

Vermont Municipal Employees' Retirement System

**Governmental Accounting Standards Board
Statement 67 Actuarial Valuation Report as of
June 30, 2020**





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November 30, 2020

Board of Trustees
Vermont Municipal Employees' Retirement System
Montpelier, Vermont 05609

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statement No. 67 Accounting Valuation as of June 30, 2020, for the Vermont Municipal Employees' Retirement System, a cost-sharing multiple-employer defined benefit pension plan. It contains the actuarial information that will need to be disclosed in order to comply with GASB 67.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist the Board and the member units in preparing their financial reports. The financial information on which our calculations were based was provided by the Office of the State Treasurer. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation 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; and changes in plan provisions or applicable law.

An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. We have not been retained to perform an analysis of the potential range of financial measurements, except where otherwise noted.

The actuarial calculations were directed under the supervision of Kathleen Riley, FSA, MAAA, EA and Matthew Strom, FSA, MAAA, EA. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate.

This valuation was prepared based on the actuarial assumptions and methods used in the June 30, 2019 actuarial valuation of the System, except as noted herein. In our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the System and are appropriate for purposes of the valuation.

We look forward to reviewing this report with you and to answering any questions.

Sincerely,

Segal



Kathleen A. Riley, FSA, MAAA, EA
Senior Vice President and Actuary



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

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Table of Contents

Section 1: Actuarial Valuation Summary	5
Important information about actuarial valuations.....	5
Purpose and basis.....	7
Highlights of the valuation.....	7
Section 2: Accounting Information.....	8
Exhibit 1 - Net pension liability	8
Exhibit 2 - Schedule of changes in Net Pension Liability – Last ten fiscal years.....	12
Exhibit 3 - Schedule of contributions – Last ten fiscal years.....	16
Exhibit 4 - Development of Blended Discount Rate.....	19
Section 3: Supplemental Information.....	25
Exhibit I: Actuarial Assumptions and Actuarial Cost Method	25
Exhibit II: Summary of Plan Provisions	33
Appendix: Definition of Terms	36

Section 1: Actuarial Valuation Summary

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the System. The System uses an “actuarial value of assets” that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

Section 1: Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the Vermont Municipal Employees' Retirement System. Segal is not responsible for the use or misuse of its report, particularly by any other party.

An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

Sections of this report may include actuarial results that are not rounded, but that does not imply precision.

If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.

Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to their other advisors for expertise in these areas.

As Segal has no discretionary authority with respect to the management or assets of the System, it is not a fiduciary in its capacity as actuaries and consultants with respect to the System.

Section 1: Valuation Summary

Purpose and basis

This report has been prepared by Segal to present certain disclosure information required by Governmental Accounting Standards Board Statement No. 67 as of June 30, 2020. This report, based on unaudited financial information as of June 30, 2020, provided by the Office of the State Treasurer and the Vermont Municipal Employees' Retirement System Actuarial Report as of June 30, 2019, dated November 1, 2019, reflects:

- The benefit provisions of the Pension Plan, as administered by the Board; and
- The characteristics of covered active members, inactive members, and retired members and beneficiaries as of June 30, 2019, provided by the Office of the State Treasurer.

Except as noted below, the assumptions are the same as shown in the Vermont Municipal Employees' Retirement System Actuarial Valuation Report as of June 30, 2019. Total Pension Liability as of June 30, 2020, reflects changes to actuarial assumptions that were adopted as part of the September 2020 experience study review.

Highlights of the valuation

The following key findings were the result of this actuarial valuation:

- The Net Pension Liability (NPL) is equal to the difference between the Total Pension Liability (TPL) and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and, therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) on a market value basis. The NPL increased from \$173.5 million as of June 30, 2019, to \$253.0 million as of June 30, 2020, and the Plan's Fiduciary Net Position as a percent of the TPL decreased from 80.35% to 74.52%.
- The NPL, measured as of June 30, 2020, was determined based upon the results of the actuarial valuation as of June 30, 2019, adjusted forward using standard actuarial techniques, and updated to reflect changes in the following assumptions: investment return, inflation, cost-of-living adjustments, salary increases, mortality rates, retirement rates, and termination rates. The NPL, measured as of June 30, 2019, was determined based on the results of the actuarial valuation as of June 30, 2018, adjusted using standard actuarial techniques.
- The discount rates used to determine the TPL and NPL as of June 30, 2020, and June 30, 2019, were 7.00% and 7.50%, respectively.

Section 2: Accounting Information

Exhibit 1 – Net pension liability

The components of the net pension liability of the Vermont Municipal Employees' Retirement System are as follows:

	June 30, 2020	June 30, 2019
Total Pension Liability	\$993,026,959	\$882,957,638
Plan Fiduciary Net Position	740,052,895	709,465,831
System's Net Pension Liability	252,974,064	173,491,807
Plan Fiduciary Net Position as a percentage of the Total Pension Liability*	74.52%	80.35%

* These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

Actuarial assumptions. The total pension liability as of June 30, 2020, was determined by rolling forward the total pension liability as of June 30, 2019, to June 30, 2020, using the following actuarial assumptions:

Investment rate of return	7.00%, net of pension plan investment expenses, including inflation
Inflation	2.30%
Salary increases	Varying service-based rates from 0-10 years of service, then a single rate of 4.50% (includes assumed inflation rate of 2.30%) for all subsequent years.
Cost of Living Adjustment	1.10% for Group A members and 1.20% for Groups C, B and D members. The January 1, 2020 and January 1, 2021 COLAs are 0.80% and 0.40%, respectively, for all groups.
Mortality	<p><i>Pre-Retirement:</i></p> <ul style="list-style-type: none"> • Groups A/B/C – 40% PubG-2010 General Employee Amount-Weighted below-median and 60% of PubG-2010 General Employee Amount-Weighted, with generational projection using Scale MP-2019. • Group D – PubG-2010 General Employee Amount-Weighted above-median, with generational projection using scale MP-2019.

Section 2: Accounting Information

Mortality (continued)

Healthy Post-Retirement - Retirees:

- Groups A/B/C – 104% of 40% PubG-2010 General Healthy Retiree Amount-Weighted below-median and 60% of PubG-2010 General Employee Amount-Weighted, with generational projection using scale MP-2019.
- Group D – PubG-2010 General Healthy Retiree Amount-Weighted, with generational projection using scale MP-2019.

Healthy Post-Retirement - Beneficiaries:

- Groups A/B/C – 70% Pub-2010 Contingent Survivor Amount-Weighted below-median and 30% of Pub-2010 Contingent Survivor Amount-Weighted, with generational projection using scale MP-2019.
- Group D – Pub-2010 Contingent Survivor Amount-Weighted, with generational projection using scale MP-2019.

Disabled Post-Retirement:

- All Groups – PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using Scale MP-2019.

Section 2: Accounting Information

Determination of discount rate and investment rates of return

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of June 30, 2020, are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Global Equity	29.00%	7.07%
US Equity – Large Cap	4.00%	6.19%
US Equity – Small/Mid Cap	3.00%	6.93%
Non-US Equity – Large Cap	5.00%	7.01%
Non-US Equity – Small Cap	2.00%	7.66%
Emerging Markets Debt	4.00%	3.66%
Core Bond	20.00%	0.39%
Private & Alternate Credit	10.00%	6.03%
US TIPS	3.00%	-0.20%
Core Real Estate	5.00%	4.06%
Non-Core Real Estate	3.00%	6.43%
Private Equity	10.00%	11.27%
Infrastructure/Farmland	<u>2.00%</u>	5.44%
	100.00%	

* Calculated as the Nominal Rates of Return minus the Rate of Inflation, as provided by the Vermont State Treasurers' Office

Section 2: Accounting Information

Discount rate: The long-term expected rate of return on pension plan investments is 7.00%. The high quality tax-exempt general obligation municipal bond rate (20-Bond GO Index) as of the closest date prior to the valuation date of June 30, 2020, is 2.21%, as published by The Bond Buyer.

