TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

VALUATION AND REPORT
AS OF JULY 1, 2003

Bryan, Pendleton, Swats & McAllister, LLC
A Wells Fargo Company
Beyond Precision

November 21, 2003

The Honorable Dale Sims, Chairman
Board of Trustees
Tennessee Consolidated Retirement System
Nashville, Tennessee 37219

Dear Mr. Sims:

Submitted herewith are the results of an actuarial valuation of the Tennessee Consolidated Retirement System prepared as of July 1, 2003, pursuant to the provisions of TCA Section 8-34-506. Also included are the actuary's recommendations with respect to contributions by the employers.

We trust that this report will be helpful in formulation of policy with respect to the operation and financing of the System. We very much appreciate the opportunity to serve the Board of Trustees, and will be pleased to supplement this report in any way, as you request.

The staff of the Tennessee Consolidated Retirement System has been extremely helpful and cooperative in developing the information required for this valuation. Their cooperation has been greatly appreciated, and is hereby acknowledged.

Respectfully submitted,

Anthony S. Johnston, F.S.A.

Justin C. Thacker, A.S.A.

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Enclosures

TABLE OF CONTENTS

SECTION

A. INTRODUCTION

An actuarial valuation of the Tennessee Consolidated Retirement System was performed as of July 1, 2003. The purpose of the valuation was to determine the funding requirements of the various components of the System, with the intention that the funding requirements indicated by the valuation would be used as the basis for contributions commencing on July 1, 2004.

The Tennessee Consolidated Retirement System (TCRS) was established as of July 1, 1972 as a successor to the following superseded retirement systems:

Tennessee State Retirement System
Tennessee Teachers' Retirement System
Tennessee Judges Retirement System
Retirement System for County Paid Judges of Tennessee
Attorneys General Retirement System of Tennessee
Public Service Commissioners' Retirement System
Tennessee Retirement System for County Officials

As of the date of establishment, all members and beneficiaries of the superseded systems were covered under the Consolidated System. The assets of each superseded system were transferred to the credit of the Consolidated System, and no further contributions have been made to the superseded systems by either the members or the employers. Separate accounting is maintained under the Consolidated System for the assets and liabilities attributable to the various classes of members and beneficiaries. Benefits under the System are funded by contributions made by members and employers (including the State). The level of such contributions is determined biennially by an actuarial valuation. This report presents the results of the actuarial valuation of the System performed as of July 1, 2003.

The following sections of this report discuss the membership in the System as of the valuation date; the funding levels generated under the approach to funding previously adopted by the Board; the current financial status of the System as a whole and of each major subdivision of the System; an analysis of the factors causing change in the required contribution levels; the validity of the records on which the study was based; the benefits provided by current and superseded systems; and the data on which the valuation was based and the actuarial assumptions utilized in the valuation.

B. MEMBERSHIP

The statute which established the Tennessee Consolidated Retirement System in 1972 specified the three following classifications of employment:

Group I	Teachers and General Employees (State and Political Subdivisions)
Group II	State Policemen, Wildlife Officers, Firemen and Policemen
Group III	State Judges, County Judges, Attorneys General, County Officials, and Public Service Commissioners

Any person who was a member of a superseded system as of June 30, 1972 became a member of the Consolidated System on the date of establishment. Such a member could elect to remain covered by the benefit and contribution provisions of the superseded system of which he was a member, in which case he was classified as a "prior class member". If he did not so elect, he was classified as a member of Group I, Group II or Group III on the basis of his employment category.

Effective July 1, 1976, all new entrants to the System, without regard to their employment category, entered the System as Group I employees. Despite this change, several small groups (those previously classified as "Group III") are treated differently from the bulk of the general employees with respect to funding levels for various reasons.

Effective September 1, 1990, a new Group IV category became available to State Judges. State Judges previously participating in Group I or Group III became eligible to transfer to the new category, and those becoming State Judges on or after the effective date automatically enter Group IV.

The following tables show the number of active and retired members included in the July 1, 2001 and July 1, 2003 valuations.

THE NUMBER AND ANNUAL COMPENSATION OF
ACTIVE MEMBERS INCLUDED IN THE 2001 AND 2003 VALUATIONS

	Number		*Pct*	Compensation		*Pct*
GROUP	2001	2003	*Change*	2001	2003	*Change*
Group I						
Contributory Teachers	65,492	66,770	2.0%	2,560,094,101	2,762,152,883	7.9%
General Employees:						
State	59,772	60,459	1.1%	1,775,544,306	1,898,939,582	6.9%
University of Tennessee (TIAA)	712	577	(19.0%)	55,169,604	50,037,267	(9.3%)
Separately Funded Systems	516	534	3.5%	31,344,789	34,029,309	8.6%
Sub-Total	61,000	61,570	0.9%	1,862,058,699	1,983,006,158	6.5%
Political Subdivisions	68,914	71,832	4.2%	1,537,971,658	1,725,737,468	12.2%
Total - Group I	195,406	200,172	2.4%	5,960,124,458	6,470,896,509	8.6%
Group II						
State Policemen and Wildlife Officers	144	102	(29.2%)	7,607,885	5,676,415	(25.4%)
Firemen and Policemen	169	109	(35.5%)	7,621,877	5,397,737	(29.2%)
Total - Group II	313	211	(32.6%)	15,229,762	11,074,152	(27.3%)
Group III (including Superseded Systems)						
State Judges - Group III	2	2	--	208,968	222,120	6.3%
Attorneys General - Group III	5	5	--	490,979	520,388	6.0%
County Judges - Group III	5	5	--	350,175	374,249	6.9%
County Officials - Group III	21	14	(33.3%)	1,103,793	800,195	(27.5%)
State Judges - Superseded	5	4	(20.0%)	541,896	464,928	(14.2%)
Attorneys General - Superseded	7	4	(42.9%)	568,892	372,617	(34.5%)
County Judges - Superseded	1	0	(100.0%)	30,000	0	(100.0%)
County Officials - Superseded	12	7	(41.7%)	591,058	359,984	(39.1%)
Total - Group III	58	41	(29.3%)	3,885,761	3,114,481	(19.8%)
Group IV - Judges	169	173	2.4%	17,807,046	19,348,818	8.7%
State - All Groups	126,863	128,656	1.4%	4,451,453,492	4,773,298,755	7.2%
Political Subdivisions- All Groups	69,083	71,941	4.1%	1,545,593,535	1,731,135,205	12.0%
Grand Total - All Groups	195,946	200,597	2.4%	5,997,047,027	6,504,433,960	8.5%

THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES CURRENTLY PAYABLE TO BENEFICIARIES ON THE RETIREMENT ROLLS

GROUP	Number 2001	Number 2003	***Pct Change***	Amount 2001	Amount 2003	***Pct Change***
Group I						
Contributory Teachers	28,077	29,580	5.4%	402,199,952	464,867,635	15.6%
General Employees:						
State	25,579	27,551	7.7%	238,788,075	277,618,522	16.3%
University of Tennessee (TIAA)	2,025	2,051	1.3%	16,641,508	18,189,926	9.3%
Separately Funded Systems	87	108	24.1%	863,723	1,179,708	36.6%
Sub-Total	27,691	29,710	7.3%	256,293,306	296,988,156	15.9%
Political Subdivisions	20,217	22,092	9.3%	92,139,302	108,956,036	18.3%
Total - Group I	75,985	81,382	7.1%	750,632,560	870,811,827	16.0%
Group II						
State Policemen and Wildlife Officers	551	573	4.0%	12,152,347	13,929,965	14.6%
Firemen and Policemen	533	581	9.0%	9,748,967	11,597,157	19.0%
Total - Group II	1,084	1,154	6.5%	21,901,314	25,527,122	16.6%
Group III (including Superseded Systems)						
State Judges - Group III	8	8	--	40,931	42,583	4.0%
Attorneys General - Group III	11	10	(9.1%)	210,961	211,074	0.1%
County Judges - Group III	23	25	8.7%	320,147	353,845	10.5%
County Officials - Group III	74	78	5.4%	1,057,490	1,182,455	11.8%
State Judges - Superseded	94	91	(3.2%)	6,209,000	6,015,351	(3.1%)
Attorneys General - Superseded	116	120	3.4%	5,021,273	5,200,462	3.6%
County Judges - Superseded	155	142	(8.4%)	4,755,064	4,555,590	(4.2%)
County Officials - Superseded	226	208	(8.0%)	3,948,145	3,937,617	(0.3%)
Total - Group III	707	682	(3.5%)	21,563,011	21,498,977	(0.3%)
Group IV - Judges	55	61	10.9%	1,579,401	1,744,001	10.4%
State - All Groups	57,081	60,606	6.2%	693,788,017	799,028,734	15.2%
Political Subdivisions- All Groups	20,750	22,673	9.3%	101,888,269	120,553,193	18.3%
Grand Total - All Groups	77,831	83,279	7.0%	795,676,286	919,581,927	15.6%

C. DETERMINATION OF FUNDING LEVELS

General Method

The statute which established the Tennessee Consolidated Retirement System prescribed a "frozen initial liability" method of valuation, under which an initial unfunded accrued liability is established for each major cost group, and the remainder of the cost of the System is borne by a "normal cost" contribution. Under that method as it is usually utilized, the "normal cost" calculated as a part of each subsequent valuation absorbs any variation of actual from expected experience.

Prior to 1975, the unfunded accrued liability was not being amortized. In that year, a 40-year amortization of the unfunded accrued liability was begun, except that (in accordance with the statute at that time) cost of living benefits remained on a "pay-as-you-go" basis.

In 1977, the statute was changed to provide for advance funding of cost of living benefits. It was decided to amortize the additional accrued liability arising from these benefits as a percent of payroll, rather than by level dollar annual payments. The result was to arrive at a contribution rate consisting of three segments: a "normal cost"; an "accrued liability level dollar" amortization of the unfunded accrued liability for basic benefits; and an "accrued liability percent of payroll" amortization for the additional accrued liability arising from cost of living benefits. For closed groups, all of the unfunded accrued liability was amortized on a level dollar basis.

Under the present statute, the Trustees can decide whether to freeze the prior valuation's unfunded accrued liability, or to reestablish that figure. From time to time, the unfunded accrued liability has been reestablished rather than frozen. Reestablishment has generally occurred when there have been significant changes in benefits or actuarial experience and has been elected in order to more accurately portray the unfunded liability of the system. The long term trend has been for the unfunded liability to decrease due to favorable plan experience in spite of significant benefit improvements.

State

Funding History

In 1981, the State began making the contributions previously made by State Group I employees and teachers associated with higher education, in lieu of part of the salary increase these participants would otherwise have received. Separate contribution rates were developed for "contributory" (K-12) teachers and "non-contributory" (higher education) teachers. These rates were artificially adjusted so as to retain a reasonable relationship between the two rates; exact separate calculations were not made because the total pool of assets accumulated for teachers was not being accumulated separately for the two groups.

In 1983, several improvements were made to the funding program:

1. The unfunded accrued liability was treated as if it had been frozen in 1981, rather than being reestablished. This action had little effect on 1983 contribution rates, but established the desired precedent --- once frozen, the unfunded accrued liability would decrease regularly until it disappeared in 2015.
2. All of the "percent of payroll" amortization piece for State employees and 70% of the equivalent piece for teachers were shifted to the stronger "level dollar" amortization basis.
3. Contribution rates for several of the smaller groups were recombined to reflect more accurately the sources of the money used to fund them.

Separate rates were again computed for "contributory" and "non-contributory" teachers, involving an artificial differential intended to keep the relationship of the two rates reasonable.

In 1984 and again in 1985, the Legislature allocated excess general State funds to the TCRS. Some of these funds were allocated to the superseded ("prior class") State Judges and Attorney General Systems, for which existing funding was not proving adequate. The intention of this infusion of funds was to make it feasible to fund the remaining liabilities of these closed systems in reasonably level dollar amounts over the next 30 years. Other funds were intended to fund in advance the "bonus", "aged teacher" and "aged State employee" programs that had previously been funded on a year-by-year basis from the operating budget.

In 1985, the remaining 30% of the frozen accrued liability for teachers was shifted to the "level dollar" amortization basis. A new set of actuarial assumptions was adopted, based on the 1984 study of actual experience under the TCRS. The rates called for by the 1985 valuation were generally somewhat lower than the rates then being contributed. As a conservative measure, the Board of Trustees voted to continue utilizing the then-current rates, rather than allowing the rates to drop.

Between 1985 and 1987, the TCRS experienced large actuarial gains due to investment earnings substantially in excess of the actuarial assumption of 8.5%. Even when the smoothing procedure utilized since 1981 was applied to plan assets, to avoid undue fluctuations in contribution rates, the strong investment performance of the two-year period generated actuarial gains, lowering the required contribution rates. The Board of Trustees, unsure how the stock market would react to a 500 point decline of the Dow Jones Industrial Average on October 19, 1987, adopted contribution rates which "split the difference" between the then-current rates and the much lower rates called for by the 1987 valuation. Contribution rates for the major groups still dropped significantly; nevertheless, the adopted rates included considerable margins over the "required" rates, in order to minimize the likelihood of having to increase the rates in 1989.

Also in 1987, a "consolidated State" contribution rate covering all groups for whom the State was directly responsible was adopted. This group included higher education (non-contributory) teachers and a closed group of University of Tennessee teachers whose TIAA benefits are supplemented by the TCRS, as well as all Group I and Group II State employees. This change was made for purposes of administrative simplicity, and also to avoid questions concerning classification of higher education employees which had arisen in the past. Teachers who were still contributing to the TCRS (K-12 teachers) remained as a separate group.

