

*Teachers' Retirement System of
the State of Illinois*

**Investigation of Demographic
and Economic Experience**

*Five-Year Period from
July 1, 2006 – June 30, 2011*

August 2012

August 21, 2012 REVISED

Board of Trustees
 Teachers' Retirement System
 of the State of Illinois
 2815 West Washington Street
 Springfield, Illinois 62702

Ladies and Gentlemen:

We are submitting herewith our report on the results of an actuarial investigation of the demographic and economic experience of the active members, annuitants, and survivors covered under the Teachers' Retirement System of the State of Illinois for the five-year period July 1, 2006 to June 30, 2011.

This investigation was prepared in accordance with Article 16, Section 176 of the Pension Code governing the System, which requires that at least once in each five-year period, the actuary of the System is to make an actuarial investigation into the mortality, service, and compensation experience of the members, annuitants, and survivors covered under the System.

The results of this review, pending adoption by the Board of Trustees at the August 2012 board meeting, are to be used in the preparation of the June 30, 2012 through June 30, 2016 actuarial valuations, which will determine the funding requirements for fiscal years 2014 through 2018. This report, which describes the actuarial process employed, and identifies the significant results of the investigation. In particular, we are recommending changes in the actuarial assumptions that are used to anticipate:

Assumption	Recommendation	Impact on costs
1. Termination from active employment:	Fewer terminations	Increase
2. Disability retirement:	Fewer disabilities	Increase
3. Regular service retirement:	Fewer retirements	Decrease
4. Mortality:	Fewer deaths	Increase
5. Utilization of ERO:	Lower utilization	Decrease
6. Optional Service and Sick Leave Service:	More utilization	Increase
7. Salary and Severance:	Lower increases	Decrease
8. Investment return:	Lower investment return	Increase
9. New Hires after valuation:	Revise mix	Mixed

The most significant of the recommended changes are that the post-retirement mortality assumption is revised to reflect improved longevity, future salary increases are expected to be lower and lower investment returns are assumed. While the current 8.50% assumption is supportable, it is projected to be achieved 40% of the time over the next 30 years. We have provided alternative assumptions of 8.25%, 8.00% and 7.75% which are expected to be achieved between 50% and 60% of the time. The recommended changes to other assumptions can be viewed as “fine tuning” based on recent experience.

We also recommend that our funding policy recommended in Section IV be implemented, but we realize this is a legislative issue.

A summary of our key results regarding investment returns is below:

	Investment Return Assumptions			
	8.50%	8.25%	8.00%	7.75%
FY 2013 Normal Cost	17.60%	18.67%	19.86%	21.08%
PBO (in 1,000,000s)	\$ 83,510.0	\$ 86,192.4	\$ 89,095.5	\$ 92,002.6
June 30, 2011 AVA Funded Ratio	45.23%	43.82%	42.39%	41.05%

A summary of our recommendations may be found in Section V beginning on page 32 of the report.

Fiscal Impact – June 30, 2011 Pension Benefit Obligation

As indicated on page 44 of Section V of the report, the proposed revisions in the above assumptions would increase the pension benefit obligation of the System by approximately \$4.9 billion if the 8.25% investment return assumption is adopted, \$7.8 billion if the 8.00% investment return assumption is adopted or \$10.7 billion if the 7.75% investment return assumption is adopted. The funded status decreases from 46.5% to 43.8% if the 8.25% assumption is adopted, 42.4% if the 8.00% assumption is adopted or 41.1% if the 7.75% assumption is adopted.

Board of Trustees
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Fiscal Impact – June 30, 2011 Normal Cost

Also as indicated on page 45 of Section V of the report, the proposed revisions in the above assumptions would increase the normal cost of the System by approximately 1.04% of payroll if the 8.25% investment return assumption is adopted, 2.23% of payroll if the 8.00% investment return assumption is adopted or 3.45% of payroll if the 7.75% investment return assumption is adopted.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Sincerely,



Larry Langer, FCA, ASA, EA, MAAA
Principal, Consulting Actuary



Paul R. Wilkinson, A.S.A., E.A., M.A.A.A.
Director, Consulting Actuary

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**TEACHERS' RETIREMENT SYSTEM OF THE
STATE OF ILLINOIS**

**ACTUARIAL INVESTIGATION OF THE SYSTEM'S
EXPERIENCE FOR THE PERIOD
JULY 1, 2006 TO JUNE 30, 2011**

SECTION I - INTRODUCTION

Article 16, Section 176 of the Pension Code of the Teachers' Retirement System of the State of Illinois provides that at least once in each five-year period, the actuary of the System is to make an actuarial investigation into the mortality, service, and compensation experience of the members, annuitants, and survivors covered under the System.

The results of our review are to be presented to and adopted by the Board of Trustees at the August 2012 board meeting, and the recommended new assumptions are to be used in the preparation of the June 30, 2012 actuarial valuation, which determined the funding requirements for fiscal year 2014. We have also prepared the following report, which presents more detailed results of the experience investigation of the System for the five-year period July 1, 2006 through June 30, 2011.

The objectives of this investigation are to:

- (1) Determine assumptions to anticipate the following events among active members:
 - (a) Termination from employment;
 - (b) Disability retirement;
 - (c) Regular service retirement;
 - (d) Death during membership;
 - (e) Utilization of the early retirement option (ERO) and determination of contribution sufficiency;
 - (f) Optional service purchases;
 - (g) Accumulation of sick leave service credit;
 - (h) Salary increases; and
 - (i) Severance payments.

- (2) Determine appropriate rates to anticipate death after retirement among:
 - (a) Service retirees,
 - (b) Survivors; and
 - (c) Disability retirees.

- (3) Determine appropriate assumptions for the funding projection;

- (4) Determine appropriate assumptions for the rate of inflation and rate of investment return; and

- (5) Make recommendations regarding the adoption of the funding policy of the System, which are deemed appropriate by the actuary for adoption by the Board and enactment by the legislature.

Experience Based on Employment Type

Since June 30, 1991, when Substitute and Hourly-Paid employees were first reported to the actuary, the Substitute/Hourly group has constituted approximately 16% - 19% of the total active membership, but has accounted for less than 1% of the total active liability. Therefore, we have performed our review of the active member demographic experience solely with regard to members who were part of the Full Time/Part Time group when the event under study occurred. Since the movement of active members from the Substitute/Hourly group to the Full Time/Part Time group affects the salary increase experience, our analysis of the salary experience takes this movement into account. Employment Type was not taken into account in the review of post-retirement mortality.

Sex Distinct versus Unisex Assumptions

The actuarial assumptions for termination from employment, disability, and rates of mortality have been determined on a sex distinct basis, while annual salary increase rates and the assumptions for service retirement, utilization of ERO, severance pay, optional service credit, and unused and uncompensated sick leave have a unisex basis. Separate male and female results are shown only for the events that are (or were) assumed to have a sex distinct basis.

Experience for Active Members

Separation from Service

Using data provided for the annual actuarial valuations, tabulations were compiled that show the distribution by age and sex of active members who were exposed to the events of termination from employment, death, disability and regular service retirement during the five-year period of the study. The assumed rates of occurrence of these events, which are currently used in preparing annual actuarial valuations, were then applied to the number exposed to determine the expected number of separations in each category.

For each category, the number of actual cases of separation was compared to the expected number and the result of the comparison was expressed as a ratio of actual experience over expected experience.

Early Retirement Option (ERO)

Tabulations were also compiled that provide distributions by age and service of members retiring from active service who were assumed eligible to elect ERO during their fiscal year of retirement. The number of actual cases of ERO retirement was compared to the number in the eligible group to determine the actual rates of utilization of ERO. In addition, the sufficiency of contributions was examined.

Optional Service Purchases and Sick Leave Service Credit

For optional service purchases and unused and uncompensated sick leave service credit, information for retirees who retired with an annuity with effective dates between July 1, 2006 and June 30, 2011, inclusive, was reviewed. Files provided by TRS for the annual actuarial valuations provided details on the following types of service credit at retirement: Regular (including repaid refunds), Optional Service (including Leave/Layoff service, Military service, and Out-of-System service), and Unused and Uncompensated Sick Leave. Using this information for the members who retired from active employment during the period of the study, we could determine the impact that each type of service has on the regular service retirement benefit.

Salary Increases and Severance Pay

Using data provided for the annual actuarial valuations, the expected and actual salaries as of the end of each year were compared to the actual salaries as of the end of each previous year. The comparisons yield an average annual total increase in both expected and actual salaries for the five-year period.

For severance pay, information for annuitants with fiscal years of retirement between 2007 and 2011, inclusive, and tabulations that show distributions of severance pay and other pensionable earnings in the last year of employment, were reviewed.

Experience for Annuitants and Survivors

Investigations of the mortality experience for annuitants and survivors were prepared separately by cause of retirement. The expected deaths were determined by applying the assumed rates of mortality used for valuation purposes to the number of persons exposed in each retirement category. A comparison was then made between the expected and actual deaths in each retirement category, and the results expressed as the ratio of actual experience over expected experience.

Experience for Funding Projection

An analysis of the profile for new entrants was performed on the data provided for the last three actuarial valuations. For each group – full time/regular part time members, and members who are hourly-paid or substitute teachers – we reviewed the percentage of new hires that will fall into that group, the average annual service credit earned by members of the group, and the average annual full time rate of pay at June 30, 2011 for members of the group. The new member profile will be used in the projection completed annually to determine the funding requirements of state law.

Experience for Rates of Inflation and Investment Return

The analysis for setting the rates of inflation and investment return included a review of recent past experience, consideration of projections by the System's current investment consultant as well as the System's target asset allocation, a comparison to the current assumptions of other public retirement systems, and a review of long-term past inflation as well as long-term projections of future inflation included in the 2012 OASDI Trustees Report.

Recommendations

Based on the results of our investigation, we are recommending revisions in the actuarial assumptions for (i) termination from employment, (ii) disability retirement, (iii) regular service retirement, (iv) death in active service, (v) death for regular service retirements, (vi) death for survivors, (vii) ERO, (viii) optional service purchases, (ix) sick leave service credit, (x) salary increases, and (xi) severance payments. We are also recommending an updated new member profile for use in the annual funding projection required by state law. In addition to affecting the results of the actuarial valuation and the funding projection, the proposed changes in post-retirement mortality assumptions will affect the money purchase and reversionary annuity factors used in determining TRS benefits, and the factors used to determine School District payments under Section 16-158(f) to cover the liability arising from pay increases greater than 6% per annum in the final average salary period.

The most significant of the recommended changes are that the post-retirement mortality assumption is revised to reflect improved longevity, future salary increases are expected to be lower and lower investment returns are assumed.

