State Employees' Retirement System of Illinois

ACTUARIAL VALUATION
OCTOBER, 1998

Actuarial Valuation as of June 30, 1998

October, 1998

Watson Wyatt
Worldwide

Table Of Contents

Introduction

The law governing the State Employees' Retirement System (SERS or System) requires the Actuary, as the technical advisor to the Board of Trustees to:

> ...make an annual valuation of the liabilities and reserves of the system, make an annual determination of the amount of contributions required from the State under this Article, and certify the results thereof to the board. (40 ILCS Section 5/14 - 138(c)).

Watson Wyatt & Company has been retained by the Board of Trustees to perform an actuarial valuation as of June 30, 1998. In this report, we present the results of the valuation and the appropriation requirements under Senate Bill 533 (SB533) for fiscal year 2000. For purposes of disclosure, this report also includes the annual required contribution and schedule of funding progress as required by GASB Statement No. 25 and the development of the net pension obligation in accordance with GASB Statement No. 27.

The valuation was completed based upon membership and financial data provided by the administrative staff of the System. The actuarial assumptions used were based on an experience review for the seven-year period ending June 30, 1997 and are unchanged from last year. The cost method used to determine the benefit liabilities is the Projected Unit Credit Cost Method. The value of assets is the fair market value at the valuation date. These methods are unchanged from last year.

Several changes to the system benefit provisions were enacted by the General Assembly in 1997 and were effective as of January 1, 1998. The funding status information presented in this report reflect these changes and are the primary cause for the decrease in the System's funded status. The appropriation requirements for fiscal year 1999 as presented in the 1997 report reflected these changes as do the fiscal year 2000 appropriation requirements presented in this report.

Appropriation Requirements Under SB533

The law governing the System under SB533 provides that:

For fiscal years 2011 through 2045, the minimum contribution to the System for each fiscal year shall be an amount determined to be sufficient to bring the total assets of the System up to 90% of the total actuarial liabilities of the System by the end of fiscal year 2045. In making these determinations, the required contribution shall be calculated each year as a level percentage of payroll over the years remaining to and including fiscal year 2045 and shall be determined under the projected unit credit actuarial cost method.

For fiscal years 1997 through 2010, the contribution to the System, as a percentage of the payroll, shall be increased in equal annual increments so that by fiscal year 2010, the contribution rate is at the same level as the contribution rate for fiscal years 2011 through 2045. In accordance with HB110, State contribution rates for fiscal years 1999 through 2009 will not be less than the following schedule:

Fiscal Year	Statutory Rate	Fiscal Year	Statutory Rate
1999	9.8%	2005	11.0%
2000	10.0	2006	11.2
2001	10.2	2007	11.4
2002	10.4	2008	11.6
2003	10.6	2009	11.8
2004	10.8		

Beginning in fiscal year 2046, the minimum contribution to the System for each fiscal year shall be the amount needed to maintain the total assets of the System at 90% of the total actuarial liabilities of the System (40 ILCS Section 5/14-131(e)).

Table 1
(Continued)

	Normal Cost	Actuarial Liability
6. Active Members		
a. Pension Benefits	$160,984,710	$2,974,849,223
b. Cost-of-Living Adjustments	56,411,661	983,742,374
c. Death Benefits		
i. Occupational	$1,248,022	$14,929,338
ii. Survivor & widow	14,183,224	224,139,008
iii. Non-occupational	313,907	3,916,625
iv. Refund	6,308,024	96,479,035
v. Total	$22,053,177	$339,464,006
d. Disability		
i. Occupational	$ 7,510,509	$94,945,041
ii. Non-occupational	16,092,302	229,348,735
iii. Total	$23,602,811	$324,293,776
e. Withdrawal	36,208,112	482,867,331
f. Expenses	6,501,000	-
g. Total	$305,761,471	$5,105,216,710
7. Total Actuarial Liability (4 + 5 + 6)		$9,341,897,641
8. Assets (Market)		$7,064,494,830
9. Unfunded Actuarial Liability		$2,277,402,811
10. Total Normal Cost	$305,761,471	
11. Employee Contributions	$155,898,112	
12. Annual Employer Normal Cost (% payroll)	$149,863,359 (4.840%)	

Actuarial Cost Method Adopted June 30, 1989

A projected unit credit normal cost method is used. Under this method, the projected pension at retirement age is first calculated and the value thereof at the individual member's current or attained age is determined. The normal cost for the member for the current year is equal to the value so determined divided by the member's projected service at retirement. The normal cost for the plan for the year is the sum of the individual normal costs.

The actuarial liability at any point in time is the value of the projected pensions at that time less the value of future normal costs.

