



Wise County Appraisal District
Texas County & District Retirement System
GASB 68 Report
For Measurement Date: December 31, 2018
Based on Actuarial Valuation Date: December 31, 2018
For Fiscal Year Ending: December 31, 2019

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Certification

Actuarial computations presented in this report under Statement No. 68 of the Governmental Accounting Standards Board are for purposes of assisting the plan sponsor in fulfilling their financial accounting requirements. No attempt is being made to offer any accounting opinion or advice. This report is for fiscal years ending between January 31, 2019 and December 31, 2019. The reporting date for determining plan assets and obligations is December 31, 2018. The calculations enclosed in this report have been made on a basis consistent with our understanding of the plan provisions. Determinations for purposes other than meeting financial reporting requirements may be significantly different than the results contained in this report. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security or meeting employer funding requirements.

In preparing this report, we relied, without audit, on information as of December 31, 2018 furnished by the Texas County & District Retirement System (TCDRS). This information includes, but is not limited to, statutory provisions (as of January 1, 2019), member census data, and financial information.

We performed a limited review of the census and financial information used directly in our analysis and have found them to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

This report is only an estimate of the plan's financial condition as of a single date. It can neither predict the plan's future condition nor guarantee future financial soundness. All costs, liabilities, rates of interest, and other factors for the plan have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the plan and reasonable expectations); and which in combination, offer a reasonable estimate of anticipated experience affecting the plan.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, 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 (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurements.

Milliman's work was prepared solely for TCDRS in TCDRS' capacity as plan administrator of the system. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent; provided, however, we understand that in performing its duties as plan administrator, TCDRS intends to distribute the report to its participating employers and to the independent auditors of its participating employers. In addition, TCDRS may be required to release a copy of the report, if a valid request is filed pursuant to the Texas Public Information Act.

Milliman does not have a legal contract with parties other than TCDRS. The distribution of Milliman's report by TCDRS to participating employers and their auditors does not create or imply any legal duty between Milliman and the participating employers or their auditors. Milliman does not intend to benefit or create a legal duty to any recipient of its work product other than TCDRS. Milliman does not authorize the inclusion of Milliman's name or reports in any offering, memorandum, prospectus, securities filing, or solicitation of investment. Any third-party recipient should engage qualified professionals for advice appropriate to its own specific needs.

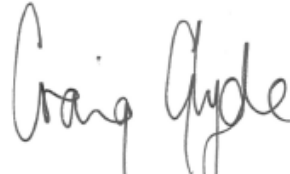
The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and has been prepared in accordance with generally recognized accepted actuarial principles and practices. Specifically, our calculation of the Net Pension Liability (including the assumptions used) was performed in compliance with the relevant Actuarial Standards of Practice. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.



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Overview of GASB 67 and GASB 68

GASB 67 applies to financial reporting for the Texas County & District Retirement System (TCDRS) and does not impact participating employers.

GASB 68 governs the specifics of reporting public pension plan obligations for employers.

The following GASB Statements provide additional information for, amend, or clarify GASB 67 and 68 and are reflected in this report:

- 1) GASB 73 provides information about accounting and reporting for pensions and related assets that are not within the scope of GASB 68, and amendments to certain provisions of GASB 67 and 68. As it relates to GASB 67 and 68, GASB 73 is effective for fiscal years beginning after June 30, 2015.
- 2) GASB 82 addresses certain issues with respect to GASB 67, GASB 68 and GASB 73, and is effective for reporting periods beginning after June 30, 2016.

Three key ways that GASB 68 affects employer financial statements are:

- 1) GASB 68 requires a liability for pension obligations, known as the Net Pension Liability, to be recognized on the balance sheets of participating employers.
- 2) Changes in the Net Pension Liability from year-to-year will be recognized as Pension Expense on the income statement or reported as deferred inflows/outflows of resources, depending on the type of change.
- 3) Deferred inflows/outflows of resources will need to be reported. These are amounts that are not entirely recognized when they occur. They are recognized over a period of time.

Under Statements 67 and 68 plan sponsors are encouraged to establish a formal funding policy that is separate from financial reporting calculations. A copy of the TCERS funding policy is shown in Appendix E of this report.

Please refer to the Glossary shown in Appendix F of this report for more information on the relevant accounting terminology.

Net Pension Liability / (Asset)

Net Pension Liability / (Asset)	December 31, 2017	December 31, 2018
Total pension liability	\$4,147,609	\$4,552,330
Fiduciary net position	4,045,530	4,048,538
Net pension liability / (asset)	102,080	503,792
Fiduciary net position as a % of total pension liability	97.54%	88.93%
Pensionable covered payroll ⁽¹⁾	\$924,831	\$1,044,042
Net pension liability as a % of covered payroll	11.04%	48.25%

The total pension liability was determined by an actuarial valuation as of the valuation date, calculated based on the discount rate and actuarial assumptions below.

Note: Rounding differences may exist above or in other tables in this report.

⁽¹⁾ Payroll is calculated based on contributions as reported to TCDRS.

Discount Rate

Discount rate ⁽²⁾	8.10%	8.10%
Long-term expected rate of return, net of investment expense ⁽²⁾	8.10%	8.10%
Municipal bond rate ⁽³⁾	Does not apply	Does not apply

⁽²⁾ This rate reflects the long-term rate of return funding valuation assumption of 8.00%, plus 0.10% adjustment to be gross of administrative expenses as required by GASB 68.

⁽³⁾ The plan's fiduciary net position is projected to be available to make all projected future benefit payments of current active, inactive, and retired members. Therefore, the discount rate for calculating the total pension liability is equal to the long-term expected rate of return, and the municipal bond rate does not apply. See page 6 of this report for further details.

Other Key Actuarial Assumptions

All actuarial assumptions that determined the total pension liability as of December 31, 2018 were based on the results of an actuarial experience study for the period January 1, 2013 - December 31, 2016, except where required to be different by GASB 68.

See Appendix B of this report (Actuarial Methods and Assumptions Used for GASB Calculations) for a listing of key assumptions used in the calculation of the total pension liability and other GASB 68 metrics.

See Appendix C (Actuarial Methods and Assumptions Used for Funding Valuation) of this report for a full description of the actuarial assumptions used in the funding valuation.