The discount rate used to measure the total pension liability was 7.00% as of June 30, 2020. The projection of cash flows used to determine the discount rate assumed plan member and employer contributions will be made at rates set by the Board (employers) and statute (members) with scheduled increases through July 1, 2021. Further, based upon Board resolution, projected contributions beginning July 1, 2022, and each subsequent July 1, through 2025 include additional total contribution increases of 0.50% per year. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the pension plans' fiduciary net position was projected to be available to make all projected future benefit payments of current plan members as of June 30, 2020. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Discount rate sensitivity

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability, calculated using the discount rate of 7.00%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate:

	1% Decrease (6.00%)	Current Discount (7.00%)	1% Increase (8.00%)
Net pension liability as of June 30, 2020	\$386,493,064	\$252,974,064	\$143,116,106

Section 2: Accounting Information

Exhibit 2 – Schedule of changes in Net Pension Liability – Last ten fiscal years

	Year End June 30,				
	2020	2019	2018	2017	2016
Total pension liability					
Service cost	\$34,726,405	\$30,744,435	\$28,434,045	\$27,245,986	\$25,264,340
Interest	67,360,649	61,617,803	56,503,328	54,779,918	49,744,271
Differences between expected and actual experience	8,291,943	17,467,646	14,172,418	-3,749,037	1,088,020
Changes of assumptions	38,774,448	0	0	14,481,136	12,203,982
Changes of benefit terms	0	0	193,575	0	0
Benefit payments, including refunds of employee contributions	<u>-39,084,124</u>	<u>-35,397,043</u>	<u>-31,444,463</u>	<u>-27,803,390</u>	<u>-25,588,884</u>
Net change in total pension liability	\$110,069,321	\$74,432,841	\$67,858,903	\$64,954,613	\$62,711,729
Total pension liability – beginning	<u>882,957,638</u>	<u>808,524,797</u>	<u>740,665,894</u>	<u>675,711,281</u>	<u>612,999,552</u>
Total pension liability – ending (a)	\$993,026,959	\$882,957,638	\$808,524,797	\$740,665,894	\$675,711,281
Plan fiduciary net position					
Contributions – employer	\$20,680,856	\$19,202,981	\$17,519,690	\$16,481,881	\$15,235,742
Contributions – employee	20,771,304	19,777,956	19,166,537	25,210,413	15,226,948
Net investment income	29,113,786	38,740,356	43,889,050	59,486,928	6,776,933
Benefit payments, including refunds of employee contributions	-39,084,124	-35,397,043	-31,444,463	-27,803,390	-25,588,884
Administrative expenses	-1,354,418	-1,158,070	-928,741	-874,707	-755,013
Other	<u>459,660</u>	<u>450,746</u>	<u>136,490</u>	<u>-5,897</u>	<u>215,646</u>
Net change in fiduciary net position	\$30,587,064	\$41,616,926	\$48,338,563	\$72,495,228	\$11,111,372
Plan fiduciary net position – beginning	<u>709,465,831</u>	<u>667,848,905</u>	<u>619,510,342</u>	<u>547,015,114</u>	<u>535,903,742</u>
Plan fiduciary net position – ending (b)	\$740,052,895	\$709,465,831	\$667,848,905	\$619,510,342	\$547,015,114
Net pension liability – ending: (a)-(b)	\$252,974,064	\$173,491,807	\$140,675,892	\$121,155,552	\$128,696,167
Plan's fiduciary net position as a percentage of the total pension liability	74.52%	80.35%	82.60%	83.64%	80.95%
Covered-employee payroll	\$306,103,224	\$289,838,838	\$274,813,707	\$256,730,055	\$249,810,907
Net pension liability as a percentage of covered-employee payroll	82.64%	59.86%	51.19%	47.19%	51.52%

Note: Covered-employee payroll reflects actual compensation amounts from the prior Plan year.

Section 2: Accounting Information

Exhibit 2 – Schedule of changes in Net Pension Liability – Last ten fiscal years *(continued)*

	Year End June 30,				
	2015	2014	2013*	2012*	2011*
Total pension liability					
Service cost	\$24,366,167	\$22,519,428			
Interest	46,058,159	42,139,031			
Differences between expected and actual experience	3,046,272	0			
Changes of assumptions	19,192,039	0			
Changes of benefit terms	0	0			
Benefit payments, including refunds of employee contributions	<u>-23,315,175</u>	<u>-20,601,380</u>			
Net change in total pension liability	\$69,347,462	\$44,057,079			
Total pension liability – beginning	<u>543,652,090</u>	<u>499,595,011</u>			
Total pension liability – ending (a)	\$612,999,552	\$543,652,090			
Plan fiduciary net position					
Contributions – employer	\$14,136,067	\$12,805,737			
Contributions – employee	13,587,975	13,233,728			
Net investment income	-2,358,518	64,346,116			
Benefit payments, including refunds of employee contributions	-23,315,175	-20,601,380			
Administrative expenses	-950,625	-588,022			
Other	<u>278,541</u>	<u>2,142,868</u>			
Net change in fiduciary net position	\$1,378,265	\$71,339,047			
Plan fiduciary net position – beginning	<u>534,525,477</u>	<u>463,186,430</u>			
Plan fiduciary net position – ending (b)	\$535,903,742	\$534,525,477			
Net pension liability – ending: (a)-(b)	\$77,095,810	\$9,126,613			
Plan's fiduciary net position as a percentage of the total pension liability	87.42%	98.32%			
Covered-employee payroll	\$230,969,202	\$220,371,643			
Net pension liability as a percentage of covered-employee payroll	33.38%	4.14%			

* Historical information prior to implementation of GASB 67/68 is not required.

Note: Covered-employee payroll reflects actual compensation amounts from the prior Plan year.

Section 2: Accounting Information

Notes to Exhibit 2:

Changes in Assumptions:

The following changes were effective June 30, 2020:

- The investment return assumption was lowered from 7.50% to 7.00%.
- The inflation assumption was lowered from 2.50% to 2.30%.
- The COLA assumption was lowered from 1.15% to 1.10% for Group A members and from 1.30% to 1.20% for Groups B, C, and D members.
- The mortality assumptions were updated as follows:
 - Pre-Retirement:
 - Groups A/B/C – 40% PubG-2010 General Employee Amount-Weighted below-median and 60% of PubG-2010 General Employee Amount-Weighted, with generational projection using Scale MP-2019
 - Group D – PubG-2010 General Employee Amount-Weighted above-median, with generational projection using scale MP-2019
 - Healthy Post-Retirement - Retirees:
 - Groups A/B/C – 104% of 40% PubG-2010 General Healthy Retiree Amount-Weighted below-median and 60% of PubG-2010 General Employee Amount-Weighted, with generational projection using scale MP-2019
 - Group D – PubG-2010 General Healthy Retiree Amount-Weighted, with generational projection using scale MP-2019
 - Healthy Post-Retirement - Beneficiaries:
 - Groups A/B/C – 70% Pub-2010 Contingent Survivor Amount-Weighted below-median and 30% of Pub-2010 Contingent Survivor Amount-Weighted, with generational projection using scale MP-2019
 - Group D – Pub-2010 Contingent Survivor Amount-Weighted, with generational projection using scale MP-2019
 - Disabled Retirees:
 - All Groups – PubNS-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table with generational projection using scale MP-2019
- The salary scale assumption was revised for varying service based rates from 0-10 years of service, then a single rate of 2.20% for all subsequent years, plus revised inflation of 2.30%.