Between 1987 and 1989, the valuation "target" rates necessary to continue the 40-year funding program begun in 1975 decreased still further. Several factors contributed to this decline. First, the unfunded accrued liability frozen in 1981 was being amortized by level dollar annual contributions; as the covered payroll increases, as it had each year since 1983, these level dollar amounts represent a decreasing percentage of each year's covered payroll. Second, actuarial gains had emerged. Third, the fact that contributions during the two years actually exceeded the targets called for by the 1987 valuation meant that current assets exceeded the amounts which would have been on hand if the valuation "target" rates had actually been adopted. For all these reasons, the 1989 valuation rates declined significantly from the 1987 rates.

A 1988 study of experience under the TCRS had led to the adoption by the Board of Trustees of a new set of actuarial assumptions for the 1989 valuation. While some of the new assumptions would require less money to go into the trust (for example, it was assumed that continuing participants would receive annual salary increases of 7% each year, rather than 8%), overall the new set of assumptions was more conservative than the old set. Therefore, the "1989 valuation rates" were somewhat higher than they would have been if the new, more conservative set of assumptions had not been adopted.

Because it was felt that most of the conditions which had caused the required contribution rates to decline from 1987 to 1989 would continue to apply after 1989, the Board of Trustees voted to adopt the 1989 "target" rates as the actual contribution rates, effective July 1, 1990.

As expected, the required contribution rates developed in 1991 were lower than the 1989 rates. The Board of Trustees again voted to adopt the 1991 "target" rates as the actual contribution rates, effective July 1, 1992.

The quadrennial experience study performed in 1992 indicated that the demographic assumptions which had been used in the 1989 and 1991 valuations had turned out to be accurate. Investment performance during the proceeding few years had substantially exceeded the 8% interest assumption, and salary increases during the last few years had fallen short of the 7% salary assumption. Therefore, the Board of Trustees took the position that continuing to utilize the same set of actuarial assumptions was an appropriate practice, retaining a reasonable yet conservative approach to the calculation of required contribution rates.

From 1991 to 1993, the System generated unusually large actuarial gains. Investment earnings exceeded expected earnings (on the 8% basis) by over $675,000,000. Freezes on salaries had minimized salary increases during the valuation period, leading to additional large actuarial gains. The effect of these two large sources of gains was to lower required contribution rates substantially.

A further result of these actuarial gains was to create several anomalies in the funding method; the most prominent of which was a "negative normal cost" for the Consolidated State. The unfunded accrued liability of each group for which a contribution rate is obtained had not been reestablished since 1981. During that period, there had been substantial actuarial gains, culminating in the large gains from 1991 to 1993. All of the gains had been absorbed into the "normal cost" component of the contribution. As a result, the remaining unfunded accrued liability had become the major component of the remaining employer liability; in the case of the Consolidated State, the unfunded accrued liability, which had been brought forward as a dollar amount from year to year, exceeded the State's total liability for the group.

In order to remove these anomalies, the Board of Trustees decided, as authorized by TCA Section 8-37-304, to reestablish the unfunded accrued liability for each group. The result was that a much smaller unfunded accrued liability remained for teachers, that unfunded accrued liabilities increased for County Judges and Officials and for State Judges and Attorneys General (Superseded), and that there was no longer an unfunded accrued liability for the other contribution groups.

Actual contributions for the two smaller groups which still had unfunded accrued liabilities were not affected by the reestablishment. Benefits for County Judges and Officials are funded through litigation taxes, so the actuarially determined contribution rate serves only as a benchmark. Superseded State Judges and Attorneys General are being funded by level annual contributions which are intended to pay off the group's <u>total</u> liability by 2015, without regard to the subdivision between "normal cost" and "accrued liability."

Rather than allowing the rates to drop substantially, the Board of Trustees followed the course which had been authorized in previously-approved legislation:

1. Portability among members who had service in more than one membership classification was improved.
2. The base benefit of active and retired members in most categories was increased by 5%.
3. The amortization period for the Contributory Teachers was decreased to 10 years. However, the Board retained the right to increase the amortization period in the future, so long as the resulting amortization period did not exceed the original "40 years from 1975."

Even after these benefit and funding improvements, the 1993 contribution rates for the major groups decreased slightly.

From 1993 to 1995, actuarial experience was not as favorable as it had been in prior years. Although the required contribution rate for Contributory Teachers decreased further, the required contribution rate for the Consolidated State group increased for the first time in several years.

The Trustees adopted the actuary’s recommendation that unfunded accrued liabilities be reestablished for the three groups for which such liabilities existed. Since Section 8-37-305 of the TCA specifies that the accrued liability contribution is to be discontinued for any member classification as soon as the unfunded accrued liability becomes zero, the unfunded accrued liabilities were not reestablished for the groups which had reached that goal in 1993. Reestablishment for the three entities with remaining liabilities was elected in order to maintain a more realistic balance between the accrued liability contribution and the normal cost contribution.

As mentioned above, the Board retained the right to extend the amortization period for Contributory Teachers from the eight-year period remaining from the ten-year amortization schedule adopted in 1993 to a period that in 1995 was permitted to be as much as twenty years. The primary purpose of retaining this right was as a safety valve to avoid undue strain on the State's resources in the event of a future increase in required contributions due to actuarial losses. Reversion to the twenty-year amortization schedule was elected in order to mitigate contribution volatility associated with the leveraged position as plan assets equaled approximately 80% of projected benefit values.

The quadrennial experience study conducted in 1996 led the Trustees to adopt a set of more conservative withdrawal and mortality assumptions for the Contributory Teacher group. The study also concluded that economic assumptions should be revised to reflect lower prevailing rates of inflation, as inflation had declined significantly since the previous review was conducted. Consequently, the assumed investment return rate was revised downward from the 8% per annum rate used in the 1995 valuation to 7.5%. The assumed annual rate of salary increase, which is also expected to contain an inflation component, was revised downward from 7% to 5.5%.

Unrelated to the assumption changes resulting from the experience study was a recommended modification in the asset valuation method. An asset smoothing procedure had been applied in determining the asset value upon which contributions are based since 1981. The purpose of the smoothing process was to dampen the effect of investment volatility so that contributions were not unduly affected by short-term changes in investment results. Under the procedure used in prior plan valuations, fixed income investments had been treated differently than equities and had been valued at book value. Equities were valued by adjusting the book value of the equity portion of the portfolio by a factor which reflected the five-year moving average ratio of the equity market to book values.

While the previous methodology had served the purpose of reducing volatility adequately, the procedure differed from the methods mandated by recently applicable Governmental Accounting Standards Board (GASB) Statements 25 and 27. Under the GASB standards, the entire portfolio, rather than the equity portion only, must be adjusted to recognize changes in market value. The revised methodology approved for the plan expanded the moving average procedure then in use to apply to all plan assets.

The 1997 valuation recognized benefit modifications that were adopted by the legislature in the 1997 Appropriation Act as follows –

1. The arithmetic, or simple, form of cost-of-living adjustment was replaced by a geometric, or compounded, adjustment. The modification was effective January 1, 1998 and included a "catch-up" feature for then current retirees.
2. Salary "loading" for Consolidated State employees hired prior to July 1, 1981 and for whom employee contributions had been eliminated was permanently extended.

3. Contribution rates related to the geometric cost-of-living adjustment and permanent salary extension were implemented effective as of January 1, 1998 and July 1, 1998, respectively.

As of July 1, 1997, an unfunded accrued liability remained for the Contributory Teacher group and two other small groups. The Trustees elected to reestablish the liability for all three groups resulting in the elimination of the unfunded accrued liability for Contributory Teachers and leaving an unfunded accrued liability for only the County Judges and Officials and State Judges and Attorneys General (Superseded).

Contribution rates produced by the 1999 valuation continued to benefit from favorable investment experience. Lower than expected salary increases to Teachers also contributed to lower contribution rates. Factors influencing higher contributions were the addition of new entrants for whom contribution rates were higher because they did not benefit from prior accumulated gains and modifications in valuation programming to accommodate improvements in valuation techniques. The trend for the Teachers employer contribution rate continued to decline. An increase in the State employer contribution rate resulted in the State rate for the first time exceeding that for Teachers.

Between 1997 and 1999, TCRS record keeping procedures were revised to eliminate maintenance of the fund book value. Since prior asset valuation methods were based on a historical comparison of the relationship between book and market value, the valuation asset method was revised for the 1999 valuation. A primary consideration in selecting the revised method was that the prior method should not be altered more than necessary. Under the revised method, the asset value used in computing plan contributions was determined by recognizing "excess earnings" occurring in each preceding year over a five year period following the year of recognition. Excess earnings in a year are earnings above the investment returns that would have occurred if the plan earned the actuarially assumed rate for the year. Excess earnings or losses so computed for each year were phased in ratably over five years. For conservatism, excess losses for a year were applied first to reduce accumulated excess earnings on a dollar for dollar basis before phasing the remainder.

During 1999, an actuarial audit of the primary calculations underlying the valuation was conducted by Buck Consultants, a national actuarial consulting firm with significant public plan experience. Conclusions and opinions resulting from the audit were discussed in a report prepared by Buck Consultants. Significantly, the audit endorsed the actuarial valuation methodology and the basic liability results used in computing contributions for the TCRS.

A quadrennial experience study was conducted in 2000 covering the period of plan operations from July 1, 1996 through June 30, 2000. The study compared the actuarial assumptions used to determine contribution rates with the actual experience of the plan. The review concluded that economic assumptions including the assumed rate of investment return and the inflation assumption should be unchanged. Modifications however were recommended for the salary increase rate and many of the demographic assumptions.

The assumed rate of salary increase employed in the 1999 actuarial valuation was a uniform rate of 5.5% that was applied to all ages. The assumed rate was higher than actual aggregate experience. Also, the pattern of salary increase rates was such that increases for younger participants were considerably higher than those for older participants. An age graded scale was recommended to replace the uniform scale. The revised scale was slightly lower than the prior scale but more accurately reflected career salary patterns.

In the four-year period covered by the experience study, post retirement mortality rates improved extending the precedent established in earlier studies. Improvement was observed for both Teachers and State groups. Since the standard tables did not appear to represent the TCRS retiree mortality pattern, a revised table modeled after TCRS experience was developed. The revised table was more conservative than the table previously used for State retirees and somewhat less so for the Teachers.

The continued pattern of mortality improvement noted in 2000 and previous experience studies is compatible with national trends and suggests that actuarial valuation procedures should be modified to anticipate future improvements. Relatively few public or private plan sponsors however have adopted projection mortality tables in which future improvements are recognized. The recognition of future improvements, as opposed to those that have occurred in the past, was considered but was not incorporated into the current mortality tables. Adoption of projected mortality at the earliest feasible date is recommended.

Predicted rates of termination and retirement of both State and Teachers groups were modified significantly to recognize separation patterns measured on the basis of liabilities. The revised tables recommended by the study resulted in increased contribution rates for both groups. Following a policy of gradual absorption of significant contribution rate changes, the Board elected to phase in the termination rates for the State and Political subdivision groups ratably over a cycle of three actuarial biennial valuations beginning in 2001.

The aggregate effect of recommended 2001 actuarial valuation salary and demographic changes (including the decision to phase in State termination rates) was to increase Teacher and State employer contribution rates by 0.3% and 1.1% respectively.

The adoption of revised valuation mortality tables suggested that a review of the actuarial factors utilized in computing plan actuarial equivalent benefits should be modernized. Administrative factors for survivorship plans, early reduction and delayed retirement had been last revised prior to 1990. Since the time of their adoption, the assumed actuarial valuation interest rate was reduced from 8.0% to 7.5% and mortality improvements have been implemented. Accordingly, the Board recommended modification of the administrative factors as of July 1, 2002.

2003 Valuation

Plan contribution rates resulting from the current and preceding valuations are shown in the schedule on page C-12. Plan contributions established by the current valuation suffer from continued adverse investment experience. Rates of investment return for fiscal years ending in 2002 and 2003 were negative 1.92% and positive 4.90% respectively. Actuarial experience in the aggregate was unfavorable resulting in an increase in the aggregate contribution level. The impact of plan experience is discussed further in the Gain and Loss Analysis section of the report. Contribution rates for Teacher and State groups increased by 2.10% and 2.84%, respectively, due primarily to the unfavorable investment performance.

The unfunded accrued liability for the major contribution groups was eliminated in earlier valuations. An unfunded amount for the County Judges and Officials and State Judges and Attorneys General (Superseded) groups remains as of July 1, 2003. The liability for both groups has been reestablished to maintain a reasonable relationship between past and future cost allocations.

A quadrennial experience study was conducted in 2000 covering the period of plan operations from July 1, 1996 through June 30, 2000. The study compared the actuarial assumptions used to determine contribution rates with the actual experience of the plan. The review concluded that economic assumptions including the assumed rate of investment return and the inflation assumption should be unchanged. Modifications however were recommended for the salary increase rate and many of the demographic assumptions.

With one exception, the assumption changes resulting from the experience study were implemented effective July 1, 2001. The actuarial valuation report as of that date recommended that assumptions for the State group be partially recognized at the time of the 2001 actuarial valuation. Full implementation of the suggested demographic changes was deferred with the recommendation that the remainder of the effect of the proposed termination table be phased in by adopting successive one third increments in the next two valuations. The second step in the phase in process has been made in the 2003 valuation with the remainder expected to be recognized in 2005. Consolidated State contributions increased by 0.40% due to the 2003 change in assumptions.

