

▶ TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

Actuarial Funding Valuation – Legacy Pension Plans
Valuation Date: June 30, 2016

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► Valuation Purpose

- Determine contribution rates
(TCA Section 8-37 Part 3)
- Examine financial health of plan
- Separate process and reporting for GASB 67/68

► Valuation Background

- Experience Study
 - Mandated by statute
 - Most recent study reviewed 2008 - 2012 period
 - New assumptions adopted (first applied 7/1/2013)
 - Performed every 4 years
 - Next study will review 2012 – 2016 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, 2016)

- Defined Benefit System
 - State employees, higher education and K-12 teachers hired prior to July 1, 2014
 - 550+ local governments (participation is optional and costs are valued individually)
- Demographic Data
 - 191,000 Active Participants
 - 149,000 Retired Participants
(\$2.4 Billion in annual payments)
- Market Value of Assets -- \$43.2 Billion
- Funding Basis is Traditionally Conservative

► System Overview – Plan Design

| | Legacy Plan | Hybrid Plan* |
|--------------------------------|-----------------|------------------------------------|
| 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 plan
- Cost savings of new hybrid plan will be gradual over time
- Legacy plan 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>2015</u> | <u>2016</u> | <u>Pct Change</u> |
|---------------|----------------|----------------|-------------------|
| Teachers | 69,125 | 65,458 | (5.3)% |
| State | 51,723 | 46,819 | (9.5) |
| Political Sub | 76,436 | 78,007 | 2.1 |
| Others | 865 | 836 | (3.4) |
| Total | <u>198,149</u> | <u>191,120</u> | <u>(3.5)%</u> |

Active Membership Comparison by Compensation (Legacy Plans)

| Group | 2015 | 2016 | Pct Change |
|---------------|-----------------|-----------------|-------------|
| Teachers | \$3,542,059,375 | \$3,465,945,978 | (2.1)% |
| Average | 51,241 | 52,949 | 3.3 |
| State | 2,302,564,966 | 2,190,919,232 | (4.8) |
| Average | 44,517 | 46,796 | 5.1 |
| Political Sub | 2,433,640,239 | 2,588,995,836 | 6.4 |
| Average | 31,839 | 33,189 | 4.2 |
| Others | 87,478,675 | 88,441,980 | 1.1 |
| Average | 101,131 | 105,792 | 4.6 |
| Total | \$8,365,743,255 | \$8,334,303,026 | (0.4)% |
| Average | \$42,219 | \$43,608 | 3.3% |

Retired Member Comparison by Number (Legacy Plans)

| <u>Group</u> | <u>2015</u> | <u>2016</u> | <u>Pct Change</u> |
|---------------|----------------|----------------|-------------------|
| Teachers | 47,979 | 49,336 | 2.8% |
| State | 48,779 | 51,717 | 6.0 |
| Political Sub | 42,305 | 44,720 | 5.7 |
| Others | 3,620 | 3,572 | (1.3) |
| Total | <u>142,683</u> | <u>149,345</u> | <u>4.7%</u> |

Retired Member Comparison by Benefit Amount (Legacy Plans)

