



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

January 28, 2021 Board of Trustees Meeting

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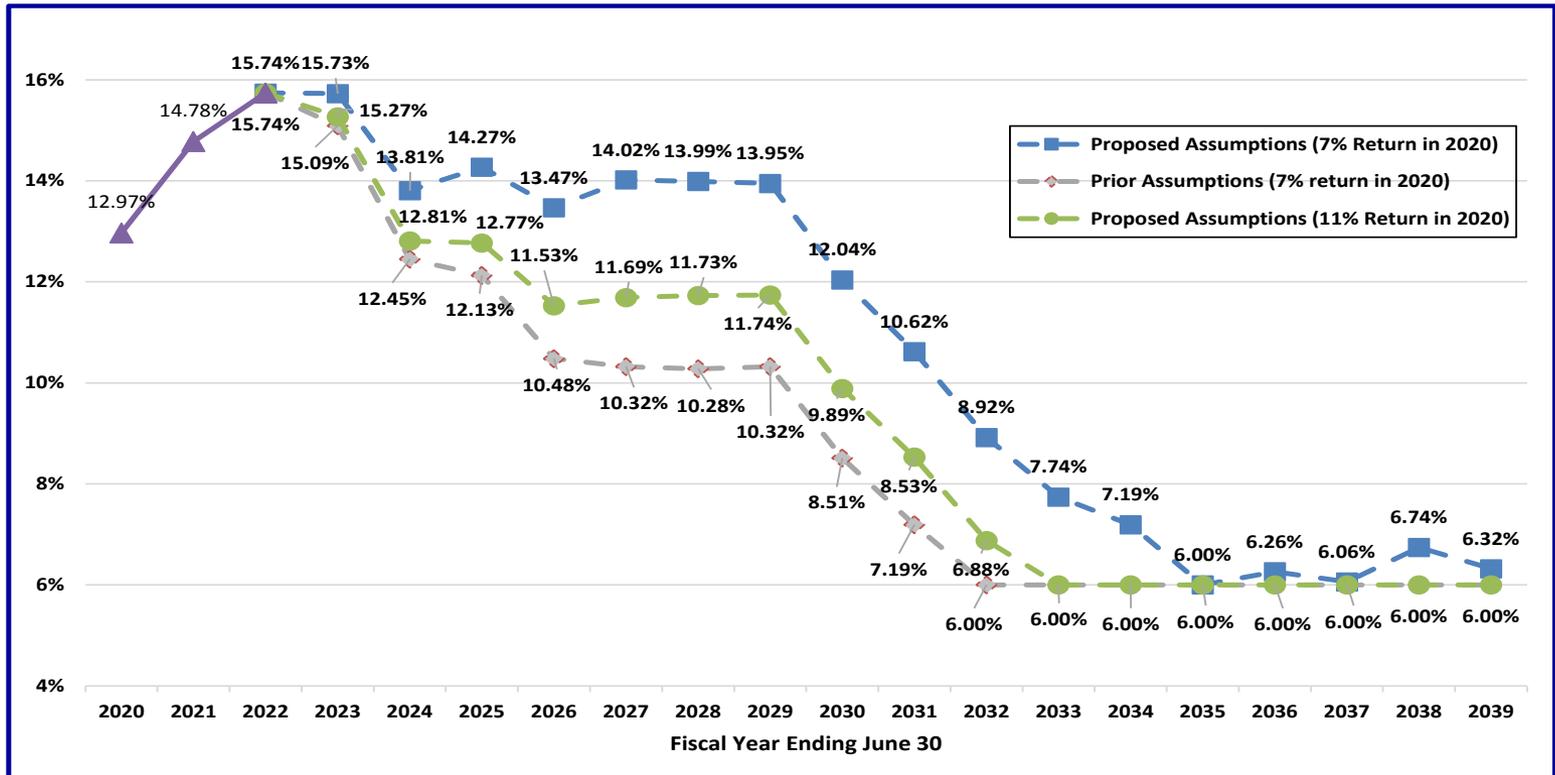


Projections

- Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides deterministic projections of the actuarial valuation under the assumptions used in the December 31, 2019 as well as the proposed assumptions recommended in our experience study covering the January 1, 2014 – December 31 , 2019 period.
- Key Projection Assumptions Proposed from Experience Study
 - Valuation interest rate of 6.50% beginning 12/31/2020 with direct rate smoothing of the employer contribution rate over a 5-year period beginning July 1, 2022.
 - 11.00% investment return on market value of assets for 2020 and 6.5% return after 2020.
 - Actuarial assumptions and methods as described in our January 1, 2015 – December 31, 2019 Experience Study Report. 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 two other deterministic projection. One is based on the proposed assumptions as the baseline deterministic projection except that it is based asset return of 7.0% for calendar year 2020. The other is based on assumptions prior to the experience study with an expected asset return of 7.0% for calendar year 2020.