Adverse experience, discussed above, will dramatically affect political subdivision contribution rates and may result in rates that are difficult to sustain for some entities. In order to reduce contribution volatility, it is recommended that sponsors for whom rate increases are significant be permitted to extend the period upon which unfunded accrued liability amortization payments are based beyond the existing schedules to thirty years.

A similar termination table phase in concept was recommended in 2001 for Political Subdivisions. It is recommended that the second stage of the phase be implemented for Political Subdivisions effective July 1, 2003.

A quadrennial experience study is next anticipated for the period from July 1, 2000 through June 30, 2004. The results of that study will be reviewed by the Board of Trustees with the expectation that resulting recommendations will be implemented at the time of the next valuation which will take place as of July 1, 2005.

Annual contribution rates include an administrative charge that has been revised as of July 1, 2003. The previous administrative charge of 0.13% has been reduced to 0.12% to reflect improvements and efficiencies in administrative processes.

No significant changes in plan benefits were implemented since the 2001 actuarial valuation.

Future expectations

The pattern of plan contributions produced by valuations since 1975 had until 2001 been generally downward. The pattern was due primarily to actuarial gains accruing during the period. These gains are attributable largely to lower than expected salary increases and greater than expected investment returns.

Although TCRS has over the past twenty years experienced investment gains, it appears unlikely that further significant gains will occur. Data produced by capital asset pricing models cited in the 2000 actuarial experience study indicate that a reasonable expectation of future returns for the plan, given the current portfolio mix, is approximately equal to the current return assumption.

TCRS assets are based upon a valuation asset method that endeavors to reduce contribution volatility by recognizing investment gains and losses ratably over a five year period from the date of recognition. Approximately $1,900,000,000 of investment losses are currently excluded from valuation assets but will be recognized during the next two valuation cycles. Continued recognition of prior investment losses is expected to increase State and Teachers contribution rates by approximately 3.0% in 2004.

The adoption in the 2001 valuation of a more realistic but less conservative salary scale suggests that salary gains are less probable. The revised age related salary scale which replaced the prior uniform 5.5% salary scale reduced the margin that previously existed.

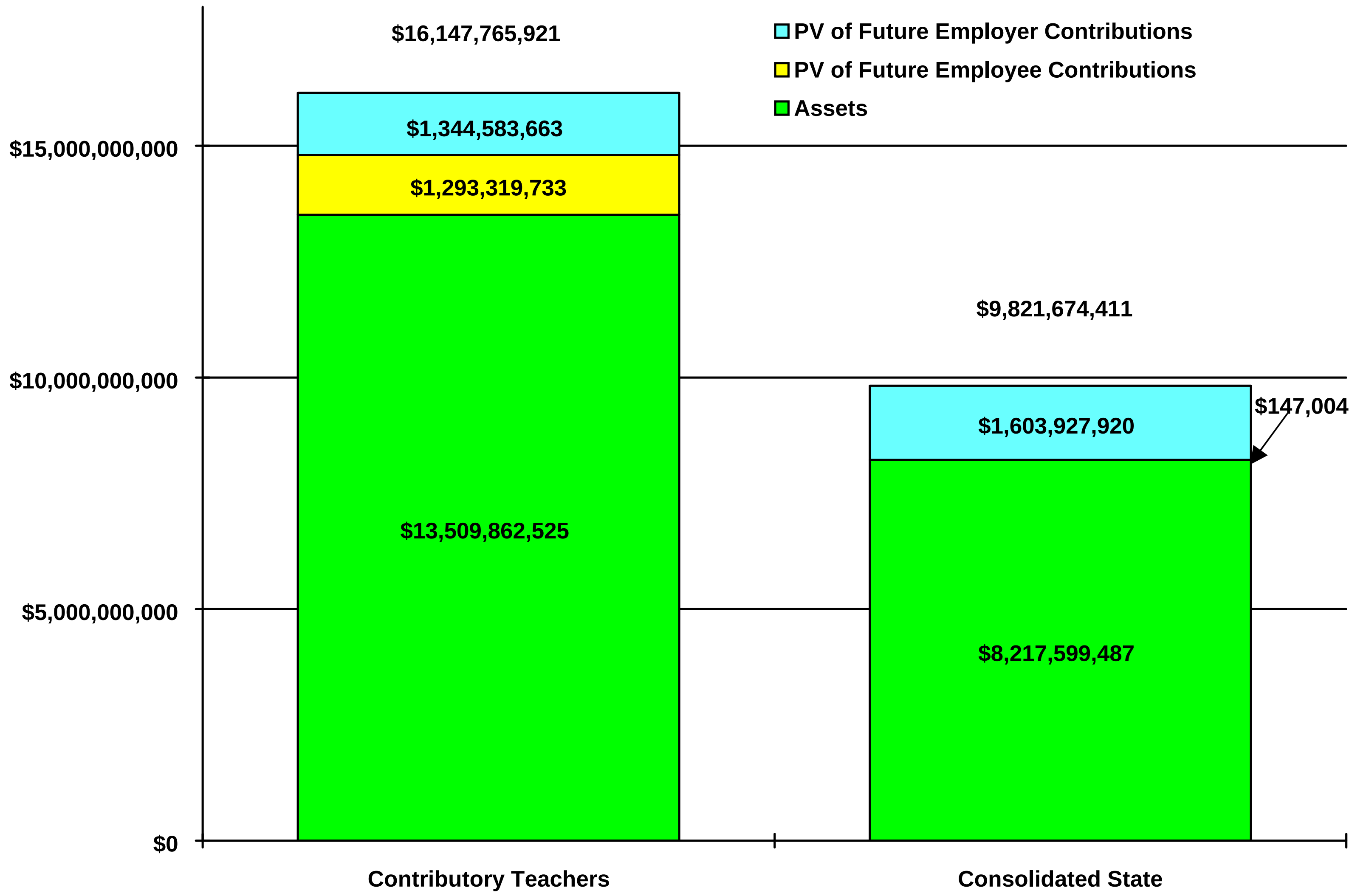
For State and Political Subdivision groups, the current valuation is based upon an intermediate termination rate which is somewhat less conservative than the tables recommended by the 2000 experience study. A recommendation was made in the 2001 valuation that the full termination table be implemented over the course of the three biennial valuations beginning in 2001. Implementation of the final phase of the recommended table would result in an additional contribution rate increase of approximately 0.40% for the State group.

As evidenced by the current valuation, there is upward pressure on contribution rates due to new entrants. Rates for new entrants are generally higher for Teachers than those for existing participants because they do not have the benefit of past actuarial gains that affect existing participant rates. The opportunity for rehired former participants to purchase prior service credits results in further rate pressure.

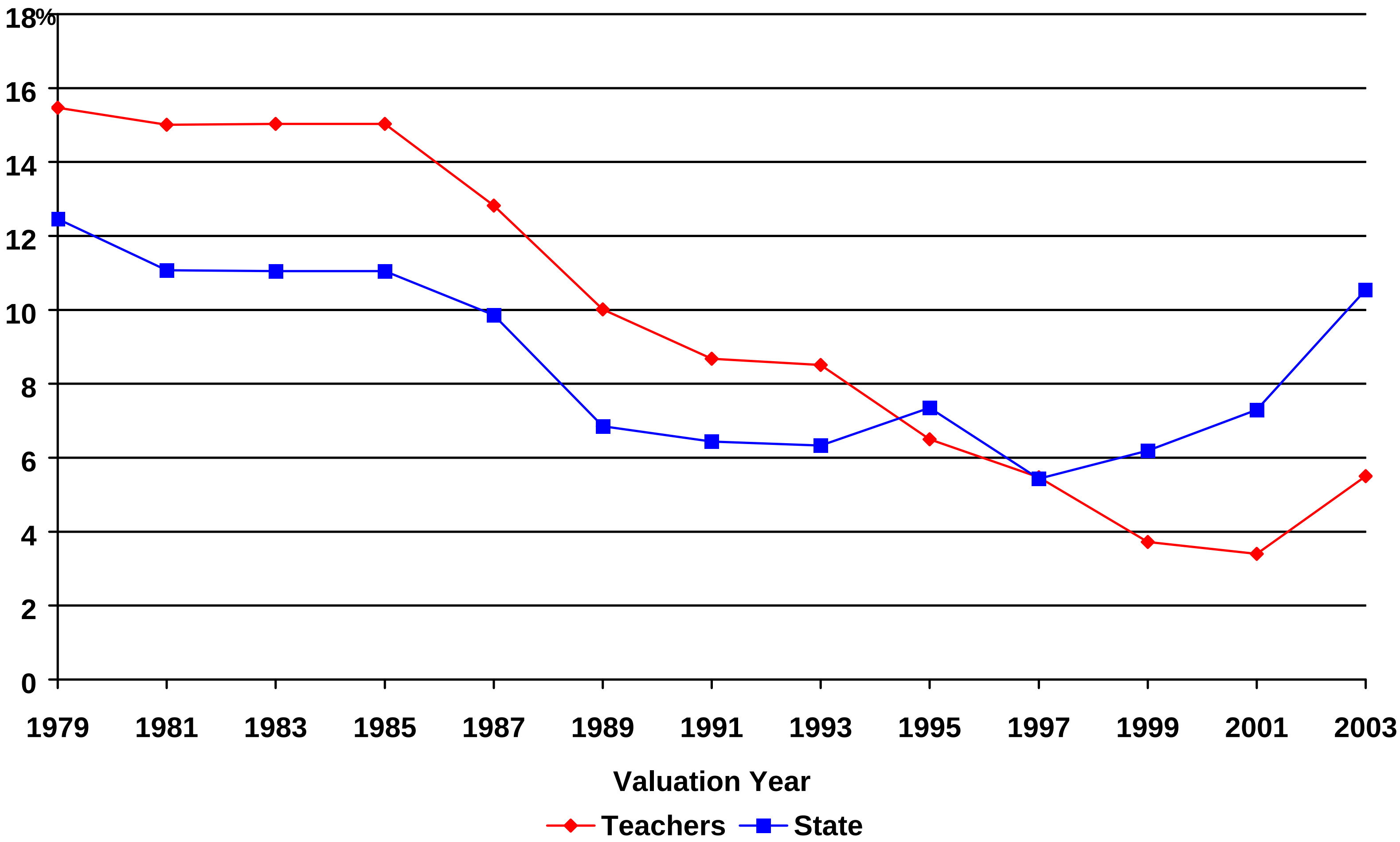
Finally, the most serious single risk for contribution rates is the issue of projected mortality. It is believed that the current mortality table does not adequately recognize expected future mortality improvements. Adoption of a revised table reflecting projected mortality is recommended at the earliest opportunity.

In summary, it seems unlikely that contribution rate declines of the magnitude occurring in the past will develop again in the near future.

PRESENT VALUE OF BENEFITS
July 1, 2003



HISTORY OF TCRS CONTRIBUTION RATES



COMPARISON OF TCRS EMPLOYER CONTRIBUTION RATES

	2003 Active Payroll	2001 Contribution Rate	2003 Contribution Rate
Contributory Teachers	$ 2,762,151,617	3.40%	5.50%
Consolidated State [1]	1,954,652,775	7.30%	10.54%
State Judges (Groups I, III & IV)	19,570,938	13.41%	14.94%
Attorneys General (Groups I & III)	34,233,746	12.03%	12.82%
County Judges and Officials (All) [2]	1,850,379	88.96%	23.07%
State Judges and Attorneys General (Superseded)	837,545	658.81%[3]	769.48%[3]

[1] The University of Tennessee pays an additional 10% of covered payroll for TIAA coverage. The rates shown relate only to TCRS benefits.

[2] Theoretical contribution rate. Actual funding is the amount received from litigation taxes.

[3] The required rate of 769.48% actually represents an annual contribution of $6,444,766, the annual amount required to amortize all liabilities relating to this group over the next 12 years. The contribution amount developed for the 2001 actuarial valuation was $7,317,994.

VALUATION BALANCE SHEET
TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
July 1, 2003

ASSETS	**Total State**	**Contributory Teachers**	**Consolidated State**	**State Judges (Groups I, III, & IV)**	**Attorneys - Gen. (Groups I & III)**	**County Judges and Officials (All)**	**State Judges & Attorneys-General (Sup.)**
Present assets creditable to:							
State Accumulation Fund	$19,191,061,582	$11,384,253,421	$7,464,024,613	$69,948,126	$60,155,758	$119,776,001	$92,903,663
Members' Fund	2,908,190,130	2,125,609,104	753,574,874	9,106,769	14,289,887	3,251,625	2,357,871
Total Present Assets	$22,099,251,712	$13,509,862,525	$8,217,599,487	$79,054,895	$74,445,645	$123,027,626	$95,261,534
Present value to prospective contributions payable to:							
State Accumulation Fund:							
Normal	$3,004,425,125	$1,344,583,663	$1,603,927,920	$16,344,127	$38,737,375	$495,904	$336,136
Accrued Liability	52,493,209	0	0	0	0	1,183,478	51,309,731
Total	$3,056,918,334	$1,344,583,663	$1,603,927,920	$16,344,127	$38,737,375	$1,679,382	$51,645,867
Members' Fund	1,294,805,852	1,293,319,733	147,004	1,016,798	103,219	191,321	27,777
Total Prospective Contributions	$4,351,724,186	$2,637,903,396	$1,604,074,924	$17,360,925	$38,840,594	$1,870,703	$51,673,644
Total Assets	$26,450,975,898	$16,147,765,921	$9,821,674,411	$96,415,820	$113,286,239	$124,898,329	$146,935,178
LIABILITIES							
Present value of prospective benefits payable on accounts of:							
Present retired members and contingent annuitants	$9,071,081,541	$5,320,302,043	$3,479,280,590	$18,700,400	$10,091,117	$107,772,731	$134,934,660
Present active members	16,960,751,035	10,639,704,179	6,114,845,433	76,959,132	100,271,179	17,009,783	11,961,329
Former members	419,143,322	187,759,699	227,548,388	756,288	2,923,943	115,815	39,189
Total Liabilities	$26,450,975,898	$16,147,765,921	$9,821,674,411	$96,415,820	$113,286,239	$124,898,329	$146,935,178

Political Subdivisions

Until 1983, all participating political subdivisions contributed the same normal cost rate. The balancing item which was used to insure that each political subdivision "paid its own way" was the contribution to amortize the unfunded accrued liability; the unfunded accrued liability was whatever was left for each political subdivision after existing assets and the present value of the "standard" normal cost rate and employee contributions were deducted from the present value of future benefits.

