Segal Consulting

Nashoba Regional School District

Governmental Accounting Standards Board (GASB) Statements No. 74 and 75 Accounting Valuation Report for Reporting Date June 30, 2018

This report has been prepared at the request of the Nashoba Regional School District to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Nashoba Regional School District and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

Segal Consulting

116 Huntington Ave., 8th Floor Boston, MA 02116-5744
T 617.424.7300 www.segalco.com

December 19, 2018

Ms. Patricia Marone
Business and Operations Manager
Nashoba Regional School District
Central Office
50 Mechanic Street
Bolton, MA 01740

Dear Ms. Marone:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statements No. 74 and 75 Accounting Valuation as of June 30, 2018. It contains the actuarial information that will need to be disclosed in order to comply with GASB 74 and 75. Except as otherwise noted, please refer to the Nashoba Regional School District Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) as of December 31, 2017, dated December 19, 2018, for the data, assumptions and plan of benefits underlying these calculations.

This report is based on information received from the Nashoba Regional School District and vendors employed by the Nashoba Regional School District. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security at termination of the plan, or determining short-term cash flow requirements.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience or rates of return on assets differing from that anticipated by the assumptions; changes in assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. 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 valuation has been completed in accordance with generally accepted actuarial principles and practices. The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and collectively 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 the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Nashoba Regional School District are reasonably related to the experience of and the expectations for the Plan.

We look forward to discussing this with you at your convenience.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: S. Boustany

Samuel Boustani, ASA, MAAA
Consulting Actuary

Daniel J. Rhodes, FSA, MAAA
Vice President and Consulting Actuary

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Nashoba Regional School District Governmental Accounting Standards Board (GASB) Statements No. 74 and 75 Accounting Valuation Report for Reporting Date June 30, 2018

Section 1: Executive Summary

Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to defining future uncertain obligations of a postretirement health plan. As such, it will never forecast the precise future stream of benefit payments. It is an estimated forecast – the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal Consulting ("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. For example, a plan may provide health benefits to post-65 retirees that coordinates with Medicare. If so, changes in the Medicare law or administration may change the plan's costs without any change in the terms of the plan itself. It is important for the Nashoba Regional School District 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 plan. 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 not necessary to have perfect data for an actuarial valuation: the valuation is an estimated forecast, not a prediction. The uncertainties in other factors are such that even perfect data does not produce a "perfect" result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	Part of the cost of a plan will be paid from existing assets – the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the Nashoba Regional School District. Some plans include assets, such as private equity holdings, real estate, or hedge funds that are not subject to valuation by reference to transactions in the marketplace. A snapshot as of a single date may not be an appropriate value for determining a single year's contribution requirement, especially in volatile markets. Plan sponsors often use an "actuarial value of assets" that differs from market value to reflect gradually year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. To determine the future costs of benefits, Segal collects claims, premiums, and enrollment data in order to establish a baseline cost for the valuation measurement, and then develops short- and long-term health care cost trend rates to project increases in costs in future years. This forecast also requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year, as well as forecasts of the plan's benefits for each of those events. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model necessarily uses approximations and estimates that may lead to significant changes in our results but will have no impact on the actual cost of the plan. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

Given the above, the user of Segal's actuarial valuation (or other actuarial calculations) needs to keep the following in mind:

- The actuarial valuation is prepared for use by the Nashoba Regional School District. It includes information for compliance with accounting standards and for the plan's auditor. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- If the Nashoba Regional School District 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.
- An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. 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.
- Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, health care trend, and investment losses, not just the current valuation results.
- 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 Nashoba Regional School District should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the Nashoba Regional School District upon delivery and review. The Nashoba Regional School District should notify Segal immediately of any questions or concerns about the final content.

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

Purpose

This report presents certain disclosure information for the Nashoba Regional School District Other Postemployment Benefits (OPEB) plan and the Nashoba Regional School District Irrevocable OPEB Trust as of June 30, 2018, required by Governmental Accounting Standards Board (GASB) Statements No. 74 and 75. The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here.

Highlights of the Valuation

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

- The Net OPEB Liability (NOL) measured as of June 30, 2018, was determined based upon the results of the actuarial valuation as of December 31, 2017, dated December 19, 2018, completed by Segal Consulting, adjusted forward using standard actuarial techniques.
- The NOL is equal to the difference between the Total OPEB Liability (TOL) and the Plan’s Fiduciary Net Position. The Plan’s Fiduciary Net Position is equal to the market value of assets and therefore, the NOL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) on a market value basis. The NOL increased from $42,399,506 as of June 30, 2017 to $42,993,354 as of June 30, 2018 and the Plan’s Fiduciary Net Position as a percent of the TOL was 0.00% for both years since the OPEB Trust was not established yet as of June 30, 2018.
- The discount rates used to determine the TOL and NOL as of June 30, 2017 and June 30, 2018 were 3.58% and 3.87%, respectively.
- The OPEB expense for fiscal 2018 is $3,369,648.

