Teachers' and State Employees' Retirement Systems of North Carolina

Projections Based On Proposed Experience Study Assumptions

December 7, 2015

buckconsultants

xerox

Experience Study Assumptions – Key Considerations

Please recall the following from our October 22, 2015 presentation, "Investigation of Demographic and Economic Experience" (pg 3) -

> Over the short term, contributions are determined by the actuarial valuation based upon estimated investment return, benefits and expenses using assumptions and methods recommended by the actuary and adopted by the Board. Over the long term, contributions are adjusted to reflect actual investment return, benefits and expenses.

Currently, the estimated (expected) investment return for TSERS is 7.25%. One might ask two questions regarding this expected investment return –

- What are the ramifications of lowering the expected investment return assumption below 7.25%?
- What are the ramifications of continuing the current expected investment return assumption of 7.25% but realizing several years of actual investment return below 7.25%?

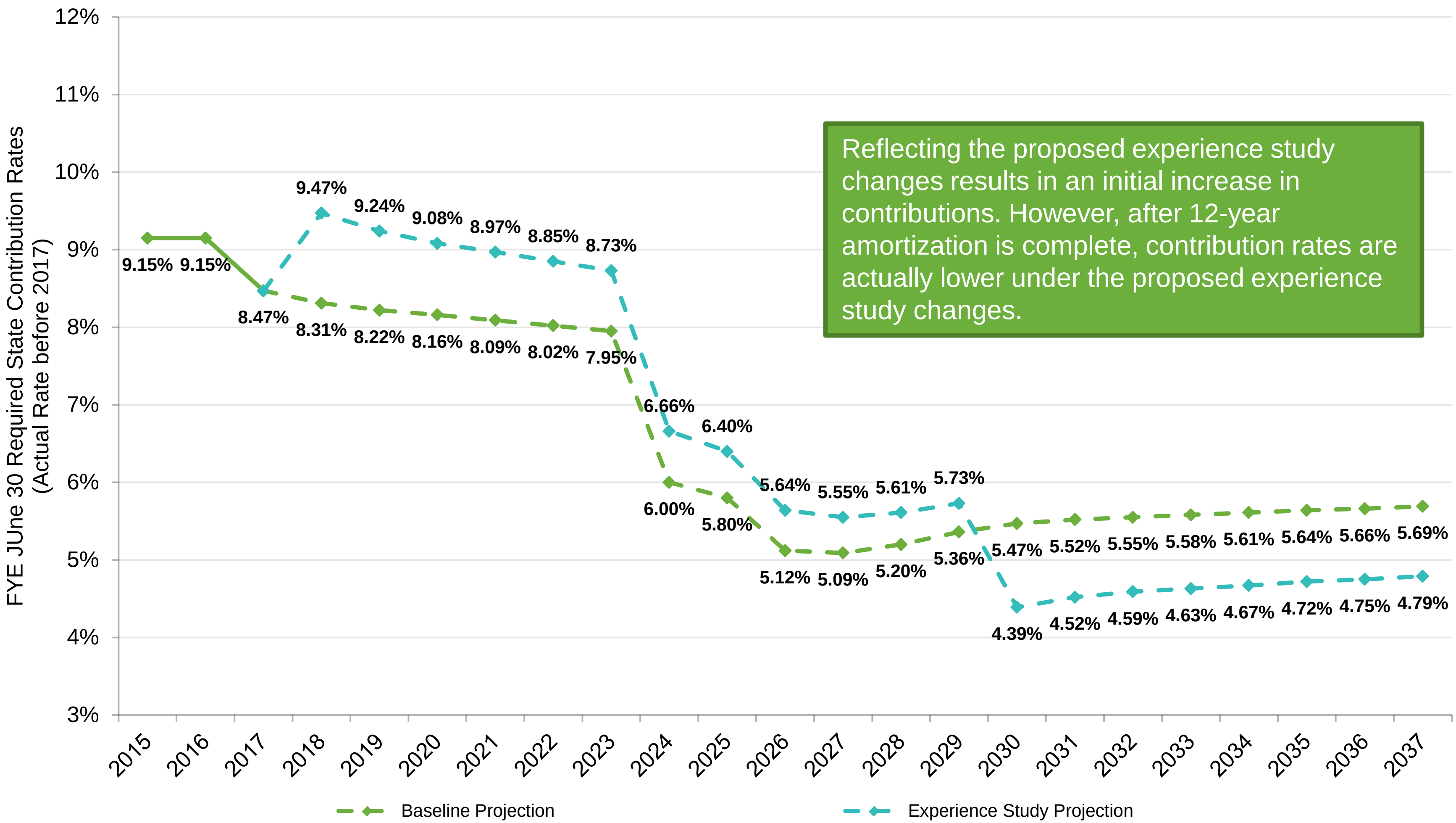
The projections following in this presentation illustrate –

- The impact of the assumptions proposed in the experience study, and
- The impact of realizing asset returns lower than the expected return.

