

# *Actuarial Section*

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## ACTUARIAL VALUATIONS

Actuarial valuations of the TCRS are performed by an independent actuarial consulting firm to assess the funding status of the system and to determine employer contribution rates for its various components. The valuation performed as of July 1, 2013 set employer rates effective July 1, 2014 through June 30, 2016. The June 30, 2015 valuation established contribution rates beginning July 1, 2016. The Board of Trustees of the system is responsible for adopting the employer contribution rates after reviewing the actuarial results.

Recent GASB Standards separated pension accounting from pension funding. As a result, TCRS will begin annual actuarial valuations beginning June 30, 2015 for both GASB 67/68 purposes and funding purposes.

## FUNDING OF PENSIONS

It is the policy of the state to fund pensions by actuarially-determined contributions which are intended to provide funding for both the normal liability cost and the unfunded actuarial accrued liability cost. This policy seeks to ensure that sufficient assets will be available to pay the benefits as promised by the pension plan.

## ACCRUED LIABILITY

The unfunded accrued liability within the plan was most recently reestablished with the 2013 actuarial valuation for most groups. This was accomplished by setting the unfunded accrued liability equal to the excess of the Entry Age Normal Past Service Liability over the valuation assets for each group.

## SPECIFICS

Valuations are based on demographic data (employees' ages, salaries and service credits), economic projections (salary increases, interest rates and investment earnings) and decrement estimates (mortality and disability rates).

The economic projections and decrement estimates used for valuation purposes utilized the assumptions recommended by the actuary and adopted by the Board of Trustees based on an actuarial experience study conducted every four years. The earnings rate assumption adopted by the Board is subject to the approval of the Council on Pensions and Insurance.

## QUADRENNIAL EXPERIENCE STUDY

A quadrennial experience study was conducted as of June 30, 2012. The system noted improvements in mortality and included an adjustment for projected mortality. In addition, the system lowered the salary scale for all groups. Assumptions developed from the June 30, 2012 experience study were used in the July 1, 2013 actuarial valuation. The next experience study will occur as of June 30, 2016.

## FUNDING POLICY

The TCRS Board of Trustees adopted a funding policy for TCRS on September 26, 2014. The policy outlines the procurement of actuarial services, the assumptions to be used in the experience study, the components of the actuarial valuation, and performance of an actuarial audit. The funding policy can be found on the TCRS website at <http://treasury.tn.gov/tcrs/PDFs/FundingPolicy.pdf>.



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December 1, 2016

Mr. David H. Lillard, Jr.  
Chairman, Board of Trustees  
Tennessee Consolidated Retirement System  
502 Deaderick Street  
Nashville, Tennessee 37243-0201

**Re: Actuary's Certification Letter**

Dear Mr. Lillard:

The purpose of this letter is to certify the actuarial adequacy of contributions being made by the State of Tennessee, Local Education Agencies and participating Political Subdivisions to the Tennessee Consolidated Retirement System and to discuss the approach currently being taken toward meeting the financing objectives of the Plan.

The most recent actuarial valuation for funding purposes completed as of the year ending June 30, 2016 for the Tennessee Consolidated Retirement System was performed as of June 30, 2015. In addition, a valuation for accounting purposes pursuant to GASB 67 and 68 was performed as of June 30, 2015 and was used to satisfy June 30, 2016 reporting date requirements. These valuations were based on a set of actuarial assumptions (described in detail in the section headed "Summary of Actuarial Assumptions and Methods") which was adopted by the Board of Trustees on the recommendation of the actuary after a study of actual experience under the TCRS during the four-year period ending June 30, 2012. Beginning June 30, 2015, actuarial valuations will be performed annually for both funding and accounting purposes.

The Tennessee Consolidated Retirement System implemented a new hybrid plan design for all new employees hired on or after July 1, 2014. Employees hired prior to this date continue to participate in the legacy plans. The 2015 funding and accounting valuations reflect this change and provide separate reporting for each plan. There have been no other significant changes in the level of benefits provided by the plan since the date of the preceding valuation.

In performing the 2015 valuations, we relied on employee data and asset information provided by the administrative staff of the Tennessee Consolidated Retirement System. In the case of employee data, each individual record was audited for reasonableness and internal consistency, although the validity of the information was not traced to source documents. With respect to plan assets, a general review for consistency with the information furnished for prior valuations was performed.

Mr. David H. Lillard, Jr.  
Chairman, Board of Trustees  
December 1, 2016  
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Certain tables presented in the Comprehensive Annual Financial Report are derived from the 2015 actuarial valuation reports prepared by Bryan, Pendleton, Swats and McAllister, LLC. The tables were prepared by the staff of the Tennessee Consolidated Retirement System and examined by our firm. These tables include the following –

***Financial Section***

- Schedules of Changes in Net Pension Liability
- Schedules of Net Pension Liability
- Schedule of Contributions

***Actuarial Section***

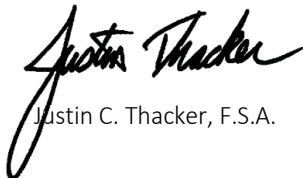
- Summary of Actuarial Assumptions and Methods
- Actuarial Data
- Actuarial Balance Sheet
- Short-Term Solvency Test
- Summary of Accrued and Unfunded Accrued Liabilities
- Selected Actuarial Funding Information
- Analysis of Financial Experience

The Schedule of Retired Member Activity in the Actuarial Data section was prepared by our firm using information gathered from prior actuarial valuations.