Section 2: Valuation Results

Exhibit 1 – General Information

At December 31, 2017, the Nashoba Regional School District plan membership consisted of the following:

	December 31, 2017
Retired members of beneficiaries currently receiving benefits	285
Active members	380
Total	665

We have assumed other general information about the Plan will be provided by the Nashoba Regional School District's auditors.

Exhibit 2 – Net OPEB Liability

The components of the net OPEB liability of the Nashoba Regional School District are as follows:

	June 30, 2018	June 30, 2017
Total OPEB Liability	$42,993,354	$42,399,506
Plan Fiduciary Net Position	0	0
Net OPEB Liability	42,993,354	42,399,506
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability*	0.00%	0.00%

* 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 OPEB liability was measured by an actuarial valuation as of December 31, 2017 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Actuarial Assumptions:

Salary increases:	6.00% decreasing to 4.25% based on service for Non-Teachers. 7.50% decreasing to 4.00% based on service for Teachers.
Discount rate:	3.87% as of June 30, 2018 and 3.58% as of June 30, 2017.
Investment rate of return:	N/A
Health care trend rates:	• Medical/Prescription Drug: 0.00%, then 7.00% decreasing by 0.5% down to 4.50% • Dental: 0.00%, then 3.50% • Medicare Part B: 4.50% • Contributions: Retiree contributions are expected to increase with medical trends. Note: Medical, prescription drug and dental trends reflect a first year trend of 0.00% since the valuation is based on September 1, 2018 premium rates.

Mortality rates:	• Pre-Retirement (Non-Teachers): RP-2000 Employee Mortality Table projected generationally with Scale BB2D from 2009 • Healthy (Non-Teachers): RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2009 • Disabled (Non-Teachers): RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2012 • Pre-Retirement (Teachers): RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP2016 • Healthy (Teachers): RP-2014 White Collar Annuitant Mortality Table projected generationally with Scale MP2016 • Disabled (Teachers): RP-2014 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2014 set forward 4 years

Exhibit 3 – Determination of Discount Rate and Investment Rate of Return

Development of Long-Term Rate

The long-term expected rate of return on OPEB plan investments was determined using a building block method in which best estimate ranges of expected future rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These returns 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 and subtracting expected investment expenses and a risk margin. The target allocation as of June 30, 2018 and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized below:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic Equity	17.50%	6.15%
International developed markets equity	15.50%	7.11%
International emerging markets equity	6.00%	9.41%
Core fixed income	12.00%	1.68%
High-yield fixed income	10.00%	4.13%
Real estate	10.00%	4.90%
Commodities	4.00%	4.71%
Hedge fund, GTAA, Risk parity	13.00%	3.94%
Private equity	12.00%	10.28%
Total	100.00%	

Note: Some asset classes in the target allocation have been combined.

Nature of Assets: The assets are in an irrevocable OPEB Trust and are invested in the State Retiree Benefits Trust Fund.

Determination of Discount Rate

The plan was not funded as of June 30, 2018 and the District's budgeted contribution of $326,510 in fiscal 2019 and $50,000 for fiscal 2020 and thereafter, which comprise current and future assets, are projected to be insufficient to pay benefits. Therefore, the discount rate is based on the yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rate of AA/Aa or higher as shown in the Bond Buyer 20-Bond General Obligation Index (3.58% as of June, 2017 and 3.87% as of June 30, 2018). This determination is in accordance with GASB Statement No. 75.

Exhibit 4 – Schedule of Changes in the Net OPEB Liability

	Fiscal Year End June 30,									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Total OPEB liability										
Service cost	$2,131,226									
Interest	1,574,791									
Differences between expected and actual experience	0									
Changes of assumptions	-2,018,216									
Changes of benefit terms	0									
Benefit payments, including refunds of member contributions	-1,093,953	(Historical information prior to implementation of GASB 74/75 is not required)								
Net change in Total OPEB Liability	$593,848									
Total OPEB Liability - beginning	42,399,506									
Total OPEB Liability - ending (a)	$42,993,354									
Plan Fiduciary Net Position										
Contributions - employer	$1,093,953									
Contributions - employee	0									
Net investment income	0									
Benefit payments, including refunds of member contributions	-1,093,953	(Historical information prior to implementation of GASB 74/75 is not required)								
Administrative expenses	0									
Net change in Fiduciary Net Position	$0									
Plan Fiduciary Net Position - beginning	0									
Plan Fiduciary Net Position - ending (b)	$0									
Net OPEB liability – ending: (a)-(b)	$42,993,354									
Plan's fiduciary net position as a percentage of the total OPEB liability	0.00%	(Historical information prior to implementation of GASB 74/75 is not required)								
Covered-employee payroll	$36,103,698									
Net OPEB liability as a percentage of covered-employee payroll	119.08%									

