

▶ TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

Actuarial Funding Valuation – Legacy Pension Plans
Valuation Date: June 30, 2019

December 6, 2019

Justin C. Thacker, F.S.A.



► Valuation Purpose

- Determine employer contribution rates for Legacy Pension Plans
(TCA Section 8-37 Part 3)
 - Valuation Date: 6/30/2019
 - New Employer Rates Effective: 7/1/2020
- Examine financial health of plan
- Separate process and reporting for GASB 67/68

► Valuation Background

- Experience Study
 - Mandated by statute
 - Most recent study reviewed 2012 – 2016 period
 - New assumptions adopted (applied to 6/30/2017 valuation)
 - Performed every 4 years
 - Next study will review 2016 – 2020 period
- Actuarial Audit
 - Commonly done for public plans
 - Last audit performed in 2010
 - Endorsed methodology and results
 - Performed every 10 years

▶ System Overview – Legacy Plans (as of June 30, 2019)

- Defined Benefit System
 - State employees, higher education and K-12 teachers hired prior to July 1, 2014
 - 600+ local governments (participation is optional and costs are valued individually)
- Demographic Data
 - 176,000 Active Participants
 - 163,000 Retired Participants
((\$2.7 Billion in annual payments))
- Market Value of Assets -- \$51.6 Billion
- Funding Basis is Traditionally Conservative

► System Overview – Plan Design

	<u>Legacy Plan</u>	<u>Hybrid Plan*</u>
Benefit Multiplier	1.575%	1.0%
Full Retirement	Age 60/30 YOS	Age 65/Rule of 90
Early Retirement	Age 55/25 YOS	Age 60/Rule of 80
Employee Contributions	State-0%;TCH-5%	State-5%;TCH-5%
Cost of Living Adjustment	CPI (Max 3%)	CPI (Max 3%)
Defined Contribution Component	None	5% From Employer
Stabilization Reserve	None	Yes
Cost Controls	None	9% Employer Target
Unfunded Liability Controls	None	Limit: 12.5% of State Indebtedness

*New Hybrid Plan effective only for new hires after 7/1/2014

► System Overview – Plan Design

- Hybrid Plan began 7/1/2014 with new employees only
- All employees hired prior to 7/1/2014 continue in Legacy Plans
- Cost savings of Hybrid Plan will be gradual over time
- Legacy Plans must still be managed and funded adequately
- Remainder of presentation related to Legacy Plans

Active Membership Comparison by Number (Legacy Plans)

<u>Group</u>	<u>2018</u>	<u>2019</u>	<u>Pct Change</u>
Teachers	59,487	56,294	(5.4)%
State	39,867	36,985	(7.2)
Political Sub	80,429	82,296	2.3
Others	748	699	(6.6)
Total	<u>180,531</u>	<u>176,274</u>	<u>(2.4)%</u>

Active Membership Comparison by Compensation (Legacy Plans)

Group	2018	2019	Pct Change
Teachers	\$3,460,664,012	\$3,248,209,652	(6.1)%
Average	58,175	57,701	(0.8)
State	2,123,748,748	2,063,300,374	(2.8)
Average	53,271	55,787	4.7
Political Sub	2,832,351,234	2,968,778,888	4.8
Average	35,216	36,074	2.4
Others	85,756,641	84,007,879	(2.0)
Average	114,648	120,183	4.8
Total	\$8,502,520,635	\$8,364,296,793	(1.6)%
Average	\$47,097	\$47,451	0.8%

Retired Member Comparison by Number (Legacy Plans)

<u>Group</u>	<u>2018</u>	<u>2019</u>	<u>Pct Change</u>
Teachers	50,922	52,400	2.9%
State	54,670	56,358	3.1
Political Sub	48,363	50,952	5.4
Others	3,408	3,329	(2.3)
Total	<u>157,363</u>	<u>163,039</u>	<u>3.6%</u>

Retired Member Comparison by Benefit Amount (Legacy Plans)

Group	2018	2019	Pct Change
Teachers	\$1,227,138,816	\$1,285,072,754	4.7%
Average	24,098	24,524	1.8
State	852,879,726	893,375,674	4.7
Average	15,601	15,852	1.6
Political Sub	402,010,661	436,792,014	8.7
Average	8,312	8,573	3.1
Others	98,296,740	99,037,767	0.8
Average	28,843	29,750	3.1
Total	\$2,580,325,943	\$2,714,278,209	5.2%
Average	\$16,397	\$16,648	1.5%

