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December 8, 2021

**[Via Email CRupe@leg.state.vt.us](mailto:CRupe@leg.state.vt.us)**

Mr. Chris Rupe  
Fiscal Analyst  
Joint Fiscal Office

**Re: Request 4 – Actuarial Modeling of Revenue Scenarios for VSERS Group F, VSERS Group C, and VSTRS**

Dear Chris:

As requested by the Pension Task Force, we have calculated the impact of potential changes to financing mechanisms and plan provisions affecting certain members of the Vermont State Employees' Retirement System (VSERS) and the Vermont State Teachers' Retirement System (VSTRS). The revenue scenarios include various combinations of one-time revenue sources, recurring revenue sources, and changes to member contribution rates. The results of the June 30, 2020, actuarial valuation, projected forward on an open group basis, are used as a baseline. The exhibits contained in this letter update and aggregate information contained in previous letters dated November 16<sup>th</sup>, 2021, and November 24<sup>th</sup>, 2021.

For the revenue scenarios, we show the additional State revenue and expected member contributions for each year from FY22-FY38, the impact on the estimated actuarially determined contribution (ADC) for FY23<sup>1</sup> and FY28<sup>2</sup>, the present value<sup>3</sup> of the additional member contributions from FY23-FY38, the present value of the decrease in the employer contributions from FY23-FY38, and the impact on the projected amortization payments from FY22-FY38.

The results of this analysis are shown in the pages following this letter. In some cases, the sum of results from the component parts do not exactly match values from combined scenarios due to interaction between the State revenue amounts, employee contributions, and the calculation of projected amortization payments.

<sup>1</sup> Since the actual FY23 contribution was determined with the recently-completed June 30, 2021, actuarial valuation, comparisons of the estimated FY23 ADCs in this analysis are provided for illustrative purposes only.

<sup>2</sup> As some member contribution increase scenarios involve a series of increases over time, we are showing the impact on a projected ADC value as well to illustrate the full magnitude of the changes.

<sup>3</sup> Present values are calculated as of June 30, 2020, to be consistent with the date of the actuarial valuation this analysis is based on.

## VSERS Group F Scenarios

**Revenue Scenarios** – Assume that additional one-time and recurring revenue sources are enacted and that the proceeds are applied toward the unfunded actuarial accrued liability, in combination with varying member contribution rate changes under the following scenarios:

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-1	\$75M	\$15M	
Rev-2	50M	40M	
Rev-3			25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>3 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23.
Rev-4			25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>5 years</b> beginning in FY23.
Rev-A	\$75M	\$15M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>3 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23.
Rev-B	50M	40M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>3 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23.
Rev-C	75M	15M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>5 years</b> beginning in FY23.
Rev-D	50M	40M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>5 years</b> beginning in FY23.

Revenue Scenario assumptions:

- One-time revenue
  - Additional funds paid June 30, 2022, and are in addition to ADCs
  - Additional funds factored into all subsequent ADCs
- Recurring revenue
  - Enacted during 2022 Legislative Session and will take effect January 1, 2023
    - Only 5/12ths of annual revenue collected in FY23
    - First full year of annual revenue in FY24, with 2% annual increases thereafter
  - All future actuarially determined contributions (ADCs) are fully funded
  - Additional funds paid annually on June 30<sup>th</sup>, and are in addition to ADCs

- Additional funds factored into all subsequent ADCs
- No additional funds after System achieves 100% funding
- Member contribution changes
  - The salary percentiles used for this analysis are as follows:
    - 25<sup>th</sup> Percentile: \$50,000; 75<sup>th</sup> Percentile: \$75,000
  - Contribution rates are applied to a member’s entire salary

## VSERS Group C Scenarios

**Revenue Scenarios** – Assume that additional one-time and recurring revenue sources are enacted and that the proceeds are applied toward the unfunded actuarial accrued liability, in combination with varying member contribution rate changes under the following scenarios:

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-1	\$75M	\$15M	
Rev-2	50M	40M	
Rev-3			Increase member contribution rate by 0.45% per year for 3 years beginning in FY23.
Rev-4			25 <sup>th</sup> -49 <sup>th</sup> salary percentile: Increase member contribution rate to 9.0% beginning in FY23. 50 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate to 10.0% beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate to 11.0% beginning in FY23.
Rev-A	\$75M	\$15M	Increase member contribution rate by 0.45% per year for 3 years beginning in FY23.
Rev-B	50M	40M	Increase member contribution rate by 0.45% per year for 3 years beginning in FY23.
Rev-C	75M	15M	25 <sup>th</sup> -49 <sup>th</sup> salary percentile: Increase member contribution rate to 9.0% beginning in FY23. 50 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate to 10.0% beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate to 11.0% beginning in FY23.
Rev-D	50M	40M	25 <sup>th</sup> -49 <sup>th</sup> salary percentile: Increase member contribution rate to 9.0% beginning in FY23. 50 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate to 10.0% beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate to 11.0% beginning in FY23.

Revenue Scenario assumptions:

- One-time revenue
  - Additional funds paid June 30, 2022, and are in addition to ADCs

- Additional funds factored into all subsequent ADCs
- Recurring revenue
  - Enacted during 2022 Legislative Session and will take effect January 1, 2023
    - Only 5/12ths of annual revenue collected in FY23
    - First full year of annual revenue in FY24, with 2% annual increases thereafter
  - All future actuarially determined contributions (ADCs) are fully funded
  - Additional funds paid annually on June 30<sup>th</sup>, and are in addition to ADCs
  - Additional funds factored into all subsequent ADCs
  - No additional funds after System achieves 100% funding
- Member contribution changes
  - The salary percentiles used for this analysis are as follows:
    - 25<sup>th</sup> Percentile: \$73,000; 50<sup>th</sup> Percentile: \$89,000; 75<sup>th</sup> Percentile: \$106,000
  - Contribution rates are applied to a member’s entire salary

## VSTRS Scenarios

**Revenue Scenarios** – Assume that additional one-time and recurring revenue sources are enacted and that the proceeds are applied toward the unfunded actuarial accrued liability, in combination with varying member contribution changes under the following scenarios:

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-1	\$97.5M	\$32.5M	
Rev-2	97.5M	50M	
Rev-3			Members currently paying <b>5%</b> : Increase member contribution rate by 0.25% per year for <b>4 years</b> beginning in <b>FY23</b> . Members currently paying <b>6%</b> : Increase member contribution rate by 0.25% per year for <b>2 years</b> beginning in <b>FY25</b> .
Rev-4			Replace current “flat” member contribution rates with “progressive” contribution rates beginning in FY23 as follows: -5.50% on the first \$40,000 of income -6.25% on income between \$40,000 and \$60,000 -7.00% on income between \$60,000 and \$80,000 -7.75% on income above \$80,000
Rev-A	\$97.5M	\$32.5M	Members currently paying <b>5%</b> : Increase member contribution rate by 0.25% per year for <b>4 years</b> beginning in <b>FY23</b> . Members currently paying <b>6%</b> : Increase member contribution rate by 0.25% per year for <b>2 years</b> beginning in <b>FY25</b> .
Rev-B	97.5M	50M	Replace current “flat” member contribution rates with “progressive” contribution rates beginning in FY23 as follows: -5.50% on the first \$40,000 of income -6.25% on income between \$40,000 and \$60,000 -7.00% on income between \$60,000 and \$80,000 -7.75% on income above \$80,000

#### Revenue Scenario assumptions:

- One-time revenue
  - Additional funds paid June 30, 2022, and are in addition to ADCs
  - Additional funds factored into all subsequent ADCs
- Recurring revenue
  - Enacted during 2022 Legislative Session and will take effect January 1, 2023
    - Only 5/12ths of annual revenue collected in FY23
    - First full year of annual revenue in FY24, with 2% annual increases thereafter
  - All future actuarially determined contributions (ADCs) are fully funded
  - Additional funds paid annually on June 30<sup>th</sup>, and are in addition to ADCs
  - Additional funds factored into all subsequent ADCs
  - No additional funds after System achieves 100% funding

## Methodology

ADCs for a given fiscal year are determined based on the actuarial valuation from two years prior. For example, the actuarial valuation as of June 30, 2020 determined the ADC for the fiscal year ending June 30, 2022. Since the first payment under all revenue scenarios will be made during FY22 and included in the assets as of June 30, 2022, the exhibits for the revenue scenarios that illustrate projected amortization payments show the first decrease as a result of the additional revenue in the row corresponding to FY24. Since we are using the 2020 actuarial valuation, changes in member contribution rates will first impact amortization payments in FY23.