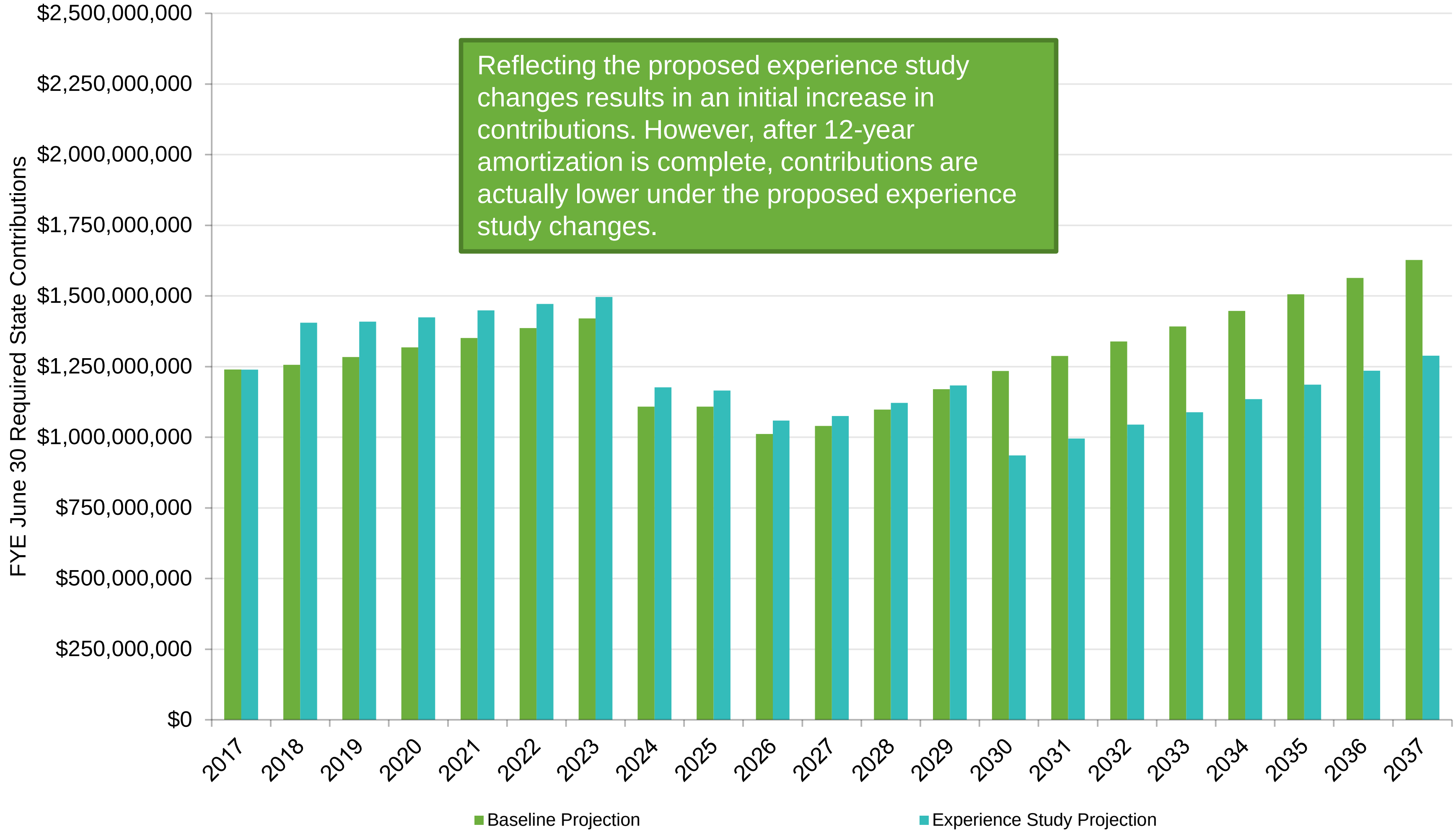
Projections of Employer Contribution Requirements and Funded Status

- Projections of employer contribution requirements and funded status into the future can be helpful planning tools for stakeholders.
- Projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future.
- The following projection ("Experience Study Projection") is based on:
  - December 31, 2014 valuation results of TSERS, except that proposed economic and demographic assumptions have been reflected based on the experience study presented in October 2015
  - Valuation interest rate and assumed asset return of 7.25% for all years
  - No cost-of-living adjustments granted
  - Assumes future pay increases based on long-term valuation
  - Assumes active headcount will remain level in future years
- For comparison purposes, we have also included the "Baseline Projection" for TSERS presented in October 2015 based on the December 31, 2014 valuation results
  - Does <u>not</u> reflect proposed experience study changes
  - Valuation interest rate and assumed asset return of 7.25% for all years

