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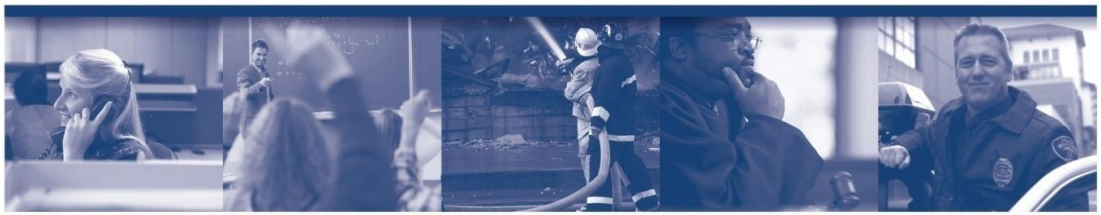
Teachers' and State Employees' Retirement System
Actuarially Determined Employer Contributions (ADEC) Projections for the State System

April 23, 2020 Board of Trustees Meeting

Larry Langer, ASA, FCA, EA, MAAA
Jonathan Craven, ASA, FCA, EA, MAAA



Projections

- Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides such projections. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on December 31, 2018 valuation results as assumptions.

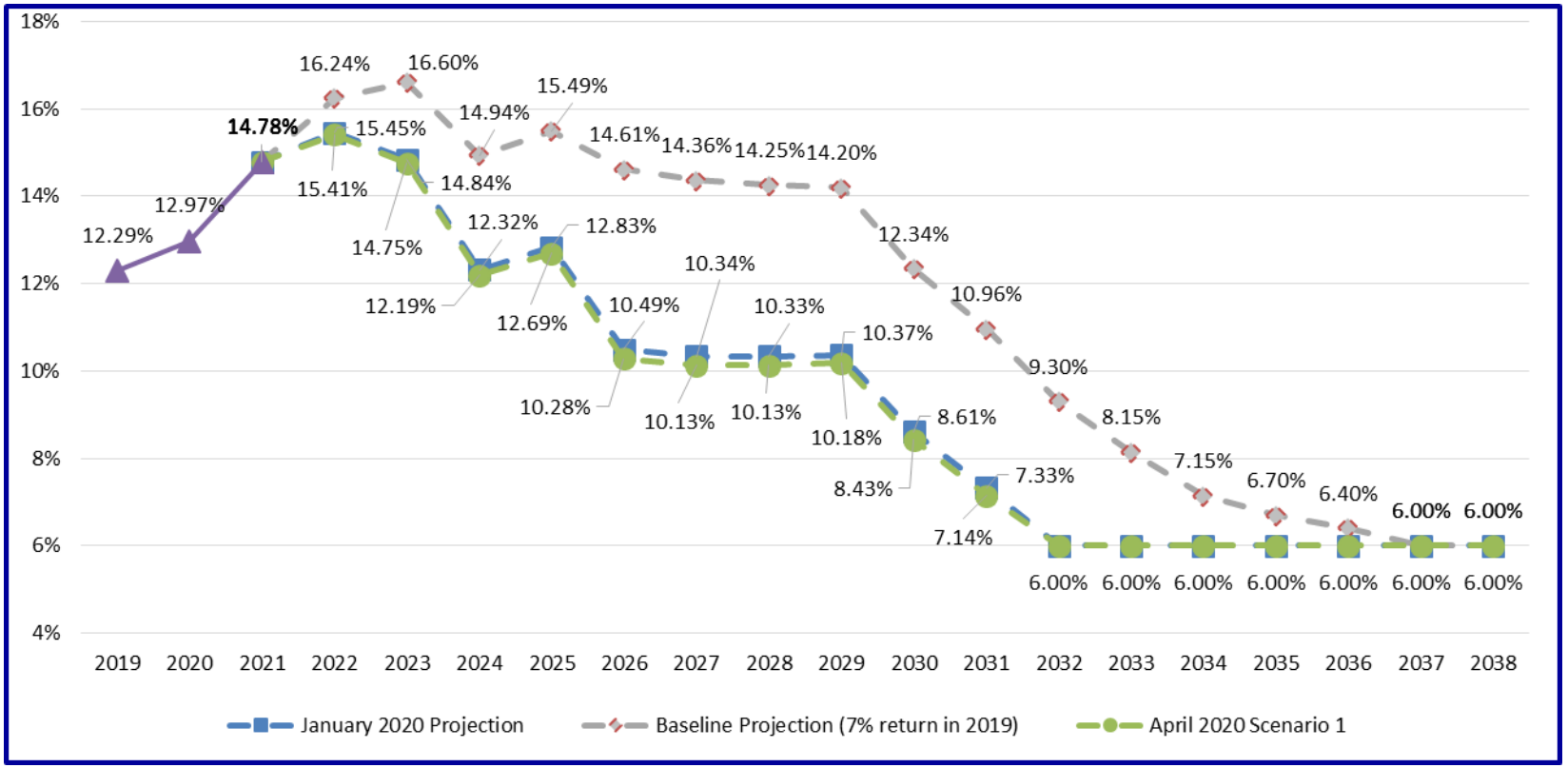
- Key Projection Assumptions
  - Valuation interest rate of 7.00% for all years in conjunction with direct rate smoothing of the employer contribution rate over a 3-year period beginning July 1, 2019.
  - 7.00% investment return on market value of assets
  - Actuarial assumptions and methods as described in Appendix D. All future demographic experience is assumed to be exactly realized.
  - The contribution rate under the Employer Contribution Rate Stabilization Policy (ECRSP) is contributed until fiscal year ending 2022.
  - The actuarially determined employer contribution rate is contributed for fiscal years ending 2023 and beyond.
  - 0% increase in the total active member population
  - No cost-of-living adjustments granted
  - Future pay increases based on long-term salary increase assumptions