Summaries of Experience

The summaries attached to this report under Section VI show the comparisons and results of the experience investigation for (i) the actual and expected cases of separation from active service, (ii) the actual rates of utilization of ERO by eligible retirees and examination of ERO contributions, (iii) the actual and expected mortality for annuitants and survivors, (iv) optional service credit and unused and uncompensated sick leave, (v) the annual rates of investment return, inflation, and real rates of return on system assets, (vi) the average increases in annual salaries among active members, (vii) severance payments in the last year of employment, and (viii) the new member profile.

For purposes of this experience investigation, the assumptions adopted effective June 30, 2007 were used in determining expected results for the entire five-year period, in order to accurately reflect the emerging trends during that period.

SECTION II - DISCUSSION OF INVESTIGATION RESULTS

DEMOGRAPHIC FACTORS

Separation from Service and Post-Retirement Mortality

We have prepared Tables 1 through 4 attached to Section VI, which summarize the actual and expected separations from active service on account of termination from employment, disability, regular service retirement, and death during the five-year period ended June 30, 2011. Tables 5, 6, and 7, also attached to Section VI, analyze the experience of death after retirement for regular service retirements, survivors, and disability retirements. Separate summaries for males and females are presented for each of these events. The assumptions for separation from active service on account of regular service retirement have been prepared on a unisex basis, and so the experience of regular service retirement is also presented on that basis.

Table 8 summarizes the utilization of ERO and examination of ERO contributions among eligible members retiring from active service, while Table 9 summarizes optional service purchases and sick leave service credit of active members who retired during the period of the study. The assumptions for these types of service are unisex assumptions and so these tables have been prepared on a unisex basis.

The following table presents a summary comparison of actual to expected cases of separation from active service and death after retirement.

SUMMARY COMPARISON OF ACTUAL TO EXPECTED CASES

Event	Ratio of Actual to Expected Experience	
	Males	Females
Termination from Employment		
• Nonvested (< 5 Years Service)	129%	117%
• Vested (> 5 Years Service)	88%	86%
Disability Retirement	88%	90%
Regular Service Retirement	113%	101%
Death in Active Service	70%	85%
Death after Retirement:		
• Regular Service Retirements	87%	98%
• Survivors	98%	103%
• Disability Retirements	86%	108%

For purposes of comparison, the table expresses the ratio of the actual number of cases to the expected number of cases as a percentage. A percentage in excess of 100% indicates that the actual number of cases was greater than the expected number of cases, whereas a percentage of less than 100% indicates that the actual number of cases was less than the expected number of cases.

For example, in regard to nonvested termination from employment, the table shows an entry of 129% for male members. This means that during the five-year experience period the actual number of male members terminating employment was 29% more than the expected number of terminations. Similarly, in regard to vested termination from employment, the table shows an entry of 88% for male members. This means that during the five-year experience period the

actual number of male members terminating employment was 12% less than the expected number of terminations.

The comments presented below under each category set forth the facts indicated by this experience study with respect to the demographic factors, along with our recommendations for future valuations.

Rates of Termination from Employment

The investigation of the experience of termination from employment for reasons other than disability, death, or retirement, was split into two categories, vested and nonvested, which are illustrated in Table 1.

Nonvested Termination

Over the last five years, we have observed more terminations of nonvested members than expected for both males and females. During the period of the study, the actual cases of termination from employment were approximately 129% of the number predicted by the current rates for nonvested males, and 117% of the number predicted for nonvested females. In particular, the current assumptions predicted just about the correct amount of terminations for members under age 28 and not enough terminations at older ages. We recommend minor reductions in rates for members under age 28, and increasing the number of expected terminations at older ages to bring the ratio of actual to expected nonvested terminations to approximately 100%.

Vested Termination

Over the last five years, we have observed fewer terminations of vested members than expected for both males and females. During the period of the study, the actual cases of termination from employment were approximately 88% of the number predicted by the current rates for vested males, and 86% of the number predicted for vested females. We recommend decreasing rates at younger ages and increasing them at older ages in such a way that we decrease the overall number of expected vested terminations to bring the ratio of actual to expected vested terminations to approximately 100%.

Rates of Disability Retirement

Table 2 shows that the actual experience of disability retirement was lower than expected for both males and females - 88% of expected for males and 90% of expected for females. The number of disability retirements involved is not statistically significant. We recommend decreasing the overall number of expected disability retirements for both sexes to bring the ratio of actual to expected disability retirements to approximately 100%.

Rates of Regular Service Retirement

Table 3 provides the experience of service retirement on a unisex basis, the basis recommended for the current assumptions. Note that we reviewed the rates separately for males and females and found that the unisex table continued to provide a good fit to the observed data. During the period of the study the actual cases of regular service retirement were approximately 113% of the number expected for males, 101% of the number expected for females, and 104% of the number expected for males and females combined. The unisex table was first introduced with the June 30, 2007 actuarial valuation. There is no compelling reason to separate rates into sex distinct rates for males and females. While the overall experience is quite close, we recommend some minor changes for some age and service combinations to bring the ratio of actual to expected deaths to approximately 100%.

Rates of Mortality Among Active Members

Actual occurrences of mortality were approximately 70% of the expected for male members in active service and 85% of expected for female members in active service. Rates of mortality were lower than expected among almost all age groups. The results are presented in Table 4.

Although the experience differed from our expectations, the number of active member deaths is statistically insignificant. In addition, the assumed rates of mortality are so much smaller than the termination and retirement rates which apply at the same ages that they have little effect on the financial results. We recommend that the mortality rates be decreased and be revised to reflect continued improvement in longevity (consistent with our recommendation for rates of death after retirement following this section) by adopting a generational mortality table.

Rates of Death After Retirement

Separate mortality investigations were performed for regular service retirements, survivors, and disability retirements:

- (1) The actual cases of death among regular service-related retirements were 87% of expected for males and 98% of expected for females.
- (2) The actual cases of death among survivors were 98% of expected for males and 103% of expected for females.
- (3) The actual cases of death among those annuitants who retired on account of disability were 86% of expected for males and 108% of expected for females.

Summaries of the experience of death after retirement are shown in the following tables:

Table 5 - Members retired on regular service retirements.

Table 6 - Survivors.

Table 7 - Members retired on disability retirements.

Rates of mortality for non-disabled individuals have declined fairly consistently over the last century, and this decline is expected to continue for the foreseeable future. Current actuarial standards of practice recommend that continued improvements in mortality be reflected in the valuation. The use of generational mortality tables, where the mortality is automatically improved with each valuation, is the recommended practice. In theory, future valuations and experience reviews will not require updates to mortality if a generational mortality table is adopted. We recommend that the current mortality table be updated to bring the ratio of actual to expected deaths for male members and male survivors up to 100%, and that a generational projection be added to account for future mortality improvements.

The mortality tables for disabled retirees were adopted ten years ago, but it should be noted that improvements in mortality are not generally anticipated for disabled retirees. That being said, it is not unreasonable to project future improvements for conservatism. The female experience in the current review is 108% of expected, and does not warrant a change in the table, and although the male experience is lower than currently expected, it is higher than the mortality experienced during the last five-year review. In addition, the number of disabled male members exposed to mortality over the five years covered by the study – 987 – is not statistically significant. That being said, we recommend changes to the RP-2000 mortality table with adjustments to fit it to TRS experience and to make this standard table current.

Early Retirement Option (ERO)

Utilization The investigation shows that 10,665 active members who retired on service retirement during the period of the study were eligible to retire on ERO at some point during the fiscal year in which they retired. Focusing only on this group of actual service retirements, we found that 41.7% of the ERO-eligible (4,448) actually retired on ERO.

Table 8 presents the actual rates of utilization of ERO that occurred during the period of the study. With the last experience review, we lowered the utilization rates to reflect that the modified ERO program is more expensive for members than the ERO program that ends on July 1, 2007. Actual rates of utilization came in lower than expected. We recommend that future rates be adjusted to match the utilization that we have seen over the experience period.

Contribution Sufficiency The interest on the 0.4% member contribution for all members and the principal of the 0.4% member contribution for members that elect, when added to the ERO lump sum contributions of 11.50% for the members and 23.50% for the employer, should pay for the cost of the increase in liability due to the election of ERO. We reviewed the sufficiency of the 11.50% member and 23.50% employer ERO lump sum contributions to determine if a change should be made to ensure that the ERO is self-sustaining over the next five-year period. These lump sum contributions accounted for 55 to 60% of the cost of the increase in liability due to ERO and the 0.4% member contributions were not sufficient to pick up the remainder of the ERO cost. We recommend that the lump sum contribution rate be increased.

Optional Service Credit and Credit for Unused and Uncompensated Sick Leave

During the five-year period, data provided on 23,948 service retirements among active members who retired with an annuity give details on the following types of service credit at retirement: Regular (including repaid refunds), Optional Service (including Out-of-System, Military, and Leave/Layoff service) and Unused and Uncompensated Sick Leave. Summary information about the different types of service credit at retirement for these 23,948 service retirees is provided in Table 9. Table 9 shows that during the period of the study, and averaged over all retirements from active service, optional service at retirement averaged 0.717 years and credit for unused sick leave averaged 1.478 years. Taken together, the sum of these two types of service averaged 2.118 years during the study.

Optional Service Credit

Under the current assumptions, the pension benefit obligation for retirement benefits for active members who have not previously purchased optional service credit is increased to cover the employer cost of out-of-system service purchased in the last two years prior to retirement. During the last experience review (conducted in 2007) total optional service credit at retirement averaged 0.926 years of service, but over the period of the current study the amount of optional service credit at retirement has trended downward to 0.717. We believe the downward trend will continue in future years as members continue to accumulate greater amounts of unused sick leave.

Unused and Uncompensated Sick Leave

The cap on this type of service was increased from one year to two years during fiscal 2003. The member can receive such credit from TRS employers who have verified creditable teaching service. No payment from the member is required to receive such service credit. In the previous experience study, the average amount of unused sick leave service credit at retirement was found to be approximately 1.094 years of service at retirement. During this experience review, the average has increased to 1.478 years of service at retirement.

Recommended Assumption for Optional Service and Unused & Uncompensated Sick Leave

We recommend it be assumed that the total amount of credit for optional service and unused and uncompensated sick leave service will average 2.2 years over all retirements from active service (the average found in the current study); that optional service at retirement will average 0.7 years over all active service retirements; and that unused and uncompensated sick leave at retirement will average 1.5 years over all active service retirements. In addition, we recommend that the patterns of accrual of each type of service following the patterns found during the current study (and illustrated in Table 9). Other assumptions and methodologies that apply to optional service are as follows:

- Actual optional service credit for each current member is provided by TRS; and
- No additional service purchases will be assumed for members who currently have optional service credit; and
- Members will not purchase service if it does not improve their pension benefit; and

- When optional service is purchased within the last two years prior to retirement, 25% of the cost is covered by member payments and the remaining cost is the responsibility of the employer. (This assumption has been borne out in prior cost studies); and
- The pension benefit obligation covered by future member payments is not included in the liability on the valuation date, but is brought into projected liabilities as those payments are brought into the assets.