	Beginning Date	Ending Date
Valuation date	December 31, 2017	December 31, 2018
Measurement date	December 31, 2017	December 31, 2018
Employer's fiscal year	January 1, 2019	December 31, 2019

Long-Term Expected Rate of Return

The long-term expected rate of return on TCDRS assets is determined by adding expected inflation to expected long-term real returns, and reflecting expected volatility and correlation. The capital market assumptions and information shown below are provided by TCDRS' investment consultant, Cliffwater LLC. The numbers shown are based on January 2019 information for a 10-year time horizon.

Note that the valuation assumption for long-term expected return is re-assessed at a minimum of every four years, and is set based on a 30-year time horizon; the most recent analysis was performed in 2017. See Milliman's TCDRS Investigation of Experience report for the period January 1, 2013 – December 31, 2016 for more details.

Asset Class	Benchmark	Target Allocation ⁽¹⁾	Geometric Real Rate of Return ⁽²⁾
U.S. Equities	Dow Jones U.S. Total Stock Market Index	10.50%	5.40%
Private Equity	Cambridge Associates Global Private Equity & Venture Capital Index ⁽³⁾	18.00%	8.40%
Global Equities	MSCI World (net) Index	2.50%	5.70%
Int'l Equities - Developed Markets	MSCI World Ex USA (net) Index	10.00%	5.40%
Int'l Equities - Emerging Markets	MSCI Emerging Markets (net) Index	7.00%	5.90%
Investment-Grade Bonds	Bloomberg Barclays U.S. Aggregate Bond Index	3.00%	1.60%
Strategic Credit	FTSE High-Yield Cash-Pay Capped Index	12.00%	4.39%
Direct Lending	S&P/LSTA Leveraged Loan Index	11.00%	7.95%
Distressed Debt	Cambridge Associates Distressed Securities Index ⁽⁴⁾	2.00%	7.20%
REIT Equities	67% FTSE NAREIT All Equity REITs Index + 33% S&P Global REIT (net) Index	2.00%	4.15%
Master Limited Partnerships (MLPs)	Alerian MLP Index	3.00%	5.35%
Private Real Estate Partnerships	Cambridge Associates Real Estate Index ⁽⁵⁾	6.00%	6.30%
Hedge Funds	Hedge Fund Research, Inc. (HFRI) Fund of Funds Composite Index	13.00%	3.90%

⁽¹⁾ Target asset allocation adopted at the April 2019 TCDRS Board meeting.

⁽²⁾ Geometric real rates of return equal the expected return minus the assumed inflation rate of 1.70%, per Cliffwater's 2019 capital market assumptions.

⁽³⁾ Includes vintage years 2006-present of Quarter Pooled Horizon IRRs.

⁽⁴⁾ Includes vintage years 2005-present of Quarter Pooled Horizon IRRs.

⁽⁵⁾ Includes vintage years 2007-present of Quarter Pooled Horizon IRRs.

Depletion of Plan Assets / GASB Discount Rate

The discount rate is the single rate of return that, when applied to all projected benefit payments results in an actuarial present value of projected benefit payments equal to the total of the following:

1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension plan's fiduciary net position is projected to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term rate of return, calculated using the long-term expected rate of return on pension plan investments.
2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Therefore, if plan investments in a given future year are greater than projected benefit payments in that year and are invested such that they are expected to earn the long-term rate of return, the discount rate applied to projected benefit payments in that year should be the long-term expected rate of return on plan investments. If future years exist where this is not the case, then an index rate reflecting the yield on a 20-year, tax-exempt municipal bond should be used to discount the projected benefit payments for those years.

The determination of a future date when plan investments are not sufficient to pay projected benefit payments is often referred to as a depletion date projection. A depletion date projection compares projections of the pension plan's fiduciary net position to projected benefit payments and aims to determine a future date, if one exists, when the fiduciary net position is projected to be less than projected benefit payments. If an evaluation of the sufficiency of the projected fiduciary net position compared to projected benefit payments can be made with sufficient reliability without performing a depletion date projection, alternative methods to determine sufficiency may be applied.

In order to determine the discount rate to be used by the employer we have used an alternative method to determine the sufficiency of the fiduciary net position in all future years. Our alternative method reflects the funding requirements under the employer's funding policy and the legal requirements under the TCDRS Act.

1. TCDRS has a funding policy where the Unfunded Actuarial Accrued Liability (UAAL) shall be amortized as a level percent of pay over 20-year closed layered periods.
2. Under the TCDRS Act, the employer is legally required to make the contribution specified in the funding policy.
3. The employer's assets are projected to exceed its accrued liabilities in 20 years or less. When this point is reached, the employer is still required to contribute at least the normal cost.
4. Any increased cost due to the adoption of a COLA is required to be funded over a period of 15 years, if applicable.

Based on the above, the projected fiduciary net position is determined to be sufficient compared to projected benefit payments. Based on the expected level of cash flows and investment returns to the system, the fiduciary net position as a percentage of total pension liability is projected to increase from its current level in future years.

Since the projected fiduciary net position is projected to be sufficient to pay projected benefit payments in all future years, the discount rate for purposes of calculating the total pension liability and net pension liability of the employer is equal to the long-term assumed rate of return on investments. This long-term assumed rate of return should be net of investment expenses, but gross of administrative expenses for GASB 68 purposes.

Therefore, we have used a discount rate of 8.10%. This rate reflects the long-term assumed rate of return on assets for funding purposes of 8.00%, net of all expenses, increased by 0.10% to be gross of administrative expenses.

As additional documentation for auditing purposes, we have shown the projection of the Fiduciary Net Position in the following exhibit ("Projection of Fiduciary Net Position").

Projection of Fiduciary Net Position*

Calendar Year Ending**	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses*** (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (a)+(b)-(c)-(d)+(e)
2019	\$4,048,538	\$159,717	\$182,400	\$4,049	\$326,870	\$4,348,676
2020	4,348,676	162,522	156,330	4,349	352,316	4,702,835
2021	4,702,835	165,761	193,149	4,703	379,655	5,050,399
2022	5,050,399	169,187	229,431	5,050	406,489	5,391,594
2023	5,391,594	173,345	264,030	5,392	432,904	5,728,420
2024	5,728,420	177,622	297,134	5,728	459,029	6,062,208
2025	6,062,208	174,267	330,532	6,062	484,593	6,384,473
2026	6,384,473	170,530	365,945	6,384	509,129	6,691,802
2027	6,691,802	166,991	401,518	6,692	532,457	6,983,039
2028	6,983,039	163,690	437,684	6,983	554,468	7,256,531
:						
2038	8,994,491	111,844	722,643	8,994	703,941	9,078,638
:						
2048	8,306,207	7,439	852,982	8,306	638,895	8,091,254
:						
2058	6,569,425	793	574,355	6,569	509,086	6,498,379
:						
2068	7,425,640	0	262,722	7,426	590,749	7,746,241
:						
2078	13,299,591	0	82,619	13,300	1,073,458	14,277,130
:						
2088	27,942,083	0	14,757	27,942	2,261,613	30,160,998
:						
2098	60,204,532	0	352	60,205	4,874,162	65,018,139

* Projection values include no assumed future cost-of-living adjustments. Fiduciary Net Position is projected to be positive for all future years, including those years not shown in this exhibit.