- The ECRSP adopted by the Board of Trustees on January 21, 2016 requires that recommended contributions be 0.35% of payroll greater than the appropriated contribution during the prior year, with the following bounds: (1) contributions may not be less than the actuarially determined employer contribution (ADEC) rate and (2) contributions may not be greater than a contribution determined using the same assumptions used to calculate the ADEC but using a discount rate equal to the long-term Treasury bond yield.

- In addition, we have provided alternate deterministic projections:
  - Estimated 2019 asset return of 14.50% and actual 2019 return of 14.88%
  - Hypothetical 2020 asset returns of 7.0%, 0.0%, 14.0%, -14.0% and -7.0%

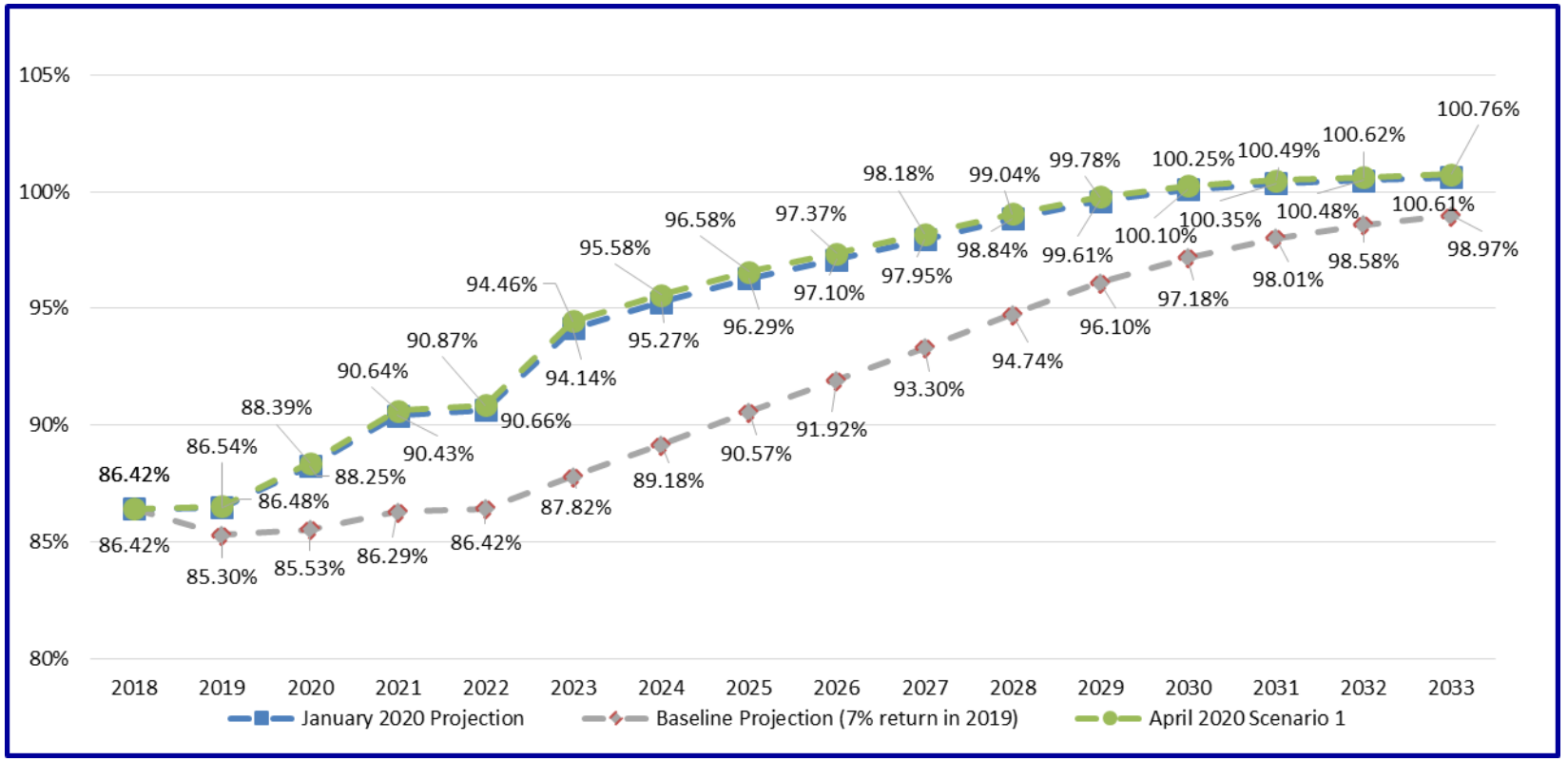
Valuation Results

Projected Contribution Rates



Estimated returns were 7.50% higher than expected. Actual returns were 7.88% higher than expected for 2019. As a result of the 2019 asset returns we are projecting that the unfunded actuarial accrued liability will be lower resulting in lower employer contribution rates.