ECONOMIC FACTORS

We have prepared Tables 10 – 12 which summarize the actual results for the key economic factors affecting the operation of the System.

Inflation

The inflation assumption is a component of the investment return assumption, the salary increase assumption, and the new hire payroll projection assumption. The current actuarial assumption is that inflation will average 3.5% per annum on a long-term basis. History (the last 40 - 70 years) argues that long-term inflation should be in the 3% - 4% range. The 2012 OASDI Trustees Report projects that over the long-term (the next 75 years) inflation will average somewhere between 1.8% and 3.8%. The most recent Public Fund Survey of 126 public pension plans shows that 3.5% is the median inflation assumption of survey respondents, and that almost 43% of the respondents have an inflation assumption that lies between 3.25% and 3.75% inclusive. Using our forward looking model, we have modeled inflation of the next 10, 20 and 30 year to be 2.61%, 3.01% and 3.22% respectively, which reflects a decrease from our May 2011 presentation figures of 3.20%, 3.44% and 3.55% respectively. Given that the short- and long-term projections anticipate lower inflation than the current assumption, we recommending that the current 3.5% long-term inflation assumption be reduced to 3.25%.

Rates of Investment Return

The assumption for the rate of investment return is a two-part assumption: it equals the sum of a long-term inflationary assumption plus an assumption for the real rate of return on System assets. The components of the current 8.5% investment return assumption are 3.5% for inflation plus

5.0% for the real rate of return. As already discussed, we are recommending that the Board reduce the current 3.5% long-term inflation assumption to 3.25%.

The actuarial rates of investment return, inflation, and real rates of return during the five-year period ended June 30, 2011 are presented in Table 10. Note that these amounts are net of investment expenses. For purposes of these discussion all returns are shown net of actual investment expenses if known, or estimated investment expenses of 40 basis points. This table indicates that the actuarial rates of investment return and real rate of return measured on a market value of assets basis averaged 5.55% and 3.37% respectively during this five-year period. As expected, the returns fluctuated during the period of the study, falling below the expected returns in three years, and exceeding expectations in the remaining two. (The rates of return calculated by the actuary are based on the assumption that contributions and benefit payments are spread uniformly throughout the year, while the rates of return calculated by the System are based on a more precise measurement of cash flow. Therefore the annual rates of return calculated by the actuary may not exactly match the rates of return calculated by TRS.)

However, short-term historical returns on the funds do not provide a solid basis for selecting the investment return assumption used to calculate costs in future years. The reason for this is that in the short-term, actual rates of investment return can be quite volatile, but the assumed rate of investment return is used to fund the present value of benefits payable many years into the future, in some instances for as long as 80 years. Therefore, a review of recent past experience can be useful but is by no means the only basis for setting the long-term assumption used for the valuation and for the funding projection.

With regard to setting a long-term expectation it is more instructive to look at how the System's assets will be invested in the future. The current allocation calls for the following investment mix:

- 20% U.S. Equities
- 20% International Equities
- 12% Private Equity
- 8% "Absolute Return Product"
- 16% Fixed Income
- 14% Real Estate
- 10% "Real Return Product"

Based on the Board's current asset allocation policy we have estimated nominal and real returns over 10, 20 and 30 year periods as follows:

	Compound (Geometric Returns)		
Nominal	10 year	20 year	30 year
5th percentile	-0.05%	2.42%	3.77%
25th percentile	4.21%	5.87%	6.62%
40th percentile	6.10%	7.24%	7.83%
50th percentile	7.14%	7.84%	8.42%
60th percentile	8.06%	8.53%	9.09%
75th percentile	9.43%	9.85%	10.19%
95th percentile	13.52%	12.72%	12.55%
Real	10 year	20 year	30 year
5th percentile	-2.76%	-0.47%	0.71%
25th percentile	1.65%	2.76%	3.41%
40th percentile	3.21%	4.05%	4.49%
50th percentile	4.24%	4.73%	5.14%
60th percentile	5.37%	5.46%	5.85%
75th percentile	7.09%	6.86%	6.89%
95th percentile	10.55%	9.55%	9.38%

The relevant period to review for purposes of setting this assumption is the 30 year period. Standards of practice allow for the use of a return that falls within the 25th to 75th percentile of projected returns. As such, the current 8.50% return assumption is within the realm of actuarial practice. That being said, there is less than a 50% likelihood of achieving the 8.50% return over a 30 year period, and the likelihood is lower over 10 and 20 year periods. We recommend that the Board lower the investment return assumption. If the Board adopts an 8.25% assumption, then TRS is expected to have a better than 50% likelihood of achieving the investment return assumption; similarly a 7.75% return assumption will result in a 60% likelihood. We have also

included a 8.00% assumption that will result in a likelihood between 50% and 60%. As such, consideration should be given to alternate returns of 8.25%, 8.00% and 7.75%. When we compare the System's 5.0% assumed real rate of return to that of other public retirement systems we see that the latest Public Fund Survey of 126 public pension plans shows that 4.5% continues to be the median assumption for the real rate of return among survey respondents, and that 25% report using an assumption between 5.0% and 5.5%, a decrease from 30% five years ago. The 7.75% returns allows for a real return more in line with the median real return.

The above percentiles are based on projections performed by Buck of the broad asset classes within which TRS is invested. Projections performed by RVK, as well as other investment consultants will differ based on their understanding of the markets, which are translated into the assumptions they use. In addition, projections performed by RVK make use of more style specific assumptions for some of their asset classes, where Buck makes use of broad indexes. For example, in real estate, we understand that RVK makes use of specific assumptions for four types of real estate investments, while Buck uses two broader indexes. Our long term inflation assumption is 3.22%. Lower inflation rates assumed by other models could explain much of the remainder of the difference in long term returns. While projections performed by others will result in the assumed rate of return falling into different percentiles, the general conclusion is unchanged. A lower assumed rate of return, all else being equal, is more likely to be achieved.

In consideration of the above, we recommend that the Board lower the investment return assumption to 8.25%, 8.00% or 7.75%, which equates to a real return of 5.00%, 4.75% or 4.50% respectively.

Rates of Salary Progression

The growth in average annual salary is presented in Table 11.

There was sizable annual migration from Substitute/Hourly to Full Time/Part Time status – approximately 3,750 per year over the period of the study (an increase from the 3,600 per year found in the previous study). This movement to Full Time status creates large average increases in salary, which can be misleading. In order to refine the salary increase study, we performed separate analyses of those who belonged to the Full Time/Part Time group at both the beginning and the end of the year under study, and those who were Substitute/Hourly at the beginning of the year and Full Time/Part Time at the end of the year. Composite results, as well as the results of the separate analyses, are shown in Table 11.

The investigation shows that members who were Full Time throughout the year averaged salary increases of 6.44% per annum during the period of the study compared to the expected average of 7.09% per annum for continuing Full Time members. On the other hand, members who moved from Substitute/Hourly to Full Time/Part Time generally experienced salary increases averaging 434% as a result of the change. Of course this increase reflects both an increase in the amount of time worked during the year as well as a true increase in the rate of pay. The composite results show that salary increases of all members who are Full Time at the end of the year have averaged 8.0% per annum. A portion of the composite increase is also due to the increase in time worked during the year.

In addition to the migration from Substitute/Hourly to Full Time/Part Time, our review disclosed that approximately 1,725 members who are Inactive at the beginning of the year – probably on a period of leave, but in any case not currently accruing benefits – return to Full Time/Part Time employment annually. (In the last experience review we found that an average of 1,750 Inactive members return to Full Time/Part Time employment annually.)

We believe that an appropriate salary increase assumption should have as a base the experience of those who are continuing Full Time/Part Time members, plus an allowance for changes in employment type and membership status. But the effect of changes in plan provisions should also be taken into account. Under Section 16-158(f), which was enacted in fiscal year 2005, School Districts must make lump sum payments to the System to cover the cost of liability arising from pay increases greater than 6% in the final average salary period. We think that this provision will have a definite dampening effect on future pay increases granted at ages 50 and above, and so we are recommending new salary increase rates that are closer to the smoothed actual experience at all ages. Overall, the recommended new rates are equivalent to an average Full Time/Part Time base of 6.25% plus an allowance of 0.25% for employment type and status changes. The recommended total average increase is 6.5%, as compared to the current expected total average of 7.0%.

Components of the Salary Increase Assumption

The components of the salary increase assumption are inflation, real wage growth, and merit or seniority increases. As noted above, we are recommending an inflation assumption of 3.25% per annum. Merit or longevity increases are expected to vary by age and/or service, while the inflation and real wage growth assumptions apply equally to all members. Pay at hire for new members and the total payroll of the entire active group are expected to grow at a rate equal to the sum of the inflation and real wage growth assumptions. Starting pays and total payroll are assumed to grow faster than inflation alone due to increases in productivity in the economy at large, and due to the fact that employers must compete for employees. We are recommending that the current 1.2% real wage growth component of the salary increase assumption be reduced to 1.0%. As a result, our recommended increase in payroll is 4.25% per annum (3.25% inflation plus 1.00% real wage growth), a reduction of 0.45% from the current assumption. It is generally accepted in actuarial practice that a reasonable spread between the investment return assumption and the average annual salary increase assumption falls in the range of 0% to 3%. The 1.75% and 1.25% spread between the recommended interest rate assumptions of 8.25% and 7.75% and the salary increase assumption (6.5%) represents a proper balance between a realistic assessment of future annual pay increases and the long-term investment return on the assets of the fund. The merit and seniority component of salary increases currently in effect ranges from 6.4% at age 20 to 1.3% above age 50. After adjusting for the 0.25% decrease in inflation and the 0.20% reduction for real wage growth, we reduced the merit and longevity rates above age 50 by an additional 0.05% based on the experience over the past 5 years. The resulting salary increases range from 10.65% at age 20 to 5.50% at ages 50 and above.

Severance Pay

The results of the severance pay analysis are shown in Table 12, attached to Section VI.

During the five-year period, data provided on 23,948 service retirements among active members who retired with an annuity give details about pensionable severance payments received at retirement. These payments are included in the calculation of final average salary. Analysis of this data shows that, during the five-year period of the study, 18,293 retirements from active service – or 35% of regular service retirements – received severance payments totaling \$98.4 million. The \$98.4 million in severance payments was equal to 5.84% of other pensionable earnings received by the 8,293 members in their last year of employment. The data indicate that the percentage of retirees with severance increases with the amount of service at retirement.

