TRS-CARE Retiree Health Care Plan
Teacher Retirement System of Texas

GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans

Actuarial Valuation as of August 31, 2017

GRS Retirement Consulting

P: 469.524.0000 | F: 469.524.0003 | www.grsconsulting.com

March 30, 2018

Board of Trustees
Teacher Retirement System of Texas
1000 Red River Street
Austin, TX 78701-2698

Subject: Actuary's Certification of the GASB 74 Actuarial Valuation as of August 31, 2017 for TRS-Care

Submitted in this report are the results of an Actuarial Valuation of the liabilities associated with the employer financed retiree health benefits provided through TRS-Care, a benefit program designed to provide post-retirement medical benefits for certain members of the Teacher Retirement System of Texas (TRS). The date of the valuation was August 31, 2017. This report was prepared at the request of TRS.

The actuarial calculations were prepared for purposes of complying with the requirements of Statement No. 74 of the Governmental Accounting Standards Board (GASB). The calculations reported herein have been made on a basis consistent with our understanding of this accounting standard. Determinations of the liability associated with the benefits described in this report for purposes other than satisfying the financial reporting requirements of TRS-Care and participating employers may produce significantly different results. Actuarial valuations of the post-retirement benefits are performed annually.

The valuation was based upon information, furnished by TRS, concerning retiree health benefits, members' census, and financial data. Data was checked for internal consistency but was not otherwise audited. Certain demographic and economic assumptions are identical to the set of demographic and economic assumptions adopted by the Board based on the 2015 Experience Study of TRS. Assumptions applicable only to TRS-Care have changed since the prior report, and they are disclosed in the assumptions section of this report.

The following CAFR schedules were prepared by GRS and can be found in Sections E and D of this report:

1. Actuarial Present Value of Benefits
2. Schedule of Funding Progress
3. Schedule of Contributions form Employer(s) and Other Contributing Entities
4. Key actuarial assumptions and methods
5. Solvency Test
6. Analysis of Financial Experience
7. Schedule of Retirants and Beneficiaries Added and Removed from Rolls

GRS is not responsible for any trend data schedules not found in this report.

The current objective is to fund the Trust in order to maintain benefits through individual biennial periods. There is no arrangement into which the participating employers would make contributions to advance-fund the obligation. However, a Trust does exist into which participating employers are making contributions based on the current funding policy.

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.

To the best of our knowledge, this report is complete and accurate and was made in accordance with generally accepted actuarial principles and practices as well as the Actuarial Standards of Practice. Joseph Newton and Mehdi Riazi are members of the American Academy of Actuaries and meet the Qualification Standards of the Academy of Actuaries to render the actuarial opinion herein. The signing individuals are independent of the plan sponsor.

Respectfully submitted,

Joseph P. Newton, FSA, EA, MAAA, Senior Consultant

Mehdi Riazi

Mehdi Riazi, FSA, EA, MAAA, Consultant

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Teacher Retirement System of Texas. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Table of Contents

SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of August 31, 2017

		2017
Actuarial Valuation Date		August 31, 2017
OPEB Plan's Fiscal Year Ending Date (Reporting Date)		August 31, 2017
Membership		
Number of		
- Retirees and Beneficiaries		216,810
- Inactive, Nonretired Members		10,512
- Active Members		712,260
- Total		939,582
Covered Payroll	$	32,806,335,231
Net OPEB Liability		
Total OPEB Liability	$	43,885,784,621
Plan Fiduciary Net Position		399,535,986
Net OPEB Liability	$	43,486,248,635
Plan Fiduciary Net Position as a Percentage of Total OPEB Liability		0.91 %
Net OPEB Liability as a Percentage of Covered Payroll		132.55 %
Development of the Single Discount Rate		
Single Discount Rate		3.42 %
Long-Term Municipal Bond Rate*		3.42 %

**Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reporte in Fidelity Index's "20-Year Municipal GO AA Index" as of August 31, 2017. 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 securit*

Discussion

Accounting Standard

For post-employment (OPEB) benefit plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 74, "Financial Reporting for Postemployment Benefit Plans other than Pension Plans," replaces the requirements of GASB Statement No. 43, "Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans." GASB Statement No. 74 establishes standards of financial reporting for separately issued financial reports of state and local government OPEB plans.

Reporting under GASB 74 is effective for plan fiscal years commencing after June 15, 2016.

The following discussion provides a summary of the information that is required to be disclosed under this new accounting standard. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report, and internal staff will be responsible for preparing that information to comply with this accounting standard.

Financial Statements

GASB Statement No. 74 requires defined benefit OPEB plans to present two financial statements: a statement of fiduciary net position and a statement of changes in fiduciary net position.

The *statement of fiduciary net position* presents the following items as of the end of the OPEB plan's reporting period:

- Assets;
- Receivables (deferred inflows and outflows of resources);
- Investments;
- Liabilities; and
- Fiduciary net position (assets, plus deferred outflows, minus liabilities, minus deferred inflows).

The *statement of changes in fiduciary net position* presents the following for the plan's reporting period:

- Additions, such as contributions and investment income;
- Deductions, such as benefit payments and expenses; and
- Net increase or decrease in the fiduciary net position (the difference between additions and deductions).

Notes to Financial Statements

GASB Statement No. 74 also requires the notes of the plan's financial statements to include additional disclosure information. This disclosure information should include:

- **Plan Description:**
  - The name of the OPEB plan, the administrator of the OPEB plan, and the identification of whether the OPEB plan is a single-employer, agent, or cost-sharing OPEB plan.
  - The number of participating employers (if agent or cost-sharing OPEB plan) and the number of nonemployer contributing entities.
  - The composition of the OPEB plan's Board and the authority under which benefit terms may be amended.
  - The number of plan members by category and if the plan is closed.
  - The authority under which benefit terms are established or may be changed, the types of benefits provided, and the classes of plan members covered. A brief description of the benefits and the description of automatic postemployment benefit changes and the sharing of benefit-related costs with inactive plan members.
  - A brief description of contribution requirements, including (a) identification of the authority under which contribution requirements of employers, nonemployer contributing entities, and plan members are established or may be amended; (b) the contribution rates of the employer, nonemployer contributing entities, and plan members; and (c) legal or contractual maximum contribution rates. If the OPEB plan of the entity that administers the OPEB plan has the authority to establish or amend contribution requirements, disclose the basis for determining contributions.
- **Plan Investments:**
  - A description of investment policies, including procedures for making and amending investment decisions; policies for asset allocation; and description of any significant changes in investment policy occurring during the reporting period.
  - Identification of investments that represent 5% or more of the fiduciary net position.
  - The annual money-weighted rate of return on the OPEB plan investments.
- **Receivables:**
  - The terms of any long-term contracts for contributions to the OPEB plan and the outstanding balance on any such long-term contracts.
- **Allocated insurance contracts excluded from OPEB plan assets**
- **Reserves:**
  - A description of the policy related to reserves;
  - The authority for the reserve policy;
  - The conditions under which the reserves can be used; and
  - The balances of the reserves.

