

Re: Actuarial Information for Employer Accounting and Financial Reporting under GASB Statement 75

Prepared for the Employer: **Memphis Academy of Science and Engineering**

Gabriel, Roeder, Smith & Company (GRS) has been engaged by the State of Tennessee to perform an Actuarial Valuation of Other Post-Employment Benefits (OPEB) provided through the State's group insurance plans. While we do not have a contract with your organization, we are providing this report at the request of our Client-Principal, the State of Tennessee. We are pleased to present herein the results of the valuation of benefits provided to retirees of Memphis Academy of Science and Engineering covered under the The Tennessee Plan, supplemental medical insurance for retirees with Medicare which you as Employer offer to

This report provides actuarial information in accordance with Governmental Accounting Standards Board (GASB) Statement No. 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions." This information is intended to assist in preparation of the financial statements of the Employer in relation to benefits provided through The Tennessee Plan. This report does not address liabilities for benefits provided through the Local Education Insurance Plan, supplemental medical insurance for retirees with Medicare. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

This report was prepared at the request of the State and is intended for use by the Employer and those designated or approved by them. This report may be provided to parties other than the Employer in its entirety and only with the permission of the Employer or the State. GRS is not responsible for unauthorized use of this report.

Our actuarial calculations for this report were prepared for the purpose of complying with the requirements of GASB Statement No. 75. These calculations have been made on a basis that is consistent with our understanding of this Statement. The calculation of the plan's liability for this report is not applicable for the purpose of pre-funding the OPEB plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 75 may produce significantly different results.

This report is based upon information through June 30, 2018 furnished to us by the State officials for the June 30, 2018 actuarial valuation. This information, including plan provisions and census data for active members, retirees and beneficiaries, was reviewed for internal consistency, but it was not audited by us. We are not responsible for the accuracy or completeness of the information provided by the State.

The calculations are based upon the actuarial valuation as of June 30, 2018 with results presented in a report dated September 24, 2019 on file with the State of Tennessee. As such they depend on assumptions regarding future events, which may or may not materialize. They are also based upon plan provisions outlined in the June 30, 2018 actuarial valuation report. If you have reason to believe that the assumptions that were used are unreasonable, that the plan provisions are incorrectly described, that important relevant plan provisions are not described or referenced, or that conditions have changed since the calculations were made, you should contact the author of this report prior to relying on information in this report.

This report complements the June 30, 2018 actuarial valuation report dated September 24, 2019, and information herein should be considered along with the information from that report, especially for additional discussions of the nature of actuarial calculations and for more information related to participant data, economic, demographic, health care trend and morbidity assumptions, and benefit provisions. Refer to that full actuarial report for disclosures of OPEB plan provisions and detailed actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. The scope of this report does not include an analysis of the potential range of such future measurements.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly represents the actuarial position of the plan as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice, and with applicable statutes. If you have reason to believe that the information provided in this report is inaccurate, or is in any way incomplete, or if you need further information in order to make an informed decision on the subject matter of this report, please contact the author of this report prior to making such decision.

Results presented within this report are not applicable if benefits are prefunded through a qualifying trust maintained by the employer. No information was provided to the actuary regarding component units of the employer, the employer will be responsible for allocation the results if necessary.

James J. Rizzo and Piotr Krekora are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

We will be pleased to answer any questions pertaining to this report.

Respectfully submitted,

GABRIEL, ROEDER, SMITH AND COMPANY



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Senior Consultant & Actuary



Piotr Krekora, ASA, EA, MAAA, FCA
Consultant & Actuary

Executive Summary

Actuarial Valuation Date	June 30, 2018
Measurement Date of the Total OPEB Liability	June 30, 2018
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2019

Membership as of the Actuarial Valuation Date

Number of	
- Retirees and Beneficiaries (Currently Receiving Benefits)	0
- Inactive, Nonretired Members	0
- Active Members	29
- Total	29
Estimated Covered-Employee Payroll	N/A

Total OPEB Liability

Collective Total OPEB Liability	\$ 21,286
Employer's Share of the Total OPEB Liability	\$ 0
Employer's Share as a Percentage of Covered-Employee Payroll	N/A