In 1983, the changes made by the State were also offered to the political subdivisions. In particular, each political subdivision was encouraged to freeze its unfunded accrued liability, so that in the future its normal cost would be the balancing item, reflecting actuarial gains and losses. All but about 30 of the more than 400 participating units accepted this change in 1983, and the remaining units did so in 1985.

The next page comprises an actuarial balance sheet showing the assets and liabilities relating to the participating political subdivisions. The split between normal cost and accrued liability contributions for political subdivisions is theoretical, since no summary of the split for individual political subdivisions is available at the time of this report, but all other figures, including the total value of prospective employer contributions, reflect the actual situation. The table also combines the figures for political subdivisions with the aggregate State figures to provide a summary for the entire TCRS.

VALUATION BALANCE SHEET
TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
July 1, 2003

TOTAL SYSTEM

ASSETS	**Total State**	**Polisubs**	**Grand Total**
Present assets creditable to:			
State Accumulation Fund	$19,191,061,582	$2,914,374,745	$22,105,436,327
Members' Fund	2,908,190,130	691,154,611	3,599,344,741
Total Present Assets	$22,099,251,712	$3,605,529,356	$25,704,781,068
Present value to prospective contributions payable to:			
State Accumulation Fund:			
Normal	$3,004,425,125	$1,285,055,361	$4,289,480,486
Accrued Liability	52,493,209	0	52,493,209
Total	$3,056,918,334	$1,285,055,361	$4,341,973,695
Members' Fund	1,294,805,852	376,265,035	1,671,070,887
Total Prospective Contributions	$4,351,724,186	$1,661,320,396	$6,013,044,582
Total Assets	$26,450,975,898	$5,266,849,752	$31,717,825,650
LIABILITIES			
Present value of prospective benefits payable on accounts of:			
Present retired members and contingent annuitants	$9,071,081,541	$1,304,957,688	$10,376,039,229
Present active members	16,960,751,035	3,851,255,879	20,812,006,914
Former members	419,143,322	110,636,185	529,779,507
Total Liabilities	$26,450,975,898	$5,266,849,752	$31,717,825,650

D. GAIN AND LOSS ANALYSIS

The contribution rate for any defined benefit pension plan is based on a set of actuarial assumptions. It is assumed that interest will be earned at a certain rate, that salary increases will be granted according to a certain schedule, and that, in the aggregate, participants will withdraw, become disabled, die, and retire in certain patterns. Assumptions must also be made concerning other events --- for example, the pattern of future social security increases, or the percentage of participants who are married at the time of death.

It is possible to predict what would happen to the present value of benefits, the plan's assets, the normal cost rate, and the unfunded accrued ("past service" or "supplemental") liability from one valuation date to the next if all the actuarial assumptions prove to be exactly correct. Variations from these predicted values arise whenever actual experience differs from the actuarial assumptions. Analysis of these variations can reveal the degree to which actual experience has differed from assumed and can, over a period of years, provide an indication as to the validity of the various actuarial assumptions.

Variations from "predicted" values also can arise from external sources, such as benefit changes and refinement of programming techniques.

A complete gain and loss analysis is a complex, technical task. It requires that the initial valuation be reproduced, predicting the amount of reserve expected to be released due to each type of decrement (death, disability, retirement, withdrawal) and the amount of liability expected to be incurred as a result of those terminations. Similar "expected" values must be obtained for increases in liability due to salary increases, and for changes in assets due to contributions, benefit payments, and interest earnings.

All these quantities must then be compared to actual experience. This process requires tracing each individual from the first valuation, determining if he is still active or, if not, why not and what benefit was paid and/or what liability remains for him. For those still active, updated salary information must be obtained.

Because of the complexity of this task, which is exacerbated by the fact that two years elapse between valuations, no gain and loss analysis was attempted for the TCRS prior to 1979. Improvements in data handling procedures allow for enhanced analysis but the primary procedure for analyzing TCRS experience has been the experience study. The most recent experience study covers the period for July 1, 1996 through June 30, 2000 and is set forth in a separate report.

One of the difficulties with a gain and loss analysis is the lack of intermediate check points at which progress can be determined. An initial value is projected, and is compared to an actual value at the end of the period. As a completely separate process, the "gain" or "loss" from each of a number of separate sources is calculated. It is then hoped that the net effect of the various gains and losses will approximately equal the difference between the projected value and the actual value. There is no method by which an individual gain or loss item can be "checked" against some other intermediate figure.

Gains and losses may be measured with respect to the present value of benefits, the accrued liability, or the normal cost percentage. Since concern had been expressed in prior years over the growth of the unfunded accrued liability of the TCRS (even though it was being amortized, commencing in 1975), it was decided to perform a gain and loss analysis of that quantity from the June 30, 1977 valuation to the June 30, 1979 valuation, which represented the System's initial attempt at a gain and loss analysis. Similar analyses were performed as part of the 1981 and 1983 valuations. The gain and loss analyses in more recent valuations, however, were conducted with respect to the normal cost percentage, because changes in the accrued liability, which was frozen as of 1981 and eliminated for most funding groups, were no longer meaningful.

The availability of a detailed analysis of past actuarial experience through the experience analysis process mitigates the need for a comparable detailed analysis in the biennial valuation. Due to the availability of accurate detailed information in the experience report, the scope of valuation experience analyses was limited to the more accessible sources of gain and loss. Specifically, gains and losses due to death, disability, and turnover were not analyzed, since it was felt that doing so involved time and expense disproportionate to the attention given the results. Similarly, effects of early and delayed retirement were not quantified.

Because the collective effect of actuarial experience items during the course of the past two years has been to produce significant changes in the current valuation contribution rates, an expanded analysis of experience has been incorporated into the current report in order to examine the factors that affect plan contributions.

The table below indicates the effect of each measured assumption upon the 2003 valuation contribution rates.

CAUSES OF CHANGE IN CONTRIBUTION RATE

	Teachers	Consolidated State
Investment results	2.65%	2.71%
Salary increases	(0.48)	(0.41)
New entrants	0.72	0.34
Social security wage base changes	(0.03)	(0.01)
Cost of living escalation	(0.44)	(0.48)
Prior service purchases	0.09	0.16
Contribution rate change delay	(0.04)	0.17
Other	(0.37)	0.36
Total	2.10%	2.84%

Presented below is a brief discussion regarding the items in the table. Comparisons to assumptions and methods are made to the assumptions and methods used in the previous valuation conducted in 2001.

Investment results - Market value returns on plan assets during the fiscal years ending in 2002 and 2003 were negative 1.92% and positive 4.90% respectively. Investment performance is not reflected directly in the valuation asset amount. Valuation assets are based on a five year moving average of market values. The rate of return on valuation assets during the two year period was approximately 2.5% per year less than the assumed return of 7.5% per annum. Investment deficiencies resulted in valuation assets that were approximately $667,000,000 and $414,000,000 less for the Teachers and Consolidated State groups, respectively, than would have been achieved if returns were equal to the assumed rate.

Salary Increases – The annual average rate of salary increase during 2001-2003 for Teachers was 1.6% below the assumed age-based rates used in preparing the 2001 valuation report. General State salary increases during the period were 1.0% below the assumed increment rates.

New Entrants - New entrants have in recent years been a factor contributing to rising contribution rates. State and Teacher groups respectively added over 11,000 and 8,600 new entrants during the past two years. The replacements represent 18% and 13% of the active participant census population as of the valuation date. The rate pressure attributable to new entrants is due to their relatively higher employer contribution rates in comparison to rates for continuing participants who benefit from past accumulated actuarial gains. Employees entering the plan during the past two plan years were slightly older at employment than continuing employees and carried employer contribution rates of approximately 8% and 10% for Teacher and State groups respectively.

Cost of Living Escalation and Social Security Wage Base Changes - The relatively low inflation experienced during the review period produced arithmetic COLA increases that were less than the assumed rate of 3% per year. COLA adjustments for July 1, 2002 and 2003 payment dates were 1.6% and 2.4% respectively. Lower than anticipated COLA adjustments among retirees resulted in a lower liability for these participants than expected. Also, more rapid increases in the Social Security wage base than assumed caused future expected payments to active employees to be slightly lower than had been expected, causing a small actuarial gain and contribution rate decrease.

Prior Service Purchases and Sick Leave Credits - Employee purchases of prior service credits and credits for sick leave result in liabilities to the plan that are not fully offset by related employee contributions. Service was credited to approximately 4,500 participants during the past two years due to such purchases and credits.

Contribution Rate Change Delay - Since contribution rates have generally declined over the twenty years, the policy of delaying the application of contribution rates produced by a valuation for one year means that contributions in the year following the valuation are greater than those actually required by the valuation. Such additional contributions were responsible for a decline in rates required by the next biennial valuation. Alternatively, situations in which contribution rates rise produce a contribution deficit and cause rates to increase. For the 2001-2002 fiscal year, continuation of the 1999 valuation report State employee rate of 6.19% resulted in decreased plan assets in comparison to the 7.30% rate anticipated by the 2001 valuation. Consequently, contribution rates for the State group rose by 0.17%. On the other hand, the Teachers contribution rate actually decreased between the 1999 and 2001 valuations from 3.72% to 3.40%. The contribution surplus resulting from delaying application of valuation rates in the 2001-2002 fiscal year resulted in a contribution decline of 0.04%.

Other **-** The "Other" category in the table above incorporates items that are not separately identified or are relatively insignificant. It includes termination experience that indicates that a lower degree of turnover among State employees occurred than was expected. It confirms the conclusion of the most recent quadrennial experience study that assumed rates of termination for State employees are unduly low. Preliminary analysis of termination and retirement rates conducted in the course of the valuation indicates that the “other” deficit for State employees can be largely attributed to termination and retirement experience. The first step of the actuarial assumption revision phase-in occurring in the 2001 actuarial valuation would have been responsible for some reduction in the magnitude of this item in the current valuation. Remaining phase in steps expected to be taken in the current and succeeding valuations should further mitigate this source of adverse experience.

E. FUNDING STATUS

Until the unfunded accrued liability was frozen in 1981, it was occasionally used as a measure of the actuarial soundness of the funding of the TCRS. Concern was expressed when the unfunded amount was large and/or increasing as was the situation from 1975 to 1981. In fact, the liability is a by-product of the actuarial valuation method utilized to determine contribution rates for a retirement plan and the amount may vary significantly from one method to another. This variability renders comparability among plans on the basis of progress or lack of progress against the unfunded accrued liability standard as an unsatisfactory approach. However, comparability on this basis for a single plan from one year to another may be appropriate as long as the valuation method used for the plan does not change during the period of comparison.

From 1983 through 1987, valuations included an analysis of the Plan Termination Liability (PTL) as a measure of funding progress. This liability is equal to the present value of the benefits which are expected to be paid to retired and other inactive employees, plus the present value of the benefits that have accrued to date for active employees. Thus, it is a measure of the total obligation under the plan in the event the plan were to terminate in the current year. Since it relates strictly to a plan termination situation, the PTL is not a particularly significant figure for an ongoing plan.

In 1987, the Governmental Accounting Standards Board ("GASB") issued its Statement Number 5, setting out information to be disclosed concerning the progress being made in funding a pension plan sponsored by a governmental unit. Statement Number 5 compared the Pension Benefit Obligation ("PBO") to the assets available as of the date of measurement. The PBO increases throughout an employee's career, pro-rating throughout his period of service the liability which is expected to be generated by his benefits. Unlike the PTL, it does not relate to the "shutdown value" as of any given time; it represents a method of spreading the pension cost related to a particular employee throughout his working lifetime, and measuring the amount of that cost which has been accrued as of the date of measurement.

Due to its nature, the PBO as of a particular date does not have any special significance. However, followed over a number of years, the "percentage funded" (i.e., the ratio of assets to PBO) would be expected to increase if progress is being made in the funding of a pension plan and it was reasonable during the period when GASB 5 was effective to make inferences regarding funding progress using this standard.

In 1994, the Governmental Accounting Standards Board revised the methodology to be used in presenting funding progress results to require reporting based upon the a plan’s unfunded accrued liability. This GASB pronouncement relating to financial reporting standards was effective for fiscal years ending June 30, 1997. The statements provide that certain parameters are to be used in determining the unfunded liability position in each year, including a parameter for the measurement of plan assets. A schedule of funding progress based upon comparison to the unfunded accrued liability is to be included in financial statements for the years in which the calculations are consistent with the parameters.

