



Approved

Commissioners Court

JUN 26 2017

**Plan Assessment for Plan Year 2018
Johnson County – 225
Participation Date – 1/1/1968**

It's that time of year again — time to look at your TCDRS retirement plan and decide whether or not your benefits meet your workforce needs and budget. This plan assessment will give you an overview of the benefits you provide as well as how much it will cost to provide these benefits in the upcoming plan year.

2018 Plan

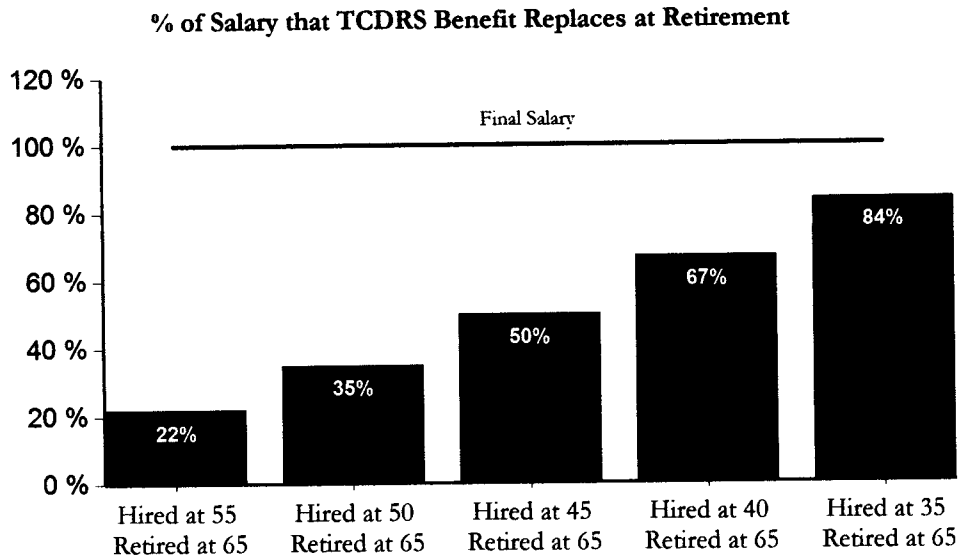
Employee Deposit	
Employee Deposit Rate	7%
Employer Matching	200%
Prior Service Credit	155%
Retirement Eligibility	
Age 60 (Vesting)	8 years of service
Rule of	75 years total age + service
At Any Age	20 years of service
Optional Benefits	
Partial Lump-Sum Payment at Retirement	No
Group Term Life	None
Actuarial Valuation	
Normal Cost Rate	6.66%
UAAL/(OAAL) Rate	4.16%
Required Rate	10.82%
Elected Rate	N/A
Total Contribution Rate	
Retirement Plan Rate (greater of required or elected rate)	10.82%
Group Term Life Rate	N/A
Total Contribution Rate	10.82%
Actuarial Balance as of 12/31/2016	
Actuarial Accrued Liability	\$104,777,997
Actuarial Value of Assets	\$92,862,757
Unfunded Actuarial Accrued Liability	\$11,915,240
Funded Ratio	88.6%

Notes:

Last COLA 2009

What You Are Providing

The TCDRS benefit is based on employee deposits, which earn 7% compound interest each year, and employer matching at retirement. The following chart shows the estimated TCDRS benefit as a percentage of final salary prior to retirement for a new hire:

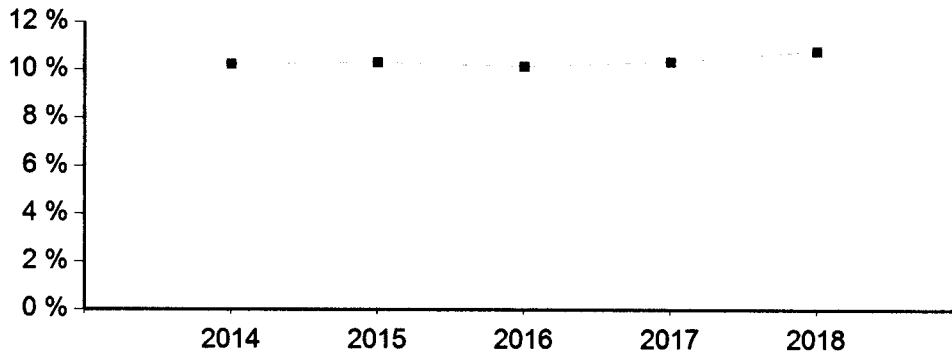


Assumptions

- Employees are new hires and will work for you until retirement.
- Your current plan provisions will remain in effect through employee's retirement.
- Current laws governing TCDRS will continue as they are.
- Graded salary scales give bigger raises early in careers, with smaller raises later in careers (see Summary Valuation Report at www.tcds.org/employer).
- Based on Single Life benefit.

Reasons for Rate Change

Below is a record of your required rate history for your retirement plan over the last five years.



Reasons for Rate Change	2014–2015	2015–2016	2016–2017	2017–2018
Beginning Rate	10.24%	10.32%	10.15%	10.36%
Plan Changes Adopted	0.00%	0.00%	0.00%	N/A
Investment Return	-0.06%	-0.07%	0.37%	0.42%
Elected Rate/Lump Sum	0.00%	0.00%	0.00%	0.00%
Demographic/Other Changes	0.12%	-0.10%	-0.04%	0.04%
Assumptions/Methods	0.02%	0.00%	-0.12%	0.00%
Ending Rate	10.32%	10.15%	10.36%	10.82%
Valuation Year	2013	2014	2015	2016
Funded Ratio	87.0%	88.2%	85.7%	88.6%

A complete Summary Valuation Report for the Dec. 31, 2016 valuation will be available mid-May at www.tcdrs.org/employer.

Next Steps

If you are interested in making plan changes, please contact your Employer Services Representative at 800-651-3848. Your benefit selections are due by Dec. 15, 2017.

SUMMARY VALUATION REPORT
as of Dec. 31, 2016

Johnson County - 225



Actuarial certification: Dec. 31, 2016

Milliman has performed an actuarial valuation of the retirement plan as of Dec. 31, 2016. This valuation reflects the benefit provisions and contribution rates in effect as of Jan. 1, 2017. In preparing this valuation, we relied without audit on information (some oral and some written) supplied by the TCDRS staff. This information includes, but is not limited to, statutory provisions, employee data and financial information. We found this information 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 a summary of the valuation results for your plan. Additional system-wide results are provided in the TCDRS Comprehensive Annual Financial Report (CAFR) and the actuarial valuation report for all of TCDRS.

All costs, liabilities, rates of interest and other factors for TCDRS have been determined on the basis of actuarial assumptions and methods that are reasonable (taking into account the experience of TCDRS and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting TCDRS. While the valuation results are based on assumptions that are reasonable both individually and in the aggregate, there may be other reasonable assumption sets that will produce different results. The TCDRS Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Section 4 of this report.

This report is an estimate of your plan's financial condition as of a single date and is not intended to predict your plan's future condition or guarantee future financial soundness. Actuarial valuations only affect the timing of contributions, not the ultimate cost of benefits.

Future actuarial measurements may differ significantly from the current measurements presented in this report. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.


Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for TCDRS. GASB financial accounting requirements are provided in a separate


document and differ from those disclosed in this report. The calculations in the enclosed report have been made on a basis consistent with our understanding of TCDRS's funding policy. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. We respectfully submit the following report. If you have any questions, please contact TCDRS and they will either provide additional information or forward your request to us.


Mark C. Olleman, FSA, EA, MAAA
Consulting Actuary, Milliman Inc.


Nick Collier, ASA, EA, MAAA
Consulting Actuary, Milliman Inc.

Johnson County, #225
Actuarial valuation results for your TCDRS plan
as of Dec. 31, 2016

INTRODUCTION

This report summarizes the major findings of the valuation for your retirement plan and reflects your benefit provisions in effect as of Jan. 1, 2017.

Much of the material contained in this report is intended to provide information to other actuaries to help comply with actuarial standards of practice. In particular, if an independent review is conducted by another actuary, the report provides information on the methods and calculations to aid the actuary in reviewing and verifying study results. More information can be found in TCDRS' Comprehensive Annual Financial Report for the year ended Dec. 31, 2016.

