



# COMPREHENSIVE ANNUAL FINANCIAL REPORT

*For the years ended December 31, 2016 & 2015*

TEXAS COUNTY & DISTRICT RETIREMENT SYSTEM



## **Strength in Numbers: TCDRS celebrates 50 years**

For 50 years, Texas has meant one thing for all of us at TCDRS and for the generations of Texans we have served — home.

In 1967, counties and districts across Texas needed a secure retirement system that met their unique needs. By coming together, they found strength in numbers. Together they would have better access to investment opportunities, more efficient plan administration and the ability to provide a meaningful retirement benefit.

**We can see the wisdom of that decision in the numbers.**

**Over the last five decades, TCDRS has built a strong financial foundation to achieve important milestones:**

- Among the top 20% of best-funded public retirement plans
- \$26 billion in assets
- More than \$1 billion in benefits paid annually

We're honored to have served so many that serve Texas. At TCDRS, we take pride in providing county and district employees confidence in their future. And we're determined to keep delivering on that promise for generations of Texans to come.

**Join us as we celebrate our 50th anniversary at**  
**[www.TCDRS.org/50](http://www.TCDRS.org/50)**







# COMPREHENSIVE ANNUAL FINANCIAL REPORT

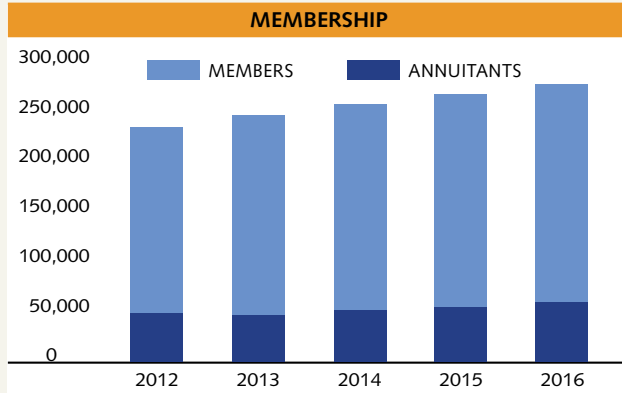
**For the years ended December 31, 2016 & 2015**

**TEXAS COUNTY & DISTRICT RETIREMENT SYSTEM**

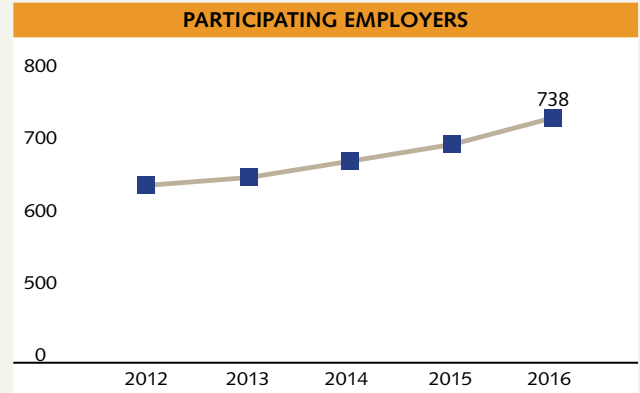
901 MOPAC EXPY. SOUTH • BARTON OAKS PLAZA IV, SUITE 500 • AUSTIN, TEXAS 78746

Prepared by the Actuarial Services, Communications, Finance and Investment Divisions

## SERVING OUR MEMBERSHIP

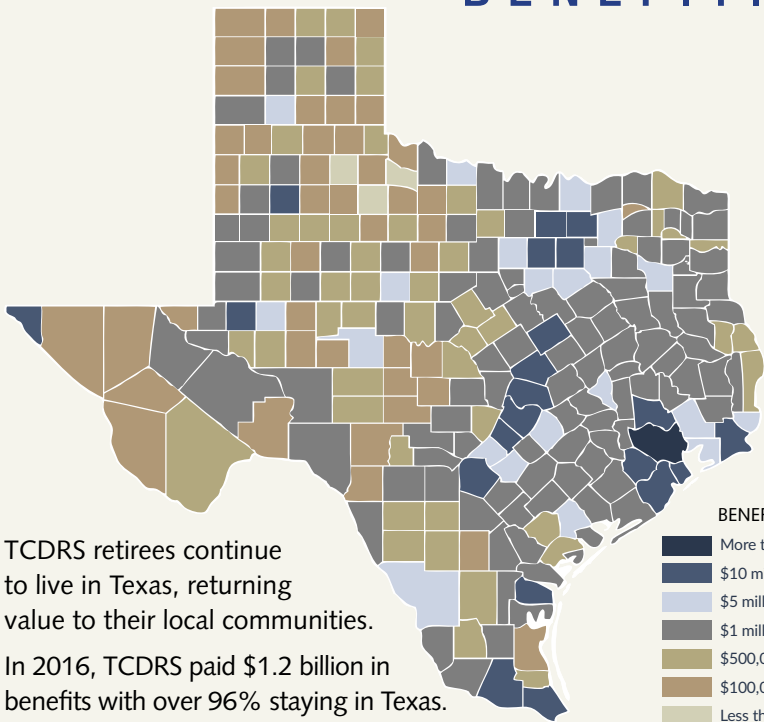


We serve a membership of more than 282,000, including nearly 60,000 retirees and beneficiaries.



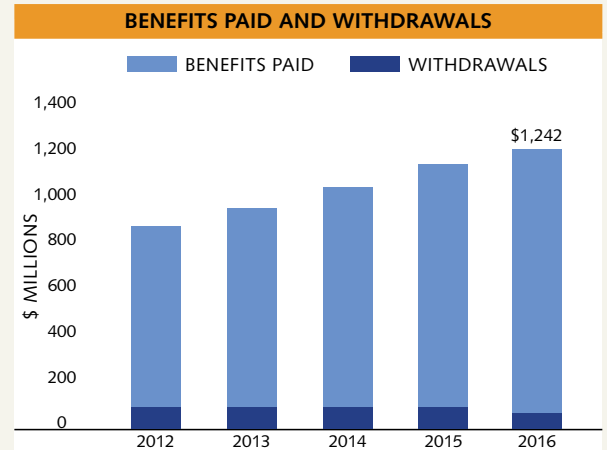
Since 1967, the system has grown to include 738 counties and districts.

## BENEFITING TEXAS



TCDRS retirees continue to live in Texas, returning value to their local communities.

In 2016, TCDRS paid \$1.2 billion in benefits with over 96% staying in Texas.



Average Age at Retirement	Average Years of Service	Average Annual Benefit
61	18	\$21,804

**1967**

TCDRS CREATED

**1982**

ADDS OPTIONAL GROUP TERM LIFE

**1997**

DIVERSIFIES INVESTMENT PORTFOLIO

**1998**

OPENS CALL CENTER

**2000**

LAUNCHES FIRST WEBSITE

# INVESTING FOR THE LONG TERM

## ASSET ALLOCATION TARGETS

EQUITIES	HEDGE FUNDS	PRIVATE EQUITY	HIGH-YIELD INVESTMENTS	REAL ASSETS	INVESTMENT-GRADE BONDS
34%	25%	14%	13%	11%	3%



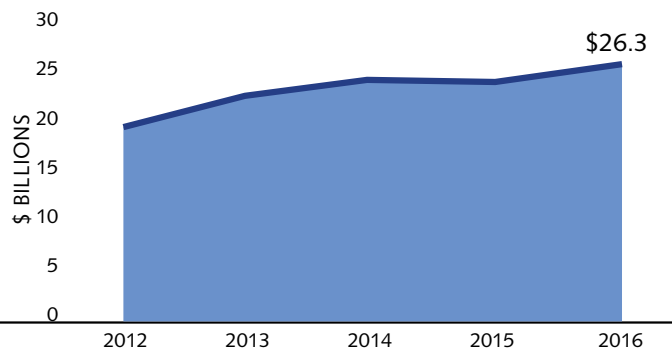
## TOTAL FUND RETURN—NET OF ALL FEES

Annualized Returns	2016 Return	5 Year	10 Year	20 Year	30 Year
Total Fund	7.5%	8.4%	4.9%	7.1%	8.0%

Our investments have achieved our target return of 8% over the long term.

Fiduciary net position totaled \$26.3 billion. Broad diversity in our investment portfolio reduces possible overall losses due to negative experience in any single asset class or investment.

## FIDUCIARY NET POSITION



# FUNDING PLANS RESPONSIBLY

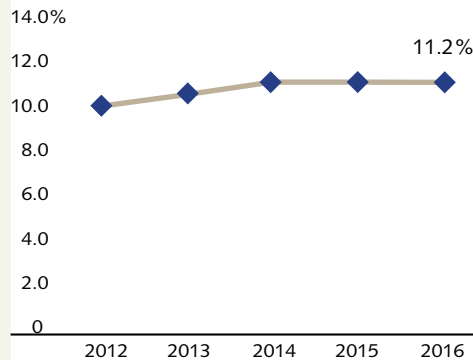
## BENEFIT FUNDING



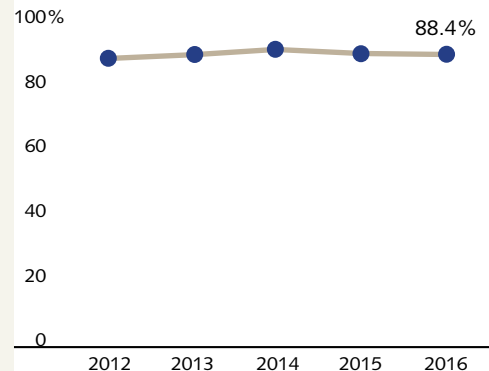
77¢ INVESTMENT EARNINGS  
13¢ EMPLOYER CONTRIBUTIONS  
10¢ EMPLOYEE DEPOSITS

(Estimated)

## AVERAGE REQUIRED EMPLOYER CONTRIBUTION RATES



## FUNDED RATIO



Investment earnings fund nearly 80¢ of every dollar of benefits. Employers must pay 100% of their required contributions every year. Each plan is funded independently by a county or district and its employees. Our conservative funding methods ensure any debt is paid down to zero within 20 years. This means money is there when needed and debt is not pushed to future generations.

All figures as of Dec. 31, 2016, except where noted.

**2002**

CREATES EMPLOYER SERVICES TEAM

**2009**

DEBUTS ONLINE ESTIMATES

**2011**

GOES SOCIAL ON FACEBOOK

**2014**

INVENTS PLAN CUSTOMIZER

**2016**

SIGNS UP 37 EMPLOYERS (MOST SINCE FIRST YEAR)

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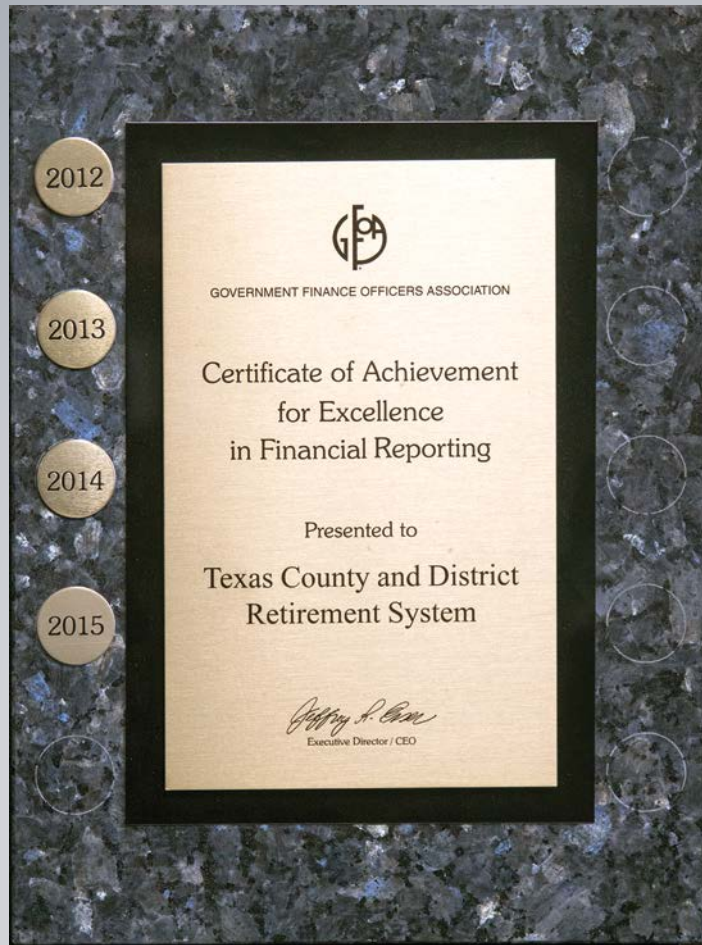


# 1 Introductory

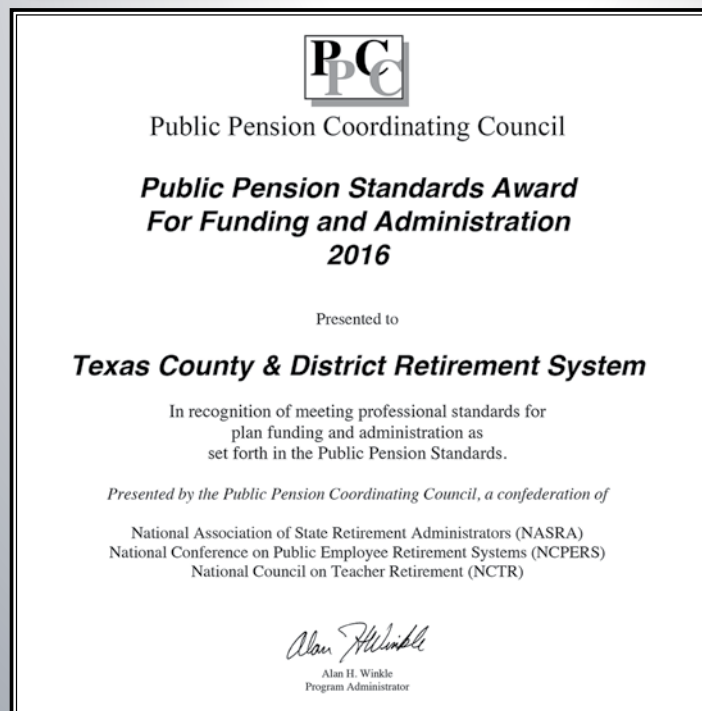
**735+**  
PARTICIPATING  
EMPLOYERS

TCDRS was created in 1967 to give Texas counties and districts a way to provide secure retirement benefits to meet their unique needs. After our first year of operations, we had 106 participating employers. Today, we serve 253 counties and 485 districts.