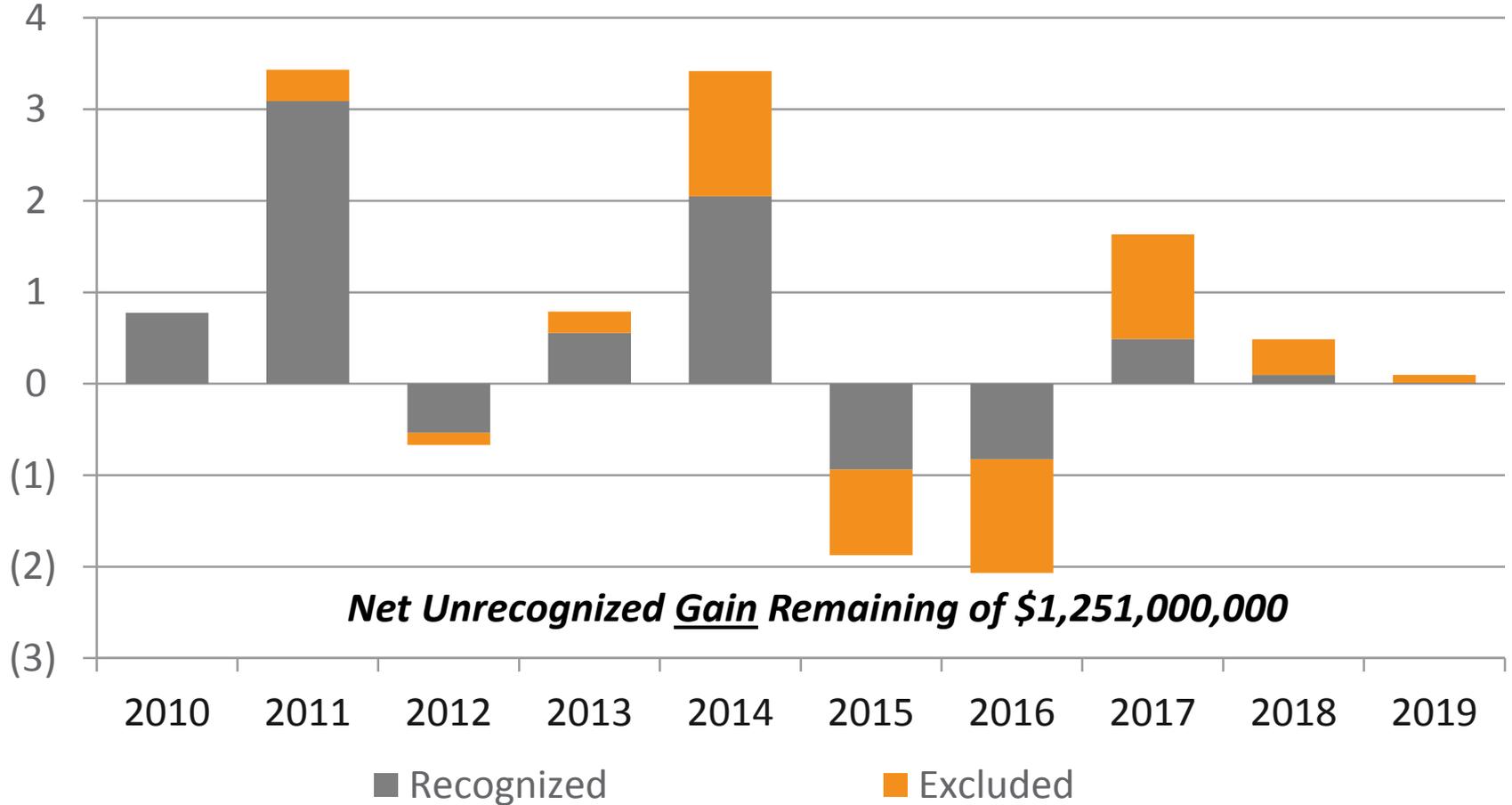
► Valuation Asset Method

- Use “smoothing” device to limit contribution volatility
- Phase-in excess or deficit earnings compared to the earnings assumption ratably over ten-year period
- Utilize 80%/120% corridor
- Resulting value is “Actuarial Value of Assets”
- Actuarial Value of Assets is only used to determine contribution rates pursuant to the TCRS funding policy (Market Value of Assets used for GASB reporting)

