

William M. Mercer-Meidinger, Incorporated

CONNECTICUT TEACHERS'  
RETIREMENT SYSTEM

Actuarial Modeling Report  
as of June 30, 1984

February, 1985

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SECTION I

INTRODUCTION

In establishing a funding program for a pension plan, two primary issues should be considered:

- . What are the projected contributions under alternative funding programs?
- . What is the projected funded status of the plan under alternative funding programs?

With regard to projected contributions, two questions should be asked:

- . What will be the long-term trend of annual contributions?
- . What will be the year-to-year variability in contributions?

In order to evaluate the projected funded status, two questions need to be asked:

- . What is the long-term funding goal of the plan?
- . What is the time framework for achieving that goal?

To give the Board and others responsible for the Plan some guidance on these questions, 30-year projections were developed comparing the expected results under the current funding law, and under the proposed revision in the funding law.

Approach

The essence of the approach was to update assets and participant data year-by-year on the assumption that the experience of the System will be exactly as assumed in the June 30, 1984 actuarial valuation. Based on this updated data, year-by-year valuations are run to determine contributions and funded status for each year in the future.

The major additional assumption needed for these projections that was not included in the June 30, 1984 valuation regards new members. For the projections it was assumed that each active teacher who leaves active status will be replaced by a new teacher. Thus, the number of active teachers is assumed to stay constant at 38,418.

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Two projections were made, differing only in the funding law used in determining contributions:

- . The current law calls for a 1985-1986 contribution equal to 55% of the sum of the normal cost plus a 40-year level dollar amortization of the unfunded actuarial liability. This grades up to 100% of the sum for 1994-1995. Subsequent contribution would be normal cost plus level dollar amortization payments over the 40-year period ending June 30, 2034.
- . The proposed law calls for a 1985-1986 contribution equal to 70% of the sum of the normal cost plus a 40-year level percent of payroll amortization of the unfunded actuarial liability. This would grade up to 100% of the sum for 1991-1992. Subsequent contributions would be normal cost plus level percent of payroll amortization payments over the 40-year period ending June 30, 2031.

It can be useful to project what the results would be if the experience of the System turns out differently than assumed in the valuation. Additional projections can be run if the Board would like to have more information about the results if experience differs from assumptions in a specified manner.

The approach followed is described in more detail in Appendix A.

## SECTION II

### PROJECTED CONTRIBUTIONS OF THE SYSTEM

This section of the report gives tables showing the projected contributions based on the current and proposed laws, both as a percent of payroll of members and as dollar amounts.

