Report of
The Joint Select Committee to Study
The Maine State Retirement System

1980

Robert N. Haskell, Chairman
W. Scott Fox, Jr.
John Menario

AN ANALYSIS OF THE FUNDING AND BENEFIT PROVISIONS OF THE MAINE STATE RETIREMENT SYSTEM

Prepared for

The Joint Select Committee to Study

The Maine State Retirement System

By

The Wyatt Company

February 22, 1980

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February 22, 1980

The Joint Select Committee to Study
The Maine State Retirement System
Augusta, Maine

Gentlemen:

We are pleased to submit our report on the results of our study of the Maine State Retirement System. This study was authorized by Section 7 of Chapter 63 of the Private and Special Laws of 1979. The portion of the study carried out by The Wyatt Company relates to the benefits provided by the System and to the funding of those benefits.

We would like to express our appreciation to the following people for the assistance they have given us during the course of this study:

1. William G. Blodgett, Executive Director of the System and his staff for providing the employee data necessary for the actuarial aspects of our study and a great deal of historical information relating to the System.

2. Robert J. Towne, F.S.A., Actuary for the System for supplying technical information regarding the actuarial valuations of the System.

3. Ms. Barbara Cottrall of the State Development Office and Messrs. Alan Pease, Galen Rose, Charles Lawton, and Richard Sherwood of the State Planning Department for their insights in developing the economic assumptions used in our cost forecasts.

The timely assistance of these people was one of the key factors enabling us to complete this project in the very limited time allowed.

We would be pleased to meet with the Committee or anyone designated by the Committee to respond to any questions or comments which may arise regarding our report.

Very truly yours,

THE WYATT COMPANY

Barclay L. Millar
Member, American Academies of Actuaries

Patrick K. Snead
Member, American Academies of Actuaries

Kenneth A. Steiner
Fellow, Society of Actuaries

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March 4, 1980

Honorable Joseph E. Brennan
Governor of Maine

Honorable Joseph Sewall
President of the Senate

Honorable John L. Martin
Speaker of the House

Gentlemen:

The Joint Select Committee to Study the Maine State Retirement System herein submits its report as requested by the 109th Legislature.

In an effort to present a professional, objective and comprehensive review and analysis of the System in the limited time available, the Committee engaged the services of The Wyatt Company, an actuarial and benefits consulting firm, to assist in examining those aspects of the System dealing with actuarial assumptions, benefits and funding. In addition, the Committee engaged the services of Merrill Lynch Pierce Fenner & Smith, Inc. to undertake a performance review of the System's investments.

The observations, findings, and recommendations contained herein, although authored by the consultants, represent the unanimous opinion of the members of the Committee. Although each comment and recommendation is fully explained and supported by relevant information, the Committee feels compelled to make the following comments which, because of their significance, need to be separately identified and/or emphasized:

Funding

It is our opinion that the Maine State Retirement System is not being funded on a realistic or prudent basis.

- Current benefit payments exceed current State contributions. The assets of the System, exclusive of local district funds and employee contributions, have decreased from $55 million on June 30, 1974 to a deficit of $5 million on June 30, 1979. It is projected that an additional deficit of between $5 million and $10 million will be incurred for the year ending June 30, 1980.

- Current actuarial assumptions, upon which costs and contribution levels are predicted, appear to be unrealistic, particularly in the areas of assumed retirement age, rates of salary increase, and rates of turnover. If current assumptions are maintained, the aggregate effect will be to require an ever increasing level of contribution by the State as a percentage of covered payroll from 14% ($50 million) in 1981 to 59% ($385 million) in the year 2000. This escalating rate of contribution by the State is considered most undesirable.

- The present amount due the System for non-contributory teachers of $122 million will grow to $469 million in 10 years unless current funding is provided by the State. This $122 million is presently being borrowed from funds contributed for other employee groups.

Benefits

Major benefit deficiencies exist in the System which are either overly generous (early retirement features), overly restrictive (cost of living adjustments), or poorly designed (disability benefits).

Integration with Social Security

It appears that a strong case, in terms of long-term cost implications, can be made for integrating the Maine State Retirement System with Social Security.

Board of Trustees

It is our opinion that certain problems exist in the composition of the Board of Trustees and its responsibility in relation to the selection of actuarial assumptions.

- The general public interest is not adequately represented on the Board of Trustees since five of the seven trustees represent beneficiaries of the System.

- The Board of Trustees appears to have too much latitude in the final determination of actuarial assumptions.

Investments

The return on investments has been very favorable when tested against accepted methods of investment performance.

In view of the above, the Committee makes the following recommendations:

Funding

- The State should immediately make a substantial additional appropriation for the fiscal year ending June 30, 1981 to raise the total State contribution level. The Committee's consultant recommends an appropriation of $47 million in addition to the $50 million otherwise required by the present funding policy, for a total contribution of $97 million.

- Similar increased State funding levels should be mandated for future fiscal years pending any changes in benefit provisions or refinements in actuarial assumptions.

- Contributions should be commenced by the State to fund the liability for the non-contributory teachers' benefits. The additional contribution recommended above includes $9 million for this purpose.

- The actuarial method and assumptions should be changed to more realistically and prudently reflect total System liabilities and result in more stable annual contributions. The Board of Trustees should undertake a review of current actuarial assumptions and methods and make changes where necessary to reflect past and anticipated future experience.

Benefits

- Further improvement in benefits should be avoided until the System is being adequately funded.

- Benefit design alternatives and their associated costs, including reduction of early retirement benefits, increases in cost-of-living adjustments, and modification in disability provisions, should be made available to assess their viability.

Social Security

We recommend an in-depth study to more fully determine the cost-benefit relationship if the System is integrated with Social Security.

Board of Trustees

- The membership of the Board should be restructured to achieve balanced representation by public members who are not beneficiaries under the System.

- The Board of Trustees should not establish actuarial assumptions unless approved by the actuary. An independent arbitration procedure should be established for any situations where the Board and the actuary cannot reach agreement.

A full reading of the report will identify other aspects of the System that should be reviewed or studied in greater depth than time afforded in this undertaking.

We appreciated the opportunity of serving the State of Maine as members of the Joint Study Committee and trust you will find the report of assistance.

Respectfully submitted,

Robert N. Haskell, Chairman

W. Scott Fox, Jr., Member

John E. Menario, Member

MERRILL LYNCH PIERCE FENNER & SMITH, INC.

SUMMARY OF ANALYSIS

STATE OF MAINE RETIREMENT SYSTEM

The five years ending December 1979

Delivered February 22, 1980

Scope of Analysis

This report is a performance analysis of the State of Maine Retirement System assets in aggregate. An analysis of the performance of the individual managers was neither requested nor provided.

The portfolio assets were divided into the major components of stocks and bonds. Each sector was analyzed individually in addition to an analysis of the total fund.

The Environment

The market environment during the last five years has been very favorable for tax-exempt portfolios. An investment in a fully diversified portfolio of stocks, bonds and/or cash equivalents regardless of the asset mix chosen would be worth more today than it was at the time of investment.

A one hundred dollar investment made on January 1, 1975 in each of the three major market sectors would today be worth:

Stocks	$199.70
Bonds	$136.30
Cash Equivalents	$140.80

Overview of System

As of the end of 1979, the assets of the State of Maine Retirement System had an aggregate market value of $296,205,000. This amount represents approximately a ninety percent increase in the size of the portfolio over the five year period, 1975-1979. Most of this growth has come from the return on investments as opposed to net contributions to the fund.

		(Millions of dollars)
Sources of Growth	Beginning Value	156.2
	Net Contributions	28.5
	Investment Return	111.5
	Ending Value	296.2

The $111.5 million investment return of the portfolio has more than surpassed that needed to keep up with inflation. After discounting the portfolio for changes in the Consumer Price Index, the system has achieved a "real" increase in purchasing power of $30.7 million. Looked at from the point of view of the fund's actuarial growth assumption of 8.5% per annum for the period, the system currently enjoys a buffer of $27.5 million. In other words, an investment at a constant rate of 8.5% would have produced a return of $84.0 million or $27.5 million less than was actually achieved.

Total Portfolio

The return on the total portfolio (excluding other assets*) for the five years was 69.7%, or 11.2% per annum compounded monthly. This compares favorably with the other tax-exempt balanced funds that we measure--outperforming 66% of the funds in our sample. The median fund earned 64.7%, or 10.5% per annum. In four of the last five years the fund has either equaled or outperformed our median fund's performance.

Equity Portfolio

On average 47.6% of the system's assets have been invested in equities (stocks). The return on the equity section of the portfolio for the five years has been 103.7% or 15.3% per annum. This important

* Other assets consist of real estate investments and comprise about 3% of the portfolio.

section of your portfolio has outperformed the market as a whole and 68% of the equity sections of the funds we measure.

This superior return is due to two factors. The dominant factor is that your stocks are slightly more aggressive (volatile) than those of the typical fund. In the current bull market environment, aggressive funds are favored. Had a bear market existed, this fund probably would have underperformed the typical fund. The second factor is the selection effect. Due to the correct selection of stocks, the managers in aggregate contributed 0.2% per year to the overall equity return.

Currently, the retirement system is structured with an emphasis on growth stocks. It is also 13% more aggressive than the stock market as a whole.

Bond Portfolio

On average, 34.1% of the system's assets have been invested in bonds. The return on the bond section of the portfolio for the five years was 41.7% or 7.2% per annum. This return also compares well with the bond sectors of other funds--outperforming 69% of the bond portfolios. Here the median fund returned 38.3% or 6.7% per annum. The bond market as a whole only returned 36.3% or 6.4% per annum.

The superior return on the systems fund is attributable to active management contributions. Active management contributed about 0.8% per year on average to the funds performance. The risk level of the system's bonds (about 10% more variable than the market) had a negative impact on the bond portfolio's return. This was more than offset by the management effects.

Comparisons with Public Funds

The asset allocations of the State of Maine Retirement System are substantially different than those of the typical public pension fund. The level of commitment to stocks is much higher than is typically observed and approaches that observed in a private pension fund. It is important to note that many retirement systems are limited by statute or policy to a maximum level in stocks which is lower than is commonly found in the private sector. This fact significantly caused the system to outperform most of the other public funds. In addition, the equity returns and the bond returns exceeded those achieved by the median public funds.

NOTE: Comparisons here are made against an early sample of public funds (27). A final version will be sent after all of the public funds we measure send in the necessary data.

Richard E. Dahl

Merrill Lynch Pierce
Fenner & Smith

Regional Marketing Manager

SUMMARY

SECTION I

Summary of Principal Findings and Recommendations

The purpose of this section of our report is to briefly set forth the more significant conclusions and recommendations reached as a result of our study of the Maine State Retirement System. Because this section is intended only as a summary of the major issues addressed in the course of the study, virtually all technical detail and supporting documentation has been eliminated from this section of the report and included in the following sections. Anyone wishing more detail regarding the background which led to the points raised here should refer to the appropriate technical documentation.

This study was undertaken to provide information on a number of substantive questions which have been raised regarding the Maine State Retirement System. Our intention here is to answer those questions as clearly and concisely as possible.

IS THE MAINE STATE RETIREMENT SYSTEM CURRENTLY BEING FUNDED ON A REALISTIC AND PRUDENT BASIS?

As part of our investigation of the funding of the System, we projected State contributions for the 10-year period 1980-89, using the same actuarial methods and assumptions currently being used by the System's actuary. Assumptions relating to future growth of the covered groups were developed with the assistance of State officials. Future State contribution levels were projected for ten years using three different sets of assumptions relating to investment return, inflation, and rates of pay increases. Contributions were then projected for an additional ten years under the "intermediate" set of assumptions, as follows:

	Inflation	Investment Return	Salary Increases
1980 - 1989	8%	9%	8%
1990 - 1999	6%	8%	7%

Based on these assumptions, projected State contributions to the MSRS for the

next 20 years under present actuarial methods and assumptions will be as follows (fiscal 1976, 1978, and 1980 results are included for reference):

Projected State Contributions to MSRS - Present Funding Policies

Fiscal Year Ending June 30,	% of Payroll	Amount
1976	7.8%	$20,457,000
1978	11.8	35,488,000
1980	14.0	47,298,000
1982	15.4	56,895,000
1984	17.3	69,539,000
1986	19.7	86,153,000
1988	22.2	106,323,000
1990	25.3	131,934,000
1992	29.4	162,345,000
1994	34.8	201,631,000
1996	41.7	252,687,000
1998	51.4	320,501,000
2000	59.3	384,880,000

The above amounts do not directly reflect any provision for immediate repayment of the funds "borrowed" to pay the benefits for the non-contributory teacher group. Under the funding method now being used, these liabilities will be fully funded in 25 years, although the impact of this funding will not begin to be felt until the 1990's, when State contribution requirements begin to increase very rapidly as a percentage of the covered payroll. The total amount borrowed for benefit payments to this group with interest through June 30, 1979 was $122 million, and, based on our projections, this amount is expected to increase to $469 million by 1990 and to over $900 million by 2000 if no State contributions are credited toward this amount. As mentioned above, however, this amount is scheduled to be funded at the end of 25 years, so presumably a procedure will be established for crediting a portion of the State contribution toward this deficit before it actually reaches these levels. Such a procedure would have no impact on the results shown above. The projected results for the next 20 years are essentially a continuation of a pattern of increasing State contributions which began early in the 1970's, although, as noted above, the rate of increase becomes quite rapid in the 1990's.

It is our opinion that the MSRS is not being funded on a realistic basis, where our standard of "realistic" is funding which will remain approximately level as a percentage of the covered payroll. As can be seen from the above table, present funding policies do not come close to meeting this standard, based on the forecast assumptions discussed previously. Even if current assumptions prove to be more realistic than any of our forecast assumptions, current funding policies by necessity will result in increasing contribution percentages because the accrued service contribution rate automatically increases by 3% per year and because the funding for non-contributory teachers is deferred under the present method.

The inadequacy of the present MSRS funding is further confirmed by the fact that current benefit payments, net of benefits attributable to employee contributions, exceed current State contributions. In the fiscal year ending June 30, 1980, total benefit payments will be approximately $70,000,000. Of this amount roughly $11,000,000 will be paid by a transfer of accumulated employee contributions, leaving $59,000,000 to be paid from State contributions. However, the State will contribute only $47,000,000 -- a cash flow shortfall of $12,000,000. In other words, the MSRS is now being funded on less than a pay-as-you-go basis. The present funding policy will gradually increase State contribution rates to exceed pay-as-you-go levels and eventually to reflect actual liabilities; however, current inadequate State contribution rates (14.0% in 1980) will rise to untenable future levels (59.3% in 2000) as a result. We therefore recommend that the following steps be taken:

1. Current actuarial assumptions and methods should be examined carefully and changed where necessary to reflect past and anticipated future experience. The current cost method is designed to produce contribution levels which will increase as a percentage of pay, and we believe this is undesirable. Some of the assumptions used to value the plan, such as the assumed retirement age of 65, are not supported when past experience is

considered and may not be the best prediction of anticipated future experience.

2. The selection of actuarial assumptions and methods should be divorced from the consideration of changes in benefits. We have seen several references in historical material provided to us indicating that benefit improvements were "paid for" by changes in actuarial assumptions. In actual fact, the costs of a pension plan equal the benefits provided. Actuarial methods and assumptions affect only the rate at which costs are recognized, not the actual costs themselves. If a change in assumptions is to be made, it should be justified on its own merits, independent of any changes in benefits which may be under consideration.

3. The liability for the non-contributory teacher group should be recognized and funded on a more current basis, or virtually the entire burden of funding this liability will be deferred until well into the 1990's.

4. Some confusion seems to exist regarding whether various funding policies are in compliance with the Maine State Retirement System Laws. For example, at one time it was intended that the cost of living payments for retirees be funded through a ½% of pay non-refundable employee contribution. Since the cost of living payments are rapidly approaching $20 million annually (nearly 6% of pay), this legislative intent seems to have fallen by the wayside. Similar comments can be made about more recent changes, such as improvements in the benefit formula and in the pay averaging period. We believe that a fresh look should be taken at the allocation of the cost of the System between employee and employer, and any legislation which attempts to artificially restrain funding should be repealed. As indicated above, once benefits have been established, it is too late to address the question of costs.

WHAT STEPS WOULD YOU RECOMMEND TO ACHIEVE A STABLE PATTERN OF FUTURE COSTS AND WHAT WOULD BE THE RESULTING STATE CONTRIBUTION REQUIREMENTS?

Table III-N of Section III (page 75) outlines an actuarial cost method and one set of alternative assumptions which we believe more reasonably reflect past experience under the MSRS than do the present actuarial assumptions. State contribution requirements (when expressed as a percentage of the active payroll) will remain more level if these or similar alternative assumptions are adopted, to the extent that future experience corresponds to that anticipated in the "intermediate" forecast assumptions. Based on our review of past experience in the MSRS, we believe changes of the type we have suggested should be considered, subject to the following qualifications:

1. These alternative assumptions are only one set which produce the desired stability of results, although even the use of these assumptions will produce slowly increasing contribution rates under the intermediate forecast assumptions. It would be possible to develop an endless number of other sets of assumptions which would produce similar results.
2. Certain components of the alternative assumptions should be further refined. For example, we have assumed that employees will retire when they reach age 62. This is in keeping with average recent experience, although it would be somewhat more accurate to assume that a certain percentage of the employees retire at each possible retirement age. The scope of our study and the serious time constraints did not permit this type of statistical analysis to be included in the present study.
3. This set of alternative assumptions will achieve reasonably stable results to the extent that actual future experience is the same as that expected by the State officials with whom we consulted. While

this information is plausible and represents the most expert opinions available concerning the State of Maine, no one can know the future with certainty and these, or any other assumptions which may be adopted, should be tested with additional forecast valuations at periodic intervals to assure their continued appropriateness.

The suggested alternate method and assumptions differ from the present actuarial method and assumptions in the following major areas:

1. Cost Method

We have continued to use the entry age normal cost method, but with three significant changes. First, the incidence of costs has been recognized on a basis which will produce level State contributions when expressed as a percentage of the active employee payroll each year. Second, actuarial gains or losses have been segregated as a separate cost component which will be amortized over a 15-year period. Finally, the extremely complex system of funding accrued liability has been replaced by 40-year funding as a level percentage of the total System payroll of the July 1, 1979 unfunded accrued liability, with subsequent gains and losses funded over 15 years as a level dollar amount.

2. Investment Return

We believe that continued use of the present 8½% interest assumption is appropriate, as long as certain other assumptions, particularly the salary increase assumption, are revised.

3. Salary Increases

We have assumed that salaries will increase at the rate of 7½% per year for each participant and that the total system payroll will increase at 5% per year. Stated differently, each participant is expected to receive a 5% cost-of-living increase and a 2½% merit or

promotional increase each year. These rates are considerably higher, and hence more conservative, than the 5½% cumulative increase assumed at present.

4. Retirement Age

We have assumed that employees will retire at age 62. This assumption is considerably more conservative than the present assumption of age 65 and seems to be more consistent with the experience of at least the last five years.

These changes together with other less substantive changes described in Section III were then tested by projecting forecast valuations for 20 years on the same basis used in arriving at the contributions shown on page 2. The results of this projection are shown on the following two tables, with the contributions previously determined using current methods and assumptions also shown for comparison.

The most immediate and obvious result shown is that adopting the alternative method and assumptions would result in an increase of over $47 million in the required State contribution for the fiscal year ending June 30, 1981, from $50,274,000 on the present basis to $97,364,000 on the alternate basis. Although further investigation would undoubtedly result in some additional refinements in the assumptions used in arriving at the alternate contribution level of $97 million, we believe it would be unlikely that any such refinements would result in a change of more than 10%, and therefore it is our opinion that a State contribution of approximately this amount will be needed for the fiscal year ending June 30, 1981 if the State wishes to begin funding the MSRS on a level percentage of payroll basis.

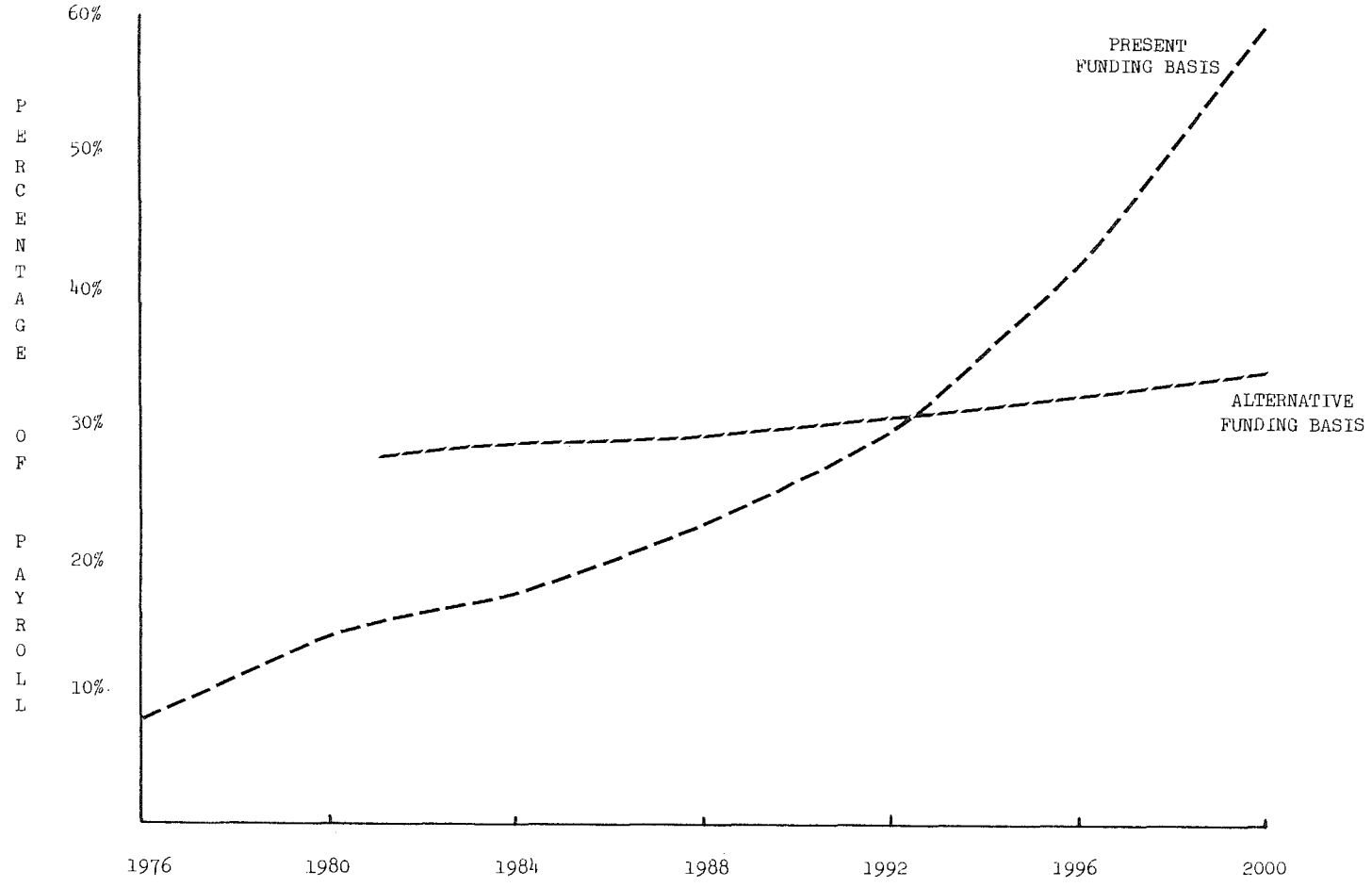
TOTAL STATE CONTRIBUTIONS TO MAINE STATE RETIREMENT SYSTEM

(Projected based on intermediate inflation assumption (8%) through 1989; low inflation (6% thereafter)

Fiscal Year Ended June 30	Present Basis Contribution Amount	Present Basis As % of Payroll	Alternative Basis Contribution Amount	Alternative Basis As % of Payroll
1976 (actual)	$ 20,457,000	7.84%		
1977 (actual)	35,005,000	11.00		
1978 (actual)	35,488,000	11.78		
1979 (actual)	39,229,000	11.95		
1980 (expected)	47,298,000	14.00		
(Projected)				
1981	$ 50,300,000	14.25%	$ 87,400,000	27.60%
1982	56,900,000	15.44	102,300,000	27.77
1983	63,200,000	16.38	107,700,000	27.96
1984	69,500,000	17.31	113,100,000	28.16
1985	77,800,000	18.48	119,300,000	28.39
1986	86,200,000	19.65	125,400,000	28.61
1987	96,500,000	20.91	132,200,000	28.80
1988	106,300,000	22.16	138,900,000	28.95
1989	119,100,000	23.73	141,200,000	29.19
1990	131,900,000	25.30	153,400,000	29.43
10 years	$ 857,700,000	10 years	$1,220,900,000	
1991	$ 147,100,000	27.35%	$ 159,800,000	29.75%
1992	162,300,000	29.40	169,500,000	30.07
1993	181,800,000	32.08	174,400,000	30.48
1994	201,600,000	34.75	179,200,000	30.89
1995	227,200,000	38.05	186,100,000	31.39
1996	252,700,000	41.74	193,100,000	31.89
1997	286,600,000	46.55	198,900,000	32.34
1998	320,500,000	51.36	204,700,000	32.79
1999	351,200,000	55.35	211,900,000	33.28
2000	384,700,000	59.31	219,000,000	33.77
10 years	$2,515,700,000	10 years	$1,896,600,000	
20 years	$3,373,400,000	20 years	$3,117,500,000	

TOTAL STATE CONTRIBUTION AS A PERCENTAGE OF COVERED PAYROLL (1976 - 2000)

(Intermediate inflation assumption (8%) through 1989; low inflation (6%) thereafter)



HOW DO THE BENEFITS AVAILABLE UNDER THE MAINE STATE RETIREMENT SYSTEM COMPARE WITH BENEFITS AVAILABLE UNDER OTHER NEARBY STATE RETIREMENT SYSTEMS AND WITH THE PENSION PLANS OF OTHER MAINE EMPLOYERS?

When the Maine State Retirement System is compared with other retirement programs, it is important that Social Security benefits be considered in addition to the plan benefits of those employers which participate in Social Security. Social Security benefits are a significant portion of the retirement income of the employees of all other employers considered in our review.

Starting with the public system retirement benefits available in New Hampshire, Vermont and New York, Maine provides noticeably lower levels of retirement income to career employees. Even if "excessive" benefits (i.e., benefits which exceed an employee's pre-retirement level of take home pay) provided by some of these other systems are ignored, Maine is still somewhat less than competitive. However, this shortfall is largely attributable to lower required employee contributions under the MSRS as compared with other state systems together with Social Security. The other types of benefits provided by the MSRS, such as death, disability and early retirement benefits, are generally in line with those provided by the other systems, with the exception of the early retirement provisions, which are discussed later in this summary.

With respect to large private employers in Maine, the MSRS benefits are, again, generally slightly less than competitive. However, benefit practices among private employers vary considerably, particularly in Maine, where many smaller employers provide no formal pension benefits. Notwithstanding, general competitive labor conditions in Maine are increasing benefit expectations among all levels of employees, and Maine is rapidly approaching national standards.

ARE THERE ANY MAJOR BENEFIT DESIGN DEFICIENCIES IN THE MAINE STATE RETIREMENT SYSTEM?

In our opinion there are four general areas where the benefits of the MSRS are either overly generous, overly restrictive or poorly designed. They are:

1. Normal and Early Retirement

   The normal retirement age of 60 provided by the System is extremely liberal by national standards, and this is one of the most expensive provisions of the System. "Normal" retirement is still 65 for most of the nation's employees, although earlier normal retirement ages (usually age 62) are common in public systems, and some private plans provide unreduced early retirement benefits at age 62. This is one of the most expensive features of the System, and a change in the normal retirement age to age 62, with reduced benefits for retirement prior to that age, could lower the long-range cost of the System by more than 10%, depending on the reductions provided for earlier retirement. Early retirement benefits provided by the System are also extremely generous and extremely expensive. Very few states and virtually no private employers provide comparably liberal early retirement benefits and, unless these benefits are a necessary part of an established State personnel policy, serious consideration should be given to reducing early retirement subsidies. Money saved in this area could then be applied to other needed improvements. A reduction in the extent to which benefits are subsidized for retirement prior to age 60 could, depending on utilization, lower costs by up to 5%.