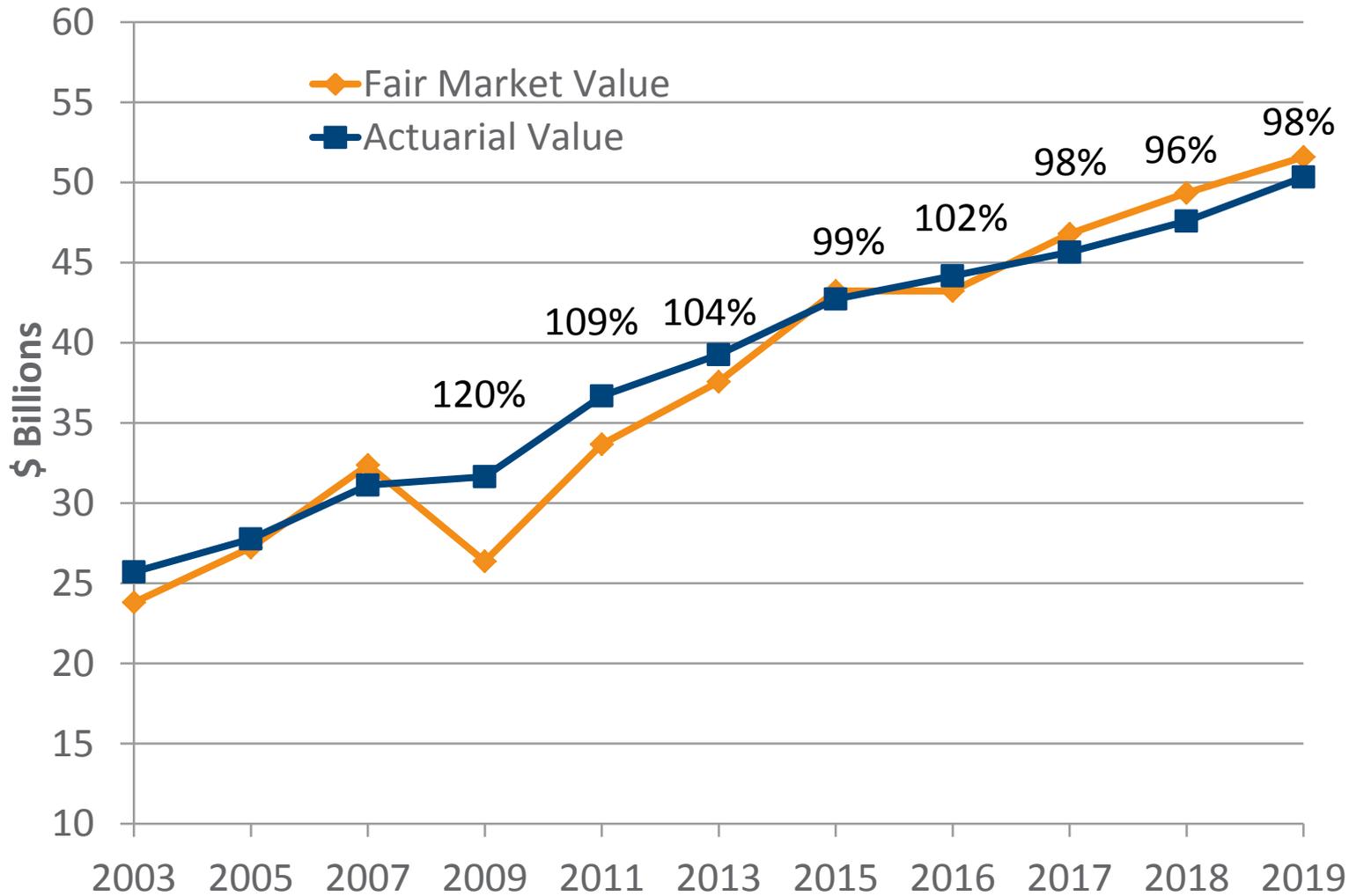
Valuation Asset Gains and Losses (Legacy Plans)

Return: 10.2% 19.6% 5.6% 9.9% 16.7% 3.3% 2.8% 11.4% 8.2% 7.5%

\$ Billions



Valuation Asset Comparison to Market (Legacy Plans)