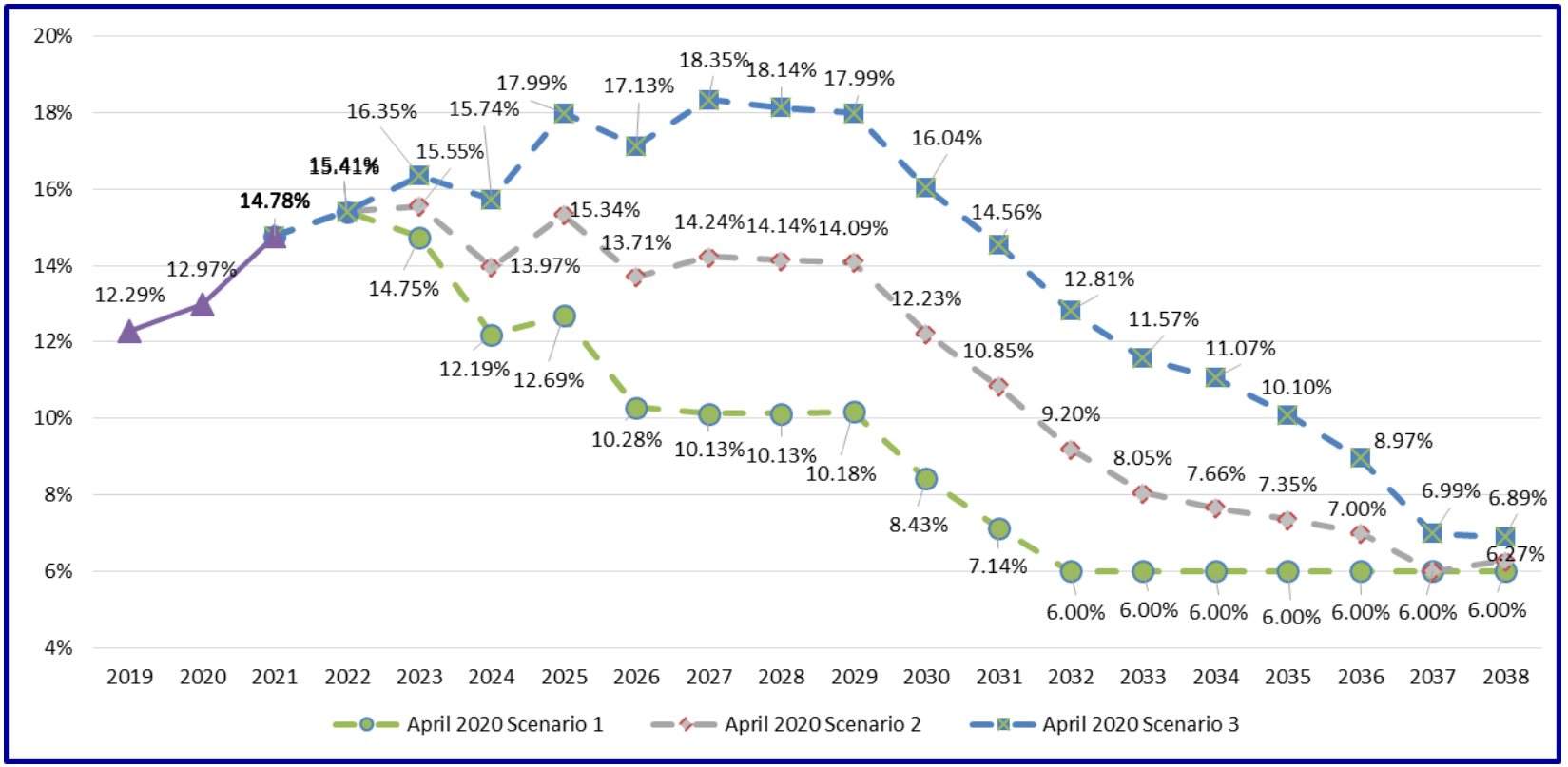
Projected Funded Ratio



Estimated returns were 7.5% higher than expected. Actual returns were 7.88% higher than expected for 2019. As a result we are projecting that the unfunded actuarial accrued liability will be lower resulting in a higher funded ratios.