2. Cost of Living Adjustments

   Social Security benefits are fully indexed to keep up with increases in the cost of living. Most private retirement plans provide no cost of living protection and most state retirement plans provide

moderate cost of living protection. The MSRS provides a maximum annual cost of living adjustment of 4%; however, because the vast majority of covered employees do not also participate in Social Security, they receive significantly less cost of living protection than most persons covered in private plans or other public plans. Inflation is a grueling financial hardship for anyone who must rely solely on a 4% annual cost of living adjustment. We suggest that consideration be given to increasing the 4% annual limit both to provide greater protection for persons retired under the MSRS and to assure that the cost attributable to future cost of living benefits be included in current actuarial calculations. However, because this is a valuable benefit, it is an expensive benefit. Changing the annual 4% adjustment to 5% would increase the cost of the System by approximately 10%.

3. Disability Benefits

Disability benefits provided by the MSRS are reasonably generous because they contemplate that a disabled employee will have no other source of current income. While this is true of those persons who become totally and permanently disabled, there appear to be a number of persons receiving disability benefits who are only marginally disabled. It may be possible to redesign the disability benefit provisions of the MSRS to provide either reduced disability benefits or transitional disability benefits to employees who are less than totally and permanently disabled and who may be able to find other jobs or undertake rehabilitative employment. This issue involves both potential savings to the MSRS and enhanced integrity of the MSRS by eliminating areas of potential abuse. Although disability benefits currently amount to only 4% of the total benefit payments from the System, a failure to adequately control these benefits could result in a substantial increase in the percentage. The long-term cost of disability benefits is

expected to be about 7% to 8% of the total cost of the System (once recent improvements are fully phased in), and the presence or absence of effective controls could easily alter the expectation by 2% or more.

4. Optional Formula Integrated with Social Security

Certain municipalities and other governmental districts in Maine participate in Social Security. If any of these districts also wishes to participate in the MSRS, it must provide full MSRS benefits which are excessive when combined with Social Security benefits. We believe an alternate benefit formula should be offered which would provide appropriate aggregate levels of benefits when combined with Social Security benefits. Such an option could encourage pension coverage in the MSRS among those local government districts which participate in Social Security but have not elected to participate in the MSRS.

5. Hazardous Service Benefits

The appropriateness of present benefit levels for special groups of hazardous service employees within MSRS should be reconsidered. Presently, these employees can usually retire on full benefits after twenty or twenty-five years of service, often at age 45 or 50. Do these employees truly "retire"? Should they be expected to find other employment prior to 60 or 65, and if so, what effects should this have on their benefits? Benefits of this type are traditional for hazardous service employees; however, substantial costs are involved and it may be advisable to reexamine the practice.

SHOULD ALL PUBLIC EMPLOYEES IN MAINE PARTICIPATE IN SOCIAL SECURITY?

Maine is one of only seven states that does not cover its state employees under Social Security and one of only fourteen states that does not cover its teachers under Social Security. All employees in the private sector - with

the exception of a few non-profit organizations - are covered under Social Security. Federal employees are not covered. In summary, the vast majority of the American workforce participates in Social Security, and Social Security benefits represent a national "norm".

Participation in Social Security entails some or all of the following advantages:

- Social Security benefits are fully indexed to keep pace with the cost of living.
- Social Security benefits are not subject to State or Federal income taxes.
- Social Security benefits are particularly generous for lower-paid employees.
- Social Security provides comprehensive survivor benefits and disability benefits.
- Social Security is administered by the Federal government and requires minimum local administration.
- Social Security benefits include Medicare.
- Funding from general Federal revenues is being considered to ease Social Security payroll taxes.
- Administrative costs of Social Security are only 2% of total receipts.

Participation in Social Security also entails the following potential disadvantages:

- Both employee and employer payroll taxes of 6.13% of earnings up to $25,900 per year would be assessed immediately, and short-term State retirement costs would increase dramatically even if future benefit accruals under the MSRS are significantly reduced.
- Combined retirement benefits would be excessive unless future benefit accruals under the MSRS are significantly reduced.

- Those MSRS employees who presently have limited earnings covered under Social Security will now have their full earnings recognized under Social Security and will lose the disproportionately greater Social Security benefit ratios intended for poverty level persons.
- The Maine legislature will lose a certain degree of control over the retirement benefits for Maine's public employees.
- Social Security often appears to be on the brink of major financial difficulties.

Assessing the collective disadvantages and advantages of Social Security participation, a strong case can be made for participation by Maine's public employees. This is certainly an area which should be carefully studied in light of the various benefits available and the short-term and long-term cost implications.

BACKGROUND

SECTION II

BACKGROUND

The Joint Select Committee to Study the Maine State Retirement System was created by the 109th Legislature to "study the funding, contributions, benefits, investment policies and all other aspects of the Maine State Retirement System". The committee has retained The Wyatt Company, an actuarial and benefits consulting firm, to assist it in examining those aspects of the System which relate to benefits and funding. Issues relating to investment policy fall outside the scope of this report.

The most significant questions addressed by this report are:

1. Are current funding policies adequate to provide the benefits promised by the System?
2. What future costs will result from a continuation of current funding policies?
3. What alternative funding policies, if any, should be considered?
4. How do the benefits provided by the System compare with those provided by other states and by other employers in Maine?

With regard to the first three questions, a widely held belief in funding pension plans is that contributions should remain approximately level as a percentage of the total pay of the active employees covered by the plan. We concur with this belief, and our examination of the funding issue presupposes that this is a desirable goal.

With regard to the fourth question, we believe that a well-designed pension program will permit a career employee to retire without suffering a substantial decrease in his standard of living. This involves establishing a retirement benefit objective, taking into account such factors as service, pay levels, degree

of reliance on personal savings, Social Security benefits (if any), the age at which the objective is to be met, etc. We have attempted to quantify these somewhat subjective factors, and the assumptions we have made in doing this are discussed later in the report.

At this point, a brief history of the System may be helpful. The Maine State Retirement System was created by the Legislature in 1947 as a combination of the Maine Teachers Retirement Association, the Maine State Employees Retirement System, and the so-called "non-contributory" teachers group. This latter group consists of teachers who did not join the Maine Teachers Retirement Association when it was formed in 1924, but rather chose to remain in a non-contributory plan established in 1913. All of the teachers in this group are now retired.

In addition to these three groups, the System also covers approximately 230 participating local districts (cities, towns, counties, etc.). Most of these local districts also participate in Social Security, although the larger ones (Portland, Bangor, Augusta, et al) do not. The local districts have a limited amount of flexibility in electing or declining certain features of the System. The State does not contribute toward the cost of the System for these local districts.

The benefits provided by the System are equal to 2% of an employee's final three-year average earnings multiplied by his years of service. This benefit is payable at age 60, which is the normal retirement age for most participating employees, although different benefit and retirement age provisions are provided for several special categories of employees. Therefore, an employee who retired at age 60 with 30 years of service and final three-year average earnings of $10,000 would receive an annual benefit of $6,000. Thereafter, the System provides for cost of living increases of up to 4% per year after retirement. Most employees

contribute 6½% of pay toward their benefits, although again there is some variation for special groups.

Today the System covers a total of more than 42,000 active employees and pays nearly $72 million in benefits annually to 15,000 retirees. Required State contributions over the years have increased steadily, from $23 million for the fiscal year ended June 30, 1974 to an amount expected to exceed $47 million for the fiscal year ending June 30, 1980. As a percentage of the total pay of the active members, the State's contribution has increased from 9% to approximately 13% during the same period.

Despite this increase in State contributions, the assets of the System for State employees, MTRA teachers, and non-contributory teachers have only increased from $154 million on June 30, 1974 to $170 million on June 30, 1979. During this time, accumulated assets other than employee contributions have decreased from $55 million to a deficit of $5 million. This decrease is due to benefit payments to the "non-contributory" teacher group mentioned previously. The funds for the non-contributory teachers' benefits have been borrowed from funds contributed for the other employee groups. As of June 30, 1979, these borrowings plus interest totalled more than $122 million. Even if the effect of the non-contributory teacher group is ignored, assets in excess of employee contributions would have only increased by about $10 million (from $110 million to $120 million) during this period. This means that the System is being funded on less than a pay-as-you-go basis if non-contributory teachers are taken into account and barely more than a pay-as-you-go basis if this group is ignored.

It is this pattern of increasing costs and decreasing assets which has given rise to questions about the future of the System. The purpose of this report is to attempt to provide an answer to those questions.

FUNDING ISSUE

SECTION III

Additional Information Relating to the Funding Section of the Report

This section of the report presents a series of tables containing information about how the results described in the summary section of the report were obtained and giving more detail about those results.

The tables and reports in this section are as follows:

TABLE III - A

Forecast Assumptions

This section contains a brief description and discussion of the assumptions used in the forecast of the System's costs. The System's population growth assumptions were developed after an extensive meeting with representatives from the State Development Office and the State Planning Department. In addition, a summary of the forecast assumptions developed at the meeting was sent to the Commissioner of Education, the Commissioner of Finance and Administration, and the Office of State Employee Relations for additional comments. The economic assumptions were developed with the aid of input from the State Development Office, the State Planning Department and were discussed with a representative of Merrill Lynch Pierce Fenner & Smith, Inc. The remainder of the assumptions were based on the results of the Study of Actuarial Assumptions performed by the System's actuary as submitted to the Board on January 19, 1978, our conversations with the System's actuary and administrative staff, national statistics, and our best estimates.

Growth of System Membership

There was general agreement among the representatives of the State Development Office and the State Development Department on the following:

- The population of the State of Maine should grow at an average rate of about ½% per year for the next 10 years.
- Growth of State employees would generally track the rate of growth of the State population for the next five years and would likely grow about ½% faster than the population in the five years following, due to increased demand for government services.

- Due to a projection of a substantial decline in public school students in the next five years with a levelling thereafter, the number of teachers will likely decline and perhaps reach a position of no growth after 5 years. (A figure of negative 2% for the first five years was decided after our meeting.)
- It was felt that the growth in the number of regular municipal employees would parallel the growth of State employees.
- ½% per year higher growth for police and fire members was projected due to increased demand for their services.

Economic Assumptions

Inflation

The major economic assumption in a forecast of pension costs is the rate of inflation. There was a general feeling among the State officials with whom we talked that inflation in Maine in the 1980's would decline from its current level to about 9% in 1982 and subsequently increase back to current levels at the end of the decade. It was felt that the average rate of inflation for the decade would be about 10%-11% per year.

While we believe this scenario is sadly a possibility, we are more inclined to believe that a 10%-11% inflation rate represents a high estimate for the following reasons:

1. The rate of inflation for the seventies averaged 7.2% per year as measured by the Consumer Price Index. That rate was the highest average rate experienced in over five decades. During the decade of the seventies, the value of a dollar was halved. Assuming 11% inflation for the eighties, the value of a 1980 dollar will be reduced to $.35 by 1990. It is hard for us to imagine that inflation in the 80's will be more than 50% higher than that experienced during the 1970's.

2. We beliive a major component of inflation is represented by energy costs. If these costs escalate as in the past decade, alternative energy sources that have heretofore been too expensive will be able to serve as cost efficient alternatives.

We believe that the following three inflation scenarios represent a reasonable range of expected inflation for the 1980's:

- High 11%
- Intermediate 8%
- Low 6%

Salary Increases

Increases in wages paid to State employees are a combination of (a) cost of living increases and (b) merit and longevity increases. State Planning and State Development representatives estimated that cost of living increases would average about 5% per year. They felt that salaries of government employees would keep pace with salaries of private employees in the 1980's and the number of salary merit step increases would be increased so that more employees would be eligible to receive merit increases.

We have separated the salary increase assumption into increases in starting wages and increases in wages for continuing employees. The former should be equal to cost of living increases and the latter equal to cost of living increases plus merit increases. It is our understanding that merit steps normally involve about a 5% pay increase, but these increases are not given to all System members. We assumed that the average yearly merit step increase to be applied to each System member would be 3%. The following exhibit details the salary increases assumed for each of the three inflation scenarios:

Scenario	Rate of Inflation	Annual Rate of Increase in Starting Wages	Annual Rate of Increase in Wages for Continuing Employees
• High	11%	7%	10%
• Intermediate	8%	5%	8%
• Low	6%	4%	7%

As can be seen from the exhibit, continuing employees are assumed to keep up with inflation at the intermediate level, lose ground at the high level and gain real earnings increases at the low level of inflation.

Investment Return

The following exhibit shows the relationship assumed between the rate of inflation and the rate of investment return on pension fund assets:

	Rate of Inflation	Annual Rate of Investment Return
• High	11%	12%
• Intermediate	8%	9%
• Low	6%	8%

Over the last five years, the rate of inflation has been about 8% per year and the fund has earned about 8.5% per year on a market to market basis. We believe that the relationship between the rates of investment return and the rates of inflation as shown above are reasonable and consistent with the generally expressed opinion of the investment community that a well-managed pool of assets will earn a rate of return in excess of inflation over any extended time period.

Rates of Decrement

The rates of turnover assumed in the forecast are based on the results of the Study of Actuarial Assumptions performed by the System's actuary. The rates used would duplicate the number of terminations experienced in fiscal years 1970 through 1975 if applied to the population in those years.

The rates of retirement used in the forecast were developed in such a manner as to produce an average retirement age of 62.7 when applied to the current

population, which is approximately equal to the average of 62.6 for the fiscal year ending June 30, 1979.

Rates of mortality are based on the 1951 Group Annuity Mortality Table projected to 1965 by Scale C. This table produces slightly higher mortality than indicated by the recent study. The effect of using this assumption rather than the 1971 Group Annuity Mortality Table is not significant.

Disability rates assumed are 50% of the 1973-1977 Social Security Disability rates. There was no available information to substantiate or refute this assumption, but it is consistent with rates used in other state systems.

Miscellaneous

85% of the males and 70% of the females are assumed to have spouses. This assumption was based on demographic statistics available in the 1978 Statistical Abstract of the United States.

13% of married participants are assumed to elect option 2 (joint and 100% survivor annuity) and 18% of married participants are assumed to elect option 3 (joint and 50% survivor annuity). These percentages are based on the current distribution of options.

All participants with less than 10 years of service at termination are assumed to elect a refund of contributions. For those with 10 or more years of service at termination, a graded percentage, depending upon age at termination, will elect a cash refund in lieu of retirement benefits. These assumptions are based on our discussion with the State's administrative staff.

Where accidental death benefits are provided, 25% of the deaths are assumed to be accidental. Since no experience was available on this assumption, our best estimate was made.

TABLE III - B

THE MAINE STATE RETIREMENT SYSTEM

Summary of Forecast Assumptions

	Fiscal Years 1980-1984	1985-1989
1. System growth		
• Teachers	-2% per year	0% per year
• State Employees (including State Specials)	.5% per year	1% per year
• Municipal Employees (Regular)	.5% per year	1% per year
• Municipal Employees (Police and Fire)	1% per year	1½% per year
2. Rate of Inflation		
• High	11%	
• Intermediate	8%	
• Low	6%	
3. Annual Rate of Increase in Starting Wages		
• High	7%	
• Intermediate	5%	
• Low	4%	
4. Annual Rate of Increase in Wages for Continuing Employees		
• High	10%	
• Intermediate	8%	
• Low	7%	
5. Annual Rate of Return on Invested Assets		
• High	12%	
• Intermediate	9%	
• Low	8%	
6. Mortality (before and after retirement):	The unadjusted 1951 Group Annuity Mortality Table projected to 1965 by Scale C. Female rates assumed to be the same as those for males five years younger.	

7. Retirement Rates

• For plans with normal retirement at age 60

Age	Rate
50 to 54	.01
55	.05
56 to 59	.03
60	.10
61	.05
62	.20
63	.25
64	.20
65	.40
66	.50
67	.50
68	.50
69	.50
70	1.00

	Age	Rate
• For Plans with normal retirement below age 60	NRA to 59	.50
	60	1.00

8. Disability Rates

50% of the 1973-77 Social Security Disability Rates

9. Withdrawal Rates Before Retirement:

(Including Mortality and Disability)

Age	State Employees	Teachers	Municipal Employees
22	.2798	.0579	.1688
27	.1117	.0950	.0988
32	.0515	.0452	.0473
37	.0391	.0293	.0452
42	.0343	.0212	.0479
47	.0272	.0212	.0423
52	.0363	.0186	.0516
57	.0482	.0223	.0629
62	.0286	.0176	.0441

10. Miscellaneous

• Percent Married

85% of males and 70% of females assumed to have spouses.

• Choice of options

13% of married participants assumed to elect option 2, 18% of married participants assumed to elect option 3, remainder of participants elect option 0.

• Cash out of vested benefits on termination

All participants with less than 10 years of service at termination are assumed to elect refund of contributions. For those with 10 or more years of service at termination, the following is assumed:

Age at Termination	% Electing Cash Refund
35 and below	20%
40	14%
45	10%
50	5%
55 and above	0%

• Accidental death

Where accidental death benefits are provided, 25% of deaths are assumed to be accidental.

• Fund administration expenses

Provided by separate state contributions.

TABLE III - C

MAINE STATE RETIREMENT SYSTEM

KEY TO FORECAST LISTINGS

1. Number of active employees
2. Number of active employees with 10 years of Service or, if a special employee, eligible for retirement
3. Total System payroll
4. (3) ÷ (1)
5. Average age
6. Average accrued Service
7. Average years of Service at retirement X current compensation X benefit accrual rate (2% for regular State employees and teachers)
8. Number of retired lives
9. Total annual benefit
10. (9) ÷ (8)
11. Average age
12. Balance in Member's Contribution Fund
13. Balance in Retirement Allowance Fund
14. (12) + (13)
15. Future Service rate
16. Accrued Service rate
17. Additional rate as a percentage of total State employee compensation for special state employee groups
18. (15) + (16) + (17)
19. Present value of future benefit payments to active and retired System members discounted with interest and the probability of termination
20. Present value of vested benefits payable at normal retirement discounted with interest and the probability of mortality
21. The entry age normal cost method accrued liability (See Table III-L in Section III)
22. (21) - (14)
23. (20) - (14)
24. (14) ÷ (22)
25. (14) ÷ (23)
26. Estimated member contributions (.065 X (3) for regular State employees and teachers, .075 X (3) for special employees)
27. Required State contribution (net of spouse benefit rate) (18) X (3)

TABLE III-C1

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for State Employees under Current Assumptions and Method - High Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (11%) Salary Increases: (10%) Rate of Investment Return: (12%)

	Valuation as of July 1,							
	1975 1/	1977 1/	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	12,910	13,242	13,884	14,023	14,163	14,376	14,665	14,960
2. Number of Vested Active Employees	-	-	5,094	5,233	5,404	5,501	5,647	6,439
3. Total Covered Compensation	$102,859	$110,784	$134,717	$151,837	$170,572	$190,381	$212,008	$234,254
4. Average Compensation	$ 7,967	$ 8,366	$ 9,703	$ 10,828	$ 12,043	$ 13,243	$ 14,457	$ 15,659
5. Average Age	41.20	40.84	40.14	40.36	40.74	41.01	41.22	41.40
6. Average Accrued Service	-	-	8.67	8.90	9.23	9.47	9.68	9.85
7. Average Projected Benefit	$ 5,144	$ 5,517	$ 6,422	$ 7,180	$ 8,002	$ 8,821	$ 9,671	$ 10,523
8. Number of Retired Lives	4,480	5,077	5,664	6,265	6,725	7,171	7,568	7,972
9. Total Annual Benefit	$ 15,223	$ 19,176	$ 24,650	$ 28,581	$ 32,885	$ 38,279	$ 44,681	$ 52,583
10. Average Annual Benefit	$ 3,398	$ 3,777	$ 4,352	$ 4,562	$ 4,890	$ 5,338	$ 5,904	$ 6,596
11. Average Age	-	-	69.11	68.28	67.76	67.30	67.02	66.72
12. Members Contribution Fund	$ 48,983	$ 58,755	$ 71,556	$ 81,979	$ 94,650	$108,276	$123,860	$140,398
13. Retirement Allowance Fund	$ 41,681	$ 46,783	$ 50,267	$ 69,547	$ 93,997	$130,213	$181,790	$254,775
14. Total Assets	$ 90,663	$102,111	$121,823	$151,526	$188,648	$238,489	$305,650	$395,173
15. Future Service Rate	3.79%	4.50%	5.14%	5.14%	5.22%	5.30%	5.34%	5.39%
16. Accrued Service Rate	5.34%	5.67%	7.58%	8.60%	9.93%	11.62%	13.46%	15.78%
17. Special Employee Rate	*1.00%	1.03%	1.09%	1.17%	1.29%	1.44%	1.60%	1.80%
18. Total	*10.13%	11.20%	13.81%	14.91%	16.44%	18.36%	20.40%	22.97%
19. Present Value of Total Benefits	$345,884	$364,432	$536,674	$628,895	$737,093	$866,028	$1,014,750	$1,187,235
20. Present Value of Vested Benefits	-	-	$570,064	$654,483	$747,435	$868,447	$1,009,833	$1,182,543
21. Accrued Liability	-	-	$475,138	$559,956	$661,220	$783,299	$ 925,048	$1,090,791
22. Unfunded Accrued Liability	-	-	$353,315	$408,430	$472,572	$544,810	$ 619,398	$ 695,618
23. Unfunded Vested Liability	-	-	$448,241	$502,957	$558,787	$629,958	$ 704,183	$ 787,370
24. Ratio of Assets to Accrued Liability	-	-	.26	.27	.29	.30	.33	.36
25. Ratio of Assets to Vested Liability	-	-	.21	.23	.25	.27	.30	.33
26. Member Contribution	$ 7,974	$ 8,341	$ 8,860	$ 9,993	$ 11,230	$ 12,527	$ 13,958	$ 15,340
27. State Contribution	$ 12,758	$ 14,274	$ 18,604	$ 22,640	$ 28,041	$ 34,949	$ 43,241	$ 53,817

1/ Information obtained from Actuarial Reports to the System. Dashes represent information not shown in the report. *denotes estimate
Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C2

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for MTRA Teachers Under Current Assumptions and Method - High Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (11%) Salary Increases: (10%) Rate of Investment Return: (12%)

	Valuation as of July 1,							
	1975 1/	1977 1/	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	18,409	20,842	17,619	16,921	16,251	15,926	15,926	15,926
2. Number of Vested Active Employees			8,224	9,276	10,226	11,245	12,042	13,086
3. Total Covered Compensation	$158,110	$190,356	$203,073	$229,853	$259,686	$294,433	$334,948	$378,046
4. Average Compensation	$ 8,589	$ 9,133	$ 11,526	$ 13,584	$ 15,980	$ 18,488	$ 21,032	$ 23,738
5. Average Age	37.2	37.2	37.93	39.35	40.70	41.69	42.34	42.89
6. Average Accrued Service	--	--	9.27	10.47	11.66	12.52	13.06	13.51
7. Average Projected Benefit	$ 6,293	$ 6,748	$ 8,442	$ 9,899	$ 11,614	$ 13,414	$ 15,250	$ 17,215
8. Number of Retired Lives	3,458	4,127	4,760	5,068	5,331	5,612	5,896	6,188
9. Total Annual Benefit	$ 16,429	$ 21,436	$ 28,907	$ 33,398	$ 38,506	$ 45,025	$ 53,188	$ 63,600
10. Average Annual Benefit	$ 4,751	5,194	6,073	6,590	7,223	8,023	9,021	10,278
11. Average Age	--	--	67.88	68.45	69.06	69.49	69.82	69.98
12. Members Contribution Fund	$ 63,391	$ 83,920	$103,330	$ 128,853	$155,123	$183,985	$216,442	$251,897
13. Retirement Allowance Fund	$ 63,979	$ 62,920	$ 70,385	$111,249	$174,304	$267,837	$403,716	$597,343
14. Total Assets	$127,370	$145,985	$173,715	$240,102	$329,426	$451,822	$620,159	$849,240
15. Future Service Rate	3.79%	4.50%	5.58%	5.58%	5.70%	5.83%	5.94%	6.07%
16. Accrued Service Rate	5.50%	5.84%	8.55%	9.63%	11.03%	12.78%	14.69%	17.08%
17. Special Employee Rate	--	--	--	--	--	--	--	--
18. Total	9.29%	10.34%	14.13%	15.21%	16.73%	18.61%	20.63%	23.15%
19. Present Value of Total Benefits	$424,893	$509,470	$708,734	$844,534	$1,009,435	$1,214,898	$1,467,616	$1,777,165
20. Present Value of Vested Benefits	--	--	$810,784	$905,317	$1,014,854	$1,163,743	$1,359,549	$1,618,686
21. Accrued Liability	--	--	$620,436	$746,072	$ 900,912	$1,095,224	$1,335,453	$1,632,756
22. Unfunded Accrued Liability	--	--	$446,721	$505,970	$ 571,486	$ 643,402	$ 715,294	$ 783,516
23. Unfunded Vested Liability	--	--	$637,069	$665,215	$ 685,428	$ 711,921	$ 739,390	$ 769,446
24. Ratio of Assets to Accrued Liability	--	--	.28	.32	.37	.41	.46	.52
25. Ratio of Assets to Vested Liability	--	--	.21	.27	.34	.39	.46	.52
26. Member Contribution	$ 10,180	$ 12,181	$ 13,197	$ 14,941	$ 16,885	$ 19,143	$ 21,771	$ 24,574
27. State Contribution	$ 12,365	$ 20,730	$ 28,694	$ 34,966	$ 43,439	$ 54,797	$ 69,087	$ 87,535

1/ Information obtained from Actuarial Reports to the System. Dashes represent information not shown in the report. *denotes estimate

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C3

MAINE STATE RETIREMENT SYSTEM

Forecast Valuation for State Employees Under Current Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: (9% through 1989; 8% thereafter)

	Valuation as of July 1,							
	1975 1/	1977 1/	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	12,910	13,242	13,884	14,023	14,376	14,376	14,665	14,960
2. Number of Vested Active Employees	-	-	5,094	5,233	5,404	5,501	5,647	6,439
3. Total Covered Compensation	$102,859	$110,784	$134,717	$146,782	$159,752	$173,047	$187,276	$201,345
4. Average Compensation	$ 7,967	$ 8,366	$ 9,703	$ 10,462	$ 11,280	$ 12,037	$ 12,770	$ 13,459
5. Average Age	41.20	40.84	40.14	40.36	40.74	41.01	41.22	41.40
6. Average Accrued Service	-	-	8.67	8.90	9.23	9.47	9.68	9.85
7. Average Projected Benefit	$ 5,144	$ 5,517	$ 6,422	$ 6,940	$ 7,493	$ 8,015	$ 8,437	$ 9,033
8. Number of Retired Lives	4,480	5,077	5,664	6,265	6,725	7,171	7,568	7,972
9. Total Annual Benefit	$ 15,223	$ 19,176	$ 24,650	$ 28,550	$ 32,663	$ 37,619	$ 43,281	$ 49,992
10. Average Annual Benefit	$ 3,398	$ 3,777	$ 4,352	$ 4,557	$ 4,857	$ 5,246	$ 5,719	$ 6,271
11. Average Age	-	-	69.11	68.28	67.76	67.30	67.02	66.72
12. Members Contribution Fund	$ 48,983	$ 58,755	$ 71,556	$ 83,028	$ 94,802	$106,834	$120,070	$133,469
13. Retirement Allowance Fund	$ 41,681	$ 46,783	$ 50,267	$ 59,837	$ 72,138	$ 91,044	$118,445	$158,046
14. Total Assets	$ 90,663	$102,111	$121,823	$142,865	$166,940	$197,878	$238,515	$291,515
15. Future Service Rate	3.79%	4.50%	5.14%	5.14%	5.22%	5.29%	5.33%	5.38%
16. Accrued Service Rate	5.34%	5.67%	7.58%	8.93%	10.61%	12.73%	15.03%	17.94%
17. Special Employee Rate	*1.00%	1.03%	1.09%	1.20%	1.34%	1.53%	1.73%	1.98%
18. Total	*10.00%	11.20%	13.81%	15.27%	17.17%	19.55%	22.10%	25.30%
19. Present Value of Total Benefits	$345.884	$364,432	$536,674	$617,555	$708,471	$812,712	$928,062	$1,056,768
20. Present Value of Vested Benefits	-	-	$570,391	$652,810	$739,108	$846,780	$967,162	$1,108,188
21. Accrued Liability	-	-	$475,138	$550,878	$637,287	$737,225	$848,274	$ 972,964
22. Unfunded Accrued Liability	-	-	$353,315	$408,013	$470,346	$539,346	$609,758	$ 681,450
23. Unfunded Vested Liability	-	-	$448,568	$509,945	$572,168	$648,902	$728,647	$ 816,673
24. Ratio of Assets to Accrued Liability	-	-	.26	.26	.26	.27	.28	.30
25. Ratio of Assets to Vested Liability	-	-	.22	.22	.23	.23	.25	.26
26. Member Contribution	$ 7,974	$ 8,341	$ 8,860	$ 9,658	$ 10,509	$ 11,397	$ 12,337	$ 13,260
27. State Contribution	$ 12,758	$ 14,274	$ 18,604	$ 22,262	$ 27,287	$ 33,670	$ 41,197	$ 50,722

1/ Information obtained from Actuarial Reports to the System. Dashes represent information not shown in the report. * Denotes estimate.