The Certificate of Achievement for Excellence in Financial Reporting was presented by the Government Finance Officers Association of the United States and Canada for the fiscal year ended Dec. 31, 2015. This was the 24th consecutive year that TCDRS has received this prestigious award, which recognizes comprehensive annual financial reports that have achieved the highest standards in government accounting and reporting.



TCDRS was awarded the Public Pension Coordinating Council's Public Pension Standards award for the 14th consecutive year. This award is in recognition of meeting professional standards for plan funding and administration as set forth in the Public Pension Standards.





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[www.tcdrs.org](http://www.tcdrs.org)

## LETTER OF TRANSMITTAL

June 1, 2017

We are pleased to present the Comprehensive Annual Financial Report (CAFR) of the Texas County & District Retirement System (TCDRS) for the year ended Dec. 31, 2016. This year we are celebrating our 50th anniversary of being a model for responsibly funded retirement benefits. By coming together in 1967, our participating employers found strength in numbers – better access to investment opportunities, more efficient plan administration and a way to provide secure retirement benefits that met their local needs and budgets.

Over the last fifty years, we have grown into a financially strong, multi-billion dollar trust partnering with 738 counties and governmental districts to provide reliable retirement, disability and survivor benefits. These attractive benefits help our employers hire and retain qualified staff. Each employer selects and funds its customized plan of benefits and adjusts benefits annually based on local needs and budgets. Our number of participating employers continues to grow. For the 10-year period ended Dec. 31, 2016, the number of participating employers increased by 31%.

We now serve more than 282,000 Texans, who make our local communities better and safer places to live. This includes nearly 60,000 retirees and beneficiaries. Over the past decade the number of members has risen by 54%, and the number of benefit recipients has grown by 85%.

Our unique savings-based plan design ensures that benefits remain reliable and makes costs more predictable for employers. Members save for their own retirement over the length of their careers. At retirement, benefits are based on a member's final savings balance and employer matching. In 2016, we paid out in excess of \$1.2 billion in benefits to retirees and former members. Over 96% of these benefits went to Texas addresses. These benefits act as an

economic engine to our local economies. On average, our current retirees began taking a benefit at age 61 after working 18 years. The average annual benefit for current retirees is \$21,804 as of Dec. 31, 2016.

The TCDRS Board of Trustees provides leadership for the system. Our nine-person board is appointed by the governor and confirmed by the Texas Senate. The board appoints an executive director, who is responsible for all day-to-day operations, and a chief investment officer, who oversees investment operations. The board also appoints legal counsel, a consulting actuary, an independent auditor, a medical board and investment consultants.

## INVESTMENTS

When it comes to managing investments, we focus on the long term with an investment horizon of 30-plus years. As employers and members save for benefits in advance over the course of an employee's career, these funds are pooled and invested with the returns compounding over time. As a result, investment earnings fund most of the benefits our members receive.

The TCDRS Board of Trustees constructs the investment portfolio to achieve our long-term investment return goal of 8% with an acceptable amount of risk. In 2016, the TCDRS portfolio returned 7.5%, net of all fees. The return was slightly under our policy benchmark return of 7.9% due to defensive positioning of the portfolio; however, we have consistently exceeded our benchmarks over longer periods. Our 30-year return is 8.0% for the period ended Dec. 31, 2016.

To ensure that the investment process is protected by appropriate safeguards, the board has adopted, and periodically reviews, an investment policy that defines and restricts investment authority. The policy also emphasizes the importance of a long-term investment philosophy with minimization of risk.

## LETTER OF TRANSMITTAL

### MAJOR INITIATIVES

This year we made great strides in ensuring that TCDRS is set up to provide best-in-class services and sound benefits for the next fifty years by:

- Updating the *TCDRS Strategic Plan 2017–2020* to prepare for the future. Major initiatives include efforts to protect sensitive information; enable members and employers to connect with TCDRS applications anytime, anywhere; prepare members for retirement; enhance employer decision-making; make administration easier for employers; support employer recruiting and retention; and strengthen organizational responsiveness.
- Implementing updated annuity purchase rates to get retirement costs back in balance with improving longevity. The solution was cost neutral for employers, had minimal impact on employees and no impact on retirees.
- Completing significant work on the final phase of our technology infrastructure upgrade which will set us up to provide enhanced services to members and employers.

### FUNDING

TCDRS is one of the nation's best-funded retirement systems. As of Dec. 31, 2016, TCDRS was 88.4% funded in aggregate. The actuarial value of assets and actuarial liabilities totaled \$26.95 billion and \$30.47 billion, respectively. The net position for pension benefits at year end 2016 and 2015 was \$26.29 billion and \$24.53 billion, respectively, an increase of \$1.76 billion (7.2%).

We do not receive funding from the State of Texas. Each plan is funded by our employers, members and investment earnings. Employers pay 100% of their required contributions every year. Many participating employers make additional contributions over the required amounts in order to provide a buffer against future adverse experience or to prefund benefit enhancements.

In addition, TCDRS has one of the most conservative funding policies in the nation. By paying the required contribution rate, employers are paying for their current employees' future benefits and are paying down any unfunded liabilities to zero within 20 years. The average amortization period of TCDRS plans is 13.5 years.

TCDRS maintains a reserve fund to help keep rates stable and to offset future adverse experience. In 2016, the board used \$107 million of general reserves to offset the effect of 2016 investment results. A total of \$309 million in the general reserves account is available as of Dec. 31, 2016.

Cash flow from deposits and contributions currently are slightly less than the amounts required to meet annual benefits paid to TCDRS retirees, member account withdrawals and the administrative expenses of the organization in 2016. The negative net cash flow is expected as the system has matured and the number of members receiving benefits increased. Investment returns and changes in employers' plans will also affect annual cash flow and the change in net position.

The recent history of net investment income, contributions and deposits, benefit payments and administrative costs is shown in the Statistical Section on page 83. Information on funding progress for all employers as a group is in the Actuarial Section, Table 6: Funding Progress, on page 71. In addition, each employer receives a customized Summary Valuation Report, which provides detailed information on their individual annual plan valuation.

### MANAGEMENT RESPONSIBILITY FOR FINANCIAL REPORTING

This report fulfills the requirements established by the Texas Government Code for public retirement systems to publish an annual financial report. TCDRS' management is responsible for the accuracy of the data and the completeness and fairness of the presentation within this report.

The financial statements have been prepared in accordance with the principles of governmental accounting and reporting set forth by the Governmental Accounting Standards Board (GASB).

A comprehensive framework of internal controls exists to provide reasonable assurance regarding the safekeeping of assets and fair presentation of the financial statements and supporting schedules. Internal controls also provide reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements. The concept of reasonable assurance recognizes that first, the cost

of a control should not exceed the benefits likely to be derived, and second, the valuation of the cost and benefits requires estimates and judgments by management.

KPMG LLP, Certified Public Accountants, has issued an unmodified (“clean”) opinion on TCDRS’ financial statements for the year ended Dec. 31, 2016. The independent auditor’s opinion is located at the front of the Financial Section of this report (see page 20).

Immediately following the independent auditor’s opinion, Management’s Discussion and Analysis (MD&A) provides a narrative introduction, overview and analysis of the basic financial statements. The MD&A complements the Letter of Transmittal and should be read in conjunction with it.

#### AWARDS AND ACKNOWLEDGMENTS

TCDRS proudly accepted a Certificate of Achievement for Excellence in Financial Reporting from the Government Finance Officers Association of the United States and Canada (GFOA) for the fiscal year ended Dec. 31, 2015.

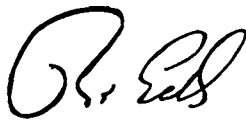
This was the 24th consecutive year that the system achieved this prestigious award, which recognizes comprehensive annual financial reports that are readable and efficiently organized, and that satisfy accepted accounting principles and applicable legal requirements.

TCDRS was also awarded the Public Pension Coordinating Council’s (PPCC) Public Pension Standards award for 2016, which is the 14th consecutive year that the system received this award in recognition of meeting professional standards for plan funding and administration.

#### SUMMARY

TCDRS staff under the direction of the board of trustees worked together to produce this report. Our thanks go out to everyone who has contributed to the preparation of this report and who works to ensure TCDRS’ continued success in the future. At TCDRS we are proud to serve those who serve Texas and look forward to continuing to do retirement right for the next 50 years.

Sincerely,



Robert A. Eckels  
Chair



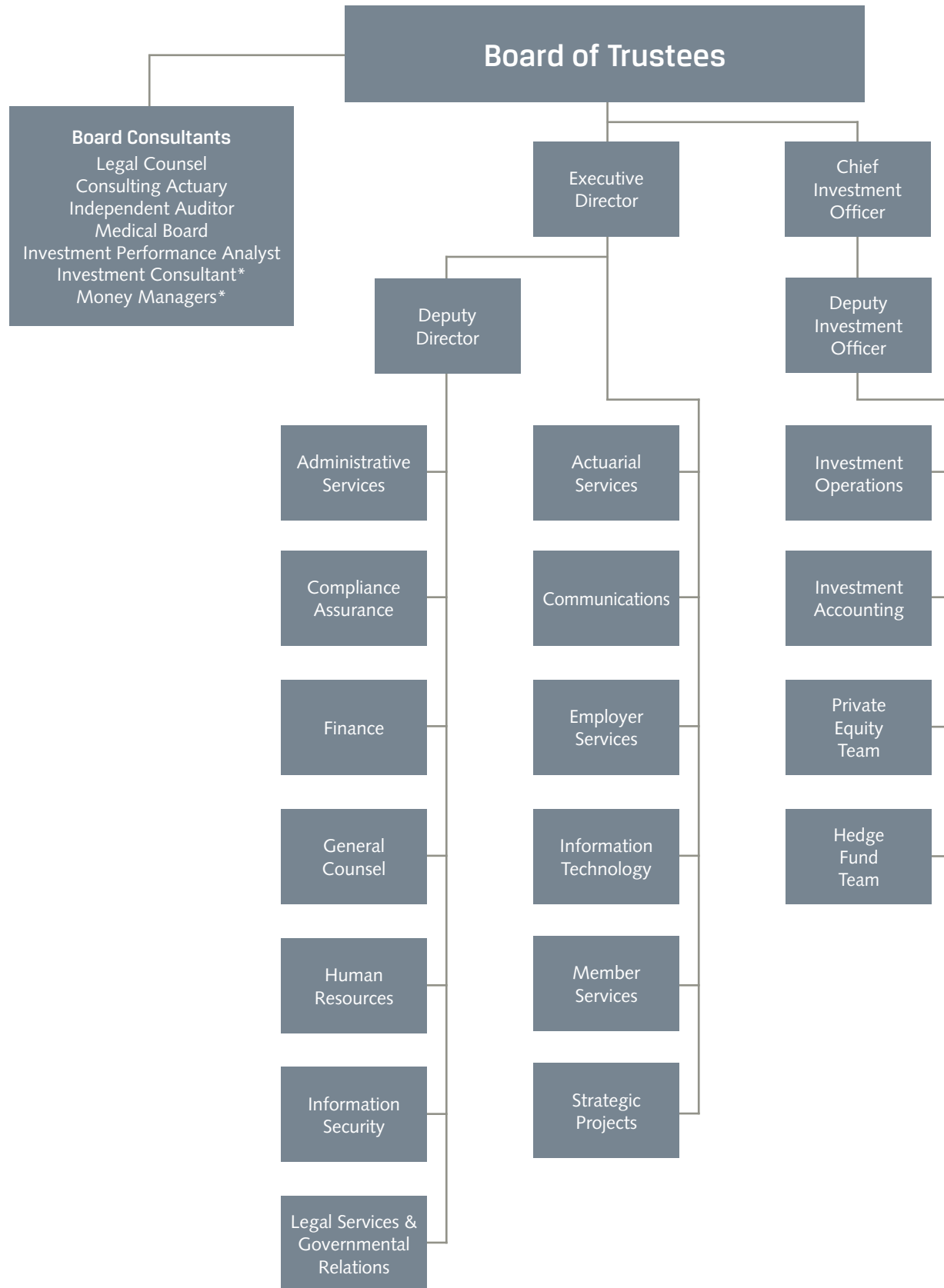
Amy Bishop  
Executive Director



Paul J. Williams  
Chief Investment Officer



# ORGANIZATION CHART



\* For information regarding investment professionals' fees, see Tables 8-9 in the Investment Section.