Section 2: Accounting Information

- The active retirement rates were updated as follows:
 - Group A: Decreased the rates throughout all ages.
 - Group B: For females, slightly decreased the rates at younger ages and then increased the rates at later ages. For males, slightly decreased the rates at most ages.
 - Group C: Simplified the assumption to a unisex table that more accurately aligns with the actual experience for both males and females.
 - Group D: For members with less than 20 years of service, increased the rates for ages 55-59.
- The inactive retirement assumption was updated to add a rate of 10% from early retirement age for each year until normal retirement age, then 100% at normal retirement age.
- The liability load of accumulated contributions for Inactive Members was removed. Liabilities for Inactive Members are now based on 100% of the accumulated contributions. Inactive Members who are vested immediately become Deferred, and the liabilities for all Deferred Members are based on the accrued benefit.
- The termination rates were updated as follows:
 - Simplified female rates to one set of slightly reduced rates for all females.
- These changes increased the total pension liability as of June 30, 2020 by \$22.6 million and increased the service cost as of June 30, 2020 by \$2.0 million.

Changes in Plan Provisions: There have been no changes in plan provisions since the last measurement date.

Section 2: Accounting Information

Exhibit 3 – Schedule of contributions – Last ten fiscal years

	Year End June 30				
	2020	2019	2018	2017	2016
Actuarially determined contribution	\$22,618,468	\$17,263,214	\$15,066,601	\$12,895,672	\$15,235,742
Contributions in relation to the actuarially determined contribution*	<u>20,680,856</u>	<u>19,202,981</u>	<u>17,519,690</u>	<u>16,481,881</u>	<u>15,235,742</u>
Contribution deficiency (excess)	\$1,937,612	-\$1,939,767	-\$2,453,089	-\$3,586,209	\$0
Covered-employee payroll	\$306,103,224	\$289,838,838	\$274,813,707	\$256,730,055	\$249,810,907
Contributions as a percentage of covered-employee payroll	6.76%	6.63%	6.38%	6.42%	6.10%

	2015	2014	2013	2012	2011
Actuarially determined contribution	\$11,956,121	\$11,638,928			
Contributions in relation to the actuarially determined contribution*	<u>14,136,067</u>	<u>12,805,737</u>	(Historical information prior to implementation of GASB 67/68 is not required)		
Contribution deficiency (excess)	-\$2,179,946	-\$1,166,809			
Covered-employee payroll	\$230,969,202	\$220,371,643			
Contributions as a percentage of covered-employee payroll	6.12%	5.81%			

Note: Actuarially determined contributions for a given fiscal year are based on results from the June 30 actuarial valuation two years prior.

Section 2: Accounting Information

Notes to Exhibit 3:

Valuation date	Actuarially determined contribution for the year ending June 30, 2020 is based on results from the June 30, 2019, actuarial valuation, and was calculated as of June 30, with appropriate interest to the middle of the fiscal year.
Actuarial cost method	Projected benefit cost method. Normal contribution rates for each Group are equal to rates from the prior year, adjusted for increases or decreases in rates due to assumption changes or plan provision changes.
Amortization method	An actuarial shortfall is determined as the present value of the future employer contributions (equal to PVB, minus AVA, minus present value of future member contributions) minus the present value of future employer normal contributions. Amortization payments calculated to fully fund unfunded actuarial accrued liability with annual increases of 3% over a closed period.
Remaining amortization period	19 years as of July 1, 2019 The amortization of unfunded actuarial accrued liability (UAAL) within the actuarially determined contribution rate calculation is based on the level percentage of pay required to amortize the UAAL over the 30-year closed period that began July 1, 2008.
Asset valuation method	A smoothing method is used, under which the value of assets for actuarial purposes equals market value less a five-year phase-in of the differences between actual and assumed investment return. The value of assets for actuarial purposes may not differ from market value of assets by more than 20%.
Actuarial assumptions:	
Investment rate of return	7.50%, net of pension plan investment expenses, including inflation
Inflation rate	2.50% per year
Projected salary increases	5.00% per year

Section 2: Accounting Information

Mortality

Pre-Retirement:

Groups A/B/C – 98% of RP-2006 tables, blended 60% Blue Collar Employee, 40% Healthy Employee with generational projection using Scale SSA-2017
Group D – 100% of RP-2006 Blue Collar Employee with generational projection using Scale SSA-2017

Healthy Post-Retirement:

Groups A/B/C – 98% of RP-2006 tables, blended 60% Blue Collar Annuitant, 40% Healthy Annuitant with generational projection using Scale SSA-2017
Group D – 100% of RP-2006 Healthy Annuitant with generational projection using Scale SSA-2017

Disabled Post-retirement:

All Groups – RP-2006 Disabled Mortality Table with generational projection using Scale SSA-2017

Other assumptions

Same as those used in the June 30, 2019 funding actuarial valuation.

Section 2: Accounting Information

Exhibit 4 – Development of Blended Discount Rate

Fiscal Year Beginning	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expense	Projected Investment Earnings	Projected Ending Fiduciary Net Position
2019*	\$709,465,831	\$41,452,160	\$39,084,124	\$1,354,418	\$29,573,446	\$740,052,895
2020	740,052,895	37,468,539	44,614,166	1,275,375	51,508,968	783,140,861
2021	783,140,861	37,147,916	48,472,812	1,230,875	54,380,408	824,965,498
2022	824,965,498	37,122,873	52,469,053	1,201,664	57,168,410	865,586,064
2023	865,586,064	37,432,945	56,522,150	1,184,823	59,881,434	905,193,470
2024	905,193,470	37,938,246	60,990,405	1,175,647	62,515,570	943,481,234
2025	943,481,234	38,634,580	65,727,735	1,171,836	65,054,412	980,270,655
2026	980,270,655	37,538,520	70,391,072	1,173,713	67,428,027	1,013,672,417
2027	1,013,672,417	36,582,915	74,898,850	1,179,253	69,574,738	1,043,751,967
2028	1,043,751,967	35,766,342	79,292,461	1,188,060	71,497,641	1,070,535,429
2029	1,070,535,429	35,008,415	83,843,869	1,199,312	73,186,263	1,093,686,926
2030	1,093,686,926	34,262,744	88,274,432	1,211,261	74,625,282	1,113,089,259
2031	1,113,089,259	33,612,183	92,275,344	1,224,566	75,820,178	1,129,021,710
2032	1,129,021,710	33,036,180	96,288,951	1,239,847	76,774,278	1,141,303,370
2033	1,141,303,370	32,485,284	100,000,256	1,255,521	77,484,269	1,150,017,146
2034	1,150,017,146	32,005,287	103,353,026	1,271,403	77,959,530	1,155,357,534
2035	1,155,357,534	31,603,177	106,523,827	1,288,221	78,207,717	1,157,356,380
2036	1,157,356,380	31,276,677	109,335,228	1,305,576	78,237,202	1,156,229,455
2037	1,156,229,455	31,024,231	111,860,633	1,323,035	78,060,482	1,152,130,500
2038	1,152,130,500	30,835,321	114,144,400	1,340,754	77,686,391	1,145,167,058
2039	1,145,167,058	30,690,784	116,410,828	1,358,991	77,113,928	1,135,201,951
2040	1,135,201,951	30,609,818	118,280,092	1,377,044	76,347,480	1,122,502,113
2041	1,122,502,113	30,580,472	119,854,544	1,394,405	75,401,751	1,107,235,387
2042	1,107,235,387	30,608,445	121,166,100	1,410,850	74,287,579	1,089,554,461
2043	1,089,554,461	30,676,319	122,180,508	1,426,651	73,016,233	1,069,639,854
2044	1,069,639,854	30,803,552	122,935,460	1,441,851	71,599,708	1,047,665,803
2045	1,047,665,803	30,956,628	123,441,048	1,455,391	70,048,713	1,023,774,705
2046	1,023,774,705	31,157,857	123,514,239	1,467,037	68,380,410	998,331,696
2047	998,331,696	31,402,940	123,443,552	1,477,618	66,610,081	971,423,547
2048	971,423,547	31,691,589	123,045,876	1,485,903	64,750,242	943,333,599
2049	943,333,599	32,033,640	122,485,239	1,492,472	62,815,309	914,204,837
2050	914,204,837	32,413,198	121,632,302	1,497,154	60,819,270	884,307,849
2051	884,307,849	32,849,838	120,447,944	1,499,509	58,783,133	853,993,367
2052	853,993,367	33,341,340	119,019,933	1,499,398	56,728,306	823,543,682
2053	823,543,682	33,881,773	117,206,781	1,496,174	54,679,316	793,401,816
2054	793,401,816	34,498,620	115,181,855	1,490,943	52,662,031	763,889,669
2055	763,889,669	35,161,720	112,929,631	1,483,100	50,698,491	735,337,149
2056	735,337,149	35,882,810	110,359,860	1,472,124	48,815,379	708,203,354
2057	708,203,354	36,669,922	107,627,158	1,458,634	47,039,679	682,827,163

* First year values in this projection reflect actual experience; first year investment earnings include "other" income.