The 2015 valuations were prepared in accordance with accepted actuarial principles of practice prescribed by the Actuarial Standards Board and the principles of Governmental Accounting Standards Board Statements 67 and 68. The valuations were also in accordance with the pension funding policy adopted by the TCRS Board of Trustees. I am a Member of the American Academy of Actuaries with experience in performing valuations for public retirement systems; all calculations were performed either by me or by other qualified actuaries under my direct supervision.

Based upon the valuation results and the contribution rates adopted by the Board of Trustees, it is our opinion that the Tennessee Consolidated Retirement System continues to fund its liabilities in accordance with standard actuarial principles of advance funding, continuing a program first adopted in 1975.

Sincerely,



Justin C. Thacker, F.S.A.

The following assumptions were adopted by the Board of Trustees for use with the July 1, 2013 valuation based on the consulting actuary's recommendations resulting from the June 30, 2012 actuarial experience study.

### General Actuarial Methods

- **Actuarial Cost Method (Frozen Entry Age)** — The state and teacher unfunded accrued liabilities are being funded over a thirteen-year and eight-year period, respectively. The amortization period related to local government unfunded accrued liabilities varies by entity.
- **Treatment of Actuarial Gains and Losses** — Under the Frozen Entry Age Method, any actuarial gains or losses are absorbed into the normal cost, unless the unfunded liability is reestablished.
- **Asset Valuation Method** — Assets are valued on a basis which reflects a ten-year moving average of the fair market value. The actuarial value of assets must be within 80-120 percent of the market value of assets.
- **Valuation Data** — The administrative staff of TCRS furnishes the actuary with demographic data relating to the active life members and the retired life members. The fair value of system assets are also provided by retirement system staff. All data is reviewed for reasonableness and consistency from year to year, but is not audited by the actuary.
- **Post-Retirement Adjustments** — Retirement benefits are assumed to increase at the geometric rate of 2.5 percent annually, reflecting the 1997 adoption of compounded cost-of-living adjustments.

### Economic Assumptions

- **Investment Return Rate** — 7.5 percent per annum, compounded annually.
- **Employee Salary Increases** — Graded scale that reflects the plan experience pattern of declining escalation rates as participant ages increase. No explicit assumption is made regarding the portion attributable to the effects of inflation on salaries. Active membership is assumed to remain constant. For the legacy pension plan, increase in Social Security Wage Base — 3.5 percent annual increase.

(continued)



**Decrement Assumptions**

**Post-Retirement Mortality** — Specifically adopted tables have been created to accurately reflect patterns that occur among TCRS retirees. Sample rates are below.

Male		
Age	Teachers	State and Political Subdivisions
Age 50	0.2%	0.3%
Age 60	0.4%	0.9%
Age 70	1.4%	2.0%

Female		
Age	Teachers	State and Political Subdivisions
Age 50	0.1%	0.2%
Age 60	0.4%	0.7%
Age 70	0.9%	1.2%

**Pre-Retirement Mortality** — All groups are based on the 2012 Static Non-annuitant mortality table published by the IRS.

**Withdrawal Due to Disability** — Sample rates of disability based on experience:

Male			
Age	Teachers	State	Political Subdivisions
Age 30	0.01%	0.07%	0.03%
Age 40	0.08%	0.16%	0.08%
Age 50	0.17%	0.27%	0.38%

Female			
Age	Teachers	State	Political Subdivisions
Age 30	0.01%	0.04%	0.03%
Age 40	0.08%	0.14%	0.08%
Age 50	0.17%	0.33%	0.38%

**Turnover Assumption** — Tables for probabilities of separation due to termination of employment are developed utilizing a “two-year select and ultimate” approach.

Teachers			
	1st Year Employment	2nd Year Employment	Ultimate
<b>Male</b>			
Age 30	18.0%	13.5%	6.0%
Age 40	18.0%	13.5%	2.0%
Age 50	19.7%	14.2%	2.0%
<b>Female</b>			
Age 30	18.0%	13.5%	7.6%
Age 40	18.0%	13.5%	2.3%
Age 50	19.7%	14.2%	1.6%

State			
	1st Year Employment	2nd Year Employment	Ultimate
<b>Male</b>			
Age 30	23.0%	18.6%	9.6%
Age 40	18.6%	13.8%	2.6%
Age 50	14.8%	11.1%	2.2%
<b>Female</b>			
Age 30	23.0%	18.6%	10.3%
Age 40	18.6%	13.8%	3.4%
Age 50	14.8%	11.1%	2.3%

Political Subdivisions			
	1st Year Employment	2nd Year Employment	Ultimate
<b>Male</b>			
Age 30	21.8%	17.9%	7.4%
Age 40	19.2%	15.9%	3.5%
Age 50	17.0%	13.0%	2.8%
<b>Female</b>			
Age 30	21.8%	17.9%	11.1%
Age 40	19.2%	15.9%	5.4%
Age 50	17.0%	13.0%	3.8%

(continued)

**Retirement** — The probabilities of retirement for members eligible to retire:

In addition, for members younger than age 60, a loading factor of 12.5 percent for teachers and 7.5 percent for state and political subdivision employees is added during the year the member is first eligible for unreduced retirement. After age 60, for those members with 15 or more years of service, an 8.0 percent load is added for teachers and 2.0 percent for state employees and political subdivision employees.

