



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

January 27, 2022 Board of Trustees Meeting

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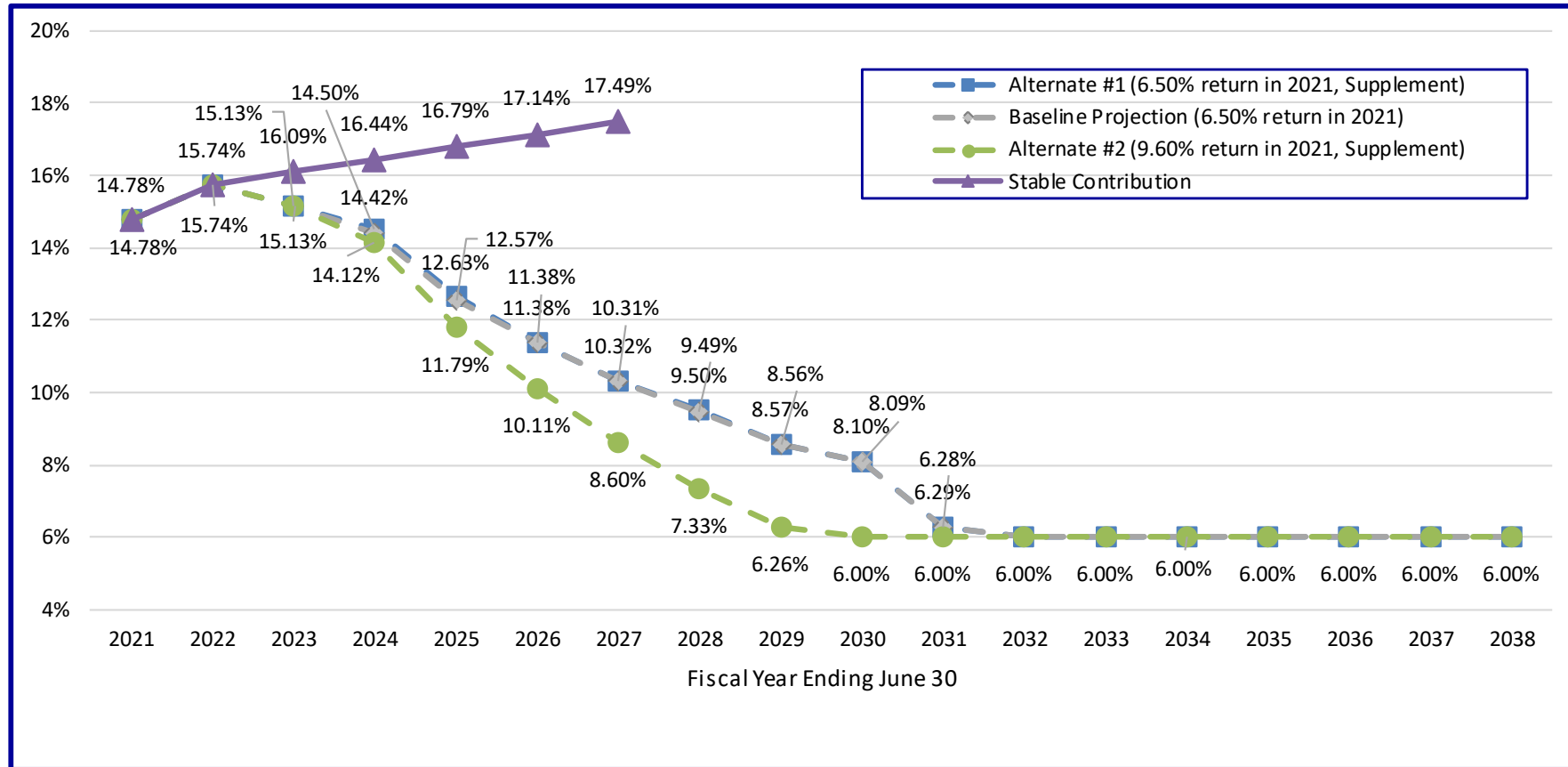


Projections

- 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, 2020 valuation.
- Key Projection Assumptions
 - Valuation interest rate of 6.50% for all years in conjunction with direct rate smoothing of the employer contribution rate over a 5-year period beginning July 1, 2023.
 - 9.60% investment return on market value of assets for 2021 and 6.5% return after 2021.
 - Actuarial assumptions and methods as described in Appendix D of the December 31, 2020 valuation 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 2027.
 - The actuarially determined employer contribution rate is contributed for fiscal years ending 2027 and beyond.
 - The sum of the “normal contribution” and the “accrued liability contribution” shall not be less than the employee contributions, which is currently 6%.
 - 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 April 29, 2021 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 assumptions in the baseline deterministic projection, including an asset return of 6.50% for calendar year 2021, and also includes the one-time supplements approved for December 2021 and October 2022, . The other also includes the supplements and is based on the assumptions in the baseline deterministic projection except that it is based asset return of 9.6% for calendar year 2021.