Section 2: Accounting Information

Exhibit 4 – Development of Blended Discount Rate *continued*

Fiscal Year Beginning	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expense	Projected Investment Earnings	Projected Ending Fiduciary Net Position
2058	\$682,827,163	\$37,522,472	\$104,693,524	\$1,442,287	\$45,396,435	\$659,610,259
2059	659,610,259	38,443,847	101,543,421	1,423,032	43,914,427	639,002,080
2060	639,002,080	39,420,225	98,281,033	1,400,973	42,620,983	621,361,282
2061	621,361,282	40,460,313	94,725,192	1,376,015	41,547,858	607,268,246
2062	607,268,246	41,570,982	91,134,971	1,348,438	40,726,842	597,082,661
2063	597,082,661	42,737,116	87,429,991	1,318,399	40,185,392	591,256,779
2064	591,256,779	43,962,502	83,768,445	1,285,969	39,949,758	590,114,625
2065	590,114,625	45,237,341	80,016,000	1,251,059	40,046,984	594,131,891
2066	594,131,891	46,565,355	76,187,004	1,213,991	40,509,985	603,806,236
2067	603,806,236	47,945,392	72,430,628	1,174,826	41,368,334	619,514,508
2068	619,514,508	49,373,756	68,650,339	1,133,803	42,651,652	641,755,774
2069	641,755,774	50,849,853	64,934,983	1,090,986	44,391,740	670,971,398
2070	670,971,398	52,372,332	61,251,535	1,046,453	46,620,600	707,666,342
2071	707,666,342	53,943,095	57,636,917	1,000,477	49,372,343	752,344,386
2072	752,344,386	55,561,387	54,085,773	955,221	52,682,321	805,547,100
2073	805,547,100	57,228,229	50,601,924	910,827	56,588,339	867,850,917
2074	867,850,917	58,945,075	47,189,451	867,423	61,130,651	939,869,769
2075	939,869,769	60,713,428	43,855,414	825,123	66,352,035	1,022,254,695
2076	1,022,254,695	62,534,831	40,600,770	784,019	72,298,080	1,115,702,817
2077	1,115,702,817	64,410,876	37,434,416	744,188	79,017,327	1,220,952,416
2078	1,220,952,416	66,343,202	34,366,282	705,689	86,561,162	1,338,784,809
2079	1,338,784,809	68,333,498	31,404,978	668,567	94,984,035	1,470,028,797
2080	1,470,028,797	70,383,502	28,557,879	632,853	104,343,763	1,615,565,330
2081	1,615,565,330	72,495,007	25,836,090	598,565	114,701,685	1,776,327,367
2082	1,776,327,367	74,669,858	23,242,410	565,709	126,123,077	1,953,312,183
2083	1,953,312,183	76,909,954	20,790,810	534,282	138,677,323	2,147,574,368
2084	2,147,574,368	79,217,253	18,484,701	504,271	152,438,196	2,360,240,845
2085	2,360,240,845	81,593,770	16,336,305	475,657	167,484,222	2,592,506,875
2086	2,592,506,875	84,041,583	14,340,294	448,414	183,899,332	2,845,659,082
2087	2,845,659,082	86,562,831	12,511,657	422,511	201,773,139	3,121,060,884
2088	3,121,060,884	89,159,715	10,832,728	397,911	221,201,780	3,420,191,740
2089	3,420,191,740	91,834,507	9,326,206	374,575	242,288,102	3,744,613,568
2090	3,744,613,568	94,589,542	7,973,231	352,461	265,142,185	4,096,019,603
2091	4,096,019,603	97,427,229	6,771,890	331,526	289,882,706	4,476,226,122
2092	4,476,226,122	100,350,046	5,712,091	311,724	316,637,247	4,887,189,600
2093	4,887,189,600	103,360,547	4,797,215	293,008	345,542,733	5,331,002,657
2094	5,331,002,657	106,461,363	4,011,691	275,334	376,746,288	5,809,923,283
2095	5,809,923,283	109,655,204	3,338,785	258,653	410,406,652	6,326,387,701
2096	6,326,387,701	112,944,861	2,780,282	242,921	446,694,397	6,883,003,756

Section 2: Accounting Information

Exhibit 4 – Development of Blended Discount Rate *continued*

Fiscal Year Beginning	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expense	Projected Investment Earnings	Projected Ending Fiduciary Net Position
2097	\$6,883,003,756	\$116,333,206	\$2,314,760	\$228,093	\$485,792,925	\$7,482,587,034
2098	7,482,587,034	119,823,202	1,935,804	214,122	527,899,657	8,128,159,967
2099	8,128,159,967	123,417,899	1,635,314	200,968	573,226,554	8,822,968,138
2100	8,822,968,138	127,120,435	1,406,971	188,587	622,001,140	9,570,494,155
2101	9,570,494,155	130,934,048	1,226,868	176,939	674,468,149	10,374,492,545
2102	10,374,492,545	134,862,070	1,082,797	165,984	730,890,943	11,238,996,777
2103	11,238,996,777	138,907,932	959,944	155,686	791,552,505	12,168,341,584
2104	12,168,341,584	143,075,169	881,681	146,007	856,755,573	13,167,144,638
2105	13,167,144,638	147,367,425	798,726	136,914	926,825,237	14,240,401,660
2106	14,240,401,660	151,788,448	732,825	128,373	1,002,110,570	15,393,439,480
2107	15,393,439,480	156,342,101	680,854	120,353	1,082,984,695	16,631,965,069
2108	16,631,965,069	161,032,364	623,156	112,823	1,169,847,928	17,962,109,382
2109	17,962,109,382	165,863,335	571,044	105,755	1,263,129,186	19,390,425,104
2110	19,390,425,104	170,839,235	509,310	99,122	1,363,287,835	20,923,943,742
2111	20,923,943,742	175,964,412	458,077	92,899	1,470,815,532	22,570,172,710
2112	22,570,172,710	181,243,344	392,810	87,061	1,586,238,811	24,337,174,994
2113	24,337,174,994	186,680,645	332,930	81,584	1,710,121,564	26,233,562,689
2114	26,233,562,689	192,281,064	249,728	76,448	1,843,067,809	28,268,585,386
2115	28,268,585,386	198,049,496	162,690	71,632	1,985,724,508	30,452,125,068
2116	30,452,125,068	203,990,981	85,864	67,116	2,138,783,085	32,794,746,154
2117	32,794,746,154	210,110,710	45,814	62,882	2,302,982,301	35,307,730,469
2118	35,307,730,469	216,414,032	23,443	58,913	2,479,112,741	38,003,174,886
2119	38,003,174,886	222,906,452	3,171	55,192	2,668,021,925	40,894,044,900
2120	40,894,044,900	229,593,646	124	51,705	2,870,617,107	43,994,203,824
2121	43,994,203,824	236,481,455	86	48,437	3,087,869,420	47,318,506,176
2122	47,318,506,176	243,575,899	58	45,374	3,320,818,999	50,882,855,642
2123	50,882,855,642	250,883,176	38	42,503	3,570,579,317	54,704,275,594
2124	54,704,275,594	258,409,671	24	39,813	3,838,342,236	58,800,987,664
2125	58,800,987,664	266,161,961	14	37,293	4,125,383,499	63,192,495,817
2126	63,192,495,817	274,146,821	8	34,932	4,433,068,623	67,899,676,321
2127	67,899,676,321	282,371,225	5	32,719	4,762,859,190	72,944,874,012
2128	72,944,874,012	290,842,362	3	30,646	5,116,319,591	78,352,005,316
2129	78,352,005,316	299,567,632	1	28,704	5,495,124,235	84,146,668,478
2130	84,146,668,478	308,554,661	1	26,885	5,901,065,266	90,356,261,519
2131	90,356,261,519	317,811,302	0	0	6,336,061,702	97,010,134,523