<b>Male</b>			
<b>Age</b>	<b>Teachers</b>	<b>State</b>	<b>Political Subdivisions</b>
Age 60	15.0%	8.5%	10.5%
Age 61	16.0%	11.0%	15.0%
Age 62	22.0%	16.0%	20.0%
Age 63	16.0%	12.0%	17.5%
Age 64	18.0%	14.0%	17.5%
Age 65	35.0%	22.0%	24.0%
Age 70	16.0%	15.5%	18.0%
Age 75	100.0%	100.0%	100.0%

<b>Female</b>			
<b>Age</b>	<b>Teachers</b>	<b>State</b>	<b>Political Subdivisions</b>
Age 60	17.0%	9.0%	11.0%
Age 61	20.0%	12.0%	13.0%
Age 62	26.0%	18.0%	18.0%
Age 63	19.5%	12.0%	16.0%
Age 64	24.0%	14.0%	16.0%
Age 65	37.5%	22.0%	22.0%
Age 70	34.0%	17.0%	19.0%
Age 75	100.0%	100.0%	100.0%



**SCHEDULE OF ACTIVE MEMBER VALUATION DATA**

	<b>Actuarial Valuation July 1</b>	<b>Number</b>	<b>Annual Payroll In Thousands</b>	<b>Average Annual Pay</b>	<b>Average Annual Percentage Increase In Average Pay</b>
2007	SETHEEPP	136,284	\$ 5,739,878	\$ 42,117	3.01%
	PSPP	76,441	2,084,945	27,275	3.40%
2009	SETHEEPP	136,123	6,052,325	44,462	2.78%
	PSPP	78,827	2,284,284	28,978	3.12%
2011	SETHEEPP	135,569	6,057,161	44,680	0.25%
	PSPP	79,507	2,356,126	29,634	1.13%
2013	SETHEEPP	132,900	6,236,930	46,929	2.48%
	PSPP	77,064	2,374,948	30,818	1.99%
2015	TLPP	69,125	3,542,059	51,241	0.84%
	TRP	5,524	225,219	40,771	N/A
	PERP	134,426	4,987,326	37,101	1.70%

**SCHEDULE OF RETIRED MEMBER VALUATION DATA**

	<b>Actuarial Valuation July 1</b>	<b>Number</b>	<b>Annual Allowances In Thousands</b>	<b>Average Annual Allowances</b>	<b>Average Annual Percentage Increase In Annual Allowances</b>
2007	SETHEEPP	70,113	\$ 1,103,826	\$ 15,744	4.80%
	PSPP	28,117	188,173	6,692	4.41%
2009	SETHEEPP	76,720	1,266,979	16,514	2.45%
	PSPP	31,155	219,860	7,057	2.73%
2011	SETHEEPP	82,456	1,442,780	17,498	2.98%
	PSPP	34,129	257,105	7,533	3.37%
2013	SETHEEPP	90,414	1,682,792	18,612	2.96%
	PSPP	37,157	286,338	7,706	3.37%
2015	TLPP	47,979	1,103,163	22,993	1.30%
	TRP	0	0	0	N/A
	PERP	94,704	1,143,883	12,079	1.60%

Legislative changes changed the plans presented beginning July 1, 2014. The July 1, 2015 Actuarial Valuation was the first performed after this change.

- SETHEEPPP - State Employees, Teachers, Higher Education Employees Pension Plan
- PSPP - Political Subdivisions Pension Plan
- TLPP - Teacher Legacy Pension Plan
- TRP - Teacher Retirement Plan
- PERP - Public Employee Retirement Plan

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## SCHEDULE OF RETIRED MEMBER ACTIVITY

	Actuarial Valuation July 1	Added to Rolls		Removed from Rolls		Rolls - End of Year		Percentage Increase in Annual Allowances	Average Annual Allowances
		No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances		
2007	SETHEEPP	9,427	\$ 219,034	3,818	\$ 40,794	70,703	\$ 1,117,789	18.97%	\$ 15,810
	PSPP	4,396	38,751	1,668	7,815	27,527	174,211	21.59%	6,329
2009	SETHEEPP	10,677	212,772	4,070	49,047	77,310	1,281,514	14.65%	16,576
	PSPP	4,752	39,522	1,714	8,407	30,565	205,326	17.86%	6,718
2011	SETHEEPP	10,090	233,149	4,359	56,689	83,041	1,457,974	13.77%	17,557
	PSPP	4,955	47,632	1,976	11,048	33,544	241,910	17.82%	7,212
2013	SETHEEPP	12,199	289,437	4,826	64,619	90,414	1,682,792	15.42%	18,612
	PSPP	5,858	56,987	2,245	12,559	37,157	286,338	18.37%	7,706
2015	TLPP	6,582	167,537	2,376	45,115	47,979	1,103,163	12.48%	22,993
	TRP	0	0	0	0	0	0	N/A	N/A
	PERP	15,885	203,829	4,979	48,335	94,704	1,143,883	15.73%	12,079

Legislative changes changed the plans presented beginning July 1, 2014. The July 1, 2015 Actuarial Valuation was the first performed after this change.

Note: Timing differences exist between the data utilized for statistical information and that used for actuarial valuation purposes.

## ACTUARIAL VS. RECOMMENDED CONTRIBUTION RATES

The Board adopted the contribution rates as recommended by the actuary.