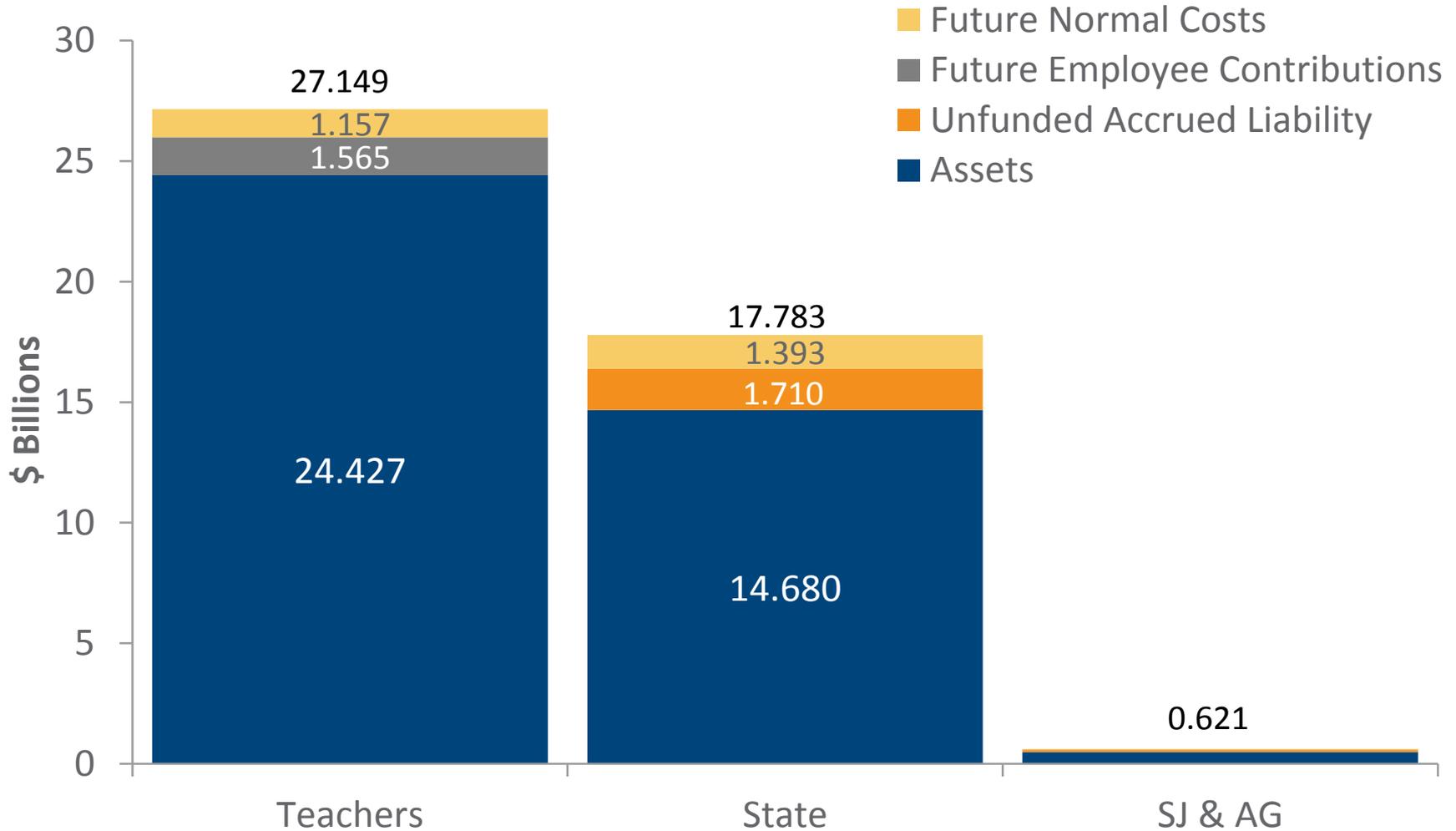


► Contribution Rate Determination

- Entry Age Normal funding method
- Normal Cost + Amortization of Unfunded Accrued Liability (UAL) + Administrative Fee
- Level dollar amortization of Unfunded Accrued Liability
- Amortization periods adjusted each year to manage rate changes and are within requirements of state law and pursuant to TCRS funding policy
- Local governments will be allowed to amortize the UAL pursuant to the TCRS funding policy