All member contribution rate changes are assumed to be effective July 1, 2022. Consequently, any increase in member contributions outlined in this analysis will reduce the ADC for FY23. The present value of the additional member contributions is equal to the sum of the additional member contributions from FY23-FY38 that arise from the member contribution changes, discounted using the current investment return assumption of 7.00%. The present value of the decrease in employer contributions is equal to the total reduction in employer contributions from FY23-FY38 due to the additional revenue amounts and the member contribution changes, discounted using the current investment return assumption of 7.00%.

## Disclosure

This analysis was prepared in accordance with generally accepted actuarial principles and practices at the request of the Pension Task Force. Please refer to our June 30, 2020, Actuarial Valuation and Review reports for both VSERS and VSTRS for the assumptions and plan of benefits underlying these calculations.

The measurements shown in these actuarial calculations may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic

assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.


Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Deterministic cost projections are based on a proprietary forecasting model. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Segal is not a law firm and we cannot offer legal advice. If legal advice is needed, please consult with appropriate legal counsel.

The actuarial calculations were directed under my supervision. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in this report is complete and accurate. In my opinion, each assumption is reasonable (taking into account the experience of the plan and reasonable expectations) and such other assumptions, in combination, offer my best estimate of anticipated experience under the plan.

Please let me know if you have any questions or need any additional information.

Sincerely,



Matthew A. Strom, FSA, MAAA, EA  
Senior Vice President and Actuary

cc: Kathleen Riley, Segal

## Results

### VSERS Group F – Scenario Descriptions (Individual)

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-1	\$75M	\$15M	
Rev-2	50M	40M	
Rev-3			25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>3 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23.
Rev-4			25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>5 years</b> beginning in FY23.

### VSERS Group F – Additional Revenue Amounts

June 30	Additional Revenue Amounts (\$ in millions) <sup>1</sup>			
	Rev-1	Rev-2	Rev-3	Rev-4
2022	\$75.0	\$50.0	-	-
2023	6.3	16.7	\$2.5	\$2.5
2024	15.0	40.0	5.3	5.3
2025	15.3	40.8	8.4	8.4
2026	15.6	41.6	10.5	11.7
2027	15.9	42.4	10.9	13.9
2028	16.2	43.3	11.2	14.4
2029	16.6	44.2	11.7	14.9
2030	16.9	45.0	12.1	15.5
2031	17.2	45.9	12.6	16.0
2032	17.6	46.9	13.1	16.7
2033	17.9	47.8	13.6	17.3
2034	18.3	48.8	14.1	17.9
2035	18.7	49.7	14.6	18.5
2036	19.0	50.7	15.2	19.1
2037	19.4	-	15.7	19.7
2038	19.8	-	16.2	20.4

<sup>1</sup> Once a System is projected to become 100% funded, we assumed that no additional State revenue amounts will be paid for all subsequent years.

## VSERS Group F – Revenue Scenarios Rev-1 through Rev-4

2020 Valuation (\$ in millions)	Baseline	Rev-1	Rev-2	Rev-3	Rev-4
<b>Estimated Actuarially Determined Contribution for Fiscal 2023*:</b>	\$123.7	\$123.7	\$123.7	\$121.2	\$121.2
Change from Baseline Valuation:		\$0.0	\$0.0	(\$2.5)	(\$2.5)
<b>Projected Actuarially Determined Contribution for Fiscal 2028:</b>	\$149.9	\$135.9	\$128.9	\$138.2	\$135.1
Change from Baseline Valuation:		(\$14.0)	(\$21.0)	(\$11.7)	(\$14.8)
<b>Present Value of Additional Member Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	\$0.0	\$0.0	\$91.1	\$111.2
<b>Present Value of Decrease in Employer Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	(\$179.1)	(\$339.7)	(\$83.7)	(\$101.8)