Hypothetical 2020 Asset Returns

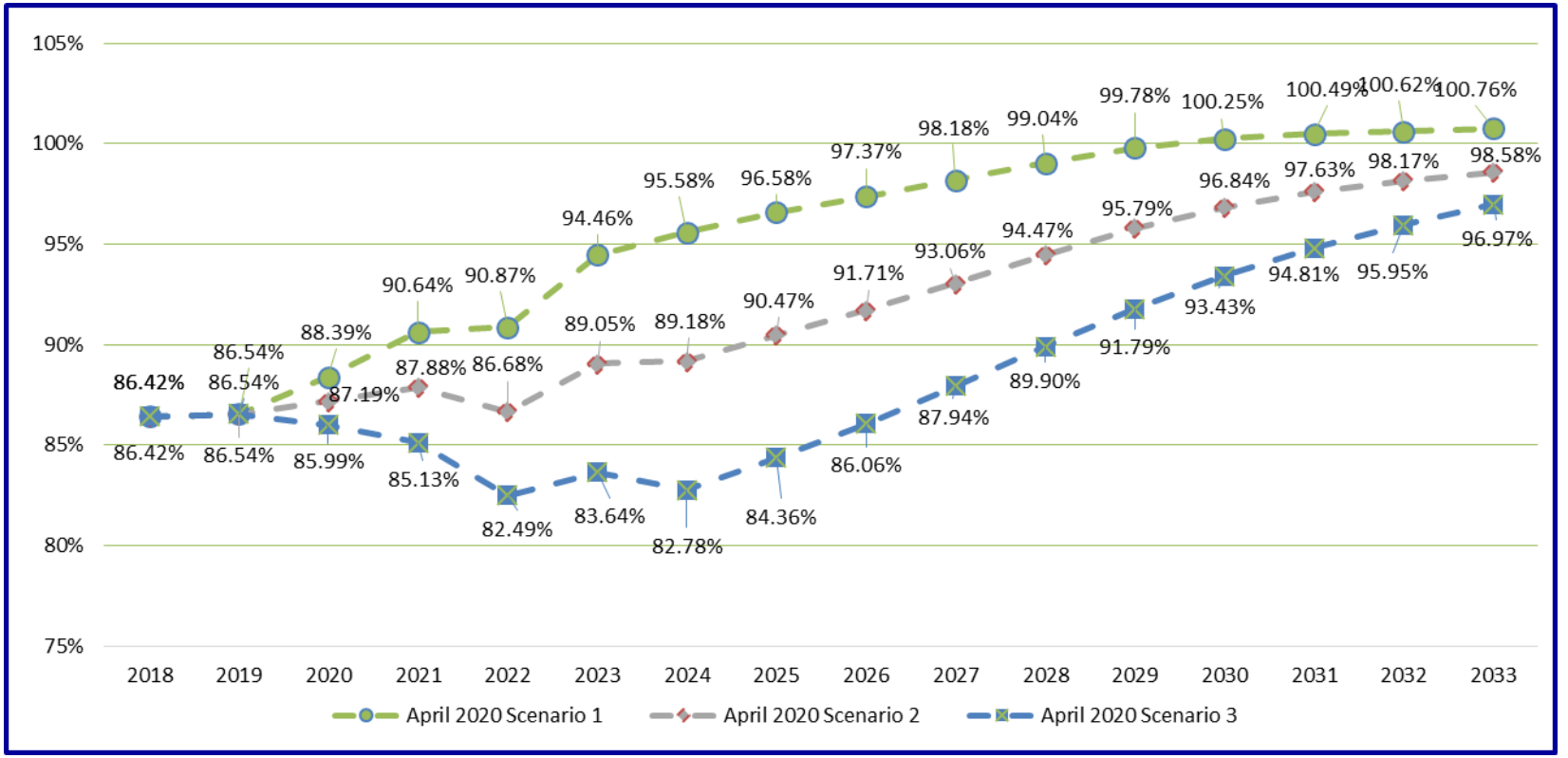
Projected Contribution Rates



Scenario 1: 7.0% 2020 return
Scenario 2: 0.0% 2020 return
Scenario 3: -7.0% 2020 return

