STUDY OF
EMPLOYER CONTRIBUTION RATE
FOR
OPTIONAL ALTERNATE RETIREMENT PROGRAM
UNDER ACT 78 OF 1987

Public Employee Retirement Study Commission
Commonwealth of Pennsylvania
October, 1991

Report to the
General Asembly and Governor of the
Commonwealth of Pennsylvania

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PUBLIC EMPLOYEE RETIREMENT STUDY COMMISSION

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COMMONWEALTH OF PENNSYLVANIA

PUBLIC EMPLOYEE RETIREMENT STUDY COMMISSION

HARRISBURG

17120

October, 1991

To: Governor Casey and
Members of the Pennsylvania General Assembly

Under section 2 of Act 78 of 1987, the Public Employee Retirement Study Commission submits the following report reviewing the established rate of employer contribution and recommending a new rate of employer contribution designed to produce parity of contributions between the alternate retirement program and the State Employes' Retirement System program.

The Commission recommends that:

- The current practice of establishing a set rate and continuing it without modification for a period of years be continued;
- The period of years for which the set rate recommended in this report would be effective without modification or review be not less than three years and not more than five years;
- The contribution rate continue to be reviewed by the Commission at the close of each established period of years to determine whether any modifications are warranted; and
- The contribution rate be set at 9.29% of payroll for Fiscal Year 1992-93 and for the two to four fiscal years after that.

On behalf of the members of the Commission, I hope that this report will be of assistance to you in your consideration of this issue.

Sincerely,

Dale D. Stone

Dale D. Stone
Chairman

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I. INTRODUCTION

Act 78 of 1987 was signed into law on October 30, 1987. The Act established an employer contribution rate of 8.95% for retirement coverage for State employees electing to participate in an employer-approved independent retirement program in lieu of membership in the State Employes' Retirement System (SERS). The affected employees are employees of the State System of Higher Education and the Pennsylvania State University who have chosen the optional retirement coverage. A limited number of employees in the State Department of Education have also elected the optional coverage. The retirement program which has been approved by the employer to provide this alternative coverage is the Teachers' Insurance and Annuity Association/College Retirement Equities Fund (TIAA/CREF), a defined contribution pension plan. Under section 2 of Act 78, the Public Employee Retirement Study Commission was directed to periodically recommend to the Governor and the General Assembly a rate of employer contribution designed to produce parity of contributions between an alternate retirement program and the State Employes' Retirement System.

In enacting Act 78 of 1987, the General Assembly recognized the need to periodically evaluate the rate of employer contribution necessary to produce parity of contributions between the alternate retirement program and the State Employes' Retirement System (SERS) program. The legislation provided that the Public Employee Retirement Study Commission transmit a recommendation of an employer contribution rate to the General Assembly no later than March 31, 1992.

II. BACKGROUND

Purpose of Study

The purpose of the study, as set forth in Act 78 of 1987, is to review the established contribution rate and recommend an employer contribution rate for the optional alternative retirement program for the next five years. The criterion specified in the legislation is that the method "be designed to produce parity of contributions between the alternative retirement program and the State Employes' Retirement System program."

Comparison of Defined Contribution and Defined Benefit Plans

The two pension plans with which this study is concerned are representative of the two broad types of benefit plans. The State Employes' Retirement Plan is a defined benefit plan. The plan in which certain state higher education employees have been authorized to participate as an alternative to SERS participation is a defined contribution plan. The distinguishing aspects between the two types of plans are the element which is fixed and the element which is variable.

In a defined contribution plan, the financing of the pension plan is fixed as a set dollar amount or percentage of pay and the amount of the eventual pension benefit is variable. The amount of the pension benefit is dependent chiefly on the amount of financing, including contributions and investment earnings, available at retirement to fund the benefit. In a defined benefit plan, the amount of the eventual pension benefit is fixed based on a predetermined benefit formula and the financing of the plan is variable dependent on the actuarial funding method chosen. The actuarial funding method provides a systematic plan for accumulating assets which will be adequate to pay the pension benefits which have been promised.