Notes to Schedule:

Changes in Assumptions:	The discount rate was changed from 3.58% as of June 30, 2017 to 3.87% as of June 30, 2018.
Changes in Plan Provisions:	None.

Exhibit 5 – Sensitivity

Sensitivity of the net OPEB liability to changes in the discount rate

The following presents the net OPEB liability well as what the net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate.

	1% Decrease	Current Discount Rate	1% Increase
Net OPEB liability as of June 30, 2018	$50,510,505	$42,993,354	$37,007,325

Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates

The following presents the net OPEB liability as well as what the net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage-point lower or 1-percentage point higher than the current rates.

	1% Decrease	Current Trend Rates	1% Increase
Net OPEB liability as of June 30, 2018	$36,560,422	$42,993,354	$51,290,924

Exhibit 6 – Schedule of Contributions – Last Ten Years

	Year End June 30,									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially determined contribution	$2,132,734									
Contributions in relation to the actuarially determined contribution	1,093,953									
Contribution deficiency (excess)	$1,038,781									
Covered-employee payroll	$36,103,698									
Contributions as a percentage of covered-employee payroll	3.03%	(Historical information prior to implementation of GASB 74/75 is not required)								

Actuarial Assumptions:

Valuation date:	Actuarially determined contribution for fiscal 2018 was based on the December 31, 2017 actuarial valuation.
Actuarial cost method:	Entry Age Normal – Level Percentage of Payroll
Amortization method:	Level percent of payroll
Remaining amortization period:	30 years from July 1, 2017
Asset valuation method:	Market value
Inflation:	4.50%
Salary increases:	6.00% decreasing to 4.25% based on service for Non-Teachers. 7.50% decreasing to 4.00% based on service for Teachers.
Discount rate:	7.25%
Investment rate of return:	7.25%
Health care trend rates:	• Medical/Prescription Drug: 0.00%, then 7.00% decreasing by 0.5% down to 4.50% • Dental: 0.00%, then 3.50% • Medicare Part B: 4.50% • Contributions: Retiree contributions are expected to increase with medical trends. • Medical, prescription drug and dental trends reflect a first year trend of 0.00% since the valuation is based on September 1, 2018 premium rates.

Mortality rates:	• Pre-Retirement (Non-Teachers): RP-2000 Employee Mortality Table projected generationally with Scale BB2D from 2009 • Healthy (Non-Teachers): RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2009 • Disabled (Non-Teachers): RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2012 • Pre-Retirement (Teachers): RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP2016 • Healthy (Teachers): RP-2014 White Collar Annuitant Mortality Table projected generationally with Scale MP2016 • Disabled (Teachers): RP-2014 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2014 set forward 4 years

Exhibit 7 – OPEB Expense and Deferred Outflows/Inflows of Resources Related to OPEB

A. OPEB expense for the year ended June 30, 2018		
• Service cost	$2,131,226	
• Interest	1,574,791	
• Contributions – employee	0	
• Projected earnings on OPEB Trust investments	0	
• Administrative expenses	0	
• Recognized portion of current-period difference between expected and actual experience	0	
• Recognized portion of current-period difference between projected and actual earnings on OPEB plan investments	0	
• Recognized portion of current year period assumption change	-336,369	
• Recognized portion of current year period plan change	0	
• Recognition of deferred outflows of resources	0	
• Recognition of deferred inflows of resources	0	
• OPEB expense for fiscal year ended June 30, 2018	$3,369,648	
B. Deferred outflows/inflows of resources related to OPEBs	**Deferred Outflows of Resources**	**Deferred Inflows of Resources**
• Differences between expected and actual experience	$0	$0
• Changes of assumptions	0	1,681,847
• Net difference between projected and actual earnings on OPEB Trust investments	0	0
• Total	$0	$1,681,847
C. Projected recognition of deferred outflows/(inflows)	**Year Ended June 30,**	**Recognition**
	2019	-$336,369
	2020	-336,369
	2021	-336,369
	2022	-336,369
	2023	-336,371
	Thereafter	0

Note: Average expected remaining service lives as of June 30, 2018 is 6 years.

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