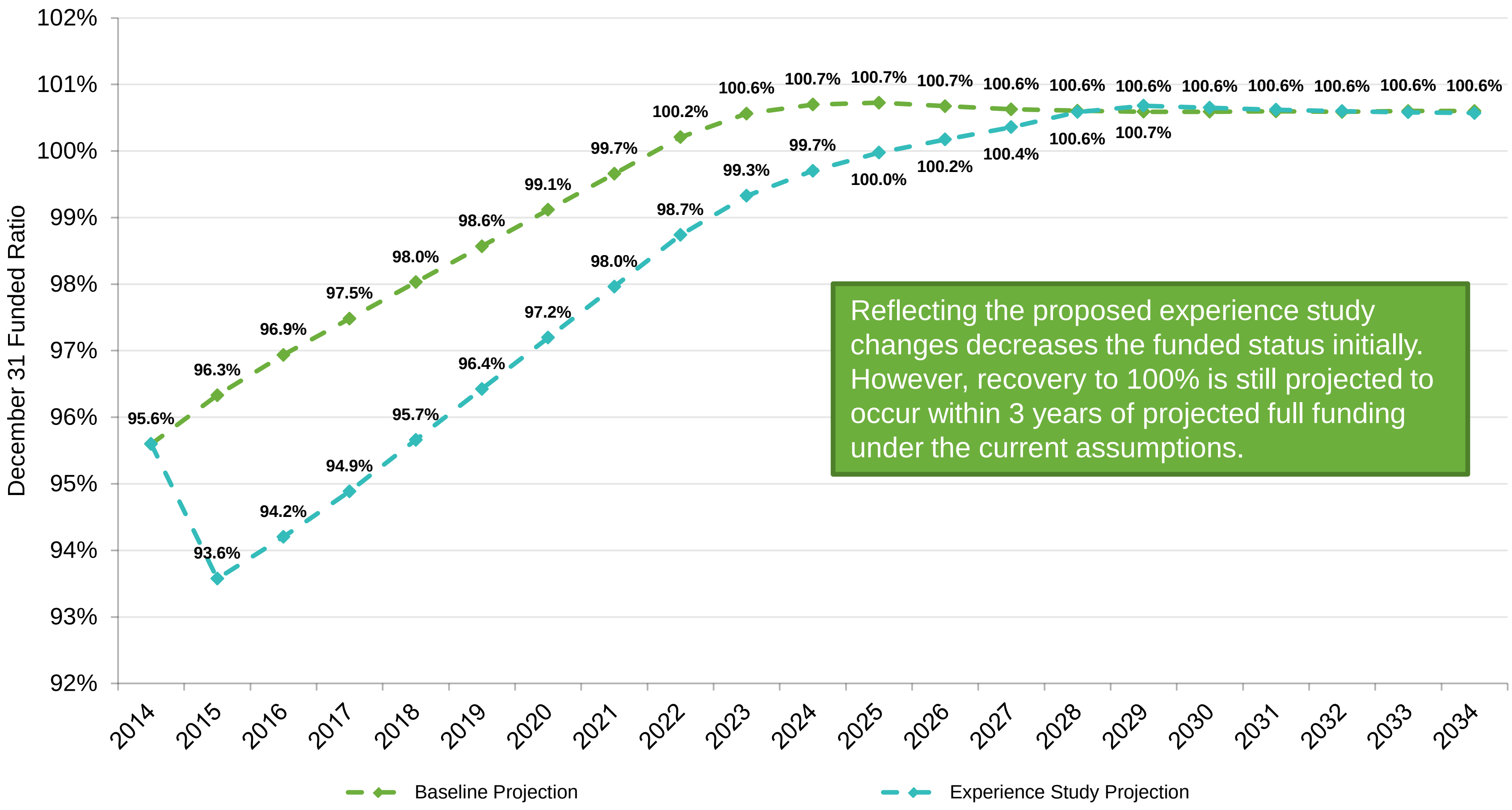
Projected Employer Required Contribution Rates (Experience Study Projection)



Projected Employer Required Contributions (Experience Study Projection)



