GENERAL ASSEMBLY RETIREMENT SYSTEM OF ILLINOIS

FOUR-YEAR EXPERIENCE ANALYSIS FOR THE PERIOD 2002-2005

GOLDSTEIN & ASSOCIATES

GOLDSTEIN & ASSOCIATES
Actuaries and Consultants

29 SOUTH LaSALLE STREET SUITE 735
CHICAGO, ILLINOIS 60603
PHONE (312) 726-5877 FAX (312) 726-4323

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

Re: **Four-Year Experience Analysis**

Dear Board Members:

We are pleased to submit our report on the experience analysis of the system for the four-year period 2002 to 2005.

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, 2006 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,

Sandor Goldstein, F.S.A.
Consulting Actuary

Carl J. Smedinghoff, A.S.A.
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 employee earnings rates and recommend as a result thereof, the tables to be adopted for all required actuarial calculations."

We have performed an experience analysis of the fund over the four-year period 2002 through 2005. 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, 2006 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 was used for active and retired members. The UP-1994 Mortality Table for Females was used for surviving spouses. We have examined the mortality experience of the fund over the last four years and have compared it with the mortality expected under the mortality assumptions used for the last valuation. The results are as follows:

Mortality - Actives

Actual number of deaths	4
Expected number of deaths	4.7
Ratio of actual to expected	85.1%

Mortality - Pensioners

Actual number of deaths	36
Expected number of deaths	42.1
Ratio of actual to expected	85.5%

Mortality - Survivors

Actual number of deaths	20
Expected number of deaths	28.9
Ratio of actual to expected	69.2%

It can be seen from the above that the number of deaths among active members was 85.1% of the expected number. Although the number of deaths among active members has been lower than expected, the mortality assumption for active members has a relatively small impact on the results of the valuation. Also, the relatively small number of deaths over the four-year period means that the system's experience for active members cannot be used as a reliable predictor of future experience.

The mortality experience of pensioners and survivors has a considerably greater impact on the results of the valuation than the mortality experience of active members. 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 110% to 120% 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 four years, the number of deaths among pensioners has been 85.5% of the number expected, and the number of deaths among survivors has been 69.2% of the number expected.

Again, the relatively small number of deaths over the four-year period means that the system's own experience for pensioners and survivors cannot be used as a reliable predictor of future experience. We have also performed a similar analysis of the mortality experience under the Judges' Retirement System where the number of deaths of pensioners and survivors was considerably larger. Based on this experience analysis, we adopted the following mortality rate assumptions for the June 30, 2006 actuarial valuation of the Judges' Retirement System: (1) For active members and pensioners: The UP-1994 Mortality Table for Males, rated down 2 years; (2) For Survivors: The UP-1994 Mortality Table for Females, rated down 1 year. We therefore propose to use these mortality assumptions for the June 30, 2006 actuarial valuation of the General Assembly Retirement System as well.

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 four 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 four years and compared it with the termination expected under the above assumptions. The results are as follows:

Actual number of terminations	37
Expected number of terminations	38.0
Ratio of actual to expected	97.4%

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 four years has been very close to the number expected according to our assumptions. We therefore propose to continue to use the same termination rates that were used for the June 30, 2005 actuarial valuation.

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 four 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 four 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	23.1
Ratio of actual to expected	108.2%
Actual average retirement age	65.8
Expected average retirement age	66.5

It can be seen from the above that over the four-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 has also been also close to the expected average retirement age according

to the assumed retirement rates. We therefore propose to continue to use the same retirement rates as were used for the June 30, 2005 actuarial valuation.

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 four 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 four 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	0.6
Ratio of actual to expected	0.0%

It can be seen from the above that, over the past four years, there have not been any cases of annuities granted as a result of permanent disability. The rates of disability that we are using are very low and result in less than one expected disability per year. 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 four years, a salary increase assumption of 6.5% 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 seniority 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 seniority 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 seniority increase generally falls in the range of 1% to 1.5% per year.

Under the General Assembly Retirement System, it is possible for a former member of the General Assembly who entered service prior to 1995 to continue in governmental employment at a salary that is higher than the last salary the member had in the General Assembly. Under the provisions of the Retirement Systems Reciprocal Act, such a member will have his or her retirement annuity from the General Assembly Retirement System based on the highest salary from governmental employment prior to retirement. The 6.5% salary increase assumption used in previous valuations included a seniority salary increase factor of 2.0% per year as a way of taking into account, at least to some extent, the additional liability attributable to former members who continue in governmental employment at salaries higher than their General Assembly salary.

As increasingly fewer members are eligible for the above provision, we propose to reduce the seniority salary increase factor from 2.0% per year to 1.0% per year.