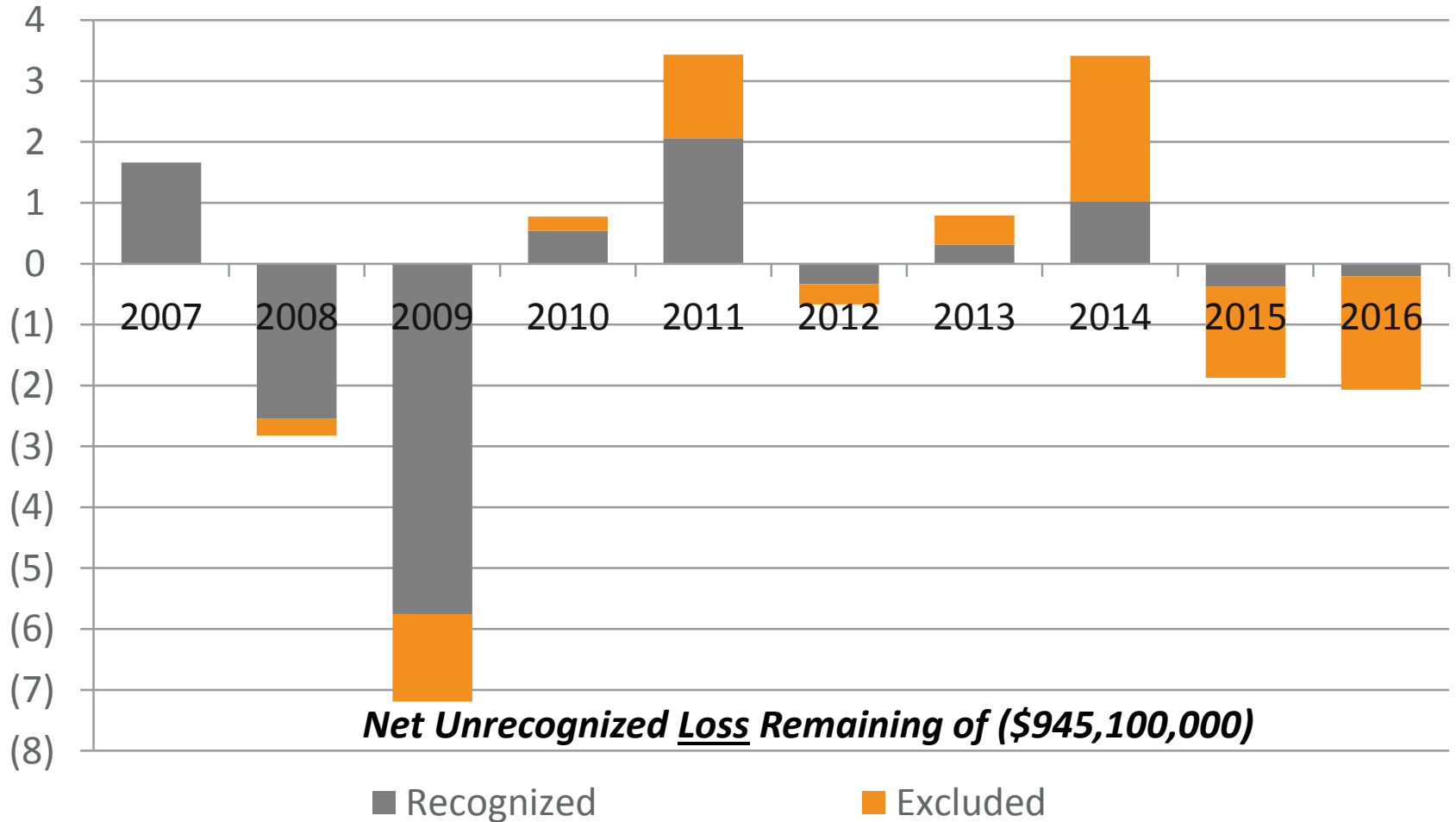
| Group | 2015 | 2016 | Pct Change |
|---------------|-----------------|-----------------|-------------|
| Teachers | \$1,103,163,065 | \$1,142,551,737 | 3.6% |
| Average | 22,993 | 23,159 | 0.7 |
| State | 719,441,574 | 770,471,036 | 7.1 |
| Average | 14,749 | 14,898 | 1.0 |
| Political Sub | 327,696,250 | 350,552,906 | 7.0 |
| Average | 7,746 | 7,839 | 1.2 |
| Others | 96,745,059 | 97,089,598 | 0.4 |
| Average | 26,725 | 27,181 | 1.7 |
| Total | \$2,247,045,948 | \$2,360,665,277 | 5.1% |
| Average | \$15,749 | \$15,807 | 0.4% |