For ancillary benefits for active members, in particular disability benefits, death and survivor benefits, termination benefits, and the postretirement increases, the same procedure as outlined above is followed.

Estimated annual administrative expenses are added to the normal cost.

For valuation purposes as well as projection purposes, assets are valued at market.

Actuarial Assumptions Adopted June 30, 1997

Mortality

1983 Group Annuity Mortality Table for males (with a one-year setback) and for females (with no setback). Five percent of deaths among active employees are assumed to be in the performance of their duty.

Interest

8.50% per annum, compounded annually.

Termination

Illustrative rates of withdrawal from the plan are as follows:

Age	Males	Females
20	.159	.339
25	.107	.129
30	.073	.086
35	.052	.065
40	.040	.050
45	.031	.037
50	.027	.027
55+	.026	.027

It is assumed that terminated employees will not be rehired.

The rates apply only to employees who have not fulfilled the service requirement necessary for retirement at any give age.

Salary Increases

Illustrative rates of increase per individual employee per annum, compounded annually:

Age	Annual Increase	Age	Annual Increase
20	8.2%	45	5.7%
25	7.7	50	5.2
30	7.2	55	4.7
35	6.7	60	4.2
40	6.2	65	4.0

These increases include a component for inflation of 3.5% per annum. In addition, for purposes of determining annual appropriation as a percent of total covered payroll, the size of the active group is assumed to remain constant, and new entrants are assumed to enter with an average age of 34.13 years and average pay of $24,900 (1998 dollars).

The average increase in payroll for the 48-year projection period is 3.4% per annum.

Disability

Incidence of disability for employees eligible for disability benefits:

Age	Males	Females	Age	Males	Females
20	.0020	.0026	45	.0043	.0074
25	.0021	.0031	50	.0068	.0098
30	.0022	.0037	55	.0109	.0128
35	.0025	.0045	60	.0162	.0164
40	.0031	.0057	65	.0226	.0226

Among active employees, 15% of disabilities are assumed to be in the performance of their duty.

Employees receiving a disability allowance are assumed to recover or die, in accordance with the following tables:

Age	Rate of Recovery Male/Female	Rate of Mortality Male	Rate of Mortality Female
20	0.689	0.040	0.035
25	0.572	0.040	0.035
30	0.466	0.040	0.035
35	0.370	0.040	0.035
40	0.286	0.040	0.036
50	0.150	0.044	0.038
60	0.058	0.059	0.045
70	--	0.094	0.059
80	--	0.174	0.091

Retirement

Employees are assumed to retire in accordance with the following rates:

Age	General Employees	Alternative Formula Employees*
50-54	--	10.0%
55-59	10.0%	15.0
60	12.5	20.0
61	15.0	22.0
62	17.5	24.0
63	20.0	26.0
64	22.5	28.0
65	25.0	30.0
66-69	25.0	30.0
70	100.0	100.0

* *An additional 10% are assumed to retire in the year in which the employee completes 30 years of service. The rates apply only to employees who have fulfilled the service requirement necessary for retirement at any given age.*

Assets

Assets available for benefits are used at market value.

Expenses

As estimated and advised by SERS staff, based on current expenses with an allowance for expected increases.

Marital Status

85% of employees are assumed to be married. 65% of married households are assumed to be two wage-earner households.

Spouse's Age

The female spouse is assumed to be 3 years younger than the male spouse.

Remarriage

The surviving spouses of deceased employees are assumed to remarry in accordance with the following table:

Age	Rate of Remarriage	Age	Rate of Remarriage
20	0.144	40	0.028
25	0.094	45	0.018
30	0.059	50	0.010
35	0.040	55	0.004

Children

It is assumed that married members have 2.2 children, one year apart in age.

The age of the youngest child of a deceased employee at his date of death is assumed to be as follows:

Age at Death of Employee	Age of Youngest Child	Age at Death of Employee	Age of Youngest Child
20	2	40	6
25	3	45	8
30	4	50	10
35	5	55	12
		60	14

Social Security Benefits

Social Security Disability and Survivor benefits payable in future years are assumed to bear the same relationship to future compensation levels at time of entitlement as current Social Security benefits bear to current compensation levels. The Primary Insurance Amount of the female spouse is assumed to be 80% of the Primary Insurance Amount of the male spouse.

Overtime and Shift Differentials

Reported earnings include base pay alone. It is assumed that overtime and shift differentials will increase total payroll by 3.5% over reported earnings.

Missing Data

If earnings were not available, the annual rate of pay was assumed to be $32,260. If a birth date was not available, the member was assumed to be age 40.