The schedule presented herein is based upon valuation results for the current valuation period only. Information for earlier periods is presented in the TCRS Comprehensive Annual Financial Report.

Results displayed in the table below are based upon the aggregate/frozen initial liability actuarial valuation method used by the plan. The unfunded liability used in the calculations has been reestablished as of the valuation date and is an appropriate representation of the current level of funding. Consequently, a comparison based on the unfunded liability should be a reasonable basis for assessing the current status of the plan.

The unfunded liability under the valuation method used is zero as of the valuation date for the primary groups, Teachers and Consolidated State, and two other groups. A liability exists however for two other minor groups with the result that the plan in total retains a small liability and should be fairly judged to be well funded. The amortization basis for groups that have a remaining unfunded liability is indicated in foot notes to the Comparison of TCRS Employer Contribution Rates Table on page C-12.

Funding for groups for which the liability has been reestablished to zero is allocated over the future working lifetime of present plan participants. The process results in an equitable allocation of the cost of benefits payable to current plan participants among future generations.

Tennessee Consolidated Retirement System
Schedule of Funding Progress
July 1, 2003

Funding Group	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	Unfunded Actuarial Accrued Liability as a Pct of Covered Payroll
Teachers	13,509,862,525	13,509,862,525	0	100.00%	2,762,151,617	na
Consolidated State	8,217,599,487	8,217,599,487	0	100.00%	1,954,652,775	na
State Judges (I, III, IV)	79,054,895	79,054,895	0	100.00%	19,570,938	na
Attorneys General (I, III)	74,445,645	74,445,645	0	100.00%	34,233,746	na
County J & O (all) *	123,027,626	124,211,104	1,183,478	99.05%	1,850,379	na **
State Judges & Atty Gen (Supp) *	95,261,534	146,571,265	51,309,731	64.99%	837,545	na **
Total State	22,099,251,712	22,151,744,921	52,493,209	99.76%	4,773,297,000	1.10%
Political Subdivisions ***	3,605,529,356	3,605,529,356	0	100.00%	1,731,134,594	na
Total	25,704,781,068	25,757,274,277	52,493,209	99.80%	6,504,431,594	0.81%

***   Systems closed to new membership prior to 1977.**
**** Actual funding of liabilities for closed groups is based upon payment methods that are not related to payroll.**
***** Political subdivision results are presented in the aggregate and are not representative of results for individual entities.**

F. VALIDITY OF DATA

The quality of the records available on retired members and on active members was excellent. Almost every record relating to a retired life was used in the valuation. Similarly, very few records on active participants had to be excluded due to questionable data. A list of the records containing apparent discrepancies has been furnished to the staff of the System.

In addition to retired and active members, the master records of the System contain approximately 22,100 records for former members with deferred vested benefits and approximately 32,800 records on other terminated members. Of this latter group, about 16,700 relate to those who terminated without vested benefits, but who have not withdrawn their contributions, and the remaining 16,100 relate to those for whom records are incomplete for various reasons, such as failure to complete membership cards, reporting contradictory social security numbers, etc.

For inactive members with vested benefits, the vested benefit was calculated and the value of the benefit was compared with the current value of the member's accumulated contributions; the larger of the two amounts was established as a liability of the System. For all other "miscellaneous" categories, the amount of each member's accumulated contributions was established as a liability of the System; thus, some liability was established for each of these records.

Records on active participants were obtained from the master file which has been built on all TCRS participants. The records were examined extensively with only minor discrepancies being observed. In general, the TCRS records seem to be in excellent condition, especially for a system which is so large and which receives data from so many widely-dispersed sources.

G. BENEFIT PAYMENT PROJECTION

Advance funding for TCRS is based upon ongoing plan concepts including recognition of the likelihood that currently active participants will retire in the future. An examination of the incidence of future benefit payments can be of interest to financial managers in forecasting future cash flows from the plan. Such information is valuable in assessing the liquidity needs that must be satisfied by plan investments in order to satisfy the needs of participants.

Plan benefits are funded by means of employee and employer contributions accumulated in advance of the benefit payment commencement date. Consequently, significant funds build up within the plan during the working lifetime of participants. The following table provides a projection of expected benefit payment patterns. The projection is based upon assumptions utilized in preparing the actuarial valuation. The assumptions include those regarding future salary levels, retirement dates, incidence of disability and mortality and annual cost of living adjustments.

Payments in the table are separated into amounts paid to existing retirees and amounts paid to currently active employees who are expected to retire in the future. Payments to existing retirees decline with increases attributable to cost of living adjustment mitigating decreases related to the incidence of mortality. In the aggregate, the decline in payments to existing retirees is more than offset by the influx of new retirees. The net effect of various factors on the retirement payment pattern is that benefit payments from the TCRS during the twenty year projection period are expected to increase by an average of approximately 6.8% per annum. Some variation in benefit payment growth is projected with the highest rates of increase expected to occur immediately with increases of over 10% anticipated.

BENEFIT PAYMENT PROJECTION

Year	*Current retirees*	*Current active participants*	*Total*
2003	$902,761,518	$50,992,492	$953,754,010
2004	901,049,255	157,657,505	1,058,706,760
2005	897,793,289	268,847,032	1,166,640,321
2006	892,961,642	383,555,536	1,276,517,178
2007	886,498,613	503,982,011	1,390,480,624
2008	878,373,274	630,886,883	1,509,260,157
2009	868,309,710	765,565,256	1,633,874,966
2010	856,722,426	905,897,452	1,762,619,878
2011	843,370,615	1,049,682,905	1,893,053,520
2012	828,234,829	1,197,162,641	2,025,397,470
2013	811,288,079	1,347,616,538	2,158,904,617
2014	792,601,382	1,500,994,454	2,293,595,836
2015	772,164,259	1,656,819,374	2,428,983,633
2016	750,018,699	1,814,531,398	2,564,550,097
2017	726,222,925	1,973,430,077	2,699,653,002
2018	700,853,873	2,132,682,489	2,833,536,362
2019	674,006,363	2,291,815,806	2,965,822,169
2020	645,793,074	2,447,685,061	3,093,478,135
2021	616,344,261	2,599,755,886	3,216,100,147
2022	585,809,502	2,750,437,377	3,336,246,879

H. OUTLINE OF BENEFIT AND CONTRIBUTION PROVISIONS

(As Amended through July 1, 2003)

Any person who becomes a teacher not participating in a local retirement fund, a general employee of the State, a state policeman, or a wildlife officer on or after July 1, 1972 becomes a member of the Tennessee Consolidated Retirement System as a condition of employment. Membership is optional for any person who becomes a state judge, a part-time employee, a commissioner, a county judge or county official in a participating political subdivision, an attorney general, an assistant attorney general, a criminal investigator, or an elected or appointed official of the general assembly. Membership is mandatory for any person employed on or after July 1, 1993 as an attorney general in the office of the Attorney General and reporter. Membership is compulsory for other employees of participating political subdivisions, except that for employees in service on the date the political subdivision commences participation, membership is optional.

A member of a superseded system as of June 30, 1972 had the choice of becoming a Group I, II, or III member of the Consolidated System according to his employment classification, or remaining subject to the benefit and contribution provisions of the superseded system as a "prior class" member with all rights, benefits and privileges under the superseded system. This choice was extended to members eligible to enter Group III prior to September 1, 1974. A transferred former Class A or Class B member of the System who is not a prior class member receives the greater of the retirement allowance provided under the Consolidated System or the superseded system. Effective July 1, 1976, all new members began to enter Group I, regardless of employment classification. Effective September 1, 1990, new state judges began to enter a new Group IV; Group I and Group III state judges could elect to transfer to this new category.

"Creditable service" means membership service under the Consolidated System for which contributions are made by the member, plus prior service credited under a superseded system as of June 30, 1972. Additional service may also be credited for certain periods of military service and service before the date of membership for which the member makes the required contributions.

The term "Average Final Compensation "(AFC) means average compensation during the five consecutive years of creditable service producing the highest average. "Social Security Integration Level" (SSIL) means, for the calendar year in which a member retires, the average annual amount of earnings (rounded to the nearest multiple of $600) with respect to which old age and survivors' benefits would be provided under Title II of the Federal Social Security Act for a male employee attaining age 65 in such calendar year, computed as though for each year prior to such calendar year, annual earnings are at least equal to the maximum amount of earnings subject to contributions under the provisions of the Federal Insurance Contributions Act. The SSIL is $39,600 in 2003 and will be $42,000 in 2004. "Social Security Base" (SSB) means for each calendar year the amount of a member's compensation subject to Social Security contributions, except that for years prior to 1966 SSB means $6,600 for the superseded Teachers' System. For the period prior to July 1, 1963 SSB means $4,200 and for the period between July 1, 1963 and January 1, 1966 SSB means $4,800 under the superseded State System.

"Benefit Base" (BB) means the annual salary in the position from which certain prior class members in a superseded system covering elected officials retired, as of the dates of their retirement; except that for members who are eligible for escalation, the Benefit Base is increased to reflect any post-retirement changes in annual salary for the position from which the member retired.

The regular form of benefit under the System is a monthly annuity payable to the member for life, with all payments ceasing at his death. In lieu of the regular benefit, a member may elect an optional plan to convert his allowance into a reduced benefit of equivalent actuarial value in accordance with one of the following options:

> Option I - In the event of the member's death, the designated beneficiary will receive 100% of the member's reduced monthly benefit for life.
>
> Option II - In the event of the member's death, the designated beneficiary will receive 50% of the member's reduced monthly benefit for life.
>
> Option III - In the event of the member's death, the designated beneficiary will receive 100% of the member's reduced monthly benefit for life. Should the beneficiary die before the member, the benefit payable to the member reverts to the unreduced regular benefit.
>
> Option IV - In the event of the member's death, the designated beneficiary will receive 50% of the member's reduced monthly benefit for life. Should the beneficiary die before the member, the benefit payable to the member reverts to the unreduced regular benefit.
>
> Social Security Adjustment - A member may convert his retirement allowance into an increased benefit payable prior to the date he is eligible to receive Social Security benefits and a reduced allowance payable after that date, so that his total income will be approximately the same before and after the commencement of Social Security payments.

Benefits payable to retired members are increased on each July 1 according to the percentage increase in the Consumer Price Index during the preceding calendar year, provided that the increase will not exceed 3% of the current benefit in any year, and provided that the member has been retired for at least 12 months. Prior to July 1, 1998, the CPI increase percentage was applied to the initial base, rather than current, benefit.

Every member is guaranteed the return of his account balance arising from his own contributions (including interest) either as benefit payments to him or his designated beneficiary, or upon his death or termination as a lump sum amount equal to the excess of his accumulated contributions over any benefits paid on his behalf.

Effective July 1, 1981, the System became non-contributory (or, for classes of employees who previously contributed more than 5%, contribution rates were reduced by 5%) for State employees and for teachers in higher education. Teachers in grades K-12 and political subdivisions remained contributory, except that political subdivisions were given the option of electing to become non-contributory.

For employees who moved from "contributory" to "non-contributory" on July 1, 1981, withdrawals in the event of termination have been calculated as though their personal contributions had continued, and retirement benefits have been calculated by loading each of the next 15 years' salaries by 3.6%. This provision, which otherwise would have expired on June 30, 1996, has been extended permanently effective July 1, 1998 by the Legislature for those members in the system at the onset of non-contributory retirement.

The following summaries give the main provisions of the Tennessee Consolidated Retirement System on which the valuation was based. Summaries are also given of the various superseded systems, whose provisions are applicable for certain members. Throughout these summaries, the symbol # means that the actual benefit (or minimum or maximum) is 105% of the indicated amount for State employees (including teachers) in these categories, and that participating political subdivisions may elect this improvement as an optional provision.

Note: In the following tables, minimum benefits are described as $96.00 per year or $103.92 per year for various classifications. These amounts apply to members with at least 10 years of creditable service. If a benefit is calculated for a member with less than 10 years of creditable service, minimum benefits of $84.00 per year and $91.92 per year, respectively, apply instead of the amounts shown in the tables.

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

	GROUP			
	I	II	III	IV
SERVICE RETIREMENT				
Full Benefit:				
Eligibility conditions (Age and years of creditable service)	Age 60 and vested, or 30 years	Age 60 and vested, or 55 with 25 years or 30 years of service*	Age 65 and vested, or age 55 with 24 years or 30 years	Age 55 with 24 years, or Age 60 with 8 years
Benefit percentages (% of AFC for each year of Creditable service):				
% up to SSIL	1.50%#	1.75%#	2.00%	2.50%
% over SSIL	1.75#	2.25#	2.50	2.50
Early Reduced Benefit:				
Eligibility conditions	N/A	55 with 10 years	Age 55 with 8 years	N/A
Benefit	Full benefit reduced by 4/10 of 1% for each month prior to eligibility for full benefit.			
25 Year Benefit:				
Eligibility Conditions	25 years	N/A	N/A	N/A
Benefit	Full benefit is reduced 4/10 of 1% for each of first 60 months prior to 30 years of service. Benefit so calculated is further reduced by actuarial factor if member's age at commencement of benefits is less than 55.			

*See note on next page.

#See explanation on page H-3.