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C3

MAINE STATE RETIREMENT SYSTEM

Forecast Valuation for State Employees Under Current Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: (9% through 1989; 8% thereafter)

	Valuation as of July 1,				
	1991	1993	1995	1997	1999
1. Number of Active Employees	15,261	15,567	15,880	16,199	
2. Number of Vested Active Employees	6,759	6,958	7,150	7,345	
3. Total Covered Compensation	$211,287	$220,870	$230,009	$238,533	
4. Average Compensation	$ 13,845	$ 14,188	$ 14,484	$ 14,725	
5. Average Age	41.56	41.71	41.87	42.01	
6. Average Accrued Service	10.00	10.15	10.28	10.41	
7. Average Projected Benefit	$ 9,330	$ 9,601	$ 9,838	$ 10,032	
8. Number of Retired Lives	8,410	8,840	9,263	9,685	
9. Total Annual Benefit	$ 57,861	$ 66,592	$ 76,114	$ 86,322	
10. Average Annual Benefit	$ 6,880	$ 7,533	$ 8,217	$ 8,913	
11. Average Age	66.37	66.07	65.83	65.63	
12. Members Contribution Fund	$144,154	$154,662	$164,942	$174,660	
13. Retirement Allowance Fund	$210,191	$281,673	$382,428	$527,476	
14. Total Assets	$354,345	$436,335	$547,371	$702,136	
15. Future Service Rate	5.42%	5.45%	5.48%	5.52%	5.58%
16. Accrued Service Rate	21.78%	26.82%	33.46%	42.62%	50.01%
17. Special Employee Rate	2.31%	2.74%	3.31%	4.09%	5.10%
18. Total	29.50%	35.01%	42.25%	52.24%	60.69%
19. Present Value of Total Benefits	$1,187,515	$1,326,725	$1,475,431	$1,631,354	
20. Present Value of Vested Benefits	$1,273,491	$1,454,727	$1,652,364	$1,862,891	
21. Accrued Liability	$1,101,440	$1,238,488	$1,385,197	$1,539,306	
22. Unfunded Accrued Liability	$ 747,096	$ 802,153	$ 837,826	$ 837,170	
23. Unfunded Vested Liability	$ 919,146	$1,018,392	$1,104,993	$1,160,755	
24. Ratio of Assets to Accrued Liability	.39	.43	.50	.60	
25. Ratio of Assets to Vested Liability	.28	.30	.33	.38	
26. Member Contribution	$ 13,928	$ 14,573	$ 15,186	$ 15,755	
27. State Contribution	$ 62,335	$ 77,332	$ 97,171	$124,612	

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C4

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for MTRA Teachers Under Current Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: (9% through 1989; 8% thereafter)

	Valuation as of July 1,							
	1975 1/	1977 1/	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	18,409	20,842	17,619	16,921	16,251	15,926	15,926	15,926
2. Number of Vested Active Employees			8,224	9,276	10,226	11,245	12,042	13,086
3. Total Covered Compensation	$158,110	$190,356	$203,073	$221,817	$242,046	$265,441	$292,517	$320,049
4. Average Compensation	$ 8,589	$ 9,133	$ 11,526	$ 13,109	$ 14,894	$ 16,667	$ 18,367	$ 20,096
5. Average Age	37.2	37.2	37.93	39.35	40.70	41.69	42.34	42.89
6. Average Accrued Service	--	--	9.27	10.47	11.66	12.52	13.06	13.51
7. Average Projected Benefit	$ 6,293	$ 6,748	$ 8,442	$ 9,552	$ 10,823	$ 12,087	$ 13,306	$ 14,554
8. Number of Retired Lives	3,458	4,127	4,760	5,068	5,331	5,612	5,896	6,188
9. Total Annual Benefit	$ 16,429	$ 21,436	$ 28,907	$ 33,368	$ 38,293	$ 44,368	$ 51,690	$ 60,661
10. Average Annual Benefit	$ 4,751	$ 5,194	$ 6,073	$ 6,584	$ 7,183	$ 7,906	$ 8,767	$ 9,803
11. Average Age	--	--	67.88	68.45	69.06	69.49	69.82	69.98
12. Members Contribution Fund	$ 63,391	$ 83,920	$103,330	$130,499	$155,383	$181,583	$209,897	$239,533
13. Retirement Allowance Fund	$ 63,979	$ 62,920	$ 70,385	$ 96,543	$139,099	$200,606	$288,108	$410,342
14. Total Assets	$127,370	$145,985	$173,715	$227,042	$294,482	$382,190	$498,005	$649,876
15. Future Service Rate	3.79%	4.50%	5.58%	5.58%	5.70%	5.83%	5.94%	6.06%
16. Accrued Service Rate	5.50%	5.84%	8.55%	9.96%	11.70%	13.89%	16.26%	19.25%
17. Special Employee Rate	--	--	--	--	--	--	--	--
18. Total	9.29%	10.34%	14.13%	15.54%	17.40%	19.71%	22.20%	25.31%
19. Present Value of Total Benefits	$424,893	$509,470	$708,734	$828,865	$968,654	$1,136,322	$1,334,830	$1,568,942
20. Present Value of Vested Benefits	--	--	$811,318	$903,170	$1,004,248	$1,135,645	$1,301,557	$1,512,726
21. Accrued Liability	--	--	$626,804	$739,595	$ 872,572	$1,032,716	$1,222,758	$1,448,944
22. Unfunded Accrued Liability	--	--	$446,721	$506,562	$ 572,541	$ 645,497	$ 720,339	$ 795,375
23. Unfunded Vested Liability	--	--	$637,603	$676,128	$ 709,766	$ 753,455	$ 803,552	$ 862,850
24. Ratio of Assets to Accrued Liability	--	--	.28	.31	.34	.37	.41	.45
25. Ratio of Assets to Vested Liability	--	--	.21	.25	.29	.34	.38	.43
26. Member Contribution	$ 10,180	$ 12,181	$ 13,197	$ 14,417	$ 15,731	$ 17,248	$ 19,016	$ 20,799
27. State Contribution	$ 12,365	$ 20,730	$ 28,694	$ 34,480	$ 42,114	$ 52,324	$ 64,939	$ 80,991

1/ Information obtained from Actuarial Reports to the System. Dashes represent information not shown in the report. *denotes estimate

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C4

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for MTRA Teachers Under Current Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: 9% through 1989; 8% thereafter)

	Valuation as of July 1,				
	1991	1993	1995	1997	1999
1. Number of Active Employees	15,926	15,926	15,926	15,926	
2. Number of Vested Active Employees	12,930	12,607	12,391	12,244	
3. Total Covered Compensation	$340,969	$359,442	$375,317	$385,528	
4. Average Compensation	21,410	22,570	23,566	24,208	
5. Average Age	43.32	43.62	43.81	43.84	
6. Average Accrued Service	13.84	14.02	14.10	13.97	
7. Average Projected Benefit	15,505	16,338	17,050	17,473	
8. Number of Retired Lives	6,507	6,872	7,260	7,743	
9. Total Annual Benefit	71,753	85,474	101,836	122,200	
10. Average Annual Benefit	11,027	12,438	14,027	15,782	
11. Average Age	69.97	69.74	69.42	68.87	
12. Members Contribution Fund	264,442	286,793	306,682	320,057	
13. Retirement Allowance Fund	582,437	812,337	1,116,491	1,519,738	
14. Total Assets	846,879	1,099,130	1,423,174	1,839,795	
15. Future Service Rate	6.17%	6.29%	6.42%	6.53%	6.68%
16. Accrued Service Rate	23.16	28.29	35.02	44.28	51.77
17. Special Employee Rate	0	0	0	0	0
18. Total	29.33%	34.58%	41.44%	50.81%	58.45%
19. Present Value of Total Benefits	1,823,308	2,113,106	2,436,932	2,801,415	
20. Present Value of Vested Benefits	1,787,123	2,135,872	2,553,661	3,081,318	
21. Accrued Liability	1,698,347	1,984,235	2,305,310	2,668,671	
22. Unfunded Accrued Liability	848,625	883,262	881,471	829,597	
23. Unfunded Vested Liability	940,244	1,036,742	1,130,487	1,241,523	
24. Ratio of Assets to Accrued Liability	.50	.55	.62	.69	
25. Ratio of Assets to Vested Liability	.47	.51	.56	.60	
26. Member Contribution	22,169	23,363	24,399	25,068	25,971
27. State Contribution	100,010	124,299	155,516	195,889	233,576

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C5

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for State Employees Under Current Assumptions and Method - Low Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (6%) Salary Increases: (7%) Rate of Investment Return: (8%)

	Valuation as of July 1,							
	1975	1977	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	12,910	13,242	13,884	14,023	14,163	14,376	14,665	14,960
2. Number of Vested Active Employees	-	-	5,094	5,233	5,404	5,501	5,647	6,439
3. Total Covered Compensation	$102,859	$110,784	$134,717	$144,288	$154,554	$164,933	$175,991	$186,700
4. Average Compensation	$ 7,967	$ 8,366	$ 9,703	$ 10,289	$ 11,913	$ 11,473	$ 12,001	$ 12,480
5. Average Age	41.20	40.84	40.14	40.36	40.74	41.01	41.22	41.40
6. Average Accrued Service	-	-	8.67	8.90	9.23	9.47	9.68	9.85
7. Average Projected Benefit	$ 5,144	$ 5,517	$ 6,422	$ 6,823	$ 7,249	$ 7,638	$ 8,020	$ 8,371
8. Number of Retired Lives	4,480	5,077	5,664	6,265	6,725	7,171	7,568	7,972
9. Total Annual Benefit	$ 15,223	$ 19,176	$ 24,650	$ 28,531	$ 32,549	$ 37,304	$ 42,623	$ 48,797
10. Average Annual Benefit	$ 3,398	$ 3,777	$ 4,352	$ 4,554	$ 4,840	$ 5,202	$ 5,632	$ 6,121
11. Average Age	-	-	69.11	68.28	67.76	67.30	67.02	66.72
12. Members Contribution Fund	$ 48,983	$ 58,755	$ 71,556	$ 83,570	$ 94,902	$106,170	$118,314	$130,290
13. Retirement Allowance Fund	$ 41,681	$ 46,783	$ 50,267	$ 56,355	$ 64,370	$ 77,458	$ 97,030	$126,234
14. Total Assets	$ 90,663	$102,111	$121,823	$139,925	$159,272	$183,628	$215,344	$256,524
15. Future Service Rate	3.79%	4.50%	5.14%	5.14%	5.21%	5.29%	5.33%	5.37%
16. Accrued Service Rate	5.34%	5.67%	7.58%	8.95%	10.80%	13.11%	15.62%	18.76%
17. Special Employee Rate	*1.00%	1.03%	1.09%	1.20%	1.36%	1.56%	1.78%	2.05%
18. Total	*10.13%	11.20%	13.81%	15.28%	17.37%	19.96%	22.73%	26.18%
19. Present Value of Total Benefits	$ 345,884	$364,432	$ 536,674	$611,966	$694,717	$787,710	$888,372	$998,419
20. Present Value of Vested Benefits	-	-	$ 570,559	$651,984	$735,051	$836,419	$947,150	$1,074,018
21. Accrued Liability	-	-	$ 475,138	$546,406	$625,786	$715,617	$813,119	$ 920,265
22. Unfunded Accrued Liability	-	-	$ 353,315	$406,481	$466,514	$531,989	$597,775	$ 663,741
23. Unfunded Vested Liability	-	-	$ 448,736	$512,059	$575,779	$652,791	$731,806	$ 817,494
24. Ratio of Assets to Accrued Liability	-	-	.26	.26	.25	.26	.26	.31
25. Ratio of Assets to Vested Liability	-	-	.21	.21	.22	.22	.23	.24
26. Member Contribution	$ 7,974	$ 8,341	$ 8,860	$ 9,498	$ 10,169	$ 10,856	$ 11,582	$ 12,294
27. State Contribution	$ 12,758	$ 14,274	$ 18,604	$ 22,052	$ 26,853	$ 32,923	$ 39,996	$ 48,884

1/ Information obtained from Actuarial Reports to the System. Dashes represent information not shown in the report. *denotes estimate
Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C6

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for MTRA Teachers Under Current Assumptions and Method - Low Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (6%) Salary Increases: (7%) Rate of Investment Return: (8%)

	Valuation as of July 1,							
	1975 1/	1977 1/	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	18,409	20,842	17,619	16,921	16,251	15,926	15,926	15,926
2. Number of Vested Active Employees			8,224	9,276	10,226	11,245	12,042	13,086
3. Total Covered Compensation	$158,110	$190,356	$203,073	$217,853	$233,580	$251,899	$273,221	$294,361
4. Average Compensation	$ 8,589	$ 9,133	$ 11,526	$ 12,875	$ 14,373	$ 15,817	$ 17,156	$ 18,483
5. Average Age	37.2	37.2	37.93	39.35	40.70	41.69	42.34	42.89
6. Average Accrued Service	--	--	9.27	10.47	11.66	12.52	13.06	13.51
7. Average Projected Benefit	$ 6,293	$ 6,748	$ 8,442	$ 9,381	$ 10,443	$ 11,467	$ 12,422	$ 13,376
8. Number of Retired Lives	3,458	4,127	4,760	5,068	5,331	5,612	5,896	6,188
9. Total Annual Benefit	$ 16,429	$ 21,436	$ 28,907	$ 33,353	$ 38,191	$ 44,054	$ 50,989	$ 59,312
10. Average Annual Benefit	$ 4,751	$ 5,194	$ 6,073	$ 6,581	$ 7,164	$ 7,850	$ 8,648	$ 9,585
11. Average Age	--	--	67.88	68.45	69.06	69.49	69.82	69.98
12. Members Contribution Fund	$ 63,391	$ 83,920	$103,330	$131,349	$155,554	$180,483	$206,872	$233,879
13. Retirement Allowance Fund	$ 63,979	$ 62,920	$ 70,385	$ 91,272	$126,600	$177,282	$249,002	$348,643
14. Total Assets	$127,370	$145,985	$173,715	$222,620	$282,153	$357,765	$455,874	$582,522
15. Future Service Rate	3.79%	4.50%	5.58%	5.58%	5.70%	5.83%	5.93%	6.06%
16. Accrued Service Rate	5.50%	5.84%	8.55%	9.98%	11.89%	14.27%	16.85%	20.07%
17. Special Employee Rate	--	--	--	--	--	--	--	--
18. Total	9.29%	10.34%	14.13%	15.56%	17.59%	20.09%	22.78%	26.12%
19. Present Value of Total Benefits	$424,893	$509,470	$708,734	$821,144	$949,074	$1,099,537	$1,274,192	$1,476,151
20. Present Value of Vested Benefits	--	--	$811,593	$902,110	$999,089	$1,122,238	$1,274,443	$1,464,223
21. Accrued Liability	--	--	$620,436	$727,460	$850,751	$ 996,063	$1,164,841	$1,361,654
22. Unfunded Accrued Liability	--	--	$446,721	$504,840	$568,598	$ 638,298	$ 708,967	$ 779,132
23. Unfunded Vested Liability	--	--	$637,878	$679,490	$716,936	$ 764,473	$ 818,569	$ 881,701
24. Ratio of Assets to Accrued Liability	--	--	.28	.31	.33	.36	.39	.43
25. Ratio of Assets to Vested Liability	--	--	.21	.25	.28	.32	.36	.40
26. Member Contribution	$ 10,180	$ 12,181	$ 13,197	$ 14,163	$ 15,178	$ 16,372	$ 17,757	$ 19,143
27. State Contribution	$ 12,365	$ 20,730	$ 28,694	$ 33,889	$ 41,089	$ 50,618	$ 62,246	$ 76,894

1/ Information obtained from Actuarial Reports to the System. Dashes represent information not shown in the report. *denotes estimate

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C7

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for State Employees under Alternate Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: (9% through 1989; 8% thereafter)

	Valuation as of July 1,					
	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	13,884	14,023	14,163	14,376	14,665	14,960
2. Number of Vested Active Employees	5,094	5,233	5,404	5,501	5,647	6,439
3. Total Covered Compensation	$134,690	$146,752	$159,720	$173,012	$187,239	$201,305
4. Average Compensation	9,701	10,465	11,277	12,035	12,768	13,456
5. Average Age	40.14	40.36	40.74	41.01	41.22	41.40
6. Average Accrued Service	8.67	8.90	9.23	9.47	9.68	9.85
7. Average Projected Benefit	6,422	6,940	7,493	8,015	8,537	9,033
8. Number of Retired Lives	5,664	6,265	6,725	7,171	7,568	7,972
9. Total Annual Benefit	24,650	28,550	32,663	37,619	43,281	49,992
10. Average Annual Benefit	4,352	4,557	4,857	5,246	5,719	6,271
11. Average Age	69.11	68.28	67.76	67.30	67.02	66.72
12. Members Contribution Fund	71,556	83,028	94,802	106,834	120,070	133,469
13. Retirement Allowance Fund	50,267	76,493	124,862	182,981	251,057	330,705
14. Total Assets	121,823	159,521	219,665	289,815	371,127	464,174
15. Normal Cost Rate	5.14%	9.65%	9.47%	9.28%	9.08%	8.02%
16. UAL as of 1979 Rate		16.18	16.36	16.64	16.91	17.29
17. Gain/Loss Rate		-0.10	0.07	0.23	0.38	0.52
18. Total	13.81%	25.73%	25.90%	26.15%	26.38%	26.72%
19. Present Value of Total Benefits			Not Calculated			
20. Present Value of Vested Benefits	570,391	652,810	739,108	846,780	967,162	1,108,188
21. Accrued Liability	600,467	694,828	801,532	920,639	1,053,372	1,199,432
22. Unfunded Accrued Liability	478,644	535,306	581,867	630,824	682,245	735,258
23. Unfunded Vested Liability	448,568	493,289	519,443	556,965	596,035	644,014
24. Ratio of Assets to Accrued Liability	.20	.23	.27	.31	.35	.39
25. Ratio of Assets to Vested Liability	.21	.24	.30	.34	.38	.42
26. Member Contribution	8,860	9,658	10,509	11,397	12,337	13,260
27. State Contribution	18,604	37,767	41,374	45,255	49,405	53,798

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C7

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for State Employees under Alternate Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: (9% through 1989; 8% thereafter)

	Valuation as of July 1, 1991	1993	1995	1997	1999
1. Number of Active Employees	15,261	15,567	15,880	16,199	
2. Number of Vested Active Employees	6,759	6,958	7,150	7,345	
3. Total Covered Compensation	$211,287	$220,870	$230,009	$238,533	
4. Average Compensation	13,845	14,188	14,484	14,725	
5. Average Age	41.56	41.71	41.87	42.01	
6. Average Accrued Service	10.00	10.15	10.28	10.41	
7. Average Projected Benefit	9,330	9,601	9,838	10,032	
8. Number of Retired Lives	8,410	8,840	9,263	9,685	
9. Total Annual Benefit	57,861	66,592	76,114	77,409	
10. Average Annual Benefit	6,880	7,533	8,217	8,913	
11. Average Age	66.37	66.07	65.83	65.63	
12. Members Contribution Fund	144,154	154,662	164,942	174,660	
13. Retirement Allowance Fund	414,087	503,664	599,501	702,338	
14. Total Assets	558,241	658,326	764,444	876,999	
15. Normal Cost Rate	8.74%	8.59%	8.44%	8.30%	8.17%
16. UAL as of 1979 Rate	17.95%	18.89%	19.96%	21.18%	22.53%
17. Gain/Loss Rate	0.48%	0.32%	0.17%	-0.02%	-0.49%
18. Total	27.18%	27.80%	28.58%	29.46%	30.21%
19. Present Value of Total Benefits			not calculated		
20. Present Value of Vested Benefits	1,273,497	1,454,727	1,652,364	1,862,891	
21. Accrued Liability	1,343,653	1,495,639	1,655,407	1,819,276	
22. Unfunded Accrued Liability	785,413	837,313	890,963	942,227	
23. Unfunded Vested Liability	715,250	796,401	887,920	985,892	
24. Ratio of Assets to Accrued Liability	.42	.44	.46	.48	
25. Ratio of Assets to Vested Liability	.44	.45	.46	.47	
26. Member Contribution	13,928	14,573	15,186	15,755	16,444
27. State Contribution	57,418	61,391	65,733	70,267	75,204

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown

TABLE III-C8

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for MTRA Teachers under Alternate Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: (9% through 1989; 8% thereafter)

	Valuation as of July 1,					
	1979	1981	1983	1985	1987	1989
1. Number of Active Employees	17,619	16,921	16,251	15,926	15,926	15,926
2. Number of Vested Active Employees	8,224	9,276	10,226	11,245	12,042	13,086
3. Total Covered Compensation	$203,074	$221,818	$242,047	$265,442	$292,518	$320,050
4. Average Compensation	11,526	13,109	14,894	16,667	18,367	20,096
5. Average Age	37.93	39.35	40.70	41.69	42.34	42.89
6. Average Accrued Service	9.27	10.47	11.66	12.52	13.06	13.51
7. Average Projected Benefit	8,442	9,552	10,823	12,087	13,306	14,554
8. Number of Retired Lives	4,760	5,068	5,331	5,612	5,896	6,188
9. Total Annual Benefit	28,907	33,368	38,293	44,368	51,690	60,661
10. Average Annual Benefit	6,073	6,584	7,183	7,906	8,767	9,803
11. Average Age	67.88	68.45	69.06	69.49	69.82	69.98
12. Members Contribution Fund	103,330	130,499	155,383	181,583	209,897	239,533
13. Retirement Allowance Fund	70,385	117,757	207,489	321,045	463,227	639,287
14. Total Assets	173,715	248,257	362,872	502,628	673,123	878.821
15. Normal Cost Rate	5.58%	9.48%	8.34%	8.90%	8.67%	8.45%
16. UAL as of 1979 Rate		14.84	14.98	15.17	15.14	15.19
17. Gain/Loss Rate		0.26	0.89	1.53	2.18	2.84
18. Total	14.13%	24.58%	25.07%	25.59%	25.99%	26.48%
19. Present Value of Total Benefits	---------- NOT CALCULATED ----------					
20. Present Value of Vested Benefits	811,318	903,170	1,004,248	1,004,248	1,135,645	1,512,726
21. Accrued Liability	843,101	1,005,974	1,194,775	1,135,645	1,301,557	1,951,176
22. Unfunded Accrued Liability	663,018	751,726	826,354	904,648	986,401	1,068,663
23. Unfunded Vested Liability	637,603	654,913	641,376	633,017	628,434	633,905
24. Ratio of Assets to Accrued Liability	.21	.25	.31	.36	.41	.45
25. Ratio of Assets to Vested Liability	.21	.27	.36	.44	.52	.58
26. Member Contribution	13,197	14,417	15,731	17,248	19,016	20,799
27. State Contribution	28,694	54,515	60,672	67,939	76,023	84,757

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C8

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for MTRA Teachers under Alternate Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8% through 1989; 6% thereafter) Salary Increases: (8% through 1989; 7% thereafter) Rate of Investment Return: (9% through 1989; 8% thereafter)

	Valuation as of July 1,				
	1991	1993	1995	1997	1999
1. Number of Active Employees	15,926	15,926	15,926	15,926	
2. Number of Vested Active Employees	12,930	12,607	12,391	12,244	
3. Total Covered Compensation	340,970	359,444	375,319	385,530	
4. Average Compensation	21,410	22,570	23,566	24,208	
5. Average Age	43.32	43.62	43.81	43.84	
6. Average Accrued Service	13.84	14.02	14.10	13.97	
7. Average Projected Benefit	15,505	16,338	17,050	14,473	
8. Number of Retired Lives	6,507	6,872	7,260	7,743	
9. Total Annual Benefit	71,753	85,474	101,836	122,200	
10. Average Annual Benefit	11,027	12,438	14,027	15,782	
11. Average Age	69.97	69.74	69.42	68.87	
12. Members Contribution Fund	264,442	286,793	306,682	320,057	
13. Retirement Allowance Fund	837,530	1,065,892	1,322,953	1,607,543	
14. Total Assets	1,101,972	1,352,685	1,629,636	1,927,600	
15. Normal Cost Rate	8.26%	8.09%	7.94%	7.82%	7.73%
16. UAL as of 1979 Rate	15.51%	16.14%	16.96%	18.05%	19.44%
17. Gain/Loss Rate	3.27%	3.52%	3.71%	3.28%	2.74%
18. Total	27.05%	27.76%	28.61%	29.16%	29.92%
19. Present Value of Total Benefits	Not Calculated				
20. Present Value of Vested Benefits	1,787,123	2,135,872	2,553,661	3,081,318	
21. Accrued Liability	2,246,575	2,566,967	2,910,412	3,271,385	
22. Unfunded Accrued Liability	1,141,761	1,212,439	1,280,111	1,344,506	
23. Unfunded Vested Liability	686,151	783,187	924,025	1,153,718	
24. Ratio of Assets to Accrued Liability	.49	.53	.56	.59	
25. Ratio of Assets to Vested Liability	.62	.63	.64	.67	
26. Member Contribution	22,169	23,363	24,399	25,068	25,971
27. State Contribution	92,239	99,770	107,373	112,412	119,565

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C9

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for Portland Employees Under Current Assumptions and Method - High Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (11%) Salary Increases: (10%) Rate of Investment Return: (12%)

		Valuation as of July 1,					
		1979	1981	1983	1985	1987	1989
1.	Number of Active Employees	1,443	1,461	1,480	1,505	1,540	1,574
2.	Number of Vested Active Employees	415	449	531	634	656	719
3.	Total Covered Compensation	$14,189	$16,557	$19,099	$21,866	$24,906	$28,121
4.	Average Compensation	9,833	11,333	12,905	14,529	16,173	17,866
5.	Average Age	40.01	39.78	39.99	40.15	40.26	40.31
6.	Average Accrued Service	7.34	7.78	8.31	8.74	9.09	9.36
7.	Average Projected Benefit	$ 5,713	$ 6,696	$ 7,703	$ 8,746	$ 9,841	$10,994
8.	Number of Retired Lives	549	612	654	695	735	778
9.	Total Annual Benefit	$ 2,671	$ 2,976	$ 3,295	$ 3,668	$ 4,101	$ 4,616
10.	Average Annual Benefit	$ 4,865	$ 4,863	$ 5,038	$ 5,277	$ 5,579	$ 5,933
11.	Average Age	65.63	65.91	66.19	66.33	66.47	66.51
12.	Members Contribution Fund	$ 3,510	$ 6,341	$ 7,750	$ 9,364	$11,225	$13,291
13.	Retirement Allowance Fund	$ 3,449	$ 3,777	$ 6,800	$11,291	$17,755	$26,855
14.	Total Assets	$ 6,959	$10,118	$14,551	$20,655	$28,980	$40,145
15.	Future Service Rate	9.15%	9.82%	10.39%	11.04%	11.68%	12.32%
16.	Accrued Service Rate	9.60%	9.77%	9.33%	9.10%	9.07%	9.16%
17.	Death Benefit Rate	0.24%	0.25%	0.25%	0.26%	0.27%	0.27%
18.	Total	18.99%	19.84%	19.96%	20.40%	21.01%	21.75%
19.	Present Value of Total Benefits	$60,788	$70,444	$81,874	$95,691	$112,013	$131,078
20.	Present Value of Vested Benefits	$69,598	$75,632	$81,926	$89,594	$98,599	$109,369
21.	Accrued Liability	$52,445	$61,035	$71,530	$84,502	$100,061	$118,474
22.	Unfunded Accrued Liability	$45,486	$50,917	$56,979	$63,848	$71,081	$78,328
23.	Unfunded Vested Liability	$62,639	$65,514	$67,375	$68,939	$69,619	$69,224
24.	Ratio of Assets to Accrued Liability	.13	.17	.22	.30	.42	.58
25.	Ratio of Assets to Vested Liability	.10	.13	.18	.23	.29	.37
26.	Member Contribution	$ 859	$ 1,001	$ 1,155	$ 1,320	$ 1,502	$ 1,694
27.	State Contribution	$ 2,694	$ 3,285	$ 3,813	$ 4,461	$ 5,234	$ 6,117

Contribution rates and amounts are for the fiscal year beginning July 1 of the year shown.