► Valuation Asset Method

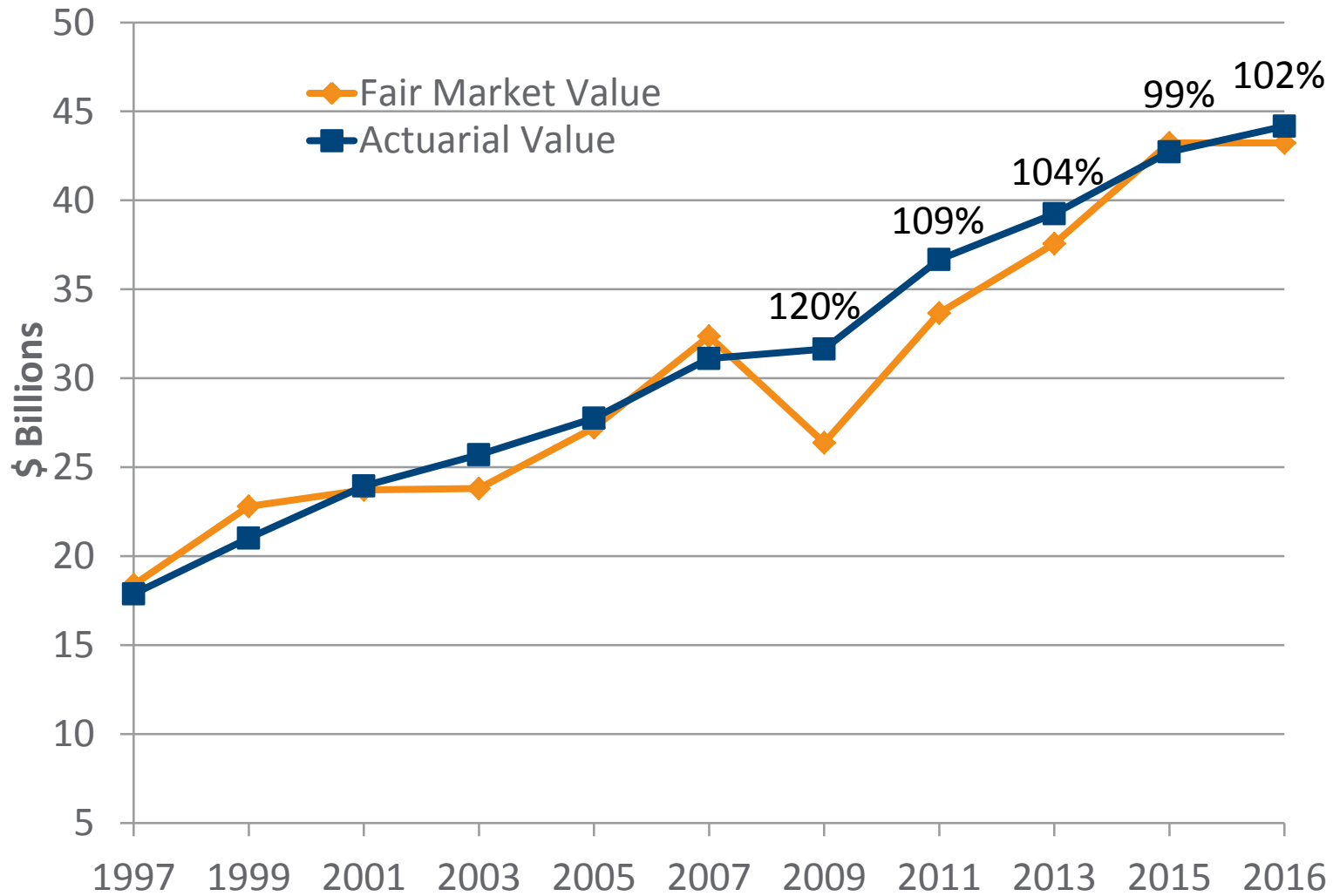
- Use “smoothing” device to limit contribution volatility
- Phase-in excess or deficit earnings compared to the earnings assumption ratably over ten-year period
- Utilize 80%/120% corridor
- Resulting value is “Actuarial Value of Assets”
- Actuarial Value of Assets is only used to determine contribution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