\*Estimated in the June 30, 2020 Actuarial Valuation and Review for VSERS

### Projected Amortization Payment for the Plan Year Ending June 30 (\$ in millions)

Year	Baseline	Rev-1	Rev-2	Rev-3	Rev-4
2022	\$84.8	\$84.8	\$84.8	\$84.8	\$84.8
2023	90.4	90.4	90.4	90.5	90.5
2024	94.8	88.2	90.4	94.9	94.9
2025	99.1	91.2	92.7	99.0	99.0
2026	103.4	93.7	92.7	103.0	103.0
2027	107.7	96.0	92.1	106.9	106.9
2028	112.0	98.0	91.0	111.0	110.8
2029	116.3	99.9	89.2	115.3	114.9
2030	120.8	101.5	86.6	119.7	119.3
2031	125.3	102.9	83.2	124.1	123.7
2032	129.9	103.8	78.7	128.7	128.3
2033	134.6	104.3	72.7	133.4	133.0
2034	139.4	104.1	64.7	138.2	137.8
2035	144.4	103.0	54.0	143.2	142.8
2036	149.6	100.4	38.9	148.3	148.0
2037	155.2	95.2	16.3	153.9	153.5
2038	161.2	84.0	-	159.9	159.6



## VSERS Group F – Scenario Descriptions (Combinations)

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-A	\$75M	\$15M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>3 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23.
Rev-B	50M	40M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>3 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23.
Rev-C	75M	15M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>5 years</b> beginning in FY23.
Rev-D	50M	40M	25 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>4 years</b> beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate by 0.5% per year for <b>5 years</b> beginning in FY23.

## VSERS Group F – Additional Revenue Amounts

Additional Revenue Amounts (\$ in millions) <sup>1</sup>				
June 30	Rev-A	Rev-B	Rev-C	Rev-D
2022	\$75.0	\$50.0	\$75.0	\$50.0
2023	8.8	19.2	8.8	19.2
2024	20.3	45.3	20.3	45.3
2025	23.7	49.2	23.7	49.2
2026	26.1	52.1	27.3	53.3
2027	26.8	53.3	29.8	56.4
2028	27.5	54.5	30.6	57.7
2029	28.2	55.8	31.5	59.1
2030	29.0	57.2	32.4	60.5
2031	29.8	58.5	33.3	62.0
2032	30.7	60.0	34.2	63.5
2033	31.6	61.4	35.2	65.1
2034	32.4	62.9	36.1	66.6
2035	33.3	64.4	37.1	68.2
2036	34.2	65.9	38.1	69.8
2037	35.1	15.7	39.1	19.7
2038	36.0	16.2	40.2	20.4

<sup>1</sup> Once a System is projected to become 100% funded, we assumed that no additional State revenue amounts will be paid for all subsequent years.

## VSERS Group F – Revenue Scenarios Rev-A through Rev-D

2020 Valuation (\$ in millions)	Baseline	Rev-A	Rev-B	Rev-C	Rev-D
<b>Estimated Actuarially Determined Contribution for Fiscal 2023*:</b>	\$123.7	\$121.2	\$121.2	\$121.2	\$121.2
Change from Baseline Valuation:		(\$2.5)	(\$2.5)	(\$2.5)	(\$2.5)
<b>Projected Actuarially Determined Contribution for Fiscal 2028:</b>	\$149.9	\$124.3	\$117.2	\$121.2	\$114.1
Change from Baseline Valuation:		(\$25.6)	(\$32.7)	(\$28.7)	(\$35.8)
<b>Present Value of Additional Member Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	\$91.1	\$91.1	\$111.2	\$111.2
<b>Present Value of Decrease in Employer Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	(\$262.8)	(\$423.0)	(\$281.0)	(\$441.0)