TABLE III-C10

MAINE STATE RETIREMENT SYSTEM

Forecase Valuations for Portland Employees Under Current Assumptions and Method - Intermediate Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (8%) Salary Increases: (8%) Rate of Investment Return: (9%)

		Valuation as of July 1,				
	1979	1981	1983	1985	1987	1989
1 Number of Active Employees	1,443	1,461	1,480	1,505	1,540	1,574
2. Number of Vested Active Employees	415	449	531	634	656	719
3. Total Covered Compensation	$14,189	$16,018	$17,926	$19,955	$22,136	$24,373
4. Average Compensation	9,833	10,964	12,112	13,259	14,374	15,485
5. Average Age	40.01	39,78	39.99	40.15	40.26	40.31
6. Average Accrued Service	7.34	7.78	8.31	8.74	9.09	9.36
7. Average Projected Benefit	5,713	6,479	7,231	7,982	8,743	9,519
8. Number of Retired Lives	549	612	654	695	735	778
9. Total Annual Benefit	2,671	2,974	3,280	3,627	4,013	4,456
10. Average Annual Benefit	4,865	4,859	5,016	5,218	5,460	5,727
11. Average Age	65.63	65.91	66.19	66.33	66.47	66.51
12. Members Contribution Fund	3,510	6,413	7,737	9,196	10,825	12,574
13. Retirement Allowance Fund	3,449	3,296	5,568	8,828	13,389	19,652
14. Total Assets	6,959	9,709	13,305	18,024	24,214	32,226
15. Future Service Rate	9.15%	9.81%	10.34%	10.94%	11.48%	12.00%
16. Accrued Service Rate	9.60%	9.95%	9.87%	9.99%	10.29%	10.74%
17. Death Benefit Rate	.24%	.25%	.26%	.27%	.28%	.29%
18. Total	18.99%	20.02%	20.47%	21.19%	22.06%	23.03%
19. Present Value of Total Benefits	60,788	69,228	78,794	89,905	102,488	116,578
20. Present Value of Vested Benefits	69,637	75,527	81,350	88,087	95,682	104,340
21. Accrued Liability	52,445	60,121	69,065	79,642	91,759	105,466
22. Unfunded Accrued Liability	45,486	50,412	55,760	61,618	67,545	73,240
23. Unfunded Vested Liability	62,678	65,818	68,045	70,063	71,468	72,114
24. Ratio of Assets to Accrued Liability	.13	.16	.19	.23	.26	.31
25. Ratio of Assets to Vested Liability	.10	.13	.16	.20	.25	.31
26. Member Contribution	859	968	1,084	1,205	1,337	1,469
27. State Contribution	2,694	3,207	3,669	4,229	4,882	5,614

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown

TABLE III-C11

MAINE STATE RETIREMENT SYSTEM

Forecast Valuations for Portland Employees Under Current Assumptions and Method - Low Inflation

(all amounts except averages and rates in thousands)

Rate of Inflation: (6%) Salary Increases: (7%) Rate of Investment Return: (8%)

	Valuation as of July 1, 1979	1981	1983	1985	1987	1989
1. Number of Active Employees	1,443	1,461	1,480	1,505	1,540	1,574
2. Number of Vested Active Employees	415	449	531	634	656	719
3. Total Covered Compensation	$ 14,189	$ 15,752	$ 17,363	$ 19,060	$ 20,870	$ 22,701
4. Average Compensation	$ 9,833	$ 10,782	$ 11,732	$ 12,664	$ 13,552	$ 14,422
5. Average Age	40.01	39.78	39.99	40.15	40.26	40.31
6. Average Accrued Service	7.34	7.78	8.31	8.74	9.09	9.36
7. Average Projected Benefit	$ 5,713	$ 6,371	$ 7,004	$ 7,623	$ 8,241	$ 8,860
8. Number of Retired Lives	549	612	654	695	735	778
9. Total Annual Benefit	$ 2,671	$ 2,973	$ 3,273	$ 3,606	$ 3,972	$ 4,382
10. Average Annual Benefit	$ 4,865	$ 4,858	$ 5,005	$ 5,189	$ 5,404	$ 5,632
11. Average Age	65.63	65.91	66.19	66.33	66.47	66.51
12. Members Contribution Fund	$ 3,510	$ 6,450	$ 7,732	$ 9,117	$ 10,638	$ 12,243
13. Retirement Allowance Fund	$ 3,449	$ 3,056	$ 4,975	$ 7,683	$ 11,423	$ 16,508
14. Total Assets	$ 6,959	$ 9,506	$ 12,707	$ 16,801	$ 22,061	$ 28,751
15. Future Service Rate	9.15%	9.81%	10.32%	10.88%	11.38%	11.84%
16. Accrued Service Rate	9.60%	10.05%	10.16%	10.46%	10.95%	11.60%
17. Death Benefit Rate	0.24%	0.25%	0.26%	0.27%	0.29%	0.30%
18. Total	18.99%	20.11%	20.73%	21.62%	22.62%	23.73%
19. Present Value of Total Benefits	$ 60,788	$ 68,629	$ 77,315	$ 87,195	$ 98,139	$110,119
20. Present Value of Vested Benefits	$ 69,657	$ 75,476	$ 81,069	$ 87,368	$ 94,316	$102,033
21. Accrued Liability	$ 52,445	$ 59,670	$ 67,882	$ 77,367	$ 87,970	$ 99,677
22. Unfunded Accrued Liability	$ 45,496	$ 50,164	$ 55,174	$ 60,567	$ 65,909	$ 70,926
23. Unfunded Vested Liability	$ 62,698	$ 65,970	$ 68,362	$ 70,567	$ 72,255	$ 73,282
24. Ratio of Assets to Accrued Liability	.13	.16	.19	.22	.25	.29
25. Ratio of Assets to Vested Liability	.10	.13	.16	.19	.23	.28
26. Member Contribution	$ 859	$ 953	$ 1,050	$ 1,151	$ 1,260	$ 1,369
27. State Contribution	$ 2,694	$ 3,168	$ 3,600	$ 4,120	$ 4,720	$ 5,387

Contribution rates and amounts are for the Fiscal Year beginning July 1 of the year shown.

TABLE III-C-12

TOTAL STATE CONTRIBUTIONS TO MAINE STATE RETIREMENT SYSTEM

(Projected based on intermediate inflation Assumption (8%) through 1989; low inflation (6%) thereafter)

Fiscal Year Ended June 30,	Present Basis		Alternative Basis	
	Contribution Amount	As % of Payroll	Contribution Amount	As % of Payroll
1976 (actual)	$20,456,779	7.84%		
1978 (actual)	35,488,012	11.78		
1980 (expected)	47,298,000	14.00		
1981 (projected)	50,274,000	14.25	$ 97,364,000	27.60%
1982 (projected)	56,895,000	15.44	102,348,000	27.77
1984 (projected)	69,539,000	17.31	113,144,000	28.16
1986 (projected)	86,153,000	19.65	125,430,000	28.61
1988 (projected)	106,323,000	22.16	138,918,000	28.95
1990 (projected)	131,934,000	25.30	153,428,000	29.43
1992 (projected)	162,345,000	29.40	166,054,000	30.07
1994 (projected)	201,631,000	34.75	179,239,000	30.89
1996 (projected)	252,687,000	41.74	193,037,000	31.89
1998 (projected)	320,501,000	51.36	204,653,000	32.79
2000 (projected)	384,655,000	59.31	218,995,000	33.77

TABLE III - D

Projection of Amounts Borrowed to Pay Non-Contributory Teacher Benefits

Accumulated Borrowings on July 1,	Assumed Rate of Return on Borrowed Assets		
	8%	9%	11%
1979 1/	$125,399,000	$125,399,000	$125,399,000
1980	144,474,000	145,771,000	148,366,000
1981	165,558,000	168,463,000	174,350,000
1982	188,036,000	192,902,000	202,895,000
1983	211,980,000	219,207,000	234,243,000
1984	237,476,000	247,514,000	268,670,000
1985	264,614,000	277,970,000	306,482,000
1986	293,499,000	310,740,000	348,022,000
1987	324,249,000	346,012,000	393,679,000
1988	356,995,000	383,991,000	443,888,000
1989	391,883,000	424,909,000	499,135,000
1990	429,079,000	469,026,000	546,933,000

1/ The July 1, 1979 amount is $125,399,000 measured against valuation assets; $122,109,000 when measured against the market value of assets.

TABLE III - E

Projection of Benefit Payments and Liabilities for Non-Contributory Teachers

Year	Number of Retirees	Average Age	Average Benefit	Total Benefits	Liability for Future Benefit
1979	1863	80.3	$4,864	$8,695,000	$69,906,000
1980	1727	81.0	5,085	9,160,000	65,505,000
1981	1600	81.8	5,308	8,877,000	61,032,000
1982	1475	82.5	5,539	8,559,000	56,524,000
1983	1352	83.2	5,778	8,209,000	52,019,000
1984	1232	83.9	6,026	7,827,000	47,556,000
1985	1116	84.5	6,281	7,419,000	43,174,000
1986	1004	85.2	6,544	6,991,000	38,909,000
1987	898	85.8	6,813	6,544,000	34,797,000
1988	797	86.5	7,087	6,085,000	30,869,000
1989	702	87.0	7,367	5,621,000	27,155,000
1990	613	87.6	7,648	5,156,000	23,678,000
1991	532	88.1	7,930	4,692,000	20,454,000
1992	457	88.6	8,209	4,239,000	17,512,000
1993	390	89.0	8,480	3,802,000	14,847,000
1994	329	89.3	8,738	3,390,000	12,467,000
1995	276	89.6	8,975	3,006,000	10,371,000
1996	229	89.7	9,182	2,651,000	8,550,000
1997	189	89.7	9,346	2,325,000	6,993,000
1998	154	89.5	9,451	2,033,000	5,683,000

TABLE III - F

MAINE STATE RETIREMENT SYSTEM

FORECAST OF MEMBERS' CONTRIBUTION FUND AND RETIREMENT ALLOWANCE FUND

(000's Omitted)

	July 1,							
	1975	1977	1979	1981	1983	1985	1987	1989
Rate of Inflation: 6%								
MEMBERS' CONTRIBUTION FUND								
• State Employees	$ 48,983	$ 58,755	$ 71,556	$ 83,570	$ 94,902	$106,170	$118,314	$130,290
• MTRA Teachers	63,391	83,065	103,330	131,349	155,554	180,483	206,872	233,879
• Old System Teachers	817	515	-	-	-	-	-	-
Total	113,191	142,335	174,886	214,919	250,456	286,653	325,186	364,169
RETIREMENT ALLOWANCE FUND								
• State Employees	$ 41,681	$ 46,783	$ 50,267	$ 56,355	$ 64,370	$ 77,458	$ 97,030	$126,234
• MTRA Teachers	63,979	62,920	70,385	91,272	126,600	177,282	249,002	348,643
• Old System Teachers	(66 969)	(93,110)	(125,398)	(156,624)	(201,553)	(252,435)	(310,014)	(375,233)
Total	38,691	16,593	(4,746)	(8,997)	(10,583)	2,305	36,018	99,644
Rate of Inflation: 8%								
MEMBERS' CONTRIBUTION FUND								
• State Employees	$ 48,983	$ 58,755	$ 71,556	$ 83,028	$ 94,802	$106,834	$120,070	$133,469
• MTRA Teachers	63,391	83,065	103,330	130,499	155,383	181,583	209,897	239,533
• Old System Teachers	817	515	-	-	-	-	-	-
Total	113,191	142,335	174,886	213,527	250,185	288,417	329,967	373,002
RETIREMENT ALLOWANCE FUND								
• State Employees	$ 41,681	$ 46,783	$ 50,267	$ 59,837	$ 71,853	$ 90,400	$117,320	$156,284
• MTRA Teachers	63,979	62,920	70,385	96,543	138,703	199,707	286,528	407,853
• Old System Teachers	(66,969)	(93,110)	(125,398)	(159,422)	(208,466)	(265,208)	(330,850)	(406,895)
Total	38,691	16,593	(4,746)	(3,042)	2,090	24,899	72,998	157,242
Rate of Inflation: 11%								
MEMBERS' CONTRIBUTION FUND								
• State Employees	$ 48,983	$ 58,755	$ 71,556	$ 81,979	$ 94,650	$108,276	$123,860	$140,398
• MTRA Teachers	63,391	83,065	103,330	128,853	155,123	183,985	216,442	251,897
• Old System Teachers	817	515	-	-	-	-	-	-
Total	113,191	142,335	174,886	210,832	249,773	292,261	340,302	392,295
RETIREMENT ALLOWANCE FUND								
• State Employees	$ 41,681	$ 46,783	$ 50,267	$ 69,547	$ 93,997	$130,213	$181,790	$254,775
• MTRA Teachers	63,979	62,920	70,385	111,249	174,304	267,837	403,716	597,343
• Old System Teachers	(66,969)	(93,110)	(125,398)	(167,972)	(230,328)	(307,001)	(401,486)	(517,821)
Total	38,691	16,593	(4,746)	12,824	37,973	91,049	184,120	334,297

TABLE III - G1

MAINE STATE RETIREMENT SYSTEM

Distribution of State Regular Employees by Attained Age and Completed Years of Service

July 1, 1979

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	707	438	209	107	45	44	0	0	0	0	0	1,550 $(5,232)
25 to 29	435	355	240	152	128	465	38	0	0	0	0	1,813 (7,606)
30 to 34	293	227	168	125	118	611	323	7	0	0	0	1,872 (9,480)
35 to 39	172	154	70	64	57	365	313	187	21	0	0	1,403 (10,419)
40 to 44	106	108	72	60	45	283	245	177	150	27	0	1,273 (10,870)
45 to 49	115	98	58	54	55	300	230	155	164	98	21	1,348 (10,902)
50 to 54	87	71	61	50	43	322	298	149	131	122	111	1,445 (11,344)
55 to 59	49	56	44	31	48	281	288	140	121	81	144	1,283 (10,853)
60 to 64	27	21	21	18	20	166	184	112	93	37	71	770 (10,456)
Over 65	21	18	8	4	5	65	64	51	37	15	30	318 (10,014)
Total Number	2,013	1,546	951	665	564	2,902	1,983	978	717	380	377	13,076
(Average Compensation)	$(5,481)	(6,089)	(7,877)	(9,084)	(9,263)	(10,174)	(11,361)	(12,665)	(13,670)	(14,861)	(13,968)	(9,510)

Average Attained Age	40.37
Average Accrued Service	8.61
Average Entry Age	31.76

TABLE III - G2

MAINE STATE RETIREMENT SYSTEM

Distribution of State Regular Employees by Attained Age and Completed Years of Service

July 1, 1989

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	459	278	159	90	49	22	0	0	0	0	0	1,056 $ (5,303)
25 to 29	282	260	227	189	147	296	16	0	0	0	0	1,417 (6,675)
30 to 34	190	201	195	186	176	687	278	13	0	0	0	1,926 (8,438)
35 to 39	112	114	129	127	143	747	629	234	21	0	0	2,255 (11,791)
40 to 44	69	68	67	82	83	523	598	392	209	5	0	2,096 (15,613)
45 to 49	75	76	68	59	63	319	363	257	220	78	2	1,579 (16,331)
50 to 54	56	57	66	68	66	292	284	206	178	95	12	1,380 (16,107)
55 to 59	32	35	33	40	46	258	263	207	159	102	88	1,264 (17,672)
60 to 64	18	16	18	17	17	123	164	166	150	75	151	915 (20,517)
Over 65	14	8	5	3	3	17	29	36	31	17	39	201 (19,654)
Total Number	1,305	1,112	967	862	792	3,284	2,625	1,511	968	372	292	14,090
(Average Compensation)	$(5,481)	(5,961)	(6,479)	(7,035)	(7,631)	(9,696)	(15,697)	(22,586)	(25,294)	(28,331)	(32,106)	(13,038)

Average Attained Age	41.30
Average Accrued Service	9.61
Average Entry Age	31.69

TABLE III - G3

MAINE STATE RETIREMENT SYSTEM

Distribution of MTRA Teachers by Attained Age and Completed Years of Service

July 1, 1979

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	414	295	61	15	7	8	0	0	0	0	0	800 $(7,613)
25 to 29	453	500	568	541	565	829	15	0	0	0	0	3,471 (9,385)
30 to 34	292	273	219	207	241	2067	528	2	0	0	0	3,829 (11,239)
35 to 39	172	148	156	137	153	687	1045	270	1	0	0	2,769 (12,510)
40 to 44	125	92	89	72	91	428	392	617	197	2	0	2,105 (12,754)
45 to 49	75	56	57	57	58	382	276	252	449	135	2	1,799 (13,049)
50 to 54	46	33	30	29	33	260	240	168	139	234	104	1,316 (12,796)
55 to 59	22	14	16	12	22	140	191	123	104	105	214	963 (12,952)
60 to 64	9	4	7	8	9	47	86	77	68	47	110	472 (12,529)
Over 65	3	0	0	0	2	7	13	16	9	7	35	92 (12,950)
Total Number	1,611	1,415	1,203	1,078	1,181	4,855	2,786	1,525	967	530	465	17,616
(Average Compensation)	$(7,756)	(8,577)	(9,206)	(9,843)	(10,399)	(11,660)	(13,197)	(14,394)	(14,736)	(15,276)	(14,803)	(11,528)

Average Attained Age 37.93

Average Accrued Service 9.27

Average Entry Age 28.66

TABLE III - G4

MAINE STATE RETIREMENT SYSTEM

Distribution of MTRA Teachers by Attained Age and Completed Years of Service

July 1, 1989

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	200	114	24	7	3	1	0	0	0	0	0	349 $(7,363)
25 to 29	219	243	269	225	172	140	3	0	0	0	0	1,271 (8,921)
30 to 34	141	134	137	143	150	529	374	4	0	0	0	1,612 (12,115)
35 to 39	83	85	88	94	101	398	1,454	505	9	0	0	2,817 (17,656)
40 to 44	60	55	63	68	68	275	872	1,460	390	1	0	3,313 (22,062)
45 to 49	36	43	46	49	51	197	600	538	818	157	0	2,535 (24,357)
50 to 54	22	23	25	27	31	143	380	347	318	314	36	1,664 (24,324)
55 to 59	11	11	12	15	17	81	247	312	225	194	238	1,362 (25,825)
60 to 64	4	6	6	6	6	34	113	169	154	104	252	855 (26,299)
Over 65	1	0	0	0	1	4	15	22	29	18	54	145 (26,900)
Total Number	779	715	670	634	600	1,802	4,058	3,356	1,943	787	580	15,923
(Average Compensation)	$(7,756)	(8,391)	(9,075)	(9,815)	(10,615)	(13,536)	(19,638)	(25,373)	(28,888)	(31,613)	(32,935)	(20,100)

Average Attained Age	42.89
Average Accrued Service	13.51
Average Entry Age	29.39

TABLE III - G5

MAINE STATE RETIREMENT SYSTEM

Distribution of State Special Employees by Attained Age and Completed Years of Service

July 1, 1979

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	13	14	6	2	1	0	0	0	0	0	0	36 $(8,085)
25 to 29	17	39	20	21	19	31	2	0	0	0	0	149 (10,473)
30 to 34	11	10	13	5	15	107	50	0	0	0	0	211 (13,036)
35 to 39	3	6	1	6	5	33	77	22	0	0	0	153 (14,607)
40 to 44	5	3	1	4	0	13	21	41	20	1	0	109 (13,862)
45 to 49	1	1	3	1	1	10	5	15	27	4	0	68 (14,386)
50 to 54	5	0	1	0	0	2	6	8	9	4	2	37 (12,497)
55 to 59	0	1	1	1	0	1	4	9	7	4	4	32 (14,473)
60 to 64	0	0	0	0	0	1	1	1	2	0	0	5 (13,488)
Over 65	0	0	0	0	0	1	0	0	1	0	0	2 (9,678)
Total Number	55	74	46	40	41	199	166	96	66	13	6	802
(Average Compensation)	$(6,550)	(9,284)	(11,291)	(11,041)	(11,932)	(13,017)	(14,853)	(15,274)	(15,632)	(14,515)	(16,386)	(12,891)

Average Attained Age 36.35

Average Accrued Service 9.68

Average Entry Age 26.67

TABLE III - G6

MAINE STATE RETIREMENT SYSTEM

Distribution of State Special Employees by Attained Age and Completed Years of Service

July 1, 1989

Age	Completed Years of Service											Total (Average Compensation)
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	
Under 25	13	7	3	2	1	0	0	0	0	0	0	26 $(7,360)
25 to 29	17	14	11	9	6	8	0	0	0	0	0	65 (8,290)
30 to 34	11	11	12	12	10	35	9	0	0	0	0	99 (10,114)
35 to 39	3	4	4	6	7	43	55	17	1	0	0	140 (16,826)
40 to 44	5	4	3	3	4	20	35	69	33	0	0	175 (23,766)
45 to 49	1	1	1	1	2	17	15	23	54	16	0	130 (27,302)
50 to 54	5	3	3	3	2	5	9	9	15	30	15	100 (25,799)
55 to 59	0	3	3	2	2	12	5	7	4	11	21	70 (24,240)
60 to 64	0	0	0	0	0	8	4	1	4	5	10	32 (21,731)
Over 65	0	0	0	0	0	0	2	2	4	7	12	27 (30,861)
Total Number	54	45	41	37	35	150	134	127	114	68	59	864
(Average Compensation)	$(6,550)	(7,032)	(7,560)	(8,141)	(8,774)	(11,052)	(21,392)	(28,262)	(32,086)	(33,011)	(33,546)	(20,371)

Average Attained Age	42.95
Average Accrued Service	13.74
Average Entry Age	29.21

TABLE III - G7

MAINE STATE RETIREMENT SYSTEM

Distribution of Portland Regular Employees by Attained Age and Completed Years of Service

July 1, 1979

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	45	32	10	11	1	0	0	0	0	0	0	99 $ (7,786)
25 to 29	36	27	21	25	13	43	1	0	0	0	0	166 (8,995)
30 to 34	19	24	13	8	9	46	11	0	0	0	0	130 (10,458)
35 to 39	9	8	7	7	7	32	14	4	0	0	0	88 (10,038)
40 to 44	5	20	8	3	5	29	8	5	6	0	0	89 (9,632)
45 to 49	10	12	11	6	10	31	13	11	9	1	1	115 (8,881)
50 to 54	15	14	6	2	11	39	30	5	10	6	3	141 (8,148)
55 to 59	9	10	6	4	6	37	22	12	11	8	4	129 (8,635)
60 to 64	5	4	3	2	6	18	18	11	5	2	2	76 (9,614)
Over 65	1	0	0	2	2	17	10	5	6	0	2	45 (8,752)
Total Number	154	151	85	70	70	292	127	53	47	17	12	1,078
(Average Compensation)	$(7,806)	(8,024)	(8,967)	(9,054)	(8,451)	(9,299)	(9,405)	(11,009)	(11,057)	(12,433)	(12,248)	(9,065)

Average Attained Age	42.26
Average Accrued Service	6.99
Average Entry Age	35.27

TABLE III - G8

MAINE STATE RETIREMENT SYSTEM

Distribution of Portland Regular Employees by Attained Age and Completed Years of Service

July 1, 1989

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	32	20	14	8	5	2	0	0	0	0	0	81 $ (7,973)
25 to 29	25	27	21	20	17	34	2	0	0	0	0	145 (9,734)
30 to 34	13	14	14	12	14	70	31	0	0	0	0	168 (12,790)
35 to 39	6	5	8	9	8	51	63	23	1	0	0	174 (16,176)
40 to 44	4	4	4	4	4	29	45	28	7	0	0	129 (18,761)
45 to 49	7	7	6	6	6	16	24	20	9	3	0	102 (16,235)
50 to 54	11	10	6	4	3	24	26	18	5	3	4	113 (15,280)
55 to 59	6	7	9	10	9	24	29	18	8	6	6	132 (14,656)
60 to 64	4	3	3	3	4	24	20	17	13	2	6	98 (14,979)
Over 65	1	0	0	1	1	3	4	4	3	1	2	19 (16,826)
Total Number	108	96	86	77	70	276	243	128	44	15	18	1,162
(Average Compensation)	$(7,806)	(8,437)	(9,122)	(9,857)	(10,641)	(13,444)	(18,207)	(21,029)	(21,058)	(26,987)	(25,574)	(14,257)

Average Attained Age	41.73
Average Accrued Service	8.74
Average Entry Age	32.99

TABLE III - G9

MAINE STATE RETIREMENT SYSTEM

Distribution of Portland Policemen and Firemen by Attained Age and Completed Years of Service

July 1, 1979

	Completed Years of Service											
Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	Total (Average Compensation)
Under 25	2	3	0	0	0	0	0	0	0	0	0	5 $ (9,205)
25 to 29	0	8	4	6	40	35	0	0	0	0	0	93 (11,863)
30 to 34	1	3	2	0	20	92	11	0	0	0	0	129 (12,127)
35 to 39	0	0	0	0	5	33	37	3	0	0	0	78 (12,612)
40 to 44	0	0	0	0	0	4	11	26	2	0	0	43 (13,486)
45 to 49	0	0	0	0	0	0	0	7	1	0	0	8 (12,860)
50 to 54	0	0	0	0	0	0	0	0	1	0	0	1 (13,037)
55 to 59		0	0	0	0	0	0	1	0	1	0	2 (12,199)
50 to 64	0	0	0	0	0	0	0	0	0	0	0	0 (0)
Over 65	0	0	0	0	0	0	0	0	0	0	0	(0)
Total Number	3	14	6	6	65	164	59	37	4	1	0	359
(Average Compensation)	$(8,593)	(10,190)	(10,517)	(11,987)	(11,062)	(12,579)	(13,016)	(13,318)	(14,652)	(12,730)	0	(12,305)

Average Attained Age 33.30

Average Accrued Service 8.37

Average Entry Age 24.93

TABLE III - G10

MAINE STATE RETIREMENT SYSTEM

Distribution of Portland Policemen and Firemen by Attained Age and Completed Years of Service

July 1, 1989

Age	Completed Years of Service											Total (Average Compensation)
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30 & Over	
Under 25	22	18	7	6	0	0	0	0	0	0	0	54 $ (9,010)
25 to 29	0	0	8	7	11	22	0	0	0	0	0	47 (12,390)
30 to 34	11	10	9	9	8	13	2	0	0	0	0	62 (11,759)
35 to 39	0	0	0	0	0	31	30	19	0	0	0	81 (21,443)
40 to 44	0	0	0	0	0	0	16	57	7	0	0	79 (26,188)
45 to 49	0	0	0	0	0	0	3	21	23	2	0	49 (27,230)
50 to 54	0	0	0	0	0	0	0	3	7	16	1	27 (29,117)
55 to 59	0	0	0	0	0	0	0	0	0	4	1	5 (27,767)
60 to 64	0	0	0	0	0	0	0	0	0	0	1	1 (28,145)
Over 65	0	0	0	0	0	0	0	0	0	1	1	1 (26,337)
Total Number	34	29	24	21	19	67	51	99	37	23	3	406
(Average Compensation)	$(8,593)	(9,286)	(10,039)	(10,853)	(11,732)	(14,707)	(23,548)	(27,128)	(28,105)	(28,768)	(30,979)	(19,468)

Average Attained Age 36.54

Average Accrued Service 11.62

Average Entry Age 24.92

TABLE III - H

MAINE STATE RETIREMENT SYSTEM

SUMMARY OF SYSTEM PROVISIONS

The following summary is intended to represent the provisions of the Maine State Retirement System which have substantive cost impact. Any conflicts between this summary and the Maine State Retirement System Laws will be governed by the provisions of the Maine State Retirement System Laws:

Normal Retirement

• Eligibility	Teachers, regular State employees and regular political subdivision employees are eligible at age 60. Special State employees and political subdivision employees are eligible at various combinations of age and service ranging from 20 years service and no age requirement for State Police to 25 years service and age 55 for State Liquor Inspectors.
• Benefit	For teachers, regular State employees and regular political subdivision employees, 2% of average earnings in highest 3 years for each year of service with a minimum of $100 with 10 years of service. For Special State employees, 50% of average earnings in highest 3 years plus 2% of such earnings for each year past normal retirement. Various normal retirement benefits are provided to special political subdivision employees depending on election made by the political subdivision.
• Normal Form of Benefit	For teachers, regular state employees and regular political subdivision employees, the normal form of benefit is a straight life annuity. For some special State employees and special political subdivision employees, 50% of allowance is automatically continued to surviving spouse or perhaps children.