CHANGES REFLECTED IN THE VALUATION

There were several changes reflected in this year's valuation that applied to all employers:

- Legislation effective in 2017 changed the fund structure for TCDRS. Previously, when a member retired, assets were transferred to a system-wide fund (the Current Service Annuity Reserve Fund or CSARF) and the associated benefit was paid from the CSARF. Effective Jan. 1, 2017, benefits that were previously paid from the CSARF will now be paid by the retiree's former employer. CSARF assets have been allocated back to the employer in proportion to their share of the liabilities. For valuation purposes, this allocation is treated as having occurred on Dec. 31, 2016.
- The asset smoothing method was modified to provide more stable year-to-year changes. The recognition period remains five years.
- The treatment of extra contributions due to employer lump sums or elected rates was changed to provide more immediate impact on employer liabilities, resulting in a greater reduction in the required contribution rate.

IMPACT OF DEFERRED INVESTMENT LOSSES

The actuarial valuation recognizes investment gains and losses over five years to avoid single-year rate spikes. For 2016 there were no actuarial investment gains or losses. Required contribution rates are projected to increase over the next several years as net investment losses that occurred prior to 2016 are being recognized. In the future, higher-than-expected returns could mitigate some of the increases, or conversely, lower-than-expected investment returns could further increase rates.

Since costs are projected to rise for the next several years, it is important to weigh any benefit enhancements carefully. Benefit increases, such as matching rate increases and cost-of-living adjustments for retirees, will also cause required rates to increase.

SCOPE OF THE REPORT

This report presents the results of the actuarial valuation for your TCDRS retirement plan. The report consists of five sections:

- Section 1 is a summary of the actuarial valuation results as of the valuation date — Dec. 31, 2016 — for your plan.
- Section 2 includes a summary of your member and benefit recipient data, and a summary of your plan assets.
- Section 3 is a summary of the plan provisions.
- Section 4 is a summary of the actuarial methods and assumptions.
- Section 5 includes a brief glossary of terms used in this report.

SECTION I
Actuarial valuation results for your TCDRS plan
as of Dec. 31, 2016

RATES EFFECTIVE 2018

The following shows some key results of the actuarial valuation as of Dec. 31, 2016. For comparison purposes, the results of the prior valuation, after reflecting any plan changes effective Jan. 1, 2017, are also shown. Please refer to the bottom of the section titled "Your Costs" in the Retirement Plan Assessment for an analysis of what caused the changes in your contribution rate.

Employer Name: Johnson County

Employer Number: 225

Plan Assets & Liabilities	Dec. 31, 2016	Dec. 31, 2015
1. Present value of future benefits:		
Benefit recipients	\$37,515,555	\$11,447,594
Members	\$92,775,449	\$87,695,447
Total	\$130,291,004	\$99,143,041
2. Present value of future normal cost contributions	\$25,513,007	\$25,019,800
3. Actuarial accrued liability (line 1 – line 2)	\$104,777,997	\$74,123,241
4. Actuarial value of assets	\$92,862,757	\$63,550,238
5. Unfunded/(Overfunded) actuarial accrued liability [UAAL/(OAAL)] (line 3 – line 4)	\$11,915,240	\$10,573,003
6. Funded ratio (line 4 / line 3)*	88.6%	85.7%
7. Effective amortization period (in years)**	14.5	14.9
 Retirement Plan Funding	 2018***	 2017****
Normal cost rate	6.66%	6.69%
UAAL/(OAAL) rate	4.16%	3.67%
Required rate	10.82%	10.36%
 Elected rate	 N/A	 N/A
 Retirement plan rate (greater of required or elected rate)	 10.82%	 10.36%

Please refer to the Actuarial Glossary for additional information on the terms used above.

* The funded ratio assumes on-going TCDRS plan participation. The funded ratio does not represent the financial status for a terminating plan.

** This is the period it would take for the UAAL to be fully paid down assuming the required rate shown is paid each year in the future and all future experience emerges exactly as assumed.

*** 2018 rates assume you do not make any plan changes and that you continue your elected rate, if any, currently in effect for 2017.

**** These rates reflect plan changes effective Jan. 1, 2017.

Unfunded Actuarial Accrued Liability (UAAL)

If a plan has a UAAL (i.e., the Actuarial Accrued Liability exceeds the Actuarial Value of Assets), this does not indicate that the plan is insufficiently funded or is behind in making required contributions. All TCDRS employers pay 100% of their required rate. Just by paying the required rate, the employer is funding the existing UAAL over a closed period of 20 years or less.

The UAAL represents the estimated amount needed to fully fund benefits attributable to service already rendered by employees. Most new plans begin with a UAAL. The UAAL will increase when a plan adopts benefit increases attributable to past service, like a cost-of-living adjustment (COLA) for retirees. Actuarial gains and losses (for example, investment returns either greater than or less than the assumed rate of return) and changes in actuarial assumptions will also affect the UAAL.

UAAL Contribution Rate and Explanatory Notes

Amortization payments are based on a fixed schedule that increases by the payroll growth assumption each year. Amortization payments are adjusted from Dec. 31 amounts to reflect that actual contributions are made on a monthly basis.

Date Established	Description	Remaining Period as of Dec. 31, 2017	2018 Amortization Payment
Dec. 31, 2008	Initial UAAL	12 Years	\$523,139
Dec. 31, 2009	UAAL Layer	13 Years	\$12,078
Dec. 31, 2010	UAAL Layer	14 Years	\$110,750
Dec. 31, 2011	UAAL Layer	15 Years	\$84,803
Dec. 31, 2012	UAAL Layer	16 Years	\$109,797
Dec. 31, 2013	UAAL Layer	17 Years	(\$29,176)
Dec. 31, 2014	UAAL Layer	18 Years	(\$29,696)
Dec. 31, 2015	UAAL Layer	19 Years	\$204,432
Dec. 31, 2016	UAAL Layer	20 Years	\$114,036
		Total Amortization Payment:	\$1,100,163
		Projected Payroll:	\$26,443,434
		UAAL Contribution Rate (Amortization as % of Payroll):	4.16%

UAAL Amortization and Explanatory Notes

UAAL amortization payments (see column C below) are based on a fixed schedule that increases by the payroll assumption each year. The assets and liabilities used in the calculation of the UAAL are as of Dec. 31, 2016, but the contribution rates are not effective until Jan. 1, 2018. Therefore, the UAAL is adjusted to Dec. 31, 2017 in the calculation of the contribution rate.

TCDRS does not charge any fees to employers, and employers are not assessed an interest fee on the UAAL. The "Adjustment Due to Decrease in Discount Period" (see column B below) shows the impact of one-year's passage of time and reflects anticipated future returns on investments. During this period, both employer assets and liabilities are projected to grow at the same rate of interest (also referred to as the discount rate). The discount rate used in this calculation is 8%. Lowering the discount rate would increase employer contribution rates.

The amortization of the Dec. 31, 2016 UAAL Layer does not begin until Dec. 31, 2017; however, the UAAL amount is adjusted based on the expected 2017 UAAL contributions.

Date Established	Description	Balance as of Dec. 31, 2016 (A)	Adjustment Due to Decrease in Discount Period (B)	Amortization Payment on Dec. 31, 2017 (C)	Balance as of Dec. 31, 2017 (A) + (B) - (C)
Dec. 31, 2008	Initial UAAL	\$5,037,702	\$403,016	\$533,483	\$4,907,235
Dec. 31, 2009	UAAL Layer	\$122,868	\$9,829	\$12,317	\$120,380
Dec. 31, 2010	UAAL Layer	\$1,184,261	\$94,741	\$112,940	\$1,166,062
Dec. 31, 2011	UAAL Layer	\$949,102	\$75,928	\$86,480	\$938,550
Dec. 31, 2012	UAAL Layer	\$1,281,300	\$102,504	\$111,968	\$1,271,836
Dec. 31, 2013	UAAL Layer	(\$353,840)	(\$28,307)	(\$29,753)	(\$352,394)
Dec. 31, 2014	UAAL Layer	(\$373,177)	(\$29,854)	(\$30,283)	(\$372,748)
Dec. 31, 2015	UAAL Layer	\$2,655,008	\$212,401	\$208,475	\$2,658,934
Dec. 31, 2016	UAAL Layer	\$1,412,016	\$112,961	(\$7,873)	\$1,532,850
UAAL as of Dec. 31, 2016:		\$11,915,240			

SECTION 2

Additional plan information

Members	Dec. 31, 2016	Dec. 31, 2015
Number of members:	1,001	1,002
Number of depositing members:	585	593
Average monthly salary:*	\$3,551	\$3,438
Average age:*	46.76	46.98
Average length of service in years:*	10.03	9.71

*Averages for depositing members. They differ from the prior year's report, which included all members.