Section 2: Accounting Information

Exhibit 4 – Development of Blended Discount Rate *continued*

Fiscal Year Beginning	Projected Beginning Fiduciary Net Position	Projected Benefit Payments	“Funded” Portion of Benefit	“Unfunded” Portion of Benefit	Present Value of “Funded” Benefit Payments at 7.00%	Present Value of “Unfunded” Benefit Payments at 2.21%*	Present Value of Benefit Payments at 7.00%
2019	\$709,465,831	\$39,084,124	\$39,084,124	\$0	\$37,784,049	\$0	\$37,784,049
2020	740,052,895	44,614,166	44,614,166	0	40,308,544	0	40,308,544
2021	783,140,861	48,472,812	48,472,812	0	40,929,720	0	40,929,720
2022	824,965,498	52,469,053	52,469,053	0	41,405,688	0	41,405,688
2023	865,586,064	56,522,150	56,522,150	0	41,686,139	0	41,686,139
2024	905,193,470	60,990,405	60,990,405	0	42,038,842	0	42,038,842
2025	943,481,234	65,727,735	65,727,735	0	42,340,318	0	42,340,318
2026	980,270,655	70,391,072	70,391,072	0	42,377,882	0	42,377,882
2027	1,013,672,417	74,898,850	74,898,850	0	42,141,796	0	42,141,796
2028	1,043,751,967	79,292,461	79,292,461	0	41,695,195	0	41,695,195
2029	1,070,535,429	83,843,869	83,843,869	0	41,204,215	0	41,204,215
2030	1,093,686,926	88,274,432	88,274,432	0	40,543,523	0	40,543,523
2031	1,113,089,259	92,275,344	92,275,344	0	39,608,505	0	39,608,505
2032	1,129,021,710	96,288,951	96,288,951	0	38,627,398	0	38,627,398
2033	1,141,303,370	100,000,256	100,000,256	0	37,491,804	0	37,491,804
2034	1,150,017,146	103,353,026	103,353,026	0	36,213,845	0	36,213,845
2035	1,155,357,534	106,523,827	106,523,827	0	34,883,048	0	34,883,048
2036	1,157,356,380	109,335,228	109,335,228	0	33,461,392	0	33,461,392
2037	1,156,229,455	111,860,633	111,860,633	0	31,994,652	0	31,994,652
2038	1,152,130,500	114,144,400	114,144,400	0	30,512,019	0	30,512,019
2039	1,145,167,058	116,410,828	116,410,828	0	29,082,112	0	29,082,112
2040	1,135,201,951	118,280,092	118,280,092	0	27,615,978	0	27,615,978
2041	1,122,502,113	119,854,544	119,854,544	0	26,152,879	0	26,152,879
2042	1,107,235,387	121,166,100	121,166,100	0	24,709,409	0	24,709,409
2043	1,089,554,461	122,180,508	122,180,508	0	23,286,240	0	23,286,240
2044	1,069,639,854	122,935,460	122,935,460	0	21,897,314	0	21,897,314
2045	1,047,665,803	123,441,048	123,441,048	0	20,548,943	0	20,548,943
2046	1,023,774,705	123,514,239	123,514,239	0	19,216,007	0	19,216,007
2047	998,331,696	123,443,552	123,443,552	0	17,948,607	0	17,948,607
2048	971,423,547	123,045,876	123,045,876	0	16,720,360	0	16,720,360
2049	943,333,599	122,485,239	122,485,239	0	15,555,305	0	15,555,305
2050	914,204,837	121,632,302	121,632,302	0	14,436,434	0	14,436,434
2051	884,307,849	120,447,944	120,447,944	0	13,360,620	0	13,360,620
2052	853,993,367	119,019,933	119,019,933	0	12,338,522	0	12,338,522
2053	823,543,682	117,206,781	117,206,781	0	11,355,661	0	11,355,661
2054	793,401,816	115,181,855	115,181,855	0	10,429,415	0	10,429,415
2055	763,889,669	112,929,631	112,929,631	0	9,556,526	0	9,556,526
2056	735,337,149	110,359,860	110,359,860	0	8,728,095	0	8,728,095
2057	708,203,354	107,627,158	107,627,158	0	7,955,114	0	7,955,114

* Bond Buyer's 20-Bond GO index

Section 2: Accounting Information

Exhibit 4 – Development of Blended Discount Rate *continued*

Fiscal Year Beginning	Projected Beginning Fiduciary Net Position	Projected Benefit Payments	“Funded” Portion of Benefit	“Unfunded” Portion of Benefit	Present Value of “Funded” Benefit Payments at 7.00%	Present Value of “Unfunded” Benefit Payments at 2.21%*	Present Value of Benefit Payments at 7.00%
2058	\$682,827,163	\$104,693,524	\$104,693,524	\$0	\$7,232,036	\$0	\$7,232,036
2059	659,610,259	101,543,421	101,543,421	0	6,555,545	0	6,555,545
2060	639,002,080	98,281,033	98,281,033	0	5,929,839	0	5,929,840
2061	621,361,282	94,725,192	94,725,192	0	5,341,398	0	5,341,398
2062	607,268,246	91,134,971	91,134,971	0	4,802,758	0	4,802,758
2063	597,082,661	87,429,991	87,429,991	0	4,306,082	0	4,306,082
2064	591,256,779	83,768,445	83,768,445	0	3,855,836	0	3,855,836
2065	590,114,625	80,016,000	80,016,000	0	3,442,161	0	3,442,161
2066	594,131,891	76,187,004	76,187,004	0	3,063,031	0	3,063,031
2067	603,806,236	72,430,628	72,430,628	0	2,721,504	0	2,721,504
2068	619,514,508	68,650,339	68,650,339	0	2,410,714	0	2,410,714
2069	641,755,774	64,934,983	64,934,983	0	2,131,071	0	2,131,071
2070	670,971,398	61,251,535	61,251,535	0	1,878,678	0	1,878,678
2071	707,666,342	57,636,917	57,636,917	0	1,652,161	0	1,652,161
2072	752,344,386	54,085,773	54,085,773	0	1,448,942	0	1,448,942
2073	805,547,100	50,601,924	50,601,924	0	1,266,926	0	1,266,926
2074	867,850,917	47,189,451	47,189,451	0	1,104,194	0	1,104,194
2075	939,869,769	43,855,414	43,855,414	0	959,047	0	959,047
2076	1,022,254,695	40,600,770	40,600,770	0	829,788	0	829,788
2077	1,115,702,817	37,434,416	37,434,416	0	715,023	0	715,023
2078	1,220,952,416	34,366,282	34,366,282	0	613,476	0	613,476
2079	1,338,784,809	31,404,978	31,404,978	0	523,938	0	523,938
2080	1,470,028,797	28,557,879	28,557,879	0	445,270	0	445,270
2081	1,615,565,330	25,836,090	25,836,090	0	376,479	0	376,479
2082	1,776,327,367	23,242,410	23,242,410	0	316,527	0	316,527
2083	1,953,312,183	20,790,810	20,790,810	0	264,617	0	264,617
2084	2,147,574,368	18,484,701	18,484,701	0	219,875	0	219,875
2085	2,360,240,845	16,336,305	16,336,305	0	181,607	0	181,607
2086	2,592,506,875	14,340,294	14,340,294	0	148,989	0	148,989
2087	2,845,659,082	12,511,657	12,511,657	0	121,486	0	121,486
2088	3,121,060,884	10,832,728	10,832,728	0	98,303	0	98,303
2089	3,420,191,740	9,326,206	9,326,206	0	79,095	0	79,095
2090	3,744,613,568	7,973,231	7,973,231	0	63,197	0	63,197
2091	4,096,019,603	6,771,890	6,771,890	0	50,163	0	50,163
2092	4,476,226,122	5,712,091	5,712,091	0	39,545	0	39,545
2093	4,887,189,600	4,797,215	4,797,215	0	31,038	0	31,038
2094	5,331,002,657	4,011,691	4,011,691	0	24,258	0	24,258
2095	5,809,923,283	3,338,785	3,338,785	0	18,868	0	18,868
2096	6,326,387,701	2,780,282	2,780,282	0	14,684	0	14,684