[BACK ROW] Mary Louise Garcia, Chris Davis, Deborah Hunt  
 [FRONT ROW] Bridget McDowell, H.C. “Chuck” Cazalas, Bill Metzger, Robert A. Eckels  
 [NOT PICTURED] Kristeen Roe, Bob Willis

**CHAIR**

**Robert A. Eckels**  
 Retiree  
 Harris County Judge  
 Term expires Dec. 31, 2019

**VICE-CHAIR**

**H.C. “Chuck” Cazalas**  
 Retiree  
 Nueces County Commissioner  
 Term expires Dec. 31, 2017

**Chris Davis**  
 Cherokee County Judge  
 Term expires Dec. 31, 2021

**Mary Louise Garcia**  
 Tarrant County Clerk  
 Term expires Dec. 31, 2017

**Deborah Hunt**  
 Williamson Central Appraisal  
 District Board of Directors  
 Term expires Dec. 31, 2021

**Bill Metzger**  
 Dallas County  
 Justice of the Peace  
 Term expires Dec. 31, 2021

**Bridget McDowell**  
 Retiree  
 Taylor County Auditor  
 Term expires Dec. 31, 2019

**Kristeen Roe**  
 Brazos County  
 Tax Assessor-Collector  
 Term expires Dec. 31, 2017

**Bob Willis**  
 Polk County Commissioner  
 Term expires Dec. 31, 2019

## EXECUTIVE STAFF AND PROFESSIONAL ADVISORS

### INVESTMENT STAFF



**Paul J. Williams**  
Chief Investment Officer



**Sandra Bragg**  
Deputy Investment Officer

### ADMINISTRATIVE STAFF



**Amy Bishop**  
Executive Director



**Tom Harrison**  
Deputy Director



**Ann McGeehan**  
General Counsel

### PROFESSIONAL ADVISORS

**Vinson & Elkins LLP**  
**Bradshaw & Bickerton PLLC**  
Investment Counsel

**Milliman, Inc.**  
Consulting Actuary

**Bank of New York Mellon**  
Investment Performance  
Analyst

**Cliffwater LLC**  
Investment Consultant

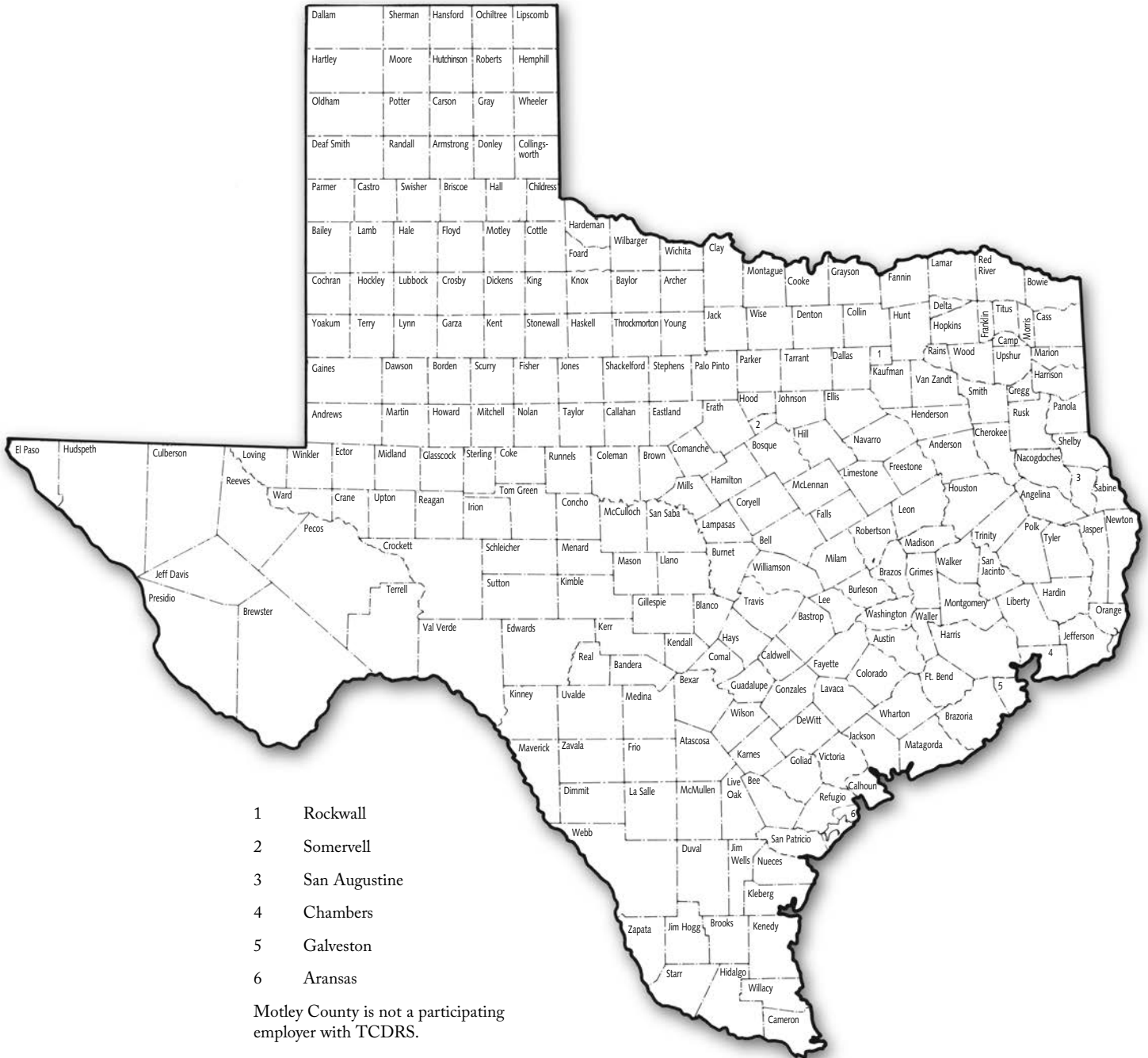
**KPMG LLP**  
Independent Auditor

**Jackson Walker LLP**  
Fiduciary & Benefit Plan  
Administration Counsel

**Ace Alsup, M.D.**, Chairman  
**Shelby H. Carter, M.D.**  
**Frank E. Robinson, M.D.**  
**John P. Vineyard Jr., M.D.**  
Medical Board



PARTICIPATING COUNTIES AND DISTRICTS As of Dec. 31, 2016



## PARTICIPATING COUNTIES AND DISTRICTS As of Dec. 31, 2016

### A

Acton Municipal Utility District  
 Agua Special Utility District  
 Alamo Area Council of Governments  
 Anderson County  
 Anderson County Central Appraisal District  
 Andrews County  
 Andrews County Appraisal District  
 Angelina County  
 Angelina County Appraisal District  
 Angelina-Nacogdoches Counties Water Control and Improvement District #1  
 Angleton Drainage District  
 Aquilla Water Supply District — Hill County  
 Aransas County  
 Aransas County Appraisal District  
 Aransas County Navigation District #1  
 Archer County  
 Archer County Appraisal District  
 Armstrong County  
 Atascosa County  
 Atascosa County Appraisal District  
 Athens Municipal Water Authority  
 Austin County  
 Austin County Appraisal District  
 Austin County Emergency Communications District

### B

Bacliff Municipal Utility District  
 Bailey County  
 Ballinger Memorial Hospital District  
 Bandera County  
 Bastrop Central Appraisal District  
 Bastrop County  
 Bastrop County Emergency Services District #1  
 Bastrop County Emergency Services District #2  
 Baylor County  
 Baylor County Appraisal District  
 Bayview Irrigation District #11  
 Bayview Municipal Utility District  
 Bee County  
 Bell County  
 Bell County Appraisal District  
 Bell County Water Control and Improvement District #1  
 Benbrook Water Authority  
 Bexar Appraisal District  
 Bexar County  
 Bexar County Emergency Services District #2  
 Bexar County Emergency Services District #7  
 Bexar County Emergency Services District #8  
 Bexar County Water Control and Improvement District #10  
 Bexar Metro 9-1-1 Network District  
 Bexar-Medina-Atascosa Water Control and Improvement District #1  
 Bistone Municipal Water Supply District — Limestone County  
 Blanco County  
 Bluebonnet Groundwater Conservation District  
 Borden County

Borden County Appraisal District  
 Bosque County  
 Bosque County Central Appraisal District  
 Bowie County  
 Brazoria County  
 Brazoria County Appraisal District  
 Brazoria County Conservation and Reclamation District #3  
 Brazoria County Drainage District #4  
 Brazoria County Drainage District #5  
 Brazos Central Appraisal District  
 Brazos County  
 Brazos County Emergency Communications District  
 Brazos Regional Public Utility Agency  
 Brazos River Authority  
 Brazos Valley Council of Governments  
 Brazos Valley Groundwater Conservation District  
 Brewster County  
 Brewster County Appraisal District  
 Bright Star-Salem Special Utility District  
 Briscoe County  
 Brookesmith Special Utility District  
 Brooks County  
 Brookshire Municipal Water District  
 Brookshire-Katy Drainage District  
 Brown County  
 Brownsville Irrigation District  
 Brushy Creek Municipal Utility District — Williamson County  
 Burleson County  
 Burleson County Appraisal District  
 Burnet Central Appraisal District  
 Burnet County

### C

Caldwell County  
 Caldwell County Appraisal District  
 Calhoun County  
 Calhoun County Appraisal District  
 Calhoun County E911 Emergency Communications District  
 Callahan County  
 Callahan County Appraisal District  
 Cameron County  
 Cameron County Appraisal District  
 Cameron County Drainage District #1  
 Cameron County Drainage District #3  
 Cameron County Drainage District #5  
 Cameron County Emergency Communication District  
 Cameron County Irrigation District #2  
 Cameron County Irrigation District #6  
 Cameron County Regional Mobility Authority  
 Camp Central Appraisal District  
 Camp County  
 Caney Creek Municipal Utility District  
 Carson County  
 Cass County  
 Cass County Appraisal District  
 Castro County  
 Central Appraisal District of Bandera  
 Central Appraisal District of Johnson County

Central Appraisal District of Taylor County  
 Central Texas Groundwater Conservation District  
 Central Texas Regional Mobility Authority  
 Central Water Control and Improvement District — Angelina County  
 Chambers County  
 Chambers County Appraisal District  
 Chambers County Public Hospital District  
 Cherokee County  
 Childress County  
 Childress County Appraisal District  
 Childress County Hospital District  
 City of Quanah Housing Authority  
 Clay County  
 Clay County Appraisal District  
 Coastal Bend Groundwater Conservation District  
 Coastal Plains Groundwater Conservation District  
 Cochran County  
 Cochran County Appraisal District  
 Coke County  
 Coke County Appraisal District  
 Coke County Soil and Water Conservation District #219  
 Coleman County  
 Collin County  
 Collin County Central Appraisal District  
 Collingsworth County  
 Collingsworth County Appraisal District  
 Colorado County  
 Comal Appraisal District  
 Comal County  
 Comal County Emergency Services District #3  
 Comanche County  
 Combined Consumers Special Utility District  
 Concho County  
 Concho County Appraisal District  
 Concho County Hospital District  
 Concho Valley Council of Governments  
 Cooke County  
 Cooke County Appraisal District  
 Coryell County  
 Cottle County  
 Cow Creek Groundwater Conservation District  
 Crane County  
 Crane County Hospital District  
 Crockett County  
 Crockett County Appraisal District  
 Crockett County Water Control and Improvement District #1  
 Crosby County  
 Crosby County Appraisal District  
 Crosby Municipal Utility District  
 Cross Roads Special Utility District  
 Crystal Clear Special Utility District  
 Culberson County

### D

Dallam County  
 Dallam County Appraisal District  
 Dallas Central Appraisal District

## PARTICIPATING COUNTIES AND DISTRICTS As of Dec. 31, 2016

Dallas County  
 Dallas County Park Cities Municipal Utility District  
 Dawson County  
 Dawson County Central Appraisal District  
 Deaf Smith County  
 Deaf Smith County Hospital District  
 Delta County  
 Delta County Appraisal District  
 Delta County Municipal Utility District  
 Delta Lake Irrigation District  
 Denco Area 9-1-1 District — Denton County  
 Denton Central Appraisal District  
 Denton County  
 Denton County Fresh Water Supply District 1A  
 Denton County Transportation Authority  
 DeWitt County  
 DeWitt County Appraisal District  
 Dickens County  
 Dickens County Appraisal District  
 Dimmit County  
 Donley County  
 Duval County  
 Duval County Appraisal District  
 Duval County Groundwater Conservation District

### E

East Fork Special Utility District  
 East Medina County Special Utility District  
 Eastland County  
 Eastland County Appraisal District  
 Ector County  
 Ector County Appraisal District  
 Ector County Hospital District  
 Edwards Aquifer Authority — Bexar County  
 Edwards Central Appraisal District  
 Edwards County  
 El Paso Central Appraisal District  
 El Paso County  
 El Paso County 9-1-1 District  
 El Paso County Emergency Services District #2  
 El Paso County Hospital District  
 Ellis Appraisal District  
 Ellis County  
 Emerald Bay Municipal Utility District  
 Emergency Communication District of Ector County  
 Erath County  
 Erath County Appraisal District

### F

Falls County  
 Falls County Appraisal District  
 Fannin County  
 Fannin County Appraisal District  
 Fayette County  
 Fern Bluff Municipal Utility District  
 Fisher County  
 Fisher County Hospital District  
 Floyd County  
 Foard County

Fort Bend Central Appraisal District  
 Fort Bend County  
 Fort Bend County Emergency Services District #2  
 Fort Bend County Water Control and Improvement District #2  
 Fort Clark Municipal Utility District  
 Four Way Special Utility District  
 Franklin County  
 Freestone County  
 Freestone County Appraisal District  
 Frio County  
 Frio County Appraisal District

