Vermont State Teachers' Retirement System

Information Required Under Governmental Accounting Standards Board Statement No. 67 as of June 30, 2016

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Board of Trustees
Vermont State Teachers' Retirement System
Montpelier, Vermont 05609

GASB 67 Report as of June 30, 2016

Dear Board Members:

This actuarial valuation report provides information concerning the Vermont State Teachers' Retirement System (VSTRS) in accordance with the Governmental Accounting Standards Board (GASB) Statement No. 67 (GASB 67). This Statement is an amendment of Statement No. 25, Financial Reporting for Defined Benefit Pension Systems and Note Disclosures for Defined Contribution Systems. Information is provided herein for the fiscal year ending June 30, 2016.

This report covers the retirement [Section 401(a)] portion of the System. The retiree medical benefits payable under the System are addressed in a separate report prepared in accordance with GASB Statement No. 43.

We certify that the information contained in this report has been prepared in accordance with generally accepted actuarial principles and practices. To the best of our knowledge, the information fairly presents the actuarial position of the System in accordance with the requirements of GASB 67 as of June 30, 2016.

The Board of Trustees and staff of the State Treasurer's office may use this report for the review of the operation of the System. The report may also be used in the preparation of VSTRS' audited financial statements. Use of this report for any other purpose or by anyone other than the Board of Trustees, the staff of the State Treasurer's office or its auditors may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. No one may make any representations or warranties based on any statements or conclusions contained in this report without Buck Consultants' prior written consent.

Future actuarial measurements may differ significantly from current measurements due to System experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in System provisions or applicable law. An analysis of the potential range of such future differences is beyond the scope of this report.

In preparing the actuarial results, we have relied upon information provided by State Treasurer's office staff regarding System provisions, participants, assets, contributions and other matters used in the actuarial valuation. Although we did not audit the data, we reviewed the data for reasonableness and consistency with the prior year's information. The accuracy of the results presented herein is dependent on the accuracy of the data.

This valuation was prepared based on the actuarial assumptions and methods used in the June 30, 2015, actuarial valuation of the System, except as noted herein. In our opinion, the actuarial assumptions used are appropriate for purposes of the valuation and are reasonably related to the experience of the System and to reasonable long-term expectations.

This report was prepared under my supervision and in accordance with all applicable Actuarial Standards of Practice. I am a Fellow of the Society of Actuaries, an Enrolled Actuary and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

I am available to discuss this report with you at your convenience.

Buck Consultants, LLC

David L. Driscoll

David L. Driscoll, FSA, EA, MAAA
Principal and Consulting Actuary

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Section I – GASB 67 Information

Notes to the Financial Statements for the Year Ended June 30, 2016

Net Pension Liability

The components of the net pension liability as of June 30, 2016, are as follows:

Total pension liability	$	2,930,423,200
System fiduciary net position		(1,620,899,749)
Net pension liability	$	1,309,523,451
System fiduciary net position as a percentage of the total pension liability		55.31%

Actuarial Assumptions

The total pension liability as of June 30, 2016, was determined by rolling forward the total pension liability as of June 30, 2015, to June 30, 2016, using the actuarial assumptions outlined in Section II. These assumptions were selected on the basis of the experience study that was performed for the five-year period ending June 30, 2014. The recommended assumption changes based on this experience study were adopted by the Board at its October 29, 2015, Board meeting, and were effective for the June 30, 2015 actuarial valuation.

Actuarial Cost Method

Entry Age Normal – Level Percentage of Pay

Asset Valuation Method

Invested assets are reported at fair value.

The long-term expected rate of return on System investments was determined using best-estimate ranges of expected future nominal rates of return (expected returns, net of investment expense and inflation) developed for each major asset class using an econometric model that forecasts a variety of economic environments and then calculates asset class returns based on functional relationships between the economic variables and the asset classes

Best estimates of arithmetic rates of return for each major asset class included in the target asset allocation as of June 30, 2015 are summarized in the following table:

Asset Class	Long-Term Expected Real Rate of Return
Equity	8.61%
Fixed Income	1.91%
Alternatives	6.93%
Multi-strategy	4.88%

Nominal long-term expected rates of return for these asset classes are equal to the sum of the above expected long-term real rates and the expected long-term inflation rate of 3.0%.