Benefit Recipients

Number of benefit recipients:	318	291
Average monthly benefit:	\$1,064	\$1,024

Plan Assets

<i>Employees Saving Fund (ESF)</i>		<i>Subdivision Accumulation Fund (SAF)</i>	
This is the total sum balance of your members' accounts.		This is your employer account.	
Balance as of Jan. 1, 2016	\$22,629,717	Balance as of Jan. 1, 2016	\$36,619,461
Additions:		Additions:	
Member deposits	\$1,805,291	Employer contributions	\$2,617,668
Partial-year interest	\$37,759	Allocated net income/(loss)	\$3,482,780
Annual interest	\$1,498,798		
Deductions:		Deductions:	
Transfers to the CSARF (retirement trust fund)	\$1,930,354	Transfers to the CSARF (retirement trust fund)	\$1,930,354
Withdrawals	\$320,737	Retirement allowances	\$1,289,340
Net escheatments	(\$182)	Other transfers:	\$0
Fund balance as of Dec. 31, 2016	\$23,720,655	Fund balance as of Dec. 31, 2016	\$39,500,216
		CSARF transfer effective Jan. 1, 2017	\$26,416,092
		Fund balance after CSARF transfer	\$65,916,308

Development of Allocated Net Income/(Loss) in SAF

1) Prior year balance for allocation (includes ESF, SAF and allocated CSARF)	\$82,362,849
2) Allocated net income/(loss) (8.000% x Line 1)	\$6,589,028
3) Annual interest to ESF and allocated CSARF	\$3,106,248
4) Allocated net income/(loss) to SAF* (Line 2 – Line 3)	\$3,482,780

ACTUARIAL VALUE OF ASSETS

The assets used in the valuation are adjusted to reduce volatility in contribution rates by the application of a smoothing method. These smoothed assets are referred to as the actuarial value of assets. The method used to determine the actuarial value of the Subdivision Accumulation Fund is described in the Actuarial Methods section of Section 4.

Development of Actuarial Value of Assets

1) Subdivision Accumulation Fund (SAF) balance	\$65,916,308
2) Total unrecognized actuarial asset gain/(loss) in SAF (see below)	(\$3,225,794)
3) Actuarial value of SAF* (Line 1 – Line 2)	\$69,142,102
4) Employees Saving Fund (ESF) balance	\$23,720,655
5) Actuarial value of assets* (Line 3 + Line 4)	\$92,862,757

Development of Unrecognized Actuarial Asset Gain/(Loss) in SAF

Year Ended	Adjusted Actuarial Asset Gain/(Loss) for Year**		Percent Excluded	Gain/(Loss) Excluded
December 31, 2013	\$0	x	20.00%	\$0
December 31, 2014	\$0	x	40.00%	\$0
December 31, 2015	(\$5,376,324)	x	60.00%	(\$3,225,794)
December 31, 2016	\$0	x	80.00%	\$0
Total Unrecognized Actuarial Asset Gain/(Loss) in SAF *				= (\$3,225,794)

Development of Current Year Actuarial Asset Gain/(Loss) in SAF

1) Prior year balance for allocation (includes ESF, SAF and allocated CSARF)	\$82,362,849
2) Assumed allocated net income (8% x Line 1)	\$6,589,028
3) Actual allocated net income/(loss) (8% x Line 1)	\$6,589,028
4) Current year gain/(loss) to be recognized over five years* (Line 3 – Line 2)	\$0

* Small differences may occur due to the rounding of numbers.

** Gains/Losses may be adjusted due to the application of the asset smoothing method, which offsets gains and losses.

SECTION 3

Plan Provisions

PLAN PROVISIONS

The following description reflects your plan as of Jan. 1, 2017. No future plan provision changes are assumed for purposes of this valuation. Future plan provision changes may be adopted by the plan but are not reflected in these valuation results.

Membership

All full- and part-time employees must participate in TCDRS, regardless of the number of hours they work in a year or their age. Only those employees who are classified as “temporary” are excluded from enrollment.

Termination of Membership

TCDRS membership is terminated by death, retirement, withdrawal of account balance from the plan or attainment of the age under which distribution must occur under federal law.

Employee Deposits

TCDRS is a savings-based plan. Every paycheck, a portion of each employee’s pay — from 4% to 7% as set by the employer — is deposited into their TCDRS account. Your employees’ current deposit rate is 7.00%. By law, employee accounts earn 7% interest annually.

Service

Employees receive a month of service for each month that they make a deposit into their account. Service may also be granted for periods of employment prior to the employer joining TCDRS and for military or certain other service.

Within TCDRS, periods of service with any TCDRS participating employer are generally combined. Also, service periods with other Texas public retirement plans participating with TCDRS in the Texas Proportionate Retirement Program are combined to satisfy TCDRS retirement eligibility and vesting requirements.

Eligibility Requirements

Service Retirement Benefits

The amount of service an employee needs to earn a future benefit is called the vesting requirement. When an employee is vested he or she has the right to a monthly benefit at age 60 or older. Employers may choose 5-, 8- or 10-year vesting. The vesting requirement for your employees is 8 years of service. In addition, employees may retire before age 60 if they meet one of the following requirements, set by the employer:

- “Rule of” eligibility — Under these rules, a vested employee can retire if their age plus years of service time add up to at least 75 or 80. Your plan requirement is Rule of 75.
- 20-year or 30-year retirement at any age — This lets employees retire when they have at least 20 or 30 years of service time. Your plan requirement is 20 years of service.

Retirees elect to receive their lifetime benefit by choosing from one of seven actuarially equivalent payment options.

Disability Retirement Benefits

A member who is vested and who is totally and permanently disabled is eligible for a disability retirement benefit. A member who is not vested is eligible for disability retirement benefits if the total and permanent disability was a result of an on-the-job injury.

Survivor Benefits

Benefits are payable to the beneficiaries or estate of a deceased member. The eligibility requirement for an employer-provided Survivor Benefit is four years of TCDRS service. Otherwise the Survivor Benefit is the deceased member's account balance.

Determination of Retirement Benefits

Employer Matching Rate

A member's retirement benefit is calculated based on the employee's account balance and the employer matching. The current employer matching rate for future deposits is 200% for your employees. The employee's account balance with employer matching is converted to an annuity at retirement and then he or she receives a payment every month for the rest of his or her life.

Payment Options

Retirees elect to receive their monthly lifetime benefit by choosing from one of the following seven actuarially equivalent payment options.

- **Single Life option** – Monthly payments cease upon death of the retiree. This option provides the highest monthly benefit.
- **Guaranteed Term Benefit options** – The two guaranteed term benefit options are 10-Year Guaranteed Term and 15-Year Guaranteed Term. These options provide a lifetime monthly benefit to the retiree. In addition, if the retiree passes away within 10 or 15 years of the retirement date, the beneficiary will receive the monthly benefit until the end of the guaranteed term.
- **Dual Life options** – The four dual life options are 100% to Beneficiary, 75% to Beneficiary, 50% to Beneficiary and 100% to Beneficiary With Pop-Up. Under each of these options, after the death of the retiree, the beneficiary receives a monthly lifetime benefit equal to the selected percentage of the retiree's benefit payment. Under the 100% to Beneficiary With Pop-Up option, if the beneficiary dies before the retiree, the monthly benefit amount will "pop up" to a higher monthly amount, as if the retiree had retired under the Single Life option.

All options pay a death benefit equal to the excess of the person's account at retirement over the total monthly benefits that have been paid.

Each employer may elect the partial lump-sum option. This payment option allows the retiring member to receive an immediate lump-sum payment not to exceed his or her account balance, and choose a reduced monthly lifetime benefit from any of the payment options.

