

County—	Total valuation.	County—	Total valuation.	County—	Total valuation.
Anderson	\$15,005,968	Goliad	9,263,467	*Navarro	52,804,729
Andrews	2,246,478	Gonzales	13,981,008	Newton	8,413,409
*Angelina	14,513,649	*Gray	3,839,913	Nolan	8,370,526
Aransas	2,614,985	Grayson	48,265,336	Nueces	20,217,329
Archer	14,077,449	Gregg	5,394,477	Ochiltree	5,080,398
Armstrong	4,070,964	Grimes	12,445,395	Oldham	4,169,325
Atascosa	11,242,649	Guadalupe	15,602,615	Orange	16,870,490
Austin	12,261,599	Hale	10,242,766	*Paleo Pinto	17,192,091
Bailey	3,468,748	Hall	8,068,890	*Panola	6,608,470
Bandera	2,625,060	Hamilton	9,652,490	Parker	13,136,061
Bastrop	13,490,809	*Hansford	2,679,673	*Parmer	6,069,225
*Baylor	6,673,959	Hardeman	9,962,613	Pecos	8,530,915
Bee	8,313,968	*Hardin	18,011,230	*Polk	9,956,805
*Bell	29,792,750	Harris	205,038,348	Potter	20,014,629
Bexar	331,198,216	*Harrison	15,737,060	*Presidio	6,701,397
Blanco	3,201,670	Hartley	4,718,419	Rains	3,032,415
Borden	2,334,770	Haskell	8,657,816	Randall	5,604,031
Bosque	2,310,294	Hays	9,980,890	Reagan	1,755,077
Bowie	4,748,096	Hemphill	5,494,752	Real	1,008,890
Brazoria	33,139,895	*Henderson	9,256,810	Red River	13,524,950
Brazos	10,404,752	*Hidalgo	28,493,019	*Reeves	5,907,201
Brewster	8,749,742	Hill	30,085,940	Refugio	6,116,192
Briscoe	3,077,248	*Hockley	3,356,760	Roberts	3,175,677
Brooks	4,467,828	Hood	3,849,212	Robertson	12,646,161
Brown	12,384,517	Hopkins	9,633,066	Rockwall	4,658,171
*Burleson	9,277,237	Houston	8,105,630	Runnels	12,088,650
Burnet	7,492,236	*Howard	5,540,805	Rusk	7,465,670
Caldwell	15,696,886	Hudspeth	5,511,435	*Sabine	5,307,990
*Calhoun	4,762,368	Hunt	25,253,970	San Augustine	5,615,578
Callahan	7,347,931	Hutchinson	1,760,924	*San Jacinto	4,106,020
*Cameron	24,975,090	Ira	8,708,509	*San Patricio	9,688,335
*Camp	3,600,000	Jackson	10,200,000	Sandoval	8,685,385
Carson	4,400,000	Jacks	10,200,000	Santa Fe	3,648,900
Cass	6,800,000	Jadwin	10,200,000	Schleicher	6,858,816
*Castro	4,500,000	Jarvis	10,200,000	Seminole	6,907,762
Chambers	4,200,000	Jefferson	10,200,000	Sherman	8,717,560
Cherokee	12,400,000	Jones	10,200,000	Smith	3,238,963
Childress	7,200,000	Kimble	10,200,000	Sonoma	14,145,951
Ciudad	13,000,000	King	10,200,000	Starr	1,427,029
*Cochran	1,300,000	Kinney	10,200,000	Stephens	3,357,640
Coke	3,200,000	Kleberg	10,200,000	Sterling	25,861,260
Coleman	12,000,000	Knox	10,200,000	Stonewall	2,378,714
Collin	30,000,000	Lamar	10,200,000	Sumner	4,606,367
Collingsworth	5,800,000	*Lamb	10,200,000	Tarrant	3,866,672
*Colorado	13,000,000	Lampasas	10,200,000	Tarrant	5,390,687
Comal	7,000,000	*La Salle	10,200,000	Tarrant	140,573,810
Comanche	14,563,014	Lavaca	10,200,000	Taylor	22,480,535
Concho	5,239,164	Lee	10,200,000	Terrell	5,031,917
Cooke	13,362,350	Leon	10,200,000	*Terry	3,420,598
Coryell	10,325,000	Liberty	10,200,000	Throckmorton	4,380,697
Cottle	6,955,975	*Limestone	10,200,000	Titus	4,785,618
Crane	610,319	Lipscomb	10,200,000	Tom Green	13,260,940
*Crockett	3,336,409	*Live Oak	10,200,000	Travis	42,938,097
*Crosby	4,978,866	*Llano	10,200,000	*Trinity	6,239,250
*Culberson	3,866,000	Loving	10,200,000	Tyler	6,180,589
*Dallas	10,098,355	Lubbock	15,568,565	Upshur	5,691,612
Dallas	224,759,500	Lynn	5,417,542	Upton	1,974,675
Dawson	5,024,600	*Madison	4,450,740	Uvalde	9,680,467
Deaf Smith	7,923,323	Marion	3,811,575	*Val Verde	12,429,801
Delta	7,064,660	Martin	2,553,785	Van Zandt	9,982,416
Denton	19,423,150	Mason	5,858,850	Victoria	8,387,832
De Witt	20,334,489	Matagorda	20,607,880	*Walker	8,210,397
Dickens	4,777,849	*Mayerick	6,428,381	*Waller	5,693,255
Dimmit	5,036,358	McCulloch	9,257,351	Ward	3,631,344
Donley	6,284,110	McLennan	66,752,410	Washington	11,605,300
Duval	7,677,675	McMullen	3,045,663	Webb	16,641,930
Eastland	38,417,589	Medina	11,927,890	Wharton	15,540,290
*Ector	2,327,752	Menard	3,980,690	Wheeler	4,622,174
*Edwards	4,529,145	Midland	5,052,750	Wichita	67,820,609
Ellis	37,250,700	Milam	18,192,829	Wilbarger	15,855,462
*El Paso	70,512,321	Mills	5,448,489	*Willacy	4,929,736
Erath	12,068,950	Mitchell	7,161,389	Williamson	31,717,846
Falls	19,275,390	Montague	12,875,495	Wilson	9,930,218
Fannin	21,317,679	Montgomery	10,572,479	Winkler	820,610
Fayette	19,164,455	*Moore	1,394,346	Wise	13,048,602
Fisher	7,310,693	*Morris	3,013,542	Wood	8,108,882
Floyd	10,241,899	Motley	4,994,216	Yoakum	1,581,406
Foard	4,882,287	Nacogdoches	12,151,290	Young	15,159,400
Fort Bend	15,457,424			Zapata	1,785,890
Franklin	2,618,790			Zavalla	4,845,714
*Freestone	9,910,850				
Frio	7,168,949				
Gaines	3,859,782				
Galveston	56,240,264				
Garza	4,279,596				
Gillespie	6,905,431				
Glasscock	2,058,847				
				Total.....	\$3,473,401,843