In addition, Single-Employer and Cost-Sharing OPEB plans should disclose the following information in notes to financial statements:

- The components of the net OPEB liability:
    - The total OPEB liability;
    - The fiduciary net position;
    - The net OPEB liability; and
    - The OPEB plan's fiduciary net position as a percentage of the total OPEB liability.
- Significant assumptions and other inputs used to measure the total OPEB liability:
    - Significant assumptions include inflation, healthcare cost trend rates, salary changes, ad hoc postemployment benefit changes, and the sharing of benefit-related costs with inactive plan members.
    - If applicable, the patterns of practice relied upon for projecting the sharing of benefit-related costs with inactive plan members.
    - The source of the assumptions for mortality.
    - The dates of experience studies on which assumption are based.
- Measure of the net OPEB liability using +/- 1% on the healthcare trend rate.
- On the discount rate:
    - The discount rate used and the change in the discount rate since the prior fiscal year-end.
    - Assumptions about projected cash flows.
    - The long-term expected rate of return on OPEB investments and a description of how it was determined.
    - The municipal bond rate used and the source of that rate.
    - The periods of projected benefit payments to which the long-term expected rate of return are used.
    - The assumed asset allocation of the portfolio and the long-term expected real rate of return for each major asset class, and whether the returns are arithmetic or geometric.
    - Measure of the net OPEB liability using +/- 1% on the discount rate.
- The date of the valuation and, if applicable, the fact that update procedures were used to roll forward the total OPEB liability.

Required Supplementary Information

For Single-Employer and Cost-Sharing OPEB Plans, GASB Statement No. 74 requires a 10-year fiscal history of:

- Sources of changes in the net OPEB liability;
- Information about the components of the net OPEB liability and related ratios, including the OPEB plan's fiduciary net position as a percentage of the total OPEB liability, and the net OPEB liability as a percent of covered-employee payroll;
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy along with the significant methods and assumptions used in calculating the actuarially determined contributions; and
- The annual money-weighted rate of return on OPEB plan investments for each year.

For Agent OPEB Plans, GASB Statement No. 74 requires a 10-year history of the annual money-weighted rate of return on OPEB plan investments.

Notes to the required schedules should include factors that significantly affect trends in the amounts reported (for example, changes of benefit terms, changes in the size or composition of the population covered, or the use of different assumptions). Information about investment-related factors that significantly affect trends in the amounts reported should be limited to those factors over which the OPEB plan or the participating governments have influence.

Measurement of the Net OPEB Liability

The net OPEB liability is to be measured as the total OPEB liability, less the amount of the OPEB plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement). The net OPEB liability should be measured as of the OPEB plan's most recent fiscal year end.

Frequency and Timing of the Actuarial Valuation

An actuarial valuation to determine the total OPEB liability is required to be performed at least every two years. If the actuarial valuation is not calculated as of the plan's fiscal year end, the total OPEB liability is required to be rolled forward from the actuarial valuation date to the OPEB plan's fiscal year end. If update procedures are used to roll forward the total OPEB liability, the date of the actuarial valuation must be no more than 24 months earlier than the OPEB plan's most recent fiscal year-end.

The total OPEB liability shown in this report is based on an actuarial valuation performed as of August 31, 2017 and a measurement date of August 31, 2017.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on OPEB plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) 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 (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the municipal bond rate is 3.42% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"), and the resulting Single Discount Rate is 3.42%. Because the plan is essentially a "pay-as-you-go" plan, the Single Discount Rate is equal to the prevailing municipal bond rate.

Actuarial Assumptions

The actuarial assumptions used to value the liabilities are outlined in detail in Section I. The assumptions include details on the healthcare trend assumption, the aging factors, as well as the cost method used to develop the OPEB expense. The demographic assumptions were based on the experience study covering the period ending August 31, 2014, as conducted for the retirement plan.

Future Uncertainty or Risk

Future results may differ from those anticipated in this valuation. Reasons include, but are not limited to:

- Actual medical trend differing from expected;
- Changes in the healthcare plan designs offered to active and retired members; and
- Participant behavior differing from expected, e.g.,
    - Elections at retirement;
    - One-person versus two-person coverage elections; and
    - Time of retirement or termination.

Benefits Valued

The benefit provisions that were valued are described in Section F. The valuation is required to be performed on the current benefit terms and existing legal agreements. Consideration is to be given to the written plan document as well as other communications between the employer and plan members and an established pattern of practice for cost sharing. The summary of major plan provisions is designed to outline principal plan benefits. If the plan summary is not in accordance with the actual provisions, please alert the actuaries IMMEDIATELY, so they can both be sure the proper provisions are valued.

Effective Date and Transition

GASB Statement No. 74 is effective for an OPEB plan's fiscal years beginning after June 15, 2016.

SECTION B

FINANCIAL STATEMENTS

Statement of Fiduciary Net Position
as of August 31, 2017

		2017
Assets		
Cash and Deposits	$	221,723,009
Receivables		
Accrued Interest and Other Dividends	$	349,140
Contributions		106,808,403
Accounts Receivable - Other		196,808,000
Total Receivables	$	303,965,543
Investments		
Capital Assets		709,417
Total Investments	$	709,417
Total Assets	$	526,397,969
Liabilities		
Payables		
Accounts Payable	$	228,976
Accrued Expenses		1,056,601
Health Care Claims Payable		125,576,406
Total Liabilities	$	126,861,983
Net Position Restricted for OPEB	$	399,535,986

Statement of Changes in Fiduciary Net Position for Year Ended August 31, 2017

	2017
Additions	
Contributions	
Employer	
Paid at Employer Contribution Rate	$ 180,415,839
Paid at State's Contribution Rate (Federal/Private Funding)	24,302,720
Surcharge for Employment after Retirement	10,641,961
Total Employer Contributions	$ 215,360,520
Nonemployer contributing entities	
State of Texas - Paid at State's Contribution Rate	$ 303,760,632
State of Texas - Supplemental Appropriations	15,559,552
Other - Federal Funding	5,341,625
Total Nonemployer contributing entities	$ 324,661,809
Active Employees	$ 213,241,179
Total Contributions	$ 753,263,508
Investment Income	
Net Investment Income	$ 4,696,973
Other	$ 529,020
Total Additions	$ 758,489,501
Deductions	
Benefit Payments	
Claims Costs (claims and premiums)	$ 1,691,239,521
Rebate and Discount Income	(291,725,635)
Retiree Contributions	(404,027,710)
Total Benefit Payments	$ 995,486,176
OPEB Plan Administrative Expense	$ 4,953,492
Total Deductions	$ 1,000,439,668
Net Increase in Net Position	$ (241,950,167)
Net Position Restricted for OPEB	
Beginning of Year	$ 641,486,153
End of Year	$ 399,535,986

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedules of Required Supplementary Information
Schedule of Changes in Net OPEB Liability and Related Ratios Multiyear