SETHEEPP – State Employees, Teachers, Higher Education Employees Pension Plan

PSPP – Political Subdivisions Pension Plan

TLPP - Teacher Legacy Pension Plan

TRP - Teacher Retirement Plan

PERP - Public Employee Retirement Plan



**ACTUARIAL BALANCE SHEET  
as of July 1, 2015**

	<u>Teacher Legacy Pension Plan</u>	<u>Teacher Retirement Plan</u>	<u>Public Employee Retirement Plan</u>	<u>Total</u>
<b>ASSETS</b>				
Present assets creditable to:				
Employer accumulation fund	\$17,699,311,040	\$5,384,662	\$19,929,128,545	\$37,633,824,247
Members' accumulation fund	3,340,879,458	10,360,690	1,753,721,976	5,104,962,124
Total present assets	<u>21,040,190,498</u>	<u>15,745,352</u>	<u>21,682,850,521</u>	<u>42,738,786,371</u>
Present value of prospective contributions payable to:				
Employer accumulation fund				
Normal	1,851,614,510	26,131,783	2,810,980,429	4,688,726,722
Accrued liability	268,857,872	(1,092,784)	1,565,808,774	1,833,573,862
Total employer accumulation	<u>2,120,472,382</u>	<u>25,038,999</u>	<u>4,376,789,203</u>	<u>6,522,300,584</u>
Member's accumulation fund	1,785,604,938	140,523,579	667,469,121	2,593,597,638
Total prospective contributions	<u>3,906,077,320</u>	<u>165,562,578</u>	<u>5,044,258,324</u>	<u>9,115,898,222</u>
<b>TOTAL ASSETS</b>	<u>\$24,946,267,818</u>	<u>\$181,307,930</u>	<u>\$26,727,108,845</u>	<u>\$51,854,684,593</u>
<b>LIABILITIES</b>				
Present value of prospective benefits payable on account of:				
Present retired members and beneficiaries	12,534,489,777	-	12,202,018,320	24,736,508,097
Present active members	11,961,198,008	180,762,543	12,860,374,684	25,002,335,235
Former members	450,580,033	545,387	1,664,715,841	2,115,841,261
<b>TOTAL LIABILITIES</b>	<u>\$24,946,267,818</u>	<u>\$181,307,930</u>	<u>\$26,727,108,845</u>	<u>\$51,854,684,593</u>

## Short-Term Solvency Test

The financing objective of the Tennessee Consolidated Retirement System is to pay for the benefits provided by the plan through contributions that remain approximately level from year to year as a percentage of payroll, except that the strategy to fund the unfunded accrued liability is to make level-dollar payments over an established amortization period. A short-term solvency test is one means of checking a system's progress under its funding program. In a short-term solvency test, the plan's present assets are compared with: (1) active member contributions on deposit; (2) the liabilities for future benefits to

present retired lives; and (3) the liabilities for service already rendered by active members. In a system that has been following the approach of level percent of payroll financing for some time, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) should be fully covered by present assets. In addition, the liabilities for service already rendered by active members (liability 3) should be partially covered by the remainder of present assets. Generally, if the system has been using level cost financing, the funded portion of liability 3 will increase over time.

Dollar Amounts Expressed in Millions

Actuarial Valuation July 1	Actuarial Accrued Liabilities for:			Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members (Employer Financed)		(1)	(2)	(3)
2009 SETHEEP	\$3,559.8	\$14,122.8	\$11,372.4	\$26,335.2	100%	100%	76%
PSPP	1,011.3	2,190.0	2,942.4	5,304.5	100%	100%	71%
Total	\$4,571.1	\$16,312.8	\$14,314.8	\$31,639.7	100%	100%	75%
2011 SETHEEP	\$3,707.0	\$15,941.3	\$13,059.3	\$30,118.2	100%	100%	80%
PSPP	1,100.8	2,560.6	3,700.3	6,562.6	100%	100%	78%
Total	\$4,807.8	\$18,501.9	\$16,759.6	\$36,680.8	100%	100%	80%
2013 SETHEEP	\$3,759.9	\$18,747.4	\$11,616.3	\$31,851.0	100%	100%	80%
PSPP	1,196.3	\$3,075.7	\$1,991.6	\$7,398.3	100%	100%	100%
Total	\$4,956.2	\$21,823.1	\$13,607.9	\$39,249.3	100%	100%	92%
2015 TLPP	\$3,340.9	\$12,534.5	\$5,433.7	\$21,040.2	100%	100%	95%
TRP	10.4	0	4.3	15.7	100%	100%	100%
PERP	1,753.7	12,202.0	9,292.9	21,682.8	100%	100%	83%
Total	\$5,105.0	\$24,736.5	\$14,730.9	\$42,738.7	100%	100%	88%

SETHEEPP – State Employees, Teachers, Higher Education Employees Pension Plan

PSPP – Political Subdivisions Pension Plan

TLPP - Teacher Legacy Pension Plan

TRP - Teacher Retirement Plan

PERP - Public Employee Retirement Plan

The unfunded accrued liability represents the excess of the accrued actuarial liability over the actuarial value of assets. For funding purposes, the Board of Trustees of TCRS has adopted the frozen initial liability method.

Under this method, the unfunded accrued liability is being funded by level-dollar contributions. Also, actuarial gains and losses are absorbed in normal cost rather than as part of the unfunded liability. The statute governing TCRS allows the Board of Trustees to reestablish the unfunded accrued liability for actuarial gains and losses.

For the July 1, 2013 actuarial valuation, the Board reestablished the unfunded accrued liability. In an inflationary economy where the covered payroll

continues to grow, the level-dollar amounts which are being contributed to fund the unfunded accrued liability will, if expressed as a percentage of payroll, continue to decrease.

While concern is generally expressed regarding the dollar amount of the unfunded accrued liability, an analysis should also include the method being used to fund this liability as well as a review of this liability expressed as a percentage of active member payroll. The smaller the ratio of unfunded liabilities to the active member payroll, the stronger the system. A review of this ratio over a period of years will give an indication of whether the system is becoming financially stronger or weaker with respect to its unfunded liabilities.