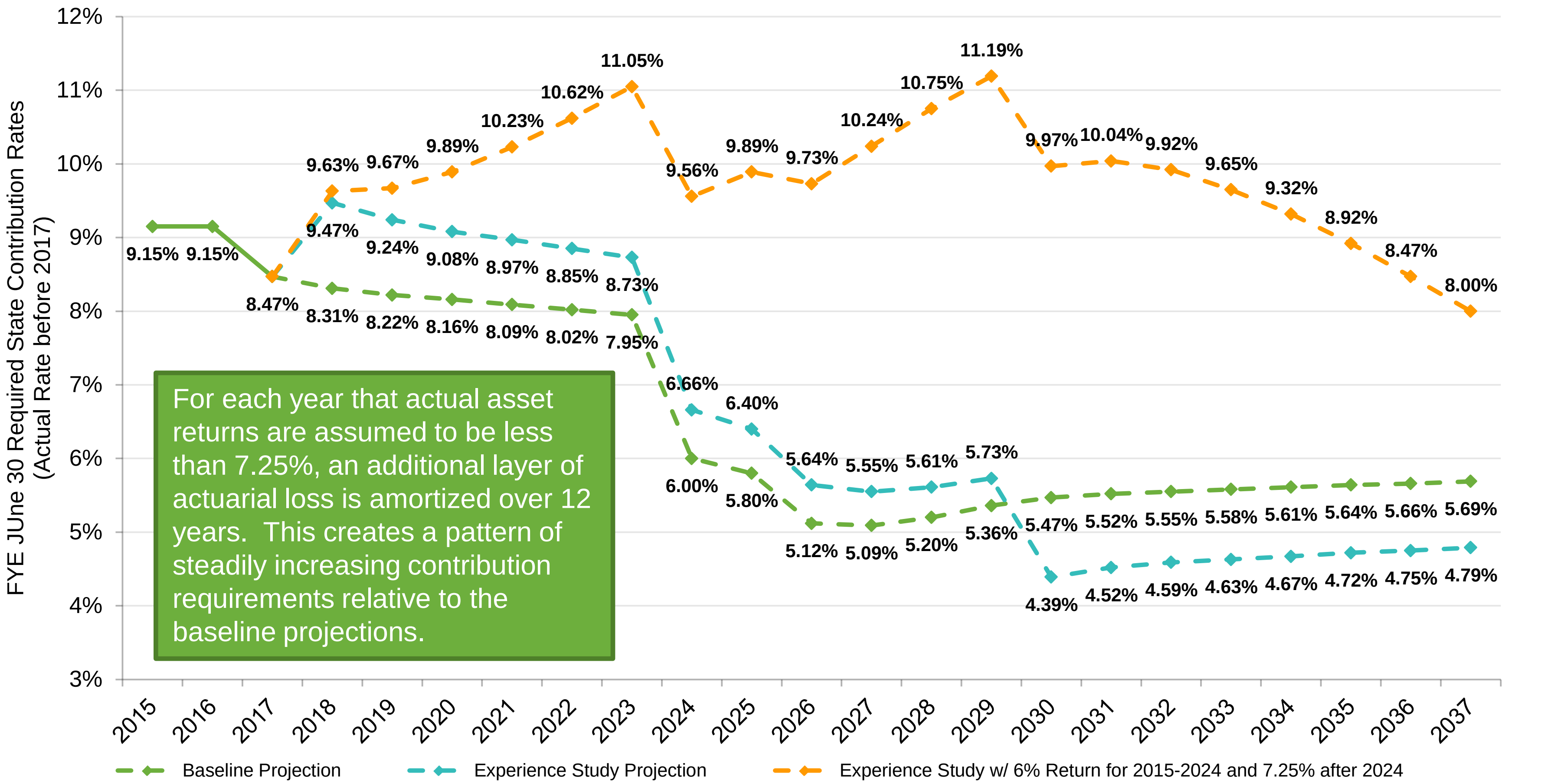
Projected Funded Ratio (Experience Study Projection)



“What Happens If…?”
Projections of Employer Contribution Requirements and Funded Status

- In addition to reflecting the demographic and economic assumptions from the proposed experience study, we have performed an alternative projection assuming a lower rate of return is achieved for calendar years 2015 through 2024.
- For this illustration, the assumed rate of return is 6% for 2015 through 2024 and 7.25% for 2025 through 2034.
- Please note that use of a 6% rate of return should not be considered an actuarial opinion as recommended by Buck. It is only for the purposes of illustration.

"What Happens If…?"
Projected Employer Required Contribution Rates (Projection with 6% return for 10 years)



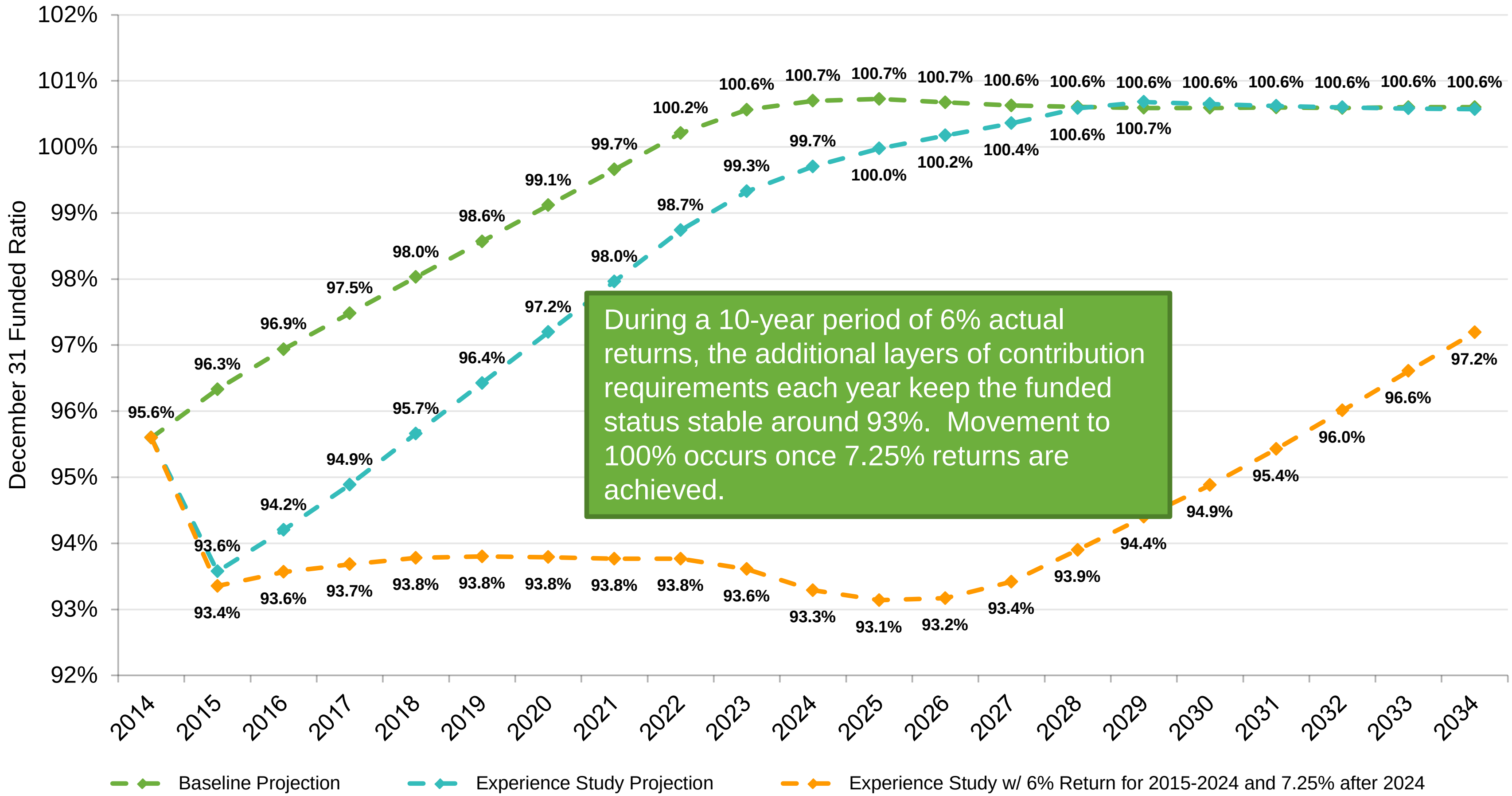
For each year that actual asset returns are assumed to be less than 7.25%, an additional layer of actuarial loss is amortized over 12 years. This creates a pattern of steadily increasing contribution requirements relative to the baseline projections.