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending August 31,	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Total OPEB liability										
Service cost	$ 4,312,406,330									
Interest on the total OPEB liability	2,356,367,107									
Changes of benefit terms	(18,610,362,725)									
Difference between expected and actual experience	(1,027,633,765)									
Changes of assumptions	(19,563,767,793)									
Benefit payments	(995,486,176)									
Net change in total OPEB liability	(33,528,477,022)									
Total OPEB liability - beginning	77,414,261,643									
Total OPEB liability - ending (a)	$ 43,885,784,621									
Plan fiduciary net position										
Employer contributions	$ 215,360,520									
Nonemployer contributing entities contributions	324,661,809									
Employee contributions	213,241,179									
OPEB plan net investment income	4,696,973									
Benefit payments	(995,486,176)									
OPEB plan administrative expense	(4,953,492)									
Other	529,020									
Net change in plan fiduciary net position	(241,950,167)									
Plan fiduciary net position - beginning	641,486,153									
Plan fiduciary net position - ending (b)	$ 399,535,986									
Net OPEB liability - ending (a) - (b)	$ 43,486,248,635									
Plan fiduciary net position as a percentage of total OPEB liability	0.91 %									
Covered-employee payroll	$ 32,806,335,231									
Net OPEB liability as a percentage of covered-employee payroll	132.55 %									

Notes to Schedule:

Significant plan changes were adopted during fiscal year ending August 31, 2017. Effective January 1, 2018, only one health plan option will be offered and all retirees will be required to contribute monthly premiums
Assumption changes made for the August 31, 2017 valuation include a change to the assumption regarding the phase-out of the Medicare Part D subsidies and a change to the discount rate from 2.98% as of August 31, 2016 to 3.42% as of August 31, 2017.

Schedules of Required Supplementary Information
Schedule of the Net OPEB Liability Multiyear

Last 10 Fiscal Years (which may be built prospectively)

FY Ending August 31,	Total OPEB Liability	Plan Net Position	Net OPEB Liability	Plan Net Position as a % of Total OPEB Liability	Covered Payroll	Net OPEB Liability as a % of Covered Payroll
2017	43,885,784,621	399,535,986	43,486,248,635	0.91 %	32,806,335,231	132.55 %

SECTION D

NOTES TO FINANCIAL STATEMENTS

Single Discount Rate

A Single Discount Rate of 3.42% was used to measure the total OPEB liability. Because the plan is essentially a "pay-as-you-go" plan, the Single Discount Rate is equal to the prevailing municipal bond rate.

Summary of Membership Information

The following table provides a summary of the number of participants in the plan as of August 31, 2017:

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	216,810
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	10,512
Active Plan Members	712,260
Total Plan Members	939,582

Per GASB's guidance, dependents of current retirees receiving benefits are not included in the counts shown above.

The Average Expected Remaining Service Life (AERSL) of 8.5761 is based on the membership information as of the beginning of the fiscal year. The AERSL of the active employees was 11.3012 years. This calculates to a total remaining service years of 11.3012*699,129 = 7,900,986 years. Divided by the total membership of 921,278 as of August 31 2016 yields an AERSL of 8.5761.

Actuarial Assumptions and Methods

Valuation Date:	August 31, 2017
Methods and Assumptions	
Actuarial Cost Method	Individual Entry Age Normal
Inflation	2.50%
Single Discount Rate	3.42% as of August 31, 2017
Demographic Assumptions	Based on the experience study performed for the Teachers Retirement System of Texas for the period ending August 31, 2014.
Mortality Assumption	The active mortality rates were based on 90% of the RP-2014 Employee Mortality Tables for males and females, with full generational mortality using Scale BB. The post-retirement mortality rates for healthy lives were based on the 2015 TRS of Texas Healthy Pensioner Mortality Tables, with full generational projection using Scale BB.
Health Care Trend Rates:	Initial medical trend rates of 7.00% for non-Medicare retirees and 10.00% for Medicare retirees. Initial prescription drug trend rate of 12.00% for all retirees. Initial trend rates decrease to an ultimate trend rate of 4.50% over a period of 10 years.
Election Rates	Normal Retirement: 70% participation prior to age 65 and 75% participation after age 65
Aging Factors	Based on plan specific experience.
Expenses	Third party administrative expenses related to the delivery of health care benefits are included in the age-adjusted claims costs.
Other Information:	
Notes	There was a significant plan change adopted in fiscal year ending August 31, 2017. Effective January 1, 2018, only one health plan option will be offered and all retirees will be required to contribute monthly premiums for coverage. Assumption changes made for the August 31, 2017 valuation include a change to the assumption regarding the phase-out of the Medicare Part D subsidies and a change to the discount rate from 2.98% as of August 31, 2016 to 3.42% as of August 31, 2017. The change to the Medicare Part D subsidy phase-out assumption had the larger impact.

Sensitivity of Net OPEB Liability

Regarding the sensitivity of the net OPEB liability to changes in the Single Discount Rate, the following presents the plan's net OPEB liability, calculated using a Single Discount Rate of 3.42%, as well as what the plan's net OPEB liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

Sensitivity of Net OPEB Liability to the Single Discount Rate Assumption

1% Decrease 2.42%	Current Single Discount Rate Assumption 3.42%	1% Increase 4.42%
$ 51,324,568,976	$ 43,486,248,635	$ 37,186,006,400

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

Sensitivity of Net OPEB Liability to the Healthcare Cost Trend Rate Assumption

1% Decrease	Current Healthcare Cost Trend Rate Assumption	1% Increase
$ 36,206,646,484	$ 43,486,248,635	$ 53,038,004,180

SECTION E

ADDITIONAL CAFR SCHEDULES

Actuarial Present Value of Future Benefits
Actuarial Valuation August 31, 2017
Based on a 3.42% Discount Rate

Present Value of Benefits Being Paid:		
1. Future Medical Claims	$	10,611,169,258
2. Future Rx Claims		19,067,975,083
3. Retiree Premiums Collected		(14,017,887,963)
4. Net Present Value of Benefits for Current Retirees	$	15,661,256,378
Present Value of Benefits Payable in the Future to Inactive Plan Members Entitled to But Not Yet Receiving Benefits		
1. Future Medical Claims	$	594,504,466
2. Future Rx Claims		1,102,652,469
3. Retiree Premiums Collected		(789,936,796)
4. Net Present Value of Benefits for Current Retirees	$	907,220,139
Present Value of Benefits Payable In the Future To Present Active Members:		
1. Future Medical Claims	$	39,097,342,487
2. Future Rx Claims		63,586,219,532
3. Retiree Premiums Collected		(46,185,732,525)
4. Net Present Value of Benefits for Future Retirees	$	56,497,829,494
Total Actuarial Present Value of Future Benefits:	$	73,066,306,011
Summary of Cost Items		
1. Actuarial Present Value of Future Benefits	$	73,066,306,011
2. Present Value of Future Normal Costs		(29,180,521,390)
3. Actuarial Accrued Liability		43,885,784,621
4. Actuarial Value of Assets		(399,535,986)
Unfunded Actuarial Accrued Liability	$	43,486,248,635

Schedule of Funding Progress
(Amounts Shown in Millions)