**SUMMARY OF ACCRUED AND UNFUNDED ACCRUED LIABILITIES**  
*Dollar Amounts Expressed in Millions*

Actuarial Valuation Jul 1	Actuarial Accrued Liabilities (AAL)	Valuation Assets	Ratio Assets to AAL	Unfunded Actuarial Accrued Liabilities (UAAL)	Active Member Payroll	UAAL as a Percentage of Active Member Payroll
2011	\$ 40,069.3	\$ 36,680.8	91.54%	\$ 3,388.5	\$ 8,413.3	40.28%
2013	41,913.4	39,249.3	93.64%	2,664.1	8,611.9	30.94%
2015	44,572.4	42,738.8	95.89%	1,833.6	8,754.6	20.94%

Notes:

This schedule is the aggregate of all TCRS plans.



SELECTED ACTUARIAL FUNDING INFORMATION

Actuarial Valuation Year	Earnings Assumptions	Salary Assumptions	Unfunded Liability (Asset)		State Amortization Period
			SETHEEP	PSPP	
2005	7.50%	4.75% (2)	\$ 39,806,610	\$ 326,114,462	10
2007	7.50%	4.75% (2)	1,025,156,148	577,645,568	20
2009	7.50%	4.75% (2)	2,719,767,478	839,320,076	20
2011	7.50%	4.75% (2)	2,589,446,292	799,102,966	9
2013	7.50%	4.25% (2)	2,272,526,399	391,589,555	13

Actuarial Valuation Year	Earnings Assumptions	Salary Assumptions	Unfunded Liability (Asset)			State Amortization Period
			TLPP	TRP	PERP	
2015 (3)	7.50%	4.25% (2)	\$ 268,857,872	\$ (1,092,784)	\$ 1,565,808,774	(1)

Notes:

(1) At each actuarial valuation, the new tier of unfunded liability is established over a period not to exceed 20 years per the TCRS funding policy.

The tier for prior years is amortized over a period not to exceed the remaining period. At 2015, the effective amortization period for all tiers for the state is 14.37 years.

(2) Graded Scale

(3) The information in this schedule is based upon legislative changes. The legislative changes changed the plans presented beginning July 1, 2014.

GAIN AND LOSS ANALYSIS, JULY 1, 2015 VALUATION

	Consolidated State	Teacher
<b>Contribution Rate</b>		
Effective Employer Contribution Rate Pursuant to 2013 Valuation	15.14%	9.04%
<b>Investment Results</b>		
	1.00%	0.92%
Salary Increases: The annual weighted-average rate of salary increase during the 2013-2015 period was below the assumed age-based rate used in preparing the 2013 valuation report. This resulted in a reduction in the contribution rate.	-0.26%	-0.94%
New Entrants: Includes the effect where normal cost for new entrants since the previous valuation differs from the normal cost of the group.	-0.29%	0.07%
Cost of Living Escalation: COLA in 2014 and 2015 were 1.5% and 1.0%, respectively for combined effect of 1.2%, which is less than the assumed 2.5% per year.	-1.16%	-0.93%
Prior Service Purchases: Employee purchases of prior service credits result in liabilities to the plan that are not fully offset by related employee contributions	0.10%	0.10%
Effect of turnover on total payroll: Turnover during the 2013-2015 period was above the assumed rates, which resulted in lower payroll than expected for the 2015 valuation. The lower payroll base led to an increase in the contribution rate.	1.05%	0.34%
Other	0.59%	-0.43%
Re-amortization of unfunded liability	-1.03%	0.87%
Effective Employer Contribution Rate Pursuant to 2015 Valuation	15.14%	9.04%

## HISTORY AND ADMINISTRATION

The TCRS was established in 1972 by an Act of the Tennessee General Assembly. Seven existing retirement systems were consolidated to provide retirement, disability and death benefits to state employees, public school teachers, higher education employees and the employees of participating local governments. State laws governing the plan may be found in Chapters 34-37, 39 of Title 8, Tennessee Code Annotated. Amendments to the plan can only be made by legislation enacted by the General Assembly of the State of Tennessee.

A 20-member Board of Trustees has the responsibility to manage and oversee the operation of the consolidated system. The Board consists of nine ex-officio members from the executive, legislative and judicial branches of state government, nine representatives of the active TCRS membership and two representatives for retirees. Employee representation consists of three teachers, one from each grand division of the state; two state employees from departments other than those represented by ex-officio members; three representatives of local governments; one public safety officer; one retired state employee representative; and one retired teacher representative. Local government representatives are appointed for two-year terms by each of the following organizations: the Tennessee County Services Association, the Tennessee Municipal League and the Tennessee County Officials Association. All employee representatives must be vested members of TCRS.

TCRS is administered by the Treasury Department under the legislative branch of state government. By state law, the State Treasurer serves as chairman of the Board of Trustees and as custodian of the funds of the system. The Director of the retirement system is appointed by the Treasurer and serves as the chief administrative officer of the plan.

The state is responsible for the pension cost of state employees; pension costs for teachers are the responsibility of the local education agencies

in Tennessee; costs for the participation of local government employees are paid by political subdivisions. Administrative expenses are paid from employers' account balances. The operating budget is funded through fees charged to the employer.

## MEMBERSHIP

Membership in the retirement system is a condition of employment for full-time state employees, K-12 teachers, higher education general employees and the employees of participating local governments. Membership is optional for part-time state employees and the part-time employees of political subdivisions which have authorized such coverage.

Interim teachers and part-time teachers have optional membership. The faculty employees of institutions of higher education may elect participation in either TCRS or an optional retirement program (ORP), a defined contribution plan for higher education faculty.