Hypothetical 2020 Asset Returns

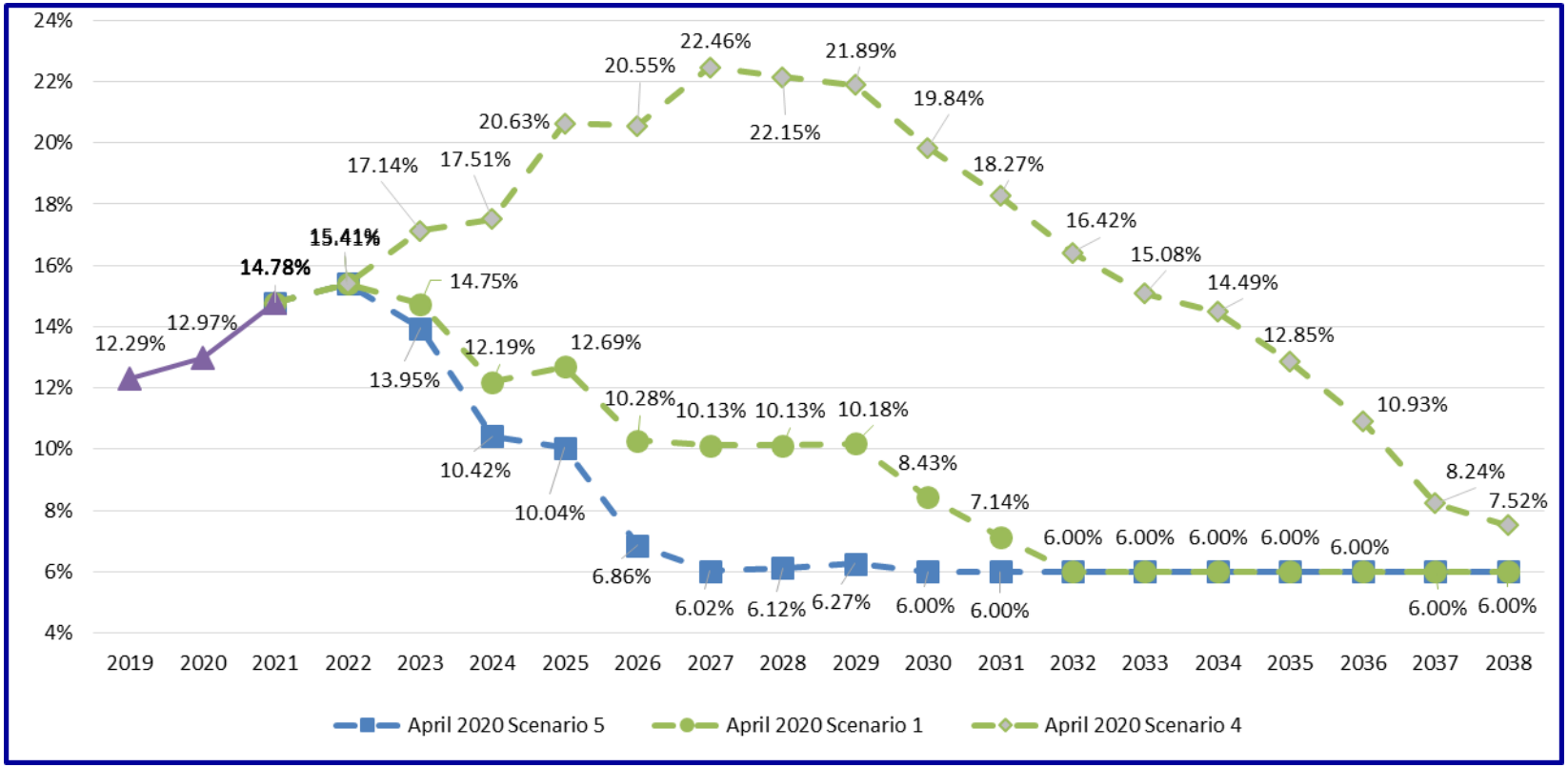
Projected Funded Ratio



Scenario 1: 7.0% 2020 return
Scenario 2: 0.0% 2020 return
Scenario 3: -7.0% 2020 return