** Note that only select years have been shown for formatting purposes

*** Administrative expenses are assumed to be 0.10% of Fiduciary Net Position.

Changes in Net Pension Liability / (Asset)

Changes in Net Pension Liability / (Asset)	Total Pension Liability (a)	Fiduciary Net Position (b)	Net Pension Liability / (Asset) (a) – (b)
Balances as of December 31, 2017	\$4,147,609	\$4,045,530	\$102,080
Changes for the year:			
Service cost	130,603		130,603
Interest on total pension liability ⁽¹⁾	342,968		342,968
Effect of plan changes ⁽²⁾	0		0
Effect of economic/demographic gains or losses	20,982		20,982
Effect of assumptions changes or inputs	0		0
Refund of contributions	(7,208)	(7,208)	0
Benefit payments	(82,624)	(82,624)	0
Administrative expenses		(3,252)	3,252
Member contributions		73,083	(73,083)
Net investment income		(74,496)	74,496
Employer contributions		94,774	(94,774)
Other ⁽³⁾	0	2,731	(2,731)
Balances as of December 31, 2018	\$4,552,330	\$4,048,538	\$503,792

⁽¹⁾ Reflects the change in the liability due to the time value of money. TCDRS does not charge fees or interest.

⁽²⁾ No plan changes valued.

⁽³⁾ Relates to allocation of system-wide items.

Sensitivity Analysis

The following presents the net pension liability of the employer, calculated using the discount rate of 8.10%, as well as what the Wise County Appraisal District net pension liability would be if it were calculated using a discount rate that is 1 percentage point lower (7.10%) or 1 percentage point higher (9.10%) than the current rate.

	1% Decrease	Current Discount Rate	1% Increase
	7.10%	8.10%	9.10%
Total pension liability	\$5,185,541	\$4,552,330	\$4,020,853
Fiduciary net position	4,048,538	4,048,538	4,048,538
Net pension liability / (asset)	\$1,137,003	\$503,792	(\$27,685)

Pension Expense / (Income)

Pension Expense / (Income)	January 1, 2018 to December 31, 2018
Service cost	\$130,603
Interest on total pension liability ⁽¹⁾	342,968
Effect of plan changes	0
Administrative expenses	3,252
Member contributions	(73,083)
Expected investment return net of investment expenses	(330,766)
Recognition of deferred inflows/outflows of resources	
Recognition of economic/demographic gains or losses	16,041
Recognition of assumption changes or inputs	15,424
Recognition of investment gains or losses	113,081
Other ⁽²⁾	(2,731)
Pension expense / (income)	\$214,789

⁽¹⁾ Reflects the change in the liability due to the time value of money. TCDRS does not charge fees or interest.

⁽²⁾ Relates to allocation of system-wide items.

As of December 31, 2018, the deferred inflows and outflows of resources are as follows:

Deferred Inflows / Outflows of Resources	Deferred Inflows of Resources	Deferred Outflows of Resources
Differences between expected and actual experience	\$1,554	\$29,850
Changes of assumptions	0	14,728
Net difference between projected and actual earnings	0	263,172
Contributions made subsequent to measurement date ⁽³⁾	N/A	Employer determined

Amounts currently reported as deferred outflows of resources and deferred inflows of resources related to pensions, excluding contributions made subsequent to the measurement date, will be recognized in pension expense as follows:

Year ended December 31:	
2019	\$127,910
2020	51,187
2021	46,045
2022	81,054
2023	0
Thereafter ⁽⁴⁾	0

⁽³⁾ Any eligible employer contributions made subsequent to the measurement date through the employer's fiscal year end should be reflected as outlined in Appendix D of this report.

⁽⁴⁾ Total remaining balance to be recognized in future years, if any. Note that additional future deferred inflows and outflows of resources may impact these numbers.

Schedule of Deferred Inflows and Outflows of Resources

Expense / (Income) Calculation				Balances of Deferred Inflows and Outflows as of 12/31/2018	
Original Amount (a)	Date Established (b)	Original Recognition Period ⁽¹⁾ (c)	Amount Recognized for 2018 ⁽¹⁾ (a) ÷ (c)	Inflows	Outflows
<i>Investment (gains) or losses</i>					
\$405,262	12/31/2018	5.0	\$81,052	\$0	\$324,210
(223,215)	12/31/2017	5.0	(44,643)	133,929	0
25,701	12/31/2016	5.0	5,140	0	10,281
313,047	12/31/2015	5.0	62,609	0	62,610
44,617	12/31/2014	5.0	8,923	0	0
 <i>Economic/ demographic (gains) or losses</i>					
20,982	12/31/2018	4.0	5,246	0	15,736
(2,590)	12/31/2017	5.0	(518)	1,554	0
56,458	12/31/2016	4.0	14,115	0	14,114
(11,519)	12/31/2015	4.0	(2,880)	0	0
390	12/31/2014	5.0	78	0	0
 <i>Assumption changes or inputs</i>					
0	12/31/2018	4.0	0	0	0
24,546	12/31/2017	5.0	4,909	0	14,728
0	12/31/2016	4.0	0	0	0
42,058	12/31/2015	4.0	10,515	0	0
0	12/31/2014	5.0	0	0	0
 <i>Employer contributions made subsequent to measurement date ⁽²⁾</i>					
—————Employer Determined—————					

⁽¹⁾ Investment (gains)/losses are recognized in pension expense over a period of five years; economic/demographic (gains)/losses and assumption changes or inputs are recognized over the average remaining service life for all active, inactive, and retired members.