State employees, higher education employees and K-12 public school teachers hired after June 30, 2014 will participate in a Hybrid Pension Plan for State Employees and Teachers.

## CONTRIBUTIONS

TCRS membership became noncontributory on July 1, 1981 for most state employees, teachers in state supported institutions of higher education and teachers employed in the Department of Education. At that time, the contributions, up to 5.0 percent of compensation payable to these employees, were assumed by the state, but this amount continued to be credited to the individual members' accounts from employer funds. State employees hired after July 1, 1981 join TCRS as noncontributory members with no funds credited to their individual accounts. Public school teachers contribute at a rate of 5.0 percent of gross salary. State employees, teachers in state supported institutions of higher education and teachers employed by the Department of Education hired after June 30, 2014 contribute at a rate of 5.0 percent of gross salary.

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Participating political subdivisions may either adopt noncontributory retirement provisions or require employee contributions, at 2.5% or 5.0% of salary. The contribution rate for local government employees is 5.0 percent up to the Social Security wage base and 5.5 percent above that base, unless the employing government has authorized a level 5.0 percent rate.

Individual accounts are maintained for all contributory members with interest credited annually at a rate of 5.0 percent. Since the TCRS is a defined benefit plan, benefits are based upon the member's average final compensation and years of creditable service. The member's account balance including interest accrued has no bearing on the monthly benefit amount payable at retirement. Account balances plus interest are fully refundable upon termination of service or death.

Contributory members are covered by Section 414(h) of the Internal Revenue Code. Under this provision, retirement contributions are made on a tax-deferred basis, with income tax due only when contributions are returned to members as benefits or refunds. Political subdivisions may adopt the 414(h) provision for their employees.

The state also makes contributions on behalf of higher education faculty members who select membership in the ORP. These contributions are equal to 10 percent of salary up to Social Security wage base and 11 percent of any excess salary.

For ORP participants hired after June 30, 2014, the state will contribute 9.0 percent of salary to the ORP. The employee will contribute 5.0 percent of gross salary to the ORP.

## BENEFITS

### General

TCRS provides three valuable benefits to its members: disability, death and service retirement benefits. Disability benefits are available to qualified TCRS members who become totally and permanently disabled before meeting the requirements for service retirement. Two types of disability retirement are available: ordinary and accidental.

To qualify for ordinary disability, a member must have a minimum of five years of TCRS service credit. The ordinary disability benefit is equal to 90 percent of what the member would receive under service retirement. If a disabled retiree has less than 20 years of service credit, the service is projected to age 60 or 20 years, whichever comes first. When service is projected, the actual and projected service combined cannot exceed 20 years. If the member's actual service credit exceeds 20 years, the benefit is based on actual service only.

There is no minimum service requirement to qualify for an accidental disability benefit. However, the disability must be the result of a job-related accident that occurs without negligence on the part of the member during the performance of duty. Prior to the onset of Social Security benefits, an accidental disability benefit is equal to 50 percent of the member's average final compensation (AFC). Once Social Security benefits begin, the accidental benefit is 33.3 percent of AFC. For members joining TCRS on or after July 1, 1997, accidental disability benefits are determined in the same manner as ordinary disability using the projection of service method. Disability benefits are increased by 5.0 percent for state employees, teachers and employees of participating political subdivisions which have authorized the 5.0 percent benefit improvement. The accidental benefit is adjusted if the member's combined benefits from Social Security and/or workers' compensation exceed 75 percent of his AFC.

*(continued)*



One of several death benefits may be payable to the designated beneficiary of an active member who dies prior to retirement. The type of death benefit payable will be determined by whether or not death occurred while in service, who is named as beneficiary and the member's length of service.

A member may designate one or more persons, his estate, an institution or any combination of such as his beneficiary. However, estates, institutions and/or multiple beneficiaries are only eligible for a lump-sum refund of the member's accumulated contributions and interest unless one of the beneficiaries named is the surviving spouse. Other death benefits offered by TCRS include a 100 percent Joint and Surviving Spouse Annuity after ten years of service, a 100 percent Joint and Survivor Annuity for any beneficiary and a Line-of-Duty Benefit. Any beneficiary of a member who had ten years of service and who is eligible for a lump-sum death benefit may elect a benefit to be paid over ten years.

#### Legacy Plan for Members Before July 1, 2014

All members hired prior to July 1, 2014, with the exception of state judges, joining TCRS after 1976 enter the same membership group. The benefit formula for this group provides 1.5 percent of AFC computed over five years for each year of service credit. If a member's AFC exceeds the Social Security integration level (SSIL) applicable at retirement, the formula provides an additional .25 percent of the amount of the excess for each service year. These benefits are increased by 5.0 percent for state employees, teachers and employees of participating political subdivisions which have authorized the 5.0 percent benefit improvement. State judges joining TCRS after September 1, 1990 become Group IV members. The benefit formula for Group IV members is 2.5 percent of AFC computed over five years for each year of service credit.

Members become eligible for regular service retirement at age 60 if vested or at any age with 30 years. Vested members are eligible for reduced early retirement benefits when they have reached age 55 or have completed 25 years of service. Members joining TCRS after June 30, 1979 attain vesting rights after five years of service; the vesting period for members who joined prior to July 1, 1979 is four years. Five-year vesting and 25-year retirement are benefits that are optional to local governments. Otherwise, vesting for local governments is ten years of service.