Early Retirement

• Eligibility	Teachers, regular state employees and regular political subdivision employees are eligible before age 60 with 25 years of service. Special employees are generally not eligible for early retirement.

• Benefit	The normal retirement benefit reduced for each year early retirement precedes age 60. Early retirement reduction factors are determined as the ratio of the immediate annuity factor at the early retirement age divided by the immediate annuity factor at age 60.
• Normal form of Benefit	A straight life annuity.

Disability Retirement

• Eligibility	For all System employees: anytime while in service and before normal retirement except for a pre-existing condition which reoccurs within the first five years of membership.
• Benefit	66 2/3% of average earnings in highest 3 years reduced by workers compensation benefits. Changed to a service retirement benefit when service benefit, calculated assuming cost of living pay increases and service credited while disabled, equals disability benefit but not later than 10 years after the normal retirement age.
• Normal Form of Benefit	Normally same form as for normal retirement.

Death Benefits

• Eligibility	Death in active service or if disabled and before eligibility for retirement.
• Benefit	For an ordinary death: Employee contribution refund or $100 to $300 per month depending upon number of surviving children and whether deceased had 10 years of service at death. For a service connected death: 66 2/3% to 100% of average of highest 3 years compensation, depending upon number of surviving children. After eligible for retirement: The same amount that would have been payable to the member if he retired and elected option 2, or the value of his accumulated contributions. Parents may be able to receive death benefits.
• Normal Form of Benefit	Refund of contributions paid in a lump sum.

	Monthly benefits paid on a straight life basis to surviving spouse as long as the spouse does not become a dependent of another person, and on straight life basis to age 18 to unmarried surviving children or age 22 if a full time student.
Termination Benefits	
• Eligibility	Upon termination of System membership.
• Benefit	With less than 10 years service: Refund of member contributions with interest except no interest is credited for any period beyond 5 years after termination. With 10 years of service: Normal retirement benefit based on service and salary at termination payable at age 60.
• Normal Form of Benefit	Refund of contributions paid in a lump sum. Monthly benefit paid as a straight life annuity.
Optional Forms of Benefit Payment	In lieu of a straight life annuity, a member may elect various optional benefit forms which reduce the straight life benefit and provide death benefits upon death of the member.
Employee Contributions	Regular State employees, teachers and some regular political subdivisions contribute at 6½% of pay. Special State employees contribute at 7½% of pay. Police officers and fire fighters contribute at 8% of pay. Participating local districts may elect to reduce such rate to 6½% after attaining eligibility for retirement or to a rate in effect in other prior provisions. Special political subdivision employees contribute at a number of various rates. Voluntary contributions up to 10% of pay may be made.
Employer Contributions	The employer contribution rate should be that percentage of the members' compensation payable during the members' periods of membership required to provide the difference between the total liabilities for retirement allowances not provided by the members' contributions and current assets. The employer contribution must be at least an amount equal to the expected payouts during the year.

Cost of Living Increases

Increases are made in September of each year based on the percentage change in the Consumer Price Index for the preceding 12 month period from July 1st through June 30. The automatic increase is limited to 4% per year.

TABLE III - I

MAINE STATE RETIREMENT SYSTEM

SUMMARY OF CURRENT ACTUARIAL

ASSUMPTIONS AND COST METHOD

1. Cost Method - The entry age Normal Cost Method is used. Under this method the normal cost is the amount calculated as the level percentage of pay necessary to fully fund each employee's prospective benefit from entry age to retirement age. To approximate the effect of an 8½% investment assumption, a 5½% salary scale assumption and a 4% post retirement cost of living increase assumption, the actuary assumes 3% interest before retirement and 4½% interest after retirement.

The accrued liability under this method represents the theoretical accumulation of all prior years' normal cost for each participant as if the current plan and current assumptions had always been in effect. The unfunded accrued liability represents the excess of the total accrued liability for all participants over current plan assets.

The total State contribution rate is the sum of three calculated rates:

1) The Future Service Rate
2) The Accrued Service Rate
3) The Survivor Benefit Rate

The Future Service Rate for teachers for each year is the sum of 4.16% plus the calculated teacher disability rate unless the actuarial assumptions are changed. The Future Service Rate for regular State employees is 3.69% plus the calculated regular State employee disability rate. These "frozen" percentages were developed in response to Section 1095 Sub. 8 of the MSRS Laws.

The Accrued Service Rate is calculated in two steps. First, the unfunded accrued liability is reduced by the present value of a series of annual payments over the funding period decided by the Board. The first payment is calculated as the State Frozen Future Service contribution for the year plus 70% of regular State employee and teacher contribution, and 60% of special State employee contributions for the year less the year's normal cost. Succeeding payments are assumed to increase at 5½% per year in order to approximate a level percentage of total group payroll. The Accrued

Service Rate is obtained by dividing this reduced unfunded accrued liability by the product of the current payroll and the funding period decided by the Board. The effect of this step is to anticipate that future accrued service rates will grow by 3% per year, or, equivalently, that payments to fund this reduced unfunded accrued liability are expected to increase at 8½% per year. (3% above the 5½% increase in salary growth.)

Starting with the fiscal period 1979-1980, it was decided that the period to fund the unfunded accrued liability for the entire system (including non-contributory teachers) must decrease by one year in each fiscal year. Prior to this time, gains and losses served only to lengthen the funding period. The result of this decision is to force the amortization of gains and losses over an ever decreasing funding period. The additional funding contribution due to actuarial losses is calculated as the difference between the actual total unfunded accrued liability less the expected unfunded accrued liability divided by the present value of total salaries over the period required to fund the unfunded accrued liability.

2. Investment Earnings - All funds are assumed to earn 8½% per year.

3. Salary Increases - Salaries for each system member are assumed to increase at the rate of 5½% per year. Total System payroll is also assumed to increase at the rate of 5½% per year.

4. Mortality rates - Pre-retirement mortality rates are included in the rate of termination. Post retirement rates are as follows:

Male Teachers:	Male 1971 Group Annuity Mortality Table, with a two year setback in age.
Female Teachers:	Female 1971 Group Annuity Mortality Table, with a two year setback in age.
Male State employees:	Male 1971 Group Annuity Mortality Table.
Female State employees:	Female 1971 Group Annuity Mortality Table
Male Participating district employees:	1951 Group Annuity Mortality Table
Female Participating district employees:	1951 Group Annuity Mortality Table with a five year setback in age.

5. Disability Rates - Pre-retirement disability rates are included in the rate of termination. Claim costs are based on the 1964 Commissioners Disability Table.

6. Termination Rate - Sample rates of termination from all causes are as follows:

Age	Rate of Withdrawal
20	.08
30	.07
40	.05
50	.05
60	.05

All terminating members are assumed to elect contribution withdrawal rather than a benefit at age 60.

7. Retirement Age - Age 65 is the assumed retirement for regular employees. The earliest possible normal retirement age is assumed for special groups. All retiring members are assumed to elect a Straight Life Benefit.

8. Cost of Living Adjustments - 4% per year is assumed.

9. Actuarial Assets - Total actuarial assets are determined as the sum of the System's assets at cost value plus one-fifth of the sum of the difference between the market value of assets and the cost value of assets for the five preceding fiscal periods. Actuarial assets for each cost group within the System are determined as the cost value for the group multiplied by the ratio of total System actuarial assets divided by the cost value of total System assets.

TABLE III - J

SUMMARY OF ACTUARIAL VALUATION RESULTS

AS OF JUNE 30, 1979 [1/]

(000's Omitted)

		MTRA Teachers	State Employees
1.	Present Value of Benefits	$708,734	$536,674
2.	Present Value of Future Normal Costs	81,930	61,536
3.	Members' Assets	103,330	71,556
4.	Retirement Annuity Fund	70,385	50,267
5.	Present Value of Additional State Appropriations	6,369	-
6.	Unfunded Accrued Liability ((1)-(2)-(3)-(4)-(5))	446,720	353,315
7.	Normal Cost	8,794	7,580
8.	Active Payroll	203,073	134,717
9.	Normal Cost Rate ((7)÷(8))	.0433	.0563
10.	Disability Rate (regular)	.0142	.0145
11.	Frozen Future Service Rate	.0416	.0369
12.	Future Service Rate ((10)+(11))	.0558	.0514
13.	Frozen Future Service Contribution (11)x(8) for teachers; for State employees additional contributions are included for special employees	8,448	6,334
14.	Expected Member Contribution	13,200	8,903
15.	Member Contribution reduced for Termination (70% of 14. for Regular State and Teachers 60% of 14. for Special State Employees	9,240	6,121
16.	Contribution in excess of Normal Cost ((13)+(15)-(7))	8,894	4,875

		MTRA Teachers	State Employees
17.	Present Value of Future Contributions over the excess of Normal Cost (17.944 year funding for teachers, (16) x 14.133; 25.73 year funding for State employees (16) x 18.046	$125,699	$87,974
18.	Reduced Unfunded Accrued Liability ((6)-(17))	321,021	265,341
19.	Accrued Service Rate ((18) ÷ (17.944 x (8) for teachers) ((18) ÷ (25.23 x (8) for State employees)	.0881	.0781

1/ These numbers represent the July 1, 1979 valuation results as calculated by The Wyatt Company and differ slightly from the actual July 1, 1979 results because of differences in computational procedures. Our results were then adjusted to exactly match the July 1, 1979 valuation results in order to have the correct starting point for our forecast valuations.

TABLE III - K

Calculation of Additional Funding Contribution Due to Actuarial Losses

As of June 30, 1979 [1/]

(000's omitted)

	MTRA Teachers	State Employees	Old System Teachers	Total
1. Unfunded Accrued Liability (for Old System Teachers: present value of benefits plus borrowings less present value of special payments)	$446,720	$353,315	$193,162	$993,197
2. Contribution in Excess of Normal Cost	8,894	4,875	-	13,769
3. Present value of (2) over 25.4 years at 3% interest (18.1283 x (2))	161,233	88,375		249,608
4. Present value of accrued service contributions over 25.4 years assuming payments increase at 8½% per year (.0881 x 25.4 x 203,073 for teachers) (.0781 x 25.4 x 134,717 for State)	454,425	267,244		721,669
5. Expected Unfunded Accrued Liability (3) + (4)				971,277
6. Actuarial Loss (1) - (5)				21,920
7. Additional payment required by actuarial loss (6) ÷ (Present Value of a payment of $1 per year over 25 years at 3% interest (17.4131) x Total Payroll (337,790))				.37%

1/ These numbers represent the July 1, 1979 valuation results as calculated by The Wyatt Company and differ slightly from the actual July 1, 1979 results because of differences in computational procedures. Our results were then adjusted to exactly match the July 1, 1979 valuation results in order to have the correct starting point for our forecast valuations.

TABLE III - L

MAINE STATE RETIREMENT SYSTEM

ASSETS AS OF JUNE 30, 1979

	Book Value	Market Value	
Bonds	$ 52,449,763	$ 51,207,352	
U.S. Government			
Corporate and Other	58,657,393	57,646,813	
Total Bonds	$111,107,156	$108,854,165	
Investments			
Corporate Stocks	$105,688,128	$117,082,848	
Mortgages	6,445,242	6,445,242	1/
Insured Guaranteed Contract	5,000,000	6,714,890	2/
Commingled Trust	18,683,256	18,272,812	
Cash (Time Deposits)	999,726	1,000,000	
Total Investments	$247,923,508	$258,369,957	
Other Assets			
Cash (Demand Deposits)	$ 11,422,435	$ 11,422,435	
Cash (Fiduciary)	707,726	707,726	
Accrued Interest	3,586,375	3,586,375	
Accounts Receivable	179,612	179,612	
Miscellaneous	3,082	3,082	
Total Other Assets	$ 15,899,230	$ 15,899,230	
Total Assets	$263,822,738	$274,269,187	

1/ Book Value - Market Value unavailable.

2/ Includes accrued income of $1,714,890.

TABLE III - M

DISCUSSION OF PRESENT ACTUARIAL METHOD AND ASSUMPTIONS

This section contains a brief description and discussion of the method and assumptions adopted by the Board of Trustees and used by the System's actuary to develop the State's contribution. A more detailed outline of the current method and assumptions may be found in Table III - G.

Cost Method

For teachers and state employees, the actuarial cost method used is the entry age normal cost method. Under this method, the normal cost is the amount calculated as the level percentage of pay necessary to fully fund each employee's prospective benefit from entry age to retirement age. The accrued liability, which is redetermined for each individual as of each valuation date, represents the theoretical accumulation of all prior years' normal costs for the participant as if the current plan had always been in effect. The unfunded accrued liability represents the excess of the total accrued liability over the current plan assets. As of July 1, 1979, the unfunded accrued liability for the System including pre-1924 teachers was $993,201.

This unfunded accrued liability exists because past contributions have been less than the normal cost as calculated under current assumptions and benefit structure. This is a common occurrence when benefits have been liberalized since a plan's inception or when funding begins after employees have entered the plan. An unfunded accrued liability may also exist because prior normal costs were underestimated and actuarial losses resulted. Both of these factors have helped to create the System's current unfunded accrued liability.

It is important to note, however, that the State's annual contribution is designed not only to pay for each year's normal cost but also to amortize the unfunded accrued liability over a period of years decided by the Board of

Trustees. In a sense, the System's unfunded accrued liability can be viewed as a mortgage which increases each year with interest on the outstanding balance and is reduced by payments made. In the State's case, if all assumptions are realized, the unfunded accrued liability at the beginning of each year will be reduced by the excess of contributions made during the year over the sum of the normal cost plus interest on the unfunded accrued liability.

Payments to amortize a mortgage are normally a level dollar amount per pay period. The level dollar amortization of unfunded accrued liability is also required for private plans covered by ERISA.

Under the method adopted by the Board, approximately 22% of the unfunded accrued liability is amortized by payments that are assumed to increase at $5\frac{1}{2}\%$ per year and the other 78% is amortized by payments that are assumed to increase at $8\frac{1}{2}\%$ per year. The effect of this method is to lower this year's total state contributions from approximately 50% compared to level dollar funding and by 25% compared to funding assuming payments increase at $5\frac{1}{2}\%$ per year.

Using this method, required State contributions as a percentage of pay for MTRA teachers excluding spouse's benefit contributions are expected to increase for the next 25 years from 14.39% of pay in fiscal year 1980-1981 to 23.86% of pay in fiscal year 2004-2005 if all actuarial assumptions are exactly realized. The required contributions as a percentage of pay for State employees is expected to increase for the next 25 years from a 1980-81 level of 12.95% of pay to 21.3% of pay in fiscal year 2004-2005. These expected increases ignore the possibility of any additional State contributions that might be required by Section 1062(a)(D) of Chapter 101 of the System's Laws.

As we have stated previously, we believe that contributions should be determined as a level percentage of the total salaries of the members of the System, and therefore that the unfunded accrued liability should not be amortized with payments that are expected to represent an increasing percentage of total payroll.

The effect of using such an approach is to place a heavier funding burden on future taxpayers than on present taxpayers. There is no problem with this if the State feels for some reason that future taxpayers will be more able to fund benefits than are current taxpayers. If this is not the case, however, we recommend that the unfunded accrued liability as of June 30, 1979 be amortized by a series of annual payments that are designed to be constant as a percentage of total System payroll over a period decided by the Board.

We also suggest a different treatment of actuarial gains and losses. Actuarial losses increase the unfunded accrued liability, and the current method funds these losses by payments that are assumed to increase by 8½% per year. As a result, in the early years following such losses, the increase in State contribution required does not even reflect interest on the loss. Therefore, if assumptions are chosen that will consistently produce actuarial losses, then current contributions will be artificially understated for the near future and rapidly rising as the funding period shortens. The purpose of spreading the recognition of gains and losses is to avoid unnecessary fluctuations in the contribution rate, but the current method, coupled with the consistent actuarial losses which have been suffered by the System, tends to push the real cost of the losses too far into the future. Additionally, this method will become impractical when the funding period becomes very short.

In private plans covered by ERISA, actuarial losses must be amortized with level dollar payments over no more than 15 years, and we recommend that the same or a similar system be adopted for funding future actuarial gains and losses. This method of amortization will avoid undesirable cost fluctuations, and will not pass on the funding of actuarial losses to future generations.

Investment Income

The Retirement Board's current investment return assumption is 8½%. In light of consistently high fixed income yields and long term predictions of

continued high inflation, this assumption could be considered realistic.

We believe the 8½% investment return assumption may be approximately broken down into the following three components: inflation of 5% to 6%, risk-free return of about 2% to 3%, and return for risk premium of 0% to 1%.

Salary Increases

The Board's current assumption for future salary growth is 5½%. We believe the salary increase assumption can be broken down into the following three components: inflation, longevity and merit increases, and increases for productivity. Therefore, to be consistent with what we believe to be the underlying rate of inflation used in the investment return assumptions, we would assume future salary growth for individual participants of about 7% to 8% per year and future growth for total System payroll of 5% to 6%.

Mortality Rates After Retirement

The Board has adopted the following assumptions:

1) Teachers - 1971 Group Annuity Mortality Table with a two year setback

2) State Employees - 1971 Group Annuity Mortality Table

3) Participating District Employees - 1951 Group Annuity Mortality Table

These rates appear reasonable to us. The experience study performed by the actuary appears to substantiate the assumption of higher mortality for participating district employees.

Disability Rates

The Board has chosen to use the one year term cost method to value disability benefits provided by the System. Claim costs are based on 1964 Commissioners Disability Table. In general, we believe that it is preferable to fund ancillary benefits such as disability on the same actuarial basis as all other benefits provided by a pension plan, but the current procedures are not unusual.

Termination Rates

The following rates are assumed for termination of System membership and election of contribution refund:

Age	Rate of Termination
20	8.0%
30	7.0
40	6.0
50	5.0
60	5.0

Looked at a different way, the following exhibit shows the probability of receiving a benefit other than a refund of contributions and the probability of receiving a cash refund:

Age	Probability of Receiving a Benefit	Probability of Receiving a Cash Refund
20	.08	.92
30	.17	.83
40	.34	.66
50	.58	.42
55	.72	.28
60	.87	.13
62	.93	.07
65	1.00	0

These rates cause us concern for two reasons:

1) the last experience analysis performed by the actuary indicated that rates of actual terminations for state employees and teachers were significantly lower than the rates assumed, and
2) no liability for benefits provided to future participants who terminate with vested benefits is calculated. For example, for current assumptions to be realized, 28% of the vested participants age 55 will have terminated and elect a cash refund before age 65, and this seems unlikely.

We believe that the termination rates which have been used for over a decade should be changed to reflect more recent experience, and the cost of providing deferred vested benefits should be recognized by the actuary in

determining contribution levels. This will result in an increase in current contribution requirements, but it should help reduce future actuarial losses.

Retirement Rates

The assumption for retirement is 65 for regular state employees and the earliest normal retirement date for special groups.

In the latest actuarial report, the actuary indicated that the average retirement age for regular employees was 62.6 years when weighted by benefit reserves, and he commented that actuarial losses in the last fiscal year resulted from both the lowered average age at retirement and the availability of subsidized early retirement benefits. In examining retirement experience for the last five years, it appears that this has been a consistent source of actuarial losses.

We recommend that the Board adopt the use of retirement rates which reflect more accurately recent experience. Under the current assumptions, the System incurs an actuarial loss each time a member retires before age 65. The cost of these early retirements and actuarial subsidies should be recognized in the valuation and funded on a current basis. In addition, we recommend that the Board make an assumption for the percentage of those retiring and electing options 2 and 3 (the joint and survivor options), as these options are also subsidized and involve a cost which should be recognized.

Cost of Living Increases

4% cost of living increases are assumed. Since this is the maximum rate that may be automatically granted by the Board of Trustees if warranted by the increase in the Consumer Price Index, we believe that this assumption is reasonable. Additional increases may be granted by the legislature, there is no reason to anticipate these increases before they are legislated.

TABLE III - N

MAINE STATE RETIREMENT SYSTEM

ALTERNATIVE ACTUARIAL ASSUMPTIONS AND COST METHOD

This section describes the alternative actuarial assumptions and cost method used in determining the pattern of System contributions shown on page of the summary section of the report. Since the limited time available for this study did not permit an exhaustive analysis of actuarial assumptions, we are not suggesting that these are "the" assumptions which should be used. However, we do believe that they are more representative of past experience and expected future experience (as expressed by various State officials) in several areas than are the present assumptions.

1.	Cost Method	- The entry age normal cost method is used. The unfunded accrued liability as of July 1, 1979 produced by application of this method and assumptions (including the liability for pre-1924 teachers and excluding the "borrowed" assets attributable to these teachers) is amortized over 40 years assuming amortization payments increase at 6% per year. Each year's actuarial gain or loss is amortized over 15 years in level dollar payments.
2.	Investment Return	- 8½% per year (same as current assumption)
3.	Salary Increases	- Salaries for each participant are assumed to increase at 7½% per year. Total System payroll is assumed to increase at 5% per year.
4.	Post Retirement Mortality	- Same as current assumptions.
5.	Terminations (all causes)	- Two-thirds of current rates.
6.	Assumed Retirement Age	- Age 62 (or earliest possible date for special groups).
7.	Cost of Living Increases	- 4% per year (same as current assumption)
8.	Asset Valuation	- Actuarial assets as of June 30, 1979 developed by the System's actuary are credited with assumed interest and contributions and debited by assumed benefit payments.

BENEFIT DESIGN

SECTION IV

TABLES

This section analyzes the benefit design and provisions of the Maine State Retirement System and shows a comparison with five other public employee retirement systems and with five private employer retirement programs.

SPENDABLE INCOME ANALYSIS

This section sets forth a Spendable Income Analysis of the Maine State Retirement System comparing the benefits provided by the System with private employer plans and with other public employee retirement systems, including the Civil Service Retirement System. We will show the level of benefits provided by the system and will recommend possible changes to better recognize the retirement needs of those members who are expected to eventually retire.

Spendable Income Analysis (SIA) compares the after tax post-retirement income of a participant to his pre-retirement spendable income. The ratio of the post-retirement income after taxes to the pre-retirement spendable income is known as the Spendable Income Ratio.

A participant's pre-retirement spendable income is equal to gross pay less federal and state taxes, F.I.C.A. contributions where applicable, employee contributions to a retirement program, and work-related expenses. A portion of the participants' pre-retirement income may be set aside as personal savings while the individual is employed and the resulting accumulation may become a source of retirement income. This source of retirement income is not considered in this study. The derivation of spendable income before and after retirement is shown in Tables IV - A, IV - B, and IV - C.

Spendable Income as a percentage of gross earnings decreases as gross compensation increases since Federal and State taxes are skewed to favor the lower-paid employees. As can be seen in Table IV - D a state employee in MSRS earning $10,000 in 1979 has spendable income of approximately 70% of his gross pay or $7,044 while Table IV - H shows a State employee earning $25,000 will have spendable income of 61% of gross pay or $15,232. In the comparison of MSRS with other state systems, Tables IV - D and IV - K show that public employees in the state of Maine generally receive higher pre-retirement spendable income

than equal wage earners in the public system surveyed because MSRS employees are not required to contribute to Social Security (nor are Civil Service Employees). At higher pay levels, State employees, teachers, and municipal employees in New Hampshire have greater spendable income since higher state income taxes in Maine more than offset the F.I.C.A. savings. In Vermont, proposed legislation for a non-contributory system, would increase spendable income for state employees and teachers above the spendable income level for similar employees in Maine.

In our analysis, all employees working in Maine (both public and private) who earn the same gross salary will have the same pre-retirement spendable income. This is accomplished by assuming that employees covered by Social Security will save the difference between the contribution required by participation in MSRS (currently 6.5% of pay for most members) and the FICA deduction (currently 6.13% of pay below $25,900). By making this assumption it is possible to better compare the level of benefit adequacy provided by the surveyed plans.

Retirement income is generally received from two principle sources; (1) Social Security and (2) Employer maintained pension plans. Of the ten plans included in our analysis (5 public and 5 private), MSRS and the Civil Service Retirement System are the only employers that do not provide Social Security benefits to their employees, therefore, for those affected, this source of retirement income is zero. Employees of public employer systems covered by Social Security can expect approximately 50% replacement of spendable income from Social Security if their pre-retirement pay was $10,000 and employees in the $25,000 range will have about 32% of pre-retirement spendable income replaced by Social Security. This income, although a good base, does not entirely provide for full replacement of pre-retirement spendable income. Therefore, Social Security must be augmented by other sources for the employee to maintain the same standard of living after retirement as before. The same standard would be

maintained if post retirement income after taxes were equal to pre-retirement spendable income. This standard is represented by the 100% Spendable Income Ratio in Tables IV - L and IV - M.

These Tables show the adequacy of the total retirement benefits payable to a single employee retiring at age 62 with 30 years of service. Salary levels for private plan comparisons are $5,000, $10,000, $15,000, $20,000, $30,000 and $40,000. Expected gross retirement benefits are reduced by applicable taxes to obtain the post-retirement spendable income provided by the employer plans. This amount combined with Social Security equals net retirement income which is compared to net pre-retirement income to determine the Spendable Income Ratio (SIR).

In Maine, regular State employees, teachers, and municipal employees with 30 years of service receive about 73% of their net pre-retirement earnings from the System. Police and firemen with 20 years of service receive about a 61% replacement. At the $10,000 pay level, the spendable income ratio for MSRS employees in all four employment classifications is well below that of each other state systems primarily because Maine does not provide Social Security for its State employees. For example, in New Hampshire a teacher with 30 years of service earning $10,000 in 1979 and retiring at age 62 in 1980 receives about 112% of his spendable income after he retires; 49% from Social Security and 63% from the New Hampshire Retirement System. The spendable income ratio for a teacher in New York and Vermont is 118% (69% + 49%) and 114% (62% + 52%), respectively. (See Table IV - E and IV - I). Tables IV - L and IV - M show the spendable income ratios of the private employer plans.

Table IV - N to IV - P show a 20 year projection of retirement income for employees within the State of Maine who retire with 30 years of service in 1980 at age 55. For purposes of the projection we have assumed an 8% inflation rate. None of the private plans provide for cost of living increases after retirement while the MSRS plan provides for automatic increases limited to 4% per year.

The private employer plan lines have a discontinuity at age 62 since it is assumed that this is when the participant will begin receiving Social Security benefits. Employees who retire from MSRS have a continuous decreasing line which begins at 65% of spendable income and twenty years hence is only 33%. The highly subsidized early retirement benefit available from the system is evident from the substantial gap between the MSRS plan and the private employer plans. Private employer lines reflect the automatic and full inflation protection provided by Social Security, however, the pension plan benefit is eroded quickly at an assumed inflation rate of 8%.

MSRS could probably cut back on the subsidy of early retirement benefits or provide tougher requirements in order to begin receiving benefits so the employee who stays around to age 62 or 65 could expect a greater benefit at the expense of the member who only stays to 55 and begins receiving his benefit immediately.

Tables IV - L and IV - N show a line for regular state employees in Lewiston covered by both MSRS and Social Security. It is evident by these lines that participants covered by both systems are closer to 100% of pre-retirement spendable income than participants of any other system in our survey.

Brief summaries of all ten retirement plans are given in Tables IV - Q to IV - V.

TABLE IV - A
TYPICAL SINGLE EMPLOYEES'
SPENDABLE INCOME BEFORE RETIREMENT 1/

Gross Compensation (1)	Estimated 1980 Federal & State Income Tax 2/ (2)	Estimated Work-Related Expenses 3/ (3)	Plan Contributions/ Social Security Tax Plus Personal Savings 4/ (4)	Spendable Income ((1) - (2) - (3) - (4)) (5)
$ 5,000	$ 340	$ 500	$ 326	$ 3,834
10,000	1,557	750	650	7,043
15,000	3,125	1,000	975	9,900
20,000	4,839	1,250	1,300	12,611
30,000	8,854	1,550	1,950	17,646
40,000	13,554	1,950	2,600	21,896

1/ Retirement at age 62 in 1980.

2/ Based on Current State & Federal Income Tax Laws.