For a defined contribution plan, the actual financing provided to the plan has a direct impact on the amount of the benefit which will be paid at retirement. For a defined benefit plan, the employee's benefit is not affected by the actual financing provided to the plan. The financing is actuarially determined based on an actuarial cost method and assumptions concerning expected future economic and demographic occurrences. If the financing which is provided is determined to have been more than adequate or less than adequate due to actual experience differing from the experience expected under the assumptions, actuarial adjustments are made through the recognition of actuarial gains or losses. None of these actuarial adjustments impacts on the amount of the ultimate benefit payable to the employee which is pre-established based on the benefit formula.

History of Commonwealth Participation in Alternative Retirement Programs

In 1972, state higher education institution employees became eligible to elect coverage under an employer-approved independent retirement program as an alternative to SERS retirement coverage. The provision of law authorizing the alternative coverage specified that contributions to an independent retirement program would be capped at the employer normal contribution rate for SERS which is actuarially determined on an annual basis. An employee electing coverage under the independent retirement program would not have the option of subsequently changing that election in order to become a member of SERS.

The independent retirement program which has been approved by the employer to provide alternative retirement coverage to state higher education employees is the Teachers' Insurance and Annuity Association/College Retirement Equities Fund (TIAA/CREF). The TIAA/CREF Retirement Program is the principal retirement system used nationally throughout the higher education community.

The following summarizes, by organization, the number of state employees currently participating in TIAA/CREF and the number of employees:

Organization	Number of Employees Participating in TIAA/CREF	Total Number of Employees
State System of Higher Education	2,545	11,124
Pennsylvania State University	6,238	14,898
Total	8,783	26,022

Both the State System of Higher Education (SSHE) and the Pennsylvania State University have noted significantly increased membership in TIAA/CREF. Between 1986 and 1991 the total SSHE membership in TIAA/CREF increased from 1,460 to 2,545, an increase of 74.3%, while the total compliment increased at a rate of 13%. Pennsylvania State University TIAA/CREF membership increased from 3,240 members in 1986 to 6,238 members in 1991, an increase of 97.5%.

A history of Commonwealth employer contribution rates to TIAA/CREF since the beginning of Commonwealth participation follows:

Fiscal Year	Rate (% of Payroll)
1973-74	7.32
1974-75	7.30
1975-76	6.64
1976-77	6.64
1977-78	6.64
1978-79	7.65
1979-80	7.85
1980-81	7.90
1981-82	6.50
1982-83	7.83
1983-84	6.54
1984-85	6.85
1985-86	6.42
1986-87	7.00
1987-92	8.95

The employer contribution rates from 1973-86 were based on the SERS employer normal cost rate. The 1986-87 rate of 7% was based on a one-year legislatively established rate. The 1987-92 rate was legislatively determined in Act 78 of 1987 based on a report of the Public Employee Retirement Study Commission.

In that report, entitled Study of Method for Setting Employer Contribution Rates to Optional Alternate Retirement Programs, the Commission recommended:

(1) That a set rate be established and continued without modification for a period of year;

(2) That the period of years for which the set rate would be effective without modification or review be not less than five years and not more than ten years;

(3) That the contribution rate be reviewed at the close of each established period of years to determine whether any modifications are warranted;

(4) That, based on the results of actuarial cost estimates prepared for the Commission approximating SERS normal contribution rates calculated using assumptions which meet accepted standards for long-term economic actuarial assumptions, the initial contribution rate be set in the range of 7% to 9% of payroll; and

(5) That the selection of a contribution rate within the 7% to 9% range be based on a determination by the state policymakers concerning the extent to which it is considered appropriate in achieving the goal of parity to include the value or any portion of the value of future ad hoc post-retirement increases which are likely to be granted to SERS members.

Consistent with the goal of achieving parity, the Commission endorsed including the value of future ad hoc post-retirement adjustments in the determination of a contribution rate. The specific rate recommended by the Commission was 8.95%. Act 78 of 1987 reflects these recommendations and directed the Commission to produce periodic reports based on reviews of the established contribution rate. The Commission's reports recommend a revised rate or continuation of the established rate to the Governor and General Assembly.