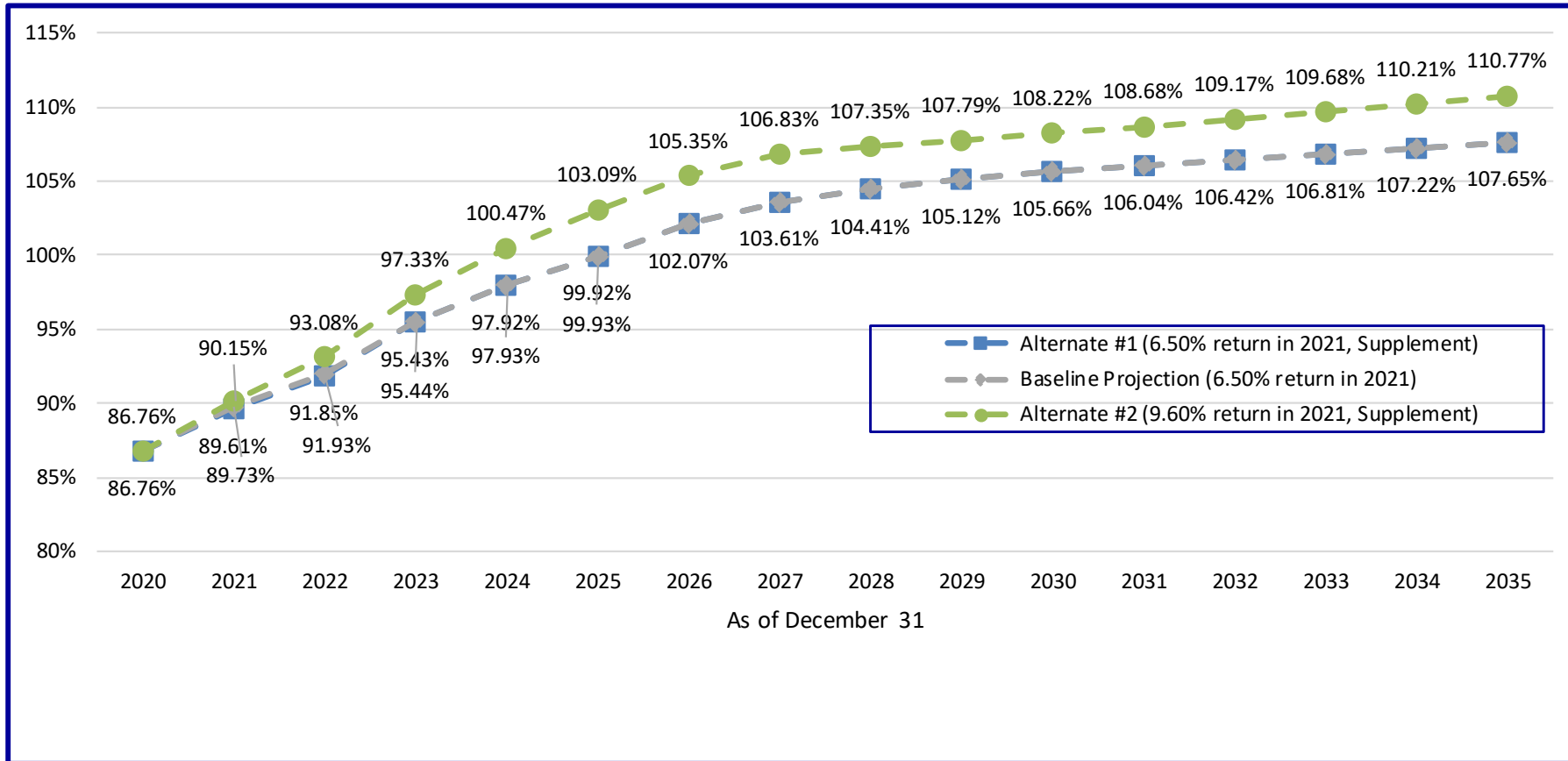
Projected Contribution Rates



Estimated returns are 3.1% 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. The stable contribution rates do not include the one-time supplement paid in December 2021 of approximately \$106M which increased the 2022 rate by 0.64%, the one-time supplement to be paid in October 2022 of approximately \$155M which will increase the 2023 rate by 0.93% and the additional 0.05% of pay contribution from the Unfunded Liability Solvency Reserve.