3/ Transportation, Meals, Clothing, Etc.

4/ 6.5% Employee contributions to Retirement System or 6.13% FICA Contribution plus personal savings.

TABLE IV - B

TYPICAL SINGLE EMPLOYEES'

SPENDABLE INCOME SOURCES AFTER RETIREMENT

			Retirement at Age 62			
Gross Pre-Retirement Compensation	Spendable Income	(2) as % of (1)	Soc. Sec. As % of Col. (1)	After-Tax "Shortfall" % (3)-(4)	Pre-Tax "Shortfall" %	100% Replacement Income 1/ (4)+(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
$ 5,000	$ 3,834	77%	0%	77%	80%	80%
10,000	7,043	70	0	70	80	80
15,000	9,900	66	0	66	80	80
20,000	12,611	63	0	63	80	80
30,000	17,646	59	0	59	80	80
40,000	21,896	55	0	55	78	78

1/ For State Employees

TABLE IV - C

TYPICAL SINGLE EMPLOYEES'

SPENDABLE INCOME SOURCES AFTER RETIREMENT

RETIREMENT AT AGE 62

Gross Pre-Retirement Compensation (1)	Spendable Income (2)	(2) as % of (1) (3)	Soc. Sec. As % of Col. (1) (4)	After-Tax "Shortfall" % (3) - (4) (5)	Pre-Tax "Shortfall" % (6)	100% Replacement Income (4)+(6) 1/ (7)
$ 5,000	$ 3,834	77%	45%	32%	32%	77%
10,000	7,043	70	34	36	37	71
15,000	9,900	66	30	36	40	70
20,000	12,611	63	24	39	46	70
30,000	17,646	59	16	43	55	70
40,000	21,896	55	12	43	58	70

1/ For Company Employees

TABLE IV - D

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $10,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

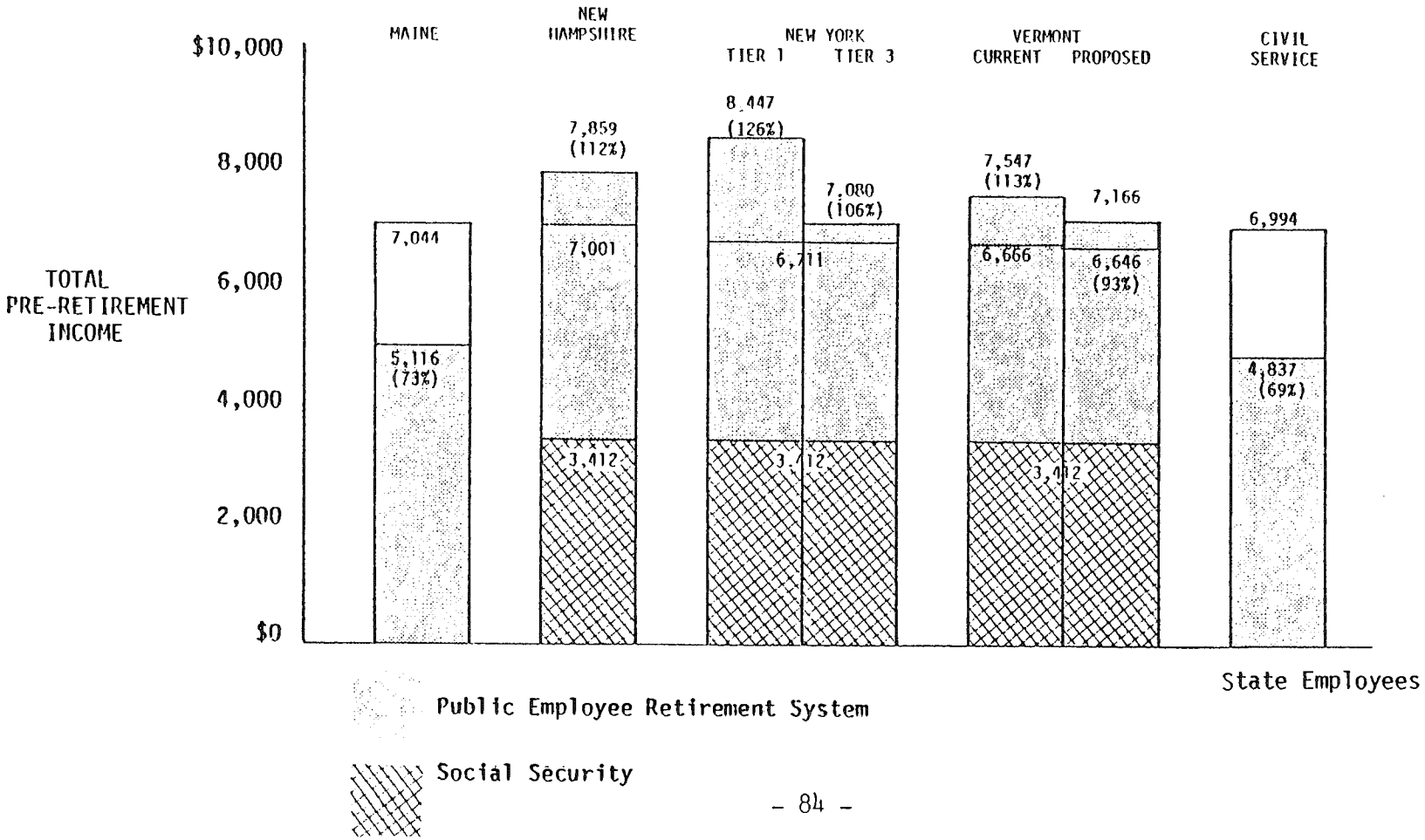


TABLE IV - E

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $10,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

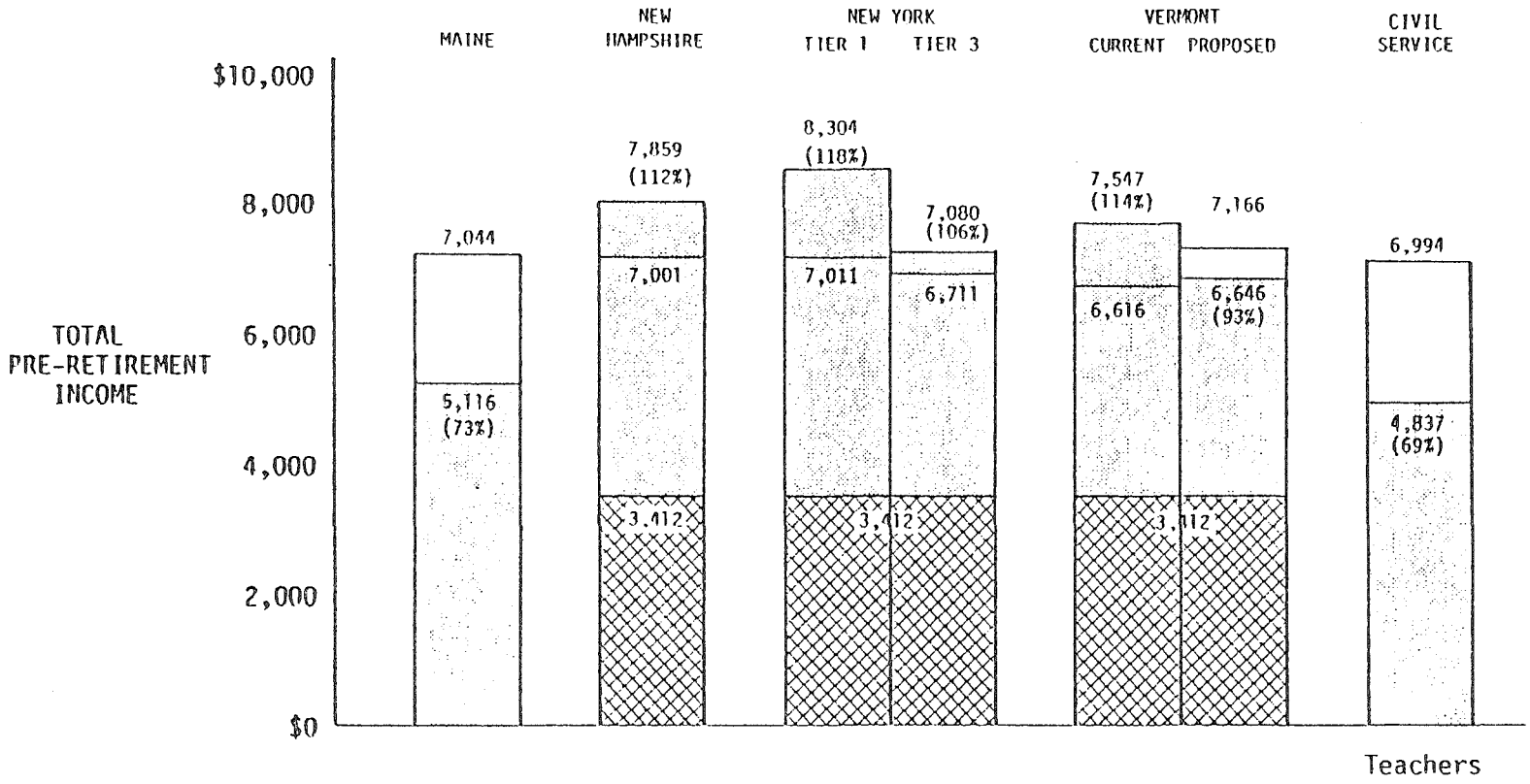


TABLE IV - F

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $10,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

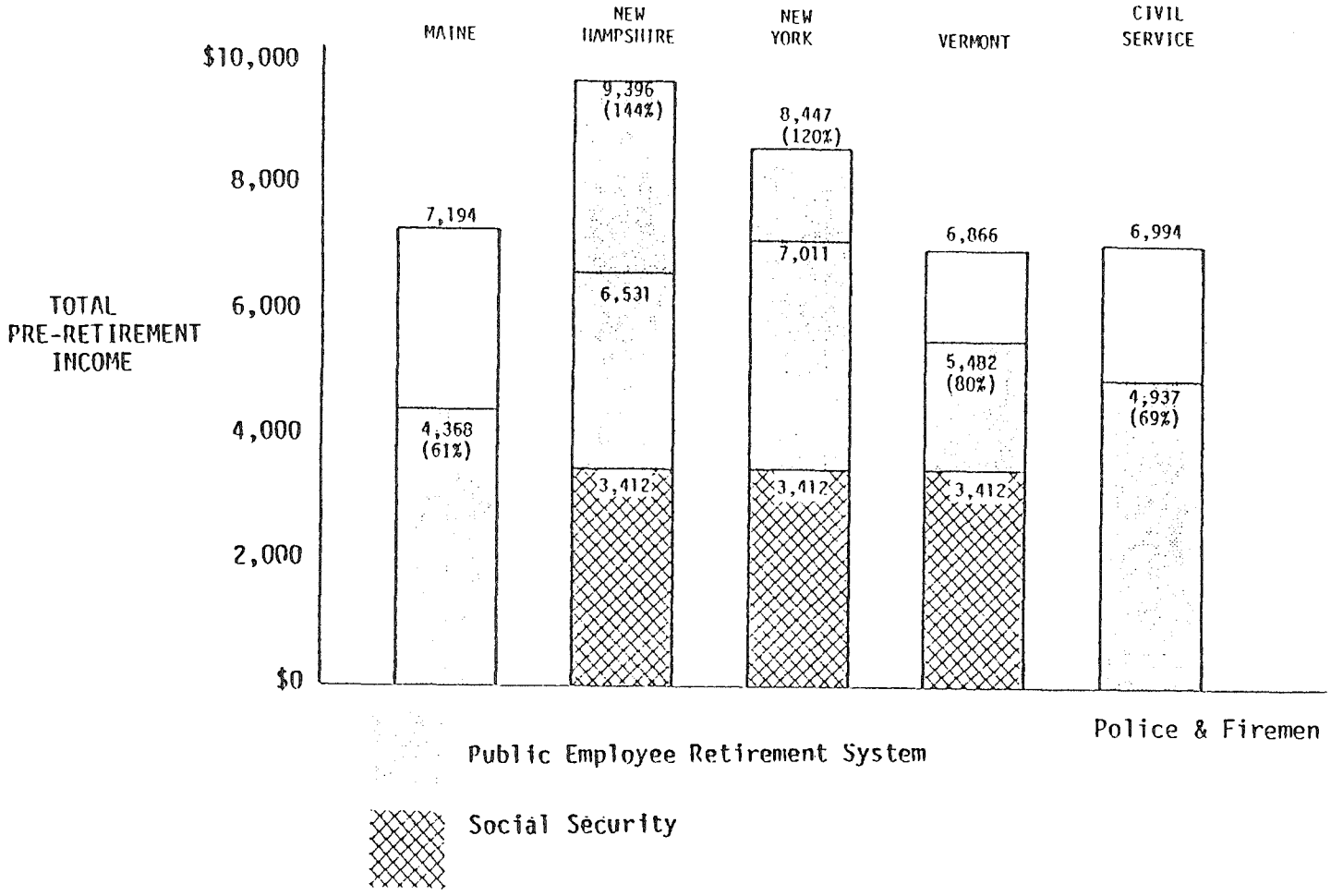


TABLE IV - G

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $10,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

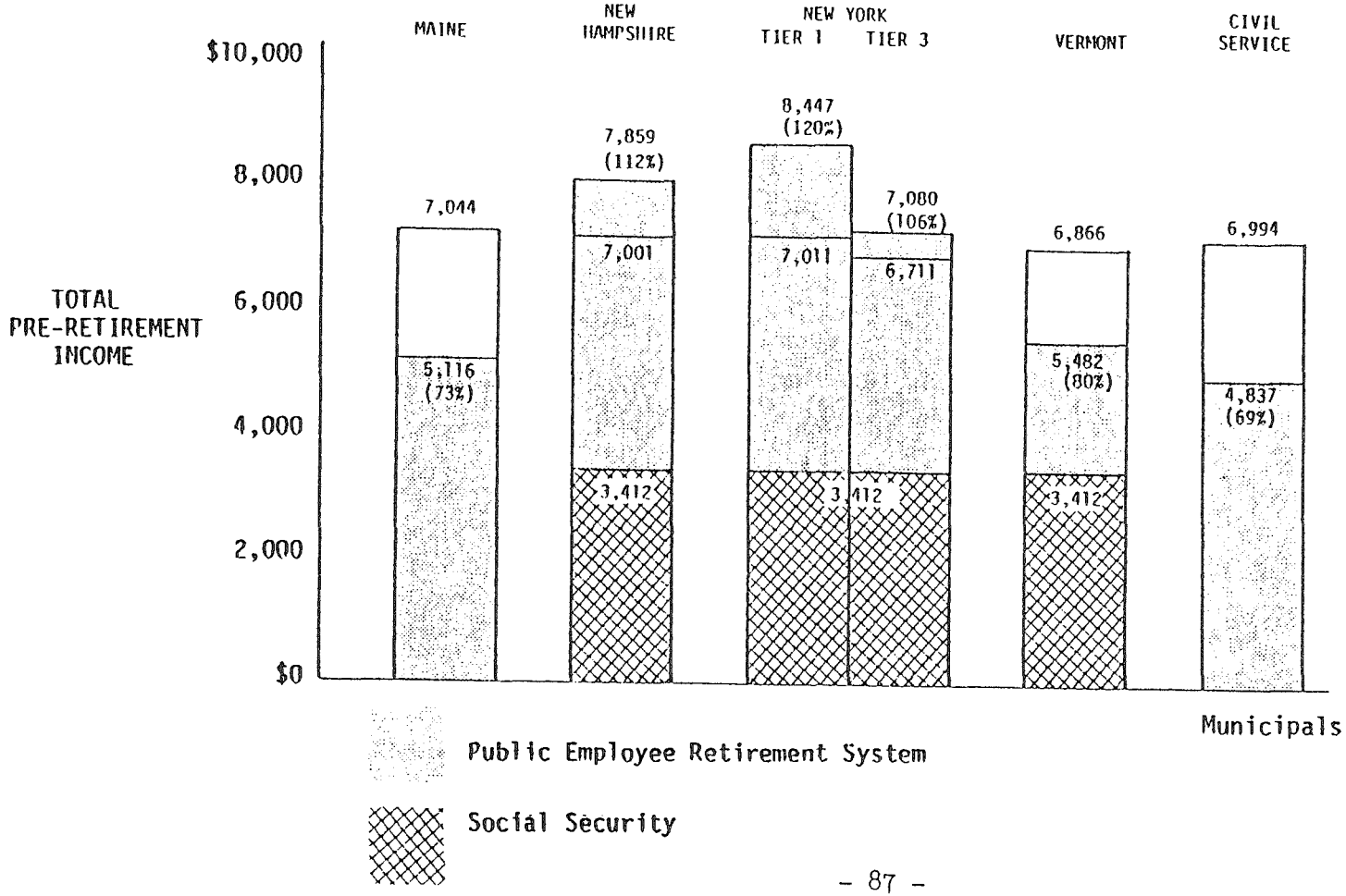


TABLE IV - H

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $25,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

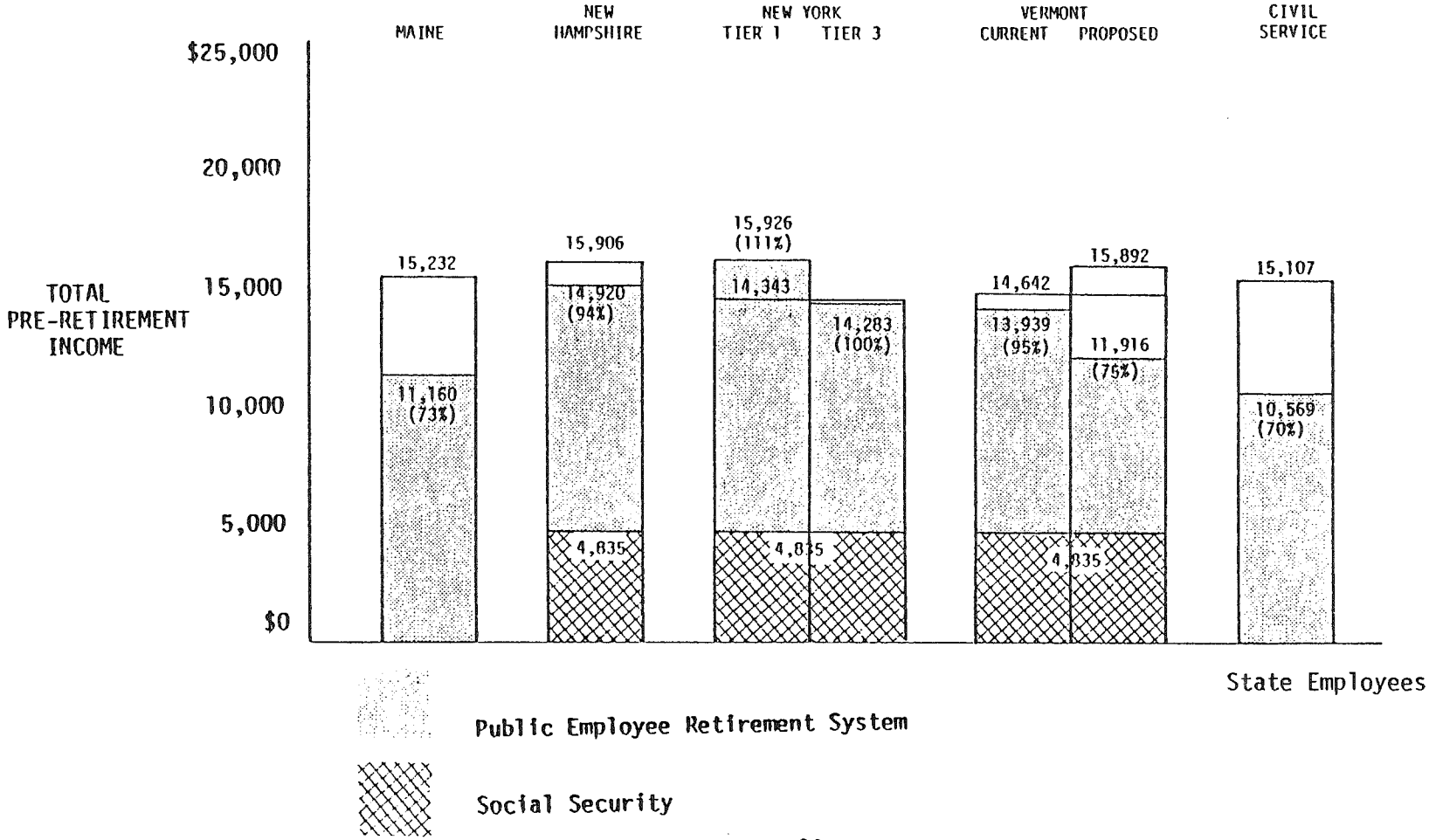


TABLE IV - I

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $25,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

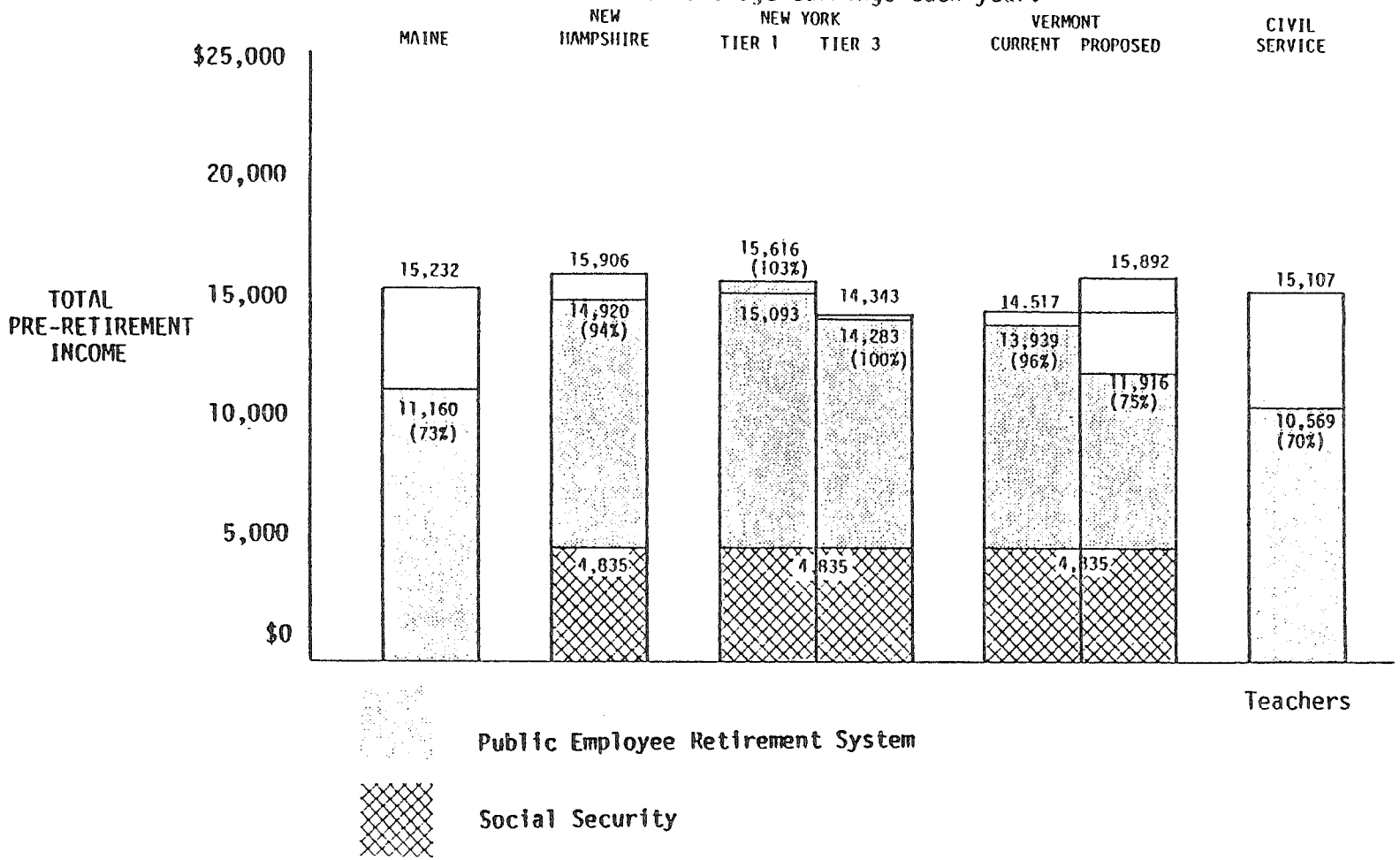


TABLE IV - J

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $25,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

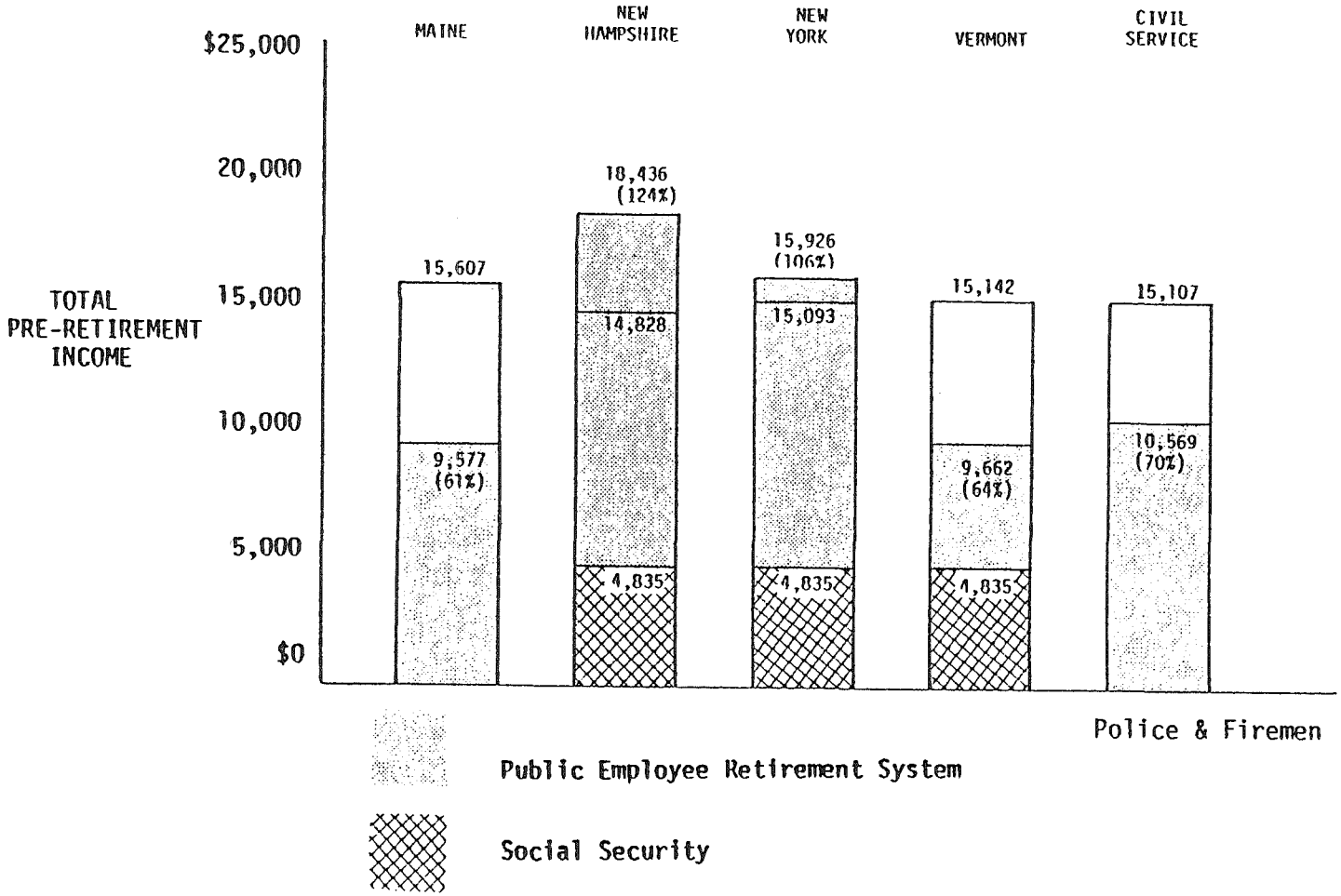


TABLE IV - K

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows the retirement income needs and actual benefits payable to a single employee who retires in 1980 at age 62 after thirty years of service with the System, assuming the employee's pay in 1979 is $25,000 and his or her prior pay has increased at the same rate as the rate of increase in the national average earnings each year.