Present Value of Benefits – Legacy Plans

(June 30, 2019)



Unfunded Accrued Liability (UAL) – Legacy Plans (Based on Actuarial Value of Assets)

	2018 UAL	2018 Funded Ratio	2019 UAL	2019 Funded Ratio
Consolidated State	\$2,051,029,991	87.2%	\$1,710,138,318	89.6%
State Judges and Attorneys General	97,654,474	82.4%	79,037,422	86.1%
Total State	\$2,148,684,465	87.1%	\$1,789,175,740	89.5%
Contributory Teachers	503,884,213	97.9%	(421,138,310)	101.8%
Total	\$2,652,568,678	93.4%	\$1,368,037,430	96.7%

The results for the Political Subdivisions are in progress and will be provided at a later date.

► Amortization of Unfunded Accrued Liability (UAL)

- New layer of UAL created with each valuation
- Effective Amortization Period for total UAL (in years)

	<u>2018</u>	<u>2019</u>
Teachers	3.08	N/A*
State	12.85	9.51
Judges & AG	11.00	7.98

- Amortization periods are lower than many other states
- Full detail of amortization schedule by layer on following page

* Teachers have negative total UAL in 2019 but still have a positive amortization due to prior positive layers that are still being amortized.

Amortization of Unfunded Accrued Liability (UAL) (Detailed Schedule of Periods)

Amortization periods for UAL – as of June 30, 2019

	Teachers	State	Judges & AG
UAL Layer 1 (2013)	1.0	6.9	8.0
UAL Layer 2 (2015)	16.0	16.0	16.0
UAL Layer 3 (2016)	17.0	17.0	17.0
UAL Layer 4 (2017)	4.0	18.0	18.0
UAL Layer 5 (2018)	19.0	19.0	19.0
UAL Layer 6 (2019)	20.0	20.0	20.0

▶ Contribution Rate Summary – Percent of Payroll (Legacy Plans – Employer Rate)

	<u>2018</u>	<u>2019</u>
Contributory Teachers	10.63%	10.27%
Consolidated State*	19.80%	20.37%
State Judges and Attorneys General	25.55%	25.94%

*The Consolidated State contribution rate includes the costs attributable to bridge and service retirement benefits for public safety officers. In practice, a separate contribution rate is determined for General Employees and Public Safety Officers.

▶ Contribution Rate Summary – Projected Contribution (Legacy Plans – Employer Rate)