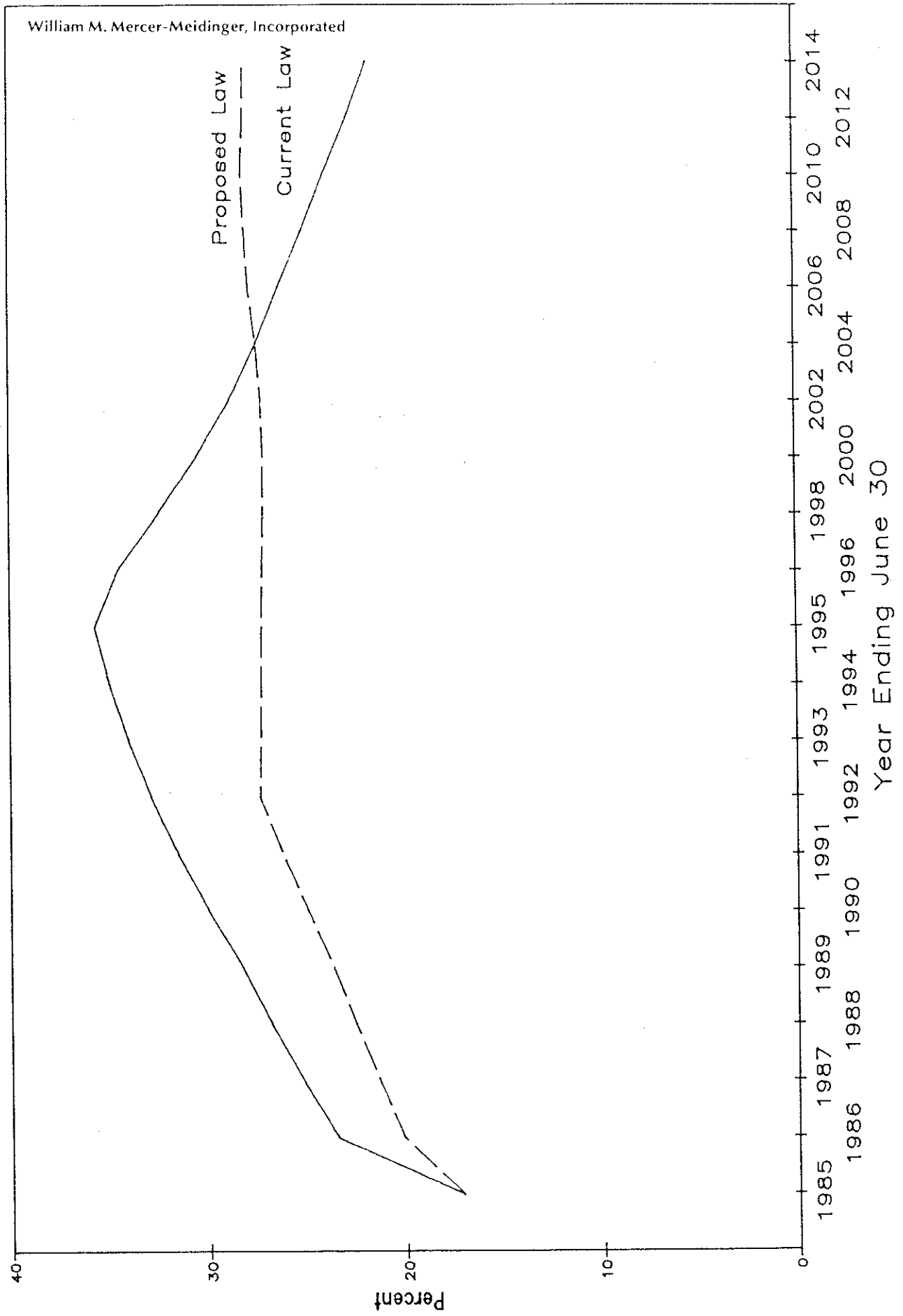
It is assumed that the best available measure of the State's ongoing ability to fund the System is whether the contributions increase at the same rate that the total payroll increases. It is assumed that if the contributions as a percent of payroll do not increase, then the annual increase in dollars in the contribution should not create special problems in preparing the State's budget. Conversely, it is assumed that if the contribution as a percent of payroll does significantly increase year-by-year, that the annual increases in dollars in the contribution will create special problems in preparing the State's budget.

Thus, it is assumed that the series of projected contributions under the proposed law will be significantly easier to budget for than the current law, because it quits increasing as a percent of payroll three years earlier.