### G

Gaines County  
 Gaines County Appraisal District  
 Galveston Central Appraisal District  
 Galveston County  
 Galveston County Consolidated Drainage District  
 Galveston County Drainage District #1  
 Galveston County Drainage District #2  
 Galveston County Emergency Communication District  
 Galveston County Fresh Water Supply District #6  
 Galveston County Health District  
 Galveston County Water Control and Improvement District #1  
 Garza Central Appraisal District  
 Garza County  
 Garza County Health Care District  
 Gillespie Central Appraisal District  
 Gillespie County  
 Gillespie County Soil and Water Conservation District  
 Glasscock County  
 Glasscock County Appraisal District  
 Goliad County  
 Gonzales County  
 Gonzales County Appraisal District  
 Graham Regional Medical Center  
 Gray County  
 Gray County Appraisal District  
 Grayson Central Appraisal District  
 Grayson County  
 Greater Harris County 9-1-1 Emergency Network  
 Greenbelt Municipal and Industrial Water Authority — Donley County  
 Gregg County  
 Grimes County  
 Grimes County Appraisal District  
 Guadalupe Appraisal District  
 Guadalupe County  
 Gulf Coast Water Authority — Galveston County

### H

Hale County  
 Hall County  
 Hall County Appraisal District  
 Hamilton County  
 Hansford County

Hansford County Hospital District  
 Hardeman County  
 Hardin County  
 Hardin County Appraisal District  
 Harlingen Irrigation District Cameron County #1  
 Harris County  
 Harris County Appraisal District  
 Harris County Emergency Services District #9  
 Harris County Emergency Services District #12  
 Harris County Emergency Services District #13  
 Harris County Emergency Services District #46  
 Harris County Emergency Services District #48  
 Harris County Emergency Services District #50  
 Harris County Housing Authority  
 Harris County Sports and Convention Corporation  
 Harris County Water Control and Improvement District #1  
 Harris County Water Control and Improvement District #36  
 Harris County Water Control and Improvement District #50  
 Harrison County  
 Hartley County  
 Hartley County Appraisal District  
 Haskell County  
 Haskell Memorial Hospital District  
 Hays Caldwell Public Utility Agency  
 Hays County  
 Hays County Emergency Services District #5  
 Hays County Emergency Services District #6  
 Hays County Emergency Services District #8  
 Heart of Texas Council of Governments  
 Hemphill County  
 Hemphill County Appraisal District  
 Hemphill County Hospital District  
 Hemphill County Underground Water Conservation District  
 Henderson County  
 Henderson County 9-1-1 Communications District  
 Henderson County Appraisal District  
 Hidalgo and Cameron Counties Irrigation District #9  
 Hidalgo County  
 Hidalgo County Appraisal District  
 Hidalgo County Drainage District #1  
 Hidalgo County Irrigation District #1  
 Hidalgo County Irrigation District #2  
 Hidalgo County Irrigation District #6  
 Hidalgo Municipal Utility District #1  
 High Plains Underground Water Conservation District #1  
 Hill County  
 Hockley County  
 Hockley County Appraisal District  
 Hood County  
 Hood County Appraisal District  
 Hopkins County



**PARTICIPATING COUNTIES AND DISTRICTS** As of Dec. 31, 2016

Hopkins County Appraisal District  
 Hopkins-Rains Soil and Water Conservation District  
 Housing Authority of the City of Abilene  
 Housing Authority of the City of Edinburg  
 Housing Authority of the City of Huntington  
 Housing Authority of the City of Mercedes  
 Housing Authority of the City of Pharr  
 Housing Authority of the County of Hidalgo  
 Houston County  
 Houston County Appraisal District  
 Howard County  
 Hudspeth County  
 Hunt County  
 Hunt County Appraisal District  
 Hutchinson County  
 Hutchinson County Appraisal District

**I**

Iraan General Hospital District  
 Irion County  
 Irion County Appraisal District

**J**

Jack County  
 Jack County Appraisal District  
 Jackson County  
 Jackson County Appraisal District  
 Jackson County County-Wide Drainage District  
 Jackson County Emergency Services District #3  
 Jasper County  
 Jasper County Water Control and Improvement District #1  
 Jeff Davis County  
 Jefferson County  
 Jefferson County Appraisal District  
 Jefferson County Drainage District #3  
 Jefferson County Drainage District #6  
 Jefferson County Drainage District #7  
 Jefferson County Water Control and Improvement District #10  
 Jim Hogg County  
 Jim Hogg County Appraisal District  
 Jim Hogg County Emergency Services District #1  
 Jim Hogg County Water Control and Improvement District #2  
 Jim Wells County  
 Johnson County  
 Jonah Water Special Utility District  
 Jones County  
 Jones County Appraisal District

**K**

Karnes County  
 Karnes County Appraisal District  
 Karnes County Hospital District  
 Kaufman County  
 Kaufman County Appraisal District  
 Kendall Appraisal District  
 Kendall County

Kendall County Water Control and Improvement District #1  
 Kenedy County  
 Kenedy County Central Appraisal District  
 Kenedy County Fire and Emergency Services District #1  
 Kent County  
 Kent County Tax Appraisal District  
 Kerr County  
 Kerr County Soil and Water Conservation District  
 Kerr Emergency 9-1-1 Network  
 Kimble County  
 King County  
 King County Appraisal District  
 Kinney County  
 Kinney County Appraisal District  
 Kleberg County  
 Knox County

**L**

La Salle County  
 La Salle County Appraisal District  
 Laguna Madre Water District — Cameron County  
 Lake Cities Municipal Utility Authority  
 Lake Kiowa Special Utility District  
 Lakeway Municipal Utility District — Travis County  
 Lamar County  
 Lamar County Appraisal District  
 Lamb County  
 Lampasas County  
 Lampasas County Appraisal District  
 Lavaca County  
 Lavaca-Navidad River Authority — Jackson County  
 Lee Central Appraisal District  
 Lee County  
 Leon County  
 Leon County Central Appraisal District  
 Liberty County  
 Liberty County Central Appraisal District  
 Limestone County  
 Limestone County Appraisal District  
 Lipscomb County  
 Live Oak County  
 Live Oak County Appraisal District  
 Llano County  
 Loving County  
 Loving County Appraisal District  
 Lower Trinity Groundwater Conservation District  
 Lower Valley Water District  
 Lubbock Central Appraisal District  
 Lubbock County  
 Lubbock County Water Control and Improvement District #1  
 Lubbock Emergency Communication District  
 Lubbock Reese Redevelopment Authority  
 Lumberton Municipal Utility District  
 Lynn County  
 Lynn County Appraisal District  
 Lynn County Hospital District

**M**

Macedonia-Eylau Municipal Utility District — Bowie County  
 Mackenzie Municipal Water Authority — Briscoe County  
 Madison County  
 Madison County Appraisal District  
 Marion County  
 Marion County Appraisal District  
 Marion-Cass Soil and Water Conservation District  
 Marshall-Harrison County Health District  
 Martin County  
 Martin County Appraisal District  
 Mason County  
 Mason County Soil and Water Conservation District #223  
 Matagorda County  
 Matagorda County Appraisal District  
 Matagorda County Drainage District  
 Matagorda County Hospital District  
 Matagorda County Navigation District #1  
 Maverick County  
 Maverick County Hospital District  
 Maverick County Water Control and Improvement District #1  
 McCamey County Hospital District  
 McCulloch County  
 McCulloch County Appraisal District  
 McLennan County  
 McLennan County 9-1-1 Emergency Assistance District  
 McLennan County Appraisal District  
 McLennan County Water Control and Improvement District #2  
 McMullen County  
 Medical Arts Hospital — Dawson County  
 Medina County  
 Medina County 9-1-1 District  
 Medina County Appraisal District  
 Memorial Medical Center — Calhoun County  
 Menard County  
 Mesa Underground Water Conservation District  
 Middle Rio Grande Development Council  
 Midland Central Appraisal District  
 Midland County  
 Midland Emergency Communication District  
 Milam Appraisal District  
 Milam County  
 Mills Central Appraisal District  
 Mills County  
 Mitchell County  
 Mitchell County Appraisal District  
 Monahans Housing Authority  
 Montague County  
 Montague County Tax Appraisal District  
 Montgomery Central Appraisal District  
 Montgomery County  
 Montgomery County Emergency Communication District  
 Montgomery County Emergency Services District #1

## PARTICIPATING COUNTIES AND DISTRICTS As of Dec. 31, 2016

Montgomery County Emergency Services District #3  
 Montgomery County Emergency Services District #4  
 Montgomery County Emergency Services District #8  
 Montgomery County Emergency Services District #9  
 Montgomery County Emergency Services District #10  
 Montgomery County Emergency Services District #12  
 Montgomery County Hospital District  
 Montgomery County Housing Authority  
 Moore County  
 Moore County Appraisal District  
 Moore County Hospital District  
 Morris County  
 Mustang Special Utility District

### N

Nacogdoches County  
 Navarro Central Appraisal District  
 Navarro County  
 Newton Central Appraisal District  
 Newton County  
 Nolan County  
 Nortex Regional Planning Commission  
 North Central Texas Municipal Water Authority  
 North East Texas Regional Mobility Authority  
 North Hunt Special Utility District  
 North Plains Groundwater Conservation District  
 North Texas Emergency Communications Center  
 North Texas Tollway Authority  
 Northeast Texas Municipal Water District  
 Northeast Texas Public Health District  
 Nueces County  
 Nueces County Appraisal District  
 Nueces County Drainage District #2  
 Nueces County Emergency Services District #2  
 Nueces County Water Control and Improvement District #3  
 Nueces County Water Control and Improvement District #4

### O

Ochiltree County  
 Oldham County  
 Oldham County Appraisal District  
 Orange County  
 Orange County Appraisal District  
 Orange County Drainage District  
 Orange County Emergency Services District #1  
 Orange County Emergency Services District #2  
 Orange County Navigation and Port District  
 Orange County Water Control and Improvement District #1

### P

Palo Duro River Authority  
 Palo Pinto Appraisal District  
 Palo Pinto County  
 Palo Pinto Soil and Water Conservation District  
 Panola County  
 Parker County  
 Parker County Appraisal District  
 Parker County Emergency Services District #1  
 Parker County Hospital District  
 Parker County Special Utility District  
 Parmer County  
 Parmer County Appraisal District  
 Pecan Valley Groundwater Conservation District  
 Pecos County  
 Pecos County Appraisal District  
 Pecos County Water Control and Improvement District #1  
 Permian Basin Regional Planning Commission  
 Permian Regional Medical Center  
 Pineywoods Groundwater Conservation District  
 Polk Central Appraisal District  
 Polk County  
 Polk County Fresh Water Supply District #2  
 Port of Bay City Authority  
 Port of Beaumont Navigation District  
 Port of Corpus Christi Authority  
 Port of Port Arthur Navigation District  
 Post Oak Savannah Groundwater Conservation District  
 Potter County  
 Potter-Randall County Emergency Communication District  
 Prairielands Groundwater Conservation District  
 Presidio Appraisal District  
 Presidio County

### R

Rains County  
 Rains County Appraisal District  
 Randall County  
 Randall County Appraisal District  
 Rankin County Hospital District — Upton County  
 Rayburn Country Municipal Utility District  
 Reagan County  
 Reagan Hospital District  
 Real County  
 Red Bluff Water Power Control District — Reeves County  
 Red River Appraisal District  
 Red River Authority — Wichita County  
 Red River County  
 Red River County Soil and Water Conservation District  
 Reeves County  
 Reeves County Appraisal District  
 Reeves County Hospital District  
 Refugio County

Refugio County Drainage District #1  
 Refugio Groundwater Conservation District  
 Rio Grande Council of Governments  
 Roberts County  
 Robertson County  
 Robertson County Appraisal District  
 Rockwall Central Appraisal District  
 Rockwall County  
 Runnels County  
 Rusk County  
 Rusk County Appraisal District  
 Rusk County Groundwater Conservation District

### S

Sabine County  
 Sabine County Appraisal District  
 Sabine Pass Port Authority  
 Sabine-Neches Navigation District of Jefferson County  
 San Augustine County  
 San Jacinto County  
 San Jacinto County Appraisal District  
 San Patricio County  
 San Patricio County Appraisal District  
 San Patricio County Drainage District  
 San Patricio County Navigation District #1  
 San Patricio Municipal Water District  
 San Saba County  
 Santo Special Utility District  
 Schleicher County  
 Scurry County  
 Scurry County Appraisal District  
 Scurry County Hospital District  
 Shackelford County  
 Shackelford County Appraisal District  
 Shelby County  
 Shelby County Appraisal District  
 Sherman County  
 Sherman County Appraisal District  
 Smith County  
 Smith County 9-1-1 Communications District  
 Smith County Appraisal District  
 Somervell County  
 Somervell County Central Appraisal District  
 Somervell County Water District  
 South Plains Association of Governments  
 South Rains Special Utility District  
 South Texas Development Council  
 Southeast Texas Groundwater Conservation District  
 Starr County  
 Starr County Appraisal District  
 Stephens County  
 Stephens County Tax Appraisal District  
 Sterling County  
 Sterling County Appraisal District  
 Stonewall County  
 Stonewall County Appraisal District  
 Stonewall Memorial Hospital District  
 Stratford Hospital District — Sherman County  
 Sutton County

## PARTICIPATING COUNTIES AND DISTRICTS As of Dec. 31, 2016

Sutton County Hospital District  
Swisher County  
Swisher County Appraisal District