Development of the Single Discount Rate

Long-Term Municipal Bond Rate*	3.62 %
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Total OPEB Expense	\$ 1,521
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State's Share of the OPEB Expense (Revenue)	\$ 1,521
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Summary of Deferred Outflows and Deferred Inflows of Resources by Source

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 20,044	\$ 0
Changes in assumptions and other inputs	0	279
Benefits Paid After the Measurement Date by Employer	0	0
Total	\$ 20,044	\$ 279

**Source: Fidelity General Obligation AA rate as of June 29, 2018. This is the rate for Fixed Income Yield Curve Data for Municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity's "20-Year Municipal GO AA Index." In describing this index, Fidelity notes that the municipal curves are constructed using option adjusted analytics of a diverse population of over 10,000 tax exempt securities.*

Schedule of Changes in Total OPEB Liability and Related Ratios
Measurement Year Ended June 30, 2018
(Ultimately 10 Years Will Be Displayed)

Measurement Year Ended June 30,

	2018	2017
A. Collective Total OPEB Liability		
1. Service Cost	\$ 0	\$ 0
2. Interest on the Total OPEB Liability	0	0
3. Changes of benefit terms	0	0
4. Difference between expected and actual experience of the Total OPEB Liability	21,586	0
5. Changes in assumptions and other inputs	(300)	0
6. Benefit payments	-	-
7. Net change in Total OPEB Liability	\$ 21,286	\$ 0
8. Total OPEB Liability – Beginning	0	0
9. Total OPEB Liability – Ending	\$ 21,286	\$ 0
B. Proportion Determination	N/A	N/A
1. Employer's Actuarial Accrued Liability	0	0
2. Collective Actuarial Accrued Liability	21,286	0
3. Employer's Proportion	0.00%	N/A
3. State's Proportion	100.00%	N/A
4. Employer's Share of the Total OPEB Liability – Beginning	N/A	N/A
5. Employer's Share of the Total OPEB Liability – Ending	0	N/A
B. Estimated Covered-Employee Payroll	N/A	N/A
C. Employer's Total OPEB Liability as a Percentage of Covered-Employee Payroll	N/A	N/A

Notes to Schedule of Changes in Total OPEB Liability and Related Ratios

Valuation Date: June 30, 2018
Measurement Date: June 30, 2018

Methods and Assumptions Used to Determine Total OPEB Liability:

Actuarial Cost Method	Entry Age Normal.
Inflation	2.25%
Discount Rate	3.62%
Salary Increases	Salary increase rates used in the July 1, 2018 actuarial valuation of the Tennessee Consolidated Retirement System (TCRS); 3.44% - 8.72%, including inflation.
Retirement Age	Retirement rates used in the July 1, 2018 actuarial valuation of the Tennessee Consolidated Retirement System (TCRS). They are based on the results of a statewide experience study (undertaken on behalf of TCRS).
Mortality	Mortality tables used in the July 1, 2018 actuarial valuation of the Tennessee Consolidated Retirement System (TCRS). They are based on the results of a statewide experience study (undertaken on behalf of TCRS).
Healthcare Cost Trend Rates	None, premium subsidies provided by the State and the Employer are assumed to remain unchanged for the entire projection.
Aging factors	Based on the 2013 SOA Study "Health Care Costs - From Birth to Death".
Expenses	Administrative expenses are included in the per capita health costs.

Other Information:

Notes See the Actuarial Valuation Report as of July 1, 2018.

Changes in assumptions and other inputs include the change in the discount rate from 3.56% as of the beginning of the measurement period to 3.62% as of June 30, 2018. This change is reflected in the Schedule of Changes in Total OPEB Liability.

There were no benefit changes during the measurement period.

Statement of OPEB Expense
Employer Fiscal Year Ended June 30, 2019
(Based on Measurement Year Ended June 30, 2018)

OPEB Expense

1. Service Cost	\$	0
2. Interest on the Total OPEB Liability		0
3. Current-Period Benefit Changes		0
4. OPEB Plan Administrative Expense		0
5. Recognition of Outflow/(Inflow) of Resources due to Liabilities		1,521
6. Total OPEB Expense	\$	1,521

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in OPEB expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with OPEB through the OPEB plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the average of the expected remaining service lives for purposes of recognizing the applicable combined deferred outflows and inflows of resources established in the current measurement period is 14.0 years.