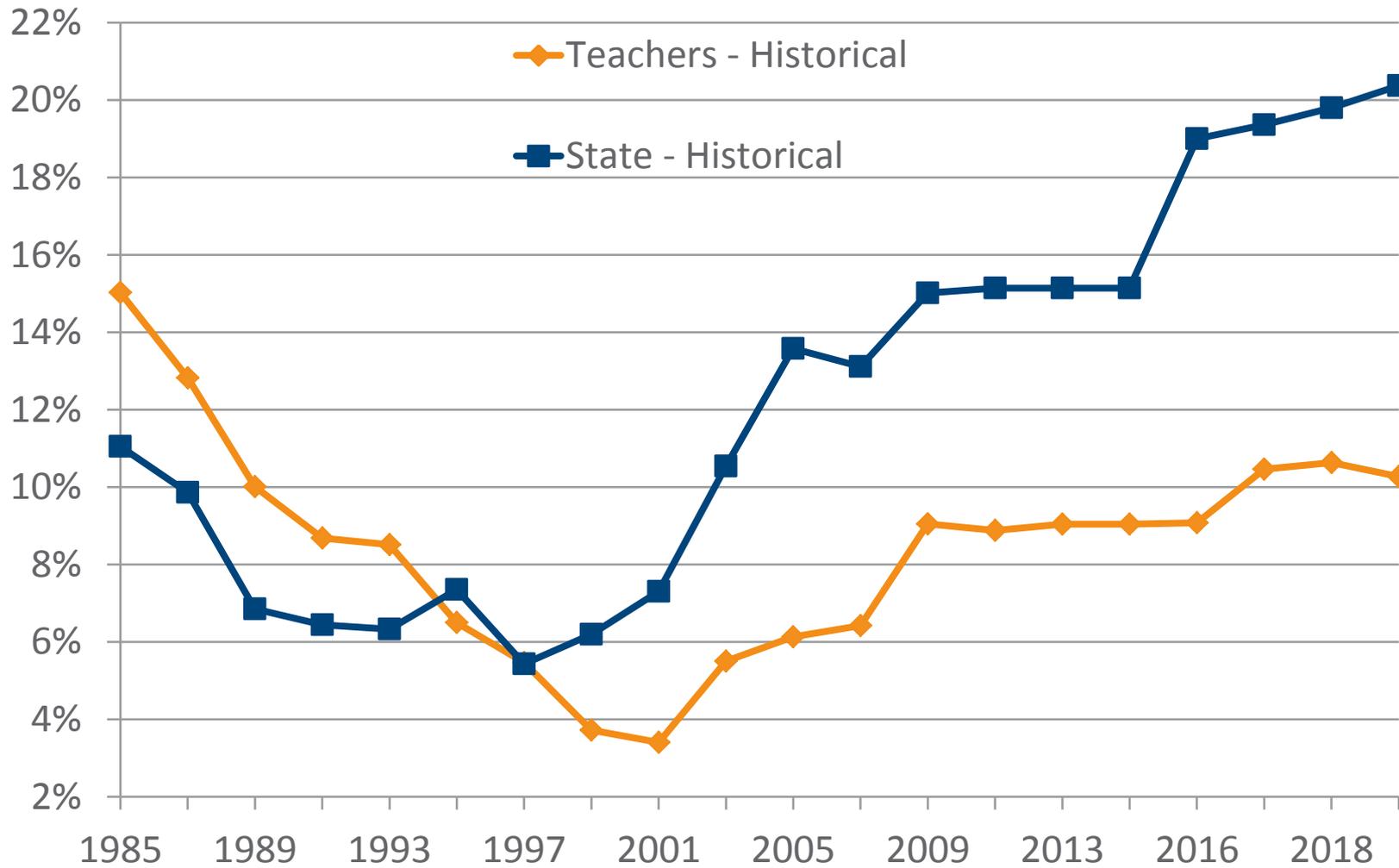
	2018	2019
Contributory Teachers	\$367,868,584	\$333,591,131
Consolidated State*	\$421,743,023	\$421,403,564
State Judges and Attorneys General	\$20,215,382	\$20,260,873

*The Consolidated State contribution rate includes the costs attributable to bridge and service retirement benefits for public safety officers. In practice, a separate contribution rate is determined for General Employees and Public Safety Officers.

Employer Contribution Rate Reconciliation (Legacy Plans)

	<u>Teachers</u>	<u>State</u>
2018 Employer Contribution Rate	10.63%	19.80%
Asset Experience	(1.02)	(0.98)
Salary Experience	(0.49)	0.00
Cost of Living Escalation	(0.13)	(0.15)
Prior Service Purchases (estimate)	0.10	0.10
Turnover Impact on Total Payroll	0.19	0.41
Delay in Contribution Rate Change	0.01	0.04
Update Mortality Projection	(0.04)	(0.05)
Other Experience and Census Changes	(0.39)	(0.09)
Completed Amortization of UAL Layer	(1.32)	0.00
Re-amortization of UAL (period change)	2.73	1.29
2019 Employer Contribution Rate	10.27%	20.37%

Employer Contribution Rate History (Legacy Plans)