Comparison of SERS and TIAA/CREF

The following compares the most significant features of SERS and TIAA/CREF:

Basic Provision	SERS	TIAA/CREF
Type of Annuity.	Fixed based on benefit formula and optional annuity form selected.	Both fixed (TIAA) and variable (CREF). Once a TIAA annuity is determined it remains fixed except for special dividends. CREF invests premiums in choice of four portfolios (money market, bonds, stocks, and balanced social choice) which causes the CREF annuity to vary depending on the performance of the portfolios.
Member Contribution Rate.	6.25% if employed on or after 7/22/83; 5% if employed prior to 7/22/83.	5%
Employer Contribution Rate.	Determined annually based on actuarial valuation.	Established by Act 78 at 8.95%.
Interest Credited to Member Contributions.	4% annually.	Adjusted periodically; 8.75% for contributions made during January to September 1991.
Age and Service Requirements.	Full retirement at any age with 35 years of service or age 60 with 3 years of service; reduced retirement at any age with 10 years of service.	Retirement income may commence at any age. No minimum length of membership.
Amount of Benefit.	Full retirement = 2% x years of service x final average salary (highest 3 years); actuarially equivalent optional annuity forms available. Early retirement uses same formula with actuarial reduction for age.	Retirement income depends on age at retirement, the total member and employer contributions, and the earnings experience of the TIAA-CREF fund. Single life annuity or optional annuity form may be selected .
Post-retirement Adjustments.	Ad hoc cost-of-living adjustments may be provided by legislation.	TIAA annuities may be increased by dividends. CREF annuities are adjusted annually (may decrease).
Vesting.	10-year cliff vesting.	Full immediate vesting.
Portability.	Transferability of service credits limited to employment with another Commonwealth agency participating in SERS or through limited nonstate service purchase options.	Transferable if employed by one of the other over 4,500 participating TIAA/CREF institutions. Direct individual payments to TIAA/CREF also permitted.

For an employee eligible to elect coverage under either system, the most significant factors which would influence the decision in the direction of TIAA/CREF are considered to be:

- Availability of immediate vesting as opposed to a 10-year "cliff" vesting requirement under SERS.
- Nationwide portability of pension coverage among higher education institutions which offer TIAA/CREF coverage.
- Potential to benefit from superior investment performance, including a variable annuity payout.

The factors which may influence the decision in the direction of SERS participation are considered to be:

- The use of the highest 3-year average salary as the basis for the SERS benefit formula.
- The provision of periodic ad hoc cost-of-living adjustments to retired members of SERS.
- The Option IV lump sum payout provision available under SERS.
- The potential that SERS disability and death coverage may be superior.

III. ANALYSIS AND DISCUSSION

Determination of Valid Long-term Actuarial Assumptions

In the 1987 report, the Commission concluded that the utilization of the employer normal rate for SERS may produce unstable and uneven employer contribution to optional alternate retirement programs. The reason for the conclusion was that while the actual self-correcting actuarial process utilized for retirement systems adequately insures proper funding for a defined benefit plan, it may not produce an appropriate funding pattern for a defined contribution plan. The Commission stated that defined benefit retirement systems, using an actuarial funding method, have the flexibility to make funding adjustments to correct for assumption variations. This underscores the need to base the employer's contribution to the alternate retirement plan on a normal cost rate determined using highly stable long-term assumptions which produce stable and reliable annual contributions.

In attempting to develop economic actuarial assumptions which represent the best estimate of future investment income and salary increase, the following results are considered desirable:

- Each assumption reflects the same long-term imbedded inflation rate.

- Each assumption bears a degree of consistency with long-term historical averages for investment return and salary growth.

The Municipal Pension Plan Funding Standard and Recovery Act (Act 205 of 1984), required that actuarial valuation reports on municipal pension plans be prepared using the entry age normal actuarial cost method and required that the Commission provide a specific range of economic actuarial assumptions which would be acceptable in preparing the reports. To assist in the development of proposed regulations specifying the acceptable range of economic actuarial assumptions for municipal pension plan actuarial reports, the Commission convened a panel of its three consulting actuaries which met with the Commission staff to produce proposed regulations on the issue.

The following summarizes the two main economic actuarial assumptions specified by the Commission for use in preparing municipal pension plan actuarial valuations under Act 205.