#### Hybrid Plan for Members After June 30, 2014

State employees, higher education employees and K-12 teachers, with the exception of state judges, the State Attorney General, elected District Attorneys General, and elected Public Defenders, becoming members after June 30, 2014 enter the same membership group. The benefit formula for this group provides 1.0 percent of AFC computed over five years for each year of service credit. The benefit formula for State judges, the State Attorney General, elected District Attorneys General, and elected Public Defenders provides 1.6 percent of AFC computed over five years for each year of service credit. Local governments have the option to join this plan. The hybrid plan also has a defined contribution component.

Members become eligible for regular service retirement at age 65 if vested or the Rule of 90. The Rule of 90 refers to a combination of age and service that total 90. Vested members are eligible for reduced early retirement benefits at age 60 if vested or the Rule of 80. Members attain vesting rights after five years of service.

## SERVICES FOR ACTIVE MEMBERS

TCRS provides a number of services for active members through its various sections. Member self-service is available at [www.mytcrs.com](http://www.mytcrs.com). Detailed member information, including salary and service history, is available on the secured portal.

### *Outreach*

- TCRS staff is available to conduct employee presentations on all aspects of the retirement system.
- Employer seminars are conducted biennially to educate payroll officers on legislation affecting TCRS and inform them of the employer contribution rates effective for the next fiscal year.

### *Membership*

- Comprehensive membership statements are provided to all members annually.
- Computer-generated membership letters are mailed to all new members.
- Membership booklets are available to members upon request.
- Member self-service at [www.mytcrs.com](http://www.mytcrs.com)

### *Prior Service*

- An automated calculation and eligibility system generates billings for members who wish to establish prior service.
- An installment program is available to purchase certain types of prior service.
- Prior Service may be purchased with a rollover from a tax-deferred 401(a) plan, 401(k) plan, 403(b) plan, 457 plan or a traditional or Roth IRA.

### *Benefits*

- RetireReady TN website - TCRS and Deferred Compensation Information
- Customer Service Call Center
- Counseling Services - Retirement Counselors available to meet in all regions of the state

## SERVICES FOR RETIRED MEMBERS

A number of services are made available to TCRS retirees.

- Retiree identification cards
- Semiannual retiree newsletter: The Retiree Advisor
- Direct deposit or debit card payments
- Deduction of medical insurance
- Deduction of dental insurance
- Deduction of Medicare supplement coverage
- Income tax information
- Certification of monthly benefits
- Certification of student discounts
- Retiree self-service at [www.mytcrs.com](http://www.mytcrs.com) allows a member to update account information, view and change direct deposit and tax withholding information, and a number of other easy actions.

## SERVICES FOR EMPLOYERS

- Accounting entries, notes, and required supplementary information regarding pensions to comply with GASB Standard 68.
- Available online at [www.treasury.tn.gov/GASB68](http://www.treasury.tn.gov/GASB68)
- Actuarial Report
- Employer education regarding reporting and participation in TCRS.

**TCRS Legacy Plan and Social Security Benefits  
for Calendar Year 2016**

Five-Year AFC*	Projected Annual Retirement Income	15 Years Service	% of AFC	20 Years Service	% of AFC	25 Years Service	% of AFC	30 Years Service	% of AFC	35 Years Service	% of AFC
\$15,000	TCRS	\$ 3,544		\$ 4,725		\$ 5,906		\$ 7,088		\$ 8,269	
	Social Security	9,708		9,708		9,708		9,708		9,708	
	Total	\$ 13,252	88.3%	\$ 14,433	96.2%	\$ 15,614	104.1%	\$ 16,796	112.0%	\$ 17,977	119.8%
\$20,000	TCRS	\$ 4,725		\$ 6,300		\$ 7,875		\$ 9,450		\$ 11,025	
	Social Security	11,184		11,184		11,184		11,184		11,184	
	Total	\$ 15,909	79.5%	\$ 17,484	87.4%	\$ 19,059	95.3%	\$ 20,634	103.2%	\$ 22,209	111.0%
\$25,000	TCRS	\$ 5,906		\$ 7,875		\$ 9,844		\$ 11,813		\$ 13,781	
	Social Security	12,660		12,660		12,660		12,660		12,660	
	Total	\$ 18,566	74.3%	\$ 20,535	82.1%	\$ 22,504	90.0%	\$ 24,473	97.9%	\$ 26,441	105.8%
\$30,000	TCRS	\$ 7,088		\$ 9,450		\$ 11,813		\$ 14,175		\$ 16,538	
	Social Security	14,124		14,124		14,124		14,124		14,124	
	Total	\$ 21,212	70.7%	\$ 23,574	78.6%	\$ 25,937	86.5%	\$ 28,299	94.3%	\$ 30,662	102.2%
\$35,000	TCRS	\$ 8,269		\$ 11,025		\$ 13,781		\$ 16,538		\$ 19,294	
	Social Security	15,600		15,600		15,600		15,600		15,600	
	Total	\$ 23,869	68.2%	\$ 26,625	76.1%	\$ 29,381	83.9%	\$ 32,138	91.8%	\$ 34,894	99.7%
\$40,000	TCRS	\$ 9,450		\$ 12,600		\$ 15,750		\$ 18,900		\$ 22,050	
	Social Security	17,076		17,076		17,076		17,076		17,076	
	Total	\$ 26,526	66.3%	\$ 29,676	74.2%	\$ 32,826	82.1%	\$ 35,976	89.9%	\$ 39,126	97.8%
\$45,000	TCRS	\$ 10,631		\$ 14,175		\$ 17,719		\$ 21,263		\$ 24,806	
	Social Security	18,540		18,540		18,540		18,540		18,540	
	Total	\$ 29,171	64.8%	\$ 32,715	72.7%	\$ 36,259	80.6%	\$ 39,803	88.5%	\$ 43,346	96.3%
\$50,000	TCRS	\$ 11,813		\$ 15,750		\$ 19,688		\$ 23,625		\$ 27,563	
	Social Security	20,016		20,016		20,016		20,016		20,016	
	Total	\$ 31,829	63.7%	\$ 35,766	71.5%	\$ 39,704	79.4%	\$ 43,641	87.3%	\$ 47,579	95.2%
\$55,000	TCRS	\$ 12,994		\$ 17,325		\$ 21,656		\$ 25,988		\$ 30,319	
	Social Security	21,492		21,492		21,492		21,492		21,492	
	Total	\$ 34,486	62.7%	\$ 38,817	70.6%	\$ 43,148	78.5%	\$ 47,480	86.3%	\$ 51,811	94.2%
\$60,000	TCRS	\$ 14,175		\$ 18,900		\$ 23,625		\$ 28,350		\$ 33,075	
	Social Security	22,944		22,944		22,944		22,944		22,944	
	Total	\$ 37,119	61.9%	\$ 41,844	69.7%	\$ 46,569	77.6%	\$ 51,294	85.5%	\$ 56,019	93.4%
\$65,000	TCRS	\$ 15,356		\$ 20,475		\$ 25,594		\$ 30,713		\$ 35,831	
	Social Security	23,640		23,640		23,640		23,640		23,640	
	Total	\$ 38,996	60.0%	\$ 44,115	67.9%	\$ 49,234	75.7%	\$ 54,353	83.6%	\$ 59,471	91.5%
\$70,000	TCRS	\$ 16,538		\$ 22,050		\$ 27,563		\$ 33,075		\$ 38,588	
	Social Security	24,324		24,324		24,324		24,324		24,324	
	Total	\$ 40,862	58.4%	\$ 46,374	66.2%	\$ 51,887	74.1%	\$ 57,399	82.0%	\$ 62,912	89.9%