Annuity Purchase Rates (Factors for Conversion to Monthly Annuity Payments)

For benefits based on member deposits made prior to Jan. 1, 2018 (including interest on those deposits, employer matching and other employer credits), benefit credits are converted into monthly benefit payments using the UP-1984 Table with an age set back of five years for retirees and an age set back of 10 years for beneficiaries, and an interest rate of 7.0%.

For benefits based on member deposits made on Jan. 1, 2018, or later (including interest on those deposits, employer matching and other employer credits), benefit credits are converted into monthly benefit payments using a custom generational mortality table (see below for details) and an interest rate of 7.0%. The rates in this mortality table vary based on the member's year of birth, so the conversion factors also vary by year of retirement.

Annuity Purchase Rates (2014 TCDRS Unisex Mortality Table)	Average of the male and female rates for service retirees for member mortality. 30%/70% male/female blend for beneficiary mortality. Males –The RP-2000 Combined Mortality Table for males projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale thereafter, with a one-year set-forward. Females –The RP-2000 Combined Mortality Table for females projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale thereafter, with no age adjustment.
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Monthly benefits are calculated by dividing the total benefit credits by the associated annuity purchase rate. Sample annuity purchase rates for the single life form of payment are shown below:

Table 1
Sample Annuity Purchase Rates

Sample Retirement Age	Annuity Purchase Rate for Single Life Benefit			
	Pre-2018 Deposits	Post-2017 Deposits 2020 Retirement Date	Post-2017 Deposits 2030 Retirement Date	Post-2017 Deposits 2040 Retirement Date
50	147.2259	155.2309	156.5194	157.7373
55	138.8321	147.2718	148.9675	150.5769
60	128.9240	137.1731	139.3300	141.3890
65	117.4861	125.0176	127.6430	130.1663
70	104.6995	110.8674	113.9168	116.8715
75	91.2252	94.7558	98.1199	101.4138

SECTION 4

Actuarial procedures and assumptions

THE ACTUARIAL VALUATION

Each year Milliman, TCDRS' independent consulting actuarial firm, analyzes your plan to determine your employer contribution rate. We study your workforce and estimate the benefits you will pay to your employees. We estimate how much the benefits you will provide are worth in today's dollars — this is what's known as the present value of your plan's future benefits. We then compare the assets you have already invested with what you will need to pay for benefits. Based on this comparison, we determine how much you will need to pay each year to fund those benefits.

Please keep in mind that the ultimate cost of a retirement program is based on the actual benefits paid to the employees. The actuarial valuation assumptions and methods are used to allocate the contributions to the plan over various time periods, but ultimately do not impact the true cost of the plan.

The actuarial procedures and assumptions used in this valuation are described in this section. The actuarial assumptions are intended to estimate the future plan experience of the members and benefit recipients of your retirement plan. Any variations in future plan experience from that expected under these assumptions will result in corresponding changes in the estimated costs of the plan's benefits.

The economic and demographic assumptions have been established based on the experience study for TCDRS, details of which can be found in the Investigation of Experience report located on www.TCDRS.org. The assumptions applicable to your plan regarding merit salary increase rates, mortality rates, retirement rates and termination of employment rates are illustrated in Tables 2 through 5. The numerical rates provided in the tables represent the likelihood of these events occurring. The following provides additional information regarding the actuarial methods and assumptions.

ACTUARIAL METHODS

Actuarial Cost Method — Entry age actuarial cost method, level percent of payroll.

Plan Funding — The change in the unfunded actuarial accrued liability (UAAL) attributable to each year is amortized over a closed 20-year period as a level percent of covered payroll, except for the following situations. 1) The UAAL attributable to benefit increases in a given year is amortized over a closed 15-year period as a level percent of covered payroll. 2) If there is an overfunded actuarial accrued liability, the amortization period is an open 30-year period. 3) If a UAAL decrease occurs due to extra employer contributions (lump sum or elected rate greater than required rate), that decrease is offset against the oldest existing actuarial loss layer.

Records and Data — The data regarding active employees, retired employees, survivors and the financial information used in this valuation were supplied by TCDRS, and are accepted for valuation purposes without audit.

Actuarial Value of Assets — The actuarial value of assets is equal to the employer assets (ESF plus SAF) adjusted for a five-year recognition of the difference between the expected and actual interest credited to the employer assets for each year. Effective with the 2016 valuation, in cases where the sum of the prior deferred actuarial gains and losses is an actuarial gain, any current year actuarial loss is offset against the oldest actuarial gain. If any of the current year actuarial loss remains after the initial offset, the remainder is offset against the next oldest gain, and so on. If the sum of prior deferred actuarial gains and losses is an actuarial loss and there is an actuarial gain for the current year, the current year gain is offset against the prior actuarial losses in a similar fashion. For the 2016 valuation, a one-time adjustment was made to offset actuarial gains and losses that occurred prior to 2016.

Economic Assumptions

TCDRS system-wide economic assumptions:

Real rate of return	5.0%
Inflation	3.0%
Long-term investment return	8.0%

The assumed long-term investment return of 8% is net after investment and administrative expenses and is expected to enable the system to credit each employer's Subdivision Accumulation Fund (SAF) with a nominal annual rate of 8% on the combined ESF and SAF funds, less the amount credited to the employer's ESF. Under the TCDRS Act, the ESF is credited with a nominal annual rate of 7%. It is assumed interest will be credited at 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 3.5% (made up of 3.0% inflation and 0.5% productivity increase assumptions) and a merit, promotion and longevity component that on average approximates 1.4% per year for a career employee. (See Table 2 for Merit Salary Increases.)

Employer-specific economic assumptions:

Growth in membership	0.0%
Payroll growth	3.5%

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

**Table 2
Merit Salary Increases***

Years of Service	Entry Age			
	Before 30	Ages 30-39	Ages 40-49	50 and later
0	5.25%	4.75%	4.25%	3.75%
1	4.50	4.00	3.50	3.00
2	4.00	3.50	3.00	2.50
3	3.50	3.00	2.50	2.00
4	3.00	2.50	2.00	1.50
5	2.65	2.15	1.65	1.15
6	2.40	1.90	1.40	0.90
7	2.20	1.70	1.20	0.70
8	2.05	1.55	1.05	0.55
9	1.95	1.45	0.95	0.45
10	1.85	1.35	0.85	0.40
11	1.75	1.25	0.75	0.40
12	1.65	1.15	0.65	0.40
13	1.55	1.05	0.55	0.40
14	1.45	0.95	0.45	0.40
15	1.35	0.90	0.40	0.40
16	1.25	0.85	0.40	0.40
17	1.15	0.80	0.40	0.40
18	1.10	0.75	0.40	0.40
19	1.05	0.70	0.40	0.40
20	1.00	0.65	0.40	0.40
21	0.95	0.60	0.40	0.40
22	0.90	0.55	0.40	0.40
23	0.85	0.50	0.40	0.40
24	0.80	0.45	0.40	0.40
25	0.75	0.40	0.40	0.40
26	0.70	0.40	0.40	0.40
27	0.65	0.40	0.40	0.40
28	0.60	0.40	0.40	0.40
29	0.55	0.40	0.40	0.40
30 & Up	0.50	0.40	0.40	0.40

* These rates do not include the wage inflation rate of 3.5% 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 8.93% total annual increase in his salary. The 8.93% is a combination of the 5.25% merit increase and the 3.5% 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 3. 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 3
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	0.005%	0.072%
25	0.000	0.000	44	0.005	0.079
26	0.000	0.000	45	0.006	0.086
27	0.000	0.000	46	0.006	0.095
28	0.000	0.010	47	0.007	0.105
29	0.000	0.010	48	0.007	0.119
30	0.000	0.011	49	0.008	0.136
31	0.000	0.012	50	0.009	0.156
32	0.000	0.012	51	0.009	0.178
33	0.000	0.014	52	0.010	0.203
34	0.000	0.018	53	0.011	0.229
35	0.001	0.023	54	0.012	0.254
36	0.001	0.028	55	0.014	0.278
37	0.001	0.035	56	0.016	0.297
38	0.002	0.041	57	0.018	0.312
39	0.002	0.047	58	0.022	0.324
40	0.003	0.053	59	0.024	0.337
41	0.004	0.059	60 & Above	0.000	0.000
42	0.004	0.066			

* 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	The RP-2000 Active Employee Mortality Table for males with a two-year set-forward and the RP-2000 Active Employee Mortality Table for females with a four-year setback, both projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale thereafter.
Service retirees, beneficiaries and non-depositing members	The RP-2000 Combined Mortality Table projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale thereafter, with a one-year set-forward for males and no age adjustment for females.
Disabled retirees	RP-2000 Disabled Mortality Table projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale thereafter, with no age adjustment for males and a two-year set-forward for females.