Projection Methodology Adopted June 30, 1994

For the purpose of calculating the appropriation requirements, we project assets and liabilities through the end of fiscal 2045 using the assumptions and methods stated in the previous section. In addition, we assume new entrants come into the system to keep the number of the active membership constant.

Summary Of Retirement System Plan (As of June 30, 1998)

Purpose

The State Employees' Retirement System of Illinois, a State Agency, provides an orderly means whereby aged or disabled employees may be retired from active service without prejudice or hardship and enables the employees to accumulate reserves for old age, disability, death and termination of employment.

Administration

Responsibility for the operation of the System and the direction of its policies is vested in a Board of Trustees of seven members. The administration of the detailed affairs of the System is the responsibility of the Executive Secretary who is appointed by the Board of Trustees. Administrative policies and procedures are designed to insure an accurate accounting of funds of the System and prompt payment of claims for benefits within the applicable statute.

Membership

All persons entering State service on or after January 1, 1984, become members upon completion of 6 months of continuous service except that beginning July 1, 1991, employees in police positions become members on their first day of employment. Persons entering State service from January 1, 1972 to January 1, 1984, became members on their first day of employment. Excluded from membership are: any employee whose position is subject to membership under another State supported system, any person who becomes an employee after June 30, 1979 as a public service employment program participant under the federal CETA program, or any enrolled of the Young Adult Conservation Corps. Prior to January 1, 1984, emergency and temporary employees were excluded from membership. Persons appointed by the Governor with the advice and consent of the Senate may elect to become members of the System.

Membership Service

Membership service includes all service rendered while a member of the System for which credit is allowable. Persons entering service on or after January 1, 1984, or after July 1, 1982, in the case of emergency or temporary employees, may also receive membership service credit for periods of employment prior to membership by making contributions for such periods.

Member Contributions

Members are required to contribute a percentage of salary as their share of meeting the cost of the various benefits. Contribution rates are as shown below:

Members covered by Social Security—4% of Salary.

Members without Social Security—8% of Salary.

Members covered by Social Security who are serving in a position in which service toward the Alternative Retirement Annuity may be earned, or who are Security Employees of the Department of Corrections—5 1/2% of Salary.

Members without Social Security who are serving in a position in which service toward the Alternative Retirement Annuity may be earned, or who are Security Employees of the Department of Corrections—9 1/2% of Salary.

Members coordinated with Social Security also pay the current Social Security tax rate.

Retirement Pension

Qualification of Member

Upon termination of State service, a member is eligible for a pension at age 60 with at least eight years of pension credit; at any age with 35 or more years of credit; between ages 55 and 60 with 30 to 35 years of credit with the pension reduced by one-half of 1% for each month the member is under age 60.

Members serving in a position in which service toward the Alternative Retirement Annuity may be earned are eligible to receive the alternative retirement annuity at age 50 with at least 25 years of pension credit or at age 55 with at least 20 years of pension credit in such a position. Security employees of the Department of Corrections were placed under the alternative formula effective

August 16, 1985. The age and service requirements in accordance with the alternative formula were phased-in over a five-year period for these employees.

Amount of Pension

The pension is based on the member's final average compensation and the number of years of pension credit that has been established.

Final Average Compensation is the average of the highest 48 consecutive months in the last 10 years. All employees whose benefit is calculated under the alternative formula will have their benefit based on the greater of (i) the salary rate in effect on their last day of service, provided the last day salary does not exceed 115% of the average monthly compensation received by the member for the last 24 months of service, or (ii) the average monthly compensation for the last 48 months prior to retirement.

The general formula for members retiring on or after January 1, 1998 (regardless of termination date) is as follows:

- 1.67% of final average salary per year of credited service for members covered by Social Security.
- 2.20% of final average salary per year of credited service for members not covered by Social Security.

The alternative formula reflects a graded or progressive method according to length of service as follows:

For Each Year of Credit	Department of Corrections**		Alternative Formula	
	Covered*	Not Covered*	Covered*	Not Covered*
First 10	1.67%	1.90%	1.67%	2.25%
Second 10	1.90	2.10	1.90	2.50
Third 10	2.10	2.25	2.10	2.75
Over 30	2.30	2.50	2.30	2.75

* *By Social Security.*
** *Who are not eligible for Alternative Formula.*

The maximum pension payable is 75% of final average compensation. The annuity for a Department of Corrections member not covered by Social Security may be calculated under the general 2.2% formula if it provides a larger benefit.

Optional Forms of Payment

Reversionary Annuity—A member may elect to receive a smaller pension during his lifetime in order to provide a spouse or a designated dependent with a lifetime income. That payment would be in addition to any other benefit payable by the System.