Valuation As of August 31,	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) (3) - (2)	Funding Ratio Assets as % of AAL (2) / (3)	Annual Covered Payroll	UAAL As a % of Covered Payroll (4) / (6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2007	$ 623	$ 19,748	$ 19,125	3.2%	$ 26,076	73%
2008	$ 729	$ 22,313	$ 21,584	3.3%	$ 27,979	77%
2009	$ 800	$ 24,357	$ 23,557	3.3%	$ 29,490	80%
2010	$ 815	$ 25,808	$ 24,993	3.2%	$ 30,758	81%
2011	$ 891	$ 29,785	$ 28,894	3.0%	$ 30,515	95%
2012	$ 741	$ 27,542	$ 26,801	2.7%	$ 29,777	90%
2013	$ 551	$ 29,835	$ 29,284	1.8%	$ 30,511	96%
2014	$ 458	$ 33,719	$ 33,261	1.4%	$ 32,247	103%
2015	$ 973	$ 44,203	$ 43,230	2.2%	$ 31,254	138%
2016	$ 641	$ 50,198	$ 49,557	1.3%	$ 32,892	151%
2017*	$ 400	$ 43,886	$ 43,486	0.9%	$ 32,806	133%

*August 31, 2017 valuation reflects plan amendment and assumption/method changes.

Schedule of Contributions From Employer(s) and Other Contributing Entities
Annual Required Contributions ($ in 000's)

Fiscal Year Ended	GASB ARC	Actual Contributions From State	From Reporting Entities	On-behalf from Federal Government	Total	Percentage Contributed
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2007	$ 1,436,756	$ 238,191	$ 136,009	$ 52,330	$ 426,530	29.69 %
2008	$ 1,535,975	$ 254,722	$ 141,673	$ 59,486	$ 455,881	29.68 %
2009	$ 1,655,647	$ 267,471	$ 149,563	$ 61,531	$ 478,565	28.90 %
2010	$ 1,806,751	$ 279,251	$ 155,918	$ 70,796	$ 505,964	28.00 %
2011	$ 1,821,817	$ 282,891	$ 158,724	$ 136,888	$ 578,503	31.75 %
2012	$ 1,980,371	$ 272,029	$ 154,608	$ 68,634	$ 495,271	25.01 %
2013	$ 1,898,160	$ 241,577	$ 160,953	$ 74,511	$ 477,041	25.13 %
2014	$ 2,058,689	$ 303,695	$ 193,125	$ 78,589	$ 575,409	27.95 %
2015	$ 2,357,011	$ 1,049,199	$ 202,976	$ 126,807	$ 1,378,982	58.51 %
2016	$ 3,853,953	$ 297,071	$ 212,936	$ 124,740	$ 634,747	16.47 %
2017	$ 4,228,737	$ 319,320	$ 215,361	$ 5,342	$ 540,022	12.77 %

The employer ARC was determined by netting the active employee contributions (0.65%) out of the Total ARC (13.54%). The ARC for FY2017 was determined by applying the employer ARC determined in the 2016 valuation as a percentage of payroll (12.89%) to the actual payroll paid in FY2017 ($32.8 billion).

Analysis of Financial Experience
Actuarial Valuation August 31, 2017

Year Ended August 31,	Asset Gain/(Loss)	Liability Gain/(Loss)	New Assumptions Gain/(Loss)	Benefit Changes Gain/(Loss)	Gains/(Losses)
(1)	(2)	(3)	(4)	(5)	(6)
2011	($36)	($44)	($2,003)	$0	($2,083)
2012	($38)	$2,148	($1,302)	$3,458	$4,266
2013	($31)	$24	($1,699)	$1,266	($424)
2014	($24)	($619)	($1,235)	$0	($1,878)
2015	($36)	($3,369)	($6,232)	$0	($9,637)
2016	($37)	$1,517	($4,199)	$0	($2,719)
2017	($8)	$1,028	$19,564	$18,610	$39,194

$ in millions

Schedule of Retirants and Beneficiaries Added and Removed from Rolls

	Added to Rolls		Removed from Rolls		Rolls-End of Year			
Year Ended August 31,	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances *	% Increase in Annual Allowances	Average Annual Allowances
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2008					198,968	$ 605,932,252	NA	$ 3,045
2009	12,158	$ 54,271,769	8,192	$19,365,868	202,934	$ 694,017,558	14.5%	$ 3,420
2010	14,996	$ 71,136,696	7,924	$21,837,784	210,006	$ 757,979,912	9.2%	$ 3,609
2011	20,467	$109,331,023	8,019	$24,802,618	222,454	$ 898,001,599	18.5%	$ 4,037
2012	19,407	$ 92,279,848	8,220	$28,700,248	233,641	$ 768,682,199	(14.4%)	$ 3,290
2013	19,798	$ 98,603,255	10,176	$25,946,471	243,263	$ 824,715,257	7.3%	$ 3,390
2014	18,916	$ 97,956,524	10,656	$27,648,497	251,523	$ 933,885,969	13.2%	$ 3,713
2015	19,171	$106,177,651	11,116	$31,400,277	259,578	$ 1,050,329,854	12.5%	$ 4,046
2016	20,883	$120,035,127	12,250	$48,462,388	268,211	$ 1,132,169,358	7.8%	$ 4,221
2017	19,121	$105,535,109	13,113	$59,695,737	274,219	$ 986,039,302	(12.9%)	$ 3,596

*Expected employer provided claims and expenses (net of retiree premiums)
Annual allowances in Column (7) include increases due to health care inflation and the impact of plan changes. As a result, the annual allowances are not equal to the beginning of year allowances plus the “Added to rolls” allowances minus the “Removed from Rolls” allowances.

Solvency Test

Valuation Date at August 31,	Active Members Contributions	Beneficiaries and Vested Terminations	Members (Employer Financed Portion)	Actuarial Value of Assets	by Reported Assets		
					(5)/(2)	[(5)-(2)]/(3)	[(5)-(2)-(3)]/(4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2007	NA *	$ 8,328,549,742	$ 11,419,115,569	$ 622,796,928	NA	7.5%	0%
2008	NA *	$ 9,318,488,707	$ 12,994,409,340	$ 728,839,325	NA	7.8%	0%
2009	NA *	$ 9,641,882,166	$ 14,715,609,398	$ 800,148,392	NA	8.3%	0%
2010	NA *	$ 10,918,483,900	$ 14,889,285,169	$ 814,964,303	NA	7.5%	0%
2011	NA *	$ 13,710,226,766	$ 16,074,942,191	$ 890,870,306	NA	6.5%	0%
2012	NA *	$ 12,676,391,675	$ 14,865,894,917	$ 741,013,656	NA	5.8%	0%
2013	NA *	$ 14,367,032,119	$ 15,467,739,143	$ 551,048,281	NA	3.8%	0%
2014	NA *	$ 16,307,486,652	$ 17,411,062,427	$ 457,940,487	NA	2.8%	0%
2015	NA *	$ 20,749,190,897	$ 23,454,137,979	$ 972,919,240	NA	4.7%	0%
2016	NA *	$ 23,260,099,177	$ 26,938,351,255	$ 641,486,153	NA	2.8%	0%
2017	NA *	$ 16,568,476,223	$ 27,317,308,398	$ 399,535,986	NA	2.4%	0%

* Active member contributions are non-refundable

SECTION F

SUMMARY OF BENEFITS

Summary of Benefits

Plan Participants

Members of the Teacher Retirement System of Texas are eligible to receive retiree health care benefits.