Valuation Asset Gains and Losses (Legacy Plans)

\$ Millions



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

► Amortization of Unfunded Accrued Liability (UAL)

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

| | <u>2015</u> | <u>2016</u> |
|-------------|-------------|-------------|
| Teachers | 2.32 | 1.13 |
| State | 14.37 | 8.46 |
| Judges & AG | 13.93 | 12.85 |

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

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

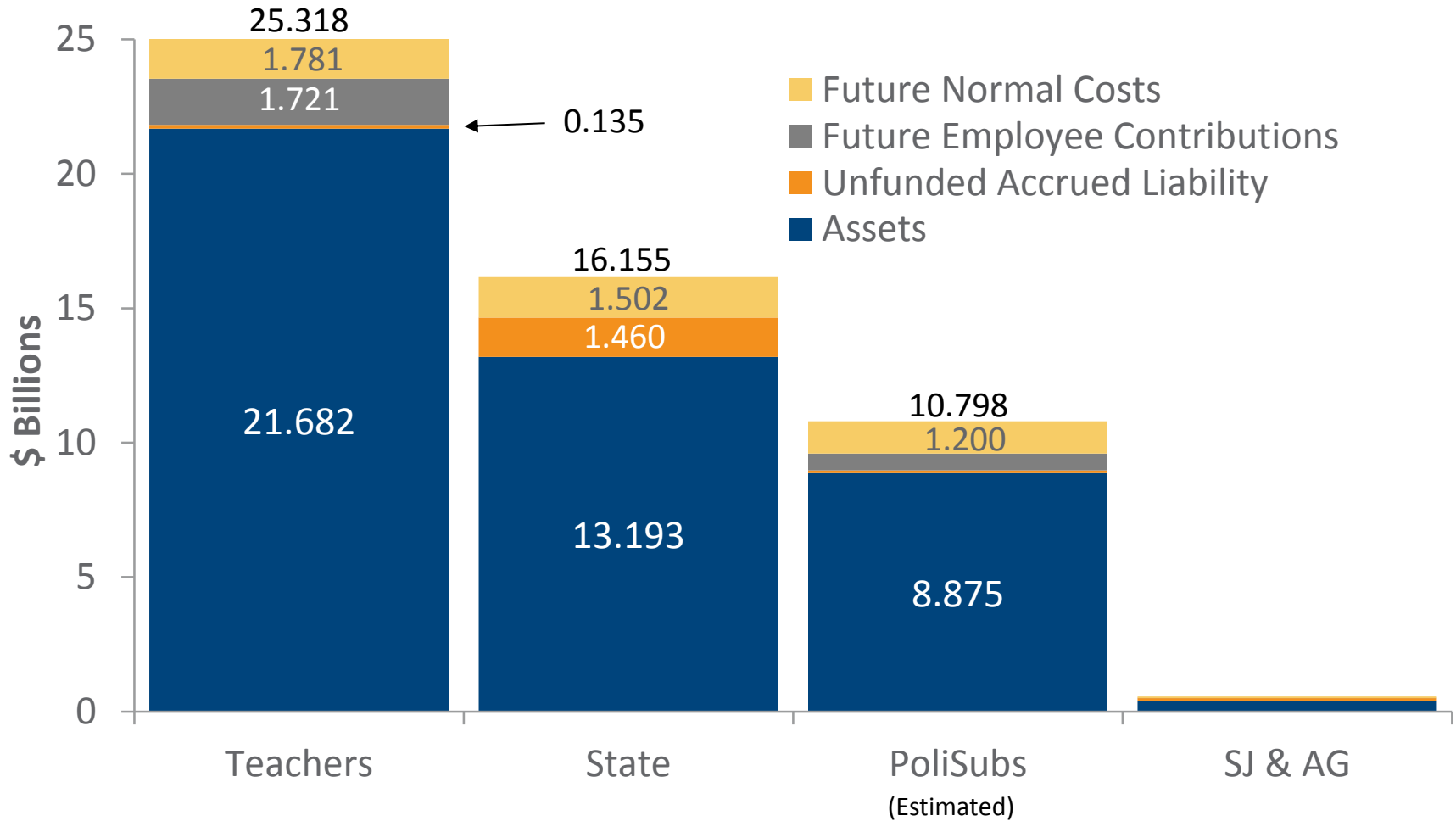
- **2015 amortization periods for UAL**

- UAL Layer 1 - Remaining UAL from 2013 valuation
(Teachers – 4.72 years; State – 13.93 years; Judges & AG – 14.00 years)
- UAL Layer 2 - New UAL from 2015 valuation
(Teachers – 20.00 years; State – 20.00 years; Judges & AG – 20.00 years)

- **2016 amortization periods for UAL**

- UAL Layer 1 - Remaining UAL from 2013 valuation
(Teachers – 3.72 years; State – 7.46 years; Judges & AG – 13.00 years)
- UAL Layer 2 - New UAL from 2015 valuation
(Teachers – 19.00 years; State – 19.00 years; Judges & AG – 19.00 years)
- UAL Layer 3 - New UAL from 2016 valuation
(Teachers – 20.00 years; State – 20.00 years; Judges & AG – 20.00 years)

Present Value of Benefits (Legacy Plans) (June 30, 2016)



Unfunded Accrued Liability Recognition Actuarial Value of Assets (Legacy Plans)

| | 2015 | 2016 | 2016 Funded Ratio |
|---|-----------------|-----------------|----------------------|
| Contributory Teachers | \$268,858,000 | \$134,716,000 | 99.4% |
| Consolidated State | 1,367,770,000 | 1,460,084,000 | 90.0% |
| State Judges and Attorneys General | 96,315,000 | 90,434,000 | 82.1% |
| Political Subdivisions (Estimated) | 144,088,000 | 99,003,000 | 98.9% |
| Total UAL | \$1,877,031,000 | \$1,784,237,000 | 96.1% |
| Total Funded Ratio (Actuarial Value of Assets) | 95.8% | 96.1% | |

▶ Contribution Rate Summary (Legacy Plans)

