GENERAL ASSEMBLY RETIREMENT SYSTEM OF ILLINOIS

FIVE-YEAR EXPERIENCE ANALYSIS FOR THE PERIOD 2006-2010

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Board of Trustees
General Assembly Retirement System of Illinois
2101 South Veterans Parkway
P.O. Box 19255
Springfield, Illinois 62794-9255

Re: **Five-Year Experience Analysis**

Dear Board Members:

We are pleased to submit our report on the experience analysis of the system for the five-year period 2006 to 2010.

The purpose of this report is to review the recent experience of the system and to develop recommended actuarial assumptions to be used for the June 30, 2011 actuarial valuation.

The report consists of four sections and one appendix as follows:

We would be pleased to discuss any aspects of this report with you and other interested persons.

Respectfully submitted,

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Consulting Actuary

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Actuary

I. INTRODUCTION

The choice of actuarial assumptions plays an important role in determining the values obtained in an actuarial valuation of the system. To ensure that the actuarial assumptions are appropriate, they must be periodically reviewed and revised if necessary.

Pursuant to Section 5/2-146 of the Illinois Pension Code, the actuary shall

> "make a general investigation at least once every 5 years of the mortality, retirement, disability, separation, interest and salary rates and recommend as a result of such investigation, the actuarial tables to be adopted.

We have performed an experience analysis of the fund over the five-year period 2006 through 2010. In this report, we summarize the results of the analysis. Based on this analysis, proposed actuarial assumptions for the actuarial valuation of the fund as of June 30, 2011 are presented.

II. GENERAL COMMENTS ON ACTUARIAL ASSUMPTIONS

Actuarial assumptions are "best estimates" of future experience generally derived from an extrapolation of past experience, with possible modification for changes anticipated in the future.

It is not possible to look at one actuarial assumption in isolation and conclude from the choice of that assumption whether or not a realistic picture of the fund is presented. It is the aggregate effect of all actuarial assumptions that is important in determining funding requirements and actuarial

liabilities. In particular, the interest rate and the salary increase assumptions generally have a strong correlation as they are both affected by inflation.

III. ANALYSIS OF EXPERIENCE AND OUTLINE OF ASSUMPTIONS TO BE USED

Mortality Rates

The mortality rates used in a valuation serve two purposes: (1) to estimate the percentage of active members who can be expected to survive to retirement age, and (2) to forecast the life expectancy of members once they have reached retirement.

For the last actuarial valuation, the UP-1994 Mortality Table for Males, rated down 2 years, was used for active and retired members. The UP-1994 Mortality Table for Females, rated down 1 year, was used for surviving spouses. We have examined the mortality experience of the fund over the last five years and have compared it with the mortality expected under the mortality assumptions used for the last valuation. The results are as follows:

Mortality - Pensioners

Actual number of deaths	44
Expected number of deaths	50.9
Ratio of actual to expected	86.4%

Mortality - Survivors

Actual number of deaths	42
Expected number of deaths	36.6
Ratio of actual to expected	114.8%

An actual to expected ratio greater than 100% means that mortality has been greater than expected, resulting in fewer benefit payments. A ratio less than 100% means that there have been fewer deaths than expected, resulting in additional costs to the fund. A mortality ratio of over 100% is generally desirable to allow for expected improvement in life expectancies in the future.

It can be seen from the above that over the last five years, the number of deaths among pensioners has been 86.4% of the number expected, and the number of deaths among survivors has been 114.8% of the number expected.

We have estimated that in the case of pensioners, using the UP-1994 Mortality Table for Males, rated down 4 years, would have resulted in a ratio of actual deaths to expected of 104.8% over the last five years, which would have been at a desirable level for the mortality ratio to allow for future improvements in mortality. In the case of survivors, the current mortality ratio of 114.8% is an appropriate in that it provides a margin for future improvements in mortality.