### T

Tarrant Appraisal District  
Tarrant County  
Tarrant County 9-1-1 Emergency Assistance District  
Tax Appraisal District of Cottle County  
Taylor County  
Terrell County  
Terrell County Water Control and Improvement District #1  
Terry County  
Terry Memorial Hospital District  
Texas Association of Counties  
Texas County & District Retirement System  
Texas Eastern 9-1-1 Network  
Throckmorton County  
Titus County  
Titus County Appraisal District  
Titus County Fresh Water Supply District  
Tom Green County  
Travis Central Appraisal District  
Travis County  
Travis County Emergency Services District #1 North Lake Travis Fire and Rescue  
Travis County Emergency Services District #2  
Travis County Emergency Services District #4  
Travis County Emergency Services District #11  
Travis County Emergency Services District #12  
Travis County Water Control and Improvement District — Point Venture  
Tri-County Special Utility District  
Trinity Bay Conservation District  
Trinity County  
Trinity County Appraisal District  
Trophy Club Municipal Utility District #1  
Two Way Special Utility District  
Tyler County  
Tyler County Appraisal District

### U

United Irrigation District — Hidalgo County  
Upper Brushy Creek Water Control and Improvement District  
Upper Leon River Municipal Water District  
Upper Trinity Groundwater Conservation District  
Upshur County  
Upton County  
Upton County Appraisal District  
Uvalde County

### V

Val Verde County  
Valley Municipal Utility District #2 — Cameron County  
Valwood Improvement Authority — Dallas County  
Van Zandt County  
Van Zandt County Appraisal District  
Velasco Drainage District — Brazoria County

Victoria County  
Victoria County Drainage District #3  
Victoria County Groundwater Conservation District

### W

Walker County  
Walker County Appraisal District  
Walker County Special Utility District  
Waller County  
Waller County Appraisal District  
Ward County  
Ward County Central Appraisal District  
Ward Memorial Hospital  
Washington County  
Webb County  
Webb County Appraisal District  
West Central Texas Council of Governments  
West Central Texas Municipal Water District  
West Jefferson County Municipal Water District  
West Nueces-Las Moras Soil and Water Conservation District #236  
West Travis County Public Utility Agency  
Wharton County  
Wharton County Central Appraisal District  
Wharton County Water Control and Improvement District #1  
Wharton County Water Control and Improvement District #2  
Wheeler County  
Wheeler County Appraisal District  
White River Municipal Water District — Dickens County  
Wichita Appraisal District  
Wichita County  
Wichita County Water Improvement District #2  
Wichita-Wilbarger 9-1-1 District  
Wickson Creek Special Utility District — Brazos County  
Wilbarger County  
Wilbarger County Appraisal District  
Wilbarger County Hospital District  
Willacy County  
Willacy County Appraisal District  
Willacy County Housing Authority  
Williamson Central Appraisal District  
Williamson County  
Williamson County Emergency Service District #4  
Williamson County Emergency Services District #3  
Williamson County Emergency Services District #5  
Wilson County  
Wilson County Appraisal District  
Winkler County  
Winkler County Appraisal District  
Wintergarden Groundwater Conservation District  
Wise County  
Wise County Appraisal District  
Wood County

Wood County Appraisal District  
Wylie Northeast Special Utility District

### Y

Yoakum County  
Yoakum County Appraisal District  
Young County

### Z

Zapata County  
Zapata County Appraisal District  
Zapata Soil and Water Conservation District  
Zavala County  
Zavala County Appraisal District



# 282,000+

## HARDWORKING TEXANS

The benefits our employers provide through TCDRS help attract and retain talented employees for public service. Our members make our communities better by providing essential services to Texans, such as health care, utilities and public safety.





KPMG LLP  
Suite 1900  
111 Congress Avenue  
Austin, TX 78701-1091

## Independent Auditors' Report

The Board of Trustees  
Texas County and District Retirement System:

### Report on the Financial Statements

We have audited the accompanying statements of fiduciary net position of the Texas County & District Retirement System (TCDRS) as of December 31, 2016 and 2015, and the related statements of changes in fiduciary net position for the years then ended and the related notes to the financial statements, which collectively comprise TCDRS's basic financial statements as listed in the table of contents.

#### *Management's Responsibility for the Financial Statements*

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

#### *Auditors' Responsibility*

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### *Opinion*

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Texas County & District Retirement System as of December 31, 2016 and 2015, and the changes in fiduciary net position for the years then ended, in accordance with U.S. generally accepted accounting principles.

KPMG LLP is a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.



*Other Matters*

**Required Supplementary Information**

U.S. generally accepted accounting principles require that the Management's Discussion and Analysis and Schedule of Money-Weighted Rates of Return on pages 22–25 and 47, respectively, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with audit standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's response to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

**Supplementary and Other Information**

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise TCDRS' basic financial statements. The Introductory Section on pages 5–18, Other Supplementary Information – Changes in Fiduciary Net Position by Fund and Interfund Transfers, Changes in Endowment Fund, Changes in Income Fund, Administrative Revenues and Expenses, Investment Expenses, and Professional/Consultant Fees and Services on pages 48–54, the Investment Section on pages 55–63, the Actuarial Section on pages 65–80, and the Statistical Section on pages 81–88 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The Other Supplementary Information – Changes in Fiduciary Net Position by Fund and Interfund Transfers, Changes in Endowment Fund, Changes in Income Fund, Administrative Revenues and Expenses, Investment Expenses and Professional/Consultant Fees and Services are the responsibility of management and were derived from and directly related to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, Other Supplementary Information – Changes in Fiduciary Net Position by Fund and Interfund Transfers, Changes in Endowment Fund, Changes in Income Fund, Administrative Revenues and Expenses, Investment Expenses and Professional/Consultant Fees and Services are fairly stated in all material respects in relation to the basic financial statements as whole.

The Introductory, Investment, Actuarial, and Statistical Sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

**KPMG LLP**

Austin, Texas  
June 9, 2017



## MANAGEMENT'S DISCUSSION AND ANALYSIS

### INTRODUCTION

This section provides an overview and analysis of the system's financial position and performance, focusing on the current year's results, changes in those results (including three-year trends), and other currently known information. Readers are encouraged to consider this information in conjunction with information provided in other areas of the Financial Section, as well as information presented in the Letter of Transmittal in the Introductory Section.

### OVERVIEW OF THE FINANCIAL STATEMENTS

The basic financial statements consist of the Statements of Fiduciary Net Position, Statements of Changes in Fiduciary Net Position and the Notes to the Financial Statements. Required Supplementary Information and Other Supplementary Information are also presented.

- The Statements of Fiduciary Net Position report the assets less liabilities and the resulting net position for pension or insurance benefits at the end of 2016, compared to 2015.
- The Statements of Changes in Fiduciary Net Position report the transactions that occurred during 2016 and 2015 for which additions less deductions equal the net increase or decrease in fiduciary net position.
- Notes to the Financial Statements include additional information not readily evident in the statements themselves. The notes are considered essential to a full understanding of the information provided in the financial statements.
- Required Supplementary Information provides the money-weighted rate of return information. In addition, there is historical funding progress and employer contributions information for the Group Term Life Fund.
- Other Supplementary Information provides detailed information, including activity by fund, administrative and investment expenses, and professional and consultant fees and services. These schedules support summary data presented in the basic financial statements.

TCDRS operates two trusts, both of which are accounted for as fiduciary funds. The Pension Trust Fund accounts for and provides retirement,

disability and survivor benefits to the employees of participating employers. The Group Term Life Fund (GTLF or Group Term Life) provides a program of group term life insurance for the employees and, if covered, retirees of electing employers. No assets of the Pension Trust Fund may be used to pay any insurance benefit due from the GTLF, nor may assets of the GTLF be used to pay any benefit due from the Pension Trust Fund. Discussion and analysis is provided separately for each of the two trusts.

The Statements of Fiduciary Net Position and Statements of Changes in Fiduciary Net Position show financial information for both the Pension Trust Fund and the GTLF.

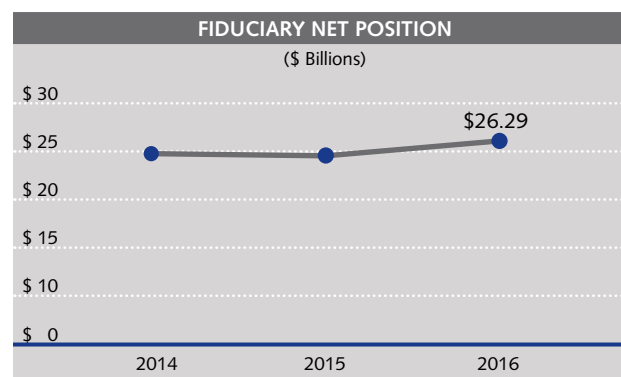
### FINANCIAL ANALYSIS: PENSION TRUST FUND

The Pension Trust Fund is comprised of six individual funds, each with a specific operational purpose. Note A in the Notes to the Financial Statements has additional information about each of these funds.

Summary information about fiduciary net position and the changes in fiduciary net position showing comparative detail for 2016, 2015 and 2014 is presented on page 23.

Net position (the amount that assets exceed liabilities) restricted for pensions at year end 2016 totaled \$26.29 billion. The 2015 amount was \$24.53 billion and for 2014 was \$24.72 billion. The increase in fiduciary net position in 2016 was \$1.76 billion, while fiduciary net position decreased in 2015 by \$0.19 billion, and increased in 2014 by \$1.57 billion.

The increase in 2016 fiduciary net position was primarily due to a net investment gain of \$1.82 billion — a 7.5% overall return, net of all fees.



## MANAGEMENT'S DISCUSSION AND ANALYSIS

### SUMMARY INFORMATION ABOUT FIDUCIARY NET POSITION

	Pension Trust Fund (\$ Millions)						
	Dec. 31,			2016 – 2015		2015 – 2014	
	2016	2015	2014	\$ Change	% Change	\$ Change	% Change
<b>Assets</b>							
Investments, at Fair Value	\$ 26,163	\$ 24,418	\$ 24,618	\$ 1,745	7.1%	\$ (200)	(0.8)%
Invested Securities-Lending Collateral	5	39	41	(34)	(87.2)	(2)	(4.9)
Receivables, Cash and Cash Equivalents, Other	164	148	129	16	10.8	19	14.7
Capital Assets, Net	21	19	17	2	10.5	2	11.8
<b>Total Assets</b>	<b>26,353</b>	<b>24,624</b>	<b>24,805</b>	<b>1,729</b>	<b>7.0</b>	<b>(181)</b>	<b>(0.7)</b>
<b>Liabilities</b>							
Securities-Lending Collateral	5	39	41	(34)	(87.2)	(2)	(4.9)
Other Liabilities	61	55	49	6	10.9	6	12.2
<b>Total Liabilities</b>	<b>66</b>	<b>94</b>	<b>90</b>	<b>(28)</b>	<b>(29.8)</b>	<b>4</b>	<b>4.4</b>
<b>Net Position Restricted for Pensions</b>	<b>\$ 26,287</b>	<b>\$ 24,530</b>	<b>\$ 24,715</b>	<b>\$ 1,757</b>	<b>7.2%</b>	<b>\$ (185)</b>	<b>(0.7)%</b>

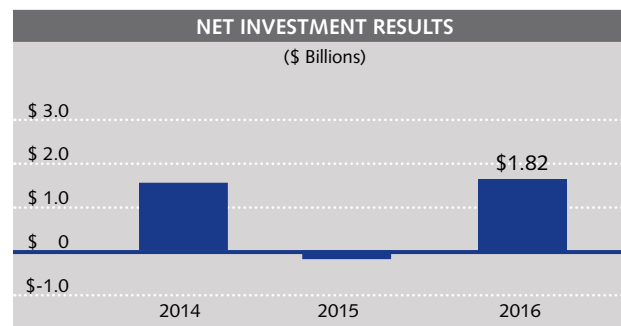
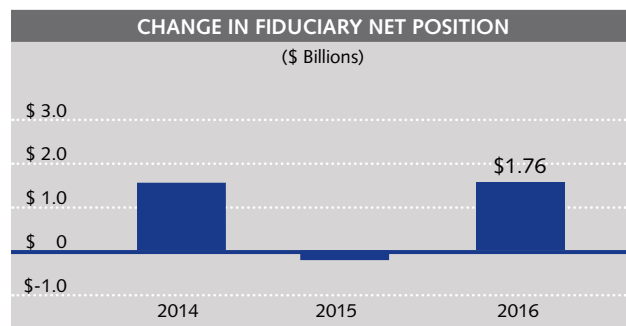
Due to rounding, totals and detail may not equal. Percentages shown are based on rounded amounts and may differ slightly from actual.