⁽²⁾ Any eligible employer contributions made subsequent to the measurement date through the employer's fiscal year end should be reflected as deferred outflows as outlined in Appendix D of this report.

Schedule of Changes in Net Pension Liability and Related Ratios

	Year Ended December 31									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Total Pension Liability										
Service cost	\$130,603	\$132,702	\$132,653	\$124,181	\$119,854	N/A	N/A	N/A	N/A	N/A
Interest on total pension liability	342,968	311,507	273,270	247,478	223,221	N/A	N/A	N/A	N/A	N/A
Effect of plan changes	0	0	0	(23,345)	0	N/A	N/A	N/A	N/A	N/A
Effect of assumption changes or inputs	0	24,546	0	42,058	0	N/A	N/A	N/A	N/A	N/A
Effect of economic/demographic (gains) or losses	20,982	(2,590)	56,458	(11,519)	390	N/A	N/A	N/A	N/A	N/A
Benefit payments/refunds of contributions	<u>(89,832)</u>	<u>(62,041)</u>	<u>(54,087)</u>	<u>(56,691)</u>	<u>(53,945)</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Net change in total pension liability	404,721	404,125	408,295	322,163	289,520	N/A	N/A	N/A	N/A	N/A
Total pension liability, beginning	<u>4,147,609</u>	<u>3,743,485</u>	<u>3,335,190</u>	<u>3,013,027</u>	<u>2,723,507</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Total pension liability, ending (a)	<u>\$4,552,330</u>	<u>\$4,147,609</u>	<u>\$3,743,485</u>	<u>\$3,335,190</u>	<u>\$3,013,027</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Fiduciary Net Position										
Employer contributions	\$94,774	\$74,726	\$68,447	\$64,163	\$62,528	N/A	N/A	N/A	N/A	N/A
Member contributions	73,083	64,738	66,731	61,694	59,959	N/A	N/A	N/A	N/A	N/A
Investment income net of investment expenses	(74,496)	506,730	232,461	(54,612)	192,468	N/A	N/A	N/A	N/A	N/A
Benefit payments/refunds of contributions	(89,832)	(62,041)	(54,087)	(56,691)	(53,945)	N/A	N/A	N/A	N/A	N/A
Administrative expenses	(3,252)	(2,690)	(2,532)	(2,259)	(2,309)	N/A	N/A	N/A	N/A	N/A
Other	<u>2,731</u>	<u>1,012</u>	<u>6,602</u>	<u>6,396</u>	<u>4,016</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Net change in fiduciary net position	3,009	582,476	317,622	18,692	262,717	N/A	N/A	N/A	N/A	N/A
Fiduciary net position, beginning	<u>4,045,530</u>	<u>3,463,054</u>	<u>3,145,432</u>	<u>3,126,740</u>	<u>2,864,023</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Fiduciary net position, ending (b)	<u>\$4,048,538</u>	<u>\$4,045,530</u>	<u>\$3,463,054</u>	<u>\$3,145,432</u>	<u>\$3,126,740</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Net pension liability / (asset), ending = (a) - (b)	<u>\$503,792</u>	<u>\$102,080</u>	<u>\$280,431</u>	<u>\$189,758</u>	<u>(\$113,713)</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Fiduciary net position as a % of total pension liability	88.93%	97.54%	92.51%	94.31%	103.77%	N/A	N/A	N/A	N/A	N/A
Pensionable covered payroll	\$1,044,042	\$924,831	\$953,300	\$881,350	\$856,552	N/A	N/A	N/A	N/A	N/A
Net pension liability/(asset) as % of covered payroll	48.25%	11.04%	29.42%	21.53%	-13.28%	N/A	N/A	N/A	N/A	N/A

This schedule is presented to illustrate the requirement to show information for 10 years. However, recalculations of prior years are not required, and if prior years are not reported in accordance with the standards of GASB 67/68, they should not be shown here. Therefore, we have shown only years for which the new GASB statements have been implemented.

Schedule of Employer Contributions⁽¹⁾

Year Ending December 31	Actuarially Determined Contribution ⁽¹⁾	Actual Employer Contribution ⁽¹⁾	Contribution Deficiency (Excess)	Pensionable Covered Payroll ⁽²⁾	Actual Contribution as a % of Covered Payroll
2009	\$29,742	\$29,742	\$0	\$660,927	4.5%
2010	41,924	41,924	0	648,983	6.5%
2011	47,046	47,046	0	700,088	6.7%
2012	50,761	50,761	0	756,503	6.7%
2013	53,387	53,387	0	808,888	6.6%
2014	62,528	62,528	0	856,552	7.3%
2015	64,163	64,163	0	881,350	7.3%
2016	68,447	68,447	0	953,300	7.2%
2017	74,726	74,726	0	924,831	8.1%
2018	94,774	94,774	0	1,044,042	9.1%

⁽¹⁾ TCDRS calculates actuarially determined contributions on a calendar year basis. GASB Statement No. 68 indicates the employer should report employer contribution amounts on a fiscal year basis. If additional assistance is needed, please contact TCDRS.

⁽²⁾ Payroll is calculated based on contributions as reported to TCDRS.

Notes to Schedule

Valuation Date: Actuarially determined contribution rates are calculated each December 31, two years prior to the end of the fiscal year in which contributions are reported.

Methods and assumptions used to determine contribution rates:

Actuarial Cost Method	Entry Age
Amortization Method	Level percentage of payroll, closed
Remaining Amortization Period	18.2 years (based on contribution rate calculated in 12/31/2018 valuation)
Asset Valuation Method	5-year smoothed market
Inflation	2.75%
Salary Increases	Varies by age and service. 4.9% average over career including inflation.
Investment Rate of Return	8.00%, net of administrative and investment expenses, including inflation
Retirement Age	Members who are eligible for service retirement are assumed to commence receiving benefit payments based on age. The average age at service retirement for recent retirees is 61.
Mortality	130% of the RP-2014 Healthy Annuitant Mortality Table for males and 110% of the RP-2014 Healthy Annuitant Mortality Table for females, both projected with 110% of the MP-2014 Ultimate scale after 2014.
Changes in Assumptions and Methods Reflected in the Schedule of Employer Contributions*	2015: New inflation, mortality and other assumptions were reflected. 2017: New mortality assumptions were reflected.
Changes in Plan Provisions Reflected in the Schedule of Employer Contributions*	2015: No changes in plan provisions were reflected in the Schedule. 2016: No changes in plan provisions were reflected in the Schedule. 2017: New Annuity Purchase Rates were reflected for benefits earned after 2017. 2018: No changes in plan provisions were reflected in the Schedule.