SUMMARY VALUATION REPORT
as of Dec. 31, 2014
Tarrant County - 319

*Report for 1924 not available at time table was compiled; figures for 1923 inserted.



Actuarial certification: Dec. 31, 2014

Milliman has performed an actuarial valuation of the Tarrant County retirement plan as of Dec. 31, 2014. This valuation reflects the benefit provisions and contribution rates in effect as of Jan. 1, 2015. 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. Additional detailed results are provided in the TCDRS Comprehensive Annual Financial Report (CAFR) and the system-wide 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.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The TCDRS Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Section 3 of this report.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for TCDRS. Actuarial computations for purposes of fulfilling GASB financial accounting requirements are provided in a separate document and may 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 requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of TCDRS. 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. Milliman does not intend to benefit or create a legal duty to the participating employers or any other third party recipient of its work product. 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 report 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 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.

Tarrant County, #319
Actuarial valuation results for your TCDRS plan
as of Dec. 31, 2014

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, 2015.

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, 2014.

SCOPE OF THE REPORT

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

- Section 1 is a summary of the actuarial valuation results as of the valuation date — Dec. 31, 2014 — 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 actuarial methods and assumptions.
- Section 4 includes a brief glossary of terms used in this report.

SECTION I
Actuarial valuation results for your TCDRS plan
as of Dec. 31, 2014

RATES EFFECTIVE 2016

The following shows some key results of the actuarial valuation as of Dec. 31, 2014. For comparison purposes, the results of the prior valuation, after reflecting any plan changes effective Jan. 1, 2015, 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: Tarrant County