\*Estimated in the June 30, 2020 Actuarial Valuation and Review for VSERS

### Projected Amortization Payment for the Plan Year Ending June 30 (\$ in millions)

Year	Baseline	Rev-A	Rev-B	Rev-C	Rev-D
2022	\$84.8	\$84.8	\$84.8	\$84.8	\$84.8
2023	90.4	90.5	90.5	90.5	90.5
2024	94.8	88.3	90.5	88.3	90.5
2025	99.1	91.0	92.5	91.1	92.6
2026	103.4	93.2	92.3	93.3	92.3
2027	107.7	95.2	91.4	95.2	91.4
2028	112.0	97.0	89.9	96.9	89.8
2029	116.3	98.8	88.1	98.5	87.7
2030	120.8	100.4	85.5	100.0	85.1
2031	125.3	101.7	82.1	101.3	81.7
2032	129.9	102.7	77.5	102.3	77.1
2033	134.6	103.1	71.5	102.7	71.1
2034	139.4	102.9	63.5	102.5	63.1
2035	144.4	101.8	52.7	101.4	52.3
2036	149.6	99.1	37.6	98.8	37.2
2037	155.2	93.9	15.0	93.5	14.6
2038	161.2	82.7	-	82.4	-

## VSERS Group C – Scenario Descriptions (Individual)

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-1	\$75M	\$15M	
Rev-2	50M	40M	
Rev-3			Increase member contribution rate by 0.45% per year for 3 years beginning in FY23.
Rev-4			25 <sup>th</sup> -49 <sup>th</sup> salary percentile: Increase member contribution rate to 9.0% beginning in FY23. 50 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate to 10.0% beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate to 11.0% beginning in FY23.

## VSERS Group C – Additional Revenue Amounts

Additional Revenue Amounts (\$ in millions) <sup>1</sup>				
June 30	Rev-1	Rev-2	Rev-3	Rev-4
2022	\$75.0	\$50.0	-	-
2023	6.3	16.7	\$0.2	\$0.7
2024	15.0	40.0	0.4	0.7
2025	15.3	40.8	0.6	0.7
2026	15.6	41.6	0.6	0.7
2027	15.9	42.4	0.6	0.7
2028	16.2	43.3	0.6	0.6
2029	16.6	44.2	0.6	0.6
2030	16.9	45.0	0.6	0.6
2031	17.2	45.9	0.6	0.6
2032	17.6	46.9	0.6	0.6
2033	17.9	47.8	0.6	0.6
2034	18.3	48.8	0.6	0.6
2035	18.7	49.7	0.6	0.6
2036	19.0	50.7	0.6	0.7
2037	19.4	-	0.6	0.7
2038	19.8	-	0.6	0.7

<sup>1</sup> Once a System is projected to become 100% funded, we assumed that no additional State revenue amounts will be paid for all subsequent years.

## VSERS Group C – Revenue Scenarios Rev-1 through Rev-4

2020 Valuation (\$ in millions)	Baseline	Rev-1	Rev-2	Rev-3	Rev-4
<b>Estimated Actuarially Determined Contribution for Fiscal 2023*:</b>	\$123.7	\$123.7	\$123.7	\$123.5	\$123.0
Change from Baseline Valuation:		\$0.0	\$0.0	(\$0.2)	(\$0.7)
<b>Projected Actuarially Determined Contribution for Fiscal 2028:</b>	\$149.9	\$135.9	\$128.9	\$149.3	\$149.2
Change from Baseline Valuation:		(\$14.0)	(\$21.0)	(\$0.6)	(\$0.7)
<b>Present Value of Additional Member Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	\$0.0	\$0.0	\$4.5	\$5.6
<b>Present Value of Decrease in Employer Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	(\$179.1)	(\$339.7)	(\$4.4)	(\$5.6)