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 4.

Table 4
Annual Rates of Service Retirement *

Age	Male	Female	Age	Male	Female
40-44	4.5%	4.5%	62	25.0%	25.0%
45-49	9.0	9.0	63	16.0	16.0
50	10.0	10.0	64	16.0	16.0
51	10.0	10.0	65	30.0	30.0
52	10.5	10.5	66	25.0	25.0
53	10.5	10.5	67	24.0	24.0
54	10.5	10.5	68	22.0	22.0
55	11.0	11.0	69	22.0	22.0
56	11.0	11.0	70	22.0	22.0
57	11.0	11.0	71	22.0	22.0
58	12.0	12.0	72	22.0	22.0
59	12.0	12.0	73	22.0	22.0
60	14.0	14.0	74**	22.0	22.0
61	12.0	12.0			

* 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 5. The rates vary by length of service, entry-age group (age at hire) and sex. No termination after eligibility for retirement is assumed.

**Table 5
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	33.12%	35.88%	27.36%	29.64%	24.48%	26.52%	21.60%	23.40%
1	22.08	23.92	18.24	19.76	16.32	17.68	14.40	15.60
2	16.56	17.94	13.68	14.82	12.24	13.26	10.80	11.70
3	13.25	14.35	10.94	11.86	9.79	10.61	8.64	9.36
4	11.04	11.96	9.12	9.88	8.16	8.84	7.20	7.80
5	9.38	10.17	7.75	8.40	6.94	7.51	6.12	6.63
6	7.73	8.37	6.38	6.92	5.71	6.19	5.04	5.46
7	6.62	7.18	5.47	5.93	4.90	5.30	4.32	4.68
8	6.07	6.58	5.02	5.43	4.49	4.86	3.96	4.29
9	5.52	5.98	4.56	4.94	4.08	4.42	3.60	3.90
10	4.97	5.38	4.10	4.45	3.67	3.98	3.24	3.51
11	4.42	4.78	3.65	3.95	3.26	3.54	2.88	3.12
12	3.97	4.31	3.28	3.56	2.94	3.18	2.59	2.81
13	3.53	3.83	2.92	3.16	2.61	2.83	2.30	2.50
14	3.09	3.35	2.55	2.77	2.28	2.48	2.02	2.18
15	2.65	2.87	2.19	2.37	1.96	2.12	1.73	1.87
16	2.32	2.51	1.92	2.07	1.71	1.86	1.51	1.64
17	1.99	2.15	1.64	1.78	1.47	1.59	1.30	1.40
18	1.77	1.91	1.46	1.58	1.31	1.41	1.15	1.25
19	1.66	1.79	1.37	1.48	1.22	1.33	1.08	1.17
20	1.66	1.79	1.37	1.48	1.22	1.33	1.08	1.17
21	1.49	1.61	1.23	1.33	1.10	1.19	0.97	1.05
22	1.32	1.44	1.09	1.19	0.98	1.06	0.86	0.94
23	1.16	1.26	0.96	1.04	0.86	0.93	0.76	0.82
24	0.99	1.08	0.82	0.89	0.73	0.80	0.65	0.70
25	0.88	0.96	0.73	0.79	0.65	0.71	0.58	0.62
26	0.77	0.84	0.64	0.69	0.57	0.62	0.50	0.55
27	0.66	0.72	0.55	0.59	0.49	0.53	0.43	0.47
28	0.55	0.60	0.46	0.49	0.41	0.44	0.36	0.39
29	0.44	0.48	0.36	0.40	0.33	0.35	0.29	0.31
30 & Later	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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 6. For non-depositing members who are not vested, 100% are assumed to elect a withdrawal.

**Table 6
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	34
4	100	19	32
5	100	20	30
6	100	21	28
7	100	22	26
8	50	23	24
9	49	24	22
10	48	25	20
11	47	26	15
12	46	27	10
13	44	28*	5
14	42		

* Members with more than 28 years of service are not assumed to refund.

SECTION 5

Glossary

For your convenience, certain terms used in this report are listed below.

Actuarial Accrued Liability This refers to the present value of future benefits less the present value of future normal cost contributions.

Actuarial Assumptions Factors that actuaries use in estimating the cost of funding your plan. Examples of actuarial assumptions are mortality rates, assumed investment return and employee turnover rates. These assumptions are used to estimate the cost of funding your plan.

Actuarial Experience Investigation The process actuaries use to help set actuarial assumptions.

Actuarial Valuation The process an actuary uses to calculate your required employer contribution rate.

Actuarial Value of Assets The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an actuarial valuation.

Annuity Purchase Rates The factors used to convert benefit credits to a monthly benefit when a member retires. Monthly benefits are calculated by dividing the total benefit credits by the associated annuity purchase rate. Sample annuity purchase rates for the standard form of payment are shown in Section 3.

Benefit Recipients This group includes both retirees and survivor beneficiaries receiving monthly payments.

Employer Contribution Rate The percentage of your covered payroll needed to fund your current and past earned benefits.

Normal Cost Rate The percentage of your organization's covered payroll needed to fund benefits for your current employees over their careers. See also entry-age actuarial cost method.

UAAL Rate UAAL stands for unfunded actuarial accrued liability. The rate is the percentage of your covered payroll needed to fund benefits not funded by your normal cost rate. See also entry-age actuarial cost method.

Required Rate This is the sum of the normal cost rate and the UAAL rate.

Elected Rate To help keep employer contribution rates more stable, a plan may choose to pay an elected rate, a rate that is greater than the required contribution rate. Adopting an elected rate may create a cushion in the event the plan has negative experience and may make budgeting easier.

Retirement Plan Rate This is the greater of the required or elected rate.

Entry-Age Actuarial Cost Method An actuarial cost method under which the expected future benefits of each individual are funded on a level basis over the individual's employment. The portion of the present value of future benefits allocated to a valuation year is called the normal cost. The portion of the present value not provided for at the valuation date by the present value of future normal costs (PVFNC) is called the actuarial accrued liability.

ESF The Employees Saving Fund. This is the fund where your employees' accounts are maintained.

Funded Ratio This is the ratio of your plan's actuarial value of assets to actuarial accrued liability. The funded ratio assumes on-going contributions. It does not represent the financial status of a terminating plan. It is a snapshot in time and moves from year to year.

Members This group includes both employees and former employees that have accounts at TCDRS. In other words, depositing and non-depositing persons with a TCDRS account.

Overfunded Actuarial Accrued Liability (OAAL)

OAAL refers to the excess, if any, of the actuarial value of assets over the actuarial accrued liability. (See also "Unfunded Actuarial Accrued Liability.")

Payroll Payroll includes the portion of your organization's payroll earned by your employees who deposit a portion of their paychecks to TCDRS.

Plan Assets The assets set aside to pay your plan's future benefit payments.

Plan Experience What actually happens to your plan assets and covered employees over time.

Present Value of Future Benefits The estimated value, in today's dollars, of the future benefits that the actuary expects will be paid under your plan. Actuaries calculate this amount using actuarial assumptions.

Present Value of Future Normal Cost Contributions

The portion of the present value of future benefits allocated to a valuation year based on your workforce entry and exit ages is called normal cost. This is the current value of normal cost contributions for all future years.

SAF Subdivision Accumulation Fund. This is the fund where your employer account is maintained.

Unfunded Actuarial Accrued Liability (UAAL)

The UAAL is the excess, if any, of the actuarial accrued liability over the actuarial value of assets. (See also "Overfunded Actuarial Accrued Liability.")