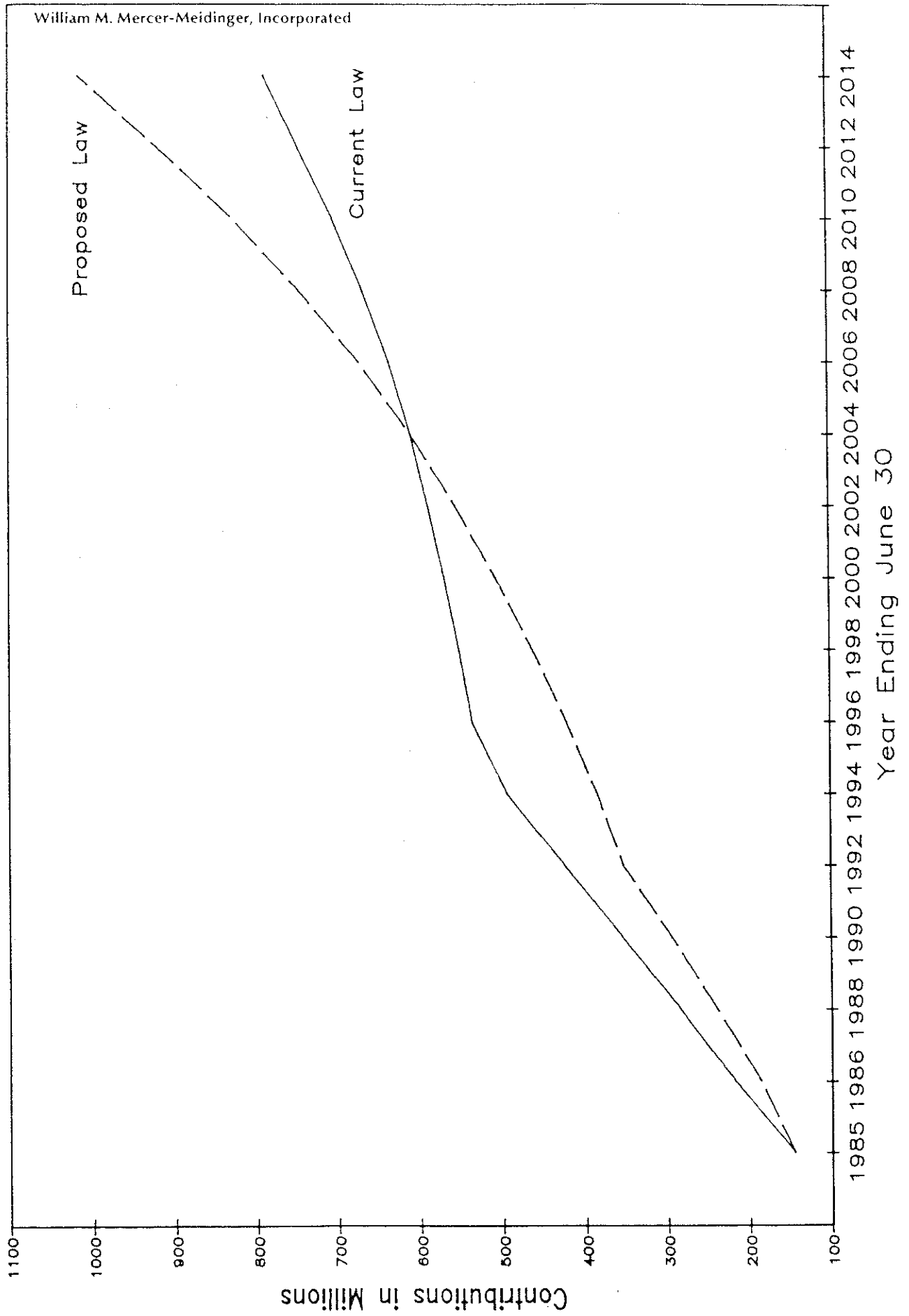
Regarding the long-term trend of contributions, the tables show that under the proposed law, contributions would be significantly lower for 18 years, becoming significantly higher after that. At the end of the 40-year amortization period, both contributions would drop to normal cost only, which would be 11.5% of payroll.

Regarding the possible year-to-year variability of contributions, no alternate sets of possible experience of the System were run to explore this area.

# State Contributions as a Percent of Payroll



# State Contributions in Dollars



### SECTION III

#### PROJECTED FUNDED STATUS OF THE SYSTEM

In evaluating the funded status of a public system two measures are generally looked at:

- . What percentage of the liabilities are covered by the assets, and are coverage ratios improving satisfactorily? (There is not a consensus as to what the coverage ratios ought to be.)
- . What is the ratio of unfunded liabilities to payroll? The point of this test is that a plan can be financially healthy even if the unfunded liability is increasing in dollars, provided it is not increasing as a percentage of payroll of plan members. The reason is that payroll of plan members is one measure of the State's ongoing ability to pay the required contributions.

#### Liability Coverage Percentages

Liabilities of public plans are calculated in three separate ways:

a. Level Percentage of Pay Measure:

For purposes of determining contributions to public plans, the actuarial liability is traditionally calculated as the reserve that is accumulated by contributing every year for every teacher the level percentage of pay that is required for each teacher to fully fund his/her pension on the date he/she retires. The liability calculated under this measure is always significantly greater than under the two measures described below.

b. For purposes of evaluating how well funded a public plan is, a different calculation is used. For this purpose, the value of normal retirement benefits earned to date is used (whether or not these benefits are vested). Two primary variations of this calculation are used:

- . Earned Benefit Measure: The value of the normal retirement benefit earned to date is based on actual pay history.
- . Projected and Benefit Measure: The value of the normal retirement benefit earned to date is based on projected pay at retirement.