We therefore propose to use the following mortality rate assumptions for the June 30, 2011 actuarial valuation of the system: (1) For active members and pensioners: The UP-1994 Mortality Table for Males, rated down 4 years; (2) For Survivors: The UP-1994 Mortality Table for Females, rated down 1 year.

Termination Rates

Termination rates are used to estimate the probability that an employee will terminate employment at a given age. The following is a sample of the termination rates that have been used for the last five years:

Age	Rate of Termination Per 1,000 Members
20-65	70
66 and over	0

We examined the system's termination experience over the last five years and compared it with the termination expected under the above assumptions. The results are as follows:

Actual number of terminations	24
Expected number of terminations	41.0
Ratio of actual to expected	58.5%

An actual to expected ratio greater than 100% means that more employees have terminated than expected, resulting in fewer employees staying until retirement, producing a savings to the fund. A ratio of less than 100% means that there have been fewer terminations than expected resulting in additional costs to the fund.

As can be seen from the above, the number of terminations of active members over the last five years has been 58.5% of the number expected according to our assumptions. It is generally desirable to have the number actual terminations slightly higher than the number expected. We therefore propose to reduce the assumed rates of termination at all ages to 4% (40 terminations per thousand. We have estimated that these proposed terminations would have produced 23.5 expected terminations over the past five years and an actual to expected ratio of 102.1%, which is in the desirable range.

Retirement Rates

Retirement rates are used to estimate the probability that an employee will retire at each age at which a retirement benefit is available. For previous valuations, rates of retirement for each age from 55 to 80 have been used. The following are samples of the rates of retirement that have been used for the past five years:

Age	Rate of Retirement Per 1,000 Members
55	200
60	100
65	80
70	50
75	50
80	1000

We examined the retirement experience of the fund over the past five years and compared it with the retirements expected according to the above rates. The results are as follows:

Actual number of retirements	25
Expected number of retirements	29.7
Ratio of actual to expected	84.2%
Actual average retirement age	64.6
Expected average retirement age	62.7

It can be seen from the above that over the five-year period, the number of retirements has been fairly close to the number expected according to the assumed rates of retirement. The actual average age at retirement over the last five years was 64.6, in comparison with the expected average retirement age of 62.7.

We therefore proposed to reduce the assumed rates of retirement at the earlier ages and increase the assumed retirement rates at the later ages to produce a somewhat higher expected average retirement age. The following are samples of the retirement rates that we proposed to use for the June 30, 2011 actuarial valuation:

Age	Rate of Retirement Per 1,000 Members
55	100
60	85
65	85
70	85
75	85
80	1000

We estimate that the above rates of retirement would have produced an expected average retirement age of 64.3, which is close to the actual average retirement age of 64.6. With these proposed retirement rates, the ratio of actual to expected retirements would have been 85.3%,

which is close to the ratio of actual to expected retirements of 84.2% under the current retirement rates.

Disability Rates

Disability rates are used to evaluate the probability that a participant will become permanently disabled and receive a retirement annuity as a result of disability. The following is a sample of the disability rates that have been used for the past five years:

Age	Disabilities Per 1,000 Members
30	.6
35	.6
40	.8
45	1.1
50	1.7
55 and over	0.0

We examined the system's disability experience over the last five years and compared it with the disabilities expected under the above assumptions. The results are as follows:

Actual number of disabilities	0
Expected number of disabilities	.5
Ratio of actual to expected	0%

It can be seen from the above that, over the past five years, there have not been any disabilities. The assumed rates of disability that we are using are very low and result in less than one expected disability over the five-year period. Therefore, not having any disabilities during the past five years

is not unexpected. We therefore propose to continue to use the same rates of disability that we have used for previous valuations.

Salary Increase

Since retirement benefits are based on a participant's final average salary, it is necessary to project each participant's current salary to future ages in order to determine pension costs and liabilities. Therefore, an assumption needs to be made concerning the rate at which salaries can be expected to increase in the future.

For the past five years, a salary increase assumption of 5.0% per year has been used.