**Only changes that affect the benefit amount and that are effective 2015 and later are shown in the Notes to Schedule.*

Appendix A—GASB 68 Plan Description for Wise County Appraisal District

A description of the pension plan pursuant to Paragraph 40 of GASB Statement No. 68 is as follows:

- a. Wise County Appraisal District participates in the Texas County & District Retirement System (TCDRS), which is a statewide, agent multiple-employer, public employee retirement system.
- b. A brief description of benefit terms:
 - 1) All full- and part-time non-temporary employees participate in the plan, regardless of the number of hours they work in a year. Employees in a temporary position are not eligible for membership.
 - 2) The plan provides retirement, disability and survivor benefits.
 - 3) TCDRS is a savings-based plan. For the district’s plan, 7% of each employee’s pay is deposited into his or her TCDRS account. By law, employee accounts earn 7% interest on beginning of year balances annually. At retirement, the account is matched at an employer set percentage (current match is 200%) and is then converted to an annuity.
 - 4) There are no automatic COLAs. Each year, the district may elect an ad hoc COLA for its retirees (if any). There are two COLA types, each limited by actual inflation.
 - 5) Benefit terms are established under the TCDRS Act. They may be amended as of Jan. 1 each year, but must remain in conformity with the Act.
- c. Membership information is shown in the chart below.
- d. The district’s contribution rate is calculated annually on an actuarial basis, although the employer may elect to contribute at a higher rate. The Wise County Appraisal District contribution rate is based on the TCDRS funding policy adopted by the TCDRS Board of Trustees and must conform with the TCDRS Act. The employee contribution rates are set by the district and are currently 7%. Contributions to the pension plan from the district for 2018 are shown in the Schedule of Employer Contributions.
- e. The most recent comprehensive annual financial report for TCDRS can be found at the following link, www.tcdrs.org.

Membership Information

Members	Dec. 31, 2017	Dec. 31, 2018
Number of inactive employees entitled to but not yet receiving benefits:	14	15
Number of active employees:	17	18
Average monthly salary*:	\$4,545	\$4,464
Average age*:	51.27	50.58
Average length of service in years*:	14.79	13.74

Inactive Employees (or their Beneficiaries) Receiving Benefits

Number of benefit recipients:	9	10
Average monthly benefit:	\$571	\$780

**Averages reported for active employees.*

Appendix B—Actuarial Methods and Assumptions Used for GASB Calculations

All actuarial methods and assumptions used for this GASB analysis were the same as those used in the December 31, 2018 funding valuation (see Appendix C, following, for details), except as noted below and throughout this report. Please see the Wise County Appraisal District December 31, 2018 Summary Valuation Report for further details.

The following are the key assumptions and methods used in this GASB analysis.

Valuation Timing	Actuarially determined contribution rates are calculated on a calendar year basis as of December 31, two years prior to the end of the fiscal year in which the contributions are reported.
Actuarial Cost Method	Entry Age Normal ⁽¹⁾
Amortization Method	
Recognition of economic/demographic gains or losses	Straight-Line amortization over Expected Working Life
Recognition of assumptions changes or inputs	Straight-Line amortization over Expected Working Life
Asset Valuation Method	
Smoothing period	5 years
Recognition method	Non-asymptotic
Corridor	None
Inflation	Same as funding valuation: See Appendix C
Salary Increases	Same as funding valuation: See Appendix C
Investment Rate of Return	8.10% (Gross of administrative expenses)
Cost-of-Living Adjustments	Cost-of-Living Adjustments for Wise County Appraisal District are not considered to be substantively automatic under GASB 68. Therefore, no assumption for future cost-of-living adjustments is included in the GASB calculations. No assumption for future cost-of-living adjustments is included in the funding valuation.
Retirement Age	Same as funding valuation: See Appendix C
Turnover	Same as funding valuation: See Appendix C
Mortality	Same as funding valuation: See Appendix C

⁽¹⁾ Individual entry age normal cost method, as required by GASB 68, used for GASB calculations. Note that a slightly different version of the entry age normal cost method is used for the funding actuarial valuation.

Appendix C—Actuarial Methods and Assumptions Used for Funding Valuation

Except where indicated in the section of this GASB 68 report entitled “Actuarial Methods and Assumptions Used for GASB Calculations”, the assumptions used in this analysis for the December 31, 2018 financial reporting metrics are the same as those used in the December 31, 2018 actuarial valuation analysis for Wise County Appraisal District.

The following is a description of the assumptions used in the December 31, 2018 actuarial valuation analysis for Wise County Appraisal District. This information may also be found in the Wise County Appraisal District December 31, 2018 Summary Valuation Report.

Economic Assumptions

TCDRS system-wide economic assumptions:

Real rate of return	5.25%
Inflation	2.75%
Long-term investment return	8.00%

The assumed long-term investment return of 8% is net after investment and administrative expenses. It is assumed returns will equal the nominal annual rate of 8% for calculating the actuarial accrued liability and the normal cost contribution rate for the retirement plan of each participating employer.

The annual salary increase rates assumed for individual members vary by length of service and by entry-age group. The annual rates consist of a general wage inflation component of 3.25% (made up of 2.75% inflation and 0.5% productivity increase assumptions) and a merit, promotion and longevity component that on average approximates 1.6% per year for a career employee. (See Table 1 for Merit Salary Increases.)

Employer-specific economic assumptions:

Growth in membership	0.00%
Payroll growth for funding calculations	3.25%

The payroll growth assumption is for the aggregate covered payroll of an employer.