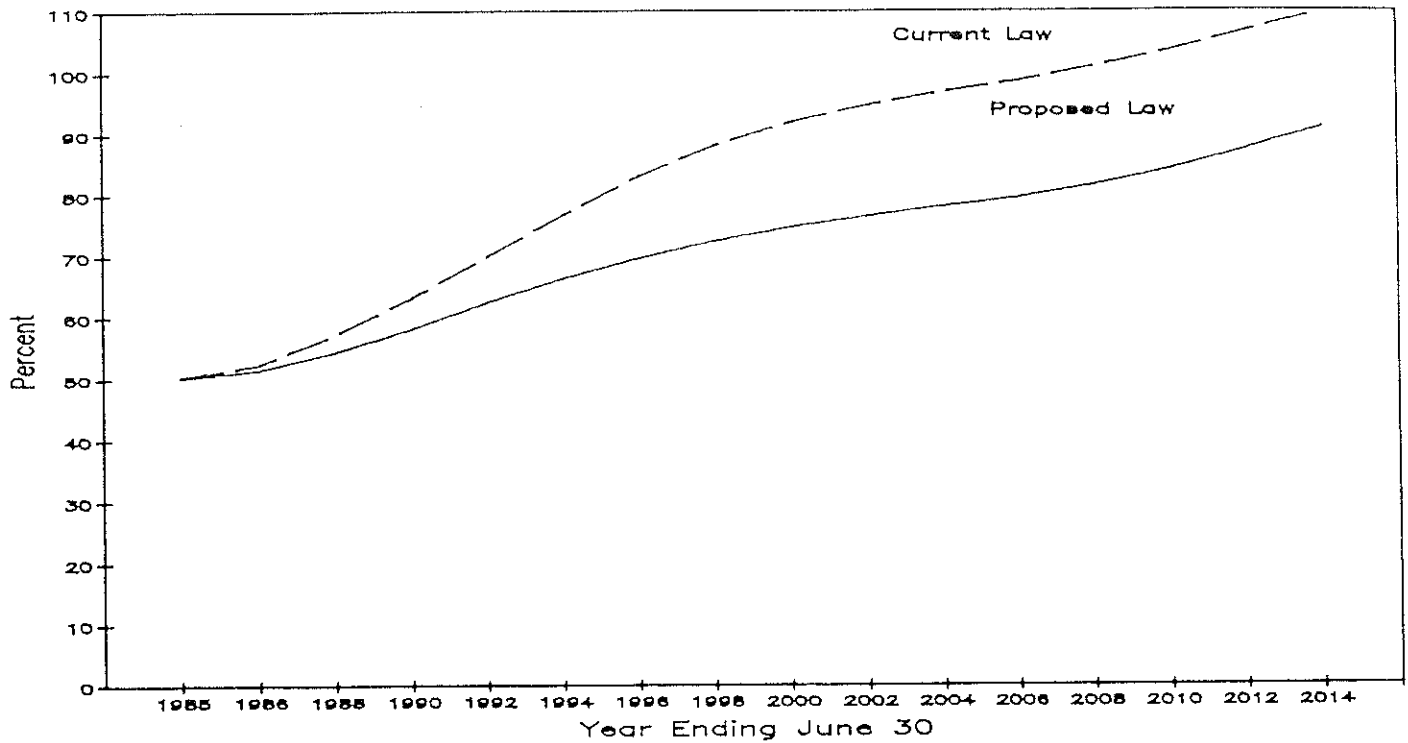
The following tables give the projected coverage ratio and the projected ratio of unfunded liabilities to payroll.