"What Happens If…?"

Projected Employer Required Contributions (Projection with 6% return for 10 years)

For each year that actual asset returns are assumed to be less than 7.25%, an additional layer of actuarial loss is amortized over 12 years. This creates a pattern of steadily increasing contribution requirements relative to the baseline projections.

"What Happens If…?"
Projected Funded Ratio
(Projection with 6% return for 10 years)

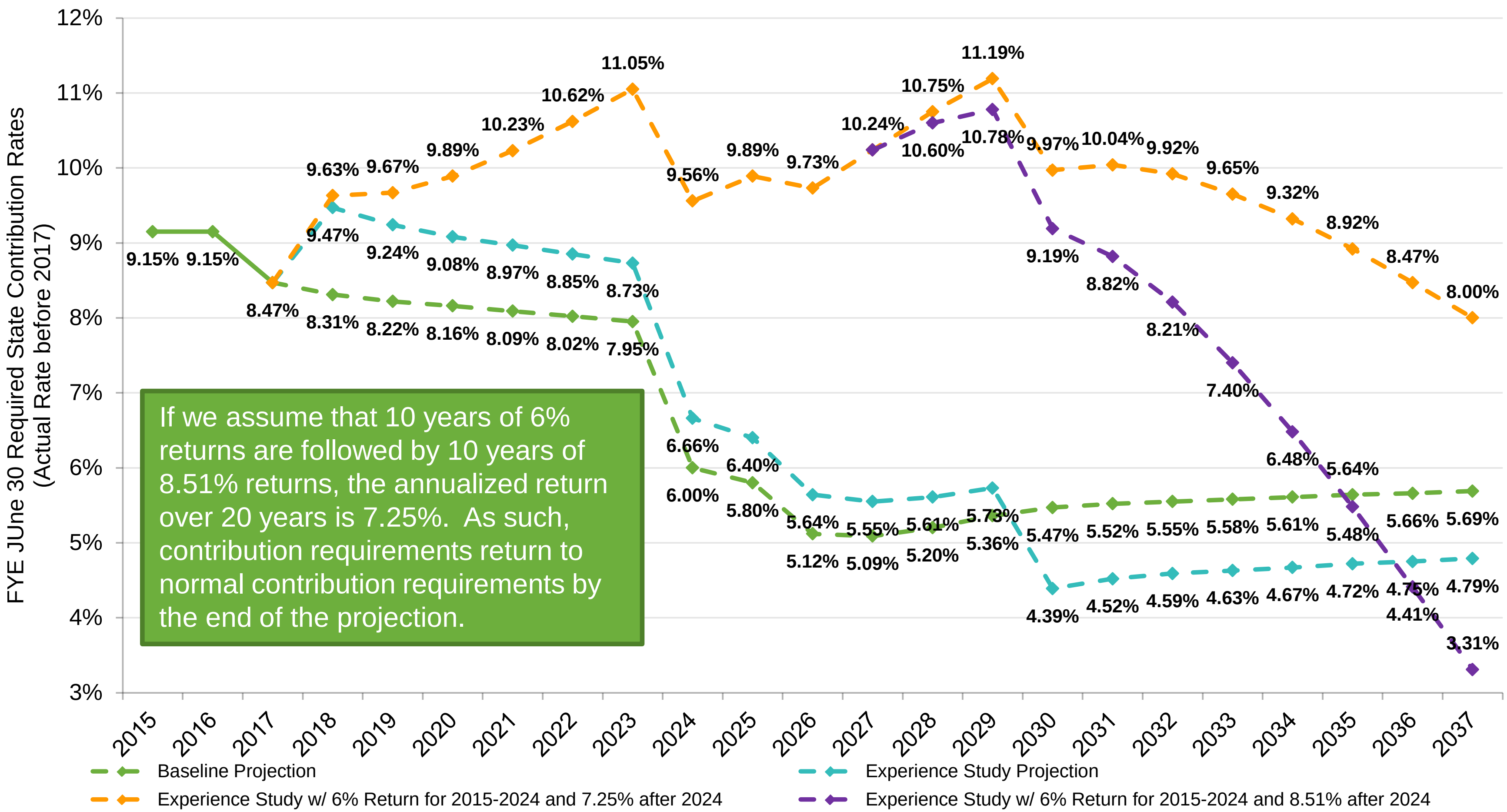


"What Happens If…?"
Projections of Employer Contribution Requirements and Funded Status

- In addition to the illustration assuming a 6.00% rate of return achieved for calendar years 2015 through 2024 