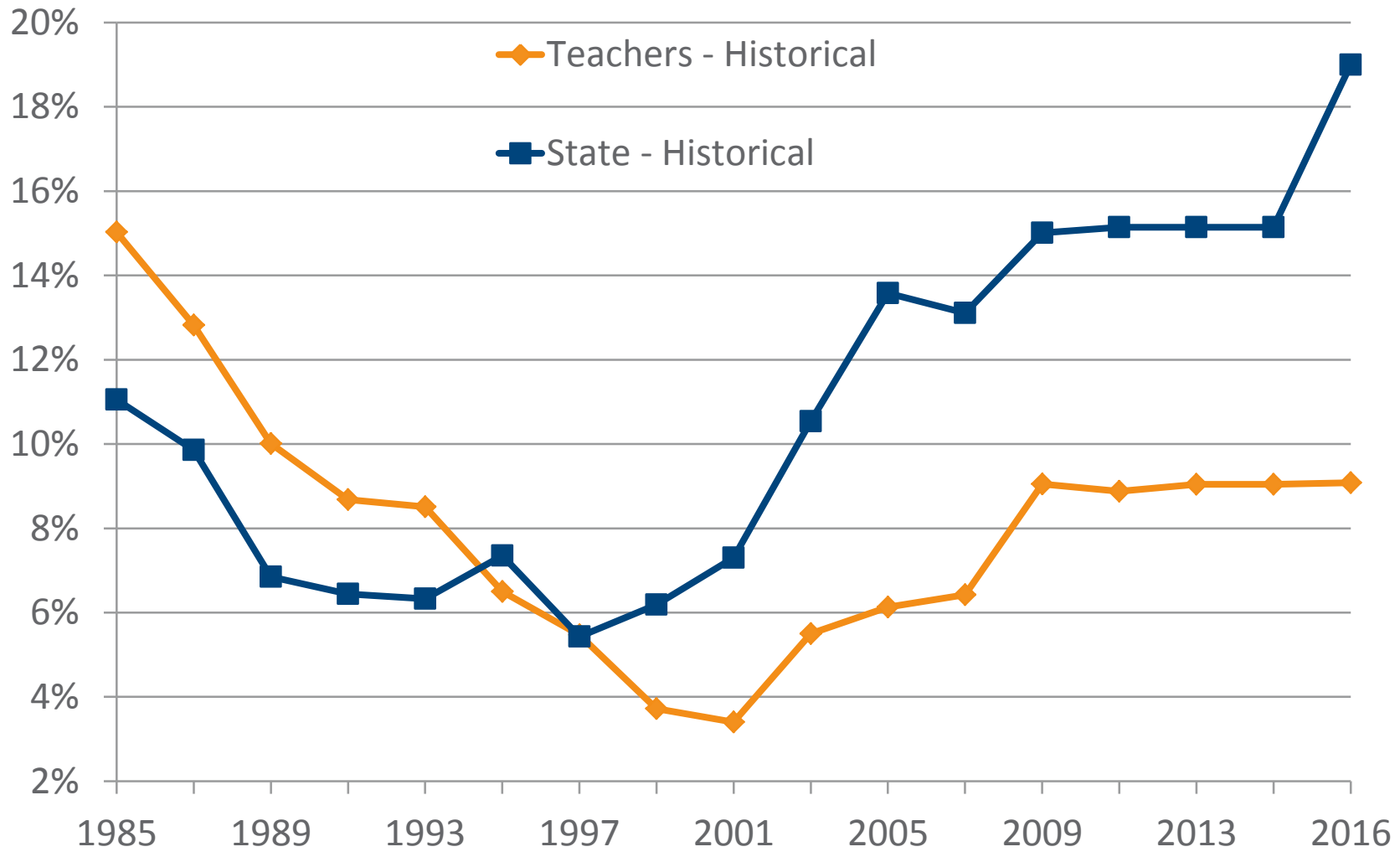
| | 2015 | 2016 |
|---------------------------------------|--------|--------|
| Contributory Teachers | 9.04% | 9.08% |
| Consolidated State* | 15.14% | 19.00% |
| State Judges and Attorneys General | 23.65% | 23.33% |

*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 Reconciliation (Legacy Plans)

| | Teachers | State |
|-------------------------------------|--------------|---------------|
| 2015 Contribution rate | 9.04% | 15.14% |
| Asset Experience | 0.79 | 0.75 |
| Salary Experience | (0.18) | (0.08) |
| New Entrants | 0.00 | 0.00 |
| Cost of Living Escalation | (0.52) | (0.56) |
| Prior Service Purchases (estimate) | 0.10 | 0.10 |
| Turnover Impact on Total Payroll | 0.05 | 0.34 |
| Other Experience and Census Changes | (0.20) | 0.41 |
| Re-amortization of UAL | 0.00 | 2.90 |
| | 9.08% | 19.00% |
| 2016 Contribution rate | | |

Contribution Rate History (Legacy Plans)