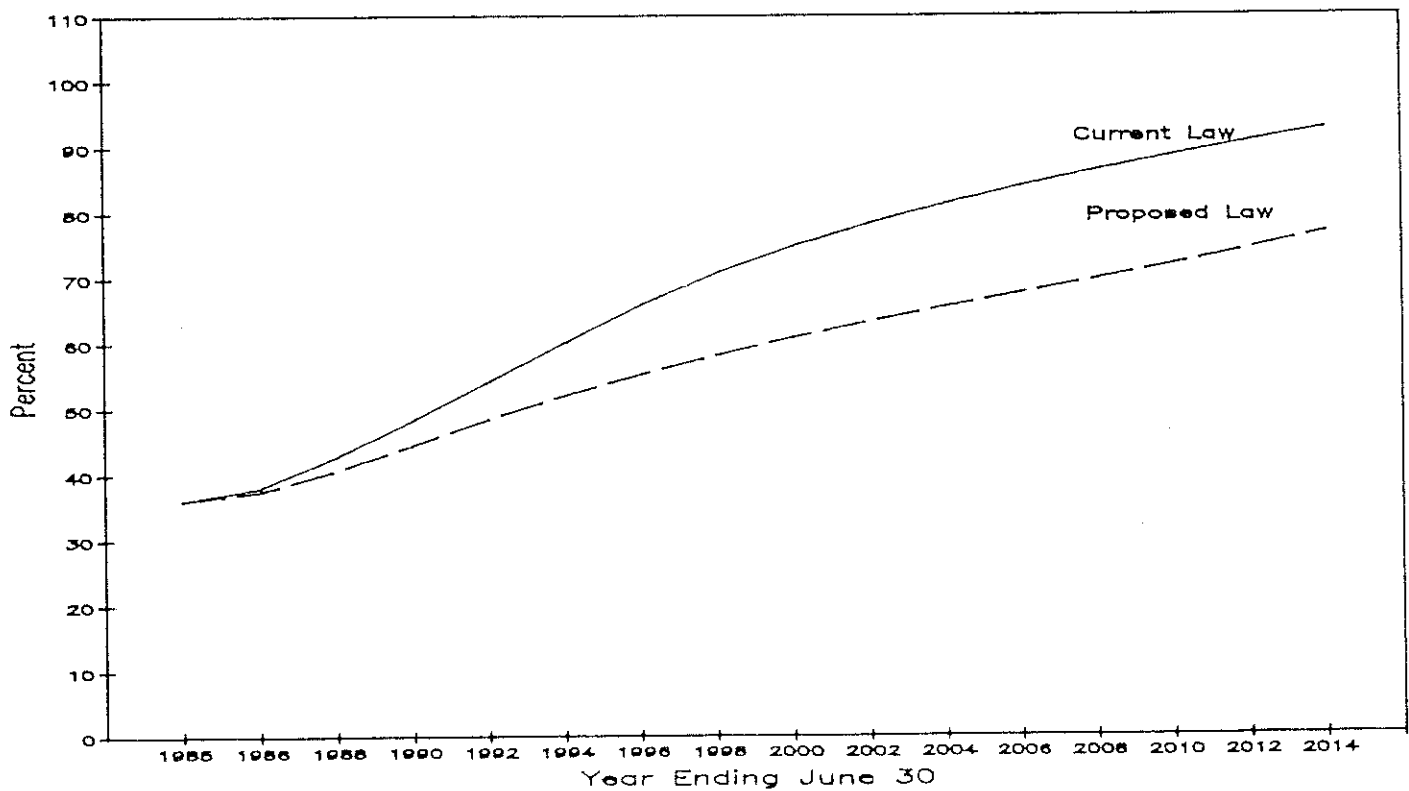
In evaluating the projected coverage ratios, the following points should be noted:

- . Under the current funding law, the System should become fully funded under the Earned Benefit Measure in about 23 years. If the funding objective of the System is to keep fully funded on that measure, the funding law should be changed at that time to reduce contributions.
- . Under the current funding law, the System should become fully funded under the Projected Benefit Measure in about 37 years.
- . Under the proposed law, full funding under the Earned Benefit Measure is not projected to happen for about 33 years. Thus, it will be long enough before either funding objective is met that it is premature now to discuss when the law should again be changed to reduce contributions.

# Projected Funded Status of the System Earned Benefit Measure



# Projected Benefit Measure



# Projected Ratio of unfunded Liabilities to Payroll Level Percentage of Pay Measure