Level Income—A member who contributes to Social Security as a State employee may elect to have his pension payments increased before age 65 and reduced thereafter. To be eligible for this election the member must have established eligibility for a Social Security pension.

Annual Increases in Pension

Postretirement increases of 3% of the current pension are granted to members effective each January 1 occurring on or after the first anniversary of the pension (i.e., increases are compounded).

Survivors Annuity

Qualification of Survivor

If death occurs while in State employment, the member must have established at least 18 months of pension credit. If death occurs after termination of State service and the member was not receiving a retirement pension, the member must have established at least eight years of pension credit.

An eligible spouse qualifies at age 50 or at any age if there is, in the care of the spouse, any unmarried children of the member under age 18 (age 22 if full-time student); unmarried children under age 18 (age 22 if full-time student) qualify if no spouse survives; dependent parents at age 50 qualify if neither an eligible spouse nor children survive the member.

Amount of Payment

If the member's death occurs before retirement, the named beneficiary receives a lump sum refund of all of the member's pension contributions plus interest, excluding contributions for widows and survivors benefits. A single lump sum payment of $1,000 is also made immediately to the survivor beneficiary of the member.

An eligible spouse receives a monthly annuity equal to 30% of the member's final average compensation subject to a maximum of $400. If children of the member are under the care of the spouse, the annuity is increased for each child, subject to a maximum of $600 or 80% of final average compensation. If only eligible children survive, the monthly annuity may not exceed the lesser of $600 or 80% of final average compensation. The maximum combined monthly payment to parents may not exceed $400. If the member's death occurs after retirement or after termination of State employment but before the member receives a pension, the monthly benefit is further limited to 80% of the pension received or earned by the member. Monthly benefits payable to survivors of a member who was covered by Social Security as a State employee are reduced by one-half of the Social Security benefits for which the survivors are eligible. For benefits granted on or after January 1, 1992, the reduction does not exceed 50% of the amount of survivors annuity otherwise payable. If death of the member occurs on or after January 1, 1984, the minimum total survivors annuity benefit payable (before any reduction for Social Security benefits) is equal to 50% of the member's earned pension without regard to the member's age at death.

Duration of Payment

The monthly annuity payable to a spouse terminates upon death or remarriage prior to attainment of age 55. The monthly annuity to children terminates upon death, marriage or attainment of age 18 (age 22 if full-time student). However, the monthly annuity will continue for a child who at age 18, is physically or mentally disabled and unable to accept gainful employment.

Annual Increases in Annuity

If the member's death occurs before retirement, increases of 3% of the current annuity are granted to survivors effective each January 1 occurring on or after the first anniversary of the annuity (i.e., increases are compounded). If the member's death occurs after retirement, the initial 3% increase applies on the January 1 on or after the survivor annuity begins.

Widow's Annuity Option

The widow of a male member who was a participant in the System prior to July 19, 1961, may have the option of taking a Widow's Annuity rather than the Survivor's Annuity.

Qualification of Widow

An eligible widow receives a Widow's Annuity if she is age 50 or over or has in her care any of the member's unmarried children under age 18. If she is not age 50 and has no such children in her care, she becomes eligible at age 50.

Amount of Payment

The Widow's Annuity consists of a lump sum payment of $500, plus a monthly annuity equal to 50% of the pension earned or received by the member at the date of death. If the widow has in her care eligible children of the member, the monthly annuity is increased because of each child, subject to a maximum payment equal to 66-2/3% of the earned pension. Monthly benefits payable to a widow of a member who was covered by Social Security as a State employee are reduced by one-half of the amount of benefits she is entitled to as a widow from Social Security (reduced by one-half of the amount of benefits she is entitled to based on her own Primary Insurance Amount). For benefits granted on or after January 1, 1992, the reduction does not exceed 50% of the amount of widow's annuity otherwise payable.

Duration of Payment

The monthly payment to the widow continues for her lifetime whether or not she remarries. If the amount of benefit was increased because of eligible children, it is adjusted downward as these children's benefits are terminated (death, marriage or attainment of age 18 or 22).

Annual Increases in Annuity

If the member's death occurs before retirement, increases of 3% of the current annuity are granted to widows effective each January 1 occurring on or after the first anniversary of the annuity (i.e., increases are compounded). If the member's death occurs after retirement, the initial 3% increase applies on the January 1 on or after the widow's annuity begins.

Occupational Death Benefit

Qualification of Survivors

If a member's death results from an injury on the job or a job related cause, the spouse may be eligible for an Occupational Death benefit. If only unmarried children under age 18 (age 22 if full-time student) survive, they would be eligible for the benefit. If neither a spouse nor eligible children survive, a dependent father or mother would be eligible.