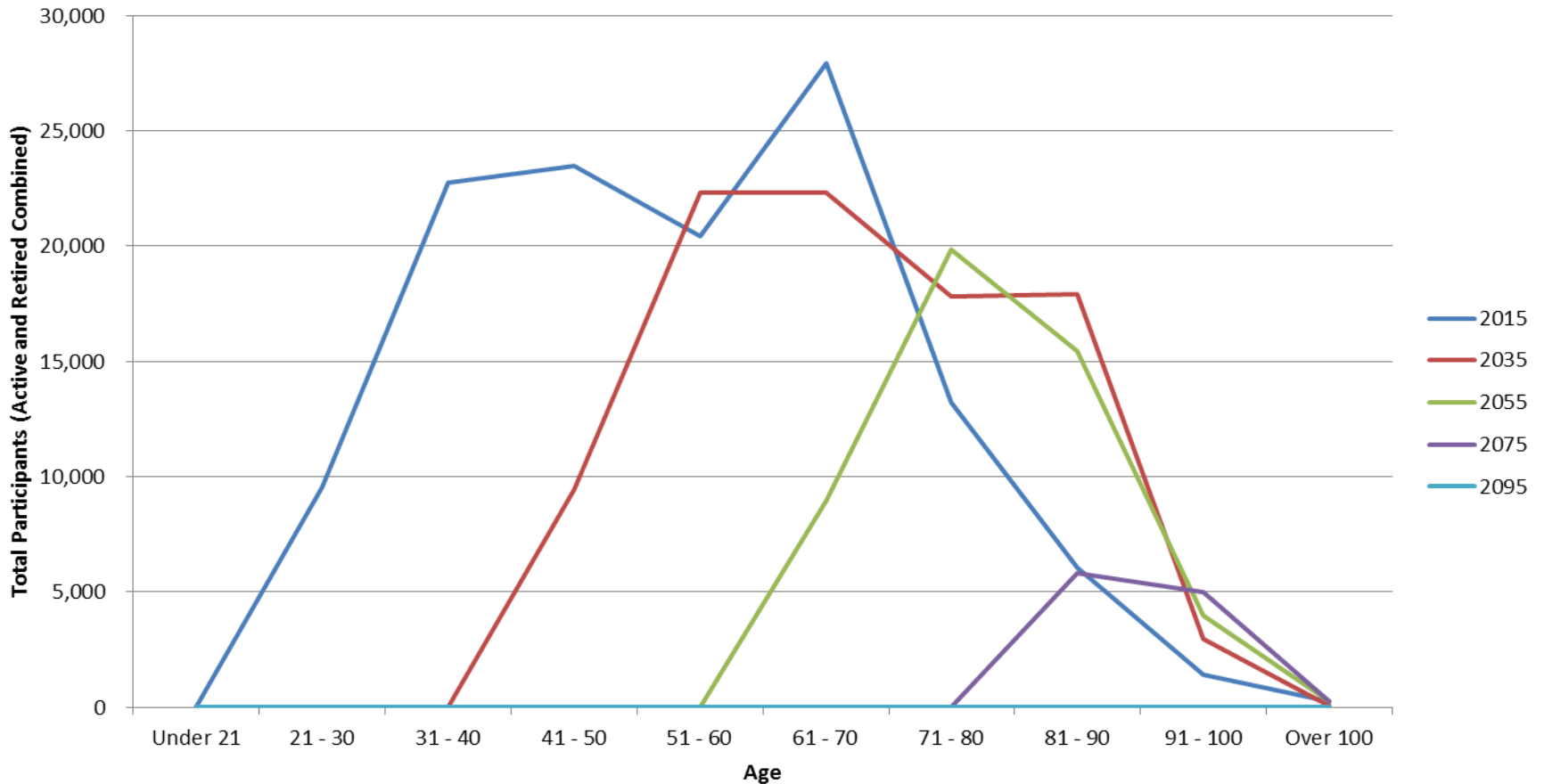


► Future Considerations and Potential Challenges

- 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, 2016
 - Mortality improvements/salary growth/COLA

Legacy Teacher Participants by Age

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



Total Participants By Year:

2015: 125,106

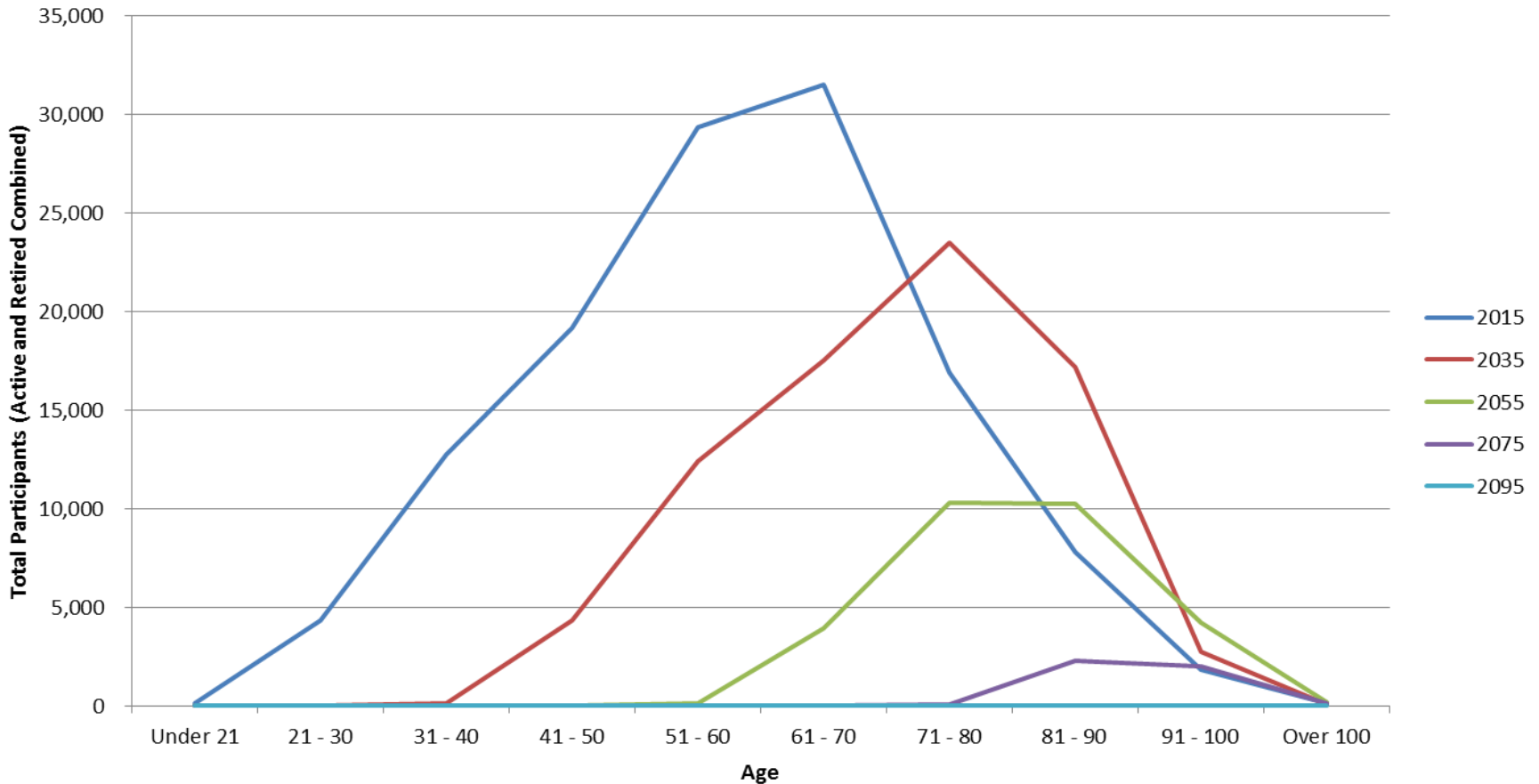
2035: 92,832

2055: 48,534

2075: 11,058

Legacy State Participants by Age

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



Total Participants By Year:

2015: 123,861

2035: 77,798

2055: 29,042

2075: 4,515