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November 12, 2021

Via Email CRupe@leg.state.vt.us

Mr. Chris Rupe
Fiscal Analyst
Joint Fiscal Office

Re: Request 4 (Partial) – Analysis of Potential Changes to VSERS and VSTRS

Dear Chris:

As requested by the Pension Task Force, we have provided analysis of potential changes to provisions affecting certain members of the Vermont State Employees' Retirement System (VSERS) and the Vermont State Teachers' Retirement System (VSTRS). When possible, we have calculated the impact on the Unfunded Accrued Liability (UAL), the funded percentage, and on employer contribution requirements. The items from Request 4 addressed in this part of the analysis are:

1. VSERS Group F – Longevity Incentive: Model or provide a general analysis on the expected impact of offering an option to pay retirement eligible actives an annual bonus payment for each year they continue working, up to a maximum of five years. The bonus payment would not come from pension assets and would not be included in AFC calculations. Behavioral assumptions are that 50% of members who take advantage of this option would retire after one extra year of service, 10% after two years, 10% after three years, 10% after four years, and 20%[1] after five years.

2. VSERS Group C – Risk Sharing COLA: Estimate the impact of a risk sharing COLA modification applicable to future retirees. If the actual investment return on a market value basis[2] is greater than or equal to the assumed rate of return (7%, currently), a post-retirement adjustment is provided under the existing formula. If the investment rate of return is less than the assumed rate of return, the post-retirement adjustment is limited to 1%.

3. VSTRS – Pension Freeze Option: Provide an analysis on the expected impact of offering an option for actives to freeze their pension benefits upon reaching the Rule of 90 or age 65 and continue working. Upon entering the "freeze", members would keep working, but

[1] Originally shown as 10% in the materials provided with Request 4, we modified to assume 20% after five years so that the sum of all years was equal to 100%.
[2] Originally shown as "actuarial rate of investment return"; for purposes of this analysis, we are assuming that the actual portfolio return each year is compared to the actuarial return assumption to determine the risk sharing COLA for the year.

would stop paying pension contributions and accruing service credits for that time and their AFC would be calculated at the pre-freeze compensation. Pension benefits would not be paid out until the member officially retires and separates from service.

VSERS Group F —Longevity Incentive

Since this change would not include any direct reduction in pension assets and no direct increase in members' AFC calculations, the primary impact to VSERS will arise from active members retiring later than currently assumed. In general, if active members retire later than assumed, the System will experience actuarial gains (i.e., a decrease in UAL and employer contribution requirement) relative to the baseline.

The current retirement rate assumptions for VSERS Group F are age-based and apply to active members that meet any of the retirement eligibility criteria applicable to Group F[3]. Using the behavioral assumptions suggested by the Task Force, we modified the current retirement rate schedules (beginning with age 55) to estimate the delayed retirement pattern under two scenarios: one where all members would be assumed to elect the longevity incentive and another where half of the members would elect the incentive. In either case, members would not be assumed to delay retirement beyond age 72. The current and modified retirement rates are as follows:

	Baseline		100% Elect Option		50% Elect Option	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
<=50	20.0%	10.0%	20.0%	10.0%	20.0%	10.0%
51	20.0%	10.0%	20.0%	10.0%	20.0%	10.0%
52	20.0%	10.0%	20.0%	10.0%	20.0%	10.0%
53	15.0%	10.0%	15.0%	10.0%	15.0%	10.0%
54	15.0%	10.0%	15.0%	10.0%	15.0%	10.0%
55	5.0%	5.0%	0.0%	0.0%	2.5%	2.5%
56	5.0%	5.0%	2.5%	2.5%	3.8%	3.8%
57	5.0%	5.0%	2.9%	2.9%	4.0%	4.0%
58	5.0%	7.5%	3.4%	3.4%	4.2%	5.5%
59	7.5%	7.5%	3.9%	5.1%	5.7%	6.3%
60	7.5%	7.5%	6.2%	6.4%	6.8%	6.9%
61	15.0%	12.5%	6.4%	6.6%	10.7%	9.6%
62	25.0%	25.0%	10.0%	9.1%	17.5%	17.1%
63	17.5%	15.0%	15.1%	15.5%	16.3%	15.3%
64	20.0%	15.0%	13.9%	12.7%	17.0%	13.9%
65	22.5%	20.0%	16.0%	13.7%	19.2%	16.8%
66	25.0%	30.0%	19.7%	17.4%	22.3%	23.7%
67	25.0%	30.0%	23.3%	24.1%	24.1%	27.0%
68	25.0%	30.0%	21.5%	21.9%	23.2%	26.0%
69	25.0%	30.0%	22.9%	23.2%	23.9%	26.6%
70	100.0%	100.0%	50.0%	50.0%	75.0%	75.0%
71	100.0%	100.0%	50.0%	50.0%	75.0%	75.0%
72	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