Amount and Duration of Payment

The nominated beneficiary receives a lump sum payment consisting of all contributions made by the member plus interest credited to his account.

A surviving spouse is entitled to a monthly benefit equal to 50% of the member's final average compensation. The benefit is payable until remarriage of the spouse unless the remarriage occurs after attainment of age 55. If children under age 18 (age 22 if full-time student) also survive, the annuity is increased by 15% of such average because of each child, subject to a maximum of 75%. If there is no spouse, or if the spouse remarries prior to attainment of age 55 or dies before all children have attained

Occupational Disability Benefit

Qualification and Amount of Payment

Provided for any member who becomes disabled as the direct result of injury or diseases arising out of and in the course of State employment.

The benefit is 75% of final average compensation plus a credit to the member's account of service and contributions. The cash benefit is reduced by any payment received under the Workmen's Compensation or Occupational Diseases Acts.

Duration of Payment

Monthly benefits are payable until the occurrence of any of the following events: (1) disability ceases; (2) resumption of gainful employment; or (3) attainment of age 65 if the benefit commences prior to age 60, or payment for 5 years if the benefit commences after age 60.

If termination of the benefit is due to the member having attained age 65 or having received benefits for five years after age 60, the member is entitled to a retirement pension based upon service credit established as of that date.

Annual Increases in Annuity

A one time increase of 7% of the original annuity is granted to members on the January 1 following the fourth anniversary of the annuity. Increases of 3% of the current annuity are then granted to members each January 1 following the 7% increase (i.e., the 3% increases are compounded).

Temporary Disability Benefit

A member who is initially denied Workers' Compensation benefits and is appealing the denial may receive payment at the nonoccupational rate, 50% of pay, providing all eligibility requirements for the nonoccupational benefit are met, until the determination is made.

Separation Benefits

Upon termination of State employment by resignation, discharge, dismissal, or layoff, a member may obtain a refund of the contributions made to the System. By accepting a refund, a member forfeits all accrued rights and benefits in the System for himself and his beneficiaries.

Watson Wyatt
Worldwide

Watson Wyatt & Company

Suite 2400
303 West Madison Street
Chicago, IL 60606-3308

Telephone 312 704 0600
Fax 312 704 8114
TDD 312 853 6818

October 13, 1998

Board of Trustees and Executive Secretary
State Employees' Retirement System of Illinois
P. O. Box 19255
2101 S Veterans Parkway
Springfield, Illinois 62794-9255

Actuarial Certification

We have completed the annual actuarial valuation of the assets and liabilities of the State Employees' Retirement System of Illinois (SERS) as of June 30, 1998. This report describes the current actuarial condition of SERS, analyzes the changes since the prior year, and determines the required employer contribution rate for the year beginning July 1, 1999 and ending June 30, 2000.

The contribution rate has been determined under the Projected Unit Credit Cost Method, providing for a 90% funding of total actuarial liabilities by fiscal year 2045 as required by 40 ILCS Section 5/14-131(e). Future contribution rates through fiscal year 2009 are not less than the specified percentages under HB110. A level contribution rate is determined for fiscal year 2010 through 2045. The required contribution rates and amounts for fiscal year 2000 are shown below.

	Total	**Net****
Required Rate	10.000%	9.714%
Required Contribution	$322,200,000	$312,991,600

** *These values reflect the $9,208,400 received from the unclaimed property fund for fiscal year 1998.*

For purposes of determining contribution rates, the market value of assets as reported by the Illinois State Board of Investment is used for the 1998 fiscal year. Assets have been projected using expected market value for subsequent fiscal years. The liabilities have been valued based on employee data which is supplied by the administrative staff of the System and verified by the System's auditor. We did not audit this data, but have made additional tests and concluded that the data is reasonable and consistent with the prior year's data.

We certify that the information presented herein is accurate and fairly portrays the actuarial position of SERS as of June 30, 1998. We prepared the accompanying Summary of Actuarial Cost Method and Major Actuarial Assumptions, but the SERS staff prepared the other supporting schedules in this section and the trend tables in the financial section, based on information supplied in our report.

All of our work conforms with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the calculations also comply with the requirements of Illinois state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. Both are Enrolled Actuaries and Members of the American Academy of Actuaries, and both are experienced in performing valuations for public retirement systems.

Watson Wyatt & Company

By: Denise Patterson

Denise Patterson, FSA, EA, MAAA
Actuary

By: William J. Miner

William J. Miner, FSA, EA, MAAA
Actuary

I\82920\98\ltrs\board98