Johnson County
Texas County & District Retirement System
GASB 68 Report
For Measurement Date: December 31, 2016
Based on Actuarial Valuation Date: December 31, 2016
For Fiscal Year Ending: September 30, 2017

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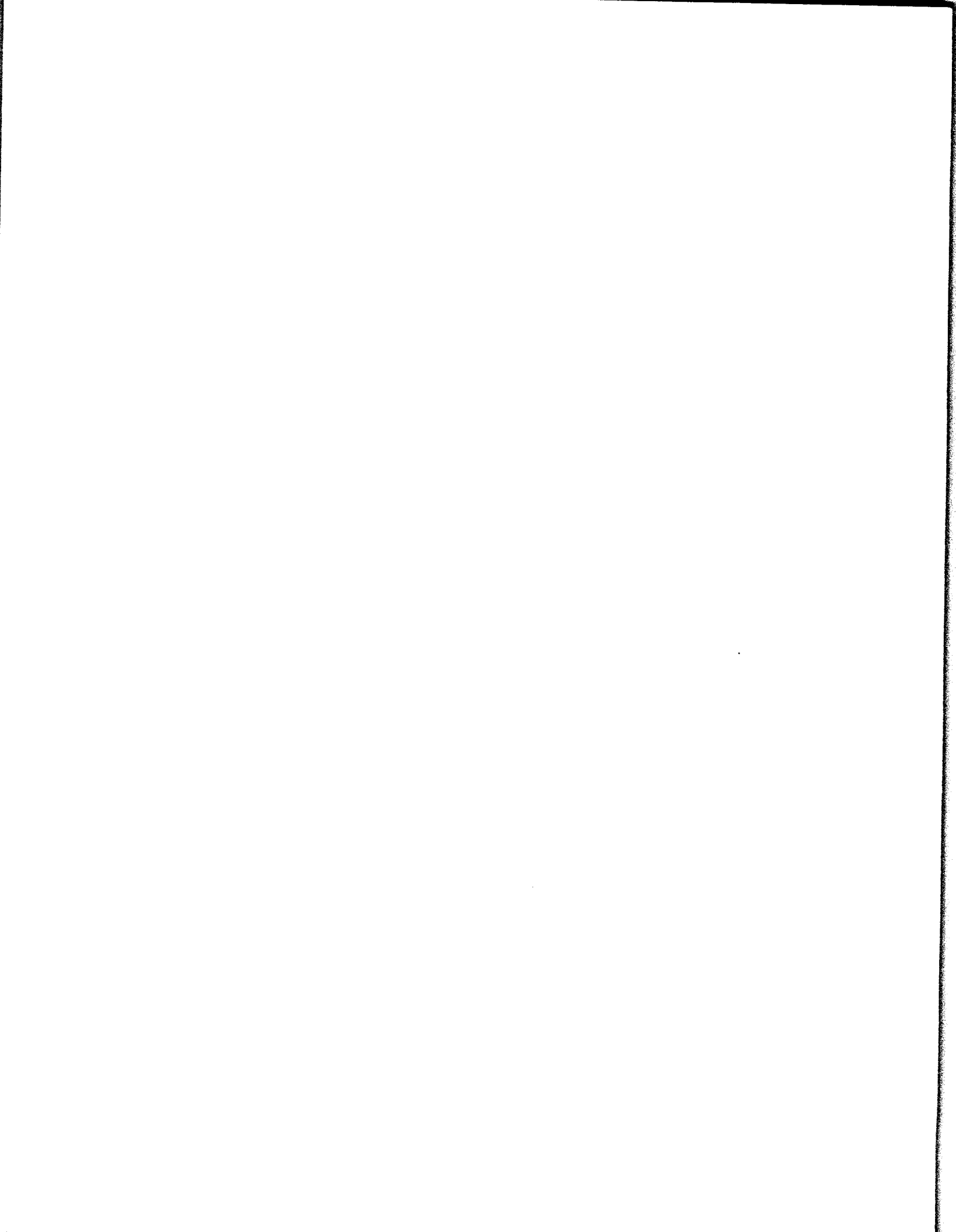


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Certification

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, 2017 and December 31, 2017. The reporting date for determining plan assets and obligations is December 31, 2016. 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, 2016 furnished by the Texas County & District Retirement System (TCDRS). This information includes, but is not limited to, statutory provisions (as of January 1, 2017), 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.

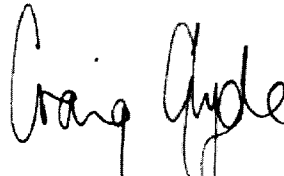
The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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.



Mark Olleman, FSA, EA, MAAA
Consulting Actuary



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Consulting Actuary



Nick Collier, ASA, EA, MAAA
Consulting Actuary

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.

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.

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

Note that the previously defined GASB Annual Required Contribution (ARC) has been eliminated under Statements 67 and 68 and is no longer relevant for financial reporting purposes. As a result, plan sponsors have been 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.

Net Pension Liability / (Asset)

Net Pension Liability / (Asset)	December 31, 2015	December 31, 2016
Total pension liability	\$93,885,939	\$101,440,827
Fiduciary net position	84,015,355	90,994,410
Net pension liability / (asset)	9,870,584	10,446,417
Fiduciary net position as a % of total pension liability	89.49%	89.70%
Pensionable covered payroll ⁽¹⁾	\$24,340,413	\$25,789,868
Net pension liability as a % of covered payroll	40.55%	40.51%

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

Updated mortality assumptions were adopted in 2015. All other actuarial assumptions that determined the total pension liability as of December 31, 2016 were based on the results of an actuarial experience study for the period January 1, 2009 - December 31, 2012, 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, 2015	December 31, 2016
Measurement date	December 31, 2015	December 31, 2016
Employer's fiscal year	October 1, 2016	September 30, 2017

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 2017 information for a 7-10 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 2013. See Milliman's TCDRS Investigation of Experience report for the period January 1, 2009 – December 31, 2012 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	13.50%	4.70%
Private Equity	Cambridge Associates Global Private Equity & Venture Capital Index ⁽³⁾	16.00%	7.70%
Global Equities	MSCI World (net) Index	1.50%	5.00%
Int'l Equities - Developed Markets	MSCI World Ex USA (net)	10.00%	4.70%
Int'l Equities - Emerging Markets	MSCI EM Standard (net) Index	7.00%	5.70%
Investment-Grade Bonds	Bloomberg Barclays U.S. Aggregate Bond Index	3.00%	0.60%
High-Yield Bonds	Citigroup High-Yield Cash-Pay Capped Index	3.00%	3.70%
Opportunistic Credit	Citigroup High-Yield Cash-Pay Capped Index	2.00%	3.83%
Direct Lending	S&P/LSTA Leveraged Loan Index	10.00%	8.15%
Distressed Debt	Cambridge Associates Distressed Securities Index ⁽⁴⁾	3.00%	6.70%
REIT Equities	67% FTSE NAREIT Equity REITs Index + 33% FTSE EPRA/NAREIT Global Real Estate Index	2.00%	3.85%
Master Limited Partnerships (MLPs)	Alerian MLP Index	3.00%	5.60%
Private Real Estate Partnerships	Cambridge Associates Real Estate Index ⁽⁵⁾	6.00%	7.20%
Hedge Funds	Hedge Fund Research, Inc. (HFRI) Fund of Funds Composite Index	20.00%	3.85%

⁽¹⁾ Target asset allocation adopted at the April 2017 TCDRS Board meeting.

⁽²⁾ Geometric real rates of return equal the expected return minus the assumed inflation rate of 2.0%, per Cliffwater's 2017 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)
2017	\$90,994,410	\$4,345,615	\$5,848,745	\$90,994	\$7,307,242	\$96,707,527
2018	96,707,527	4,319,218	5,311,545	96,708	7,790,063	103,408,555
2019	103,408,555	4,307,134	5,795,022	103,409	8,312,900	110,130,158
2020	110,130,158	4,310,519	6,263,433	110,130	8,838,616	116,905,730
2021	116,905,730	4,318,788	6,785,262	116,906	9,366,774	123,689,125
2022	123,689,125	4,234,435	7,288,355	123,689	9,892,631	130,404,147
2023	130,404,147	4,168,027	7,858,384	130,404	10,411,008	136,994,394
2024	136,994,394	4,104,570	8,502,660	136,994	10,916,451	143,375,760
2025	143,375,760	4,049,927	9,081,625	143,376	11,407,927	149,608,613
2026	149,608,613	3,993,770	9,632,121	149,609	11,888,449	155,709,103
2036	194,404,722	2,179,448	15,051,163	194,405	15,227,907	196,566,510
2046	188,188,442	329,481	17,718,770	188,188	14,545,236	185,156,201
2056	148,612,450	54,652	15,538,221	148,612	11,416,831	144,397,099
2066	118,142,620	2,264	9,980,924	118,143	9,168,593	117,214,410
2076	137,100,306	0	4,720,302	137,100	10,912,230	143,155,134
2086	246,679,687	0	1,429,495	246,680	19,914,491	264,918,004
2096	519,883,150	0	213,024	519,883	42,081,430	561,231,672

* Projection values include no assumed future cost-of-living adjustments.