\*Estimated in the June 30, 2020 Actuarial Valuation and Review for VSERS

### Projected Amortization Payment for the Plan Year Ending June 30 (\$ in millions)

Year	Baseline	Rev-1	Rev-2	Rev-3	Rev-4
2022	\$84.8	\$84.8	\$84.8	\$84.8	\$84.8
2023	90.4	90.4	90.4	90.4	90.4
2024	94.8	88.2	90.4	94.8	94.8
2025	99.1	91.2	92.7	99.1	99.0
2026	103.4	93.7	92.7	103.3	103.3
2027	107.7	96.0	92.1	107.6	107.6
2028	112.0	98.0	91.0	111.9	111.9
2029	116.3	99.9	89.2	116.3	116.3
2030	120.8	101.5	86.6	120.7	120.7
2031	125.3	102.9	83.2	125.2	125.2
2032	129.9	103.8	78.7	129.8	129.8
2033	134.6	104.3	72.7	134.5	134.5
2034	139.4	104.1	64.7	139.4	139.4
2035	144.4	103.0	54.0	144.4	144.4
2036	149.6	100.4	38.9	149.6	149.6
2037	155.2	95.2	16.3	155.1	155.1
2038	161.2	84.0	-	161.2	161.2

## VSERS Group C – Scenario Descriptions (Combinations)

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-A	\$75M	\$15M	Increase member contribution rate by 0.45% per year for 3 years beginning in FY23.
Rev-B	50M	40M	Increase member contribution rate by 0.45% per year for 3 years beginning in FY23.
Rev-C	75M	15M	25 <sup>th</sup> -49 <sup>th</sup> salary percentile: Increase member contribution rate to 9.0% beginning in FY23. 50 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate to 10.0% beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate to 11.0% beginning in FY23.
Rev-D	50M	40M	25 <sup>th</sup> -49 <sup>th</sup> salary percentile: Increase member contribution rate to 9.0% beginning in FY23. 50 <sup>th</sup> -74 <sup>th</sup> salary percentile: Increase member contribution rate to 10.0% beginning in FY23. 75 <sup>th</sup> -100 <sup>th</sup> salary percentile: Increase member contribution rate to 11.0% beginning in FY23.

## VSERS Group C – Additional Revenue Amounts

June 30	Additional Revenue Amounts (\$ in millions) <sup>1</sup>			
	Rev-A	Rev-B	Rev-C	Rev-D
2022	\$75.0	\$50.0	\$75.0	\$50.0
2023	6.4	16.9	6.9	17.3
2024	15.4	40.4	15.7	40.7
2025	15.9	41.4	16.0	41.5
2026	16.2	42.2	16.3	42.3
2027	16.5	43.0	16.6	43.1
2028	16.8	43.9	16.9	43.9
2029	17.1	44.7	17.2	44.8
2030	17.5	45.6	17.5	45.7
2031	17.8	46.5	17.9	46.6
2032	18.2	47.5	18.2	47.5
2033	18.5	48.4	18.6	48.4
2034	18.9	49.4	18.9	49.4
2035	19.3	50.3	19.3	50.4
2036	19.6	51.3	19.7	51.4
2037	20.0	0.6	20.1	0.7
2038	20.4	0.6	20.5	0.7

<sup>1</sup> Once a System is projected to become 100% funded, we assumed that no additional State revenue amounts will be paid for all subsequent years.

## VSERS Group C – Revenue Scenarios Rev-A through Rev-D

2020 Valuation (\$ in millions)	Baseline	Rev-A	Rev-B	Rev-C	Rev-D
<b>Estimated Actuarially Determined Contribution for Fiscal 2023*:</b>	\$123.7	\$123.5	\$123.5	\$123.0	\$123.0
Change from Baseline Valuation:		(\$0.2)	(\$0.2)	(\$0.7)	(\$0.7)
<b>Projected Actuarially Determined Contribution for Fiscal 2028:</b>	\$149.9	\$135.3	\$128.2	\$135.2	\$128.1
Change from Baseline Valuation:		(\$14.6)	(\$21.7)	(\$14.7)	(\$21.8)
<b>Present Value of Additional Member Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	\$4.5	\$4.5	\$5.6	\$5.6
<b>Present Value of Decrease in Employer Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	(\$183.5)	(\$344.1)	(\$184.7)	(\$345.3)