and a 7.25% for 2025 through 2034, we have prepared an additional illustration showing a 6.00% return for 2015 through 2024, and a "recovery rate of return" for calendar years 2025 through 2034 such that the annual rate of return for the 20-year period is the current assumed valuation rate of return of 7.25%.
- For this illustration, the assumed rate of return for 2015 through 2024 is 6.00% and the assumed rate of return for 2025 through 2034 is 8.51%.
- Please note that use of a these rates of return should not be considered an actuarial opinion as recommended by Buck. They are only for the purposes of illustration.

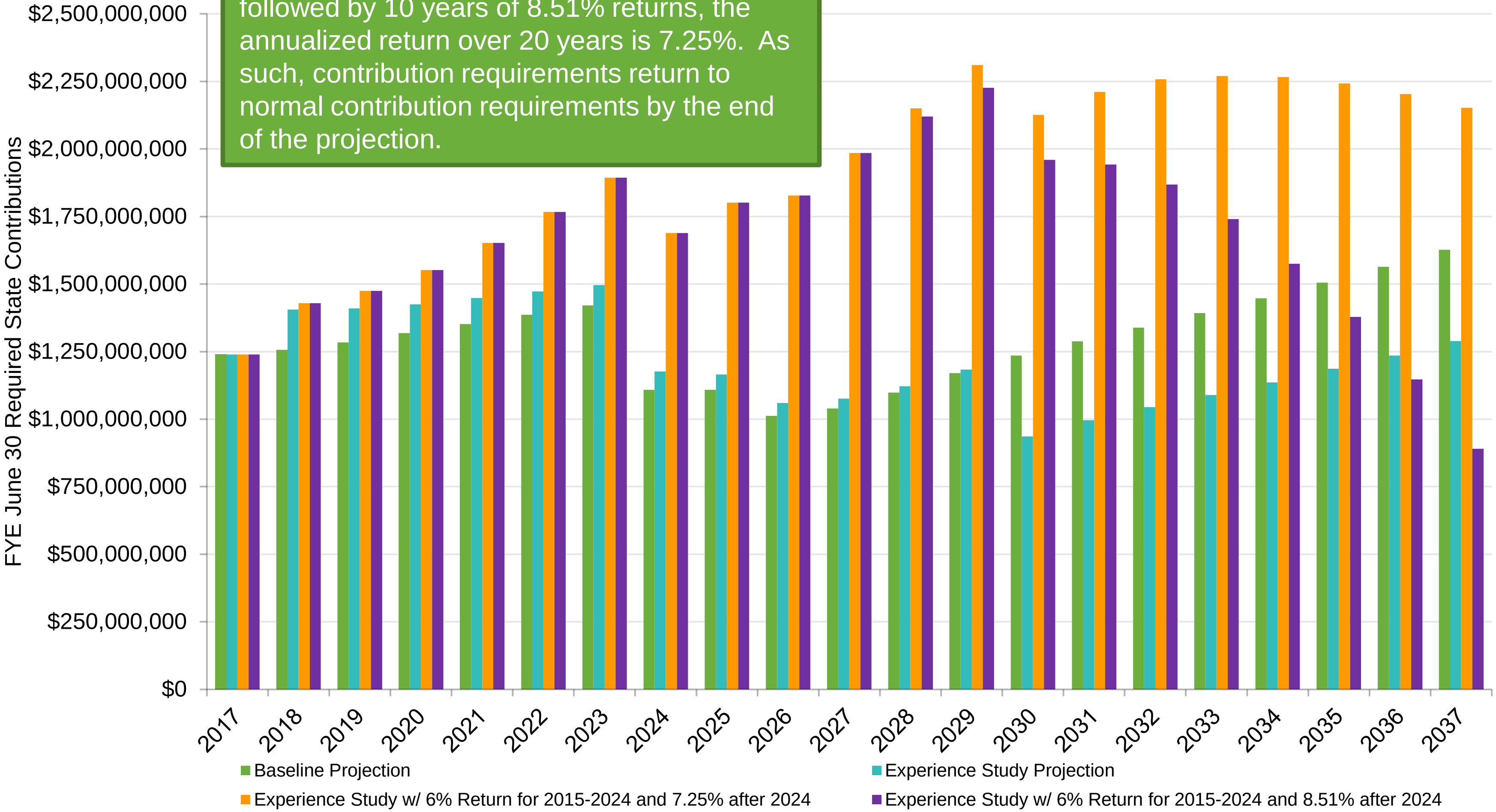
"What Happens If…?"