### SUMMARY INFORMATION ABOUT CHANGES IN FIDUCIARY NET POSITION

	Pension Trust Fund (\$ Millions)						
	Years Ended Dec. 31,			2016 – 2015		2015 – 2014	
	2016	2015	2014	\$ Change	% Change	\$ Change	% Change
<b>Additions</b>							
Employee Deposits	\$ 433	\$ 415	\$ 383	\$ 18	4.3%	\$ 32	8.4%
Employer Contributions	772	743	684	29	3.9	59	8.6
Net Investment Results	1,816	(172)	1,568	1,988	(1,155.8)	(1,740)	(111.0)
Other Income	2	2	2	0	0.0	0	0.0
<b>Total Additions</b>	<b>3,023</b>	<b>988</b>	<b>2,637</b>	<b>2,035</b>	<b>206.0</b>	<b>(1,649)</b>	<b>(62.5)</b>
<b>Deductions</b>							
Benefits Paid	1,165	1,069	964	96	9.0	105	10.9
Withdrawals	77	82	82	(5)	(6.1)	-	0.0
Administrative Expenses	20	18	18	2	11.1	0	0.0
Other Expenses	4	4	4	0	0.0	0	0.0
<b>Total Deductions</b>	<b>1,266</b>	<b>1,173</b>	<b>1,068</b>	<b>93</b>	<b>7.9</b>	<b>105</b>	<b>9.8</b>
<b>Net Increase (Decrease) in Fiduciary Net Position</b>	<b>1,757</b>	<b>(185)</b>	<b>1,569</b>	<b>1,942</b>	<b>(1,049.7)</b>	<b>(1,754)</b>	<b>(111.8)</b>
<b>Net Position Restricted for Pensions</b>	<b>\$ 26,287</b>	<b>\$ 24,530</b>	<b>\$ 24,715</b>	<b>\$ 1,757</b>	<b>7.2%</b>	<b>\$ (185)</b>	<b>(0.7)%</b>

Due to rounding, totals and detail may not equal. Percentages shown are based on rounded amounts and may differ slightly from actual.

## MANAGEMENT'S DISCUSSION AND ANALYSIS

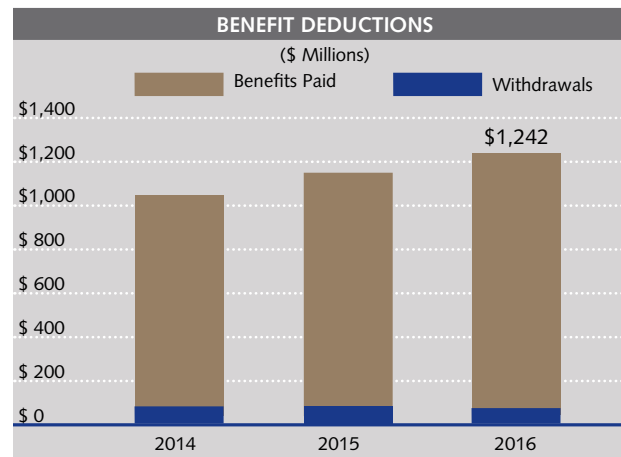


Net investment results for 2016 consist of the appreciation in fair value of investments of \$1.74 billion, plus \$111 million in interest and dividends, net income from securities-lending activity of \$2 million, and \$39 million of investment activity expenses. Net investment loss in 2015 was \$173 million and the gain in 2014 was \$1.57 billion.

Markets showed resilience in 2016 by overcoming low energy prices at the beginning of the year, the Brexit vote in June and the U.S. elections late in the year to finish broadly higher. Asset class returns in 2016 ranged from a high of 19.4% for MLPs to a low of -0.2% for the developed international equity portfolio. The results from investing activities for all asset classes, net of all fees, are presented on page 59.

Additions to fiduciary net position in 2016 also included \$433 million in employee deposits and \$772 million in employer contributions. Employee deposits increased \$18 million and employer contributions rose \$29 million over 2015 amounts. In 2015, employee deposits increased by \$32 million and employer contributions rose by \$59 million. Together, employee deposits and employer contributions increased during 2016 by 4.0% and in 2015 by 8.5% over the previous year's amounts, primarily due to growth in covered payroll.

Deductions for benefits paid and withdrawals for 2016 were \$1.24 billion, a 7.9% increase over the previous year. These deductions for 2015 were \$1.15 billion, a 10.0% increase over 2014, and in 2014, these deductions were \$1.05 billion, a 7.8% increase over 2013. Higher deductions in 2016 and 2015 were due to several factors, including increases in the number of retiree and beneficiary accounts in 2016 (a 6.4% increase) and in 2015 (a 6.0% increase) along with higher average benefits. Withdrawals decreased in 2016 and were flat in 2015.



### OTHER CURRENTLY KNOWN INFORMATION: PENSION TRUST FUND

TCDRS' investment return for 2016 was 7.5%, net of all fees, which trailed its policy benchmark return of 7.9% by 0.4%.

### FINANCIAL ANALYSIS: GROUP TERM LIFE FUND (GTLF)

The GTLF provides an optional program of group term life insurance for the employees and, if covered, retirees of electing employers. An actuarial valuation is performed annually to determine employers' premium rates and to maintain adequate funding over the long term. Based on actuarial analysis, the amount of fiduciary net position is expected to be sufficient to cover any adverse experience that may occur.

Summary information about fiduciary net position and the changes in fiduciary net position showing comparative detail for 2016, 2015 and 2014 is presented on the next page.

The net position restricted for insurance benefits at year end 2016 was \$33.6 million, an increase of \$4.0 million (13.4%) over the 2015 amount. The increase



is due to an interest allocation of \$2.1 million, along with a \$1.8 million increase in operating income (higher employer premiums than insurance benefits). For the year ended 2016, employer premiums rose \$0.2 million (4.1%), while insurance benefits declined by \$0.3 million (8.3%) related to fewer active members having claims (down 14%), although their claims were for a higher average benefit (up 5%).

At year end 2015, the net position restricted for insurance benefits was \$29.7 million, which was an increase of \$3.3 million (12.3%) over the 2014 amount. For the year ended 2015, employer premiums rose by \$0.3 million while insurance benefits declined by \$1.2 million.

**REQUESTS FOR INFORMATION**

This annual report is designed to provide a general overview of TCDRS' finances. Questions concerning any of the information provided in this report or requests for additional information should be addressed to TCDRS, Finance Division, P.O. Box 2034, Austin, Texas 78768-2034.

**SUMMARY INFORMATION ABOUT FIDUCIARY NET POSITION**

	Group Term Life Fund							
	Dec. 31,			2016 – 2015		2015 – 2014		
	2016	2015	2014	\$ Change	% Change	\$ Change	% Change	
Total Assets	\$ 33,804,538	\$ 29,918,402	\$ 26,793,739	\$ 3,886,136	13.0%	\$ 3,124,663	11.7%	
Total Liabilities	159,022	244,338	371,046	(85,316)	(34.9)	(126,708)	(34.1)	
<b>Net Position Restricted for Benefits</b>	<b>\$ 33,645,516</b>	<b>\$ 29,674,064</b>	<b>\$ 26,422,693</b>	<b>\$ 3,971,452</b>	<b>13.4%</b>	<b>\$ 3,251,371</b>	<b>12.3%</b>	

**SUMMARY INFORMATION ABOUT CHANGES IN FIDUCIARY NET POSITION**

	Group Term Life Fund							
	Years Ended Dec. 31,			2016 – 2015		2015 – 2014		
	2016	2015	2014	\$ Change	% Change	\$ Change	% Change	
<b>Additions</b>								
Employer Premiums	\$ 4,962,423	\$ 4,766,129	\$ 4,510,866	\$ 196,294	4.1%	\$ 255,263	5.7%	
Income Allocation from Pension Trust Fund	2,132,226	1,889,834	1,738,911	242,392	12.8	150,923	8.7	
<b>Total Additions</b>	<b>7,094,649</b>	<b>6,655,963</b>	<b>6,249,777</b>	<b>438,686</b>	<b>6.6</b>	<b>406,186</b>	<b>6.5</b>	
<b>Deductions</b>								
Insurance Benefits	3,123,197	3,404,592	4,637,239	(281,395)	(8.3)	(1,232,647)	(26.6)	
<b>Total Deductions</b>	<b>3,123,197</b>	<b>3,404,592</b>	<b>4,637,239</b>	<b>(281,395)</b>	<b>(8.3)</b>	<b>(1,232,647)</b>	<b>(26.6)</b>	
<b>Net Increase in Fiduciary Net Position</b>	<b>3,971,452</b>	<b>3,251,371</b>	<b>1,612,538</b>	<b>720,081</b>	<b>22.1</b>	<b>1,638,833</b>	<b>101.6</b>	
<b>Net Position Restricted for Benefits</b>	<b>\$ 33,645,516</b>	<b>\$ 29,674,064</b>	<b>\$ 26,422,693</b>	<b>\$ 3,971,452</b>	<b>13.4%</b>	<b>\$ 3,251,371</b>	<b>12.3%</b>	

# BASIC FINANCIAL STATEMENTS

## STATEMENTS OF FIDUCIARY NET POSITION

	Dec. 31, 2016			Dec. 31, 2015		
	Pension Trust Fund	Group Term Life Fund	Total	Pension Trust Fund	Group Term Life Fund	Total
<b>ASSETS</b>						
Cash and Cash Equivalents	\$ 25,415,477	\$ —	\$ 25,415,477	\$ 25,123,259	\$ —	\$ 25,123,259
Receivables:						
Contributions	114,372,139	—	114,372,139	104,566,054	—	104,566,054
Investment Interest and Dividends	19,689,461	—	19,689,461	16,004,403	—	16,004,403
Securities-Lending Interest	142,091	—	142,091	176,733	—	176,733
Foreign Currency & Exchange Contracts	—	—	—	501,140	—	501,140
Employer Premiums	—	294,806	294,806	—	243,435	243,435
Other	189,378	—	189,378	176,581	—	176,581
<b>Total Receivables</b>	<b>134,393,069</b>	<b>294,806</b>	<b>134,687,875</b>	<b>121,424,911</b>	<b>243,435</b>	<b>121,668,346</b>
Prepaid Expenses and Other Assets	4,923,365	—	4,923,365	1,994,614	—	1,994,614
Investments, at Fair Value:						
U.S. Equities	4,415,816,725	—	4,415,816,725	3,915,643,420	—	3,915,643,420
International Equities	4,468,963,509	—	4,468,963,509	4,661,048,923	—	4,661,048,923
Global Equities	532,580,995	—	532,580,995	512,500,022	—	512,500,022
Hedge Funds	6,158,219,643	—	6,158,219,643	6,188,413,589	—	6,188,413,589
High-Yield Investments	3,084,561,022	—	3,084,561,022	3,421,841,960	—	3,421,841,960
Private Equity	3,100,313,544	—	3,100,313,544	2,568,020,567	—	2,568,020,567
REITs	811,874,484	—	811,874,484	772,654,712	—	772,654,712
Master Limited Partnerships	567,543,856	—	567,543,856	472,358,195	—	472,358,195
Private Real Estate Partnerships	572,533,783	—	572,533,783	491,450,067	—	491,450,067
Commodities	540,289,650	—	540,289,650	246,097,341	—	246,097,341
TIPS	508,931,316	—	508,931,316	48,642,878	—	48,642,878
Investment-Grade Bonds	987,974,697	—	987,974,697	950,888,291	—	950,888,291
Cash and Cash Equivalents	413,319,532	—	413,319,532	168,076,759	—	168,076,759
<b>Total Investments</b>	<b>26,162,922,756</b>	<b>—</b>	<b>26,162,922,756</b>	<b>24,417,636,724</b>	<b>—</b>	<b>24,417,636,724</b>
Invested Securities-Lending Collateral	4,930,942	—	4,930,942	39,219,985	—	39,219,985
Funds Held by Pension Trust Fund	—	33,509,732	33,509,732	—	29,674,967	29,674,967
Capital Assets, Net	20,790,181	—	20,790,181	18,918,548	—	18,918,548
<b>Total Assets</b>	<b>26,353,375,790</b>	<b>33,804,538</b>	<b>26,387,180,328</b>	<b>24,624,318,041</b>	<b>29,918,402</b>	<b>24,654,236,443</b>
<b>LIABILITIES</b>						
Accounts and Investments Payable	27,786,215	—	27,786,215	25,745,421	—	25,745,421
Insurance Benefits Payable	—	159,022	159,022	—	244,338	244,338
Funds Held for Group Term Life Fund	33,509,732	—	33,509,732	29,674,967	—	29,674,967
Securities-Lending Collateral	4,930,942	—	4,930,942	39,219,985	—	39,219,985
<b>Total Liabilities</b>	<b>66,226,889</b>	<b>159,022</b>	<b>66,385,911</b>	<b>94,640,373</b>	<b>244,338</b>	<b>94,884,711</b>
<b>Net Position Restricted for Benefits</b>	<b>\$ 26,287,148,901</b>	<b>\$ 33,645,516</b>	<b>\$ 26,320,794,417</b>	<b>\$ 24,529,677,668</b>	<b>\$ 29,674,064</b>	<b>\$ 24,559,351,732</b>

See accompanying Notes to the Financial Statements.