In the final year of the experience review study, the percent of retirees that received severance pay was four times higher than that expected. That being said, overall severance as a percentage of earnings was just under 6%, much less than the amount expected. In the last year of this study, the amount was less than 4%, or a third of that expected. We recommend that the severance pay utilization be increased and the amount of severance be decreased to match what we have observed. The net impact of our recommendation is a net increase in costs due to severance pay.

FUNDING PROJECTION ASSUMPTIONS

New Member Profile

In order to perform the 50-year projection required by state law, a profile of the members who will be hired over the next 50 years must be created. We currently use, and continue to recommend, separate profiles for the Full Time/Part Time and Substitute/Hourly active member groups. As part of the current study we analyzed the data for new entrants provided for the last three actuarial valuations and have established new profiles for the two separate groups. The profiles are organized by sex and by age at hire. For each group the profiles specify, for each age and sex category, the percentage of new hires that fall into that category, the average annual service credit that will be earned throughout the member's career, and the average annual full time rate of pay at hire as of June 30, 2011. The recommended new profiles are shown in section V as well as in Table 13.

In addition, since the 50-year projection assumes that new members will be hired each year in the future, we need an assumption that allows a reasonable projection of the rate of pay at hire in years following June 30, 2011. Pay at hire is expected to grow at a rate equal to the sum of the inflation and real wage growth assumptions (which were discussed in the review of the salary increase assumption, above). Our recommendation is to reduce the current 4.7% per annum growth rate to 4.25%. As explained in the salary increase section, above, 3.25% of the increase is attributable to inflation, and the remaining 1.0% is attributable to real wage growth.

We assume the active membership of the System will remain constant in number, with no change in the size of either the Full Time/Part Time group or the Substitute/Hourly group. We are not

recommending a change in this assumption at this time. (We also note that the System uses the level percentage of payroll amortization method for purposes of disclosure under Governmental Accounting Standards Board Statement No. 25 (GASB 25), and the constant active group size assumption satisfies the GASB 25 parameters for this type of amortization.)

SECTION III – COMMENTARY ON CURRENT FUNDING POLICY

The contributions to the System are based on the provisions of state law, as amended by subsequent acts. The actuary and the Board are required to follow state law for purposes of developing contributions to the System. State law has resulted in contributions to the System much less than those that would be contributed under a prudent funding policy. As shown in Schedule II of the June 30, 2011 actuarial valuation report, the Net Pension Obligation, or cumulative shortfall of contributions since the implementation of GASB 25 and 27 in the mid-90s, is \$13.4 billion. The following characteristics of state law have resulted in contribution shortfalls:

- The use of the projected unit credit actuarial cost method has resulted in contribution shortfalls when compared to the entry age normal cost method, which is used by 75% of public sector retirement systems in the United States.
- State law calls for TRS to be 90% funded in 2045, longer than the 30 year period typically considered the industry minimum.
- Contributions are based on a funding target of 90% of the actuarial accrued liability.
- Contributions are based on members not currently in the System, specifically Tier II benefits in the System for members hired on or after January 1, 2011.
- Contributions can be reduced as a result of the debt service payments made by the State
- An Actuarial Value of Assets was implemented with the June 30, 2009 actuarial valuation. While the use of an actuarial value of assets is within actuarial standards of practice, legislation called for its implementation after the market crash of 2008, which resulted in lower contributions than if the legislation had not implemented the use of an actuarial value of assets.

Our Recommended funding policy can be found on the next page.

SECTION IV –FUNDING POLICY RECOMMENDATIONS

As noted on the previous page, the contributions to the System are based on the provisions of state law, as amended by subsequent acts. The actuary and the Board are required to follow state law for purposes of developing contributions to the System. We recommend that the following be legislated as a prudent funding policy:

- The use of the entry age normal cost method.
- The use of an amortization period of no more than 30 years on a closed basis.
- The use of a funding target of 100% of the actuarial accrued liability.
- Contributions are based on members currently in the System.
- Debt service does not impact the contributions made by the State.
- Continued use of the actuarial value of assets, without changes.

Use of a funding policy based on the above components will achieve sound actuarial health for the System for the first time in its history.

SECTION V - SUMMARY OF RECOMMENDATIONS AND FISCAL IMPACT

Based on our analysis of the results of the experience investigation, we recommend that certain changes in the actuarial basis of the System be evaluated. A summary of those changes and the cost impact per change is as follows:

Assumption	Recommendation	Impact on costs
1. Termination from active employment:	Fewer terminations	Increase
2. Disability retirement:	Fewer disabilities	Increase
3. Regular service retirement:	Fewer retirements	Decrease
4. Mortality:	Fewer deaths	Increase
5. Utilization of ERO:	Lower utilization	Decrease
6. Optional Service and Sick Leave Service:	More utilization	Increase
7. Salary and Severance:	Lower increases	Decrease
8. Investment return:	Lower investment return	Increase
9. New Hires after valuation:	Revise mix	Mixed

We recommend that the actuarial assumptions should be amended as shown on the following pages:

(1) **Terminations** The assumed rates of termination from employment should be adjusted to more closely reflect the pattern of terminations by age, and to bring the combined male/female ratio of actual to expected terminations to 100% overall. The tables below shows at sample ages the proposed rates of nonvested and vested termination from employment:

PROPOSED RATES OF TERMINATION FROM EMPLOYMENT

Incidence of Termination from Employment – Nonvested Members		
Age	Male	Female
25	7.0%	7.8%
30	8.6%	10.6%
35	9.2%	11.2%
40	11.1%	10.0%
45	11.1%	8.0%
50	12.0%	10.0%
55	16.0%	15.0%
60	21.0%	14.0%
65	21.0%	40.0%
Incidence of Termination from Employment – Vested Members		
Age	Male	Female
25	5.5%	9.0%
30	3.7%	6.0%
35	2.2%	4.2%
40	1.5%	2.2%
45	1.7%	1.7%
50	1.4%	1.4%
55	4.0%	3.1%
60	4.0%	4.0%
65	4.0%	4.0%

(2) **Disability** The assumed rates of disability should be reduced so that the ratios of actual to expected shown in Table 2 are increased to approximately 100% to more closely reflect recent experience. The table below shows at sample ages the proposed rates of disability.

PROPOSED RATES OF DISABILITY

Incidence of Disability		
Age	Male	Female
25	.029%	.045%
30	.026%	.117%
35	.033%	.090%
40	.051%	.162%
45	.054%	.083%
50	.094%	.172%
55	.111%	.197%
60	.170%	.144%
65	.510%	.287%

(3) **Retirement** The assumed rates of regular service retirement should be adjusted to better fit the actual age-and-service-related pattern of retirements observed during the experience period. The assumed rates of retirement are shown in the table below.

PROPOSED RATES OF REGULAR SERVICE RETIREMENT

Incidence of Regular Service Retirement Among Eligible Active Members					
Age *	Active Service Rounded to Nearest Year on June 30 prior to Retirement				
	5 – 18	19 – 30	31	32 – 33	34+
54		6%	12%	38%	40%
55		10%	20%	38%	40%
56		7%	16%	38%	32%
57		7%	16%	38%	32%
58		7%	13%	38%	32%
59		25%	34%	45%	31%
60	14%	27%	45%	45%	31%
61	14%	24%	30%	45%	31%
62	14%	26%	36%	45%	31%
63	14%	26%	36%	45%	31%
64	20%	33%	36%	45%	31%
65	23%	33%	45%	45%	31%
66	23%	33%	45%	45%	31%
67	23%	33%	45%	45%	31%
68	27%	33%	45%	45%	31%
69	27%	33%	45%	45%	31%
70	100%	100%	100%	100%	100%

*Age rounded to nearest year on June 30 prior to retirement

(4) **Mortality** In general, the assumed mortality rates should be changed to reflect actual recent experience for TRS members and to reflect future mortality improvements on a generational basis. The proposed mortality rates are based on variations of the RP-2000 mortality tables with adjustments to fit it to TRS experience and to make this standard table become current. Age setbacks are used in some cases. For example, the mortality rate for someone age 65 using a two-year age setback would be based on the table rate at age 63. Note that for all tables below, projected annual improvements in mortality are based on the Society of Actuaries Mortality Projection Scale AA.

Active Members – the proposed rates of death in active service are based on the RP-2000 White Collar table, projected nine years using scale AA, with a two-year age setback for men and three-year age setback for women. Rates for women are further adjusted, multiplying all rates by 70%.

Service Retirees – the proposed rates of death among members retired on regular service retirement or terminated vested are based on the RP-2000 White Collar table, projected nine years using scale AA, with a two-year age setback for men and no age setback for women. Rates for women are further adjusted, multiplying the rates for ages 63-77 by 65% and ages 78-87 by 85%.

Disability Retirees – the proposed rates of death among members retired on disability retirement are based on the RP-2000 Disabled table, projected nine years using scale AA, with a two-year age setback for men and no age setback for women.

Surviving Beneficiaries – the proposed rates of death among beneficiaries of deceased members are based on the RP-2000 Blended table, projected nine years using scale AA, with a one-year age setback for both men and women. Future generational rates are projected from 2009 based on scale AA.

(5) **ERO** The rates of utilization of ERO should be set to actual rates experienced during the period of the study. The recommended rates of utilization of ERO are shown in the following table.

PROPOSED RATES OF UTILIZATION OF ERO

Utilization of ERO among All Active Service Retirees**						
Service *	Age Rounded to Nearest Year on June 30 prior to Retirement					
	54	55	56	57	58	59
19 – 30	68%	75%	66%	63%	64%	23%
31	90%	79%	75%	71%	69%	27%
32	49%	53%	45%	48%	46%	28%
33	22%	25%	17%	15%	14%	13%

* Active member service rounded to nearest year on June 30 prior to retirement

** ERO Utilization Rates are applied only to members who have less than 35 years of total service at the assumed retirement date (including assumed sick leave and optional service purchased at retirement). Based on the sick leave and optional service assumptions, the majority of members with 33 years of service at the beginning of the year of retirement will not be assumed to retire on ERO because they will be assumed to have at least 35 years of service at retirement.

In addition, ERO Utilization Rates are not applied to members whose pension under the ERO program would be less than their money purchase benefit.

We reviewed the sufficiency of the 11.50% member and 23.50% employer ERO lump sum contributions to determine if a change should be made. Our recommendation is as follows and varies based on the assumed rate of returned adopted.