State Support

1. Total OPEB Expense	\$	1,521
2. State's Share of the OPEB Expense		1,521
3. Employer's Share of the OPEB Expense		0

**Statement of Remaining Deferred Outflows and
Inflows of Resources
Employer Fiscal Year Ended June 30, 2019
(Based on Measurement Year Ended June 30, 2018)**

A. Outflows and Inflows of Resources by Source to be Recognized in Current OPEB Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 1,542	\$ 0	\$ 1,542
2. Changes in assumptions and other inputs	0	21	(21)
3. Total	\$ 1,542	\$ 21	\$ 1,521

B. Average of the Expected Remaining Service Lives 14.0

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future OPEB Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 20,044	\$ 0	\$ 20,044
2. Changes in assumptions and other inputs	0	279	(279)
3. Total	\$ 20,044	\$ 279	\$ 19,765

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future OPEB Expenses

Year Ending June 30	Collective Net Deferred Outflows of Resources
2020	\$ 1,521
2021	1,521
2022	1,521
2023	1,521
2024	1,521
Thereafter	12,160
Total	\$ 19,765

E. Estimated Outflow of Resources due to Contributions/Benefits Paid After the Measurement Date

Employer	0
State	0
Total	0

Sensitivity of Total OPEB Liability and Other Relevant Information

Sensitivity of Total OPEB Liability (Employer's Share) to the Discount Rate Assumption

Regarding the sensitivity of the total OPEB liability to changes in the discount rate, the following presents the plan's total OPEB liability, calculated using a discount rate of 3.62%, as well as what the plan's total OPEB liability would be if it were calculated using a discount rate that is one percent lower or one percent higher:

1% Decrease	Current Discount Rate Assumption	1% Increase
2.62%	3.62%	4.62%
\$ -	\$ -	\$ -

Sensitivity of Total OPEB Liability (Employer's Share) to the Assumed Trend Rates

Regarding the sensitivity of the total OPEB liability to changes in the healthcare cost trend rates, the following presents the plan's total OPEB liability, calculated using the assumed trend rates as well as what the plan's total OPEB liability would be if it were calculated using a trend rate that is one percent lower or one percent higher:

1% Decrease	Current Healthcare Cost Trend Rate Assumption	1% Increase
N/A	N/A	N/A
\$ -	\$ -	\$ -

Discount Rate

For plans that do not have formal assets, the discount rate should equal the tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date. For the purpose of this actuarial roll-forward, the municipal bond rate is 3.62% (based on the daily rate of Fidelity's "20-Year Municipal GO AA Index" closest to but not later than the measurement date). The discount rate was 3.56% as of the beginning of the measurement year.

Plan Assets

There are no plan assets accumulated in a trust that meets the criteria in paragraph 4 of GASB Statement No. 75.

Summary of Outstanding Collective Outflows/(Inflows)

<u>Date Established</u>	<u>Source</u>	<u>Recognition Period (years)</u>	<u>Original Amount</u>	<u>Years Remaining</u>	<u>Amount Unrecognized Beg. of Period</u>	<u>Amount Recognized in Current Expense</u>	<u>Amount Deferred to Future Periods</u>
<u>Deferred Outflows of Resources</u>							
6/30/2019	Assumption Changes	N/A	\$ -	N/A	\$ -	\$ -	\$ -
6/30/2019	Liability Experience	14.0	21,586	14.0	21,586	1,542	20,044
	SUBTOTAL:		21,586		21,586	1,542	20,044
<u>Deferred Inflows of Resources</u>							
6/30/2018	Assumption Changes	0.0	\$ -	0.0	\$ -	\$ -	\$ -
6/30/2019	Assumption Changes	14.0	300	14.0	300	21	279
6/30/2019	Liability Experience	N/A	-	N/A	-	-	-
	SUBTOTAL:		300		300	21	279
GRAND TOTAL: \$ 21,286 \$ 21,286 \$ 1,521 \$ 19,765							