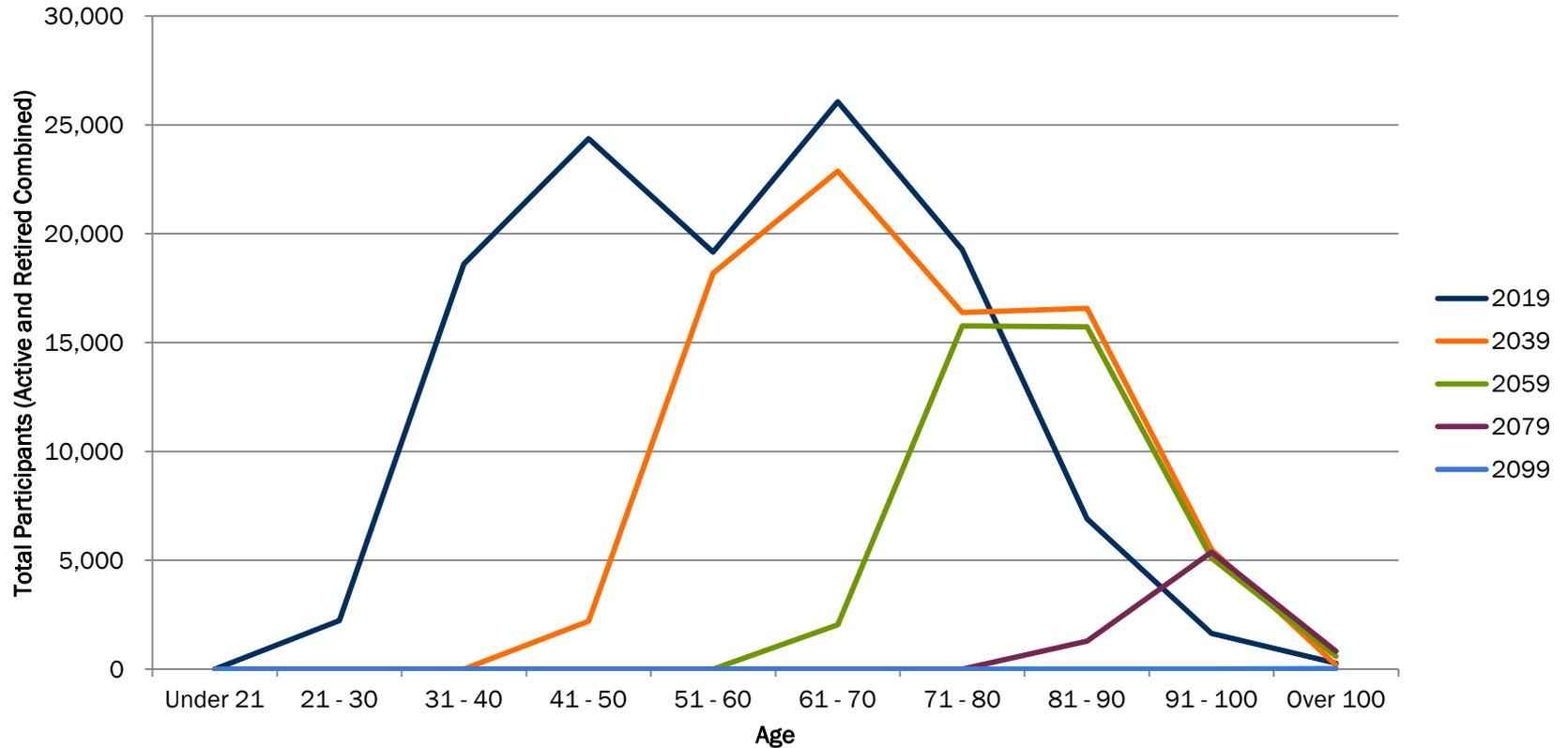


► Future Considerations and Potential Challenges

- Closed Plan (no new hires enter the plan)
 - Total payroll base used to determine contribution % will decrease
 - Level \$ UAL amortization payments will grow as a % of payroll
- Recognition of prior investment gains and losses
- Contribution rate and funded status volatility risk
 - Investment returns after June 30, 2019
 - Mortality improvements/salary growth/COLA
- Future assumption changes (discount rate, mortality, etc.)

Legacy Teacher Participants by Age

TCRS Legacy Plan - Teacher
(80-Year Participant Age Band Projection)