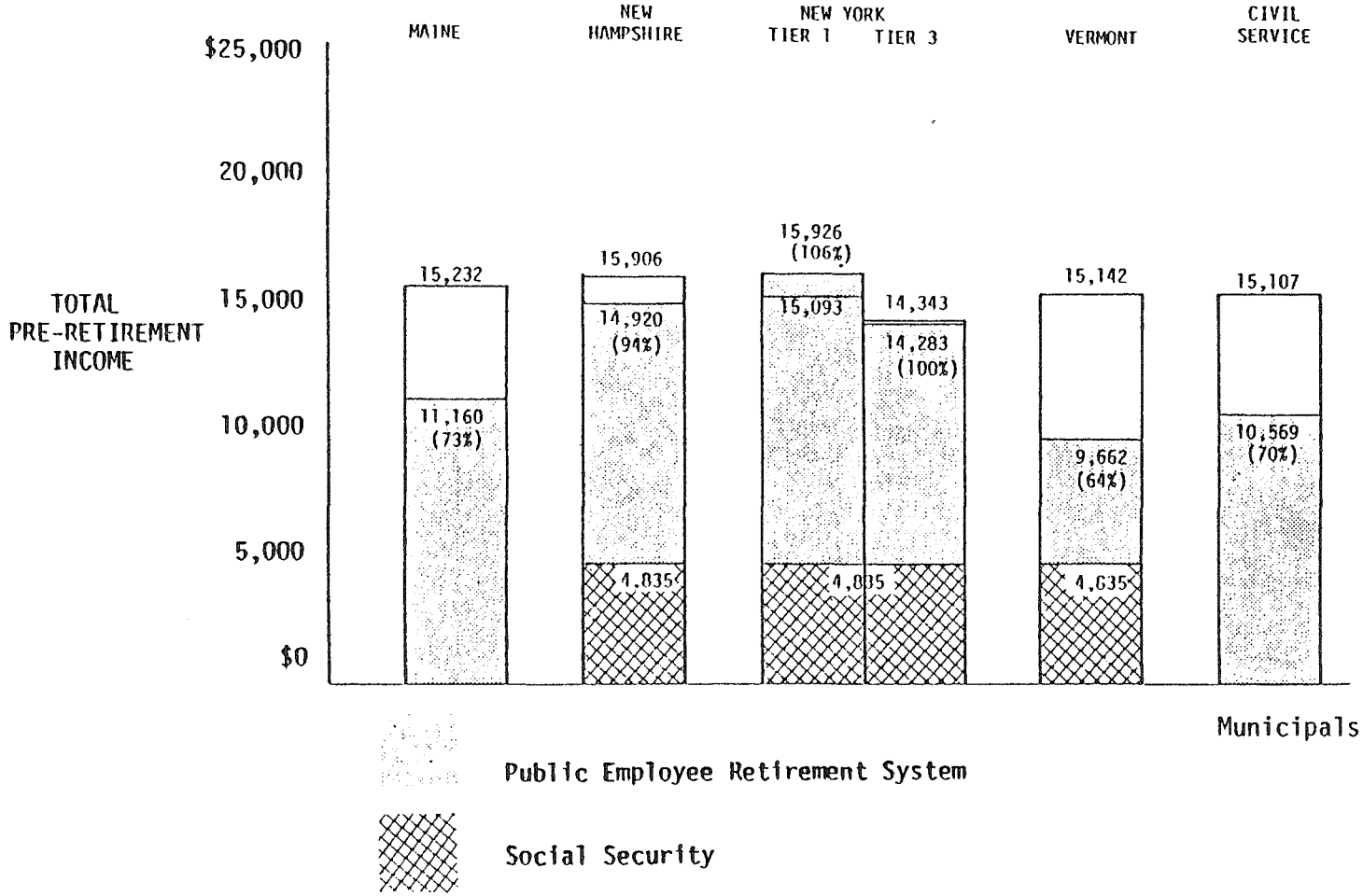


TABLE IV - L

MAINE STATE RETIREMENT SYSTEM

SPENDABLE INCOME ANALYSIS

Single Employee

This chart shows the Spendable Income Ratios of a single employee who retires in 1980 at age 62 after thirty years of service under the retirement program, assuming that the employee's pay has increased at the same rate as the rate of increase in the national average earnings each year.

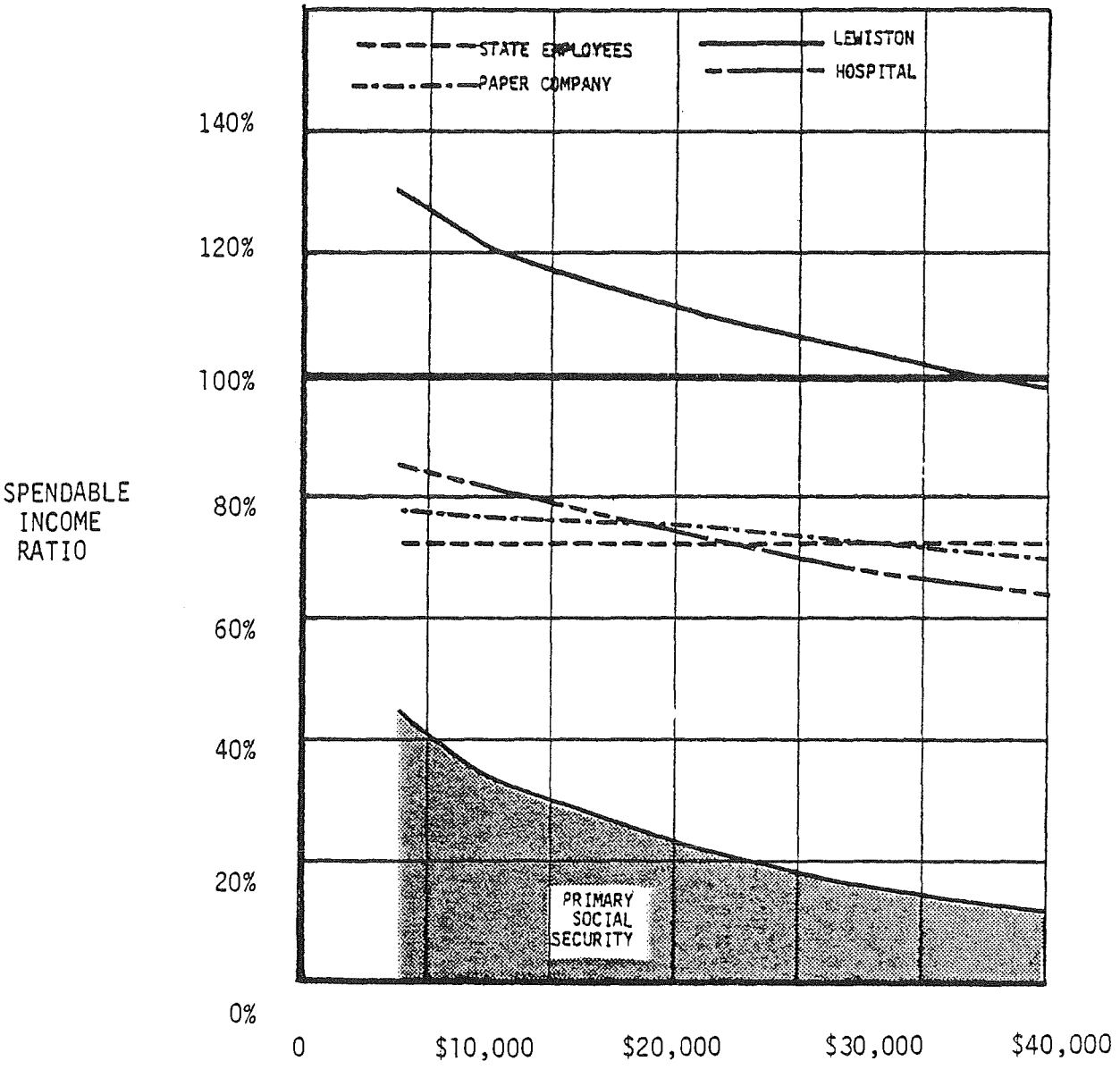


TABLE IV - M

MAINE STATE RETIREMENT SYSTEM

SPENDABLE INCOME ANALYSIS

Single Employee

This chart shows the Spendable Income Ratios of a single employee who retires in 1980 at age 62 after thirty years of service under the retirement program, assuming that the employee's pay has increased at the same rate as the rate of increase in the national average earnings each year.

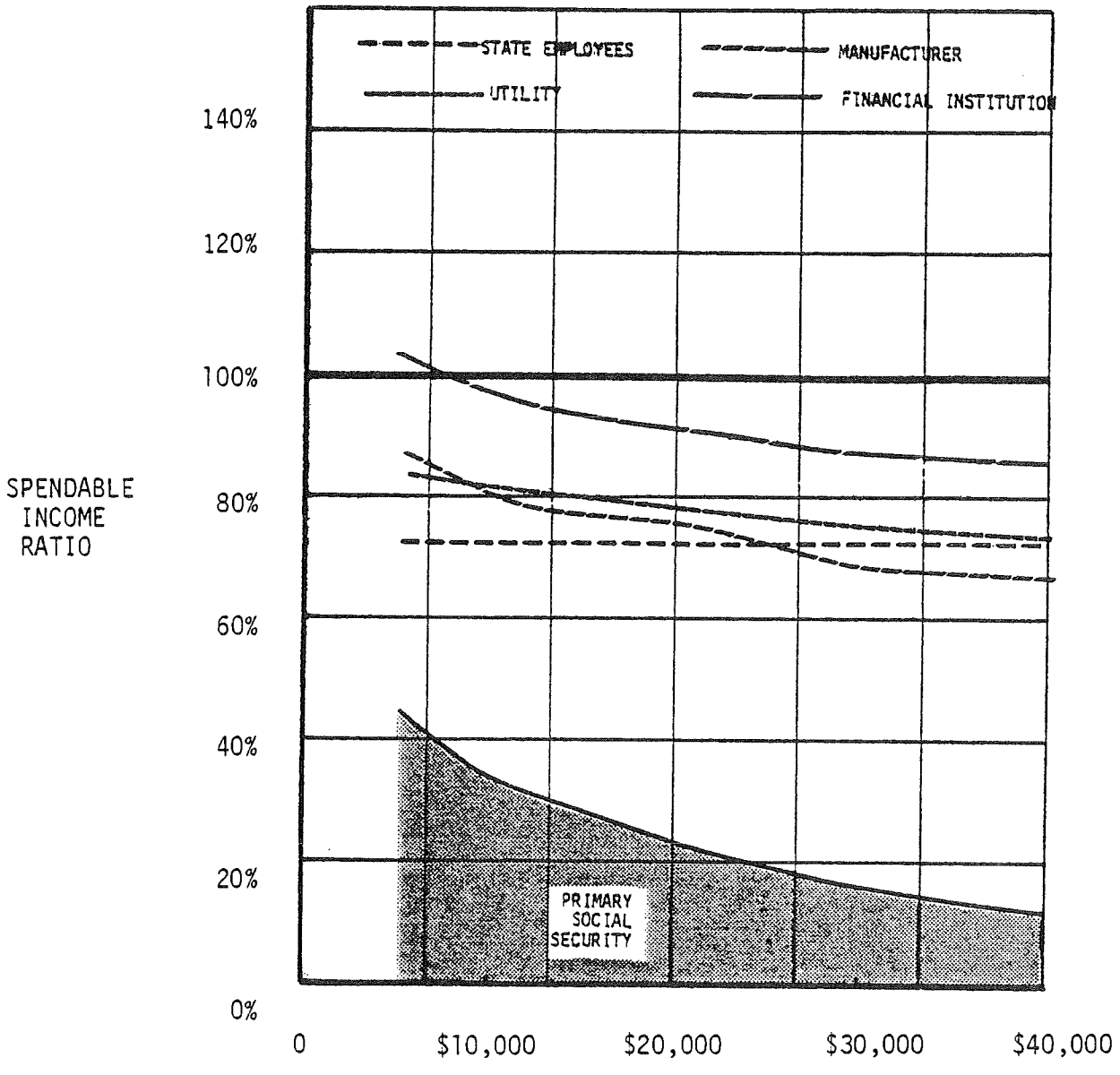


TABLE IV - N

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows a 20-year projection of post-retirement spendable income as a percentage of pre-retirement spendable income for an employee earning $12,000 who retires in 1980 at age 55 with 30 years of service under the retirement program, assuming the employee's pay has increased at the same rate of increase as the national average earnings each year. We have also assumed an annual inflation rate of 8% and an annual increase in Social Security of 8% for years after age 55.

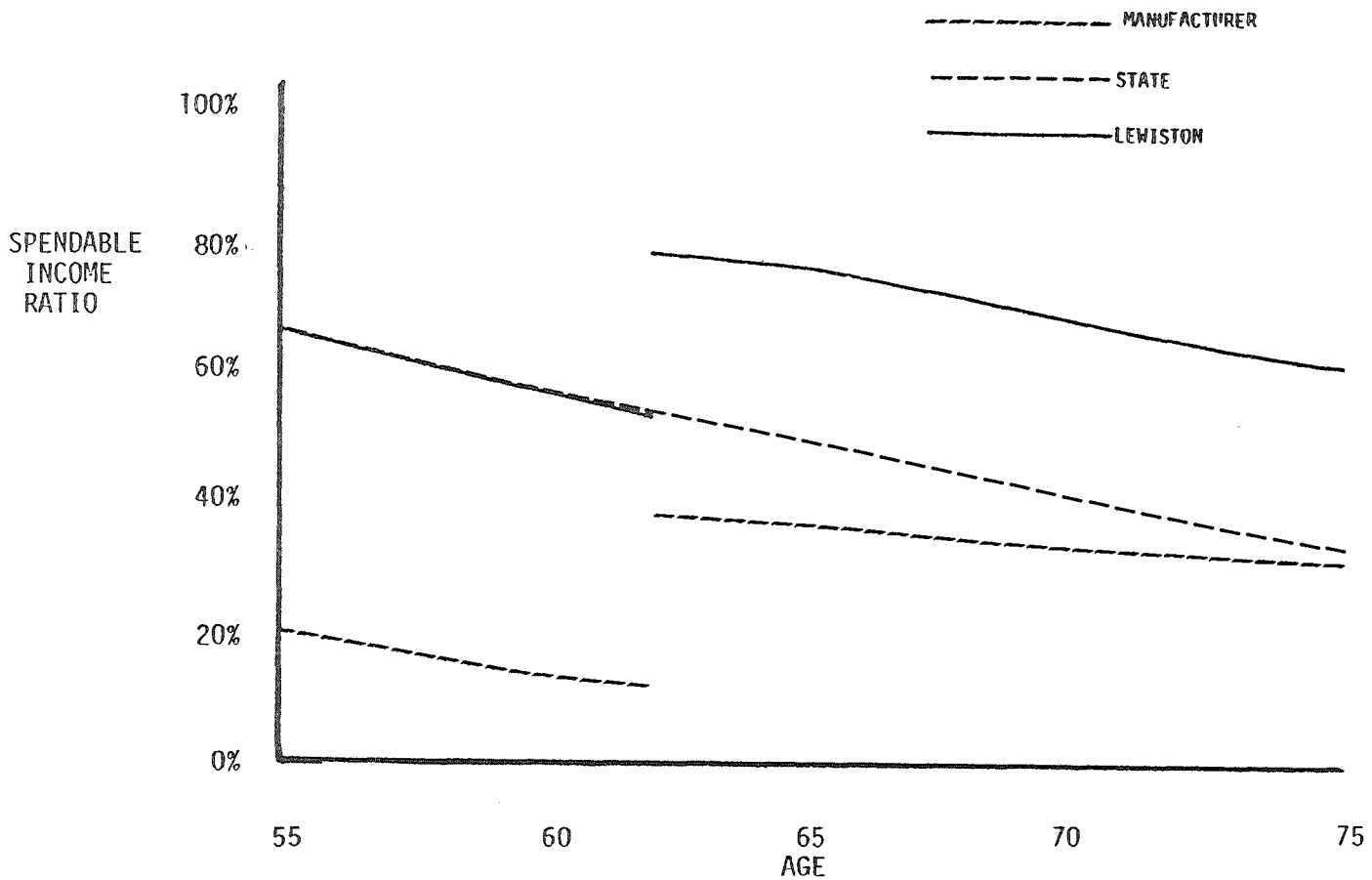


TABLE IV - O

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows a 20-year projection of post-retirement spendable income as a percentage of pre-retirement spendable income for an employee earning $12,000 who retires in 1980 at age 55 with 30 years of service under the retirement program, assuming the employee's pay has increased at the same rate of increase as the national average earnings each year. We have also assumed an annual inflation rate of 8% and an annual increase in Social Security of 8% for years after age 55.

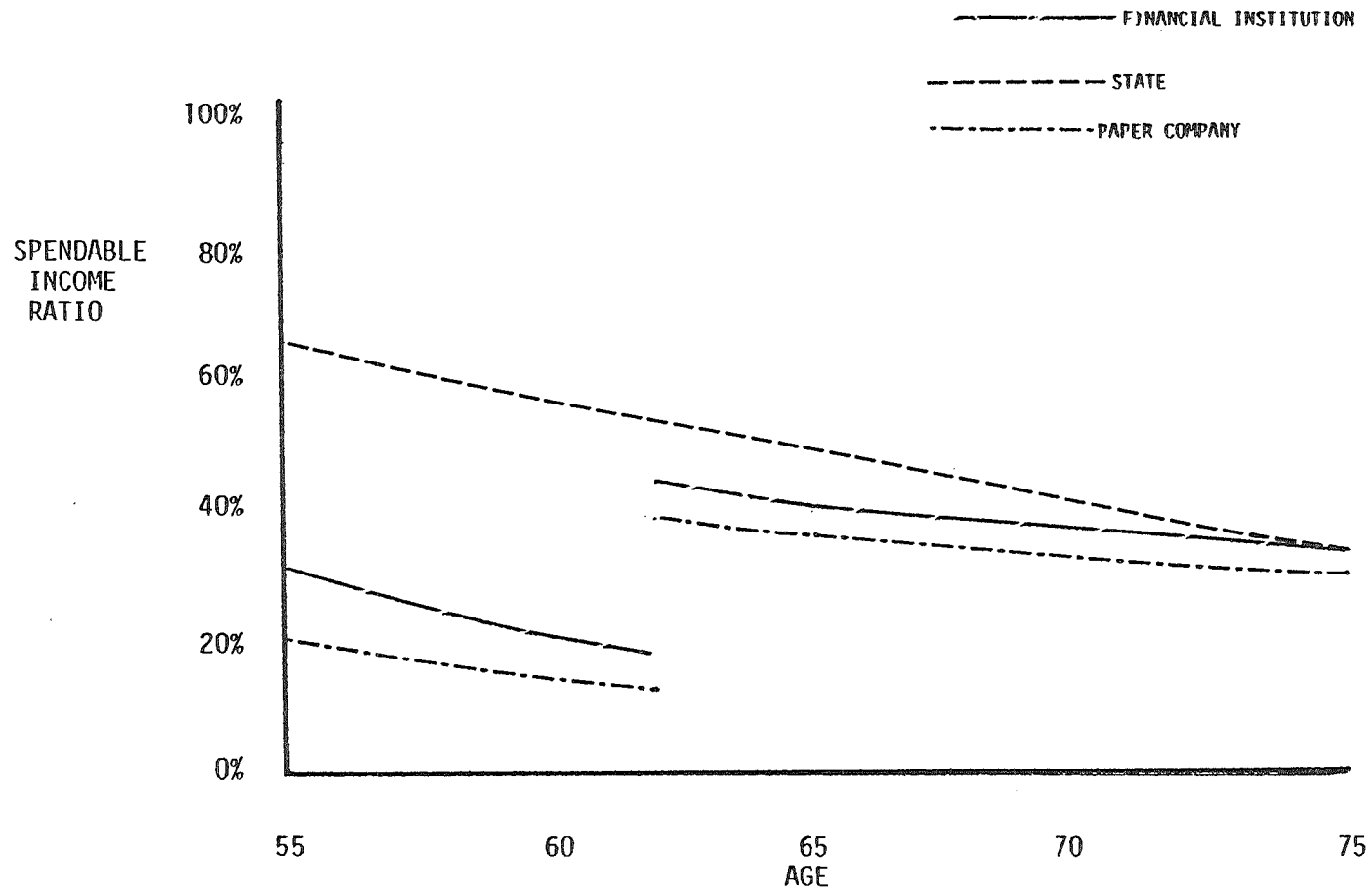
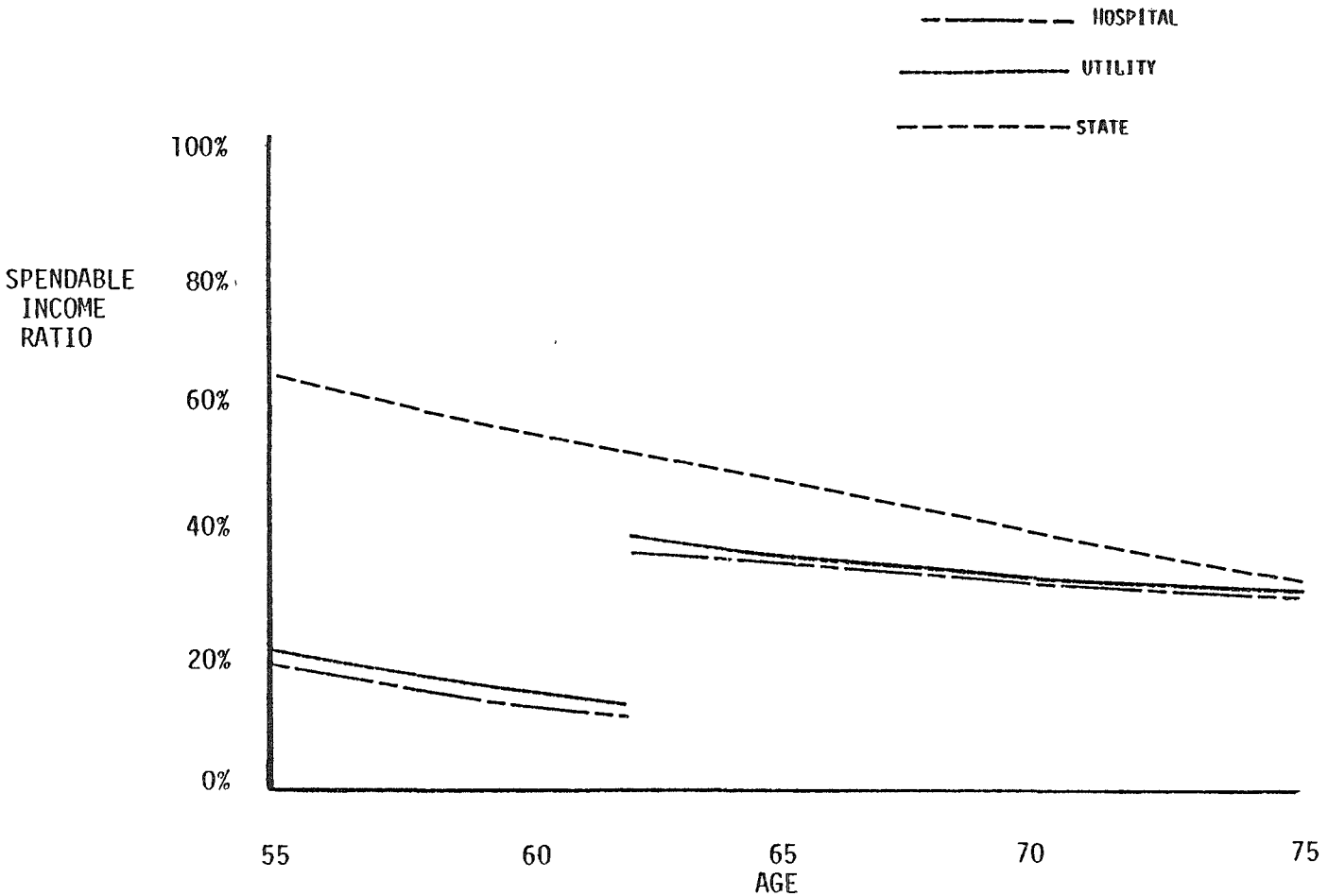


TABLE IV - P

MAINE STATE RETIREMENT SYSTEM
SPENDABLE INCOME ANALYSIS
SINGLE EMPLOYEE

This chart shows a 20-year projection of post-retirement spendable income as a percentage of pre-retirement spendable income for an employee earning $12,000 who retires in 1980 at age 55 with 30 years of service under the retirement program, assuming the employee's pay has increased at the same rate of increase as the national average earnings each year. We have also assumed an annual inflation rate of 8% and an annual increase in Social Security of 8% for years after age 55.



	New Hampshire	Vermont	New York - Tier 3	Maine
Effective Date	July 1, 1967	July 1, 1972 1/ July 1, 1980	July 1, 1976	1942
Employee Contributions	Prior to age 62: 4.6% of pay up to Taxable Wage Base 9.2% of pay in excess of Wage Base After age 62: 3.45% of pay up to Taxable Wage Base 6.90% of pay in excess of Wage Base	6% - State Police 5% - All others 1/ No employee contributions	3% of pay for 30 years	6.5% (7.5% for special classification)
Final Average Salary	3 year average	5 year average	3 year average	3 year average
Normal Retirement				
- Requirement	Age 60	Age 65; or Age 62 with 20 years of service 1/ Age 62 with 10 years of service	Age 62 with 10 years of service 2/ Age 55	Age 60 (various requirements for special classification)
- Benefit	Prior to age 65: Prior to 7-1-77: 1/2/3% x avg. compensation x years (max. 30) + 5/6% x avg. compensation x years over 30. After 7-1-77: 1 2/3% x avg. comp. x years before age 62 + 1¼% x avg. comp. x years after age 62 Reduction @ age 65: Before 7-1-77: (a) Sum of Taxable Wage Base or avg. comp. (whichever is less) for each year (max. 30) ÷ 120	1 2/3% of avg. compensation x years of service (max 30) 1/ 1¼% x avg. salary x years of service (max. 40)	20 years of service: 2% x avg. salary x years (max. 30) - 50% CO-ESC/Social Security benefit Less than 20 years: 1 2/3% x avg. salary x years - 50% CO-ESC/Social Security benefit 2/ 20 years of service: 2% x avg. salary x years (max. 30) Less than 20 years: 1 2/3% x avg. salary x years	2% x avg. salary x years of service.

PLAN SUMMARIES - STATE EMPLOYEES (CON'T)

	New Hampshire	Vermont	New York - Tier 3	Maine
- Benefit (Cont't)	(b) Sum of Taxable Wage Base or avg. comp. (whichever is less) for each year over 30 ÷ 240 After 7-1-77: (c) Sum of Taxable Wage Base or avg. comp. (whichever is less) for each year before age 62 ÷ 120 (d) Sum of Taxable Wage Base or avg. comp. (whichever is less) for each year after age 62 ÷ 160 Total Reduction: (a)+(b)+(c)+(d)			
Maximum/Minimum	N/A	N/A	N/A	Minimum: $100/mo. if at least 10 years of service.
Early Retirement				
- Requirement Age/Service	Age 55 with 10 years of service	Age 55 with 10 years or any age with 30 years of service 1/ Age 55 with 10 years of service	Age 55	25 years of service (various requirements for special classifications)
- Benefit	Accrued Normal Retirement Benefit reduced 6 2/3% per year for each year under age 60	With 30 years of service: Normal Benefit reduced 2% for each year under age 62 With less than 30 years: actuarial equivalent of Normal Benefit 1/ Normal Retirement Benefit reduced 1/2% per month under age 62	Either: (a) 20 years of service: 2% x avg. salary x years (max. 30) or (b) less than 20 years: 1 2/3% x avg. salary x years reduced 1/15th for each of first two years before age 62 and 1/30th for each year before age 60 2/ Accrued Normal Retirement Benefit.	Normal Retirement Benefit times: age 55 - 87.5% 50 - 78.0 45 - 70.7

PLAN SUMMARIES - STATE EMPLOYEES (CON'T)

	New Hampshire	Vermont	New York - Tier 3	Maine
Normal Annuity Form	Life Annuity	Life Annuity	Life Annuity	Life Annuity
Post-Retirement Cost of Living	N/A	Benefits adjusted by increase in C.P.I. limited to 5% per year. 1/ 1/2 the increase in the C.P.I. for each year (limit 5%)	Age 62 benefit is increased by increase in C.P.I., limited to 3%, each year that receipt of benefit is voluntarily deferred. 2/ N/A	Maximum of 4% per year following 6 months of retirement.