Table 1
Merit Salary Increases*

Years of Service	Entry Age			
	Before 30	Ages 30-39	Ages 40-49	50 and later
0	5.00%	4.50%	4.00%	3.50%
1	4.25	3.75	3.25	2.75
2	3.85	3.35	2.85	2.35
3	3.50	3.00	2.50	2.00
4	3.15	2.65	2.25	1.85
5	2.90	2.55	2.15	1.70
6	2.65	2.30	1.95	1.55
7	2.45	2.10	1.75	1.40
8	2.30	1.95	1.60	1.25
9	2.15	1.80	1.45	1.10
10	2.00	1.70	1.40	1.05
11	1.90	1.60	1.25	1.00
12	1.80	1.50	1.15	0.95
13	1.70	1.40	1.05	0.90
14	1.60	1.30	0.95	0.85
15	1.50	1.23	0.90	0.80
16	1.40	1.15	0.85	0.75
17	1.30	1.05	0.80	0.70
18	1.23	0.97	0.75	0.65
19	1.15	0.90	0.70	0.60
20	1.10	0.85	0.65	0.55
21	1.05	0.80	0.60	0.50
22	1.00	0.75	0.55	0.50
23	0.95	0.70	0.50	0.50
24	0.90	0.65	0.50	0.50
25	0.85	0.60	0.50	0.50
26	0.80	0.60	0.50	0.50
27	0.75	0.60	0.50	0.50
28	0.70	0.60	0.50	0.50
29	0.65	0.60	0.50	0.50
30 & Up	0.60	0.60	0.50	0.50

* These rates do not include the wage inflation rate of 3.25% per year. For example, a member who entered the system at age 20 and is in the first year of service is assumed to receive an 8.41% total annual increase in his salary. The 8.41% is a combination of the 5.00% merit increase and the 3.25% wage inflation. Note that the two components are compounded, so it is a slightly different result than just adding the two percentages.

Demographic Assumptions

TCDRS system-wide demographic assumptions:

Replacement of Terminated Members — New employees are assumed to replace any terminated members and have similar entry ages.

Disability — The rates of disability used in this valuation are illustrated in Table 2. Members who become disabled are eligible to commence benefit payments regardless of age. Rates of disability are in a custom table based on TCDRS experience.

Table 2
Annual Rates of Disability*

Age	Work Related Male and Female	All Other Causes Male and Female	Age	Work Related Male and Female	All Other Causes Male and Female
less than 25	0.000%	0.000%	43	0.004%	0.058%
25	0.000	0.000	44	0.004	0.063
26	0.000	0.000	45	0.004	0.069
27	0.000	0.000	46	0.005	0.076
28	0.000	0.008	47	0.006	0.084
29	0.000	0.008	48	0.007	0.095
30	0.000	0.009	49	0.009	0.109
31	0.000	0.010	50	0.010	0.125
32	0.000	0.010	51	0.012	0.142
33	0.000	0.011	52	0.013	0.162
34	0.000	0.014	53	0.015	0.183
35	0.001	0.018	54	0.018	0.203
36	0.001	0.022	55	0.018	0.222
37	0.002	0.028	56	0.018	0.238
38	0.002	0.033	57	0.018	0.250
39	0.002	0.038	58	0.018	0.259
40	0.002	0.042	59	0.018	0.270
41	0.003	0.047	60 & Above	0.018	0.000
42	0.003	0.053			

* The probability of disablement from all other causes is applicable for members who are vested but not eligible for service retirement. Before a member is vested, only the work related disability provisions are applicable.

Mortality

Depositing members	90% of the RP-2014 Active Employee Mortality Table for males and 90% of the RP-2014 Active Employee Mortality Table for females, projected with 110% of the MP-2014 Ultimate scale after 2014.
Service retirees, beneficiaries and non-depositing members	130% of the RP-2014 Healthy Annuitant Mortality Table for males and 110% of the RP-2014 Healthy Annuitant Mortality Table for females, both projected with 110% of the MP-2014 Ultimate scale after 2014.
Disabled retirees	130% of the RP-2014 Disabled Annuitant Mortality Table for males and 115% of the RP-2014 Disabled Annuitant Mortality Table for females, both projected with 110% of the MP-2014 Ultimate scale after 2014

Family Composition — For current retirees, beneficiary information is supplied by TCDRS. For purposes of calculating the Survivor Benefit for current depositing and non-depositing members, male members are assumed to have a female beneficiary who is three years younger. Female members are assumed to have a male beneficiary who is three years older.

Service Retirement — Members eligible for service retirement are assumed to retire at the rates shown in Table 3.

**Table 3
Annual Rates of Service Retirement***

Age	Male	Female
40-44	4.5%	4.5%
45-40	9.0	9.0
50	10.0	10.0
51	9.0	9.0
52	9.0	9.0
53	9.0	9.0
54	10.0	10.0
55	10.0	10.0
56	10.0	10.0
57	10.0	10.0
58	12.0	12.0
59	12.0	12.0
60	12.0	12.0
61	12.0	12.0

Age	Male	Female
62	20.0%	20.0%
63	15.0	15.0
64	15.0	15.0
65	25.0	25.0
66	25.0	25.0
67	22.0	22.0
68	20.0	20.0
69	20.0	20.0
70	22.0	22.0
71	22.0	22.0
72	22.0	22.0
73	22.0	22.0
74**	22.0	22.0

* *Deferred members are assumed to retire (100% probability) at the later of:*

- a) *age 60*
- b) *earliest retirement eligibility.*

** *For all eligible members ages 75 and later, retirement is assumed to occur immediately.*

Employer-specific demographic assumptions:

Other Terminations of Employment — The rate of assumed future termination from active participation in the plan for reasons other than death, disability or retirement are illustrated in Table 4. The rates vary by length of service, entry-age group (age at hire) and gender. No termination after eligibility for retirement is assumed.