Employer Number: 319

Plan Assets & Liabilities	Dec. 31, 2014	Dec. 31, 2013
1. Present value of future benefits:		
Benefit recipients	\$ 185,919,946	\$ 171,499,485
Members	\$ 953,473,880	\$ 919,263,709
Total	\$ 1,139,393,826	\$ 1,090,763,194
2. Present value of future normal cost contributions	\$ 145,245,544	\$ 140,575,924
3. Actuarial accrued liability (line 1 – line 2)	\$ 994,148,282	\$ 950,187,270
4. Actuarial value of assets	\$ 822,369,694	\$ 772,521,562
5. Unfunded/(Overfunded) actuarial accrued liability [UAAL/(OAAL)] (line 3 – line 4)	\$ 171,778,588	\$ 177,665,708
6. Funded ratio (line 4 / line 3)*	82.7%	81.3%
7. Effective amortization period**	7.9	8.8

Retirement Plan Funding	2016***	2015****
Normal cost rate	7.72%	7.73%
UAAL/(OAAL) rate	6.46%	6.87%
Required rate	14.18%	14.60%
Elected rate	17.50%	17.50%
Retirement plan rate (greater of required or elected rate)	17.50%	17.50%

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 measurement has been changed to allow direct comparisons between the amortization periods of TCDRS and other Texas statewide retirement systems using the Texas Pension Review Board’s prescribed approach based on the retirement plan rate.

*** 2016 rates assume you don’t make any plan changes and that you continue the elected rate, if any, currently in effect for 2015.

**** These rates reflect plan changes effective Jan. 1, 2015.

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 20-year period.

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 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, 2015	2016 Amortization Payment
Dec 31, 2008	Initial UAAL	14 Years	\$ 13,464,417
Dec 31, 2008	Plan Change	9 Years	\$ 31,216
Dec 31, 2009	UAAL Layer	15 Years	(\$ 304,074)
Dec 31, 2009	Plan Change	10 Years	\$ 807,901
Dec 31, 2010	UAAL Layer	16 Years	\$ 1,232,330
Dec 31, 2011	UAAL Layer	17 Years	\$ 1,372,672
Dec 31, 2011	Plan Change	12 Years	\$ 289,821
Dec 31, 2012	UAAL Layer	18 Years	\$ 1,116,613
Dec 31, 2013	UAAL Layer	19 Years	(\$ 798,347)
Dec 31, 2013	Plan Change	14 Years	\$ 245,153
Dec 31, 2014	UAAL Layer	20 years	(\$ 1,020,903)
Total 2016 Amortization Payment:			<hr/> \$ 16,436,799
2016 Projected Payroll:			<hr/> \$ 254,455,330
UAAL Contribution Rate (Amortization as % of Payroll):			<hr/> <hr/> 6.46%

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, 2014; but the contribution rates are not effective until Jan. 1, 2016. Therefore, the UAAL is adjusted to Dec. 31, 2015, 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 9%. Lowering the discount rate would increase employer contribution rates.

The amortization of the Dec. 31, 2014 UAAL Layer does not begin until Dec. 31, 2015; however, the UAAL amount is adjusted based on the 2015 UAAL contribution rate.

Date Established	Description	Balance as of Dec. 31, 2014 (A)	Adjustment Due to Decrease in Discount Period (B)	Amortization Payment on Dec. 31, 2015 (C)	Balance as of Dec. 31, 2015 (A) + (B) – (C)
Dec 31, 2008	Initial UAAL	\$ 135,399,071	\$ 12,185,916	\$ 13,789,327	\$ 133,795,660
Dec 31, 2008	Plan Change	\$ 234,914	\$ 21,142	\$ 31,969	\$ 224,087
Dec 31, 2009	UAAL Layer	(\$ 3,189,197)	(\$ 287,028)	(\$ 311,410)	(\$ 3,164,815)
Dec 31, 2009	Plan Change	\$ 6,532,112	\$ 587,890	\$ 827,397	\$ 6,292,605
Dec 31, 2010	UAAL Layer	\$ 13,430,624	\$ 1,208,756	\$ 1,262,065	\$ 13,377,315
Dec 31, 2011	UAAL Layer	\$ 15,494,998	\$ 1,394,550	\$ 1,405,797	\$ 15,483,751
Dec 31, 2011	Plan Change	\$ 2,643,648	\$ 237,928	\$ 296,814	\$ 2,584,762
Dec 31, 2012	UAAL Layer	\$ 13,017,677	\$ 1,171,591	\$ 1,143,552	\$ 13,045,716
Dec 31, 2013	UAAL Layer	(\$ 9,587,745)	(\$ 862,897)	(\$ 817,610)	(\$ 9,633,032)
Dec 31, 2013	Plan Change	\$ 2,465,270	\$ 221,874	\$ 251,067	\$ 2,436,077
Dec 31, 2014	UAAL Layer	(\$ 4,662,784)	(\$ 419,651)	\$ 7,607,209	(\$ 12,689,644)
UAAL as of Dec. 31, 2014:		<u>\$ 171,778,588</u>			