Discount rate: The discount rate used to measure the total pension liability was 7.95%. The projection of cash flows used to determine the discount rate assumed that contributions will continue to be made in accordance with the current funding policy. Based on these assumptions, the fiduciary net position was projected to be available to make all projected future benefit payments to current System members. The assumed discount rate has been determined in accordance with the method prescribed by GASB 67. We believe this assumption is reasonable for the purposes of the measurements required by GASB 67. In determining the discount rate, to the extent assets had been projected to be insufficient to provide for payment of all benefits when due, unfunded benefits would have been discounted using the S&P Municipal Bond 20 Year High Grade Rate Index, the yield to maturity of which was 2.71% on June 30, 2016. Demonstration of the appropriateness of the use of 7.95% as the discount rate in these calculations has been provided to the Office of the State Treasurer under separate cover.

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 7.95%, as well as what the net pension liability would be if it were calculated using a discount rate that is one-percentage-point lower (6.95%) or one-percentage-point higher (8.95%) than the current rate:

	1% Decrease (6.95%)	Current Discount Rate (7.95%)	1% Increase (8.95%)
Net Pension Liability	$ 1,638,648,011	$1,309,523,451	$ 1,033,302,011

Schedules of Required Supplementary Information

Schedule of Changes in the Net Pension Liability and Related Ratios

		FYE June 30, 2015
Total pension liability		
Service cost	$	34,979,249
Interest		222,185,083
Changes of benefit terms		0
Differences between expected and actual experience		3,612,809
Changes of assumptions		(7,223,825)
Benefit payments		(162,751,410)
Net change in total pension liability	$	90,801,906
Total pension liability-beginning	$	2,839,621,294
Total pension liability-ending (a)	$	2,930,423,200
System fiduciary net pension		
Contributions - state	$	73,225,064
Contributions – members		35,408,763
Net investment income		19,877,271
Benefit payments, including refunds of member contributions		(162,751,410)
Administrative expenses		(1,797,512)
Other		3,821,132
Net change in System fiduciary net position	$	(32,216,692)
System fiduciary net position-beginning	$	1,653,116,441
System fiduciary net position-ending (b)	$	1,620,899,749
System's net pension liability-ending (a)-(b)	$	1,309,523,451
System fiduciary net position as a percentage of the total pension liability		55.31%
Covered payroll as of June 30, 2015 actuarial valuation	$	557,708,310
Net pension liability as a percentage of covered payroll		234.80%

Notes to Schedule:

Benefit changes since June 30, 2015: None

Changes of assumptions since June 30, 2015: The actuarial assumptions regarding the incidence of morality, terminations, retirements, and disabilities were changed in accordance the findings of an experience study covering the five-year period ending June 30, 2014.

Schedule of Employer Contributions

	FYE 2015	FYE 2016
Actuarially determined contribution	$72,857,863	$76,102,909
Contributions related to the actuarially determined contribution	72,908,805	76,947,868
Contribution deficiency (excess)	($50,942)	($844,959)

Notes to Schedule

Valuation date: Actuarially determined contributions are calculated as of the June 30 preceding by twelve months the start of the fiscal year in which contributions are made. That is, the contribution calculated in the June 30, 2014, actuarial valuation will be made during the fiscal year ended June 30, 2016.

The methods and assumptions used to calculate the actuarially determined contribution in the June 30, 2014, actuarial valuation are shown in Schedule B of the report on that valuation. Actuarial assumptions used in subsequent valuations are summarized in Section II of this report.

Schedule of Investment Returns

	FYE 2014	FYE 2015	FYE 2016
Annual money-weighted rate of return, net of investment expenses	**13.83%**	**(0.40%)**	**1.69%**

Section II – Actuarial Assumptions and Methods

NOTE: These assumptions are used in the determination of VSERS' funding requirements. Except as noted in Section I, they are also used for determining liabilities under GASB 67.

INTEREST RATE: 7.95% per annum.

SEPARATIONS BEFORE NORMAL RETIREMENT: Representative values of the assumed annual rates of withdrawal, vested retirement, early retirement, disability and death are as follows:

Representative values of the assumed annual rates of withdrawal, vested retirement, early retirement, disability and death are as follows:

	Withdrawal and Vested Retirement		Disability		Death	
Age	Males	Females	Males	Females	Males	Females
25	21.00%	20.00%	.005%	.008%	.04%	.02%
30	12.60	14.00	.008	.008	.04	.03
35	8.40	11.30	.010	.008	.08	.05
40	6.50	9.03	.015	.010	.11	.07
45	5.80	6.30	.026	.023	.15	.11
50	5.40	5.25	.067	.070	.21	.17
55	5.40	5.04	.044	.048	.30	.25
59	5.40	5.04	.147	.071	.44	.36
60	5.40	5.04	.147	.084	.49	.39
61	5.40	5.04	.183	.101	.54	.43