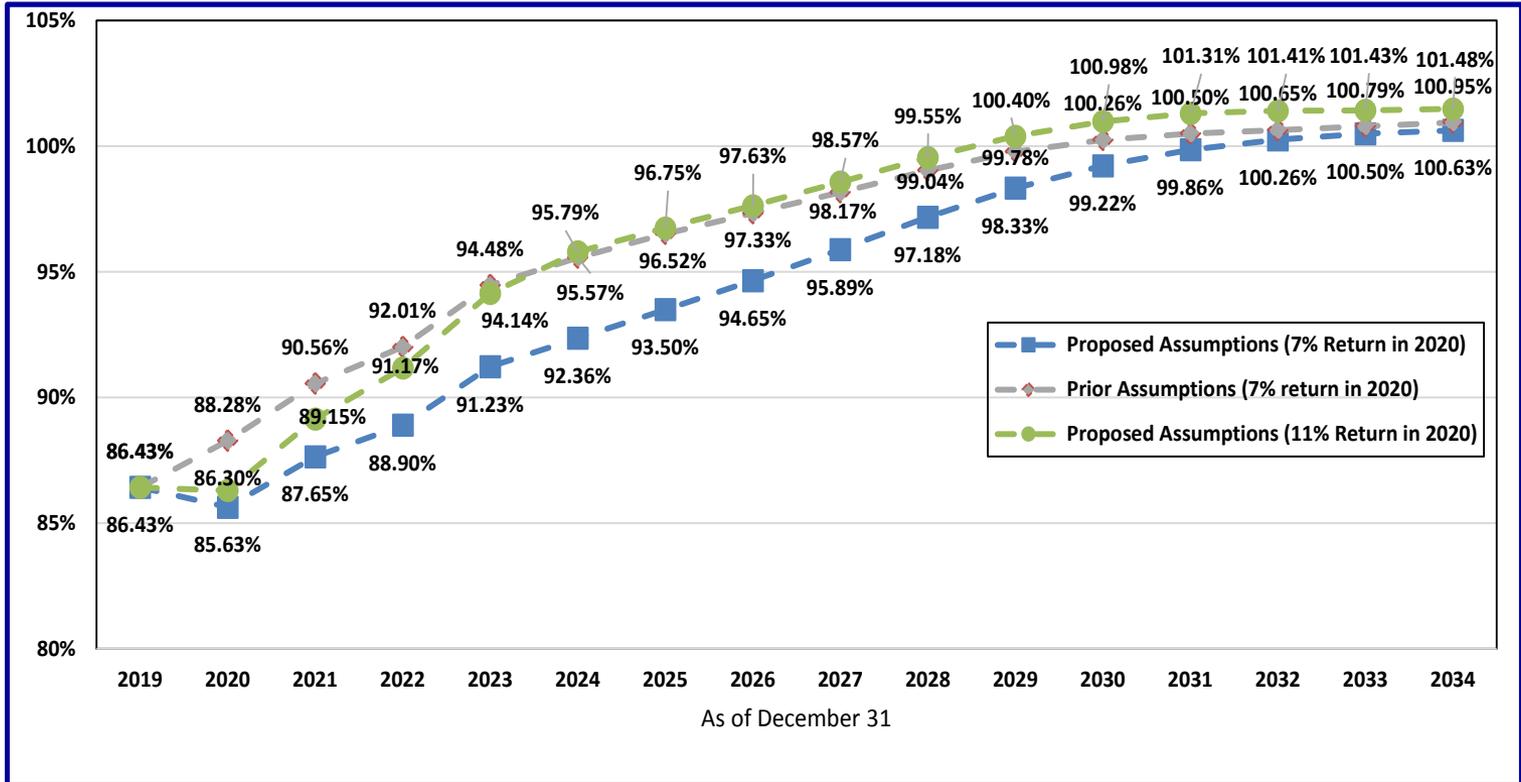
Projected Contribution Rates



Estimated returns were 4.0% higher than expected. Therefore, we are projecting that the unfunded actuarial accrued liability will be lower than previously expected resulting in lower employer contribution rates.



Projected Funded Ratio



Estimated returns were 4.0% higher than expected. Therefore, we are projecting that the unfunded actuarial accrued liability will be lower resulting in higher funded ratios.

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, 2017 were provided by the prior consulting actuary.