[3] Normal Retirement: Age 62 or 20 years of service. For members hired after June 30, 2008, age 65 or a sum of age plus service greater than or equal to 87. Early Retirement: Age 55 with 5 years of service.

This change is assumed to be effective July 1, 2022. The change in UAL, funded percentage, and projected employer contribution amounts, relative to the baseline, are shown in the table below:

	Baseline	100% Elect Option	50% Elect Option
UAL as of June 30, 2020	$1,040,465,119	$976,577,801 (63,887,318)	$1,011,279,384 (29,185,735)
Funded percentage as of June 30, 2020	66.39%	67.78% +1.39%	67.02% +0.63%
FY22 actuarially determined contribution	$119,967,769	$112,407,237 (7,560,532)	$116,594,978 (3,372,791)

Several assumptions were made to develop the adjusted retirement rates used to model the impact of this scenario:

1) The number of years each member delays retirement is equal to the suggested behavioral scenario where 50% of members who take advantage of this option would retire after one extra year of service, 10% after two years, 10% after three years, 10% after four years, and 20% after five years.

2) Based on an expectation that individuals retiring at very early ages or very late ages would not delay retirement for an incentive payment, we did not modify the retirement assumption prior to age 55 and we replaced the rates produced by the behavioral assumptions with the rates shown on the prior page at ages 70 to 72.

3) For illustration purposes, we assumed 100%, and alternatively, 50% of eligible active Group F members would elect the option.

If actual experience differs from the underlying assumptions, the estimated changes may be higher or lower than the amounts shown in the table above. For example, if members who take advantage of this option delay retirement relatively less than assumed, the decrease in projected employer contributions may be lower than illustrated. Or if members that become eligible for retirement at different ages have a non-uniform tendency to take advantage of this option (e.g., rather than 50% of all eligible employees elect the incentive, 30% of employees at certain ages elect the incentive and 70% of employees at other ages elect the incentive), the projected employer contributions could be different than illustrated above.

To illustrate the sensitivity of these results to changes in the assumed retirement rates, if the retirement rates shown on the prior page were modified at ages 69 and later to reflect 100% retirement at age 71[4] rather than age 72, the decreases in the UAL and FY 2022 actuarially determined contribution are reduced by 16% and 17%, respectively, in the scenario where all members are assumed to elect the incentive.

[4] Under the "100% Election Option", the age 69 rate changes from 22.9% for males and 23.2% for females to 50%, the age 70 rate changes from 50% to 75%, and the age 71 rate changes from 50% to 100%.

VSERS Group C – Risk Sharing COLA

Under current provisions, in general, post-retirement adjustments for members of Group C in payment status are tied to inflation and based on the increase in the Consumer Price Index (CPI), but not more than 5% (with decreases due to negative CPI subject to certain limitations as defined in 3 V.S.A. § 470). The current actuarial assumption for future Group C post-retirement adjustments is 2.40%, which was recommended to, and adopted by, the VSERS Board based upon a stochastic analysis of projected inflation, subject to the constraints outlined above.

Expanding the stochastic analysis to include an additional constraint that the post-retirement adjustment be limited to 1% in years where the portfolio return is less than the 7.00% assumption results in a decrease in the actuarial assumption from 2.40% to 1.75%. The stochastic analysis reflects the fact that inflation is correlated[5] to some extent (either positively or negatively) with the various underlying asset classes in the VPIC target asset allocation. For example, the real estate asset class tends to have a high positive correlation with inflation. Without reflecting these various correlations, since the stochastically-modeled portfolio return is expected to meet or exceed the 7.00% assumption approximately half the time (53.1%, as reported in Segal's October 2020 Experience Review), the post-retirement increase assumption would be slightly lower (approximately 1.70%, which represents a 50/50 weighting of the current 2.40% assumption and the risk-sharing COLA cap of 1.00%). However, we believe this may understate the COLA increase assumption for Group C, which could overstate any modeled savings.