Benefit Eligibility

Eligibility conditions for retiree health care benefits are as follows:

A retiree cannot be eligible for health care coverage as an employee or retiree of the State of Texas, or a public college or university in the State of Texas.

Service Retirees Who Retire after September 1, 2005: To be eligible for TRS-Care, the member must have at least 10 years of service credit in the system. This service credit may include up to five years of military service credit, but it may not include any other special or equivalent service credit purchased.

Additionally, the member must meet one of the following requirements: the sum of the retiree's age and years of service credit in the system equals or exceeds 80 at the time of retirement, regardless of whether the retiree had a reduction in the retirement annuity for early age (years of service credit can include all purchased service); or the retiree has 30 or more years of service credit in the retirement system at the time of retirement. (Years of service credit can include all purchased service.)

Vested Terminated participants are eligible for TRS Care if they meet the eligibility requirements for TRS-Care at the time of retirement.

Health Care Benefit Provided by Plan

Member: Beginning January 1, 2018, all members (except certain disabled retirees) must contribute toward the cost of coverage. Prior to this date, retirees could elect basic coverage at no cost for themselves.
Spouse: Members must contribute towards cost of spouse coverage.
Dependent: Members must contribute towards cost of coverage for dependent children.

Surviving Spouse Retirement Benefits

Surviving Spouses are eligible to elect coverage if they were married to the retiree of TRS at time of the retiree's death and that the retiree qualified, or would have qualified for coverage under the following:

Surviving Spouses of active TRS members are eligible if the member had 10 or more years of actual service credit in Texas public schools and made contributions to the Texas Public Retired Employees Group Insurance Fund.

Disabled Retirement Benefits

Health Care Benefit Eligibility Conditions
Any age with 10 years of service.
With less than 10 years of service, coverage ends when the disability retirement benefit ends.

Health Care Benefit Provided by Plan
Member: For non-Medicare retirees who have taken disability retirement under the TRS pension on or before January 1, 2017 and are taking disability retirement benefits from the TRS pension, TRS pays 100% of the coverage. All other members must contribute towards the cost of coverage.
Spouse: Members must contribute towards cost of spouse coverage.
Dependent: Members must contribute towards cost of coverage for dependent children.

TRS-Care Benefit Levels

January 1, 2018 – December 31, 2018

Plan	Deductible		Maximum Out-of-Pocket	
	Individual	Family	Individual	Family
TRS-Care Standard				
Retirees or Surviving Spouses not eligible for Medicare	$1,500 In-Network $3,000 Out-of-Network	$3,000 In-Network $6,000 Out-of-Network	$5,650 In-Network $11,300 Out-of-Network	$11,300 In-Network $22,600 Out-of-Network
TRS-Care Alternative Medical Plan				
Retirees or Surviving Spouses Enrolled in Medicare Part A and eligible for Part B	$1,300	$2,600	$7,150	$14,300
Retirees or Surviving Spouses not enrolled in Medicare Part A but eligible for Part B	$1,300	$2,600	$7,150	$14,300
Medicare Advantage for TRS-Care				
All	$500	N/A	$3,500	N/A

Medicare Advantage premiums are effective January 1, 2018 through December 31, 2018.

Maximum Out-of-Pocket includes deductibles, coinsurance, co-pays and out-of-pocket expenses.

TRS-Care Monthly Retiree Contribution Rates

January 1, 2018 – December 31, 2018

Coverage Tier	Non-Medicare Retiree Premiums	Non-Medicare Disability Retiree Premiums*	Medicare Retiree Premiums
Retiree/Surviving Spouse Only	$200	$0	$135
Retiree and Spouse	$689	$489	$529
Retiree/Surviving Spouse and Child(ren)	$408	$208	$468
Retiree and Family	$999	$799	$1,020

*$0 retiree contribution for disability retires who: (1) are retired as a disability retiree on or before 1/1/2017; (2) are currently receiving disability retirement benefits; and (3) are not eligible to enroll in Medicare.

SECTION G

DEVELOPMENT OF BASELINE CLAIMS COSTS

Development of Baseline Claims Cost

Data Source

TRS-Care maintains a substantial amount of data for all its covered members for many years of coverage. Claims and exposures for the year ending August 31, 2016 were used for the development of the Baseline Costs. These were compared to industry data for reasonableness. The actual claims and exposures were available by age, sex, status, member type, plan coverage, etc. The actual claims and exposure data were reliable and credible for the development of reasonable Baseline Costs.

Baseline Costs

An OPEB Valuation is a projection of long term benefit costs. As a starting point, baseline costs must be developed for the initial year of the projection. Projections of future costs, many years ahead, are based upon these initial year costs. Care must be taken to ensure that reasonable Baseline Costs are developed for each relevant Costing Variable.

Baseline Costs for this OPEB Valuation take the form of tables of current costs of benefits for retirees (and their dependents and survivors), separately by:

- age (20 through 110)
- sex (M and F)
- benefit type (medical, prescription drug)

Costing Variables

Baseline Costs vary depending on many different factors or characteristics of each member. For example, age is possibly the most obvious variable that affects the cost of medical coverage, but they may have different patterns based on the benefit package chosen. For the purpose of the OPEB valuation, membership status and disability status were deemed not to be necessary Costing Variables, and the claims for all retirees and spouses were combined. Separate claims estimates were developed for children.

Methodology

Aging Table

Due to the size of TRS and its unique membership, gender distinct aging tables have been developed for both medical and prescription drug claims. The average increases at each age were developed and smoothed based on the actual TRS claims experience.

The claims cost developed are appropriate for the unique distribution of age and sex currently experienced by the plan. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, the actuarial process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. This process more accurately reflects health care costs in the retired population over the projection period.

Administration Expenses

Administration expenses are included in the monthly per capita costs based on expected expenses per member in the separate cost categories based on the following table:

Monthly Fee Per Member	Non-Medicare Retirees	Medicare Retirees
Medical Administrative Fees	$24.95	n/a
Rx Administrative Fee	$1.84	$8.00
Other Admin Fee	$1.50	$1.50
PCORI Fee	$0.22	n/a
Total	$28.51	$9.50

Adjustments to Historical Claims

The claims data used to develop the baseline costs consisted of claims incurred between September 1, 2015 and August 31, 2016 and paid through May 2017. These claims were used to develop the expected claims that will be incurred in the year beginning January 1, 2018 and ending December 31, 2018. Therefore, the claims need to be increased by trend. The trend rates used to project the FY 2016 claims forward to CY 2018 were 6.75% for medical and 11.5% for pharmacy.