SECTION 2

Additional plan information

Members	Dec. 31, 2014	Dec. 31, 2013
Number of members:	6,022	5,900
Number of depositing members:	4,430	4,385
Average monthly salary:	\$ 4,514	\$ 4,406
Average age:	47.00	47.03
Average length of service in years:	13.56	13.45

Benefit Recipients

Number of benefit recipients:	2,206	2,068
Average monthly benefit:	\$ 2,111	\$ 2,025

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, 2014	\$ 287,165,189	Balance as of Jan. 1, 2014	\$ 504,538,847
Additions:		Additions:	
Member deposits	\$ 17,259,013	Employer contributions	\$ 35,671,325
Partial-year interest	\$ 636,168	Allocated net gain/(loss)	\$ 28,254,175
Annual interest	\$ 18,742,266	Endowment fund transfers	\$ 0
Deductions:		Deductions:	
Transfers to the CSARF (retirement trust fund)	\$ 23,391,613	Transfers to the CSARF (retirement trust fund)	\$ 23,345,482
Withdrawals	\$ 2,362,658	Retirement allowances	\$ 20,789,570
Net escheatments	(\$ 17,796)	Other transfers:	\$ 0
Fund balance as of Dec. 31, 2014	\$ 298,066,161	Fund balance as of Dec. 31, 2014	\$ 524,329,295

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 3.

Development of Actuarial Value of Assets

1) Subdivision Accumulation Fund (SAF) balance	\$ 524,329,295
2) Total unrecognized actuarial asset gain/(loss) in SAF (see below)	\$ 25,762
3) Actuarial value of SAF* (Line 1 – Line 2)	\$ 524,303,532
4) Employees Saving Fund (ESF) balance	\$ 298,066,161
5) Actuarial value of assets* (Line 3 + Line 4)	\$ 822,369,694

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

Year Ended	Actuarial Asset Gain/(Loss) for Year		Percent Excluded		Gain/(Loss) Excluded	
Dec 31, 2011	(\$ 52,169,179)	x	20.00%	=	(\$ 10,433,836)	
Dec 31, 2012	\$ 31,403,008	x	40.00%	=	\$ 12,561,203	
Dec 31, 2013	\$ 19,369,753	x	60.00%	=	\$ 11,621,852	
Dec 31, 2014	(\$ 17,154,321)	x	80.00%	=	(\$ 13,723,457)	
Total Unrecognized Actuarial Asset Gain/(Loss) in SAF *					=	\$ 25,762

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

1) Prior year Subdivision Accumulation Fund (SAF) balance	\$ 504,538,847
2) Expected interest (9% x Line 1)	\$ 45,408,496
3) SAF cash flow (contributions – benefit payments + net transfers)	(\$ 8,463,728)
4) Expected SAF balance* (Line 1 + Line 2 + Line 3)	\$ 541,483,616
5) Actual SAF balance	\$ 524,329,295
6) Current year actuarial asset gain/(loss) in SAF* (Line 5 – Line 4)	(\$ 17,154,321)

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

SECTION 3

Actuarial procedures and assumptions

THE ACTUARIAL VALUATION

Each year TCDRS actuaries take a look at your plan to determine your employer contribution rate. They study your workforce and estimate the benefits you will pay to your employees. They 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. They compare the assets you have already invested with what you will need to pay for benefits. Based on this comparison, they 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 2013 experience study for TCDRS, details of which can be found in the 2013 Investigation of Experience report. 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.

PLAN PROVISIONS

Your current plan provisions are shown in the Retirement Plan Assessment report located online when you sign in to www.tcdrs.org/employer.

In addition, no 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.

Account balances (including employer matching and other employer 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%. Sample conversion factors are shown below:

Table 1
Conversion Factors

Sample retirement age	Annuity Purchase Rate for Single Life Benefit	Sample retirement age	Annuity Purchase Rate for Single Life Benefit	Sample retirement age	Annuity Purchase Rate for Single Life Benefit
50	147.2259	59	131.0264	68	109.9341
51	145.6677	60	128.9240	69	107.3322
52	144.0487	61	126.7566	70	104.6995
53	142.3702	62	124.5266	71	102.0450
54	140.6322	63	122.2368	72	99.3770
55	138.8321	64	119.8908	73	96.6912
56	136.9699	65	117.4861	74	93.9768
57	135.0475	66	115.0197	75	91.2252
58	133.0671	67	112.4992		

ACTUARIAL METHODS

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

Plan Funding — The unfunded actuarial accrued liability attributable to each year is amortized over a closed 20-year period as a level percent of covered payroll. The unfunded actuarial accrued liability attributable to benefit increases is amortized over a closed 15-year period as a level percent of covered payroll. If there is an overfunded actuarial accrued liability, the amortization period is an open 30-year period.