Projected Funded Ratio



Estimated returns are 3.1% 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

Wendy Ludbrook, FSA, EA, FCA, MAAA
Consulting Actuary



APPENDIX

Fiscal Year Contribution Projection



9.60% Return in 2021, 6.50% Return Thereafter, Includes Dec 2021 and Oct 2022 One-Time Supplements

Fiscal Year Ending	Employer Contribution Rate	Employer Contribution	Member Contribution	Benefit Payments (Val Year)	Payroll
6/30/2023	17.07%*	\$ 2,893,854,000	\$ 1,017,172,000	\$ (5,294,049,000)	\$ 16,952,867,000
6/30/2024	16.44%	2,849,542,000	1,039,979,000	(5,511,348,000)	17,332,983,000
6/30/2025	16.79%	2,978,468,000	1,064,372,000	(5,528,829,000)	17,739,533,000
6/30/2026	17.14%	3,114,384,000	1,090,216,000	(5,704,718,000)	18,170,267,000
6/30/2027	17.49%	3,256,414,000	1,117,123,000	(5,888,642,000)	18,618,717,000
6/30/2028	7.33%	1,398,990,000	1,145,149,000	(6,084,751,000)	19,085,817,000
6/30/2029	6.26%	1,225,294,000	1,174,403,000	(6,280,198,000)	19,573,383,000
6/30/2030	6.00%	1,204,798,000	1,204,798,000	(6,482,013,000)	20,079,967,000
6/30/2031	6.00%	1,236,414,000	1,236,414,000	(6,689,143,000)	20,606,900,000
6/30/2032	6.00%	1,269,489,000	1,269,489,000	(6,899,663,000)	21,158,150,000
6/30/2033	6.00%	1,303,967,000	1,303,967,000	(7,108,082,000)	21,732,783,000
6/30/2034	6.00%	1,339,809,000	1,339,809,000	(7,312,132,000)	22,330,150,000
6/30/2035	6.00%	1,377,226,000	1,377,226,000	(7,513,816,000)	22,953,767,000
6/30/2036	6.00%	1,416,312,000	1,416,312,000	(7,710,307,000)	23,605,200,000
6/30/2037	6.00%	1,457,166,000	1,457,166,000	(7,905,727,000)	24,286,100,000
6/30/2038	6.00%	1,499,949,000	1,499,949,000	(8,026,670,000)	24,999,150,000
6/30/2039	6.00%	1,545,139,000	1,545,139,000	(8,207,190,000)	25,752,317,000
6/30/2040	6.00%	1,592,707,000	1,592,707,000	(8,370,001,000)	26,545,117,000

*Includes the policy rate of 16.09% plus the rate increase of 0.93% needed to pay for the October 2022 One-Time Supplement and the 0.05% additional contribution from the Unfunded Liability Solvency Reserve



Asset and Liability Projection

9.60% Return in 2021, 6.50% Return Thereafter, Includes Dec 2021 and Oct 2022 One-Time Supplements

Valuation Year	Market Value of Assets	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
12/31/2020	\$ 81,969,425,000	\$ 77,922,070,000	\$ 89,809,074,000	\$ 11,887,004,000	86.76%
12/31/2021	87,942,167,000	83,166,756,000	92,251,138,000	9,084,382,000	90.15%
12/31/2022	91,941,971,000	88,160,430,000	94,714,508,000	6,554,077,000	93.08%
12/31/2023	96,219,985,000	94,600,134,000	97,194,834,000	2,594,700,000	97.33%
12/31/2024	100,662,700,000	100,159,891,000	99,695,256,000	(464,636,000)	100.47%
12/31/2025	105,367,187,000	105,367,187,000	102,212,110,000	(3,155,078,000)	103.09%
12/31/2026	110,345,404,000	110,345,404,000	104,737,077,000	(5,608,326,000)	105.35%
12/31/2027	114,601,004,000	114,601,004,000	107,274,034,000	(7,326,970,000)	106.83%
12/31/2028	117,895,444,000	117,895,444,000	109,819,358,000	(8,076,086,000)	107.35%
12/31/2029	121,119,535,000	121,119,535,000	112,369,609,000	(8,749,926,000)	107.79%
12/31/2030	124,372,738,000	124,372,738,000	114,924,733,000	(9,448,005,000)	108.22%
12/31/2031	127,688,554,000	127,688,554,000	117,489,300,000	(10,199,254,000)	108.68%
12/31/2032	131,078,712,000	131,078,712,000	120,072,437,000	(11,006,275,000)	109.17%
12/31/2033	134,553,104,000	134,553,104,000	122,682,320,000	(11,870,785,000)	109.68%
12/31/2034	138,125,554,000	138,125,554,000	125,330,408,000	(12,795,146,000)	110.21%
12/31/2035	141,807,030,000	141,807,030,000	128,023,112,000	(13,783,919,000)	110.77%
12/31/2036	145,684,851,000	145,684,851,000	130,845,154,000	(14,839,697,000)	111.34%
12/31/2037	149,714,202,000	149,714,202,000	133,747,758,000	(15,966,444,000)	111.94%
12/31/2038	153,927,236,000	153,927,236,000	136,760,151,000	(17,167,085,000)	112.55%
12/31/2039	158,359,491,000	158,359,491,000	139,910,106,000	(18,449,385,000)	113.19%