In addition to trend, the claim cost for the non-Medicare population was also adjusted for differences in plan design. The non-Medicare populations currently enrolled in TRS-Care 1, TRS-Care 2 and TRS-Care 3 will be enrolled in a single, high deductible health plan beginning January 1, 2018.

Rx Rebates and Medicare Part D Reimbursements

The projected prescription drug claims are net of all expected rebates and reimbursements. Effective January 1, 2017, all Medicare enrolled retirees are required to participate in the Medicare Part D Plan.

Medicare Advantage Plan

Medical benefits for Medicare enrolled retirees are provided through a fully-insured Medicare Advantage plan. The age-adjusted medical costs for Medicare retirees were based on the demographics of the covered population and the Medicare Advantage premiums which will become effective January 1, 2018.

Monthly Per Capita Costs

Baseline Costs for Pre-65 Retirees and Spouses Calendar Year 2018				
	Medical		Prescription Drug	
Age	Male	Female	Male	Female
55	$798.14	$841.21	$208.11	$217.58
57	$828.75	$843.40	$213.90	$219.76
60	$876.90	$846.70	$221.76	$223.06
62	$910.53	$848.90	$226.45	$225.25
64	$945.46	$851.11	$230.69	$227.43

Baseline Costs for Post-65 Retirees and Spouses Calendar Year 2018								
	Medicare A&B				B Only			
	Medical		Prescription Drug		Medical		Prescription Drug	
Age	Male	Female	Male	Female	Male	Female	Male	Female
65	$57.30	$51.40	$224.31	$220.33	$349.47	$313.49	$224.31	$220.33
70	$68.66	$60.69	$232.13	$225.52	$418.76	$370.16	$232.13	$225.52
75	$77.88	$68.02	$237.27	$230.64	$474.96	$414.85	$237.27	$230.64
80	$84.95	$73.39	$239.74	$235.69	$518.09	$447.58	$239.74	$235.69
85	$89.88	$76.79	$239.98	$240.67	$548.12	$468.34	$239.98	$240.67
90	$91.80	$77.89	$239.98	$240.67	$559.87	$475.05	$239.98	$240.67

Baseline Costs for Children Calendar Year 2018			
Medical		Prescription Drug	
Medicare	Non-Medicare	Medicare	Non-Medicare
$67.92	$252.51	$435.49	$34.71

Amy Cohen and Mehdi Riazi are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to develop the baseline claims estimates.

Amy Cohen

Amy E. Cohen, ASA, MAAA

Mehdi Riazi

Mehdi Riazi, FSA, EA, MAAA

SECTION H

SUMMARY OF PARTICIPANT DATA

Summary of Participant Data

Counts of Retirees and Beneficiaries by Age and Plan as of September 1, 2017

	Retirees*			Spouses			Children			Total			Total
Age	CARE -1	CARE-2	CARE-3	CARE-1	CARE-2	CARE-3	CARE-1	CARE-2	CARE-3	CARE-1	CARE-2	CARE-3	All Plans
Up to 25	11	22	10				1,261	3,478	3,474	1,272	3,500	3,484	8,256
25-29	4	6	4				198	839	1,097	202	845	1,101	2,148
30-34	6	3	1	1			36	62	53	43	65	54	162
35-39	28	3		4			28	45	31	60	48	31	139
40-44	85	9	2	9			37	27	23	131	36	25	192
45-49	196	62	6	25	8		21	15	20	242	85	26	353
50-54	763	1,115	669	121	251	164	22	8	12	906	1,374	845	3,125
55-59	2,084	6,856	5,850	531	1,617	1,375	12	7	7	2,627	8,480	7,232	18,339
60-64	3,661	16,823	15,037	2,437	3,460	2,928	7	6	8	6,105	20,289	17,973	44,367
65-69	5,887	23,513	19,856	8,184	2,540	2,106	6	1	2	14,077	26,054	21,964	62,095
70-74	5,990	20,182	17,719	7,312	1,959	1,497	1	1	1	13,303	22,142	19,217	54,662
75-79	5,747	12,474	11,772	4,122	1,040	821	1		1	9,870	13,514	12,594	35,978
80-84	4,194	8,419	8,039	1,919	449	416				6,113	8,868	8,455	23,436
85-89	2,712	5,195	4,709	695	148	169				3,407	5,343	4,878	13,628
90-94	1,347	2,146	1,785	153	29	43				1,500	2,175	1,828	5,503
95-99	432	560	527	17	3	6				449	563	533	1,545
Over 100	69	107	113			2				69	107	115	291
Total	**33,216**	**97,495**	**86,099**	**25,530**	**11,504**	**9,527**	**1,630**	**4,489**	**4,729**	**60,376**	**113,488**	**100,355**	**274,219**
			216,810			**46,561**			**10,848**				

*Surviving spouses are included in the retiree counts.

Effective January 1, 2018, there will only be one health plan option. The counts shown above are as of September 1, 2017.

Age	**Number of Terminated Vested Participants**
30-34	1
35-39	106
40-44	919
45-49	1,936
50-54	2,529
55-59	2,849
60-64	1,675
65 and over	497
Total	10,512

Distribution of Active Members by Age and by Years of Service
As of August 31, 2017

	Years of Credited Service												
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	Total
Attained Age	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.
Under 25	3	9,328	4,095	1,224	419	171							15,240
	$6,446	$29,105	$30,649	$23,619	$22,873	$22,790							$28,833
25-29	2	15,511	15,349	13,661	10,943	11,631	140						67,237
	$5,204	$33,836	$41,721	$44,532	$46,442	$46,850	$35,758						$42,115
30-34	3	9,816	8,977	8,763	8,780	36,122	10,040	105					82,606
	$11,536	$30,546	$37,238	$40,700	$44,463	$50,476	$52,625	$40,919					$45,241
35-39	3	8,708	7,749	7,170	6,312	23,614	32,516	7,411	66				93,549
	$14,392	$28,360	$35,130	$37,507	$40,652	$47,287	$55,106	$57,257	$46,379				$46,827
40-44	3	7,315	6,490	6,090	5,449	18,867	22,080	24,579	5,191	46			96,110
	$7,862	$27,497	$33,744	$35,968	$38,111	$43,489	$51,612	$59,858	$62,408	$49,205			$47,908
45-49	1	6,236	5,631	5,489	5,047	18,137	20,281	18,512	19,630	4,736	64		103,764
	$7,520	$26,671	$31,951	$34,454	$36,373	$40,553	$47,279	$54,553	$64,008	$65,079	$55,468		$48,104
50-54	1	4,864	4,481	4,008	3,786	14,276	16,929	15,502	12,633	13,424	3,064	62	93,030
	$14,286	$24,794	$30,394	$31,819	$33,878	$37,386	$42,635	$47,341	$56,255	$65,933	$67,207	$54,699	$46,297
55-59	1	3,778	3,379	3,158	2,949	10,489	13,617	14,714	12,334	7,885	6,405	1,685	80,394
	$11,454	$23,029	$28,530	$30,007	$31,549	$34,886	$40,884	$45,329	$50,335	$58,893	$69,886	$71,622	$44,958
60-64		2,190	1,977	1,971	1,801	6,763	8,630	9,759	7,621	5,292	2,792	2,648	51,444
		$22,115	$26,328	$28,337	$29,496	$32,234	$38,759	$43,746	$48,060	$53,758	$61,856	$74,542	$42,954
65 +		1,470	1,368	1,284	1,212	4,618	4,897	4,269	3,451	2,799	1,589	1,495	28,452
		$17,468	$20,867	$22,381	$23,770	$26,818	$33,921	$39,815	$44,322	$49,796	$52,949	$66,107	$36,799
Total	17	69,609	59,535	52,820	46,698	144,688	129,130	94,851	60,926	34,182	13,914	5,890	712,260
	$9,669	$28,668	$35,020	$37,446	$39,814	$43,447	$48,035	$51,739	$56,367	$60,962	$65,684	$71,357	$45,161