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 the SAF is equal to the fund value plus five-year recognition of the difference between the expected and actual interest credited to the SAF for each year. The actuarial value of the ESF is equal to the fund value.

Economic Assumptions

TCDRS system-wide economic assumptions:

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

The long-term investment return of 8% is net after investment expenses and is expected to enable the system to credit interest at the nominal annual rates shown below to the following major funds:

Subdivision Accumulation Fund	9%
Employees Saving Fund	7%
Current Service Annuity Reserve Fund	7%

Assuming interest will be credited at these nominal annual rates to the various funds, we have then assumed the following:

- An annual rate of 9% for calculating the actuarial accrued liability and normal cost contributions rate for the retirement plan of each participating employer.
- An annual rate of 7% required under the TCDRS Act for: (1) accumulating current service credit and multiple matching credit after the valuation date; (2) accumulating prior service credit after the valuation date; (3) determining the amount of the monthly benefit at future dates of retirement or disability; and (4) calculating the actuarial accrued liability of the system-wide Current Service Annuity Reserve Fund.

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 with the projection scale AA.
Service retirees, beneficiaries and non-depositing members	The RP-2000 Combined Mortality Table with the projection scale AA, with a one-year set-forward for males and no age adjustment for females.
Disabled retirees	RP-2000 Disabled Mortality Table for males with no age adjustment and RP-2000 Disabled Mortality Table for females with a two-year set-forward, both with the projection scale AA.

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	23.18%	25.12%	19.15%	20.75%	17.14%	18.56%	15.12%	16.38%
1	15.46	16.74	12.77	13.83	11.42	12.38	10.08	10.92
2	11.59	12.56	9.58	10.37	8.57	9.28	7.56	8.19
3	9.27	10.05	7.66	8.30	6.85	7.43	6.05	6.55
4	7.73	8.37	6.38	6.92	5.71	6.19	5.04	5.46
5	6.57	7.12	5.43	5.88	4.86	5.26	4.28	4.64
6	5.41	5.86	4.47	4.84	4.00	4.33	3.53	3.82
7	4.64	5.02	3.83	4.15	3.43	3.71	3.02	3.28
8	4.25	4.60	3.51	3.80	3.14	3.40	2.77	3.00
9	3.86	4.19	3.19	3.46	2.86	3.09	2.52	2.73
10	3.48	3.77	2.87	3.11	2.57	2.78	2.27	2.46
11	3.09	3.35	2.55	2.77	2.28	2.48	2.02	2.18
12	2.78	3.01	2.30	2.49	2.06	2.23	1.81	1.97
13	2.47	2.68	2.04	2.21	1.83	1.98	1.61	1.75
14	2.16	2.34	1.79	1.94	1.60	1.73	1.41	1.53
15	1.85	2.01	1.53	1.66	1.37	1.49	1.21	1.31
16	1.62	1.76	1.34	1.45	1.20	1.30	1.06	1.15
17	1.39	1.51	1.15	1.24	1.03	1.11	0.91	0.98
18	1.24	1.34	1.02	1.11	0.91	0.99	0.81	0.87
19	1.16	1.26	0.96	1.04	0.86	0.93	0.76	0.82
20	1.16	1.26	0.96	1.04	0.86	0.93	0.76	0.82
21	1.04	1.13	0.86	0.93	0.77	0.84	0.68	0.74
22	0.93	1.00	0.77	0.83	0.69	0.74	0.60	0.66
23	0.81	0.88	0.67	0.73	0.60	0.65	0.53	0.57
24	0.70	0.75	0.57	0.62	0.51	0.56	0.45	0.49
25	0.62	0.67	0.51	0.55	0.46	0.50	0.40	0.44
26	0.54	0.59	0.45	0.48	0.40	0.43	0.35	0.38
27	0.46	0.50	0.38	0.41	0.34	0.37	0.30	0.33
28	0.39	0.42	0.32	0.35	0.29	0.31	0.25	0.27
29	0.31	0.33	0.26	0.28	0.23	0.25	0.20	0.22
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 4

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.

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.”)