* Bond Buyer's 20-Bond GO index

Section 2: Accounting Information

Exhibit 4 – Development of Blended Discount Rate *continued*

Fiscal Year Beginning	Projected Beginning Fiduciary Net Position	Projected Benefit Payments	“Funded” Portion of Benefit	“Unfunded” Portion of Benefit	Present Value of “Funded” Benefit Payments at 7.00%	Present Value of “Unfunded” Benefit Payments at 2.21%*	Present Value of Benefit Payments at 7.00%
2097	\$6,883,003,756	\$2,314,760	\$2,314,760	\$0	\$11,426	\$0	\$11,426
2098	7,482,587,034	1,935,804	1,935,804	0	8,930	0	8,930
2099	8,128,159,967	1,635,314	1,635,314	0	7,050	0	7,050
2100	8,822,968,138	1,406,971	1,406,971	0	5,669	0	5,669
2101	9,570,494,155	1,226,868	1,226,868	0	4,620	0	4,620
2102	10,374,492,545	1,082,797	1,082,797	0	3,811	0	3,811
2103	11,238,996,777	959,944	959,944	0	3,157	0	3,157
2104	12,168,341,584	881,681	881,681	0	2,710	0	2,710
2105	13,167,144,638	798,726	798,726	0	2,295	0	2,295
2106	14,240,401,660	732,825	732,825	0	1,968	0	1,968
2107	15,393,439,480	680,854	680,854	0	1,708	0	1,708
2108	16,631,965,069	623,156	623,156	0	1,461	0	1,461
2109	17,962,109,382	571,044	571,044	0	1,252	0	1,252
2110	19,390,425,104	509,310	509,310	0	1,043	0	1,043
2111	20,923,943,742	458,077	458,077	0	877	0	877
2112	22,570,172,710	392,810	392,810	0	703	0	703
2113	24,337,174,994	332,930	332,930	0	557	0	557
2114	26,233,562,689	249,728	249,728	0	390	0	390
2115	28,268,585,386	162,690	162,690	0	238	0	238
2116	30,452,125,068	85,864	85,864	0	117	0	117
2117	32,794,746,154	45,814	45,814	0	58	0	58
2118	35,307,730,469	23,443	23,443	0	28	0	28
2119	38,003,174,886	3,171	3,171	0	4	0	4
2120	40,894,044,900	124	124	0	0	0	0
2121	43,994,203,824	86	86	0	0	0	0
2122	47,318,506,176	58	58	0	0	0	0
2123	50,882,855,642	38	38	0	0	0	0
2124	54,704,275,594	24	24	0	0	0	0
2125	58,800,987,664	14	14	0	0	0	0
2126	63,192,495,817	8	8	0	0	0	0
2127	67,899,676,321	5	5	0	0	0	0
2128	72,944,874,012	3	3	0	0	0	0
2129	78,352,005,316	1	1	0	0	0	0
2130	84,146,668,478	1	1	0	0	0	0
2131	90,356,261,519	0	0	0	0	0	0
Total					\$1,173,480,336	\$0	\$1,173,480,336

* Bond Buyer's 20-Bond GO index

Section 3: Supplemental Information

Exhibit I: Actuarial Assumptions* and Actuarial Cost Method

Rationale for Assumptions:	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Study dated September 24, 2020 (as prepared by Segal).																								
Roll-forward Techniques:	The results as of June 30, 2020, are based on the results of the Vermont Municipal Employees' Retirement System Actuarial Valuation Report as of June 30, 2019, adjusted forward, using standard actuarial techniques.																								
Inflation:	2.30%.																								
Investment Return:	7.00%. The investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation.																								
Salary Increases:	Varying service based rates from 0-10 years of service, then a single rate of 4.50% for all subsequent years.																								
	<table border="1"> <thead> <tr> <th>Service</th> <th>Annual Rate of Salary Increase** (%)</th> </tr> </thead> <tbody> <tr><td>0</td><td>7.00%</td></tr> <tr><td>1</td><td>6.50%</td></tr> <tr><td>2</td><td>5.75%</td></tr> <tr><td>3</td><td>5.25%</td></tr> <tr><td>4</td><td>5.00%</td></tr> <tr><td>5</td><td>4.75%</td></tr> <tr><td>6</td><td>4.75%</td></tr> <tr><td>7</td><td>4.75%</td></tr> <tr><td>8</td><td>4.75%</td></tr> <tr><td>9</td><td>4.75%</td></tr> <tr><td>10+</td><td>4.50%</td></tr> </tbody> </table>	Service	Annual Rate of Salary Increase** (%)	0	7.00%	1	6.50%	2	5.75%	3	5.25%	4	5.00%	5	4.75%	6	4.75%	7	4.75%	8	4.75%	9	4.75%	10+	4.50%
Service	Annual Rate of Salary Increase** (%)																								
0	7.00%																								
1	6.50%																								
2	5.75%																								
3	5.25%																								
4	5.00%																								
5	4.75%																								
6	4.75%																								
7	4.75%																								
8	4.75%																								
9	4.75%																								
10+	4.50%																								

* Same assumptions used in the June 30, 2020, Actuarial Valuation and Review.

** Includes assumed inflation rate of 2.30%.

Section 3: Supplemental Information

Cost-of-Living Adjustments:

Assumed to occur on January 1 following one year of retirement at the rate of 1.10% per annum for Group A members and 1.20% per annum for Groups B, C and D members (beginning at Normal Retirement eligibility age for members who elect reduced early retirement, at age 62 for members of Groups A, B, and D who receive a disability retirement benefit, and at age 55 for members of Group C who receive a disability retirement benefit). The January 1, 2020 and January 1, 2021 COLAs are 0.80% and 0.40%, respectively, for all groups.

Mortality Rates:

Pre-Retirement:

- Groups A/B/C 40% PubG-2010 General Employee amount-weighted below-median and 60% of PubG-2010 General Employee amount-weighted, with generational projection using Scale MP-2019.
- Group D PubG-2010 General Employee amount-weighted above-median, with generational projection using scale MP-2019.

Healthy Post-retirement - Retirees:

- Groups A/B/C 104% of 40% PubG-2010 General Healthy Retiree amount-weighted below-median and 60% of PubG-2010 General Employee amount-weighted, with generational projection using scale MP-2019.
- Group D PubG-2010 General Healthy Retiree amount-weighted, with generational projection using scale MP-2019.

Healthy Post-retirement - Beneficiaries:

- Groups A/B/C 70% Pub-2010 Contingent Survivor amount-weighted below-median and 30% of Pub-2010 Contingent Survivor amount-weighted, with generational projection using scale MP-2019.
- Group D Pub-2010 Contingent Survivor amount-weighted, with generational projection using scale MP-2019.