This change is assumed to be effective for retirements after June 30, 2022. The change in UAL, funded percentage, and projected employer contribution amounts, relative to the baseline, are shown in the table below:

	Baseline (2.40% Assumption for Group C)	Risk Sharing COLA (1.75% Assumption for Group C)
UAL as of June 30, 2020	$1,040,465,119	$1,026,444,762 (14,020,357)
Funded percentage as of June 30, 2020	66.39%	66.69% +0.30%
FY22 actuarially determined contribution	$119,967,769	$117,905,095 (2,062,674)

The assumption for post-retirement adjustments determines the expected cost, but as with all actuarial assumptions, the actual experience ultimately determines the actual cost. When the actual COLA for an upcoming year is known, this value is used in the actuarial valuation and the difference between actual and expected is reflected as an experience gain (if the actual COLA

[5] Correlation coefficients between inflation and the various asset classes were based on JP Morgan Asset Management Long-Term Capital Market Assumptions Report, 26th Annual Edition.

granted is less than the assumption) or loss (if the actual COLA granted is greater than the assumption).

VSTRS Pension "Freeze" Option

This scenario requires an analysis on the expected impact of offering an option for actives to freeze their pension benefits upon reaching the Rule of 90 or age 65 and continue working. Upon entering the "freeze", members would keep working, but they would no longer be required to pay member contributions into VSTRS. In exchange, these members would stop accruing service credits and their AFC would be calculated at their pre-freeze compensation. Pension benefits would not be paid out until the member officially retires and separates from service.

To evaluate this option, we estimated the value of "lost pension" (i.e., the present value of the difference between a frozen and non-frozen pension benefit) and compared that to the accumulated value of member contributions that would otherwise have been required to continue participation in VSTRS for various sample participants.

The current benefit formula for VSTRS Group C members is as follows:

- Grandfathered – 1.25% of AFC times creditable service prior to July 1, 1990, plus 1.6667% of AFC times creditable service after July 1, 1990. Maximum benefit is 50% of AFC up to June 30, 2010, and may continue to accrue up to 53.34% of AFC with service earned after July 1, 2010.

- Non-grandfathered – 1.25% of AFC times creditable service prior to July 1, 1990, plus 1.6667% of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 2.00% of AFC for years of service after 20. If a member already has 20 or more years of service on June 30, 2010, the 2.00% will be applied to all service accrued after July 1, 2010. Maximum benefit is 60% of AFC.

Most Group C members are in the non-grandfathered category and have a maximum benefit of 60% of AFC, which is generally reached with 34 years of service. Based on the assumptions used for actuarial valuation purposes, our analysis shows that it is always financially more advantageous for the member to continue paying member contributions and accrue additional pension – even if that is by way of increases in AFC from increases in salary (after having already hit the 60% of AFC maximum) – than elect to freeze accruals and stop paying member contributions to VSTRS.

For example, a member hired at age 25 has 34 years of service at age 59 and satisfies the Rule of 90. Even though the maximum benefit of 60% of AFC has been reached, the increase in AFC due to an expected increase in salary (assumed to be 3.60% for a member age 59 for actuarial valuation purposes) is more valuable than foregoing a 6.00% of salary member contribution for the year. The present value of additional pension is worth in excess of six times the member contribution amount in the first year. By age 70, the present value of additional pension is still nearly three times more valuable than the value of member contributions, accumulated at 7% interest. In situations where the maximum percentage of AFC has not been

reached, the difference in value is even larger. With that level of disparity in value, it is likely that no members would make this "freeze" election.

Additional Comments on Our Analysis

This analysis was prepared in accordance with generally accepted actuarial principles and practices at the request of the Treasurer's Office to assist in administering both Systems. Please refer to our June 30, 2020, Actuarial Valuation and Review reports 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.

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