SECTION I

VALUATION METHODS AND ACTUARIAL ASSUMPTIONS

Valuation Methods and Actuarial Assumptions

Valuation Methods

Actuarial Cost Method – Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using the **Individual Entry Age Normal Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce/(increase) the Unfunded Actuarial Accrued Liability.

Actuarial Assumptions

This actuarial valuation of the OPEB offered through TRS-Care is similar to the actuarial valuations performed for the Teacher Retirement System of Texas, except that the OPEB valuation is more complex. All the demographic assumptions (rates of retirement, termination, and disability) and most of the economic assumptions (general inflation, salary increases, and general payroll growth) used in this OPEB Valuation were identical to those used in the respective TRS valuation. Since the assumptions were based upon a recent actuarial experience study and they were reasonable for this OPEB Valuation, they were employed in this report.

The following assumptions used for members of TRS are identical to the assumptions employed in the August 31, 2017 TRS annual actuarial valuation:

- Rates of Mortality
- Rates of Retirement
- Rates of Termination
- Rates of Disability Incidence
- General Inflation
- Wage Inflation
- Expected Payroll Growth

Economic Assumptions

The discount rate assumption was 3.42% as of the reporting date.

Health Care Trend Assumptions

Health cost increases are displayed in the following table:

Year	*Pre-65 Medical*	*Post-65 Medical*	*Rx*	*Pre-65 Retiree Premiums*	*Post-65 Retiree Premiums*
2019	7.00%	10.00%	12.00%	8.00%	11.50%
2020	6.75%	9.50%	11.00%	7.60%	10.63%
2021	6.50%	9.00%	10.00%	7.20%	9.75%
2022	6.25%	8.50%	9.00%	6.80%	8.88%
2023	6.00%	8.00%	8.00%	6.40%	8.00%
2024	5.75%	7.50%	7.00%	6.00%	7.13%
2025	5.50%	7.00%	6.00%	5.60%	6.25%
2026	5.25%	5.25%	5.50%	5.30%	5.44%
2027	5.00%	5.00%	5.00%	5.00%	5.00%
2028	4.75%	4.75%	4.75%	4.75%	4.75%
2029 & Beyond	4.50%	4.50%	4.50%	4.50%	4.50%

Baseline claims were developed for calendar year 2018. Trend increases are assumed to occur 1/1 of each year beginning 1/1/2019. Trend for retiree premiums is based on weighting of medical and Rx trend. Short-term trend is based on expectations of GRS healthcare actuaries who consult for the plan. The ultimate trend assumption of 4.50% is based on 2.50% inflation assumption plus 1.75% long-term real GDP growth plus 0.25% for the Cadillac Tax.

Aging Factors

In any given year, the cost of medical and pharmacy benefits vary by age. As the ages of employees and retirees in the covered population increase so does the cost of benefits. Morbidity tables are employed to develop Per Capita Costs at every relevant age. The following table represents the percent by which the cost of benefits for non-disabled lives at one age is higher than the cost for the previous age. For example, according to the following table, the cost of benefits for a male age 55 is 1.90% higher than for one age 54. As discussed previously, disabled lives exhibited minimal variation by age and sex. These percentages below are separate from the annual Medical Trend, which operates to increase costs independent of and in addition to the Aging Factors shown below. These factors were developed based on actual experience data gathered from TRS-Care.

Sample Ages	Cost Increase by Age			
	Medical		Rx	
	Male	Female	Male	Female
45	0.00%	0.00%	0.00%	0.00%
50	0.00%	0.00%	0.00%	0.00%
55	1.90%	0.13%	1.42%	0.50%
60	1.90%	0.13%	1.08%	0.49%
65	4.26%	3.92%	0.79%	0.47%
70	2.93%	2.67%	0.54%	0.46%
75	2.04%	1.81%	0.30%	0.44%
80	1.36%	1.14%	0.07%	0.42%
85	0.81%	0.58%	0.00%	0.00%
90	0.00%	0.00%	0.00%	0.00%

Election Percentages

Normal Retirement: It was assumed that 70% of members retiring prior to attainment of age 65 and 75% of members retiring after attainment of age 65 would choose to receive retiree health care benefits. Of the 30% of pre-65 retirees who initially decline coverage, 16.67% are assumed to enroll at age 65.

Disability Retirement: It was assumed that 100% of members retiring through disability retirement would choose to receive retiree health care benefits.

Death while Active: It was assumed that 20% of the eligible spouses of employees who die while actively employed would choose to receive retiree health care benefits.

Two-Person Coverage: Of those assumed to elect coverage, 20% were assumed to elect two-person coverage, if eligible. For those that elect two-person coverage, it was assumed that coverage would continue to the spouse upon death of the retiree, if eligible.

Benefit Election of Vested Terminated Members

Vested terminated members were assumed to commence their retirement at the earliest age the member is eligible for unreduced retirement. The assumed rates of participation and two-person coverage were the same as those used for Normal Retirement. Because vested terminated members with less than 15 years of coverage would need to delay their retirement past the age of 65 in order to be eligible for TRS-Care, only vested terminated members with at least 15 years of service are assumed to participate in TRS-Care.

Medicare Part D Reimbursements

Medicare eligible members participate in an Employer Group Waiver Plan (EGWP) with a “Wrap” feature. The EGWP design is based on a federally approved drug formulary and plan design. A sponsor may provide additional benefits through a supplementary “Wrap” plan that ensures members will receive benefits that are relatively equal to those of the traditional plan that the sponsor currently offers. In most instances, the current plan benefit design can be replicated through the combination of an EGWP-Wrap plan at reduced costs. The key components which are expected to reduce costs include:

1. Fifty percent discount on brand name drugs while member is in the “donut hole” coverage gap. Under a standard or model Medicare Part D program, a member is responsible for 100 percent of the prescription costs from the initial coverage limit to the catastrophic coverage limit. This coverage gap is also known as the “donut hole”. The discount is also applied to the member’s true out of pocket costs which allows federal catastrophic coverage to be reached sooner.
2. The “donut hole” coverage gap is reduced incrementally to 2020.
3. As the coverage gap diminishes, the sponsor’s “Wrap” supplemental benefits within the “donut hole” decreases.
4. Federal prescription drug subsidies must be used to reduce the cost of providing benefits to Medicare eligible members, resulting in lower premium rates. This feature allows the sponsor to reflect certain EGWP-Wrap savings in the GASB 45 valuation.