Disabled Post-retirement:

- All Groups PubNS-2010 Non-Safety Disabled Retiree amount-weighted with generational projection using Scale MP-2019.

The tables with the generational projection to the ages of members as of the measurement date reasonably reflect the mortality experience of the System as of the measurement date.

The mortality rates were based on historical and current demographic data, adjusted to reflect health characteristics of the underlying groups and estimated future experience and professional judgment. The mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Section 3: Supplemental Information

Withdrawal from Service before Retirement

Assumed annual rates of withdrawal are as follows:

Service	Rate (%)	
	Male	Female
0	22.50	25.00
1	16.20	22.00
2	13.50	17.50
3	12.15	15.50
4	10.80	12.00
5	9.00	11.00
6	8.10	10.50
7	7.20	10.00
8	7.20	7.50
9	6.30	7.00
10	3.60	6.00

Section 3: Supplemental Information

Disability Incidence:

Representative values of the assumed annual rates of disability incidence are as follows:

Service	Rate (%) ¹	
	Male	Female
25	0.0100%	0.0050%
30	0.0130	0.0065
35	0.0170	0.0085
40	0.0300	0.0150
45	0.0500	0.0250
50	0.0900	0.0450
55	0.1800	0.0900
60	0.3150	0.1575
65	0.3150	0.1575

¹ Disability rates stop after age 55 with 5 or more years of service for Group B, C and D members and after age 55 with 35 or more years of service for Group A members.

Section 3: Supplemental Information

Retirement Rates:

Retirement Group A

Age	Male	Female	Age	Male	Female
55	3.00%	4.00%	63	15.00%	15.00%
56	6.00	6.00	64	15.00	20.00
57	4.00	6.00	65	45.00	20.00
58	4.00	4.00	66	15.00	20.00
59	5.75	7.50	67	15.00	20.00
60	7.50	4.00	68	15.00	25.00
61	10.00	7.50	69	15.00	25.00
62	22.50	7.50	70	100.00	100.00

Retirement Group B

Age	Male	Female	Age	Male	Female
55	4.00%	4.00%	63	20.00%	12.50%
56	4.00	4.00	64	20.00	17.50
57	4.00	4.00	65	40.00	27.50
58	4.00	5.00	66	35.00	22.50
59	4.00	5.00	67	30.00	17.50
60	4.00	5.00	68	30.00	17.50
61	14.00	12.50	69	30.00	17.50
62	28.00	17.50	70	100.00	100.00

Section 3: Supplemental Information

Retirement Rates: (continued)

Retirement Group C			
Age	Unisex	Age	Unisex
55	20.00%	63	10.00%
56	10.00	64	22.50
57	10.00	65	35.00
58	15.00	66	35.00
59	17.50	67	35.00
60	15.00	68	35.00
61	10.00	69	35.00
62	20.00	70	100.00

Retirement Group D					
Age	<20 Years of Service	20+ Years of Service	Age	<20 Years of Service	20+ Years of Service
50	20.00%	40.0%	63	25.00%	10.0%
51	20.00	35.0	64	25.00	10.0
52	20.00	30.0	65	100.00	15.0
53	15.00	25.0	66	100.00	10.0
54	15.00	20.0	67	100.00	25.0
55	15.00	15.0	68	100.00	25.0
56	10.00	10.0	69	100.00	25.0
57	25.00	10.0	70	100.00	100.0

Rates shown are for participants with 5 or more years of service (unless otherwise indicated). For participants with less than 5 years of service, 0% is assumed.

Section 3: Supplemental Information

Inactive Members as Reported by the System:	<p>Not Vested: Valuation liability equals 100% of accumulated contributions.</p> <p>Vested: Valuation liability based on accrued benefit and members are assumed to retire 10% of the time each year from their Early Retirement Age until their Normal Retirement Age, than 100% of the time at their Normal Retirement age, with deferred vested benefit.</p>
Deferred Members as Reported by the System:	Assumed to retire 10% of the time each year from their Early Retirement Age until their Normal Retirement Age, than 100% of the time at their Normal Retirement age, with deferred vested benefit.
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	85% of male members and 50% of female members are assumed to be married.
Age of Spouse:	Females three years younger than males.
Benefit Elections:	<p>Non-Group D: All members are assumed to elect the single life annuity.</p> <p>Group D: Single members are assumed to elect the single life annuity. Married members are assumed to elect the 70% joint & survivor option.</p>
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary, with Normal Cost determined using the plan of benefits applicable to each participant.
Modeling	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 direction of the supervising actuary.

Section 3: Supplemental Information

Changes in Actuarial Assumptions: Based on reviews of economic assumptions and demographic assumptions in the experience study completed in September of 2020, the following actuarial assumptions were changed:

- Inflation
- Investment Return
- Salary Scale
- COLA
- Mortality
- Retirement (Active and Inactive)
- Termination

For more information on how these assumptions were changed, please refer to the Vermont State Employees' Retirement System Experience Review presentation that was completed in September of 2020.

Section 3: Supplemental Information

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Effective Date:	July 1, 1975.
Credible Service:	Service as a member plus purchased service.
Membership:	Full time employees of participating municipalities. Municipality elects coverage under Groups A, B, C, or D provisions.
Average Final Compensation (AFC):	<ul style="list-style-type: none">• Group A: Average annual compensation during highest 5 consecutive years.• Group B/C: Average annual compensation during highest 3 consecutive years.• Group D: Average annual compensation during highest 2 consecutive years.
Normal Retirement – Eligibility:	<ul style="list-style-type: none">• Group A: Earlier of age 65 with 5 years of service or age 55 with 35 years of service.• Group B: Earlier of age 62 with 5 years of service or age 55 with 30 years of service.• Groups C/D: Age 55 with 5 years of service.
Normal Retirement – Amount:	<ul style="list-style-type: none">• Group A: 1.4% of AFC times service.• Group B: 1.7% of AFC times service as a Group B member plus percentage earned as a Group A member times AFC.• Group C: 2.5% of AFC times service as a Group C member plus percentage earned as a Group A or B member times AFC.• Group D: 2.5% of AFC times service as a Group D member plus percentage earned as a Group A, B or C member times AFC. <p>Maximum benefit is 60% of AFC for Groups A and B and 50% of AFC for Groups C and D. The above amounts include the portion of the allowance provided by member contributions.</p>
Early Retirement – Eligibility:	<ul style="list-style-type: none">• Groups A/B: Age 55 with 5 years of service.• Group C: None.• Group D: Age 50 with 20 years of service.
Early Retirement – Amount:	Normal retirement allowance based on service and AFC at early retirement, reduced by 6% for each year commencement precedes Normal Retirement Age for Group A and B members; payable without reduction to Group D members.