PROPOSED LUMP SUM RATES

Assumed Interest Rate	8.5%	8.25%	8.00%	7.75%
<u>Lump Sum Rates Needed to Achieve 100% Total</u>				
Member	13.1%	13.7%	14.4%	15.0%
School District	<u>26.7%</u>	<u>28.0%</u>	<u>29.3%</u>	<u>30.6%</u>
Total	39.8%	41.7%	43.7%	45.6%

(6) **Optional Service and Sick Leave Service** The pension benefit obligation for retirement benefits for active members who have not previously purchased optional service – and whose pension benefit would be improved by such a purchase - should continue to be increased to cover the employer cost of optional service purchased in the last two years prior to retirement. No additional optional service purchases will be assumed for active members who already have optional service credit. Representative amounts purchased at retirement are as follows:

PROPOSED AMOUNTS OF OPTIONAL SERVICE PURCHASED AT REGULAR SERVICE RETIREMENT

Regular Service at Retirement	Maximum Service Purchased
10 years	0.473 years
20 years	0.835 years
25 years	1.360 years
30 years	1.040 years
34 or more	None

When optional service is purchased within the last two years prior to retirement, 25% of the cost is borne by member payments and the remaining cost is the responsibility of the employer. The PBO covered by future member payments is not included in the liability on the valuation date, but is brought into projected liabilities as those payments are brought into the assets.

Sick Leave Service Credit An assumption for unused and uncompensated sick leave service credit at retirement should be retained, and the current assumed rate of accrual of such service should be increased to reflect the experience of the last five years, which was affected by the fiscal year 2003 change in the cap from one year to two years of such service. Representative assumed amounts of unused and uncompensated sick leave service are as follows:

**PROPOSED AMOUNTS OF SICK LEAVE SERVICE CREDIT AT
REGULAR SERVICE RETIREMENT**

Regular Service at Retirement	Sick Leave Service Credit
20 years	1.035 years
25 years	1.847 years
30 years	1.454 years
34 years	1.000 years
35 or more	None

(6) Salary and Severance Pay

Salary The 6.75% Full Time/ Part Time average salary increase assumption should be lowered by 0.5% to 6.25% per annum. The additional 0.25% per annum increase used to cover employment type and status changes should be retained, for a total recommended average increase of 6.5% per annum, as compared to the current expected average of 7.0% per annum. The components of the salary increase assumption will be 3.25% inflation; 1.0% real wage growth; and merit/longevity increases that range from 6.4% at age 20 to 1.3% at age 50 and above.

PROPOSED AGE-RELATED SALARY INCREASE ASSUMPTION

Age	Annual Salary Increase
20	10.65 %
25	9.75
30	7.95
35	7.25
40	6.75
45	6.25
50 and above	5.50

Severance Pay The percent of retirees from active service assumed to receive severance payments, and the amount of such severance payments, should be based on the assumption of 20% of retirees will receive severance pay and the average severance payment will be 6% of other pensionable earnings in the last year of employment.

(8) **Investment Return** We recommend that the Board lower the investment return to 8.25%, 8.00% or 7.75%, which equates to a real return of 5.00%, 4.75% or 4.50% respectively and inflation of 3.25%.

(9) **New Hires after Valuation** Below is the new member profile for use in the 50-year funding projection:

DISTRIBUTION OF NEW ENTRANTS BY AGE, SEX, AND EMPLOYMENT TYPE

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20 – 24	5.4 %	26.2 %	31.6 %	8.8 %	16.8 %	25.6 %
25 – 29	7.7 %	24.6 %	32.3 %	8.4 %	14.7 %	23.1 %
30 – 34	3.6 %	10.3 %	13.9 %	2.9 %	5.7 %	8.6 %
35 – 39	1.8 %	5.6 %	7.4 %	2.7 %	5.9 %	8.6 %
40 – 44	1.4 %	3.9 %	5.3 %	3.7 %	8.4 %	12.1 %
45 – 49	0.8 %	3.3 %	4.1 %	2.6 %	5.5 %	8.1 %
50 – 54	0.6 %	2.0 %	2.6 %	1.8 %	3.6 %	5.4 %
55 – 59	0.6 %	1.3 %	1.9 %	1.6 %	2.6 %	4.2 %
60 – 64	0.3 %	0.4 %	0.7 %	1.3 %	1.6 %	2.9 %
65 – 69	0.1 %	0.1 %	0.2 %	0.5 %	0.5 %	1.0 %
70	0.0 %	0.0 %	0.0 %	0.2 %	0.2 %	0.4 %
Total	22.3 %	77.7 %	100.0 %	34.5 %	65.5 %	100.0 %

SERVICE CREDIT EARNED IN EACH FUTURE YEAR

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20–24	0.991	0.987	0.988	0.291	0.331	0.330
25–29	0.991	0.990	0.990	0.303	0.277	0.287
30–34	0.987	0.987	0.987	0.344	0.288	0.304
35–39	0.993	0.978	0.982	0.286	0.308	0.303
40–44	0.989	0.979	0.982	0.304	0.314	0.314
45–49	0.996	0.978	0.982	0.318	0.348	0.345
50–54	0.993	0.978	0.982	0.339	0.355	0.353
55–59	0.986	0.967	0.974	0.362	0.358	0.359
60–64	0.967	0.961	0.963	0.345	0.347	0.346
65–69	-	-	-	0.339	0.325	0.330
70	-	-	-	0.303	0.295	0.297
Average	0.990	0.986	0.987	0.326	0.328	0.329

PROJECTED ANNUAL RATE OF PAY AT 6/30/2012*
(for one year of service credit)

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20-24	\$37,722	\$36,417	\$36,633	\$15,664	\$15,924	\$15,856
25-29	40,038	39,835	39,880	15,824	15,249	15,439
30-34	44,837	42,297	42,990	16,846	15,494	15,898
35-39	48,533	43,115	44,506	15,360	14,876	14,990
40-44	51,967	41,885	44,600	15,780	15,000	15,167
45-49	49,573	42,129	43,713	16,401	15,263	15,513
50-54	52,172	46,878	48,201	15,735	15,359	15,478
55-59	65,491	52,793	57,410	15,935	15,340	15,604
60-64	57,423	51,743	54,583	15,964	15,201	15,583
65-69	-	-	-	15,765	14,964	15,465
70	-	-	-	15,038	15,207	15,094
Average	\$43,762	\$39,903	\$40,760	\$15,870	\$15,393	\$15,530

* The rate of pay profile will increase 4.25% per annum; 3.25% of the increase is attributable to inflation and 1.0% to real wage growth.

Fiscal Impact

Exhibits I and II, below, illustrate the estimated fiscal impact of the proposed changes on the cost of benefits provided by the system.

FISCAL IMPACT OF PROPOSED REVISIONS IN ACTUARIAL ASSUMPTIONS**EXHIBIT I**

**CHANGE IN PENSION BENEFIT OBLIGATION (PBO)
AS OF JUNE 30, 2011
(\$ Millions)**

Actuarial Assumption Revision	Pension Benefit Obligation		
	Amount	Change	Cumulative Change
1. June 30, 2011 Valuation	\$ 81,299.7	\$ -	\$ -
2. Termination from active employment:	81,309.1	9.4	9.4
3. Disability retirement:	81,330.3	21.2	30.6
4. Regular service retirement:	81,238.6	(91.7)	(61.1)
5. Mortality:	84,362.6	3,124.0	3,062.9
6. Utilization of ERO:	84,006.2	(356.4)	2,706.5
7. Optional Service and Sick Leave Service:	84,131.6	125.4	2,831.9
8. Salary and Severance:	83,510.0	(621.6)	2,210.3
9. Investment return:			
8.25%	86,192.4	2,682.4	4,892.7
8.00%	89,095.5	5,585.5	7,795.8
7.75%	92,002.6	8,492.6	10,702.9

The above calculations indicate that the proposed revisions increase the PBO of the System by \$4.9 billion, \$7.8 billion and \$10.7 billion under the 8.25%, 8.00% and 7.75% investment return assumptions, respectively.

EXHIBIT II**CHANGE IN TOTAL NORMAL COST
(Shown as a % of covered payroll)**

Actuarial Assumption Revision	Normal Cost		
	Amount	Change	Cumulative Change
1. Fiscal Year 2013	17.63%		
2. Termination from active employment:	17.65%	0.02%	0.02%
3. Disability retirement:	17.67%	0.02%	0.04%
4. Regular service retirement:	17.66%	-0.01%	0.03%
5. Mortality:	18.42%	0.76%	0.79%
6. Utilization of ERO:	18.24%	-0.18%	0.61%
7. Optional Service and Sick Leave Service:	18.32%	0.08%	0.69%
8. Salary and Severance:	17.60%	-0.72%	-0.03%
9. Investment return:			
8.25%	18.67%	1.07%	1.04%
8.00%	19.86%	1.19%	2.23%
7.75%	21.08%	1.23%	3.45%

The above calculations indicate that the proposed revisions increase the total normal cost rate for fiscal year 2013 by 1.07%, 2.23% and 3.45% of pay under the 8.25%, 8.00% and 7.75% investment return assumptions respectively.

SECTION VI

**COMPARISON OF ACTUAL AND EXPECTED
EXPERIENCE DURING FIVE-YEAR PERIOD
FROM JULY 1, 2006 THROUGH JUNE 30, 2011**

TABLE 1

**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011
NONVESTED TERMINATIONS
TERMINATION FROM EMPLOYMENT BEFORE RETIREMENT
CHANGE FROM ACTIVE STATUS TO INACTIVE STATUS
OR REFUND TERMINATION**

MALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	2	5.3	34	38%	5.9
23 - 27	901	918.9	11,823	98%	7.6
28 - 32	690	482.5	7,233	143%	9.5
33 - 37	365	265.0	3,583	138%	10.2
38 - 42	265	180.3	2,227	147%	11.9
43 - 47	226	150.8	1,638	150%	13.8
48 - 52	181	113.3	1,171	160%	15.5
53 - 57	193	120.2	1,030	161%	18.7
58 - 62	137	83.0	677	165%	20.2
63 - 67	54	19.1	153	282%	35.3
Over 67	2	1.1	9	178%	22.2
TOTAL	3,016	2,339.5	29,578	129%	10.2

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study

TABLE 1
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

NONVESTED TERMINATIONS
TERMINATION FROM EMPLOYMENT BEFORE RETIREMENT
CHANGE FROM ACTIVE STATUS TO INACTIVE STATUS
OR REFUND TERMINATION

FEMALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	24	35.8	199	67%	12.1
23 - 27	3,917	4,474.0	47,689	88%	8.2
28 - 32	2,400	1,876.4	21,268	128%	11.3
33 - 37	1,164	840.7	9,784	139%	11.9
38 - 42	822	510.7	7,492	161%	11.0
43 - 47	688	399.2	6,383	172%	10.8
48 - 52	582	322.2	5,005	181%	11.6
53 - 57	446	233.7	2,735	191%	16.3
58 - 62	193	118.2	1,112	163%	17.4
63 - 67	66	21.6	196	306%	33.7
Over 67	<u>2</u>	<u>1.4</u>	<u>13</u>	140%	15.4
TOTAL	10,304	8,833.9	101,876	117%	10.1

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study

TABLE 1
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

VESTED TERMINATIONS
TERMINATION FROM EMPLOYMENT BEFORE RETIREMENT
CHANGE FROM ACTIVE STATUS TO INACTIVE STATUS
OR REFUND TERMINATION

MALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	-	-	-	0%	-
23 - 27	82	146.6	2,285	56%	3.6
28 - 32	505	754.0	17,997	67%	2.8
33 - 37	444	575.0	21,849	77%	2.0
38 - 42	338	359.1	19,196	94%	1.8
43 - 47	268	250.5	15,793	107%	1.7
48 - 52	258	222.1	16,782	116%	1.5
53 - 57	233	152.7	8,546	153%	2.7
58 - 62	81	43.9	1,330	185%	6.1
63 - 67	-	-	-	0%	-
Over 67	-	-	-	0%	-
TOTAL	2,209	2,503.9	103,778	88%	2.1

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study

TABLE 1
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

VESTED TERMINATIONS
TERMINATION FROM EMPLOYMENT BEFORE RETIREMENT
CHANGE FROM ACTIVE STATUS TO INACTIVE STATUS
OR REFUND TERMINATION

FEMALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	-	-	-	0%	-
23 - 27	647	1,027.3	12,338	63%	5.2
28 - 32	3,516	4,670.3	59,163	75%	5.9
33 - 37	2,461	3,041.0	56,687	81%	4.3
38 - 42	1,151	1,391.8	49,020	83%	2.3
43 - 47	914	867.1	48,309	105%	1.9
48 - 52	968	930.2	62,610	104%	1.5
53 - 57	1,048	772.3	41,093	136%	2.6
58 - 62	307	176.3	6,052	174%	5.1
63 - 67	-	-	-	0%	-
Over 67	-	-	-	0%	-
TOTAL	11,012	12,876.3	335,272	86%	3.3

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study

TABLE 2

**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011
DISABILITY RETIREMENTS**

MALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	-	-	34	0%	-
23 - 27	1	4.5	14,108	22%	0.01
28 - 32	1	7.8	25,230	13%	0.00
33 - 37	8	10.0	25,432	80%	0.03
38 - 42	8	12.3	21,423	65%	0.04
43 - 47	15	11.8	17,431	127%	0.09
48 - 52	17	19.1	17,953	89%	0.09
53 - 57	33	27.4	21,542	121%	0.15
58 - 62	15	17.9	9,255	84%	0.16
63 - 67	6	8.3	1,811	72%	0.33
Over 67	1	0.9	295	107%	0.34
TOTAL	105	120.0	154,514	88%	0.07

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study

TABLE 2
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011
DISABILITY RETIREMENTS

FEMALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	-	0.1	199	0%	-
23 - 27	29	30.9	60,027	94%	0.05
28 - 32	109	72.7	80,431	150%	0.14
33 - 37	77	70.2	66,471	110%	0.12
38 - 42	70	62.4	56,512	112%	0.12
43 - 47	64	73.1	54,692	88%	0.12
48 - 52	109	123.7	67,615	88%	0.16
53 - 57	174	165.0	80,327	105%	0.22
58 - 62	74	132.2	36,706	56%	0.20
63 - 67	13	66.7	6,125	20%	0.21
Over 67	6	5.8	841	103%	0.71
TOTAL	725	802.8	509,946	90%	0.14

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study.

TABLE 3**SUMMARY OF EXPERIENCE****FY 2007 - FY 2011****REGULAR SERVICE RETIREMENTS****ACTUAL NUMBER OF SERVICE RETIREMENTS DURING THE STUDY
WITH AN ANNUITY OR A SINGLE-SUM BENEFIT****MALES AND FEMALES**

Actual Number of Retirements						
Age**	Service*					Total
	5-18	19-30	31	32-33	34+	
54	-	433	285	1,188	8	1,914
55	-	741	274	1,659	62	2,736
56	-	426	154	991	396	1,967
57	-	394	103	585	505	1,587
58	-	379	62	404	466	1,311
59	371	1,138	132	348	418	2,407
60	367	875	117	226	307	1,892
61	304	510	40	116	220	1,190
62	261	390	40	75	141	907
63	178	279	31	56	115	659
64	164	222	18	45	97	546
65	125	152	17	23	61	378
66	74	100	12	16	40	242
67	48	53	6	11	43	161
68	32	44	4	8	19	107
69	27	33	4	2	16	82
70+	47	48	3	9	35	142
Total	1,998	6,217	1,302	5,762	2,949	18,228

* Active member service rounded to nearest year on June 30 prior to retirement

** Age rounded to nearest year on June 30 prior to retirement

The ratio of actual to exposed provides the actual rates of separation that occurred during the study.

TABLE 3
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

REGULAR SERVICE RETIREMENTS
EXPECTED NUMBER OF SERVICE RETIREMENTS DURING THE STUDY
WITH AN ANNUITY OR A SINGLE-SUM BENEFIT

MALES AND FEMALES

Expected Number of Retirements						
Age**	Service*					Total
	5-18	19-30	31	32-33	34+	
54	-	590	276	470	4	1,340
55	-	904	300	1,200	56	2,460
56	-	652	175	751	373	1,952
57	-	593	124	446	489	1,651
58	-	535	86	290	473	1,385
59	-	1,186	104	262	452	2,004
60	376	878	118	204	351	1,926
61	245	531	64	112	259	1,211
62	225	434	50	79	188	977
63	154	295	41	59	145	693
64	146	228	21	42	106	544
65	123	153	16	25	59	376
66	73	95	10	15	42	234
67	43	66	6	11	32	158
68	26	42	4	6	22	100
69	16	25	5	3	18	67
70+	190	144	5	21	159	519
Total	1,618	7,349	1,405	3,996	3,228	17,597

* Active member service rounded to nearest year on June 30 prior to retirement

** Age rounded to nearest year on June 30 prior to retirement

TABLE 3
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

REGULAR SERVICE RETIREMENTS
MEMBERS ELIGIBLE FOR SERVICE RETIREMENT DURING THE STUDY
WITH AN ANNUITY OR A SINGLE-SUM BENEFIT

MALES AND FEMALES

Number of Active Members Exposed						
Age**	Service*					Total
	5-18	19-30	31	32-33	34+	
54	-	8,437	2,306	3,291	11	14,045
55	-	7,547	1,503	4,179	140	13,369
56	-	6,532	975	2,625	1,169	11,301
57	-	5,939	689	1,589	1,533	9,750
58	-	5,365	481	1,056	1,482	8,384
59	3,683	4,756	388	747	1,224	10,798
60	2,693	3,260	262	455	951	7,621
61	2,492	2,221	142	251	703	5,809
62	1,819	1,558	112	177	512	4,178
63	1,244	1,060	91	131	395	2,921
64	853	697	48	94	289	1,981
65	559	469	36	55	197	1,316
66	332	291	22	33	141	819
67	203	201	14	24	108	550
68	122	129	9	14	73	347
69	93	77	11	7	60	248
70+	190	144	5	21	159	519
Total	14,283	48,683	7,094	14,749	9,147	93,956

* Active member service rounded to nearest year on June 30 prior to retirement

** Age rounded to nearest year on June 30 prior to retirement

TABLE 3
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

REGULAR SERVICE RETIREMENTS
RATIO OF ACTUAL TO EXPECTED SERVICE RETIREMENTS DURING THE STUDY
WITH AN ANNUITY OR A SINGLE-SUM BENEFIT

MALES AND FEMALES

Ratio of Actual to Expected Number of Retirements						
Age**	Service*					Total
	5-18	19-30	31	32-33	34+	
54	-	73%	103%	253%	182%	143%
55	-	82%	91%	138%	111%	111%
56	-	65%	88%	132%	106%	101%
57	-	67%	83%	131%	103%	96%
58	-	71%	72%	139%	99%	95%
59	-	96%	126%	133%	93%	120%
60	98%	100%	100%	111%	88%	98%
61	124%	96%	63%	103%	85%	98%
62	116%	90%	80%	95%	75%	93%
63	116%	95%	76%	96%	79%	95%
64	112%	97%	84%	107%	91%	100%
65	101%	99%	106%	94%	104%	101%
66	102%	105%	123%	109%	96%	103%
67	110%	81%	96%	103%	134%	102%
68	122%	105%	100%	128%	88%	107%
69	165%	131%	82%	64%	90%	122%
70+	25%	33%	60%	43%	22%	27%
Total	123%	85%	93%	144%	91%	104%

* Active member service rounded to nearest year on June 30 prior to retirement

** Age rounded to nearest year on June 30 prior to retirement

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study.

TABLE 3
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

REGULAR SERVICE RETIREMENTS
ACTUAL RATES OF SERVICE RETIREMENT DURING THE STUDY
WITH AN ANNUITY OR A SINGLE-SUM BENEFIT

MALES AND FEMALES

Actual Number of Retirements per 100 Eligible Active Members						
Age**	Service*					Total
	5-18	19-30	31	32-33	34+	
54	-	5	12	36	73	14
55	-	10	18	40	44	20
56	-	7	16	38	34	17
57	-	7	15	37	33	16
58	-	7	13	38	31	16
59	10	24	34	47	34	22
60	14	27	45	50	32	25
61	12	23	28	46	31	20
62	14	25	36	42	28	22
63	14	26	34	43	29	23
64	19	32	38	48	34	28
65	22	32	47	42	31	29
66	22	34	55	48	28	30
67	24	26	43	46	40	29
68	26	34	44	57	26	31
69	29	43	36	29	27	33
70+	25	33	60	43	22	27
Total	14	13	18	39	32	19

* Active member service rounded to nearest year on June 30 prior to retirement

** Age rounded to nearest year on June 30 prior to retirement

TABLE 4

**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011
DEATHS IN ACTIVE SERVICE**

MALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	-	-	34	0%	-
23 - 27	2	8.1	14,108	25%	0.01
28 - 32	1	14.7	25,230	7%	0.00
33 - 37	9	16.8	25,432	54%	0.04
38 - 42	8	17.5	21,423	46%	0.04
43 - 47	17	18.9	17,431	90%	0.10
48 - 52	25	27.9	17,953	90%	0.14
53 - 57	52	50.1	21,542	104%	0.24
58 - 62	22	38.1	9,255	58%	0.24
63 - 67	8	14.2	1,811	56%	0.44
Over 67	2	2.0	295	98%	0.68
TOTAL	146	208.3	154,514	70%	0.09

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study.