Table 4
Annual Rates of Termination

Years of Service	Entry Age 20		Entry Age 30		Entry Age 40		Entry Age 50	
	Male	Female	Male	Female	Male	Female	Male	Female
0	26.7%	29.0%	22.2%	24.2%	19.0%	20.5%	17.8%	19.3%
1	18.2	19.8	15.4	16.6	13.0	14.2	12.3	13.3
2	13.6	14.7	11.5	12.5	9.8	10.6	9.2	10.0
3	10.8	11.7	9.2	10.0	7.8	8.5	7.4	8.0
4	8.9	9.7	7.7	8.3	6.6	7.0	6.2	6.6
5	7.9	8.6	6.9	7.5	5.8	6.4	5.5	6.0
6	7.0	7.6	6.2	6.6	5.2	5.7	4.9	5.4
7	6.2	6.8	5.5	6.0	4.7	5.1	4.4	4.8
8	5.2	5.6	4.6	5.0	3.9	4.2	3.7	4.0
9	5.0	5.4	4.5	4.8	3.8	4.1	3.6	3.8
10	4.4	4.7	4.0	4.3	3.4	3.7	3.2	3.4
11	3.8	4.2	3.5	3.8	3.0	3.3	2.8	3.0
12	3.5	3.8	3.2	3.5	2.7	3.0	2.6	2.8
13	3.1	3.4	2.9	3.2	2.5	2.7	2.3	2.6
14	2.8	3.0	2.6	2.8	2.2	2.4	2.1	2.2
15	2.4	2.6	2.3	2.5	1.9	2.2	1.8	2.0
16	2.1	2.2	2.0	2.2	1.7	1.8	1.6	1.8
17	1.8	2.0	1.8	1.9	1.5	1.6	1.4	1.5
18	1.6	1.7	1.5	1.7	1.3	1.4	1.2	1.4
19	1.4	1.5	1.4	1.5	1.2	1.3	1.1	1.2
20	1.3	1.4	1.3	1.4	1.1	1.2	1.0	1.1
21	1.1	1.3	1.1	1.3	1.0	1.1	1.0	1.0
22	1.0	1.2	1.0	1.2	0.9	1.0	0.9	1.0
23	1.0	1.1	1.0	1.1	0.8	0.9	0.8	0.9
24	0.9	1.0	0.9	1.0	0.8	0.9	0.8	0.8
25	0.9	1.0	0.9	1.0	0.7	0.8	0.7	0.8
26	0.9	0.9	0.9	0.9	0.7	0.8	0.7	0.7
27	0.8	0.8	0.8	0.8	0.6	0.7	0.6	0.6
28	0.8	0.7	0.8	0.7	0.6	0.7	0.6	0.6
29	0.7	0.6	0.7	0.6	0.5	0.6	0.5	0.5
30 & Later	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Withdrawals — Members who terminate may either elect to leave their account with TCDRS or withdraw their funds. The probability that a member elects a withdrawal varies by length of service and vesting schedule. Rates applied to your plan are shown in Table 5. For non-depositing members who are not vested, 100% are assumed to elect a withdrawal.

**Table 5
Probability of Withdrawal**

Years of Service	Probability	Years of Service	Probability
0	100%	15	40
1	100	16	38
2	100	17	36
3	100	18	33
4	100	19	30
5	100	20	28
6	100	21	26
7	100	22	24
8	100	23	22
9	100	24	20
10	45	25	18
11	44	26	16
12	43	27	14
13	42	28	12
14	41	29*	10

** Members with more than 29 years of service are not assumed to refund.*

Appendix D—Contributions Made Subsequent to Measurement Date

GASB Statement No. 71 (“GASB 71”), *Pension Transition for Contributions Made Subsequent to the Measurement Date – an Amendment of GASB Statement No. 68*, requires employer contributions made between the measurement date, which is the date used to determine an employer’s net pension liability (“NPL”), and the employer’s fiscal year end be reported as a deferred outflow of resources (“DOoR”). The statement “requires a beginning deferred outflow of resources for its pension contributions, if any, made subsequent to the measurement date of the beginning net pension liability.”

For GASB valuation purposes, TCDRS’ consulting actuary will compute each participating employer’s NPL as of Dec. 31 of each year. Employers will need to account for pension contributions (employer; not employee contributions or group term life premiums) made between the measurement date and the employer’s fiscal year end as a DOoR. These contributions will not be reported to you as part of this GASB report; employers can access their monthly employer activity statements, which display employer contributions to the retirement plan via the TCDRS Employer Portal.

Appendix E—Summary of TCDRS Funding Policy

Texas County & District Retirement System Funding Policy

In Effect for the Dec. 31, 2018 Actuarial Valuation

Introduction

The funding policy governs how the Texas County & District Retirement System (TCDRS) determines the employer contributions required to ensure that benefits provided to TCDRS members are funded in a reasonable and equitable manner. The goals of TCDRS' funding policy are to fully fund benefits over the course of employees' careers to ensure intergenerational equity, and to balance rate and benefit stability with the need for the plan funding to be reflective of current plan conditions.

This policy documents the current funding policies in effect for the Dec. 31, 2018 actuarial valuation as established by state law, administrative rule and action by the TCDRS Board of Trustees (the board). The policy serves as a comprehensive funding overview and complies with the GASB reporting requirements for an agent multiple-employer plan.

TCDRS funding overview

TCDRS is a model for responsible, disciplined funding. TCDRS does not receive any state funding. As an agent, multiple-employer plan, each participating employer in the system funds its plan independently. A combination of three elements funds each employer's plan: employee deposits, employer contributions and investment income.

- The deposit rate for employees is 4%, 5%, 6% or 7% of compensation, as adopted by the employer's governing body.
- Participating employers are required to contribute at actuarially determined rates to ensure adequate funding for each employer's plan. Employer contribution rates are determined annually and approved by the TCDRS Board of Trustees.
- Investment income funds a large part of the benefits employees earn.

Pursuant to state law, employers participating in the system must pay 100% of their actuarially determined required contributions on an annual basis.

Each employer has the opportunity to make additional contributions in excess of its annual required contribution rate either by adopting an elected rate that is higher than the required rate or by making additional contributions on an ad hoc basis. Employers may make additional contributions to pay down their liabilities faster, pre-fund benefit enhancements and/or buffer against future adverse experience.

In addition, employers annually review their plans and may adjust benefits and costs based on their local needs and budgets. Although accrued benefits may not be reduced, employers may reduce future benefit accruals and immediately reduce costs.

Methodology for determining employer contribution rates

The board hires independent outside consulting actuaries to conduct an annual valuation to measure the funding status and to determine the required employer contribution rate for each employer plan. In order to calculate the employer contribution rate, the actuary does the following:

- Studies each employer's adopted plan of benefits and the profile of its plan participants, and uses assumptions established by the board to estimate future benefit payments.
- Discounts the estimate of future benefit payments to the present based on the long-term rate of investment return to determine the present value of future benefits.
- Compares the present value of future benefits with the plan's assets to determine the difference that needs to be funded based on the funding policy.

The valuation of each employer plan is based on the system funding policy and the assets, benefits and participant profile of each participating employer plan. The four key components in the determination of employer contribution rates are: the actuarial cost method, amortization policy, the asset valuation method and the actuarial assumptions.

Actuarial cost method

TCDRS has adopted the replacement life entry age cost method, a conservative cost method and an industry standard. The goal of this cost method is to fund benefits in an orderly manner for each participant over his or her career so that sufficient funds are accumulated by the time benefit payments begin. Under this approach, benefits are funded in advance as a level percentage of pay. This portion of the contribution rate is called the normal cost rate and generally remains stable from year to year.