In order to prepare the results in this study, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

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



APPENDIX

Fiscal Year Contribution Projection



Proposed Assumptions (11% return in 2020)

Fiscal Year Ending	Employer Contribution Rate	Employer Contributions	Member Contributions	Benefit Payments (Val Year)	Payroll
6/30/2022	15.74%	2,622,415,000	999,650,000	5,465,507,000	16,660,833,000
6/30/2023	15.27%	2,604,759,000	1,023,481,000	5,268,393,000	17,058,017,000
6/30/2024	12.81%	2,238,620,000	1,048,534,000	5,440,685,000	17,475,567,000
6/30/2025	12.77%	2,287,746,000	1,074,900,000	5,621,531,000	17,915,000,000
6/30/2026	11.53%	2,118,699,000	1,102,532,000	5,808,036,000	18,375,533,000
6/30/2027	11.69%	2,203,951,000	1,131,198,000	6,003,607,000	18,853,300,000
6/30/2028	11.73%	2,269,683,000	1,160,963,000	6,201,716,000	19,349,383,000
6/30/2029	11.74%	2,332,161,000	1,191,905,000	6,406,236,000	19,865,083,000
6/30/2030	9.89%	2,017,586,000	1,224,016,000	6,616,624,000	20,400,267,000
6/30/2031	8.53%	1,787,658,000	1,257,438,000	6,833,248,000	20,957,300,000
6/30/2032	6.88%	1,481,814,000	1,292,280,000	7,053,350,000	21,538,000,000
6/30/2033	6.00%	1,328,520,000	1,328,520,000	7,271,514,000	22,142,000,000
6/30/2034	6.00%	1,346,988,000	1,346,988,000	7,484,358,000	22,449,800,000
6/30/2035	6.00%	1,442,256,000	1,442,256,000	7,692,909,000	24,037,600,000
6/30/2036	6.00%	1,487,932,000	1,487,932,000	7,899,492,000	24,798,867,000
6/30/2037	6.00%	1,535,651,000	1,535,651,000	8,040,383,000	25,594,183,000
6/30/2038	6.00%	1,585,608,000	1,585,608,000	8,234,758,000	26,426,800,000
6/30/2039	6.00%	1,611,162,000	1,611,162,000	8,422,832,000	26,852,700,000



Asset and Liability Projection

Proposed Assumptions (11% return in 2020)

Valuation Year	Market Value of Assets	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
12/31/2019	75,486,780,000	73,353,760,000	84,873,315,272	11,519,555,272	86.43%
12/31/2020	81,392,758,000	77,421,640,000	89,714,162,000	12,292,522,000	86.30%
12/31/2021	84,846,121,000	82,139,121,000	92,137,524,000	9,998,403,000	89.15%
12/31/2022	88,473,142,000	86,238,145,000	94,589,560,000	8,351,415,000	91.17%
12/31/2023	91,978,441,000	91,383,266,000	97,066,557,000	5,683,291,000	94.14%
12/31/2024	95,378,843,000	95,378,843,000	99,567,503,000	4,188,660,000	95.79%
12/31/2025	98,765,781,000	98,765,781,000	102,087,390,000	3,321,609,000	96.75%
12/31/2026	102,152,186,000	102,152,186,000	104,627,549,000	2,475,363,000	97.63%
12/31/2027	105,655,239,000	105,655,239,000	107,185,126,000	1,529,887,000	98.57%
12/31/2028	109,265,942,000	109,265,942,000	109,757,903,000	491,961,000	99.55%
12/31/2029	112,792,351,000	112,792,351,000	112,343,382,000	(448,969,000)	100.40%
12/31/2030	116,072,494,000	116,072,494,000	114,942,122,000	(1,130,372,000)	100.98%
12/31/2031	119,099,589,000	119,099,589,000	117,560,063,000	(1,539,526,000)	101.31%
12/31/2032	121,902,001,000	121,902,001,000	120,206,989,000	(1,695,012,000)	101.41%
12/31/2033	124,647,891,000	124,647,891,000	122,892,918,000	(1,754,973,000)	101.43%
12/31/2034	127,437,943,000	127,437,943,000	125,576,985,000	(1,860,958,000)	101.48%
12/31/2035	130,345,988,000	130,345,988,000	128,427,484,000	(1,918,504,000)	101.49%
12/31/2036	133,328,099,000	133,328,099,000	131,356,057,000	(1,972,042,000)	101.50%
12/31/2037	136,399,399,000	136,399,399,000	134,378,450,000	(2,020,949,000)	101.50%
12/31/2038	139,589,760,000	139,589,760,000	137,526,055,000	(2,063,705,000)	101.50%
12/31/2039	142,919,028,000	142,919,028,000	140,816,139,000	(2,102,889,000)	101.49%