TABLE 4
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011
DEATHS IN ACTIVE SERVICE

FEMALES

Age	Number of Separations		Number Exposed	Ratio of Actual to Expected	Separations per 100 Participants
	Actual	Expected			
Less than 23	-	-	199	0%	-
23 - 27	2	7.5	60,027	27%	0.00
28 - 32	12	13.8	80,431	87%	0.01
33 - 37	18	20.1	66,471	90%	0.03
38 - 42	17	23.3	56,512	73%	0.03
43 - 47	32	35.2	54,692	91%	0.06
48 - 52	65	69.2	67,615	94%	0.10
53 - 57	99	118.1	80,327	84%	0.12
58 - 62	69	75.7	36,706	91%	0.19
63 - 67	17	23.1	6,125	74%	0.28
Over 67	<u>1</u>	<u>3.2</u>	<u>841</u>	31%	0.12
TOTAL	332	389.2	509,946	85%	0.07

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

The ratio of actual to exposed provides the actual rates of separation that occurred during the study.

TABLE 5**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011****DEATHS AMONG SERVICE RETIREMENTS****MALES**

Age	Number of Deaths		Exposed	Ratio of Actual to Expected Experience
	Actual	Expected		
48 - 52	-	-	3	0%
53 - 57	14	16.9	5,688	83%
58 - 62	143	162.3	31,617	88%
63 - 67	253	347.8	35,867	73%
68 - 72	318	433.6	25,390	73%
73 - 77	448	573.6	19,681	78%
78 - 82	584	741.2	14,254	79%
83 - 87	623	651.3	7,643	96%
88 - 92	352	342.0	2,667	103%
93 - 97	202	139.9	786	144%
Over 97	45	27.2	107	166%
Total	2,982	3,435.8	143,703	87%

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

TABLE 5
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

DEATHS AMONG SERVICE RETIREMENTS

FEMALES

Age	Number of Deaths		Exposed	Ratio of Actual to Expected Experience
	Actual	Expected		
48 - 52	-	-	4	0%
53 - 57	27	28.3	12,373	95%
58 - 62	208	195.8	58,950	106%
63 - 67	318	413.3	62,982	77%
68 - 72	381	566.6	42,171	67%
73 - 77	473	670.6	29,404	71%
78 - 82	697	893.5	24,089	78%
83 - 87	1,022	1,089.7	17,517	94%
88 - 92	1,317	1,154.4	11,532	114%
93 - 97	1,070	777.8	5,162	138%
Over 97	478	351.2	1,519	136%
Total	5,991	6,141.2	265,703	98%

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

TABLE 6

**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011**

DEATHS AMONG BENEFICIARIES OF DECEASED PENSIONERS

MALES

Age	Number of Deaths		Exposed	Ratio of Actual to Expected Experience
	Actual	Expected		
Less than 18	-	-	-	0%
18 - 22	-	0.2	219	0%
23 - 27	-	-	7	0%
28 - 32	-	-	7	0%
33 - 37	-	-	43	0%
38 - 42	2	0.1	54	3484%
43 - 47	-	0.1	63	0%
48 - 52	4	0.6	227	693%
53 - 57	3	2.0	462	147%
58 - 62	14	8.2	983	170%
63 - 67	21	20.8	1,334	101%
68 - 72	29	41.0	1,532	71%
73 - 77	68	87.5	1,915	78%
78 - 82	128	166.4	2,220	77%
83 - 87	244	275.6	2,419	89%
88 - 92	265	260.1	1,654	102%
93 - 97	167	153.7	723	109%
Over 97	61	46.0	151	133%
Total	1,006	1,062.3	14,013	98%

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

TABLE 6
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

DEATHS AMONG BENEFICIARIES OF DECEASED PENSIONERS

FEMALES

Age	Number of Deaths		Exposed	Ratio of Actual to Expected Experience
	Actual	Expected		
Less than 18	-	-	-	0%
18 - 22	-	-	197	0%
23 - 27	-	-	-	0%
28 - 32	-	-	5	0%
33 - 37	-	-	28	0%
38 - 42	-	-	40	0%
43 - 47	3	0.1	94	3291%
48 - 52	3	0.3	222	870%
53 - 57	10	1.7	750	580%
58 - 62	7	6.6	1,736	107%
63 - 67	19	21.2	2,646	90%
68 - 72	40	56.3	3,613	71%
73 - 77	94	116.8	4,561	81%
78 - 82	220	227.2	5,476	97%
83 - 87	285	318.7	4,627	89%
88 - 92	383	375.7	3,413	102%
93 - 97	288	239.7	1,477	120%
Over 97	114	95.6	383	119%
Total	1,466	1,459.9	29,268	103%

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

TABLE 7

**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011**

DEATHS AMONG DISABILITY RETIREMENTS

MALES

Age	Number of Deaths		Exposed	Ratio of Actual to Expected Experience
	Actual	Expected		
23 - 27	-	-	-	0%
28 - 32	-	-	-	0%
33 - 37	2	0.6	13	317%
38 - 42	1	1.8	36	57%
43 - 47	2	2.7	56	74%
48 - 52	8	4.4	90	183%
53 - 57	10	10.4	214	96%
58 - 62	9	13.0	267	70%
63 - 67	6	7.6	151	79%
68 - 72	2	3.9	51	52%
73 - 77	5	5.9	53	85%
78 - 82	3	7.8	46	39%
83 - 87	3	1.8	8	165%
88 - 92	1	0.7	2	149%
93 - 97	-	-	-	0%
Over 97	-	-	-	0%
Total	52	60.6	987	86%

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

TABLE 7
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

DEATHS AMONG DISABILITY RETIREMENTS

FEMALES

Age	Number of Deaths		Exposed	Ratio of Actual to Expected Experience
	Actual	Expected		
23 - 27	1	0.3	9	408%
28 - 32	1	2.0	72	51%
33 - 37	3	2.8	102	108%
38 - 42	7	5.5	203	127%
43 - 47	5	5.7	208	88%
48 - 52	19	11.4	420	166%
53 - 57	31	27.8	1,019	112%
58 - 62	46	33.1	1,216	139%
63 - 67	16	12.6	446	127%
68 - 72	10	10.8	263	92%
73 - 77	8	13.5	216	60%
78 - 82	9	12.3	129	73%
83 - 87	10	14.7	103	68%
88 - 92	11	9.4	46	117%
93 - 97	-	1.7	6	0%
Over 97	1	1.1	2	92%
Total	178	164.7	4,460	108%

If the ratio of actual to expected is:

in excess of 100%, then the actual number of cases was greater than expected

less than 100%, then the actual number of cases was less than expected

TABLE 8**SUMMARY OF EXPERIENCE
FY 2007- FY 2011****UTILIZATION OF ERO AMONG ALL ACTIVE SERVICE RETIREES****MALES AND FEMALES****ERO-ELIGIBLE SERVICE RETIREMENTS****

Number of Actual Service Retirements among Active Members						
Service *	Age Rounded to Nearest Year on June 30 prior to Retirement					
	54	55	56	57	58	59
19 – 30	433	741	426	394	374	1,138
31	285	274	154	103	62	132
32	1,027	715	375	259	183	183
33	161	944	616	326	221	165
34	8	60	374	276	151	100

ERO-ELECTED SERVICE RETIREMENTS**

Number of ERO Elected Service Retirements among Active Members						
Service *	Age Rounded to Nearest Year on June 30 prior to Retirement					
	54	55	56	57	58	59
19 – 30	295	556	280	249	241	264
31	257	217	115	73	43	36
32	505	381	170	124	85	51
33	35	234	106	48	32	22
34	-	1	12	7	5	4

UTILIZATION OF ERO AMONG ERO-ELIGIBLE SERVICE RETIREMENTS**

Rates of Utilization of ERO						
Service *	Age Rounded to Nearest Year on June 30 prior to Retirement					
	54	55	56	57	58	59
19 – 30	68%	75%	66%	64%	64%	23%
31	90%	79%	75%	69%	69%	27%
32	49%	53%	45%	46%	46%	28%
33	22%	25%	17%	14%	14%	13%
34	0%	2%	3%	3%	3%	4%

* Active member service rounded to nearest year on June 30 prior to retirement

** Based on beginning of year data and actuarial assumptions about service accruals and service purchases, projected to be eligible for ERO during the fiscal year of retirement

Total Number of ERO-Eligible Retirements: 10,665

- 41.7% of the ERO-Eligible (4,448) actually retired on ERO

ERO PROJECTION OF COST SHARING – Beginning July 1, 2013

Assumed Interest Rate	8.5%	8.25%	8.00%	7.75%
<u>Portion of ERO Cost by Source</u>				
Member Lump Sum (11.5% rate)	19.4%	19.0%	18.5%	18.1%
School District Lump Sum (23.5% rate)	39.7%	38.7%	37.8%	36.9%
0.4% ERO contributions and Earnings	<u>32.7%</u>	<u>31.2%</u>	<u>29.7%</u>	<u>28.3%</u>
Total	91.8%	88.9%	86.0%	83.3%

TABLE 9**SUMMARY OF EXPERIENCE
FY 2007- FY 2011****OPTIONAL AND SICK LEAVE SERVICE CREDIT
AMONG ACTIVE SERVICE RETIREES
WHO RETIRED WITH AN ANNUITY****MALES AND FEMALES****SERVICE CREDIT AT RETIREMENT**

Type of Service	Number of Retirees	Years of Service	Average Over All Retirees	As a Percent of Regular
Regular	23,948	585,321	24.441	100.00%
Optional Service	6,664	17,181	0.717	2.94%
Sick Leave	<u>19,209</u>	<u>35,393</u>	<u>1.478</u>	<u>6.05%</u>
Total	23,948	637,894	26.637	108.98%

AVERAGE AMOUNTS OF DIFFERENT TYPES OF SERVICE

Type of Service	Under 20	20-24.999	25-29.999	30-33.999	34 or more	Total
Regular	10.341	20.271	24.569	29.035	32.776	24.440
Optional Service	0.437	0.835	1.360	1.212	0.523	0.717
Sick Leave	<u>1.724</u>	<u>1.035</u>	<u>1.847</u>	<u>1.567</u>	<u>1.322</u>	<u>1.478</u>
Total	12.503	22.141	27.777	31.813	34.621	26.636

AVERAGES BY FISCAL YEAR OF RETIREMENT

Fiscal Year	Optional Service	Sick Leave	Total
2007	0.852	1.142	1.994
2008	0.509	3.063	3.572
2009	0.734	1.241	1.975
2010	0.739	1.156	1.895
2011	0.686	1.195	1.881
Average	0.717	1.478	2.195

TABLE 10**SUMMARY OF ACTUARIAL INVESTMENT RETURN AND INFLATION****FY 2007 – FY 2011**

Year Ended June 30	Market Return		Inflation		Real Rate of Return Based on Market Value of Assets	
	Investment Return	Actual Minus 8.5% Assumed Return	Actual Change in CPI-U	Actual Minus 3.5% Assumed Inflation	Actual Real Rate of Return	Actual Minus 5.0% Assumed Return
2007	19.07%	10.57%	2.7%	(0.8)%	16.38%	11.38%
2008	(4.89)%	(13.39)%	5.0%	1.5%	(9.91)%	(14.91)%
2009	(22.89)%	(31.39)%	(1.4)%	(4.9)%	(21.46)%	(26.46)%
2010	12.97%	4.47%	1.1%	(2.4)%	11.92%	6.92
2011	23.50%	15.00%	3.6%	0.1%	19.94%	14.94%
5-Year Average*	5.55%	(2.95)%	2.2%	(1.3)%	3.37%	(1.63)%
Current Assumption	8.50%		3.5%		5.00%	

- Notes: (1) Actual rates of return were determined exclusive of investment expenses. The rates were calculated by the actuary based on the assumption that contributions and benefit payments were spread uniformly throughout the year.
- (2) Investments are based on the market value of assets.
- (3) The real rate of return equals the actuarial investment return minus the change in the CPI-U

* Average over the five-year period July 1, 2006 to June 30, 2011.