Interest:	Range of 5% to 9% (Midpoint of 7%)
Salary Increase:	Range of 2% to 9% (Midpoint of 5.5%)
Maximum Spread between Interest and Salary:	3% (Midpoint of 1.5%)

A complete copy of the portion of the Commission's administrative rules and regulations specifying the acceptable range of actuarial assumptions is included in Appendix "A". An analysis conducted by William A. Reimert of Milliman and Robertson, Inc. in 1987 validated the Act 205 assumptions based on 50-year historical averages of experience. Based on that analysis and other supporting data, the Commission concluded that utilization of the Act 205 assumptions to determine the long-term normal cost rate of SERS would meet the objective of producing the desired parity of contributions.

1987 Normal Cost Contribution Rate

In 1987 the Commission requested that the actuarial consulting firm of Towers, Perrin, Forster and Crosby prepare a cost estimate based on the economic assumptions specified for actuarial valuations of Pennsylvania's municipal pension plans. The economic actuarial assumptions, representing the midpoints of each of the ranges specified in the regulations, were:

Investment:	7.0% / year
Salary Increase:	5.5% / year

The demographic assumptions were approximations to the SERS demographic assumptions. The consulting actuary estimated the cost of prefunding the additional benefit attributable to post-retirement cost-of-living increases by reflecting future ad hoc increases in SERS benefits as equal to one-half of future CPI increases. The assumed increase in the CPI was 3.5%.

The resulting normal cost rates recommended by the Commission in 1987 were as follows:

Total Normal Cost	15.20%
Member Contributions	6.25
Net Employer Cost	**8.95%**

1992 Normal Cost Contribution Rate

In April of 1991, the Commission requested the actuarial firm of Towers, Perrin, Forster and Crosby Company (TPF&C) to analyze the established contribution rate for members of the alternate retirement program under the mandate in Act 78 of 1987. In conducting the analysis, the actuary approximated the general methodology employed in the actuarial valuation of SERS as of December 31, 1989, and utilized the long-term economic assumptions developed in the course of the initial study conducted in 1987, which were as follows:

Investment:	7.0%
Salary Increase:	5.5%
CPI:	3.5%

Because the current contribution rate established in the initial Commission study reflects the costs of probable ad hoc cost-of-living adjustments, the actuary's redetermination of the contribution rate equivalent to the SERS normal cost rate also reflected costs attributable to assumed future cost-of-living adjustments equal to one-half of the future increases in the CPI. The actuary's analysis differed from the initial study by:

- Adding a provision for cost-of-living disability benefits;
- Adding a provision for the cost of death benefits;
- Reflecting the broad range of actual population characteristics rather than approximating these characteristics through use of a single typical employee; and
- Adding a provision for the effect of expected nonvested terminations.

The actuary's analysis, which is included in Appendix "B", indicated that the contribution rate for the alternate retirement program that is equivalent to the normal cost contribution rate for SERS is as follows:

Total Normal Cost	15.54%
Member Contributions	6.25
Net Employer Cost	**9.29%**

IV. RECOMMENDATIONS

The Public Employee Retirement Study Commission recommends that:

- The current practice of establishing a set rate and continuing it without modification for a period of years be continued;
- The period of years for which the set rate recommended in this report would be effective without modification or review be not less than three years and not more than five years;
- The contribution rate continue to be reviewed by the Commission at the close of each established period of years to determine whether any modifications are warranted; and
- The contribution rate be set at 9.29% of payroll for Fiscal Year 1992-93 and for the two to four fiscal years after that.

APPENDIX "A"

CHAPTER 203. ACTUARIAL AND FINANCIAL REPORTS ON MUNICIPAL EMPLOYE PENSION SYSTEMS

§203.3. Range of economic actuarial assumptions.

(a) *Selection of actuarial assumptions.* The actuarial valuation report shall be prepared using actuarial assumptions selected jointly by the actuary of the municipal pension plan and the governing body of the municipal pension plan. The actuarial assumptions shall represent the best available joint estimate of the actuary and the governing body of future occurrences in the case of each actuarial assumption. The economic actuarial assumptions shall additionally be either within the range for economic actuarial assumptions specified in subsection (b) or accompanied in the actuarial valuation report with the documentation specified in subsection (c) that explains and justifies the choice of one or more assumptions outside of the range.