Projected Employer Required Contribution Rates (Projections with 6% return followed by recovery)

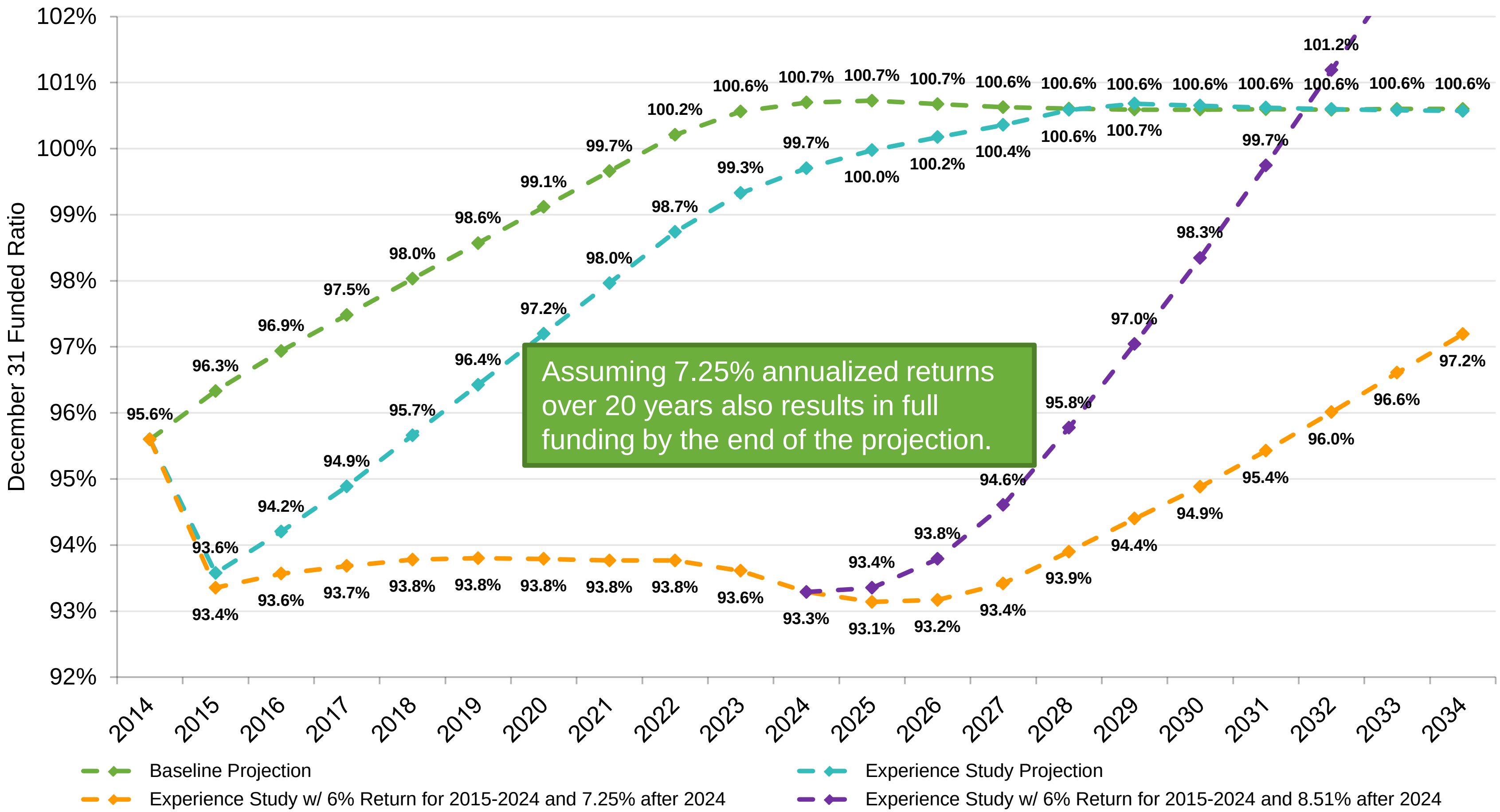


"What Happens If…?"
Projected Employer Required Contributions (Projections with 6% return followed by recovery)

If we assume that 10 years of 6% returns are followed by 10 years of 8.51% returns, the annualized return over 20 years is 7.25%. As such, contribution requirements return to normal contribution requirements by the end of the projection.



"What Happens If…?"
Projected Funded Ratio
(Projections with 6% return followed by recovery)



Experience Study Assumptions – Key Takeaways

Currently, the estimated (expected) investment return for TSERS is 7.25%. One might ask two questions regarding this expected investment return –

- What are the ramifications of lowering the expected investment return assumption below 7.25%?
  - Immediate significant additional funding required, as discussed by David Vanderweide in earlier presentation
  - Likelihood of future actuarial gains increases, resulting in greater potential to grant ad hoc COLA increases
  - Increases cost of optional forms of payment (e.g. joint-and-survivor benefit elections).
- What are the ramifications of continuing the current expected investment return assumption of 7.25% but realizing several years of actual investment return below 7.25%?
  - All else being equal, actual investment return below 7.25% results in higher contributions in the near term
  - No change in the cost of optional forms of payment attributable to a change in the expected investment return assumption

Certification

These results were prepared under the direction of Larry Langer and Michael Ribble who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about them.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law.