	Reduced Early Retirement		Full Early Retirement
Age	Group A	Group C	Grandfathered (Group C)
50	N/A	N/A	N/A
55	6.13%	6.13%	6.13%
56	6.25	6.25	6.25
57	6.25	6.25	6.25
58	6.25	6.25	6.25
59	9.38	9.38	9.38
60	12.50	18.75	18.75
61	18.75	18.75	18.75

Service Retirements

Occur between ages 62 (60 for Group A) and 70. The assumed rates of service retirement are as follows:

Age	Annual Rate of Retirement		
	Group A	Group C	
		Non-Grandfathered	Grandfathered
60	12.5%	17.0%	NA
61	18.8	17.0	NA
62	25.0	20.0	20.0%
63	22.0	22.0	22.0
64	22.0	22.0	22.0
65	33.0	33.0	33.0
66	33.0	33.0	33.0
67	33.0	33.0	33.0
68	22.0	22.0	22.0
69	33.0	33.0	33.0
70	100.0	100.0	100.0

Non Grandfathered participants have a 25% probability to go into service retirement if they are first eligible for service retirement on or before age 62 and 27.5% probability to go into service retirement if they are first eligible for service retirement between age 62 and age 65.

Group C Grandfathered participants are assumed to retire at the following rates upon completion of 30 years of creditable service.

Age	Annual Rate of Retirement
49	0.00%
50	40.00
51	20.00
52	20.00
53	20.00
54	20.00
55	8.75
56	6.25
57	6.25
58	10.00
59	10.00
60	25.00
61	17.00

Group A participants are assumed to retire at the following rates upon completion of 30 years of creditable service.

Age	Annual Rate of Retirement
49	0.0%
50	40.0
51	20.0
52	20.0
53	20.0
54	20.0
55	20.0
56	10.0
57	10.0
58	10.0
59	10.0
60	30.0
61	25.5

Salary Increases

Representative values of the assumed annual rates of future salary increase are as follows:

Age	Annual Rate of Salary Increase	Age	Annual Rate of Salary Increase
25	8.15%	50	4.46%
30	6.84%	55	4.22%
35	5.97%	60	4.12%
40	5.29%	65	4.12%
45	4.80%		

Deaths after Retirement

The RP-2000 Mortality Tables Projected to 2029 using Scale BB for retirees, terminated vested members and beneficiaries, the RP-2000 Disabled Life Table with projection to 2020 using Scale AA for disabled retirees. The tables used contain a margin to reflect anticipated mortality improvement after the valuation date.

Inflation

The separately stated assumptions for investment return, salary increases and cost of living adjustments are consistent with an expected annual inflation rate of 3.00% to 3.25% per year.

Future Expenses

No provision made.

Spouse's Age

Husbands are assumed to be three years older than their wives.

Percent Married

85% of the male members and 35% of the female members are assumed to be married.

Cost-of-living Adjustments

Assumed to occur on January 1 following one year of retirement at the rate of 3% per annum for Group A members and 1.5% per annum for Group C member (beginning at age 62 for Group C members who elect reduced early retirement).

Inactive Members

A liability equal to 350% of accumulated contributions of inactive members is included in the valuation liabilities. Solely for the June 30, 2016, valuation, this percentage was reduced to 332.5% in recognition of the impact of the school district consolidation program on the demographics of the inactive population.

Actuarial Cost Method

The individual entry age normal actuarial cost method was used. For actuarial valuations prior to June 30, 2006, the entry age normal method with frozen initial liability was used.

Asset Valuation Method

The amount of the assets for valuation purposes equals the preliminary asset value plus 20% of the difference between the market and preliminary asset values. The preliminary asset value is equal to the previous year's asset value (for valuation purposes) adjusted for contributions less benefit payments and expenses and expected investment income. If necessary, a further adjustment is made to ensure that the valuation assets are within 20% of the market value.

Member Data

315 members terminated on June 30, 2016 and retired on July 1, 2016 were included with a valuation status as members receiving benefits. 536 members who were active on June 30, 2016 and terminated on July 1, 2016, were included with a valuation status as inactive. For those terminated members with at least five years of service, the system will automatically vest them six years after their termination if they do not withdraw.

Health and Medical Benefits for Retirees

Not included in this valuation.

Data for Valuation

In preparing the actuarial valuation as of June 30, 2015, the actuary relied on data and assets provided by the staff of the State Treasurer's office. While not verifying the data at their source, the actuary has performed tests for consistency and reasonableness.