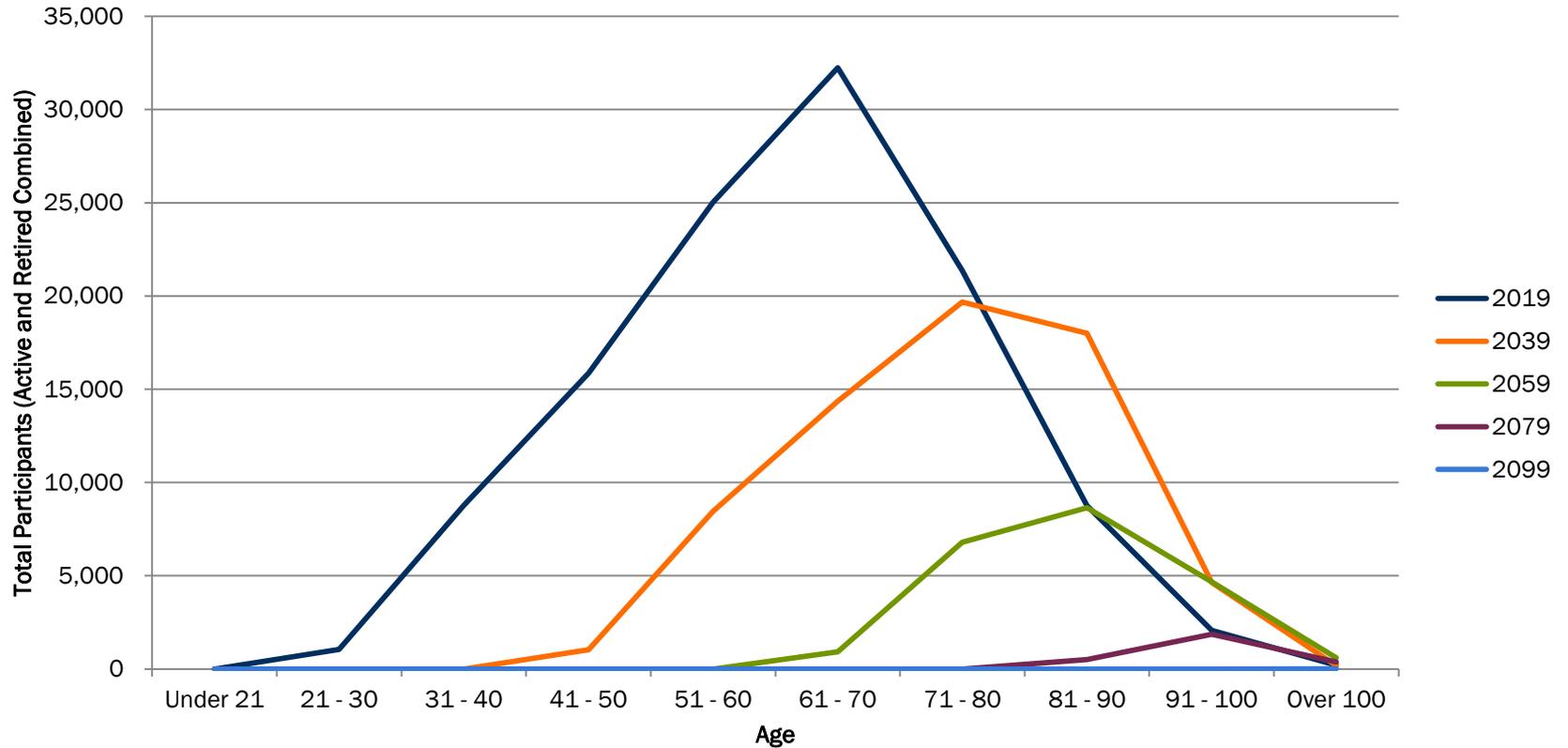


Total Participants by Year

2019: 118,507 2039: 81,896 2059: 39,212 2079: 7,476 2099: 25

Legacy State Participants by Age

TCRS Legacy Plan - State
(80-Year Participant Age Band Projection)



Total Participants by Year

2019: 115,354 2039: 66,352 2059: 21,626 2079: 2,754 2099: 10

► Certification

This report has been prepared exclusively for TCRS to provide Legacy Plan employer contribution rates. Census data, plan provisions, and actuarial assumptions and methods will be documented in the TCRS actuarial valuation funding report as of June 30, 2019. Findley is not responsible for consequences resulting from the use of any part of this report without prior authorization and approval. Determinations for other purposes may be different from the results shown in this report. This report provides actuarial advice and does not constitute legal, accounting, tax, or investment advice. This report has been prepared under the supervision of Justin C. Thacker, a member of the American Academy of Actuaries, a Fellow of the Society of Actuaries, and a consulting actuary with Findley of Brentwood, Tennessee, who has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein. To the best of our knowledge this report has been prepared in accordance with generally accepted actuarial standards, including the overall appropriateness of the analysis, assumptions, and results and conforms to appropriate Standards of Practice as promulgated from time to time by the Actuarial Standards Board, which standards form the basis for the actuarial report. We are not aware of any direct or material indirect financial interest or relationship that could create, or appear to create, a conflict of interest that would impair the objectivity of our work.



Justin C. Thacker
Fellow, Society of Actuaries
Phone 615.665.5387

December 6, 2019

Date