The choice of a salary increase assumption involves a consideration of the following factors which affect salary increases:

(1) Promotional and seniority increases, reflecting normal pay increases as employees accumulate increased experience and responsibility throughout their careers.

(2) General increases, affecting the compensation of all employees, primarily on account of inflation.

The promotional component of the salary increase assumption can be estimated for a group of employees by comparing the progression of salaries with increasing age for a given year. An

analysis of this type eliminates the effect of inflationary salary increases on the salary progression. Studies of this type indicate that the average rate of promotional increase throughout an employee's career is generally between 1% and 1.5% per year. The rate of promotional increase tends to be higher than this at the younger ages and lower at the older ages. But over an employee's career, the rate of promotional increase generally falls in the range of 1% to 1.5% per year.

We have examined the actual increases in salaries that have occurred over the past five years. The average rates of increases in salaries over the past five years were as follows:

Fiscal Year	Rate of Increase
2006	0.0%
2008	13.7%
2008	0.4%
2009	6.5%
2010	0.1%
Average For 2006 – 2010	3.9%

Based on the rates of increase in salaries experienced over the past five years and expectations for the future, we propose to reduce the salary increase assumption from 5.0% per year to 4.0% per year. This 4.0% per year assumption can be considered to consist of a promotional increase factor of 1.0% per year and a general increase factor of 3.0% per year.

Interest Rate Assumption

At its June Board meeting, the Board voted to reduce the interest rate assumption to be used for the June 30, 2011 actuarial valuation from 8.0% to 7.0%.

IV. ESTIMATE OF NET EFFECT OF PROPOSED CHANGES IN ASSUMPTIONS

We are proposing changing the mortality rate assumption for active members and pensioners from the UP-1994 Mortality Table for Males, rated down 2 years to the UP-1994 Mortality Table for Males, rated down 4 years. This change would result in some increase in liabilities and costs. We are proposing to reduce the assumed rates of termination at all ages. This would result in a relatively small increase in liabilities and costs.

We are proposing to reduce retirement rates at the earlier ages and to increase retirement rates at the later ages, resulting in a higher expected average retirement rate. This would result in some decrease in liabilities and costs. We are proposing to reduce the salary increase assumption from 5.0% per year to 4.0% per year. This would result in some decrease in liabilities and costs.

We have estimated that the proposed changes in actuarial assumptions outlined above (excluding the change in the interest rate assumption adopted by the Board) would have the impact of increasing the total actuarial liabilities of the system by approximately $5,700,000, which represents a 2.3% increase in the total actuarial liabilities of the system. We have estimated that the change in the interest rate assumption adopted by the board will have the impact of increasing the total actuarial liabilities of the system by $28,500,000, or 11.3% of the total actuarial liabilities of the system.

APPENDIX

SUMMARY OF PROPOSED ASSUMPTIONS FOR THE JUNE 30, 2011 VALUATION

Mortality Rates. For active members and pensioners: The UP-1994 Mortality Table for Males, rated down 4 years; (2) For Survivors: The UP-1994 Mortality Table for Females, rated down 1 years.

Termination Rates. Termination rates based on the recent experience of the fund. The following is a sample of the termination rates:

Age	Rate of Termination Per 1,000 Members
20-65	40
66 and over	0

Retirement Rates. Rates of retirement for each age from 55 to 80 based on the recent experience of the system. The following is a sample of the proposed rates of retirement:

Age	Rate of Retirement Per 1,000 Members
55	100
60	85
65	85
70	85
75	85
80	1,000

Disability Rates. The following is a sample of the proposed disability rates:

Age	Disabilities Per 1,000 Members
30	.6
35	.6
40	.8
45	1.1
50	1.7
55 and over	0.0

Salary Progression. 4.0% per year, compounded annually.

Investment Return Rate. 7.0% per year, compounded annually.

Marital Status. 75% of participants are assumed to be married.

Spouse's Age. The age of the spouse is assumed to be 4 years younger than that of the employee.