In order to reflect the substantive plan, the age-rated prescription drug claims shown in Section G are net of EGWP related reimbursements. Per paragraph B47 from Appendix B of GASB Statement No. 75, “In contrast, the Board concluded that Medicare benefits that an employer is providing as a conduit for the federal government, such as through an Employer Group Waiver Plan in which eligible employees are enrolled in Medicare Part D, are not part of the substantive OPEB plan offered by the employer because the federal government is primarily responsible for and has assumed the risks associate with providing the benefits.” By adjusting the claims downward by the EGWP related reimbursements, the projected future benefits reflect the risks borne by TRS-CARE.

Miscellaneous and Technical Assumptions

Administrative Expenses	Third party administrative expenses related to the delivery of health care benefits are included in the age-adjusted claims discussed in Section F.
Rx Rebates	The age-rated prescription drug claims shown in Section G are net of expected pharmaceutical manufacturer rebates.
Pay Increase Timing	Beginning of (fiscal year). This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing	Retirement decrements are assumed to occur 9 months after the valuation date. Termination decrements are assumed to occur at the beginning of the year. All other decrements are assumed to occur mid-year.
Decrement Operation	Disability is added to the retirement decrement during retirement eligibility. The withdrawal decrement ends at normal retirement eligibility.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Spousal Age Difference	Male spouses are assumed to be three years older than female spouses.
Medicare Coverage	90% of members hired before 1986 and 100% of members hired after 1986 were assumed to be eligible for Medicare on attainment of age 65. All future disabled retirees were assumed to be eligible for Medicare at age 65. For disabled retirees who are younger than 65, 25% were assumed to be eligible for Medicare coverage at time of disability.
Experience Studies	The demographic assumptions were based on the experience study performed for the Teachers Retirement System of Texas for the period ending August 31, 2014. The OPEB specific assumptions (health care trend, plan participation, etc.) are reviewed during each OPEB valuation and updated as needed.

Excise ("Cadillac") Tax

For taxable years beginning after December 31, 2019, a 40% excise tax will be required to be paid (by the employer and/or insurer) on the aggregate cost of the health plan in excess of certain legislated thresholds. For 2018, the thresholds are $850 per month for individual coverage and $2,292 per month for family coverage.

Both Actuarial Standard of Practice No. 6 and GASB Statement Nos. 74 and 75 reference this tax, and, in accordance with these standards an estimate of the impact of the Cadillac tax has been included in this valuation.

The tax is based on the gross cost of the health plan and may, in accordance with Notice 2015-16, exclude employer contributions to FSAs, MSAs, and HSAs; coverage for non-deminimus on-site medical clinics; accident or disability income; liability; workers compensation; long-term care, dental and vision; military; and after-tax HSA/MSA employee contributions.

Adjustments to the dollar limits may be effective for non-Medicare retirees over 55; high risk professions; and age/gender.

In this valuation the impact of the Cadillac Tax has been calculated as a portion of the trend assumption. Assumptions and methods used to determine the impact of the Cadillac Tax include:

- 2018 thresholds of $850/$2,292 were indexed annually by 2.50%.
- Premium data submitted was not adjusted for permissible exclusions to the Cadillac Tax.
- There were no special adjustments to the dollar limit other than those permissible for non-Medicare retirees over 55.

Results indicate that the value of the excise tax would not be unreasonably represented by a 25 basis point addition to the long term trend assumption.

Assumption, Method, and Plan Changes

Assumption, Method, and Plan Changes

1. Significant plan changes were adopted during fiscal year ending August 31, 2017. Effective January 1, 2018, only one health plan option will exist (instead of three) and all retirees will be required to contribute monthly premiums for coverage. The health plan changes triggered changes to several of the assumptions including participation rates, retirement rates, and spousal participation rates. Per GASB's guidance, the assumption changes which resulted from the plan change were included in the impact of the plan change.
2. The August 31, 2016 valuation had assumed that the savings related to the Medicare Part D reimbursements would phase out by 2022. This assumption was removed for the August 31, 2017 valuation. Although there is uncertainty regarding these federal subsidies, we believe the new assumption better reflects the current substantive plan. This change was unrelated to the plan amendment and its impact was included as an assumption change in the reconciliation of the total OPEB liability. This change significantly lowered the total OPEB liability.
3. The discount rate changed from 2.98% as of August 31, 2016 to 3.42% as of August 31, 2017. This change lowered the total OPEB liability.

SECTION J

GLOSSARY OF TERMS

Glossary of Terms

Accrued Service	Service credited under the system that was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the OPEB trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total OPEB liability, and related actuarial present value of projected benefit payments for OPEB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.

Glossary of Terms

Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)
A calculated contribution into an OPEB plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Amortization Method
The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).

Amortization Payment
The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.

Cost-of-Living Adjustments
Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-Sharing Multiple-Employer Defined Benefit OPEB Plan (cost-sharing OPEB plan)
A multiple-employer defined benefit OPEB plan in which the OPEB obligations to the employees of more than one employer are pooled and OPEB plan assets can be used to pay the benefits of the employees of any employer that provides benefits through the OPEB plan.

Covered-Employee Payroll
The payroll of employees that are provided with benefits through the OPEB plan.

Deferred Inflows and Outflows
The deferred inflows and outflows of OPEB resources are amounts used under GASB Statement No. 75 in developing the annual OPEB expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in the OPEB expense should be included in the deferred inflows or outflows of resources.

Discount Rate
For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:

1. The benefit payments to be made while the OPEB plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and
2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)
The EAN is a cost method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Fiduciary Net Position
The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.

GASB
The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

Long-Term Expected Rate of Return
The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.

Money-Weighted Rate of Return
The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 74, the money-weighted rate of return is calculated as the internal rate of return on OPEB plan investments, net of OPEB plan investment expense.

Multiple-Employer Defined Benefit OPEB Plan
A multiple-employer plan is a defined benefit OPEB plan that is used to provide OPEB payments to the employees of more than one employer.

Municipal Bond Rate
The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.

Net OPEB Liability (NOL)
The NOL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit OPEB plan.

Non-Employer Contributing Entities
Non-employer contributing entities are entities that make contributions to an OPEB plan that is used to provide OPEB payments to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contributing entities.

Glossary of Terms

Normal Cost
The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

Other Postemployment Benefits (OPEB)
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 post-employment benefits do not include termination benefits.

Real Rate of Return
The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.

Service Cost
The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Total OPEB Expense
The total OPEB expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total OPEB Liability
3. Current-Period Benefit Changes
4. Employee Contributions (made negative for addition here)
5. Projected Earnings on Plan Investments (made negative for addition here)
6. OPEB Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to Liabilities
9. Recognition of Outflow (Inflow) of Resources due to Assets

Total OPEB Liability (TOL)
The TOL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL)
The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets
The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 74 and 75, the valuation assets are equal to the market value of assets.