** 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, 2015	\$93,885,939	\$84,015,355	\$9,870,584
Changes for the year:			
Service cost	3,686,376		3,686,376
Interest on total pension liability ⁽¹⁾	7,591,733		7,591,733
Effect of plan changes ⁽²⁾	0		0
Effect of economic/demographic gains or losses	291,215		291,215
Effect of assumptions changes or inputs	0		0
Refund of contributions	(320,737)	(320,737)	0
Benefit payments	(3,693,699)	(3,693,699)	0
Administrative expenses		(67,695)	67,695
Member contributions		1,805,291	(1,805,291)
Net investment income		6,229,109	(6,229,109)
Employer contributions		2,617,668	(2,617,668)
Other ⁽³⁾	0	409,119	(409,119)
Balances as of December 31, 2016	<u>\$101,440,827</u>	<u>\$90,994,410</u>	<u>\$10,446,417</u>

⁽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 Johnson County 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 7.10%	Current Discount Rate 8.10%	1% Increase 9.10%
Total pension liability	\$114,604,468	\$101,440,827	\$90,496,721
Fiduciary net position	90,994,410	90,994,410	90,994,410
Net pension liability / (asset)	<u>\$23,610,058</u>	<u>\$10,446,417</u>	<u>(\$497,689)</u>

Pension Expense / (Income)

Pension Expense / (Income)	<u>January 1, 2016 to December 31, 2016</u>
Service cost	\$3,686,376
Interest on total pension liability ⁽¹⁾	7,591,733
Effect of plan changes	0
Administrative expenses	67,695
Member contributions	(1,805,291)
Expected investment return net of investment expenses	(6,835,025)
Recognition of deferred inflows/outflows of resources	
Recognition of economic/demographic gains or losses	(230,656)
Recognition of assumption changes or inputs	256,097
Recognition of investment gains or losses	1,847,217
Other ⁽²⁾	(409,119)
Pension expense / (income)	<u>\$4,169,027</u>

⁽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, 2016, the deferred inflows and outflows of resources are as follows:

Deferred Inflows / Outflows of Resources	<u>Deferred Inflows of Resources</u>	<u>Deferred Outflows of Resources</u>
Differences between expected and actual experience	\$638,614	\$234,258
Changes of assumptions	0	512,194
Net difference between projected and actual earnings	0	5,438,598
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:	
2017	\$1,872,657
2018	1,856,810
2019	1,695,785
2020	121,183
2021	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 12/31/2016	
Original Amount (a)	Date Established (b)	Original Recognition Period ⁽¹⁾ (c)	Amount Recognized for 2016 ⁽¹⁾ (a) ÷ (c)	Inflows	Outflows
<i>Investment (gains) or losses</i>					
\$605,917	12/31/2016	5.0	\$121,183	\$0	\$484,733
7,508,992	12/31/2015	5.0	1,501,798	0	4,505,395
1,121,175	12/31/2014	5.0	224,235	0	448,470
<i>Economic/ demographic (gains) or losses</i>					
291,215	12/31/2016	4.0	72,804	0	218,411
(1,277,227)	12/31/2015	4.0	(319,307)	638,614	0
63,386	12/31/2014	4.0	15,847	0	15,847
<i>Assumption changes or inputs</i>					
0	12/31/2016	4.0	0	0	0
1,024,387	12/31/2015	4.0	256,097	0	512,194
0	12/31/2014	4.0	0	0	0

Employer contributions made subsequent to measurement date ⁽²⁾

—————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									
	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total Pension Liability										
Service cost	\$3,686,376	\$3,356,710	\$3,228,313	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Interest on total pension liability	7,591,733	7,131,530	6,593,390	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect of plan changes	0	(605,396)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect of assumption changes or inputs	0	1,024,387	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect of economic/demographic (gains) or losses	291,215	(1,277,227)	63,386	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benefit payments/refunds of contributions	<u>(4,014,437)</u>	<u>(3,799,130)</u>	<u>(3,231,425)</u>	<u>N/A</u>	<u>N/A</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	7,554,888	5,830,873	6,653,664	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total pension liability, beginning	<u>93,885,939</u>	<u>88,055,066</u>	<u>81,401,402</u>	<u>N/A</u>	<u>N/A</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>\$101,440,827</u>	<u>\$93,885,939</u>	<u>\$88,055,066</u>	<u>N/A</u>	<u>N/A</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	\$2,617,668	\$2,511,927	\$2,470,381	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Member contributions	1,805,291	1,703,829	1,688,738	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Investment income net of investment expenses	6,229,109	(616,199)	5,292,764	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benefit payments/refunds of contributions	(4,014,437)	(3,799,130)	(3,231,425)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Administrative expenses	(67,695)	(60,576)	(62,523)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other	<u>409,119</u>	<u>199,540</u>	<u>(138,000)</u>	<u>N/A</u>	<u>N/A</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	6,979,055	(60,610)	6,019,935	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fiduciary net position, beginning	<u>84,015,355</u>	<u>84,075,965</u>	<u>78,056,030</u>	<u>N/A</u>	<u>N/A</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>\$90,994,410</u>	<u>\$84,015,355</u>	<u>\$84,075,965</u>	<u>N/A</u>	<u>N/A</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>\$10,446,417</u>	<u>\$9,870,584</u>	<u>\$3,979,101</u>	<u>N/A</u>	<u>N/A</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	89.70%	89.49%	95.48%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pensionable covered payroll	\$25,789,868	\$24,340,413	\$24,124,827	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Net pension liability/(asset) as % of covered payroll	40.51%	40.55%	16.49%	N/A	N/A	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.

GASB 68 Disclosure for Measurement Date December 31, 2016
 Johnson County
 Texas County & District Retirement System

This work product was prepared solely for TCDRS for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Schedule of Employer Contributions

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
2007	\$1,531,258	\$1,531,258	\$0	\$20,335,433	7.5%
2008	1,556,594	1,556,594	0	21,893,025	7.1%
2009	1,765,911	1,765,911	0	21,774,490	8.1%
2010	1,997,412	1,997,412	0	22,392,507	8.9%
2011	1,998,023	1,998,023	0	22,151,038	9.0%
2012	2,157,393	2,157,393	0	22,926,651	9.4%
2013	2,240,034	2,240,034	0	22,834,220	9.8%
2014	2,470,381	2,470,381	0	24,124,827	10.2%
2015	2,511,927	2,511,927	0	24,340,413	10.3%
2016	2,617,668	2,617,668	0	25,789,868	10.1%

⁽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.

⁽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	14.5 years (based on contribution rate calculated in 12/31/2016 valuation)
Asset Valuation Method	5-year smoothed market
Inflation	3.0%
Salary Increases	Varies by age and service. 4.9% average over career including inflation.
Investment rate of Return	8.00%, net of 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	In the 2015 actuarial valuation, assumed life expectancies were adjusted as a result of adopting a new projection scale (110% of the MP-2014 Ultimate Scale) for 2014 and later. Previously Scale AA had been used. The base table is the RP-2000 table projected with Scale AA to 2014.
Changes in Plan Provisions Reflected in the Schedule of Employer Contributions*	2015: No changes in plan provisions.
	2016: No changes in plan provisions.