\*Estimated in the June 30, 2020 Actuarial Valuation and Review for VSERS

### Projected Amortization Payment for the Plan Year Ending June 30 (\$ in millions)

Year	Baseline	Rev-A	Rev-B	Rev-C	Rev-D
2022	\$84.8	\$84.8	\$84.8	\$84.8	\$84.8
2023	90.4	90.4	90.4	90.4	90.4
2024	94.8	88.2	90.4	88.2	90.4
2025	99.1	91.2	92.7	91.1	92.6
2026	103.4	93.6	92.7	93.6	92.7
2027	107.7	95.9	92.1	95.9	92.1
2028	112.0	98.0	90.9	98.0	90.9
2029	116.3	99.8	89.1	99.8	89.1
2030	120.8	101.5	86.6	101.5	86.6
2031	125.3	102.8	83.1	102.8	83.1
2032	129.9	103.8	78.6	103.8	78.6
2033	134.6	104.3	72.6	104.3	72.6
2034	139.4	104.1	64.7	104.1	64.7
2035	144.4	103.0	53.9	103.0	53.9
2036	149.6	100.4	38.9	100.4	38.9
2037	155.2	95.1	16.3	95.1	16.3
2038	161.2	84.0	-	84.0	-

## VSTRS – Scenario Descriptions (Individual)

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-1	\$97.5M	\$32.5M	
Rev-2	97.5M	50M	
Rev-3			Members currently paying <b>5%</b> : Increase member contribution rate by 0.25% per year for <b>4 years</b> beginning in <b>FY23</b> . Members currently paying <b>6%</b> : Increase member contribution rate by 0.25% per year for <b>2 years</b> beginning in <b>FY25</b> .
Rev-4			Replace current “flat” member contribution rates with “progressive” contribution rates beginning in FY23 as follows: -5.50% on the first \$40,000 of income -6.25% on income between \$40,000 and \$60,000 -7.00% on income between \$60,000 and \$80,000 -7.75% on income above \$80,000

## VSTRS – Additional Revenue Amounts

June 30	Additional Revenue Amounts (\$ in millions) <sup>1</sup>			
	Rev-1	Rev-2	Rev-3	Rev-4
2022	\$97.5	\$97.5	-	-
2023	13.5	20.8	\$0.9	\$3.8
2024	32.5	50.0	1.7	3.9
2025	33.2	51.0	3.6	4.1
2026	33.8	52.0	5.5	4.3
2027	34.5	53.1	5.6	4.4
2028	35.2	54.1	5.6	4.6
2029	35.9	55.2	5.7	4.8
2030	36.6	56.3	5.7	5.0
2031	37.3	57.4	5.8	5.2
2032	38.1	58.6	5.8	5.4
2033	38.8	59.8	5.9	5.6
2034	39.6	60.9	5.9	5.8
2035	40.4	62.2	5.9	6.0
2036	41.2	63.4	6.0	6.2
2037	42.0	64.7	6.0	6.5
2038	42.9	66.0	6.0	6.7

<sup>1</sup> Once a System is projected to become 100% funded, we assumed that no additional State revenue amounts will be paid for all subsequent years.

## VSTRS – Revenue Scenarios Rev-1 through Rev-4

2020 Valuation (\$ in millions)	Baseline	Rev-1	Rev-2	Rev-3	Rev-4
<b>Estimated Actuarially Determined Contribution for Fiscal 2023*:</b>	\$202.1	\$202.1	\$202.1	\$201.2	\$198.3
Change from Baseline Valuation:		\$0.0	\$0.0	(\$0.9)	(\$3.8)
<b>Projected Actuarially Determined Contribution for Fiscal 2028:</b>	\$245.1	\$221.9	\$215.0	\$238.9	\$240.1
Change from Baseline Valuation:		(\$23.2)	(\$30.1)	(\$6.2)	(\$5.0)
<b>Present Value of Additional Member Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	\$0.0	\$0.0	\$40.3	\$41.7
<b>Present Value of Decrease in Employer Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	(\$331.4)	(\$463.9)	(\$38.9)	(\$41.3)