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP I	GROUP II	GROUP III	GROUP IV
Vested Benefit:				
Eligibility conditions	5 years**	10 years	8 years	8 years
Benefit	Reduced benefit payable at age 55 or later Benefit further reduced by 15% for each year of service less than 10 years			
Maximum Benefit: (before reduction)	90%# of average final compensation	80%	75%	75%
Minimum Benefit:	$96.00# for each year of creditable service, but not in excess of 100% of average final compensation.			
ORDINARY DISABILITY RETIREMENT				
Eligibility conditions	5 years	5 years	8 years	8 years
Benefit percentages:*				
% up to SSIL	1.350%#	1.575%#	1.800%	2.250%
% over SSIL	1.575#	2.025#	2.250	2.250

* Benefit % for each year of creditable service. If service to date of disability retirement is less than 20 years, projected years of service to the full benefit date are added to creditable service, but not to bring total years of creditable service to more than 20 years, nor less than ten years of creditable service. Benefit changes to normal service benefit (including projected years of service) when the conditions for normal service retirement are met.

NOTE: During certain time restricted periods, certain Group II members could elect to become covered by a special provision whereby the eligibility condition for service retirement is age 55 (and vested) or 25 years of service. In order to elect this provision of the law, the Group II member must make additional contributions to the retirement system at the rate of 5% of salary.

**If membership date is prior to 7-1-79, 4 years.

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP			
	I	II	III	IV
ORDINARY DISABILITY RETIREMENT (Continued)				
Maximum Benefit:	75%# of average final compensation			
Minimum Benefit: (no reduction)	$96.00# for each year of creditable service to date of disability retirement, but not in excess of 100% of final compensation.			
ACCIDENTAL DISABILITY RETIREMENT				
Eligibility condition	In performance of duty	In performance of duty	N/A	N/A
Benefit:				
To age 62 or receipt of Social Security Disability	50%# of average final compensation	50%# of average final compensation	N/A	N/A
After age 62 or receipt of Social Security Disability	33-1/3%# of average final compensation	33-1/3%# of average final compensation	N/A	N/A
For members joining on or after 7/1/97, benefit is determined in same manner as ordinary disability.				
INACTIVE DISABILITY				
Eligibility condition	5 years	5 years	8 years	8 years
Benefit:	Actuarial equivalent of age 55 benefit			
ORDINARY DEATH BENEFITS				
1. Eligibility condition	Eligible for early or service retirement benefit			
Benefit	Survivor benefit as if member had retired and elected joint and 100% survivor annuity			

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP			
	I	II	III	IV
<u>ORDINARY DEATH BENEFITS (Continued)</u>				
2. Eligibility condition*	10 years	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)			
3. Eligibility condition	In service within 150 days and no other benefit			
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.			
<u>ACCIDENTAL DEATH BENEFITS</u>				
Eligibility condition	Death in performance of duty			
Benefit	50% of average final compensation to eligible dependent(s). The aggregate total death benefit payable on account of a member who dies in the line of duty shall have a value of not less than $50,000. If the death benefit is payable to a single beneficiary, the guaranteed minimum value shall be paid in monthly installments calculated on a sixty-month basis. If no surviving spouse exist on the date of the member's death and if the projected payments to be made to all the minor children do not exceed a minimum total value of $50,000 the projected excess shall be paid to the member's estate for the benefit of all the member's surviving children regardless of age.			
<u>INACTIVE DEATH BENEFITS</u>				
Eligibility condition*	10 years	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)			

* Optional to political subdivisions

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP			
	I	II	III	IV
MEMBER CONTRIBUTION RATES				
Contributory				
% of compensation up to SSB	5.0%	5.5%	5.5%	N/A
% of compensation in excess of SSB	5.0%	5.5%	7.0%	N/A
Non-Contributory				
% of compensation up to SSB	0.0%	0.5%	0.5%	0.5%
% of compensation in excess of SSB	0.0%	0.5%	2.0%	2.0%

SUPERSEDED SYSTEMS
TENNESSEE TEACHERS' RETIREMENT SYSTEM

	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of creditable service)	Age 60 or 30 years		
Benefit percentages (% of AFC for each year of creditable service):			
% up to SSB	1.125%#	1.875%#	1.875%#
% over SSB	1.875#	1.875#	1.875#
Vested Benefit:			
Eligibility conditions	10 years or 4 years at higher learning institute (only Class A)		
Benefit	Full benefit deferred to age 60		
Minimum Benefit (No reduction)	$96.00#	$103.92#	$103.92#
DISABILITY RETIREMENT			
Eligibility conditions	10 years	10 years	10 years
Benefit percentages:			
% up to SSB	1.0125%*#	1.6875%**#	1.6875%**#
% over SSB	1.6875#	1.6875#	1.6875#
Minimum Benefit (No reduction)	$96.00#	$103.92#	$103.92#

* If service to date of disability retirement is less than 20 years, projected years of service to the full benefit date are added to creditable service, but not to bring total years of creditable service to more than 20 years, nor less than 10 years.

** Total benefit package percentage based on years of service not to be less than 25%.#

SUPERSEDED SYSTEMS

TENNESSEE TEACHERS' RETIREMENT SYSTEM
(Continued)

	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
DEATH BENEFITS			
1. Eligibility condition	Eligible for early or service retirement		
Benefit	Joint and 100% survivor option as if member had retired and elected this option		
2. Eligibility condition	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		
3. Eligibility condition	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund		
INACTIVE DEATH BENEFITS			
Eligibility condition*	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
MEMBER CONTRIBUTION RATES			
Contributory			
% of compensation up to SSB	3.0%	5.0%	7.0%
% of compensation in excess of SSB	3.0%	5.0%	7.0%
Non-Contributory	0.0%	0.0%	2.0%

*Optional to political subdivisions

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM

	GENERAL EMPLOYEES		
	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of creditable service)	Age 65	Age 60 with 20 years or 30 years	Age 60 with 20 years or 30 years
Benefit percentages (% of AFC for each year of creditable service):			
% up to SSB	1.125%#	1.875%#	1.875%#
% over SSB	1.750#	1.875#	1.875#
Vested Benefit:			
Eligibility conditions	10 years	10 years	10 years
	Payable at age 55 or later		
Benefit	Full benefit reduced by 4/10 of 1% for each month prior to eligibility for full benefit		
Maximum Benefit:	75%# of average final compensation		
Minimum Benefit:			
(Per year of creditable service) No reduction	\$96.00#	\$103.92#	\$103.92#
Death Benefits:			
1. Eligibility condition	Eligible for early or service retirement		
Benefit	Joint and 100% survivor option as if member had retired and elected this option.		
2. Eligibility condition*	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		

* Optional to political subdivisions.

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM
(Continued)

	GENERAL EMPLOYEES		
	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
3. Eligibility condition	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.		
INACTIVE DEATH BENEFITS			
Eligibility condition***	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
DISABILITY RETIREMENT			
Eligibility conditions	10 years	5 years	5 years
Benefit percentages:			
% up to SSB	1.0125%*[#]	1.6875%**[#]	1.6875%**[#]
% over SSB	1.5750[#]	1.6875[#]	1.6875[#]
Maximum Benefit	75% of average final compensation		
Minimum Benefit (No reduction)	$96.00[#]	$103.92[#]	$103.92[#]
MEMBER CONTRIBUTION RATES			
Contributory			
% of compensation up to SSB	3.0%	5.5%	7.0%
% of compensation in excess of SSB	5.0%	5.5%	7.0%
Non-Contributory	0.0%	0.0%	2.0%

* If service to date of disability retirement is less than 20 years, projected years of service to the full benefit date are added to creditable service, but not to bring total years of creditable service to more than 20 years.

** Total benefit percentage based on years of service not to be less than 25%.[#]

*** Optional to political subdivisions

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM
(Continued)

	GAME AND FISH OFFICERS	STATE POLICEMEN	FIREMEN AND POLICEMEN
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of creditable service)	Age 60 or 55 with 25 years, or 30 years	Age 50 or 25 years	Age 55 with 25 years, or 30 years
Benefit percentages (% of AFC for each year of creditable service)	2.125%#	2.250%#	2.250%#
Vested Benefit:			
Eligibility conditions	10 years	10 years	10 years
	Payable at age 55 or later for Class A Payable upon completion of 10 years for Class B		
Benefit	Full benefit reduced by 4/10 of 1% for each month prior to eligibility for full benefit		
Maximum Benefit	75%# of average final compensation		
Minimum Benefit (Per year of creditable service)	Class A - $96.00# Class B - $103.92#	N/A	Class A - $96.00# Class B - $103.92#
DISABILITY RETIREMENT			
Eligibility conditions	Class A - 10 years Class B - 5 years	5 years	Class A - 10 years Class B - 5 years
Benefit percentages	1.9125%*#	2.025%**#	2.025%*#
Maximum Benefit	75% of average final compensation		
Minimum Benefit (No projected service)	Class A - $96.00# Class B - $103.92#	N/A	Class A - $96.00# Class B - $103.92#

* For Class A, if service to date of disability retirement is less than 20 years, projected years of service to age 55 are added to creditable service, but not to bring total years of creditable service to more than 20 years. Class B does not get projected years.

** Total benefit percentage based on years of service (without projection) not to be less than 25%.#

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM
(Continued)

	GAME AND FISH OFFICERS	STATE POLICEMEN	FIREMEN AND POLICEMEN
<u>ACCIDENTAL DISABILITY</u>			
Eligibility conditions	N/A	In performance of duty	N/A
Benefit	N/A	50% of AFC#	N/A
<u>ORDINARY DEATH BENEFITS</u>			
1. Eligibility conditions	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.		
2. Eligibility conditions*	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		
3. Eligibility conditions	Eligible for early or service retirement		
Benefit	Joint and 100% survivor option as if member had retired and elected this option.		
<u>INACTIVE DEATH BENEFITS</u>			
Eligibility condition	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
<u>DEATH IN PERFORMANCE OF DUTY</u>	N/A	50% of AFC#	N/A
<u>MEMBER CONTRIBUTION RATES</u>			
% of compensation to SSB	5.0%	6.63%	Class A - 3.0% Class B - 7.0%
% of compensation in excess of SSB	5.0%	6.63%	Class A - 5.0% Class B - 7.0%

*Optional to political subdivisions.

SUPERSEDED SYSTEMS

	STATE JUDGES	ATTORNEYS GENERAL	COUNTY JUDGES
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of service)	Age 65 or age 54 with 8 years	Age 54 with 10 years	Age 55 with 8 years
Benefit percentages (% of BB for each year of creditable service)	3.75%	3.75%	3.0%*
Vested Benefit:			
Eligibility conditions	Immediate	10 years	8 years
Benefit	Full benefit deferred to age 54 with 8 years or age 65	Full benefit deferred to age 54	Full benefit deferred to age 55
Maximum Benefit	75% of BB	75% of BB	75% of BB
DISABILITY RETIREMENT			
Eligibility conditions	10 years	10 years	8 years
Benefit	Full service benefit	Full service benefit	Full service benefit
Minimum Benefit	N/A	N/A	25% of AFC

BB (Benefit Base) definition:

(1) If member's benefit is subject to escalation, the BB is the salary the retired member would have received had he remained in office.
(2) If member's benefit is not subject to escalation, the BB is the salary at the time the member retired or the salary in effect May 1, 1975, whichever is greater.

* Minimum total rate of 75% of average final compensation after 24 years of creditable service.

SUPERSEDED SYSTEMS
(Continued)

	STATE JUDGES	ATTORNEYS GENERAL	COUNTY JUDGES
DEATH BENEFIT			
Eligibility conditions			
1. Eligible for service retirement	If elected, survivorship option as if member retired; otherwise 100% joint and survivor option to designated beneficiary	If elected, survivorship option as if member retired; otherwise 100% joint and survivor option to designated beneficiary	If elected, survivorship option as if member retired; otherwise 50% joint and survivor option to designated beneficiary
2. Eligibility conditions	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		
3. 10 years	N/A	Optional benefit paid at age 54 if elected	N/A
4. Age 54 with 10 years or 18 years	N/A	50% joint and survivor option as if member had retired	N/A
5. Eligibility condition	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.		
INACTIVE DEATH BENEFITS			
Eligibility condition	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
MEMBER CONTRIBUTION RATES	3.0%	8.0% contributory 3.0% non-contributory	8.0% contributory 3.0% non-contributory

SUPERSEDED SYSTEMS

(Continued)

	COUNTY OFFICIALS	PUBLIC SERVICE COMMISSIONERS
SERVICE RETIREMENT		
Full Benefit:		
Eligibility conditions (Age and years of service)	Age 55 with 12 years	Age 65 or age 54 with 12 years
Benefit percentages (% of BB or AFC for each year of creditable service)	2.5% of AFC	3.75% of salary at retirement
Maximum Benefit	75% of AFC	75% of salary at retirement
Vested Benefit:		
Eligibility conditions	12 years	Immediate
Benefit	Full benefit deferred to age 55	Deferred to age 65 or to age 54 with 12 years
DISABILITY RETIREMENT		
Eligibility conditions	N/A	10 years
Benefit	N/A	Full benefit
DEATH BENEFITS		
1. Eligibility conditions	12 years	Eligible for full benefit
Benefit	Full benefit payable to beneficiary for 10 years; if eligible for service retirement, beneficiary may elect joint and 100% survivor option	If elected, survivorship option as if member retired; otherwise 100% joint and survivor option to designated beneficiary
2. Eligibility conditions	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)	
3. Eligibility condition	In service within 120 days and no other benefit	
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.	