Except where otherwise indicated, an analysis of the potential range of such future differences is beyond the scope of this report.

Larry Langer, FCA, ASA, EA, MAAA Principal, Consulting Actuary	Michael Ribble, FSA, EA, MAAA Principal, Consulting Actuary

Questions?

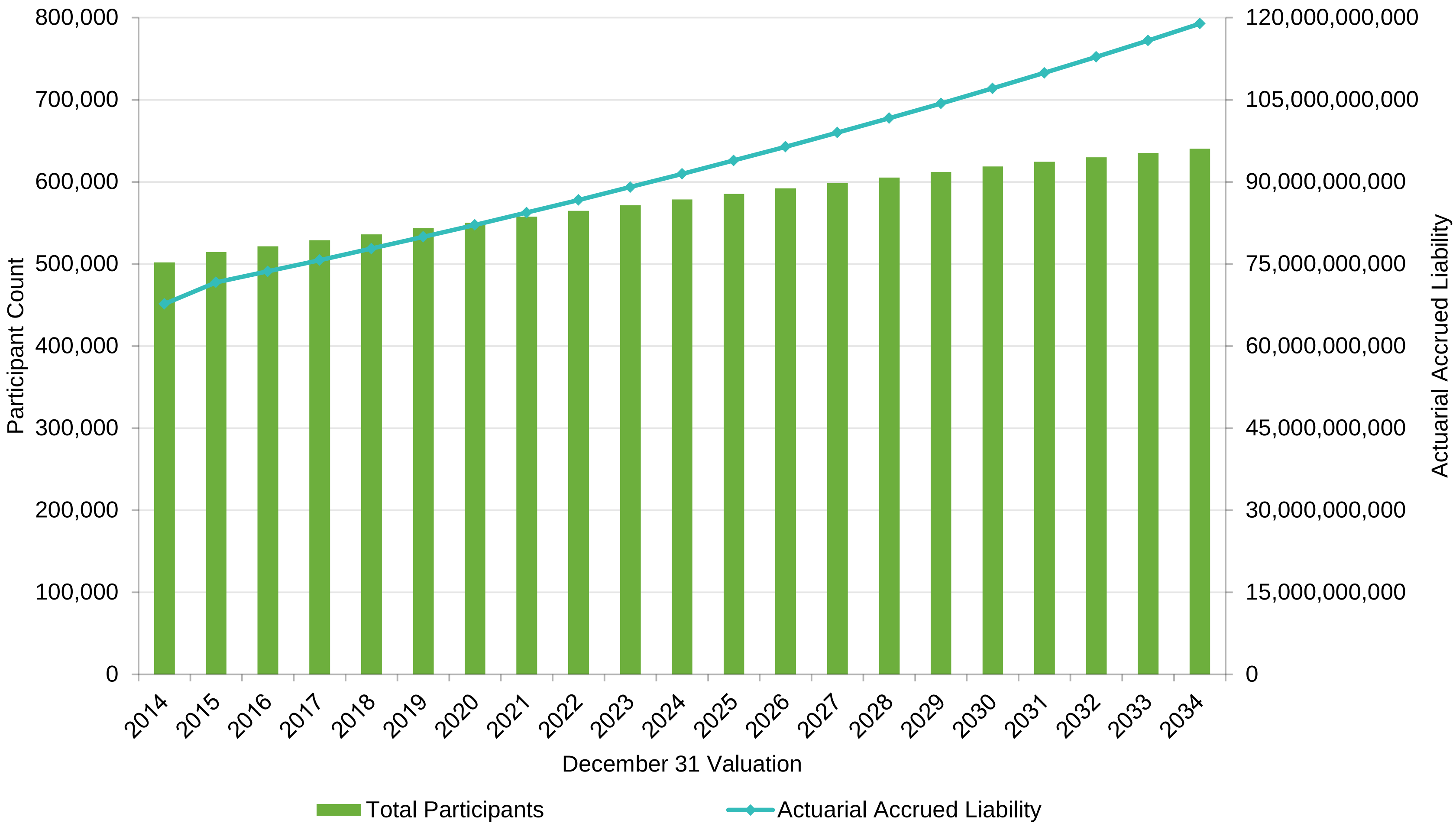
THANK YOU

Additional Projections – Participant Counts, Liability, and Benefit Payments

As requested, we have also prepared an illustration of the number of participants in TSERS compared to entry-age normal accrued liability for those participants. Additionally, we have prepared an illustration of the number of participants in TSERS compared to the expected benefit payments to be paid by the system.

- Please note this illustration includes active and retired participants, both present and future.
- These headcounts, liabilities, and benefit payments rely on same assumptions, methods and data as used in the Experience Study Projections from this presentation.

Additional Illustrations – Participant Counts and Liability



Additional Illustrations –
Participant Counts and Benefit Payments