**Only changes effective 2015 and later are shown in the Notes to Schedule.*

Appendix A— GASB 68 Plan Description for Johnson County

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

- a. Johnson County 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 county'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 county 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 county's contribution rate is calculated annually on an actuarial basis, although the employer may elect to contribute at a higher rate. The Johnson County 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 county and are currently 7%. Contributions to the pension plan from the county for 2016 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, 2015	Dec. 31, 2016
Number of inactive employees entitled to but not yet receiving benefits:	409	416
Number of active employees:	593	585
Average monthly salary*:	\$3,438	\$3,551
Average age*:	46.98	46.76
Average length of service in years*:	9.71	10.03

Inactive Employees (or their Beneficiaries) Receiving Benefits

Number of benefit recipients:	291	318
Average monthly benefit:	\$1,024	\$1,064

**Averages reported for active employees. They differ from the prior year's report, which included all active and inactive members. Average service includes all proportionate service.*

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, 2016 funding valuation (see Appendix C, following, for details), except as noted below and throughout this report. Please see the Johnson County December 31, 2016 Summary Valuation Report for further details.

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%
Cost-of-Living Adjustments	Cost-of-Living Adjustments for Johnson County 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, 2016 financial reporting metrics are the same as those used in the December 31, 2016 actuarial valuation analysis for Johnson County.

Following is a description of the assumptions used in the December 31, 2016 actuarial valuation analysis for Johnson County. This information may also be found in the Johnson County December 31, 2016 Summary Valuation Report.

Economic Assumptions

TCDRS system-wide economic assumptions:

Real rate of return	5.0%
Inflation	3.0%
Long-term investment return	8.0%

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 3.5% (made up of 3.0% inflation and 0.5% productivity increase assumptions) and a merit, promotion and longevity component that on average approximates 1.4% per year for a career employee. (See Table 1 for Merit Salary Increases.)

Employer-specific economic assumptions:

Growth in membership	0.0%
Payroll growth for funding calculations	3.5%

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	5.25%	4.75%	4.25%	3.75%
1	4.50	4.00	3.50	3.00
2	4.00	3.50	3.00	2.50
3	3.50	3.00	2.50	2.00
4	3.00	2.50	2.00	1.50
5	2.65	2.15	1.65	1.15
6	2.40	1.90	1.40	0.90
7	2.20	1.70	1.20	0.70
8	2.05	1.55	1.05	0.55
9	1.95	1.45	0.95	0.45
10	1.85	1.35	0.85	0.40
11	1.75	1.25	0.75	0.40
12	1.65	1.15	0.65	0.40
13	1.55	1.05	0.55	0.40
14	1.56	0.95	0.45	0.40
15	1.35	0.90	0.40	0.40
16	1.25	0.85	0.40	0.40
17	1.15	0.80	0.40	0.40
18	1.10	0.75	0.40	0.40
19	1.05	0.70	0.40	0.40
20	1.00	0.65	0.40	0.40
21	0.95	0.60	0.40	0.40
22	0.90	0.55	0.40	0.40
23	0.85	0.50	0.40	0.40
24	0.80	0.45	0.40	0.40
25	0.75	0.40	0.40	0.40
26	0.70	0.40	0.40	0.40
27	0.65	0.40	0.40	0.40
28	0.60	0.40	0.40	0.40
29	0.55	0.40	0.40	0.40
30 & Up	0.50	0.40	0.40	0.40

* These rates do not include the wage inflation rate of 3.5% 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 8.93% total annual increase in his salary. The 8.93% is a combination of the 5.25% merit increase and the 3.5% 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	0.005%	0.072%
25	0.000	0.000	44	0.005	0.079
26	0.000	0.000	45	0.006	0.086
27	0.000	0.000	46	0.006	0.095
28	0.000	0.010	47	0.007	0.105
29	0.000	0.010	48	0.007	0.119
30	0.000	0.011	49	0.008	0.136
31	0.000	0.012	50	0.009	0.156
32	0.000	0.012	51	0.009	0.178
33	0.000	0.014	52	0.010	0.203
34	0.000	0.018	53	0.011	0.229
35	0.001	0.023	54	0.012	0.254
36	0.001	0.028	55	0.014	0.278
37	0.001	0.035	56	0.016	0.297
38	0.002	0.041	57	0.018	0.312
39	0.002	0.047	58	0.022	0.325
40	0.003	0.053	59	0.024	0.337
41	0.004	0.059	60 & Above	0.000	0.000
42	0.004	0.066			

* 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	The RP-2000 Active Employee Mortality Table for males with a two-year set-forward and the RP-2000 Active Employee Mortality Table for females with a four-year setback, both projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale after that.
Service retirees, beneficiaries and non-depositing members	The RP-2000 Combined Mortality Table projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale after that, with a one-year set-forward for males and no age adjustment for females.
Disabled retirees	RP-2000 Disabled Mortality Table projected to 2014 with scale AA and then projected with 110% of the MP-2014 Ultimate scale after that, with no age adjustment for males and a two-year set-forward for females.

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%
45-49	9.0	9.0
50	10.0	10.0
51	10.0	10.0
52	10.5	10.5
53	10.5	10.5
54	10.5	10.5
55	11.0	11.0
56	11.0	11.0
57	11.0	11.0
58	12.0	12.0
59	12.0	12.0
60	14.0	14.0
61	12.0	12.0

Age	Male	Female
62	25.0%	25.0%
63	16.0	16.0
64	16.0	16.0
65	30.0	30.0
66	25.0	25.0
67	24.0	24.0
68	22.0	22.0
69	22.0	22.0
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	33.1%	35.9%	27.4%	29.6%	24.5%	26.5%	21.6%	23.4%
1	22.1	23.9	18.2	19.8	16.3	17.7	14.4	15.6
2	16.6	17.9	13.7	14.8	12.2	13.3	10.8	11.7
3	13.3	14.4	10.9	11.9	9.8	10.6	8.6	9.4
4	11.0	12.0	9.1	9.9	8.2	8.8	7.2	7.8
5	9.4	10.2	7.8	8.4	6.9	7.5	6.1	6.6
6	7.7	8.4	6.4	6.9	5.7	6.2	5.0	5.5
7	6.6	7.2	5.5	5.9	4.9	5.3	4.3	4.7
8	6.1	6.6	5.0	5.4	4.5	4.9	4.0	4.3
9	5.5	6.0	4.6	4.9	4.1	4.4	3.6	3.9
10	5.0	5.4	4.1	4.5	3.7	4.0	3.2	3.5
11	4.4	4.8	3.7	4.0	3.3	3.5	2.9	3.1
12	4.0	4.3	3.3	3.6	2.9	3.2	2.6	2.8
13	3.5	3.8	2.9	3.2	2.6	2.8	2.3	2.5
14	3.1	3.4	2.6	2.8	2.3	2.5	2.0	2.2
15	2.7	2.9	2.2	2.4	2.0	2.1	1.7	1.9
16	2.3	2.5	1.9	2.1	1.7	1.9	1.5	1.6
17	2.0	2.2	1.6	1.8	1.5	1.6	1.3	1.4
18	1.8	1.9	1.5	1.6	1.3	1.4	1.2	1.3
19	1.7	1.8	1.4	1.5	1.2	1.3	1.1	1.2
20	1.7	1.8	1.4	1.5	1.2	1.3	1.1	1.2
21	1.5	1.6	1.2	1.3	1.1	1.2	1.0	1.1
22	1.3	1.4	1.1	1.2	1.0	1.1	0.9	0.9
23	1.2	1.3	1.0	1.0	0.9	0.9	0.8	0.8
24	1.0	1.1	0.8	0.9	0.7	0.8	0.7	0.7
25	0.9	1.0	0.7	0.8	0.7	0.7	0.6	0.6
26	0.8	0.8	0.6	0.7	0.6	0.6	0.5	0.5
27	0.7	0.7	0.5	0.6	0.5	0.5	0.4	0.5
28	0.5	0.6	0.5	0.5	0.4	0.4	0.4	0.4
29	0.4	0.5	0.4	0.4	0.3	0.4	0.3	0.3
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	34
4	100	19	32
5	100	20	30
6	100	21	28
7	100	22	26
8	50	23	24
9	49	24	22
10	48	25	20
11	47	26	15
12	46	27	10
13	44	28*	5
14	42		

** Members with more than 28 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 that have a fiscal year end other than Dec. 31 will need to account for pension contributions (employer; not employee contributions or group term life premiums) made between Dec. 31 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

Effective as of the Dec. 31, 2014 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, 2016 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.