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

Fiscal Year	Rate of Increase
2002	3.52%
2003	2.92%
2004	0.00%
2005	4.91%
Average For 2002 – 2005	2.82%

Based on the rates of increase in salaries experienced over the past four years and expectations for the future, and the elimination of the additional seniority increase factor indicated above, we propose to reduce the salary increase assumption from 6.5% per year to 5.0% per year. This 5.0% per year assumption can be considered to consist of a seniority increase factor of 1.0% per year and a general increase factor of 4.0% per year.

Investment Return Rate

An investment return assumption is needed in order to discount future benefit payments to the present time. The investment return assumption should reflect the expected long-term average future yield of the fund, including capital appreciation. An investment return assumption of 8.0% per year has been used for the past four years.

As a guide in setting the investment return assumption, we reviewed the investment performance of the system over the four-year period July 1, 2001 to June 30, 2005. We have calculated the rates of return earned by the system over the past four years to be as follows:

Fiscal Year	Rate of Return
2002	-6.53%
2003	-0.45%
2004	16.00%
2005	9.62%
Average For 2002 – 2005	4.30%

In setting the investment return assumption, the recent experience of the system is of limited value since the investment return assumption applies over a period of 50 to 60 years.

What is the System's Long-Term Expected Rate of Return

The target asset allocation policy of the system is as follows:

Allocation Asset Class	Percentage
U.S. Equity	45.0%
U.S. Equity Hedge Funds	5.0%
International equity	10.0%
Fixed Income	25.0%
Real Estate	10.0%
Alternate investments (private equity)	5.0%

Based on recent information from several investment consulting firms, we have adopted the following expected return and risk assumptions for the above asset classes:

Asset Class	Geometric Annual Return	Arithmetic Expected Return	Standard Deviation Of Return
U.S. Equity	8.20%	9.70%	18.60%
U.S. Equity Hedge Funds	8.20%	9.70%	18.60%
International Equity	8.40%	10.10%	19.60%
Fixed Income	5.00%	5.20%	6.00%
Real Estate	7.40%	8.40%	15.00%
Alternate Investments (private equity)	9.40%	14.00%	33.50%

On the basis of the ISBI target asset allocation policy and the above expected returns for each asset class, we estimate the system's long-term expected rate of return to be 7.55% per year. We estimate the standard deviation of the fund's expected rate of return to be 15.94%.

What Actuarial Standards Apply to the Selection of the Interest Rate Assumption?

The Actuarial Standards Board, established by the actuarial profession, is the organization that sets standards that are intended to apply to the practice of actuaries. Actuarial Standards of Practice No. 27 deals with the selection of economic assumptions for measuring the pension obligation.

This standard provides that the actuary should develop a best-estimate range for the investment return assumption. The best-estimate range is the defined as the narrowest range within which the investment return rate has at least a 50% probability of falling. The actuary should then select a specific investment return within this range.

Based on the above expected returns and expected standard deviation of returns for the fund's asset classes, we estimate that there is a 50% probability that the fund's long-term expected return will be

between 5.60% and 9.50%. Therefore, an investment return assumption within this range would be in line with Actuarial Standards of Practice No. 27.

Thus, based on the system's asset allocation policy and current expectations regarding long-term investment returns, we believe that the interest rate assumption of 8.0% per year that was used for the past four valuations remains an appropriate assumption for the June 30, 2006 actuarial valuation. Although this interest rate assumption is slightly higher than the system's long-term expected return, it is within the range that is considered to be acceptable under standards set by the actuarial profession. We therefore propose to continue to use an 8% interest rate assumption for the June 30, 2006 actuarial valuation.

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 to the UP-1994 Mortality Table for Males, rated down 2 years. We are proposing the change the mortality assumptions for survivors from the UP-1994 Mortality Table for Females to the UP-1994 Mortality Table for Females, rated down 1 year. These changes would result in some increase in liabilities and costs

We are proposing to reduce the salary increase assumption from 6.5% per year to 5.0% per year. This would result in some decrease in liabilities and costs.

We have estimated that the proposed changes in actuarial assumptions would have the impact of increasing the total actuarial liabilities of the system by approximately $4,700,000, which represents a 2.2% increase in the total actuarial liabilities of the system.

APPENDIX

SUMMARY OF PROPOSED ASSUMPTIONS FOR THE JUNE 30, 2006 VALUATION

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

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

Age	Rate of Termination Per 1,000 Members
20-65	70
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	200
60	100
65	80
70	50
75	50
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. 5.0% per year, compounded annually.

Investment Return Rate. 8.0% 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.