SUPERSEDED SYSTEMS
(Continued)

	COUNTY OFFICIALS	PUBLIC SERVICE COMMISSIONERS
INACTIVE DEATH BENEFITS		
1. Eligibility conditions	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)	
2. Eligibility conditions	Out of service more than 120 days	
Benefit	Lump sum payment equal to member's account balance	
MEMBER CONTRIBUTION RATES	8.0%	8.0%

I. APPENDIX

TABLE I-1

CONTRIBUTORY TEACHERS

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Number	Earnings Total	Earnings Average
1-20	0	$0	$0
21-25	2,972	91,779,076	30,881
26-30	8,276	272,617,741	32,941
31-35	8,526	306,931,875	36,000
36-40	6,689	259,380,127	38,777
41-45	7,927	327,889,396	41,364
46-50	10,971	486,991,762	44,389
51-55	12,315	576,137,056	46,783
56-60	6,852	331,268,139	48,346
61-65	1,828	89,271,795	48,836
66-70	320	15,308,064	47,838
71-75	67	3,278,787	48,937
76-80	23	1,098,701	47,770
81-85	4	200,364	50,091
86-90	0	0	0
Total	66,770	$2,762,152,883	$41,368

TABLE I-2

STATE GENERAL EMPLOYEES
(INCLUDES NON-CONTRIBUTORY TEACHERS AND SEPARATELY-FUNDED SYSTEMS)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Number	Earnings Total	Earnings Average
1-20	317	$5,320,126	$16,783
21-25	2,850	58,983,587	20,696
26-30	4,625	112,805,320	24,390
31-35	5,323	145,625,540	27,358
36-40	6,590	192,933,387	29,277
41-45	8,781	271,841,554	30,958
46-50	10,435	351,690,739	33,703
51-55	10,134	361,957,311	35,717
56-60	7,341	270,300,737	36,821
61-65	3,278	125,752,698	38,363
66-70	1,025	38,634,382	37,692
71-75	329	11,344,370	34,481
76-80	114	4,222,765	37,042
81-85	24	905,193	37,716
86-90	0	0	0
Total	61,166	$1,952,317,709	$31,918

TABLE I-3

POLITICAL SUBDIVISION GENERAL EMPLOYEES

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Number	Earnings Total	Earnings Average
1-20	300	$4,970,276	$16,568
21-25	2,989	64,154,546	21,464
26-30	5,333	129,265,126	24,239
31-35	7,833	193,609,011	24,717
36-40	9,579	226,708,848	23,667
41-45	11,069	263,748,208	23,828
46-50	11,091	279,982,652	25,244
51-55	9,748	244,512,051	25,083
56-60	7,586	184,152,271	24,275
61-65	3,945	89,672,533	22,731
66-70	1,560	30,867,745	19,787
71-75	600	10,819,964	18,033
76-80	163	2,587,665	15,875
81-85	36	686,572	19,071
86-90	0	0	0
Total	71,832	$1,725,737,468	$24,025

TABLE I-4

UNIVERSITY OF TENNESSEE (TIAA)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Number	Earnings Total	Earnings Average
1-20	0	$0	$0
21-25	0	0	0
26-30	0	0	0
31-35	0	0	0
36-40	0	0	0
41-45	0	0	0
46-50	3	257,301	85,767
51-55	68	5,618,072	82,618
56-60	215	18,288,706	85,063
61-65	186	16,091,291	86,512
66-70	78	7,185,403	92,120
71-75	23	2,319,789	100,860
76-80	4	276,705	69,176
81-85	0	0	0
86-90	0	0	0
Total	577	$50,037,267	$86,719

TABLE I-5

GROUP II

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Number	Earnings Total	Earnings Average
1-20	0	$0	$0
21-25	0	0	0
26-30	1	34,192	34,192
31-35	0	0	0
36-40	0	0	0
41-45	1	47,664	47,664
46-50	25	1,398,616	55,944
51-55	113	5,832,756	51,617
56-60	57	2,993,769	52,522
61-65	13	765,955	58,919
66-70	1	1,200	1,200
71-75	0	0	0
76-80	0	0	0
81-85	0	0	0
86-90	0	0	0
Total	211	$11,074,152	$52,484

TABLE I-6

GROUP III

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Number	Earnings Total	Earnings Average
1-20	0	$0	$0
21-25	0	0	0
26-30	0	0	0
31-35	0	0	0
36-40	0	0	0
41-45	0	0	0
46-50	0	0	0
51-55	6	476,957	79,492
56-60	10	810,968	81,096
61-65	9	703,612	78,179
66-70	10	693,236	69,323
71-75	5	379,253	75,850
76-80	0	0	0
81-85	1	50,455	50,455
86-90	0	0	0
Total	41	$3,114,481	$75,962

TABLE I-7

TOTAL

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Number	Earnings Total	Earnings Average
1-20	617	$10,290,402	$16,678
21-25	8,811	214,917,209	24,392
26-30	18,235	514,722,379	28,227
31-35	21,682	646,166,426	29,802
36-40	22,858	679,022,362	29,706
41-45	27,778	863,526,822	31,087
46-50	32,525	1,120,321,070	34,445
51-55	32,384	1,194,534,203	36,887
56-60	22,061	807,814,590	36,617
61-65	9,259	322,257,884	34,805
66-70	2,994	92,690,030	30,959
71-75	1,024	28,142,163	27,483
76-80	304	8,185,836	26,927
81-85	65	1,842,584	28,347
86-90	0	0	0
Total	200,597	$6,504,433,960	$32,425

TABLE II-1

CONTRIBUTORY TEACHERS

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Number	Earnings Total	Earnings Average
0	3,841	$128,325,909	$33,410
1	3,991	131,012,989	32,827
2	3,739	125,446,694	33,551
3	3,986	137,566,625	34,512
4	3,208	114,413,764	35,665
0-4	18,765	636,765,981	33,934
5-9	12,600	479,645,919	38,067
10-14	8,784	369,798,780	42,099
15-19	7,947	364,356,238	45,848
20-24	5,879	278,146,995	47,312
25-29	7,339	356,273,359	48,545
30-34	4,097	206,483,297	50,399
35-39	1,122	58,421,377	52,069
40-44	183	9,609,451	52,511
45-49	54	2,651,486	49,102
Total	66,770	$2,762,152,883	$41,368

TABLE II-2

STATE GENERAL EMPLOYEES
(INCLUDES NON-CONTRIBUTORY TEACHERS AND SEPARATELY-FUNDED SYSTEMS)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Number	Earnings Total	Earnings Average
1-20	4,696	$112,783,841	$24,017
21-25	4,067	97,999,420	24,096
26-30	3,877	95,014,264	24,507
31-35	3,159	81,464,877	25,788
36-40	3,102	85,890,548	27,689
41-45	18,901	473,152,950	25,033
46-50	10,150	286,578,235	28,234
51-55	7,946	253,087,671	31,851
56-60	9,579	328,111,609	34,253
61-65	6,163	236,038,632	38,299
66-70	5,055	214,387,896	42,411
71-75	2,359	112,027,454	47,489
76-80	742	36,010,394	48,532
81-85	204	9,691,229	47,506
86-90	67	3,231,639	48,233
Total	61,166	$1,952,317,709	$31,918

TABLE II-3

POLITICAL SUBDIVISION GENERAL EMPLOYEES

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Number	Earnings Total	Earnings Average
1-20	6,977	$127,375,147	$18,256
21-25	6,123	123,011,299	20,090
26-30	5,983	123,604,059	20,659
31-35	5,888	125,487,183	21,312
36-40	4,966	110,205,032	22,192
41-45	29,937	609,682,720	20,366
46-50	17,496	418,251,471	23,906
51-55	10,903	290,993,417	26,689
56-60	6,823	193,231,136	28,321
61-65	3,783	117,980,376	31,187
66-70	2,317	73,857,969	31,877
71-75	483	17,815,205	36,884
76-80	71	3,104,768	43,729
81-85	11	559,251	50,841
86-90	8	261,155	32,644
Total	71,832	$1,725,737,468	$24,025

TABLE II-4

UNIVERSITY OF TENNESSEE (TIAA)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Number	Earnings Total	Earnings Average
1-20	0	$0	$0
21-25	0	0	0
26-30	1	7,330	7,330
31-35	0	0	0
36-40	1	22,169	22,169
41-45	2	29,499	14,749
46-50	5	129,210	25,842
51-55	7	407,853	58,264
56-60	9	1,035,840	115,093
61-65	24	1,760,342	73,347
66-70	214	19,525,886	91,242
71-75	225	19,064,286	84,730
76-80	76	6,869,291	90,385
81-85	11	915,353	83,213
86-90	4	299,707	74,926
Total	577	$50,037,267	$86,719

TABLE II-5

GROUP II

**DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS
BY LENGTH OF SERVICE**

Service Group	Number	Earnings Total	Earnings Average
1-20	0	$0	$0
21-25	0	0	0
26-30	0	0	0
31-35	0	0	0
36-40	0	0	0
41-45	0	0	0
46-50	1	34,192	34,192
51-55	0	0	0
56-60	0	0	0
61-65	1	51,100	51,100
66-70	119	6,142,592	51,618
71-75	81	4,318,847	53,319
76-80	9	527,421	58,602
81-85	0	0	0
86-90	0	0	0
Total	211	$11,074,152	$52,484

TABLE II-6

GROUP III

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Number	Earnings Total	Earnings Average
1-20	0	$0	$0
21-25	0	0	0
26-30	0	0	0
31-35	0	0	0
36-40	0	0	0
41-45	0	0	0
46-50	0	0	0
51-55	0	0	0
56-60	0	0	0
61-65	0	0	0
66-70	23	1,871,628	81,375
71-75	14	1,028,033	73,430
76-80	3	147,365	49,121
81-85	1	67,455	67,455
86-90	0	0	0
Total	41	$3,114,481	$75,962

TABLE II-7

TOTAL

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Number	Earnings Total	Earnings Average
1-20	15,514	$368,484,897	$23,752
21-25	14,181	352,023,708	24,824
26-30	13,600	344,072,347	25,299
31-35	13,033	344,518,685	26,434
36-40	11,277	310,531,513	27,537
41-45	67,605	1,719,631,150	25,436
46-50	40,252	1,184,639,027	29,431
51-55	27,640	914,287,721	33,078
56-60	24,358	886,734,823	36,404
61-65	15,850	633,977,445	39,999
66-70	15,067	672,059,330	44,605
71-75	7,259	360,737,122	49,695
76-80	2,023	105,080,616	51,943
81-85	410	20,842,739	50,836
86-90	133	6,443,987	48,451
Total	200,597	$6,504,433,960	$32,425

TABLE III

DISTRIBUTION OF CURRENT BENEFITS BY AGE GROUPS

RETIRED LIVES

Age Group	Number	Annual Benefit Total	Annual Benefit Average
1-20	0	$0	$0
21-25	0	0	0
26-30	2	11,927	5,964
31-35	14	94,474	6,748
36-40	105	523,082	4,982
41-45	268	1,616,949	6,033
46-50	678	5,584,994	8,237
51-55	3,484	53,286,276	15,295
56-60	8,298	122,009,949	14,704
61-65	14,258	173,521,690	12,170
66-70	15,770	181,928,227	11,536
71-75	14,203	154,956,990	10,910
76-80	10,849	105,999,234	9,770
81-85	7,904	66,675,327	8,436
86-90	7,446	53,372,808	7,168
Total	83,279	$919,581,927	$11,042

TABLE IV

DISTRIBUTION OF CURRENT BENEFITS BY YEARS SINCE RETIREMENT

RETIRED LIVES

Years Since Retirement	Number	Annual Benefit Total	Annual Benefit Average
0	4,519	$58,320,670	$12,906
1	5,323	68,872,428	12,939
2	4,967	63,485,537	12,781
3	5,191	65,440,224	12,606
4	5,099	67,346,538	13,208
0- 4	25,099	323,465,397	12,888
5-9	20,319	240,649,543	11,844
10-14	14,404	159,519,104	11,075
15-19	10,080	93,805,987	9,306
20-24	7,627	60,785,992	7,970
25-29	4,279	30,453,169	7,117
30-34	1,289	9,547,254	7,407
35-39	127	972,075	7,654
40-44	33	268,937	8,150
45-49	22	114,469	5,203
Total	83,279	$919,581,927	$11,042

TABLE V

BRINGING FORWARD AMOUNTS TO BE AMORTIZED

	Contributory Teachers	Consolidated State	State Judges (I, III and IV)	Attorneys General (I and III)	County Judges and Officials (All)	St. Judges & Att. Gen. (Superseded)
2001 Unfunded Supplemental Liability	0	0	0	0	17,509,536	63,717,397
Contribution	0	0	0	0	1,918,677	6,982,086
Interest	0	0	0	0	1,169,314	4,255,148
2002 Unfunded Supplemental Liability	0	0	0	0	16,760,173	60,990,459
Contribution	0	0	0	0	1,918,677	6,982,086
Interest	0	0	0	0	1,113,112	4,050,628
2003 Unfunded Supplemental Liability	0	0	0	0	15,954,609	58,059,001
Adjustment attributable to Assumption Change					0	0
July 1, 2003 Unfunded Supplemental Liability after Changes					15,954,609	58,059,001
12 Year Amortization Payment	na	na	na	na	1,918,676	6,982,085
Eligible Payroll	2,762,151,617	1,954,652,775	19,570,938	34,233,746	1,850,379	837,545
Contribution as % of Pay	na	na	na	na	103.691%	833.637%