\*Estimated in the June 30, 2020 Actuarial Valuation and Review for VSTRS

### Projected Amortization Payment for the Plan Year Ending June 30 (\$ in millions)

Year	Baseline	Rev-1	Rev-2	Rev-3	Rev-4
2022	\$157.3	\$157.3	\$157.3	\$157.3	\$157.3
2023	166.2	166.2	166.2	166.2	166.2
2024	172.9	164.3	164.3	172.9	172.9
2025	179.4	168.6	167.9	179.3	179.1
2026	186.0	171.5	169.1	185.8	185.6
2027	192.7	174.1	169.6	192.3	192.3
2028	199.4	176.2	169.4	198.9	199.0
2029	206.4	178.0	168.5	205.7	205.9
2030	213.4	179.2	166.7	212.8	212.9
2031	220.6	179.7	163.9	220.0	220.1
2032	228.0	179.5	159.8	227.4	227.5
2033	235.6	178.2	153.9	235.0	235.1
2034	243.5	175.4	145.6	242.9	242.9
2035	251.5	170.5	133.8	251.0	250.9
2036	259.9	162.2	116.7	259.4	259.3
2037	268.7	147.8	90.2	268.2	268.0
2038	278.1	120.2	42.9	277.8	277.4



## VSTRS – Scenario Descriptions (Combinations)

Revenue Scenario	One-Time Revenue	Recurring Revenue	Description of Member Contribution Changes
Rev-A	\$97.5M	\$32.5M	Members currently paying <b>5%</b> : Increase member contribution rate by 0.25% per year for <b>4 years</b> beginning in <b>FY23</b> . Members currently paying <b>6%</b> : Increase member contribution rate by 0.25% per year for <b>2 years</b> beginning in <b>FY25</b> .
Rev-B	97.5M	50M	Replace current “flat” member contribution rates with “progressive” contribution rates beginning in FY23 as follows: -5.50% on the first \$40,000 of income -6.25% on income between \$40,000 and \$60,000 -7.00% on income between \$60,000 and \$80,000 -7.75% on income above \$80,000

## VSTRS – Additional Revenue Amounts

June 30	Additional Revenue Amounts (\$ in millions) <sup>1</sup>	
	Rev-A	Rev-B
2022	\$97.5	\$97.5
2023	14.4	24.6
2024	34.2	53.9
2025	36.7	55.1
2026	39.3	56.3
2027	40.1	57.5
2028	40.8	58.8
2029	41.6	60.0
2030	42.3	61.3
2031	43.1	62.7
2032	43.9	64.0
2033	44.7	65.4
2034	45.5	66.8
2035	46.3	68.2
2036	47.2	69.7
2037	48.0	71.1
2038	48.9	72.7

<sup>1</sup> Once a System is projected to become 100% funded, we assumed that no additional State revenue amounts will be paid for all subsequent years.

## VSTRS – Revenue Scenarios Rev-A through Rev-D

2020 Valuation (\$ in millions)	Baseline	Rev-A	Rev-B
<b>Estimated Actuarially Determined Contribution for Fiscal 2023*:</b>	\$202.1	\$201.2	\$198.3
Change from Baseline Valuation:		(\$0.9)	(\$3.8)
<b>Projected Actuarially Determined Contribution for Fiscal 2028:</b>	\$245.1	\$172.6	\$167.0
Change from Baseline Valuation:		(\$29.5)	(\$35.1)
<b>Present Value of Additional Member Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	\$40.3	\$41.7
<b>Present Value of Decrease in Employer Contributions from Fiscal 2023 through Fiscal 2038:</b>	N/A	(\$370.2)	(\$505.2)

\*Estimated in the June 30, 2020 Actuarial Valuation and Review for VSTRS

### Projected Amortization Payment for the Plan Year Ending June 30 (\$ in millions)

Year	Baseline	Rev-A	Rev-B
2022	\$157.3	\$157.3	\$157.3
2023	166.2	166.2	166.2
2024	172.9	164.4	164.4
2025	179.4	168.6	167.6
2026	186.0	171.4	168.7
2027	192.7	173.7	169.2
2028	199.4	175.6	169.0
2029	206.4	177.3	168.0
2030	213.4	178.5	166.3
2031	220.6	179.1	163.4
2032	228.0	178.9	159.3
2033	235.6	177.6	153.3
2034	243.5	174.8	145.0
2035	251.5	169.9	133.2
2036	259.9	161.7	116.1
2037	268.7	147.4	89.5
2038	278.1	119.9	42.2