TABLE 11

**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011**

SALARY INCREASES OF ACTIVE MEMBERS

(without the .25% allowance for employment type and status changes)

**FULL TIME / PART TIME MEMBERS AT THE
BEGINNING AND END OF THE YEAR**

MALES AND FEMALES

Central Age Group	Salaries At End Of Year (\$ in Thousands)			Increases In Salaries	
	Actual Current (A)	Expected Current (B)	Actual Prior (C)	Actual (A) / (C) - 1	Expected (B) / (C) - 1
20	\$ 8,394	\$ 7,215	\$ 6,506	29.02%	10.90%
25	3,200,872	3,220,902	2,929,183	9.28%	9.96%
30	5,389,632	5,443,481	5,018,471	7.40%	8.47%
35	5,418,461	5,457,456	5,070,153	6.87%	7.64%
40	5,089,378	5,120,055	4,775,885	6.56%	7.21%
45	4,913,715	4,947,529	4,636,249	5.98%	6.71%
50	6,157,138	6,200,272	5,844,413	5.35%	6.09%
55	7,227,870	7,249,760	6,839,396	5.68%	6.00%
60	3,008,592	3,014,137	2,843,525	5.81%	6.00%
65	465,296	467,549	441,084	5.49%	6.00%
70	55,055	55,632	52,483	4.90%	6.00%
Total	40,934,403	41,183,988	38,457,348	6.44%	7.09%

TABLE 11
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

SALARY INCREASES OF ACTIVE MEMBERS

(without the .25% allowance for employment type and status changes)

SUBSTITUTE / HOURLY AT THE BEGINNING OF THE YEAR
AND FULL TIME / PART TIME AT THE END OF THE YEAR

MALES AND FEMALES

Central Age Group	Salaries At End Of Year (\$ in Thousands)			Increases In Salaries	
	Actual Current (A)	Expected Current (B)	Actual Prior (C)	Actual (A) / (C) - 1	Expected (B) / (C) - 1
20	\$ 16,600	\$ 1,069	\$ 964	1622%	10.90%
25	320,853	62,726	56,883	464%	10.27%
30	108,547	21,422	19,728	450%	8.59%
35	73,836	14,362	13,343	453%	7.64%
40	82,272	17,499	16,324	404%	7.20%
45	66,405	15,048	14,099	371%	6.74%
50	43,934	10,787	10,166	332%	6.12%
55	23,480	5,944	5,608	319%	6.00%
60	8,761	2,274	2,145	308%	6.00%
65	1,913	445	419	356%	6.00%
70	276	139	131	111%	6.00%
75	146	6	6	2485%	5.99%
Total	747,022	151,721	139,815	434%	8.52%

TABLE 11
(continued)

SUMMARY OF EXPERIENCE
FY 2007 - FY 2011

SALARY INCREASES OF ACTIVE MEMBERS
(without the .25% allowance for employment type and status changes)

FULL TIME / PART TIME AT THE END OF THE YEAR

MALES AND FEMALES

Central Age Group	Salaries At End Of Year (\$ in Thousands)			Increases In Salaries	
	Actual Current (A)	Expected Current (B)	Actual Prior (C)	Actual (A) / (C) - 1	Expected (B) / (C) - 1
20	\$ 24,994	\$ 8,284	\$ 7,470	234.6%	10.9%
25	3,521,725	3,283,628	2,986,066	17.9%	10.0%
30	5,498,179	5,464,903	5,038,199	9.1%	8.5%
35	5,492,297	5,471,818	5,083,496	8.0%	7.6%
40	5,171,650	5,137,554	4,792,209	7.9%	7.2%
45	4,980,120	4,962,577	4,650,348	7.1%	6.7%
50	6,201,072	6,211,059	5,854,579	5.9%	6.1%
55	7,251,350	7,255,704	6,845,004	5.9%	6.0%
60	3,017,353	3,016,411	2,845,670	6.0%	6.0%
65	465,572	467,688	441,215	5.5%	6.0%
70	<u>55,201</u>	<u>55,638</u>	<u>52,489</u>	5.2%	6.0%
Total	41,679,512	41,335,264	38,596,743	8.0%	7.1%

TABLE 12

**SUMMARY OF EXPERIENCE
FY 2007 - FY 2011**

Severance Paid in the Year Preceding Retirement

Severance Payments
Distributed by Service at Retirement

Years of Service at Retirement	Percent of Severance Paid to all Retirees
Less than 20	8.1%
20 - 24	11.3%
25 - 29	14.8%
30 - 34	52.5%
35 or more	<u>13.3%</u>
All Retirees	100.0%

Number of Retirements and Percent Retiring with Severance Pay
(excluding severance payments)

Years of Service at Retirement	Number with Severance	Number without Severance	Total Number Retiring	Percent Retiring with Severance
Less Than 20	812	6,554	7,366	11.02%
20 - 24	1,015	2,105	3,120	32.53%
25 - 29	1,288	1,907	3,195	40.31%
30 - 34	4,072	3,834	7,906	51.51%
35 or more	<u>1,106</u>	<u>1,255</u>	<u>2,361</u>	46.84%
All Retirees	8,293	15,655	23,948	34.63%

Severance Pay Compared to Other Pensionable Earnings
(retirees with severance only)

Years of Service at Retirement	Severance Pay (millions)	Other Earnings (millions)	Severance as a Percent of Other Earnings
Less Than 20	\$ 8.0	\$ 321.8	2.48%
20 - 24	11.1	232.5	4.77%
25 - 29	14.5	256.8	5.66%
30 - 34	51.7	671.8	7.70%
35 or more	<u>13.1</u>	<u>203.2</u>	6.43%
All Retirees	98.4	1,686.2	5.84%

TABLE 13

NEW MEMBER PROFILE

DISTRIBUTION OF NEW ENTRANTS BY AGE, SEX, AND EMPLOYMENT TYPE

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20 – 24	5.4 %	26.2 %	31.6 %	6.9 %	18.1 %	25.0 %
25 – 29	7.7 %	24.6 %	32.3 %	8.2 %	15.1 %	23.3 %
30 – 34	3.6 %	10.3 %	13.9 %	2.7 %	6.0 %	8.7 %
35 – 39	1.8 %	5.6 %	7.4 %	2.0 %	6.6 %	8.6 %
40 – 44	1.4 %	3.9 %	5.3 %	2.7 %	9.4 %	12.1 %
45 – 49	0.8 %	3.3 %	4.1 %	1.8 %	6.2 %	8.0 %
50 – 54	0.6 %	2.0 %	2.6 %	1.6 %	3.9 %	5.5 %
55 – 59	0.6 %	1.3 %	1.9 %	1.7 %	2.7 %	4.4 %
60 – 64	0.3 %	0.4 %	0.7 %	1.4 %	1.6 %	3.0 %
65 – 69	0.1 %	0.1 %	0.2 %	0.6 %	0.5 %	1.1 %
70	0.0 %	0.0 %	0.0 %	0.2 %	0.1 %	0.3 %
Total	22.3 %	77.7 %	100.0 %	29.8 %	70.2 %	100.0 %

SERVICE CREDIT EARNED IN EACH FUTURE YEAR

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20–24	0.917	0.923	0.922	0.311	0.336	0.335
25–29	0.947	0.934	0.937	0.309	0.298	0.298
30–34	0.909	0.915	0.913	0.340	0.276	0.297
35–39	0.930	0.916	0.920	0.288	0.301	0.300
40–44	0.931	0.901	0.908	0.252	0.308	0.298
45–49	0.900	0.905	0.904	0.304	0.317	0.312
50–54	0.888	0.928	0.919	0.321	0.338	0.334
55–59	0.972	0.903	0.926	0.353	0.345	0.346
60–64	0.893	1.113	1.010	0.328	0.330	0.327
65–69	-	-	-	0.315	0.304	0.308
70	-	-	-	0.285	0.255	0.268
Average	0.928	0.924	0.924	0.313	0.315	0.314

TABLE 13
(continued)

NEW MEMBER PROFILE

PROJECTED ANNUAL FULL TIME RATE OF PAY AT 6/30/2012*

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20-24	\$ 46,349	\$ 45,029	\$ 45,254	\$ 17,475	\$ 18,053	\$ 17,893
25-29	47,771	48,290	48,167	17,467	17,374	17,407
30-34	55,110	52,482	53,163	17,704	16,908	17,155
35-39	57,001	54,980	55,472	16,839	16,595	16,652
40-44	64,467	55,424	57,812	16,616	15,919	16,075
45-49	68,190	55,885	58,286	16,348	16,192	16,227
50-54	74,055	56,203	60,323	16,806	16,281	16,434
55-59	68,428	68,443	68,438	16,095	16,233	16,180
60-64	77,237	58,749	66,672	15,935	16,183	16,067
65-69	-	52,933	26,466	15,841	15,565	15,716
70	-	47,386	-	15,783	14,993	15,520
Average	\$ 52,582	\$ 49,509	\$ 50,195	\$ 17,074	\$ 16,989	\$ 17,014

* The rate of pay profile will increase 4.25% per annum; 3.25% of the increase is attributable to inflation and 1.0% to real wage growth