The following is a summary of System participants as of June 30, 2015:

Retired members or beneficiaries currently receiving benefits	8,484
Inactive members	2,260
Active members	9,585
Terminated vested members	1,163

Section III – Summary of System Provisions

Effective Date	July 1, 1947.
Creditable Service	Service as a member plus purchased service.
Average Final Compensation (AFC)	Average annual compensation during highest 3 successive years.
Membership	Immediate upon employment.
Grandfathered status	Group C members who were within five years of normal retirement eligibility as defined prior to July 1, 2010, are "grandfathered"

	GROUP A	GROUP C
Service Retirement Allowance		
Eligibility	Age 60 or 30 years of creditable service.	Grandfathered: Age 62 or 30 years of creditable service for. Non-Grandfathered: Age 65 or age plus creditable service equal 90.

	GROUP A	GROUP C
Amount of Allowance	Member annuity based on accumulated contributions plus a pension which, with member annuity, equals 1/60 of AFC times creditable service.	Grandfathered: Member annuity based on accumulated contributions plus a pension which, with member annuity, equals 1/80 of AFC times creditable service prior to July 1, 1990 plus 1/60 of AFC times creditable service after July 1, 1990. Non Grandfathered: Member annuity based on accumulated contributions plus a pension which, with member annuity, equals 1/80 of AFC times creditable service prior to July 1, 1990 plus 1/60 of AFC times creditable service after July 1, 1990 up to 20 years of service, plus 1/50 of AFC for years of service after 20. If member already has 20 or more years of service on June 30, 2010, the 1/50 will be applied to all service accrued after July 1, 2010.
Minimum	$6,600 after 30 years of creditable service (pro-rata portion if less than 30 years).	N/A
Maximum	None	Grandfathered: 50% of AFC up to June 30, 2010. May continue to accrue up to 53.34% of AFC with service earned after July 1, 2010. Non-Grandfathered: 60% of AFC.
Early Retirement Allowance		
Eligibility	Age 55.	Age 55 and 5 years of creditable service.

	GROUP A	GROUP C
Amount of Allowance	Actuarial equivalent of service allowance using AFC and creditable service at early retirement.	Grandfathered: Accrued normal benefit reduced 6% for each year under age 62. Non-Grandfathered: Accrued normal benefit reduced by actuarial reduction from normal retirement age.
Vested Retirement Allowance		
Eligibility	5 years of creditable service.	5 years of creditable service.
Amount of Allowance	Commencing at age 60 calculated as a service allowance using AFC and creditable service at termination.	Commencing at age 62, calculated as a service allowance using AFC and creditable service at termination.
Disability Retirement Allowance		
Eligibility	Total and permanent disability after 5 years of creditable service (5 years preceding retirement served in State).	Total and permanent disability after 5 years of creditable service (5 years preceding retirement served in State).
Amount of Allowance	Calculated as a service allowance based on AFC and creditable service at disability retirement, subject to a 25% of AFC minimum.	Calculated as a service allowance based on AFC and creditable service at disability retirement, subject to a 25% of AFC minimum.
Death Benefits		
Eligibility	Age 60 or 30 years of creditable service; 10 years of creditable service if in service at death.	Age 55 and 5 years of creditable service or 10 years of creditable service.
Amount of Allowance	Accrued allowance paid under 100% survivorship option. If the eligibility requirements are not met or if beneficiary so elects, the member's accumulated contributions are paid to the beneficiary or estate. Certain children's benefits may also be payable.	Accrued allowance paid under 100% survivorship option. If the eligibility requirements are not met or if beneficiary so elects, the member's accumulated contributions are paid to the beneficiary or estate. Certain children's benefits may also be payable.

	GROUP A	GROUP C
Return of Contributions	If no other beneficiary is payable, a terminated member receives his accumulated contributions with interest.	If no other beneficiary is payable, a terminated member receives his accumulated contributions with interest.
Options	The allowance may be paid in various optional forms at the election of the member.	The allowance may be paid in various optional forms at the election of the member.
Post-retirement Adjustments	On each December 31 allowances in payment for at least one year are adjusted for cost-of-living changes based on the Consumer Price Index, but not in excess of 5%.	On each December 31, allowances in payment for at least one year are adjusted for cost-of-living changes based on one-half of the increase in the Consumer Price Index, but not in excess of 5%. For members receiving a reduced early retirement allowance, the adjustment will not apply before age 62.
Contributions		
Members	5.5% of earnable compensation. Contributions stop after 25 years of creditable service.	5% of earnable compensation; for non-vested participants and future new hires, 6% of earnable compensation effective July 1, 2014.
State	Normal and accrued liability contributions actuarially determined to keep the system financially sound.	Normal and accrued liability contributions actuarially determined to keep the system financially sound.