Amortization policy

The portion of the contribution rate that funds any remaining unfunded amounts for benefits that are not covered by the normal cost is called the unfunded actuarial accrued liability (UAAL) rate. UAAL amounts occur when benefit enhancements are adopted that have not been funded in advance, or when actual investment or demographic experience varies from the actuarial assumptions (actuarial gains and losses). UAAL amounts are amortized on a level-percentage-of-covered-payroll basis over a closed period with a layered approach. The closed periods ensure all unfunded liabilities are financed over no more than 20 years from the time they occur. Each year new layers are established to amortize changes in the UAAL due to actuarial gains or losses, as well as any plan benefit changes elected by an employer for that year.

Benefit enhancements are amortized over a 15-year closed period. All other changes in the UAAL are amortized over 20-year closed periods. These amortization periods are generally more conservative than those of most other public retirement plans and are stricter than the minimum amortization period required under state law.

For newly participating districts that have five or fewer employees who are all within five years of retirement eligibility, any initial UAAL and any subsequent adoption of prior service credits are amortized over a five-year closed amortization period. This ensures that benefits are appropriately funded over the current generation of employees.

Notwithstanding the layered approach, the total UAAL payment may not be less than the required payment obtained by amortizing the entire UAAL over a 20-year period.

If a plan is overfunded, the overfunded actuarial accrued liability (OAAL) is calculated annually using a 30-year open amortization period.

Asset valuation method

When determining the actuarial value of assets used for measuring a plan's funded status, TCDRS smooths each year's actuarial investment gains and losses and recognizes them over a five-year period to better reflect the system's long-term investment horizons and to keep employer contribution rates more stable. As actuarial asset investment gains and losses are recognized, they become part of the actuarial gains and losses for the year and are funded according to the amortization policy. The five-year period helps stabilize employer rates while still ensuring that rates are reflective of current market conditions.

In addition, the board has the ability to set aside reserves from investment earnings that are used to help offset future negative economic cycles. These reserves are held separately and are not counted as part of a participating employer's plan assets until they are passed through to employers when determined necessary by the board. Reserves help maintain rate stability for employers. In addition, reserves ensure that employers do not adopt benefit increases based on a temporarily lower plan cost at a high point in a market cycle and, conversely, are not as pressured to immediately reduce benefit levels during a low point in a market cycle.

Actuarial assumptions

Demographic and economic assumptions are used to estimate employer liabilities and to determine the amount of funding required from employer contributions as opposed to investment earnings. These assumptions reflect a long-term perspective of 30 years or more. Examples of key economic assumptions include long-term investment return, long-term inflation and annual payroll increase.

Demographic assumptions are the actuary's best estimate of what will happen to TCDRS members and retirees. Examples of demographic assumptions are employment termination rates, retirement rates and retiree mortality rates. A complete listing of all actuarial assumptions can be found in the annual system-wide valuation report.

Oversight

The board has established review policies to ensure that actuarial assumptions are appropriate and that the methodology for determining employer contribution rates is being correctly applied.

Review of actuarial assumptions

TCDRS' actuarial assumptions are periodically reviewed and revised as deemed necessary to reflect best estimates of future experience. Every four years, the TCDRS consulting actuary conducts an investigation of experience. TCDRS assumptions are compared to plan experience and future expectations, and changes to the assumptions are recommended as needed. The board adopts actuarial assumptions to be used in the valuation based on the results of this study.

An actuarial audit of every investigation of experience is required and must be performed by an independent auditing actuary to review the consulting actuary's analysis, conclusions and recommendations for accuracy, appropriateness and reasonableness. These audits alternate between a peer review and a full replication audit of the investigation of experience. In a peer review audit of the investigation, the reviewing actuary uses the raw results of the investigation for demographic assumptions as calculated by the consulting actuary to test the conclusions and recommendations. In addition, the reviewing actuary independently analyzes economic assumptions to test the results and recommendations of the consulting actuary. The reviewing actuary also examines the consulting actuary's methods and assumptions for reasonableness and internal consistency. In a full replication audit of the investigation, in addition to performing all of the steps of a peer review, the auditing actuary fully replicates the calculation of the investigation's raw results.

Review of employer contribution rates

In order to test accuracy and ensure that the actuarial methods and assumptions are being correctly applied, an audit of the valuation is required every four years. These audits are conducted by an independent reviewing actuary and alternate between a peer review and a full replication audit of the valuation. In the peer review audit of the valuation, the actuary uses a sample of participant data and TCDRS plans to test the results of the valuation. The reviewing actuary also examines the consulting actuary's methods and assumptions for reasonableness and internal consistency. In a full replication audit of the valuation, the auditing actuary performs all the steps of a peer review audit but instead of analyzing sample data and plans, the auditing actuary fully replicates the original actuarial valuation.

Review and modification of funding policy

The board will review this policy on a regular basis and may modify this policy at its discretion. Modifications to the policy may be submitted for consideration to the board by staff and/or outside consulting actuaries as circumstances warrant.

Appendix F—Glossary

Actuarially Determined Contribution	The required contribution that is calculated for the reporting period, determined based on the funding policy and the annual valuation.
Deferred Inflows/Outflows of Resources	Portion of changes in net pension liability that is not immediately recognized in Pension Expense. These changes include differences between expected and actual experience, changes in assumptions, and differences between expected and actual earnings on plan investments.
Discount Rate	Single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the sum of: <ol style="list-style-type: none">1) The actuarial present value of benefit payments projected to be made in future periods where the plan assets are projected to be sufficient to meet benefit payments, calculated using the Long-Term Expected Rate of Return.2) The actuarial present value of projected benefit payments not included in (1), calculated using the Municipal Bond Rate.
Fiduciary Net Position	Equal to market value of assets.
Long-Term Expected Rate of Return	Long-term expected rate of return on pension plan investments expected to be used to finance the payment of benefits.
Municipal Bond Rate	Yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher.
Net Pension Liability / (Asset)	Total Pension Liability minus the Plan's Fiduciary Net Position.
Projected Benefit Payments	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and expected future service.
Service Cost	The portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
Total Pension Liability	The portion of actuarial present value of projected benefit payments that is attributable to past periods of member service using the Entry Age Normal cost method based on the requirements of GASB 67 and 68.