# BASIC FINANCIAL STATEMENTS

## STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

	Year Ended Dec. 31, 2016			Year Ended Dec. 31, 2015		
	Pension Trust Fund	Group Term Life Fund	Total	Pension Trust Fund	Group Term Life Fund	Total
<b>ADDITIONS</b>						
Contributions and Deposits						
Employee Deposits	\$ 432,765,143	\$ -	\$ 432,765,143	\$ 414,806,917	\$ -	\$ 414,806,917
Employer Contributions	771,701,126	-	771,701,126	743,149,234	-	743,149,234
Employer Premiums	-	4,962,423	4,962,423	-	4,766,129	4,766,129
<b>Total</b>	<b>1,204,466,269</b>	<b>4,962,423</b>	<b>1,209,428,692</b>	<b>1,157,956,151</b>	<b>4,766,129</b>	<b>1,162,722,280</b>
Investment Income						
<i>From Investment Activities</i>						
Net Appreciation (Depreciation) in Fair Value of Investments	1,741,570,984	-	1,741,570,984	(229,283,232)	-	(229,283,232)
Interest and Dividends	111,463,937	-	111,463,937	96,120,797	-	96,120,797
Total Investment Activity Income (Loss)	1,853,034,921	-	1,853,034,921	(133,162,435)	-	(133,162,435)
Less Investment Activity Expenses	38,694,492	-	38,694,492	41,601,487	-	41,601,487
Net Income (Loss) from Investment Activities	1,814,340,429	-	1,814,340,429	(174,763,922)	-	(174,763,922)
<i>From Securities-Lending Activities</i>						
Securities-Lending Income	2,362,319	-	2,362,319	2,144,444	-	2,144,444
Less Securities-Lending Expenses:						
Borrower Rebates and Agent Fees	126,365	-	126,365	19,050	-	19,050
Net Income from Securities-Lending Activities	2,235,954	-	2,235,954	2,125,394	-	2,125,394
Total Net Investment Income (Loss)	1,816,576,383	-	1,816,576,383	(172,638,528)	-	(172,638,528)
Building Operations and Miscellaneous Income	1,858,748	-	1,858,748	2,475,483	-	2,475,483
Income Allocation from Pension Trust Fund	-	2,132,226	2,132,226	-	1,889,834	1,889,834
<b>Total Additions</b>	<b>3,022,901,400</b>	<b>7,094,649</b>	<b>3,029,996,049</b>	<b>987,793,106</b>	<b>6,655,963</b>	<b>994,449,069</b>
<b>DEDUCTIONS</b>						
Benefits Paid	1,165,122,756	-	1,165,122,756	1,069,109,567	-	1,069,109,567
Withdrawals	76,582,913	-	76,582,913	82,058,823	-	82,058,823
Interest Allocation to Group Term Life Fund	2,132,226	-	2,132,226	1,889,834	-	1,889,834
Insurance Benefits	-	3,123,197	3,123,197	-	3,404,592	3,404,592
Administrative and Building Operations Expenses	21,592,272	-	21,592,272	20,215,681	-	20,215,681
<b>Total Deductions</b>	<b>1,265,430,167</b>	<b>3,123,197</b>	<b>1,268,553,364</b>	<b>1,173,273,905</b>	<b>3,404,592</b>	<b>1,176,678,497</b>
<b>Net Increase (Decrease) in Net Position</b>	<b>1,757,471,233</b>	<b>3,971,452</b>	<b>1,761,442,685</b>	<b>(185,480,799)</b>	<b>3,251,371</b>	<b>(182,229,428)</b>
<b>Net Position Restricted for Benefits:</b>						
Beginning of Period, Jan. 1	24,529,677,668	29,674,064	24,559,351,732	24,715,158,467	26,422,693	24,741,581,160
End of Period, Dec. 31	\$ 26,287,148,901	\$ 33,645,516	\$ 26,320,794,417	\$ 24,529,677,668	\$ 29,674,064	\$ 24,559,351,732

See accompanying Notes to the Financial Statements.

## NOTES TO THE FINANCIAL STATEMENTS

### A: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

#### Reporting Entity

The Texas County & District Retirement System (TCDRS or system) was created in 1967 by the Texas Legislature. The system partners with Texas counties and districts to provide their employees with retirement, disability and survivor benefits. TCERS is governed by the Texas Legislature and overseen by an independent board of trustees, which is responsible for the administration of the system. TCERS does not receive state funding. Each plan is funded independently by the county or district, its employees and by investment earnings.

The TCERS Board of Trustees provides leadership for the system, which serves more than 282,000 TCERS members and retirees. Our independent, nine-member board is comprised of system members and retirees appointed by the governor and confirmed by the Texas Senate. TCERS trustees serve staggered six-year terms and have oversight of all system operations, including the annual budget, policy determination, legislative proposals and investment policy. The board appoints a director to manage the day-to-day operations of TCERS and an investment officer to oversee TCERS investments.

The financial statements of TCERS have been prepared to conform to generally accepted accounting principles as prescribed by the Governmental Accounting Standards Board (GASB). The accompanying financial statements report the operations of TCERS, which consists of two fiduciary funds: the Pension Trust Fund and the Group Term Life Fund (GTLF). The Pension Trust Fund is used to provide retirement, survivor, disability and withdrawal benefits and to pay the operating expenses of the system. The GTLF is used to operate a voluntary program of group term life insurance benefits.

#### New Accounting Pronouncements

In February 2015, GASB issued Statement No. 72, *Fair Value Measurement and Application*, which expanded the disclosures related primarily to investments. The statement describes fair value as an exit price. It requires the use

of valuation techniques that will provide sufficient information to measure fair value. The statement establishes a hierarchy of inputs to valuation techniques to measure fair value. The requirements of this statement are implemented in this 2016 CAFR.

In June 2015, the GASB issued Statements No. 74, *Financial Reporting for Postemployment Benefits Other Than Pension Plans*, and No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. Postemployment benefits other than pensions are known as "OPEB". The two new statements replace Statement No. 43, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, and Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. The purpose of the two new OPEB statements is to ensure consistency with the accounting and financial reporting for pensions as promulgated by Statements No. 67 and No. 68. The requirements of Statement No. 74 will be implemented in the 2017 CAFR for the Group Term Life Fund. The requirements of Statement No. 75 will be implemented in the 2017 CAFR for employers participating in the Group Term Life Fund with fiscal years beginning after June 15, 2017, and who offer coverage to their retirees.

In March 2016, the GASB issued Statement No. 82, *Pension Issues - an amendment of GASB Statements No. 67, No. 68, and No. 73*. The purpose of the new statement is to enhance consistency in the application of financial reporting requirements to certain pension issues. The requirements of Statement No. 82 are implemented in this 2016 CAFR.

#### Basis of Accounting

The system's funds are maintained on the accrual basis of accounting. Revenues are recorded when earned and expenses are recorded when incurred, regardless of when payment is made. Employee deposits and employer contributions are recognized in the period the employer reports compensation for its employees pursuant to statutory requirements. Benefit payments are recognized when due and payable in accordance with the plans' terms.



The preparation of financial statements in accordance with accounting principles generally accepted in the United States requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

The system invests in a diversified portfolio of assets. Investments, in general, are exposed to various risks, such as interest rate, credit and market volatility. It is possible that changes in the values of investments will occur in the near term and that such changes could materially affect the amounts reported in the financial statements.

### **Basis of Presentation**

TCDRS maintains separate funds and accounts in accordance with the TCDRS Act. This is done to help ensure observance of limitations and restrictions on the use of resources available to TCDRS.

In the Pension Trust Fund, the assets of all employer plans are pooled for investment purposes. However, each employer's plan is accounted for separately, so that each employer's assets are used only for the funding of its individual plan.

The costs of administering TCDRS are paid from investment earnings and general reserves of the pooled assets of all plans.

The TCDRS Act requires that all assets of the retirement system be credited to one of the following funds and accounts, according to the purpose for which they are held:

#### **Employees Saving Fund**

The Employees Saving Fund (ESF) contains an account for each member. Each account is increased as a member makes deposits and earns interest. Accounts are reduced for payments due to withdrawals and retirements.

#### **Subdivision Accumulation Fund**

The Subdivision Accumulation Fund (SAF)

receives employer contributions and contains an account for each participating employer to fund retirement benefits. An account is increased as an employer makes contributions. Annually, the board decides on the income allocation to each employer's SAF balance. Employer accounts increase if there is a positive allocation of earnings; accounts decrease if there is a negative allocation. When an employee retires, an amount equal to the employee's account balance is transferred to the Current Service Annuity Reserve Fund (CSARF) for the purpose of funding the employee's benefits. If the employer provides retirement benefits in excess of the basic benefit, then the account is also reduced monthly by the amount of the additional benefit payments.

State legislation passed in 2015 and effective Jan. 1, 2017, alters the fund transfer related to retirements. These changes do not impact benefit amounts but do affect the actuarial valuation. See page 75 for further explanation.

#### **Current Service Annuity Reserve Fund**

The Current Service Annuity Reserve Fund (CSARF) receives employee account balances and employer matching funds when an employee chooses to retire, plus earns annual interest. It maintains all funds reserved for basic benefits granted and in force, and is reduced by all such benefit payments.

State legislation passed in 2015 and effective Jan. 1, 2017, alters the fund accounting related to annuitants. These changes do not impact benefit amounts but do affect the actuarial valuation. See page 75 for further explanation.

#### **Endowment Fund**

The Endowment Fund contains accounts that hold the general reserves of the system, inactive accounts from the ESF and reserves to transfer to the Expense Fund for subsequent year operating expenses. Refer to the schedule of Changes in Endowment Fund on page 50.

General reserves are maintained in the Endowment Fund to keep rates stable and to help offset future adverse experience. The Endowment Fund may increase or decrease

## NOTES TO THE FINANCIAL STATEMENTS

based on allocation decisions to or from the general reserves by the Board of Trustees.

### **Income Fund**

All investment income is credited to the Income Fund. It accounts for investment earnings and expenses, and annual allocations to other funds. The fund is reduced by investment expenses and by the statutory allocation of interest to the ESF, CSARF and GTLF. In addition, the board makes an allocation to the SAF.

If any excess exists after all allocations are made, the remainder is transferred to the Endowment Fund. Refer to the Changes in Income Fund schedule on page 51 for additional information.

### **Expense Fund**

TCDRS pays administrative and investment operating expenses from this fund. As mentioned in the Endowment Fund and the Income Fund, operating expenses are financed from general reserves at the beginning of the year, and the Income Fund finances the investment expenses by reimbursing the Expense Fund.

The Group Term Life Fund reports the net position available to pay insurance benefits for covered participants. Premiums paid by employers and an annual allocation are added to the fund, while insurance benefits are paid from the fund.

### **Investments**

Investments consist of a diversified portfolio, including equities, hedge funds, high-yield investments, private equity, real assets and investment-grade bonds along with cash and cash equivalents. The portfolio is further diversified within each of the asset classes.

Investment purchases and sales are recorded as of their trade dates. Investments are reported at fair value, and are primarily valued on the basis of market valuations provided by ICE Data Services. Government securities (including TIPS) and other fixed-income securities are priced using a matrix methodology. REIT investments are priced using their primary exchange closing price. U.S. and international commingled equity investments, commodities, hedge fund investments, private

equity and private real estate partnerships are valued based on shares held in the fund times a unit price or on the net asset value (NAV) provided by the respective investment company or partnership. Security transactions and any resulting gains or losses are accounted for by the specific identification method on a trade-date basis.

For the years ended Dec. 31, 2016 and 2015, the annual money-weighted rate of return on investments, net of investment expenses, was 7.48% and -0.66%, respectively. The money-weighted rate of return expresses investment performance, net of investment expenses, adjusted for the changing amounts actually invested. A table of the annual money-weighted rates of return for the 10-year period ended Dec. 31, 2016, is located in the Required Supplementary Information on page 47.

### **Capital Assets**

Capital assets, which consist of land, building and improvements, software, and equipment and furniture are reported at historical cost and are depreciated on a straight-line basis over the estimated useful lives. TCDRS has elected to capitalize items that individually exceed \$5,000. The estimated useful lives for building and improvements range from 5 to 40 years, for furniture and components from 3 to 10 years, for office equipment 3 to 5 years, for computer software 3 to 5 years, and for tenant improvements 2 to 20 years.

## **B: PLAN DESCRIPTION**

### **Pension Trust Fund**

TCDRS is a statewide, agent multiple-employer, public-employee retirement system. The system serves 738 participating counties and districts throughout Texas. Each employer maintains its own customized plan of benefits. Plan provisions are adopted by the governing body of each employer, within the options available in the TCDRS Act. Because of that, employers have the flexibility and local control to select benefits and pay for those benefits based on their needs and budgets.

Each employer has a defined benefit plan that functions similarly to a cash balance plan. The

TABLE 1: MEMBERSHIP

Dec. 31,		
<b>Pension Trust Fund:</b>	<b>2016</b>	<b>2015</b>
Inactive Plan Members (or Beneficiaries)		
Currently Receiving Benefits	59,985	56,362
Inactive Plan Members Entitled to But Not Yet Receiving Benefits Accounts:		
Vested	20,711	19,735
Nonvested	70,217	65,673
<b>Total</b>	<b>90,928</b>	<b>85,408</b>
Active Plan Members' Accounts:		
Vested	65,253	63,869
Nonvested	65,887	65,348
<b>Total</b>	<b>131,140</b>	<b>129,217</b>
Number of Plans:		
Counties	253	252
Districts	485	449
Inactive Plan	1	1
<b>Total</b>	<b>739</b>	<b>702</b>
<b>Group Term Life Fund:</b>		
Annuitants	8,195	7,652
Terminated Employees:		
Vested	6,205	5,951
Current Employees:		
Vested	16,857	16,615
Nonvested	17,943	17,933
<b>Total</b>	<b>34,800</b>	<b>34,548</b>
Number of Plans:		
Counties	125	126
Districts	187	172
<b>Total</b>	<b>312</b>	<b>298</b>

assets of the plans are pooled for investment purposes, but each employer’s plan assets may be used only for the payment of benefits to the members of that employer’s plan. In accordance with Texas law, it is intended that the pension plan be construed and administered in a manner that the retirement system will be considered qualified under Section 401(a) of the Internal Revenue Code. All employees (except temporary staff) of a participating employer must be enrolled in the plan. Membership in TCDRS as of Dec. 31, 2016 and 2015 is summarized in Table 1.

**Benefits**

A percentage of each employee’s paycheck is deposited into his or her TCDRS account. That percentage (from 4% to 7%) is set by the employer.

The employee’s savings grow, by law, at a rate of 7%, compounded annually. The employer selects a matching rate — at least “dollar for dollar,” up to \$2.50 per \$1.00 in the employee’s account. At retirement, the employee’s account balance is combined with employer matching and converted into a lifetime monthly benefit.