Section 3: Supplemental Information

Vesting:	All groups – 5 years of service. Allowance beginning at normal retirement age based on AFC and service at termination. The AFC is to be adjusted annually by one-half of the percentage change in the Consumer Price Index, subject to the limits on “Post-Retirement Adjustments” described below.
Disability Retirement – Eligibility:	All groups – 5 years of service and disability as determined by Retirement Board.
Disability Retirement – Amount:	All groups – Immediate allowance based on AFC and service to date of disability. Children’s benefit of 10% of AFC payable to up to three minor children (or children up to age 23 if enrolled in full-time studies) of a disabled Group D member.
Death Benefit – Eligibility:	All groups – Death after 5 years of service.
Death Benefit – Amount:	<ul style="list-style-type: none"> • Groups A/B/C: Reduced early retirement allowance under 100% survivor option commencing immediately or, if greater, survivor’s benefit under disability allowance computed as of date of death. • Group D: 70% of the unreduced accrued benefit, plus children’s benefit.
Post-Retirement Adjustments:	<ul style="list-style-type: none"> • Group A: Allowances in pay status for at least one year increased on each January 1 by one-half of the percentage increase in Consumer Price Index, but not more than 2%. If receiving an Early Retirement benefit, no increases until after reaching attaining Normal Retirement eligibility. If receiving a Disability Retirement benefit, no increases until after attaining age 62. • Groups B/C/D: Allowances in payment for at least one year increased on each January 1 by one-half of the percentage increase in Consumer Price Index, but not more than 3%. If receiving an Early Retirement benefit, no increases until after reaching attaining Normal Retirement eligibility. If receiving a Disability Retirement benefit, no increases until after attaining age 62 (age 55 for Group C).
Retirement Stipend:	\$25 per month payable at the option of the Retirement Board.
Optional Benefit and Death after Retirement:	<ul style="list-style-type: none"> • Group A/B/C: A lifetime allowance or actuarially equivalent 50% or 100% joint and survivor allowance with refund of contribution guarantee. • Group D: A lifetime allowance or 70% contingent annuitant option with no reduction.
Refund of Contributions:	Upon termination, if the member so elects, or if no other benefit is payable, the member’s accumulated contributions with interest are refunded.

Section 3: Supplemental Information

Member Contribution Rates:	<ul style="list-style-type: none"> • Group A 2.625% effective July 1, 2018; 2.750% effective July 1, 2019; 3.000% effective July 1, 2020; 3.250% effective July 1, 2021 and thereafter. • Group B 5.000% effective July 1, 2018; 5.125% effective July 1, 2019; 5.375% effective July 1, 2020; 5.625% effective July 1, 2021 and thereafter. • Group C 10.125% effective July 1, 2018; 10.250% effective July 1, 2019; 10.500% effective July 1, 2020; 10.750% effective July 1, 2021 and thereafter. • Group D 11.475% effective July 1, 2018; 11.600% effective July 1, 2019; 11.850% effective July 1, 2020; 12.100% effective July 1, 2021 and thereafter.
Employer Contribution Rates¹:	<ul style="list-style-type: none"> • Group A 2.625% effective July 1, 2018; 2.750% effective July 1, 2019; 3.000% effective July 1, 2020; 3.250% effective July 1, 2021 and thereafter. • Group B 5.000% effective July 1, 2018; 5.125% effective July 1, 2019; 5.375% effective July 1, 2020; 5.625% effective July 1, 2021 and thereafter. • Group C 10.125% effective July 1, 2018; 10.250% effective July 1, 2019; 10.500% effective July 1, 2020; 10.750% effective July 1, 2021 and thereafter. • Group D 11.475% effective July 1, 2018; 11.600% effective July 1, 2019; 11.850% effective July 1, 2020; 12.100% effective July 1, 2021 and thereafter.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

¹ By way of Board resolution, the VMERS Board is committed to continuing to improve the System's funded position over time by increasing total contributions by at least the equivalent of 0.5%, on average, for the four subsequent fiscal years beginning with July 1, 2022.

Appendix: Definition of Terms

Definitions of certain terms *as they are used in Statements 67/68*. The terms may have different meanings in other contexts.

Active Employees:	Individuals employed at the end of the reporting or measurement period, as applicable.
Actual Contributions:	Cash contributions recognized as additions to a pension Plan Fiduciary Net Position.
Actuarial Present Value of Projected Benefit Payments:	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation:	The determination, as of a point in time (the actuarial valuation date), of the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date:	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution:	A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.
Ad Hoc Cost-of-Living Adjustments (Ad Hoc COLAs):	Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.
Ad Hoc Postemployment Benefit Changes:	Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.
Agent Employer:	An employer whose employees are provided with pensions through an agent multiple-employer defined benefit pension plan.
Agent Multiple-Employer Defined Benefit Pension Plan (Agent Pension Plan):	A multiple-employer defined benefit pension plan in which pension plan assets are pooled for investment purposes but separate accounts are maintained for each individual employer so that each employer's share of the pooled assets is legally available to pay the benefits of only its employees.
Allocated Insurance Contract:	A contract with an insurance company under which related payments to the insurance company are currently used to purchase immediate or deferred annuities for individual employees. Also may be referred to as an annuity contract.

Appendix: Definition of Terms

Automatic Cost-of-Living Adjustments (Automatic COLAs):	Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Automatic Postemployment Benefit Changes:	Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Closed Period:	A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.
Collective Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions:	Deferred outflows of resources and deferred inflows of resources related to pensions arising from certain changes in the collective Net Pension Liability.
Collective Net Pension Liability:	The Net Pension Liability for benefits provided through (1) a cost-sharing pension plan or (2) a single-employer or agent pension plan in circumstances in which there is a special funding situation.
Collective Pension Expense:	Pension expense arising from certain changes in the collective Net Pension Liability.
Contributions:	Additions to a pension plan's fiduciary net position for amounts from employers, nonemployer contributing entities (for example, state government contributions to a local government pension plan), or employees. Contributions can result from cash receipts by the pension plan or from recognition by the pension plan of a receivable from one of these sources.
Cost-of-Living Adjustments:	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Employer:	An employer whose employees are provided with pensions through a cost-sharing multiple-employer defined benefit pension plan.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (Cost-Sharing Pension Plan):	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll:	The payroll of employees that are provided with pensions through the pension plan.

Appendix: Definition of Terms

Deferred Retirement Option Program (DROP):	A program that permits an employee to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The employee continues to provide service to the employer and is paid for that service by the employer after the DROP entry date; however, the pensions that would have been paid to the employee (if the employee had retired and not entered the DROP) are credited to an individual employee account within the defined benefit pension plan until the end of the DROP period.
Defined Benefit Pension Plans:	Pension plans that are used to provide defined benefit pensions.
Defined Benefit Pensions:	Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statements 67/68.)
Defined Contribution Pension Plans:	Pension plans that are used to provide defined contribution pensions.
Defined Contribution Pensions:	Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.
Discount Rate:	<p>The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:</p> <ol style="list-style-type: none">1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension plan's fiduciary net position is projected (under the requirements of Statements 67/68) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments.2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Appendix: Definition of Terms

Entry Age Actuarial Cost Method:	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the <i>normal cost</i> . The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the <i>actuarial accrued liability</i> .
Inactive Employees:	Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.
Measurement Period:	The period between the prior and the current measurement dates.
Multiple-Employer Defined Benefit Pension Plan:	A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Net Pension Liability (NPL):	The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities:	Entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of Statements 67/68, employees are not considered non-employer contributing entities.
Other Postemployment Benefits:	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits, regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Pension Plans:	Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed and benefits are paid as they come due.
Pensions:	Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.
Plan Members:	Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).
Postemployment	The period after employment.
Postemployment Benefit Changes:	Adjustments to the pension of an inactive employee.
Postemployment Healthcare Benefits:	Medical, dental, vision, and other health-related benefits paid subsequent to the termination of employment.

Appendix: Definition of Terms

Projected Benefit Payments:	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.
Public Employee Retirement System:	A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.
Real Rate of Return:	The rate of return on an investment after adjustment to eliminate inflation.
Service Costs:	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Single Employer:	An employer whose employees are provided with pensions through a single-employer defined benefit pension plan.
Single-Employer Defined Benefit Pension Plan (Single-Employer Pension Plan)	A defined benefit pension plan that is used to provide pensions to employees of only one employer.
Special Funding Situations:	<p>Circumstances in which a nonemployer entity is legally responsible for making contributions directly to a pension plan that is used to provide pensions to the employees of another entity or entities and either of the following conditions exists:</p> <p>The amount of contributions for which the nonemployer entity legally is responsible is not dependent upon one or more events or circumstances unrelated to the pensions.</p> <p>The nonemployer entity is the only entity with a legal obligation to make contributions directly to a pension plan.</p>
Termination Benefits:	Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.
Total Pension Liability (TPL):	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement.

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