\* Average Final Compensation

Social security benefits have been calculated by Bryan, Pendleton, Swats & McAllister, actuarial consultants for the TCRS, utilizing the following assumptions: (1) retirement is taking place at age 65 in 2016; (2) the retiree has worked a full career (TCRS plus other employers, if necessary) of 35 years or more; and (3) salary increases throughout the retiree's career have followed the same pattern as National Average Earnings.

**1972**

Benefit formula improved from 1.12 percent of salary up to the SSIL to 1.5 percent of salary up to the SSIL.

**1973**

Annual cost-of-living increase based on the CPI with a cap of 1.5 percent adopted for retirees.

**1974**

Disability retirement eligibility requirement reduced from ten years to five years of service.

Maximum annual cost-of-living increase raised to 3.0 percent.

Provision to increase retirees' benefits whenever the benefit formula is improved.

Service credit authorized for unused accumulated sick leave.

**1976**

Service retirement eligibility requirements reduced from age 65 or 35 years of service to age 60 or 30 years of service.

Early retirement eligibility requirements reduced from age 60 or 30 years of service to age 55.

**1978**

A bonus cost-of-living increase granted to retirees at a lump-sum cost of \$15.3 million.

An optional retirement plan established for teachers in the Board of Regents system.

**1980**

Death benefits for members dying in-service with ten years of service improved by offering a 100 percent joint and survivor annuity of the member's accrued benefit for the spouse.

**1981**

Noncontributory retirement for state employees and higher education employees adopted. Employees' contributions, up to 5.0 percent, were assumed by the state.

**1983**

An actuarially-reduced retirement benefit at any age with 25 years of service authorized.

**1984**

Credit for out-of-state service for the purpose of determining retirement eligibility authorized.

Retirement credit for armed conflict approved.

Part-time employees permitted to participate in TCRS and members allowed to establish credit for previous part-time employment.

**1985**

\$22 million ad-hoc increase granted to retirees.

**1987**

Service credit for half of peacetime military service made available.

\$17 million ad-hoc increase granted to retirees.

Retirement incentive for state employees.

Section 414(h) of the IRC adopted, allowing employee contributions to be made on a tax-deferred basis.

**1990**

Retirement incentive for state employees.

**1991**

3.6 percent indexing of salaries for noncontributory employees extended one year. Each succeeding year up to 1997, the 3.6 percent indexing was extended. In 1997, it was extended indefinitely.

*(continued)*

**1992**

Minimum number of years required to qualify for retirement was reduced from ten years to five years.

**1993**

Salary portability for service in different classifications authorized effective January 1, 1994.

Benefit improvement up to 5.0 percent authorized.

**1997**

Compounded COLA for retirees approved.

**1998**

Group 2 and Group 3 service requirements amended to permit service retirement with 30 years of service, regardless of age.

Group 1 and Prior Class C benefit limitations increased to 80 percent.

Mandatory retirement established with supplemental bridge benefit for all state public safety officers.

**1999**

Group 1 benefit maximum increased to 90 percent.

**2000**

Group 2 benefit maximum increased to 80 percent.

**2001**

Line-of-Duty Death Benefits adopted to guarantee a minimum \$50,000 death benefit.

**2005**

Return-to-Work statutes were reformed, including a temporary employment increase to 120 days.

**2006**

Ad-hoc increase granted to members retired prior to 1989.

**2007**

Public Safety Officer benefits were enhanced.

**2012**

New plan options offered to local governments.

**2013**

Hybrid plan enacted for state employees and teachers hired after July 1, 2014.