TABLE V (Continued)
REESTABLISHMENT OF UNFUNDED ACCRUED LIABILITY
July 1, 2003

	Contributory Teachers	Consolidated State	State Judges (Groups I, III and IV)	Attorneys General (Groups I and III)	County Judges and Officials	State Judges and Attorneys General (Superseded)
Entry Age Past Service Liability	na	na	na	na	$124,211,104	$146,571,265
Valuation Assets	na	na	na	na	123,027,626	95,261,534
Unfunded Accrued Liability	na	na	na	na	1,183,478	51,309,731
Amortization Contribution	na	na	na	na	142,323	6,170,429
Eligible Payroll	$2,762,151,617	$1,954,652,775	$19,570,938	$34,233,746	1,850,379	837,545
Contribution as % of Pay	na	na	na	na	7.692%	736.728%

TABLE VI
CALCULATION OF CONTRIBUTION RATES
PRIOR ASSUMPTION

	Contributory Teachers	Consolidated State	State Judges (Groups I, III, and IV)	Attorneys General (Groups I and III)	County Judges and Officials (All)	State Judges and Attorneys General (Superseded)
1. Present Value of Benefits	$16,147,765,921	$9,728,194,564	$96,195,103	$111,560,228	$124,895,028	$146,935,178
2. Current Members' Fund	2,125,609,104	753,574,874	9,106,769	14,289,887	3,251,625	2,357,871
3. Current State Accumulation Fund	11,384,253,421	7,464,024,613	69,948,126	60,155,758	119,776,001	92,903,663
4. Present Value of Future Employee Contributions	1,293,319,733	147,004	1,023,495	103,219	191,729	27,777
5. Unfunded Accrued Liability	0	0	0	0	1,182,854	51,309,731
6. Present Value of Future Normal Costs, ((1)-(2)-(3)-(4)-(5))	1,344,583,663	1,510,448,073	16,116,713	37,011,364	492,819	336,136
7. Present Value of Future Salaries	25,911,365,475	15,649,575,746	115,194,018	309,718,221	3,445,724	925,891
8. Normal/Aggregate Cost Percentage ((6)/(7))	5.189%	9.652%	13.991%	11.950%	14.302%	36.304%
9. Unfunded Accrued Liability Percentage (Table V)	0.000%	0.000%	0.000%	0.000%	7.688%	736.728%
12-Year Amortization						
10. Total Contribution Rate ((8)+(9)) x 1.0375+0.12%						
12-Year Amortization	na	na	na	na	22.934%	802.141%
Aggregate	5.504%	10.134%	14.636%	12.518%	50.574%	5787.258%

TABLE VI (Continued)
CALCULATION OF CONTRIBUTION RATES
REVISED ASSUMPIONS

	Contributory Teachers	Consolidated State	State Judges (Groups I, III, and IV)	Attorneys General (Groups I and III)	County Judges and Officials (All)	State Judges and Attorneys General (Superseded)
1. Present Value of Benefits	$16,147,765,921	$9,821,674,411	$96,415,820	$113,286,239	$124,898,329	$146,935,178
2. Current Members' Fund	2,125,609,104	753,574,874	9,106,769	14,289,887	3,251,625	2,357,871
3. Current State Accumulation Fund	11,384,253,421	7,464,024,613	69,948,126	60,155,758	119,776,001	92,903,663
4. Present Value of Future Employee Contributions	1,293,319,733	147,004	1,016,798	103,219	191,321	27,777
5. Unfunded Accrued Liability	0	0	0	0	1,183,478	51,309,731
6. Present Value of Future Normal Costs, ((1)-(2)-(3)-(4)-(5))	1,344,583,663	1,603,927,920	16,344,127	38,737,375	495,904	336,136
7. Present Value of Future Salaries	25,911,365,475	15,965,868,587	114,408,787	316,394,305	3,437,575	925,891
8. Normal/Aggregate Cost Percentage ((6)/(7))	5.189%	10.046%	14.286%	12.243%	14.426%	36.304%
9. Unfunded Accrued Liability Percentage (Table V)	0.000%	0.000%	0.000%	0.000%	7.692%	736.728%
12-Year Amortization						
10. Total Contribution Rate ((8)+(9)) x 1.0375+0.12%						
12-Year Amortization	na	na	na	na	23.067%	802.141%
Aggregate	5.504%	10.543%	14.941%	12.823%	50.806%	5787.258%

TABLE VII

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

The actuarial assumptions and methods set forth below have been selected by the actuary based on results of an actuarial experience study covering the period from July 1, 1996 through June 30, 2000 and expectations regarding future events and economic conditions.

The assumptions and methods have been adopted as July 1, 2001 unless otherwise noted.

Actuarial Funding Method:

Frozen Initial Liability. Unfunded accrued liabilities are being funded over the 40-year period commencing in 1975. Through reestablishment, unfunded liabilities have been eliminated for all groups except County Judges and Officials and State Judges and Attorneys General (Superseded). The Aggregate actuarial funding method is used for groups for which no unfunded accrued liability exists.

Asset Valuation Method:

Five-year moving market value average. Earnings in excess of or below expected investment returns are recognized over a five year period. Investment losses are applied to offset accumulated investment gains prior to determining the amount of earnings to be phased in.

Effective July, 1999

Interest Rate:

7.5% per annum, compounded annually

Salary Increases:

Salary increase rates vary by age. Sample rates are shown below.

Age	Rate
20	9.49%
30	7.25
40	5.86
50	4.79
60	4.30
65	4.22

Increase in Social Security Wage Base:

3.5% annual increase

Cost of Living Adjustment:

3.0% annual increase in monthly retirement benefits

Inflation:

3.0% annual rate of inflation is assumed in establishing economic assumptions

Marital Status:

(a) Percent married --
Eligible for service retirement – 80%
Ineligible for service retirement – 75%

(b) Age difference – males are assumed to be four years older than spouse

Post Retirement Mortality:

	Annual Rate of Mortality After					
	Service Retirement				Disability Retirement	
	Teachers and Group III		Others			
Age	Male	Female	Male	Female	Male	Female
40	0.1%	0.1%	0.2%	0.1%	2.3%	2.3%
50	0.3	0.2	0.4	0.2	2.6	2.6
55	0.5	0.3	0.7	0.3	2.8	2.8
60	0.7	0.5	1.2	0.6	3.3	3.3
65	1.2	0.7	2.1	1.1	3.9	3.9
70	2.1	1.3	3.2	1.7	4.9	4.9
75	3.5	2.3	4.8	2.6	6.3	6.3
80	5.8	4.1	7.5	4.5	8.7	8.7
85	8.9	7.0	10.9	8.0	12.7	12.7
90	12.9	12.1	16.2	14.1	19.4	19.4
95	18.3	19.5	23.9	22.2	31.3	31.3

Separations from Service:

Representative values of the assumed annual rates of death, disability, withdrawal and service retirement for the various membership groups are shown on the following pages.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

GROUP I

TEACHERS

MALE

Age	Mortality	Disability	Annual Rate of Withdrawal		
			First Year	Second Year	Later
20	0.02%	0.02%	15.0%	12.0%	9.9%
25	0.02	0.02	15.0	12.0	8.5
30	0.03	0.03	15.0	12.0	5.6
35	0.04	0.05	15.0	12.0	3.1
40	0.06	0.09	15.0	12.0	1.5
45	0.11	0.13	15.0	12.0	0.9
50	0.20	0.17	15.0	12.0	2.0
55	0.31	0.21	15.0	12.0	4.3
60	0.47	--	15.0	12.0	6.5
65	0.80	--	--	--	6.5

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

GROUP I

TEACHERS

FEMALE

Age	Mortality	Disability	Annual Rate of Withdrawal		
			First Year	Second Year	Later
20	0.01%	0.02%	15.0%	12.0%	10.7%
25	0.02	0.02	15.0	12.0	9.9
30	0.02	0.03	15.0	12.0	8.1
35	0.03	0.05	15.0	12.0	4.3
40	0.04	0.09	15.0	12.0	1.8
45	0.06	0.13	15.0	12.0	1.1
50	0.10	0.17	15.0	12.0	1.8
55	0.15	0.21	15.0	12.0	3.7
60	0.25	--	15.0	12.0	5.7
65	0.42	--	--	--	5.7

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

GROUP I

GENERAL EMPLOYEES

MALE

Age	Mortality	Disability		Annual Rate of Withdrawal					
				First Year		Second Year		Later**	
		State	Polisubs	State	Polisubs	State	Polisubs	State	Polisubs
20	0.05%	0.04%	0.04%	35.5%	32.3%	27.2%	24.8%	20.4%	20.6%
25	0.07	0.04	0.04	31.4	28.5	24.8	22.5	16.7	13.2
30	0.09	0.05	0.05	27.2	24.8	23.1	21.0	10.6	8.7
35	0.09	0.08	0.09	24.8	22.5	19.8	18.0	6.2	7.0
40	0.12	0.16	0.14	23.1	21.0	16.7	15.2	4.1	5.4
45	0.17	0.24	0.33	19.0	17.3	14.0	12.8	2.9	4.6
50	0.28	0.35	0.53	16.5	15.0	14.0	12.8	2.6	4.4
55	0.48	0.35	0.75	16.5	15.0	14.0	12.8	2.9	4.5
60	0.86	--	--	16.5	15.0	14.0	12.8	3.3	2.8
65	1.56	--	--	--	--	--	--	--	--

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.
** Effective July 1, 2003

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

GROUP I

GENERAL EMPLOYEES

FEMALE

Age	Mortality	Disability		Annual Rate of Withdrawal					
				First Year		Second Year		Later**	
		State	Polisubs	State	Polisubs	State	Polisubs	State	Polisubs
20	0.03	0.04%	0.04%	35.5%	32.3%	27.2%	24.8%	20.4%	24.8%
25	0.03	0.04	0.04	31.4	28.5	24.8	22.5	16.7	17.6
30	0.04	0.05	0.04	27.2	24.8	23.1	21.0	10.6	11.6
35	0.05	0.07	0.06	24.8	22.5	19.8	18.0	6.2	8.5
40	0.08	0.17	0.08	23.1	21.0	16.7	15.2	4.1	7.3
45	0.10	0.28	0.22	19.0	17.3	14.0	12.8	2.9	5.9
50	0.15	0.37	0.36	16.5	15.0	14.0	12.8	2.6	5.3
55	0.25	0.45	0.45	16.5	15.0	14.0	12.8	2.9	5.1
60	0.48	--	--	16.5	15.0	14.0	12.8	3.3	3.3
65	0.93	--	--	--	--	--	--	--	--

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.
** Effective July 1, 2003

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

SERVICE RETIREMENT RATES

The following rates are applied at each age at which a member is eligible for an unreduced service retirement benefit.

Age	Teachers	State	Polisubs	Group II	Group III
50	7.0%	5.0%	6.0%	10.0%	--
51	8.0	5.0	6.0	10.0	10.0%
52	8.0	6.0	7.0	15.0	10.0
53	10.0	7.0	7.0	15.0	10.0
54	10.0	7.0	7.0	20.0	10.0
55	10.0	7.0	7.0	20.0	12.0
56	13.0	7.0	7.0	20.0	12.0
57	16.0	8.0	10.0	20.0	12.0
58	16.0	9.0	12.0	25.0	12.0
59	16.0	10.0	12.0	25.0	12.0
60	15.0	9.0	10.0	30.0	12.0
61	22.0	12.0	17.0	30.0	12.0
62	26.0	23.0	26.0	45.0	25.0
63	22.0	15.0	17.0	35.0	12.0
64	31.0	18.0	19.0	35.0	12.0
65	43.0	34.0	29.0	40.0	25.0
66	36.0	21.0	21.0	40.0	25.0
67	32.0	21.0	16.0	40.0	25.0
68	32.0	21.0	16.0	100.0	25.0
69	32.0	21.0	17.0	100.0	25.0
70	100.0	21.0	20.0	100.0	25.0
71	100.0	21.0	20.0	100.0	100.0
72	100.0	21.0	20.0	100.0	100.0
73	100.0	21.0	20.0	100.0	100.0
74	100.0	21.0	20.0	100.0	100.0
75	100.0	100.0	100.0	100.0	100.0

Additional increments for retirees who have fifteen or more years of service at retirement on or after age 60

	Teachers	State	Polisubs	Group II	Group III
	10.0%	5.0%	5.0%	na	na

Additional increments for retirees in the year in which they are first eligible for unreduced retirement prior to age 60

	Teachers	State	Polisubs	Group II	Group III
	10.0%	10.0%	10.0%	15.0%	na

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

GROUP II

	Annual Rate of	
Age	Disability	Withdrawal
20	0.07%	5.8%
25	0.12	4.2
30	0.22	3.0
35	0.38	2.0
40	0.48	1.2
45	0.59	0.7
50	0.99	0.2
55	1.38	--

* 15.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit if prior to age 60.

GROUP III

Age	Annual Rate of Disability
20	0.02%
25	0.02
30	0.03
35	0.05
40	0.09
45	0.13
50	0.17
55	0.21
60	--
65	--

TABLE VIII
ACTUARIAL CERTIFICATION

The actuarial valuation summarized in this report has been performed utilizing generally accepted actuarial principles and is based on the current provisions of the TCRS and on actuarial assumptions which we consider to be internally consistent and reasonably related, in the aggregate, to experience under the plan and to reasonable expectations. The valuation was performed in accordance with principles of practice prescribed by the Actuarial Standards Board, by me personally or by other qualified actuaries under my direct supervision. I am a member of the American Academy of Actuaries and have experience in performing valuations for public retirement systems. It is our opinion that the results fully and fairly disclose the actuarial position of the plan on the valuation date.

____________________	__________________________
Date	Anthony S. Johnston, F.S.A.
____________________	__________________________
Date	Justin C. Thacker, A.S.A.