Hypothetical 2020 Asset Returns

Projected Contribution Rates



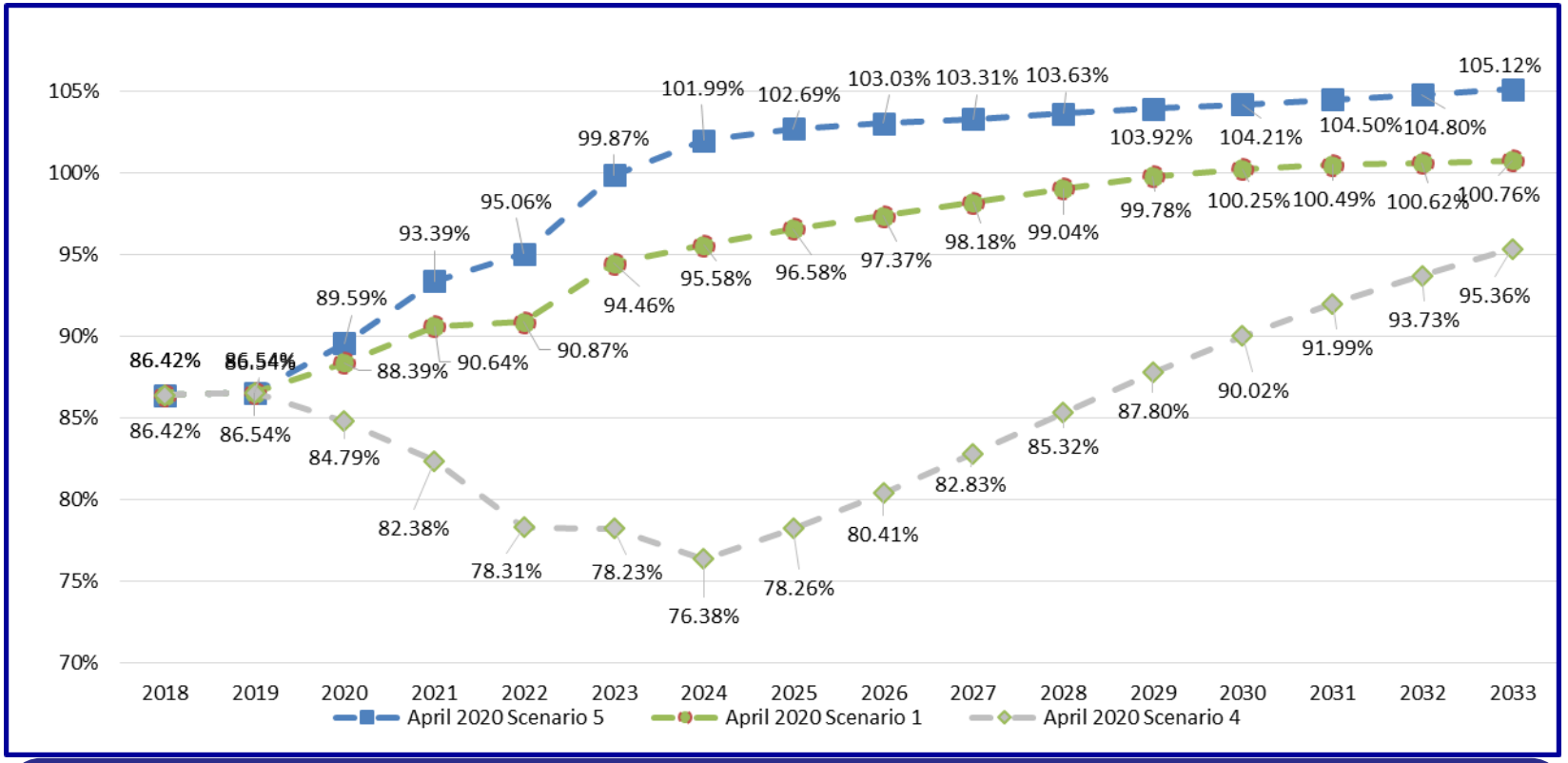
Scenario 1: 7.0% 2020 return

Scenario 4: -14.0% 2020 return

Scenario 5: 14.0% 2020 return

Hypothetical 2020 Asset Returns

Projected Funded Ratio



Scenario 1: 7.0% 2020 return
Scenario 4: -14.0% 2020 return
Scenario 5: 14.0% 2020 return

Certification

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. Because of limited scope, Cavanaugh Macdonald performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information. Results prior to December 31, 2018 were provided by the prior consulting actuary.

We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Jonathan T. Craven, ASA, EA, FCA, MAAA
Consulting Actuary