1/ Proposed Non-Contributory Benefit Plan

2/ Tier 1 Members

	New Hampshire	Vermont	New York	Maine
Effective Date	July 1, 1967	1947 1/ July 1, 1980	July 1, 1976	1924
Employee Contributions	Prior to age 62: 4.6% of pay up to Taxable Wage Base + 9.2% of pay over Wage Base After age 62: 3.45% of pay up to Taxable Wage Base + 6.90% of pay over Taxable Wage Base	5½% 1/ No employee contributions	3% of pay for 30 years 2/ No contributions	6½%
Final Average Salary	3 year average	5 year average	3 year average	3 year average
Normal Retirement - Requirement Age/Service	Age 60	Age 60 or 30 years. 1/ Age 62 with 10 yrs. of service.	Age 62 with 10 years of service 2/ 35 years of service:	Age 60
- Benefit	Prior to age 65: -Service before 7-1-77: 1 2/3% x avg. salary x service, plus -Service after 7-1-77: 1 2/3% to age 62, plus -1 1/4% x avg. salary x service after age 62 After age 65 reduction: (a) sum of avg. salary or Taxable Wage Base (whichever is less) for each year of service before age 62 ÷ 120 (b) sum of avg. salary or Taxable Wage Base (whichever is less) for each year of service after 7-1-77 and after age 62 ÷ 160 Total Reduction = (a)+(b)	1 2/3% x avg. compensation x years (max. 30) 1/ 1¼% x avg. salary x years of service (max. 40)	(a) for 20 or more years of service: 2% of avg. salary x years (max. 30) or (b) for less than 20 years of service: 1 2/3% of avg. salary x years, less (c) 50% of Social Security @ age 62 or later 2/ For 20 year employee: 2% x avg. salary x years since 7-1-59, plus 1.8% x avg. salary x years before 7-1-59 For fewer than 20 years of service benefit is reduced 5% for each year under 20	2% x avg. salary x years

PLAN SUMMARIES - TEACHERS (CON'T)

	New Hampshire	Vermont	New York	Maine
Maximum/Minimum	N/A	N/A	N/A 2/ Maximum: 75% avg. sal. Minimum: 50% avg. sal.	Minimum: $100/month with 10 years of service
Early Retirement				
- Requirement	Age 55 with 10 years of service	Age 55 1/ Age 55 with 10 yrs. of service	Age 55 with 10 years of service	25 years of service
- Benefit	Accrued benefit at retirement reduced 6 2/3% for each year payments are made before age 60	Actuarial equivalent of Normal Benefit 1/ Normal retirement benefit reduced ½% per month under age 62.	Normal retirement benefit reduced 1/15th for first two years prior to age 62 and 1/30th for each year prior to age 60. 2/ N/A	Normal retirement benefit times - age 55 - 87.5% 50 - 78.0 45 - 70.7
Normal Annuity Form	Life Annuity	Life Annuity	Life Annuity	Life Annuity
Post Retirement Cost of Living	N/A	Benefits adjusted by increase in C.P.I. limited to 5% per year 1/ 1/2 the increase in the C.P.I. for each year (limit 5%)	Benefits for retirees at age 65 or older are increased/decreased annually by the increase/decrease in the C.P.I. or 3%, whichever is less Benefits commencing between age 62 and 65 are reduced 1/36th for each month before age 65. 2/ N/A	Maximum of 4% per year following 6 months of retirement.

1/ Proposed Non-Contributory Retirement Plan

2/ Career Plan - Applies to members who joined prior to 7-1-73

	New Hampshire	Vermont 1/	New York 2/	Maine
Effective Date	July 1, 1967	July 1, 1975		1942
Employee Contributions	9.3%	3%	N/A	5%
Final Average Salary	3 year average	5 year average	3 year average	3 year average
Normal Retirement				
- Requirement Age/Service	Age 45 with 20 years of service	Age 65 with 10 years of service	Age 55	20 years of service.
- Benefit	2½% x avg. salary x years (max. 20), plus 2% x avg. salary x years over 20	1% x avg. salary x years of service Service prior to 7-1-75 is limited to 20 years	20 years of service: 2% x avg. salary x years. Less than 20 years of service: 1 2/3% x avg. sal. x years	50% x average salary
Maximum/Minimum	Maximum: 75% x avg. salary at retirement	N/A	N/A	N/A
Early Retirement				
- Requirement Age/Service	N/A	Age 55 with 10 years of service.	Age 55	20 years
- Benefit	N/A	Normal retirement benefit actuarially reduced at early retirement date.	Accrued normal retirement benefit.	Accrued normal retirement benefit.
Normal Annuity Form	Life Annuity	MCR	Life Annuity	Life Annuity
Post-Retirement Cost of Living	N/A	N/A	N/A	N/A

1/ Same as municipal employees' plan

2/ Tier 1: New Career non-contributory plan

	New Hampshire	Vermont	New York 1/	Maine
Effective Date	July 1, 1967	July 1, 1975	Tier 3: July 1, 1976	1942
Employee Contributions	Prior to age 62: 4.6% to Wage Base + 9.2% over Wage Base After age 62: 3.45% to Wage Base + 6.9% over Wage Base	3%	Tier 1: N/A Tier 3: 3% of pay for 30 yrs.	6.5%
Final Average Salary	3 year average	5 year average	3 year average	3 year average
Normal Retirement				
- Requirement Age/Service	Age 60	Age 65 with 10 years of service	Tier 1: age 55 Tier 3: age 62 with 10 years	Age 60
- Benefit	Prior to age 65: - Prior to 7-1-77: 1 2/3% x avg. salary x years (max. 30) + 5/6% x avg. salary x years over 30 - After 7-1-77: 1 2/3% x avg. salary x years (before age 62) + 1¼% x avg. salary x years (after age 62) Reduction @ age 65: (a)-service before 7-1-77: 5/6% x lesser of avg. salary or Taxable Wage Base for each year (max. 30) plus 5/12% x lesser of avg. sal or Taxable Wage Base for each year over 30	1% x avg. salary x years of service Service before 7-1-75 is limited to 20 years	Tier 1: 20 years of service: 2% x avg. salary x years (max. 30) Less than 20 years of service: 1 2/3% x avg. salary x years Tier 3: same as Tier 1 except benefit is offset by 50% of CO-ESC/ Social Security Benefit	2% x avg. salary x years of service

1/ New Career Plan Tier 1 or CO-ESC Plan Tier 3.

PLAN SUMMARIES - MUNICIPAL EMPLOYEES (CON'T)

	New Hampshire	Vermont	New York 1/	Maine
- Benefit (Con't)	(b)-service after 7-1-77: 5/6% x lesser of avg. salary or Taxable Wage Base for each year to age 62, plus 5/8% x lesser of avg. salary or Taxable Wage Base for each year after age 62. Total Reduction (a)+(b)			
Maximum/Minimum	N/A	N/A	N/A	Minimum $100/month with 10 years of service.
Early Retirement				
- Requirement Age/Service	N/A	Age 55 with 10 years of service	Age 55	25 years of service
- Benefit	N/A	Normal retirement benefit actuarially reduced at early retirement date.	Tier 1: Same as normal retirement benefit Tier 3: Same as normal retirement benefit without offset reduced 1/15th per year for first two years and 1/30th per year for next 5.	Normal retirement benefit times Age 55 - 87.5% 50 - 78.0 45 - 70.7
Normal Annuity Form	Life Annuity	MCR	Life Annuity	Life Annuity
Post-Retirement Cost of Living	N/A	N/A	Tier 1: N/A Tier 3: Age 62 benefit is increased by C.P.I. increase, limited to 3%, each year that receipt of benefit is voluntarily deferred.	N/A

IV - U
CIVIL SERVICE RETIREMENT SYSTEM

Employee Contribution	7% of pay
Average Salary	3 year average
Normal Retirement-Eligibility	Age 55 with 30 years of service, or age 60 with 20 years of service, or age 62 with 5 years of service
Benefit	1 1/2% x average salary for each of first 5 years, plus, 1 3/4% x average salary for each of next 5 years, plus, 2% x average salary for each year over 10
Maximum/Minimum	Maximum: 80% of average salary
Early Retirement-Eligibility	Age 50 with 20 years of service, or any age with 25 years of service
Benefit	Normal benefit accrued to early retirement date reduced 2% for each year under age 55
Normal Annuity Form	Life annuity
Post-Retirement Cost of Living	Applied twice each year based on the C.P.I. in the two 6 month periods June to December and December to June

PLAN SUMMARIES - MAINE COMPANIES

	MANUFACTURER	FINANCIAL INSTITUTION	PAPER COMPANY	UTILITY	HOSPITAL
Effective Date	ERISA plan: Jan. 1, 1976	Jan. 1, 1970 1/1968	1/ 1968	Dec. 1, 1946	July 1, 1976
Employee Contributions	N/A	N/A 1/2-7% of pay, 50% employer match	N/A 1/5% of pay 50% employer match	N/A	N/A
Final Average Salary	Average of high 5 of last 10 years	Average of highest 5 consecutive salaries during the last 10 yrs. 1/N/A	Average of last 5 consecutive years.	Average of 5 highest consecutive yrs. out of last 10 yrs.	Average of highest 5 of last 10 years.
Normal Retirement					
- requirement	Age 65	Age 65 or age 62 with 10 yrs of svc. 1/N/A	Age 65 1/N/A	Age 65	Age 65
- benefit	Sum of: (1) 1% x avg. salary up to Covered Compensation plus (2) 1½% x avg. salary over Covered Compensation times yrs. of credited svc.	Sum of: (1) 1.8% of avg. salary up to Covered Compensation, plus (2) 1.75% of avg. salary over Covered Compensation times yrs of svc. to a maximum of 20. 1/Value of Participants account at retirement.	1½% of avg. salary minus 1½% of Social Security benefit times yrs. of svc.	Greater of (a) or (b) where: (a) is (i) 3/4% of the first $6,000 of 1976 pay plus 1¼% of 1976 pay in excess of $6,000 times yrs. of svc. to 12-1-76 plus (ii) 1½% of first $6,000 plus 2% of pay over $6,000 for each yr. after 12-1-76 and (b) is 1 2/3% of final avg.	Sum of: (1) 1% of avg. salary to Covered Compensation, plus (2) 1½% of avg. salary over Covered Compensation times yrs. of svc.

PLAN SUMMARIES - MAINE COMPANIES

	MANUFACTURER	FINANCIAL INSTITUTION	PAPER COMPANY	UTILITY	HOSPITAL
-benefit (Continued)				salary times years of svc. (max 30) minus 50% of the Primary Social Security benefit.	
Minimum/Maximum	N/A	N/A	N/A	N/A	N/A
Early Retirement		1/Max. employee contribution: $2,000 per yr.			
-requirement	Age 55 with 10 yrs. of svc.	Age 52 with 10 yrs. of svc. 1/		Age 55 with 10 yrs. of svc. 3/	Age 55 with 10 yrs. of svc.
-benefit	Accrued normal retirement benefit reduced .4% for each month that early retirement precedes age 65.	Accrued normal retirement benefit payable in full at age 62 or reduced 5/9% for each of the first 60 months and 5/18% for each of the next 60 months that retirement precedes age 62. 1/Value of participant's account.	Accrued normal retirement benefit payable in full at age 62. 1/Value of participant's account	Accrued normal retirement benefit actuarially reduced or full amount at age 62 with 20 years of svc.	Accrued normal retirement benefit reduced 5/9% per month for 1st 60 months and 5/18% per month for next 60 months before normal retirement.
Normal Annuity Form	Life Annuity	Life Annuity	Life Annuity	Life Annuity	Life Annuity

PLAN SUMMARIES - MAINE COMPANIES

	MANUFACTURER	FINANCIAL INSTITUTION	PAPER COMPANY	UTILITY	HOSPITAL
Post Retirement Cost of Living	N/A	N/A	N/A	N/A	N/A

1/ Employee Savings Plan

2/ The Utility company also has a TRASOP which is not included in this summary or in the graphs.

3/ Age 55 for participants as of December 1, 1978

TABLE IV - W

THE MAINE STATE RETIREMENT SYSTEM

1980 Spendable Income Analysis and Survey

Summary of Specifications

Factor	Assumptions	
1. Salary Range (1979 Gross Compensation)	For Companies:	For States:
	$ 5,000 10,000 15,000 20,000 30,000 40,000	$10,000 25,000
2. Ages at Retirement	For Companies:	For States:
	62 and 55	62
3. Date of Retirement	1/1/80	
4. Marital Status		
o MSRS' plans	Single	
o Companies' plans	Single	
5. Years of Service at Retirement		
o MSRS's plans	30	
o Companies' plans	30	
6. Compound Annual Rate of Salary Increases		
o Prior to 1/1/80	Rate of increase in national average of per worker wages.	
7. Compound Annual Rate of Inflation after retirement	8%	
8. Survey States and Maine Employers		
o Maine State Retirement System o New York State Retirement System o Vermont State Retirement System o New Hampshire State Retirement System o United States Civil Service Returns	o Financial Institution o Paper Company o Manufacturer o Hospital o Utility	
9. 1979 Federal and State Income Tax.		
10. Social Security Benefits payable at age 62.		

QUESTIONNAIRE

SECTION V

Response to Questions Raised by the Committee on Aging, Retirement and Veterans

On October 11, 1979 the Committee on Aging, Retirement and Veterans sent a letter to the Joint Select Committee listing several questions the Joint Select Committee was requested to consider in the course of its investigations. It is the desire of the Joint Select Committee to be responsive to the issue raised by the Committee on Aging, and we have been asked to respond to those questions which fall within our area of expertise.

The full text of the questions, along with our responses, are set forth below:

1. PROJECTED ANALYSIS OF RETIREMENT FUND FINANCES:

   a. What will the future financial situation of the retirement system be using current standard actuarial projecting techniques if the current benefits, earnings, etc., remain constant?

   b. How will this financial situation change, on an annual basis, if the significant variables which affect it are substantially changed? The variables should include, but need not be limited to, the number of employees, salary levels, the benefit structure, and the earnings of the fund (which presumably will reflect the major changes in the economy.)

A: This question is addressed in Section I of the report and in further detail n Section III.

2. INVESTMENTS:

   a. What is your evaluation of the investment portfolio performance over the last several years in the following areas:

      (1) rate of return, overall and for the various components of the portfolio,

      (2) risk, and

      (3) diversity of investments?

   b. What recommendations do you have for making changes in the investments and the investment policy?

A: This question lies outside The Wyatt Company's area of expertise.

3. UNFUNDED ACCRUED LIABILITY: Since 1959, contributions and balances in the old system teacher retirement accound have been insufficient to provide the amount of retirement allowances paid to old system teachers. As a result, the funds have been borrowed from the retirement allowance accounts maintained for MTRA teachers and state employees. The accumulated borrowings for the old system teachers retirement allowance account, including interest, is expected to be $122,108,772 as of June 30, 1979.

   a. What have been the major factors which resulted in this deficit in the old system teacher retirement allowance account and the subsequent borrowing from retirement allowance accounts maintained for other retirees?

   b. What recommendations do you have for paying back this deficit and funding the remaining liability?

   c. What effect has this had on the integrity and fiscal soundness of the retirement system funds?

   d. What action is necessary to insure that this type of deficit does not occur again?

A: a. Funds to provide promised pension benefits come from three sources: (1) employee contributions, (2) employer contributions and (3) fund earnings. Pre-1924 teachers did not contribute to the fund until 1945 when the legislature decreed that all teachers must make contributions. State contributions did not begin until 1956 and were originally only sufficient to meet the retirement allowances then being paid. The State's contributions soon became insufficient to provide for the retirement allowances being paid, and funds were borrowed from the Maine State Employees Retirement System's fund. As a result, a negative fund balance has existed for pre-1924 teachers since 1959. Insufficient contributions from both employees and the State prevented the build up of any substantial pre-1924 fund and therefore the third source of funds, fund earnings, could not play a significant role in providing for pension benefits.

   b. It is probably impractical to ask current employees to make contributions to help pay for the benefits promised to retired employees, particularly in view of the magnitude of the liability. The State should recognize its responsibility both to current and retired employees by paying back these "borrowed" funds. The Board of Trustees has requested funding for this

liability on several occassions, but these requests have been denied. We recommend that the total unfunded liability for this group be funded over 40 years as a level percentage of the total payroll of the active employees participating in the System. If such a program were to be started in the current fiscal year, a contribution of approximately $8\frac{1}{2}$ million would be required (based on current actuarial assumptions). This contribution would increase by about $5\frac{1}{2}\%$ per year throughout the 40 year period.

c. If the borrowed funds are repaid, no long-term effect on the integrity of the System will result. However, these borrowings have totally depleted the Retirement Allowance Fund, and action on funding this liability should be taken in the very near future.

d. If the State adopts a long-term funding policy reflecting <u>all</u> liabilities of the MSRS, a deficit of this type should not occur again.

4. CONTRIBUTIONS: Title 5, MRSA, S1095, Sub-S8 provides the following:

"8. State share of cost. At no time shall the state matching share of the cost of the retirement system be increased due to changes in formula and the change from 5-year average highest compensation to 3-year average highest compensation. Any additional costs are to be borne by the members of the system."

The state contribution rate for fiscal year 1973-74 was 8.82%. The state contribution rate for fiscal years 1979-81 will be 14.87%. It appears that neither the earnings of the retirement fund nor any increase in the members contribution rate have been sufficient to prevent an increase in the state contribution rate.

a. Is the increase in the state contribution rate consistent with the provisions of 5 MRSA, S1095, sub-S8?

b. What would you recommend as an appropriate balance between state and member contributions for funding future changes in the benefit formula?

A: a. Under the MSRS statues, most State employees and teachers are required to contribute $6\frac{1}{2}\%$ of gross salary. This rate has been in effect since October 3, 1973. The State's contribution rate has increased from 9.20% of salary as of October 3, 1973 to 15.01% of salary for the fiscal year ending June 30, 1981. There are three reasons for the increases in State costs:

(1) The fund has incurred consistent actuarial losses. Assumptions adopted by the Retirement Board in the determination of plan costs have not been realized.

(2) At least part of the system's cost is designed to increase at 3% per year.

(3) Changes have been made in the assumptions in an effort to avoid future actuarial losses.

At least a portion of these increases are attributable to the changes in the benefit formula and in the pay averaging period, and would therefore seem to violate the requirements of the statute quoted. However, it is our opinion that the costs of these improvements were never realistically apportioned to the employees, and the purpose of this legislation was defeated from the start. Furthermore, even if costs were realistically divided when the improvements were made, there is no reason to assume the balance would remain valid over any extended period of time, even if the impact of the changes could be accurately measured from year to year, which in itself is an extremely complicated and subjective procedure. For these reasons, we believe that legislation of this type should be avoided. If the legislature changes benefits with a clear understanding of the long-range liabilities involved, there will be no need for legislation of this type.

b. We believe that the balance between State and member contributions for the existing plan or for future changes in the benefit formula is a matter to be decided by those individuals representing the taxpayers and those individuals representing the plan participants. Those deciding should be aware, however, that any split of costs between State and member contributions is only an estimate, and a poor one if actual experience differs significantly from that assumed. If assumptions prove to be more conservative than future experience, actuarial gains will occur and will reduce State contributions. If assumptions prove to be more liberal than future experience, actuarial losses will occur

and increase state contributions. In either case, the balance will become disrupted over time.

As a practical matter, employee contribution rates significantly in excess of the current 6.5% rate are seldom found outside of government employment, although it is not at all unusual for government employees to contribute to both an employer-sponsored pension plan and to Social Security (as in New Hampshire and Vermont, for example, although the proposed Vermont plan is non-contributory). Also, employee contributions are an inefficient means of funding pension benefits, since employees must contribute after-tax dollars, while the State's contributions are not subject to Federal income taxes. Also, employee contributions are paid out in the event of termination before vesting, whereas State contributions are not. Of course, the tradeoff is that an employee's contributions are not taxed when they are returned to him in the form of benefits, but employees are generally in a lower tax bracket after retirement.

5. FUNDING METHOD FOR THE RETIREMENT SYSTEM: The retirement system currently operates an actuarially funded retirement plan. Tennessee has enacted a statute that requires that any bill which creates a financial liability on the pension system of the state must contain the manner of funding the liability and that the costs of accrued liability must be actuarially determined on a period of not more than 20 years. (Similar legislation has been introduced in other states.) Some would argue, however, that, in view of the present rate of inflation, invested assets cannot keep pace with inflation and an actuarially funded retirement plan may actually cost more than a pay as you go retirement plan. Should the retirement system maintain its present funding plan, modify that plan with more specific legislation (perhaps similar to the Tennessee statute), or should it consider a pay as you go type of plan?

A: Section 1032 ("Special Intent") of Subchapter II of the MSRS Laws contains the following paragraph:

> If and when any special resolve or other legislation is enated by the Legislature which grants benefits which are to be paid to any person by the retirement system and to which the person would not be entitled under the provisions of this chapter but for the enactment of such law, the entire actuarial costs of such benefits shall be fully funded by act of the same Legislature 1975, c. 622, S 15; 1977, c. 694, §§ 21,22.

While this is not as specific as the Tennessee statute mentioned, it does seem to express a clear intent on the part of the Legislature that increase in benefits

be funded on an actuarial basis.

With regard to the more general question of funding vs. not funding, we believe that funding is the preferable approach because it represents a planned approach to meeting benefit liabilities and enables costs to be spread equitably over different generations of taxpayers. If the assertion that inflation will exceed the rate of return that can be earned on invested assets is true, then funding is clearly not advisable. However, this assertion has far-reaching implications for the entire economy of the United States, and no one whom we have talked to believes that such a situation can long persist.

6. DISABILITY BENEFITS:

   a. Are there adequate controls in the disability retirement law from the initial entry of the employee and during the disability review process, and is the disability beneficiary adequately monitored until he is removed from the disability retirement rolls to prevent abuse by recipients and employees and to prevent unnecessarily high costs to the state?

   b. Should the state offer or require retraining for disability beneficiaries that can perform work other than that from which they retired (with a disability)?

A: It is our understanding that the Board of Trustees believes that current controls on disability benefits are not adequate, and the Board is currently investigating methods of correcting this situation. Our comments regarding the disability benefits provided by the System have been presented in the benefit analysis section of this report.

7. COST OF LIVING BENEFITS: When the current cost of living benefit program was enacted, the Legislature was advised by the actuary that the earnings of the fund would pay for a cost of living increase of up to 4% annually. The annual report of the retirement system for the fiscal year ending June 30, 1978 indicated that "The cost of living adjustment to benefits payable under the system for the fiscal period totalled 9.58% of benefits, which was at a greater rate than the 4% actuarial assumption and resulted in an actuarial loss." Based on the available data and current standard actuarial projecting techniques, will a 4% annual cost of living increase require the state to increase its contributions above the present rate over the next several years? What effect will legislative enactment of a cost of living increase greater than 4% have on the state contribution rate?

A: The cost of granting cost of living increases to retirees is a function of the investment return earned by the fund, the age of the employee at retirement, mortality experience, and the amount of increases granted. The following chart shows approximate contribution requirements (related to a base of 100 for no increases) assuming an investment return of 8½% per year and mortality according to the 1971 Group Annuity Mortality Table, and further assuming that one-half of those retiring will be males and that all retirees will choose the Straight Life Annuity Option:

	Rate of Post Retirement Increases				
Age at Retirement	0%	4%	6%	8%	10%
50	100	148	187	239	314
55	100	142	174	215	270
60	100	136	161	192	232
65	100	130	149	172	200

If the rate of investment return assumption is lowered, the figures are somewhat higher. If the assumption is raised, the figures are somewhat lower.

The Board assumes that 4% cost of living increases will be granted. To the extent that the fund actually earns 8½% and retirements occur at an average age of 65, state contribution requirements should not increase. If the average retirement age is less than 65, if the fund fails to earn 8½% interest, or if greater than 4% cost of living increases are granted, contribution requirements will increase if all other factors remain constant.

8. EARLY RETIREMENT PLANS:

a. Several benefit programs provide for early retirement (e.g., after 20 years) at full benefits. With the improvement of the working conditions, working hours, and wage benefits of these employees, have these early retirement programs outlived their purposes?

b. The retirement benefits of teachers and regular state employees who retire prior to age 60 are reduced by 2% for each year prior to age 60 that they retire. This provides them with retirement benefits that are greater than the actuarial equivalent of the benefits that have accrued to members retiring at age 60. This has resulted in an actuarial loss of approximately $3,400,000 for the fiscal year ending June 30, 1977. Is it desirable to continue the current 2% reduction or should these early retirement benefits be reduced to more accurately reflect the actuarial equivalent of those benefits?

A: a. Benefit programs of this type are widely provided for employees in so-called "hazardous duty" occupations (especially policemen and firemen), and they are extremely expensive. In fact, many employees who retire under such plans receive more in total pension benefits than they do in salary as active employees. These benefits have the weight of tradition behind them, but we agree that the reasons for providing these benefits should be re-examined in the light of their ever-increasing costs.

b. Providing heavily subsidized early retirement benefits is expensive, and is only justified if it helps to achieve a specific personnel goal. Provisions as liberal as those in the MSRS are quite rare, even in government plans. This is an area in which we believe consideration should be given to a reduction in benefits. Perhaps any savings could be used to improve other benefits provided by the System.

9. LEGISLATIVE CONTROL OF THE RETIREMENT SYSTEM: The Legislature, as a whole, and in particular the Joint Standing Committee on Aging, Veterans, and Retirement has the authority and responsibility for determining retirement benefits and contribution levels for members of the retirement system. Amendments to the retirement plan often result in large, long-term costs to the state.

a. Does the Legislature have adequate and accurate information, including the long term cost and the assumptions for the cost estimate, to adequately act on retirement legislation?

b. What information would you recommend be made available to the Legislature in order for them to make a rational and informed decision on retirement legislation?

A. a-b. From the historical information provided to us, it appears that the legislature has occassionally acted without a full understanding of the cost and liability issues involved in certain benefit improvements. To

avoid this situation in the future, we believe that the Legislature should receive a summary of the major assumptions used to determine costs, an estimate of future as well as current costs. In addition, we suggest that any legislation which improves benefits should be accompanied by information regarding the pros and cons of the change from a benefit design standpoint.

10. THE BOARD OF TRUSTEES:

a. Does the composition of the Board of Trustees adequately reflect the interest of the employer as well as the employee?

b. Does the taxpayer have adequate representation on the Board of Trustees?

c. What recommendations, if any, would you make concerning the representative quality of the membership of the Board of Trustees?

A: a-c The Board of Trustees currently includes five members who are beneficiaries of the MSRS and two members representing the general public. This would seem to weight the representation on the Board rather heavily in favor of members who are participants in the System. Since no one is capable of total objectivity, this imposes a heavy responsibility on these members.

We would suggest greater taxpayer representation on the Board, and we think it would be advisable for as many as possible of the public members to have some expertise in the area of pension plans. Perhaps consideration should be given to having specific segments of the public represented by the public members, just as the members who are participants in the System represent specific groups. For example, one public member might represent the business community while another position might always be filled by a representative of organized labor.

If situations arose where there was significant disagreement on the Board regarding a particular issue, an arbitration procedure could be established. Hopefully this adversary type of situation would not arise often, but with a diversity of interests represented, the possibility always exists,

and a procedure should be established to deal with the possibility. One other procedure which might be useful could be to allow the inclusion of a "minority opinion" in any recommendations sent to the legislature if any member of the Board took strong exception to a decision of the Board.

11. ACTUARIAL CONSULTATION: An actuary is hired to act as technical advisor to the Board of Trustees.

    a. Is there any way for the Legislature to effectively evaluate the adequacy of the actuarial advice the Board of Trustees receives?

    b. The statutes require certain duties of the Actuary. What recommendations would you make to alter the duties of the actuary?

A: a. It is very difficult for the Legislature to judge the adequacy of the actuarial advice received by the Board except through such indirect standards as the timeliness and clarity with which the actuary responds to requests for information. The best assurance the Legislature has of receiving sound actuarial advice is by dealing with an experienced and reputable actuary, and the System's present actuary certainly falls within this category.

b. We have reviewed the duties of the actuary as set forth in the 1978 revision of the MSRS Laws, and we have no recommendations for any changes in this area.