(b) *Range of economic actuarial assumptions.* No explanatory or justificatory documentation as specified in subsection (c) is required to accompany the actuarial valuation report if the following conditions are met:

(1) Economic actuarial assumptions reflect annual percentage increase amounts.

(2) The actuarial assumption as to interest or investment earnings is not less than 5% or more than 9%.

(3) The actuarial assumption as to salary projection or individual pension plan member salary increase for municipal pension plans with a salary related benefit plan is not greater than the actuarial assumption as to interest or investment earnings and is not less than the amount of the actuarial assumption as to interest or investment earnings reduced by 3%. If the actuarial assumption as to salary projection or individual pension plan member salary increase applicable to the municipal pension plan is in the form of probability rates that differ for various ages, the rate to be used for this comparison shall be calculated by the actuary preparing the report, with appropriate accompanying documentation, and shall be the average rate under the probability table for the ages 30 through 50.

(4) The actuarial assumption as to total covered payroll increase, for a municipal pension plan of a municipality that has been determined to be financially distressed and to which a remedy of delayed implementation of the funding standard under section 607(g) or (h) of the act (53 P. S. § 895.607(g) or (h)) is applicable, is not greater than 4% nor less than .0%.

(5) The actuarial assumption as to inflation, for a municipal pension plan that provides for automatic cost-of-living postretirement adjustments based on increases in the Federal consumer price index or other recognized measure of inflation. is not greater than the amount of the actuarial assumption as to interest or investment earnings reduced by 2% and is not less than the amount of the actuarial assumption as to interest or investment earnings reduced by 5%.

APPENDIX "B"

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Gerard C. Mingione, FSA
Vice President

TPF&C
a Towers Perrin company

May 13, 1991

Mr. Anthony W. Salomone
Executive Director
Public Employee Retirement Study Commission
P.O. Box 1429
Harrisburg, PA 17105-1429

Dear Tony:

Alternate Retirement Program - Contribution Rate

Certain school employees are granted the option of participating in an alternate retirement program in place of the Pennsylvania State Employees' Retirement System (SERS). This program is an individual account-based (defined contribution) plan. The contribution provided on behalf of these employees is limited to an amount deemed equivalent to the employer contribution rate for the SERS. As requested, we have developed a normal contribution rate for this purpose, which is expressed as a percentage of payroll. The assumptions used for this calculation differ from those used by the plan actuary, and are summarized along with the rationale for their selection.

Normal Cost Results

We determined the entry age normal cost based on the provisions of the plan applicable to Class A participants, i.e., 2% of three-year average pay per year of service. This rate reflects the amount necessary to fund the benefit presuming contributions are made each year from entry age until presumed retirement.

gross cost rate	15.54%
member contribution	6.25
net cost rate	9.29

Actuarial Assumptions

The assumptions employed for the normal cost calculation can be summarized as follows:

interest	7.0%
salary increases	5.5%
inflation	3.5% (assumed increases are one-half of inflation)
retirement	age 60
mortality	1971 Group Annuity Mortality Table
other decrements	approximation of those used by SERS actuary

Comments

The above results are consistent with the objective of providing an annual contribution rate that approximates the long-run employer cost for the SERS program. The parameters described above were selected for this purpose based on the following rationales:

- o The economic assumptions represent the mid-point of the allowable ranges for Pennsylvania municipal pension plans.
- o The assumption as to future cost of living increases (1.75% per year) is generally consistent with Commonwealth practice re ad hoc retiree increases.
- o The assumed retirement age is consistent with retirement provisions effective for the long-term (i.e., temporary early retirement subsidies are not considered), and with the assumptions used by the plan actuary.
- o The other demographic assumptions approximate those used by the SERS actuary, and appear to be reasonable in light of emerging plan experience and general actuarial practice.

* * * * * *

Based on the above results, a maximum contribution percentage of 9.29% can be deemed equivalent in value to the SERS (Class A) retirement benefit with assumed cost-of-living increases.

Please let us know if we can provide any further assistance on these issues.

Sincerely,

GCM:laj