Employees receive a month of service time for each month that they make a deposit into their account. The amount of service an employee needs to earn a future benefit is called the vesting requirement. When an employee is vested, they have the right to a monthly benefit, which includes employer matching, at age 60 or older. Employers may choose 5-, 8- or 10-year vesting. 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.
- **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.

Retirees elect to receive their lifetime benefit by choosing one of seven actuarially equivalent payment options, which are detailed on page 75.

Employers may elect to provide other optional benefits. Prior service gives employees monetary credit for time worked for an organization before it joined the system. Buybacks allow current employees to re-establish a closed TCDRS account from previous service with an employer. Partial lump-sum payments at retirement allow employees to withdraw part of their TCDRS account balance as a lump sum at retirement with a reduced monthly benefit.

In addition, an employer may choose to adopt a cost-of-living adjustment (COLA) for its

## NOTES TO THE FINANCIAL STATEMENTS

retirees. This adjusts retiree benefits to restore purchasing power lost due to the effects of inflation.

### **Contributions**

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, by law, to contribute at actuarially determined rates, which are determined annually.
- Investment income funds a large part of the benefits employees earn.

Employers have the option of paying more than the required contribution rate each year. Additional contributions can help employers "pre-fund" benefit increases, such as a cost-of-living adjustment to retirees, and they can be used to help offset or mitigate future increases in the required rate due to negative plan experience. There are two approaches for making additional contributions: (a) paying an elected contribution rate higher than the required rate and (b) making a lump-sum contribution to the employer account.

Administrative costs of TCDRS are financed through the system's general reserves, which are part of the Endowment Fund.

### **Group Term Life Fund (GTLF)**

TCDRS also administers the Group Term Life program, a group term life insurance. The fund for this benefit is a separate trust administered by the board. The fund receives monthly participating employers' premiums and pays benefits when due. The obligations of the program are payable only from this fund, and are not an obligation of, or a claim against, the TCDRS Pension Trust Fund. The fund's assets are pooled with those of the Pension Trust Fund under provisions of the TCDRS Act and annually receive an allocation of income based on the fund value. This optional program provides group term life insurance coverage to currently eligible employees, and if elected by employers, to retirees. Participation in

the Group Term Life program as of Dec. 31, 2016 and 2015 is summarized in Table 1 on page 31.

### **Benefits**

Current employees of participating employers are insured for an amount equivalent to the employee's current annual compensation. Employers may also choose to cover retirees. Retirees are insured for \$5,000. Life insurance proceeds are payable as a lump sum. The coverage provided to retirees is a postemployment benefit other than pension benefits (OPEB).

### **Contributions**

Each participating employer contributes to the Group Term Life program at a contractually required rate. An annual actuarial valuation is performed and the contractual rate is equal to the cost of providing one-year term life insurance. The premium rate is expressed as a percentage of the covered payroll of members employed by the participating employer. There is a one-year delay between the actuarial valuation that serves as the basis for the employer contribution rate and the calendar year when the rate goes into effect.

The Group Term Life program is voluntary and employers can cease participation at any time. Therefore, the funding policy of the program is to ensure that adequate resources are available to meet all insurance benefit payments for the upcoming year. It is not the intent of the funding policy to pre-fund retiree term life insurance during employees' entire careers.

### **Funded Status and Funding Progress**

As of Dec. 31, 2016, the most recent actuarial valuation date, the Group Term Life program was 130.2% funded. The actuarial accrued liability for benefits was \$25.8 million, and the actuarial value of assets was \$33.6 million, resulting in an Overfunded Actuarial Accrued Liability (OAAL) of \$7.8 million. The covered payroll (annual payroll of active participants covered by the program) was \$1.6 billion and the ratio of the OAAL to the covered payroll was 0.5%.

Actuarial valuations of an ongoing plan involve



estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment and mortality. Amounts determined regarding the funded status of the plan and the annual required contributions of the employer are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future.

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations.

Additional information as of the latest actuarial valuation for the GTLF follows:

**Valuation Date:** Dec. 31, 2016

**Actuarial Cost Method:**

Active Insurance Benefits      Unit credit; determining one-year term cost

Retiree Insurance Benefits      Entry age

**Amortization Method:** Level percent, open

**Remaining Amortization Period:** 30 years

**Asset Valuation Method:** Fund value<sup>1</sup>

**Actuarial Assumptions:**

Investment Return      7.0%<sup>1</sup>

Inflation      3.0%

<sup>1</sup> The fund's assets are pooled with those of the Pension Trust Fund under provisions of the TCDRS Act. The fund receives an annual earnings allocation of 7% based on the fund value.

**C: TCDRS AS EMPLOYER**

**Pension Trust Fund**

TCDRS, as an employer, participates in the Texas County & District Retirement System.

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 TCDRS, as an employer, 7% of each employee's pay is deposited into his or her TCDRS account. By law, employee accounts earn 7% interest on the 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, TCDRS, as an employer, may elect an ad hoc COLA for its retirees. 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.

TCDRS, as an employer, has a contribution rate that is calculated annually on an actuarial basis, although the employer may elect to contribute at a higher rate. The contribution rate is based on the TCDRS funding policy adopted by the TCDRS Board of Trustees and must conform with the TCDRS Act. Contributions to the pension plan from TCDRS, as an employer, for 2016, were based on the elected rate of 10.5%, plus a one-time lump-sum amount of \$500,000.

**Postemployment Benefits Other Than Pensions**

**Group Term Life Fund**

TCDRS participates in the Group Term Life program. For a general explanation of the Group Term Life program, turn to page 32. TCDRS provides coverage to current eligible employees and to retired employees.

TCDRS, as an employer, contributes to the Group Term Life program at a contractually required rate.

TCDRS' contributions, as an employer, to the Group Term Life program for the years ended

## NOTES TO THE FINANCIAL STATEMENTS

Dec. 31, 2016, 2015 and 2014, were \$27,497, \$24,412 and \$22,215, respectively, which equaled the required contributions each year.

### **TCDRS Bridge Program Health Reimbursement Arrangement**

TCDRS adopted the TCDRS Bridge Program Health Reimbursement Arrangement (Bridge Program) for its employees. The program is open to all former TCDRS employees who meet all three conditions: (a) employed with TCDRS on or after Jan. 1, 2007; (b) accumulated at least 10 years of full-time employment with TCDRS; and (c) an active TCDRS employee on or after attaining age 58½.

The Bridge Program is a self-insured medical expense reimbursement plan that provides a maximum credit of \$550 per month for 60 consecutive months. Coverage begins on the first day of the month immediately after the eligible former employee reaches age 60 or has separated from employment with TCDRS, whichever occurs later.

As of Jan. 1, 2016, the most recent actuarial valuation date, the Bridge Program was 0% funded. The actuarial accrued liability was \$776,753 and the actuarial valuation of assets was \$0, resulting in a UAAL of \$776,753. Based on an annual covered payroll of \$10,998,211, the UAAL as a percentage of covered payroll was 7.1%. The annual OPEB cost for 2016 was \$98,350 and TCDRS' contributions as an employer in 2016 were \$36,142; the annual OPEB cost for 2015 was \$94,053 and TCDRS' contributions as an employer in 2015 were \$32,276; and the annual OPEB cost for 2014 was \$99,173, and TCDRS' contributions as an employer in 2014 were \$24,750. The resulting net OPEB obligation at Dec. 31, 2016 was \$550,926.

The actuarial cost method used was the projected unit credit with a level dollar open amortization method and the amortization period of 15 years. The discount rate used was 3.5%.

### **Deferred Compensation**

The employees of TCDRS may participate in a deferred compensation plan created in accordance with Internal Revenue Code Section 457. This

plan, available to all employees of TCDRS, permits the deferral of a portion of their salary until future years. The deferred compensation is not available to the employees until termination, retirement, death or certain unforeseeable emergencies. All compensation deferred under the plan is held by a custodian for the exclusive benefit of participants and beneficiaries.

### **D: CASH AND CASH EQUIVALENTS**

Cash and cash equivalents consist of funds on deposit with a financial institution in interest-bearing demand deposit accounts. They are invested on an overnight basis (sweep) in a U.S. dollar-denominated investment under a repurchase agreement. The funds are collateralized at 102% using U.S. Treasury, government or agency securities. Cash held in (1) demand deposit accounts, (2) the overnight sweep, and (3) the JPMorgan U.S. Government Money Market Fund (an open-end institutional money market fund) is available to pay benefits, operational expenses and funds awaiting transfer to investment management.

In December 2016, changes were implemented in which the demand deposit accounts were no longer interest bearing and invested on an overnight basis (sweep), but whose balances provided earnings credits toward bank fees. Funds in excess of the revised collateral account (\$30.0 million collateralized with U.S. Agency securities) are transferred into the JPMorgan U.S. Government Money Market Fund, referred to above.

Custodial credit risk is the risk that in the event of a bank failure, the system's deposits may not be returned to it. A discussion of custodial credit risk pertaining to cash and cash equivalents can be found in Note G, beginning on page 37.

### **E: INVESTMENTS**

Investment decisions of the board are subject to Section 67, Article XVI of the Texas Constitution, and to the applicable statutory provisions of the Texas Trust Code that provide for a "prudent person" standard of care. Investment authorization is restricted by the investment policy adopted by the board that emphasizes the importance

of a long-term investment philosophy with minimization of risk while targeting a long-term investment return of 8%. The board has determined that a diversified portfolio will offer the best opportunity to produce the desired 8% investment return. Accordingly, the TCDRS investment portfolio now includes investments in the following asset classes:

**Equity Holdings**

The system’s U.S. equities and a portion of its developed international and emerging market equities are passively managed in commingled index funds. The remaining developed international, emerging market and global equities are actively managed in commingled funds and one limited partnership.

**Hedge Funds**

The vehicles for hedge fund investments are typically commingled vehicles, such as limited partnerships, limited liability companies or offshore corporations. At Dec. 31, 2016, the system’s hedge fund portfolio consisted of 31 partnerships with a fair value totaling \$6.16 billion.

**High-Yield Investments**

The board has divided the high-yield asset class into four portions. The first portion, the high-yield bond portfolio, encompasses the portion of the U.S. corporate bond market that is rated below BBB- by S&P or below Baa3 by Moody’s. Accordingly, credit risks associated with these bonds are greater than risks with investment-grade bonds and have historically traded at yields of 3.5% to 4.5% above comparable

U.S. Treasury instruments. The second portion consists of distressed debt partnerships, which invest in securities of companies whose debt has declined in value because they are experiencing financial stress. Typical holdings are senior and subordinated debt instruments. The third portion consists of opportunistic credit partnerships that invest in securitized credit instruments made up of senior corporate bank loans and asset-backed credit investments secured by commercial and residential mortgages, car loans, and other types of assets. The fourth portion, direct lending partnerships, consists of privately originated debt made to small and medium-sized companies or to real estate investors in order to take advantage of dislocations in the capital markets. Table 2 lists the committed and unfunded capital to opportunistic credit, distressed debt and direct lending investments at Dec. 31, 2016.

**Private Equity**

TCDRS’ private equity investments consist of partnerships that (a) take public companies private in order to improve their operations and then resell them in the future; (b) invest in start-up companies with new ideas or technologies; (c) invest in both traditional and renewable energy discovery and production; and (d) invest in real estate. As of Dec. 31, 2016, TCDRS had committed \$5.70 billion of capital to 160 private equity partnerships.

Table 2 lists the committed and unfunded capital to private equity investments at Dec. 31, 2016. During the first quarter of 2017, an additional \$195 million has been committed to private equity partnerships.

TABLE 2: SCHEDULE OF UNFUNDED COMMITMENTS

Investment Category	Dec. 31, 2016		
	Total Commitment	Unfunded Commitment	Fair Value
Opportunistic Credit	\$ 2,348,489,494	\$ 248,411,776	\$ 1,630,428,777
Distressed Debt	1,373,026,019	366,286,101	575,496,038
Direct Lending	1,005,959,750	541,404,813	471,306,988
Private Equity	5,703,831,022	2,343,195,531	3,100,313,544
Private Real Estate	1,425,642,690	712,519,444	572,533,783
<b>Total Contingent Commitments</b>	<b>\$ 11,856,948,975</b>	<b>\$ 4,211,817,665</b>	<b>\$ 6,350,079,130</b>

## NOTES TO THE FINANCIAL STATEMENTS

### Real Assets

- Real estate investment trusts (REITs) are companies that own and operate income-producing real estate, such as commercial office buildings, apartments, malls, warehouses and storage facilities. Under provisions of the U.S. tax law, if REITs pay out most of their income in dividends, they are not required to pay income taxes. Consequently, substantial amounts of income can be received from investing in REITs.
- Treasury Inflation-Protected Securities (TIPS) are issued by the U.S. Treasury and structured as a hedge against inflation. The principal value of the securities is adjusted based on changes in the consumer price index (CPI). Interest payments are determined by multiplying a fixed coupon by the inflation-adjusted principal. The inflation-adjusted principal is payable at maturity.
- Commodities consist of investments in resources that can be either perishable (grains, sugar, etc.) or non-perishable (metals, energy, etc.). Commodities provide protection against inflation and have low correlation to stocks and other asset classes.
- Private real estate partnerships acquire and operate commercial properties including office buildings, apartments, hotels, malls and residential real estate. Private real estate investments are illiquid and typically have expected holding periods of 10 to 12 years. As reported in Table 2, at Dec. 31, 2016, TCDRS had committed \$1.43 billion to 29 private real estate partnerships.
- Master Limited Partnerships (MLPs) are publicly traded partnership interests authorized by Congress to encourage investment in domestic energy infrastructure. At the entity level, these interests are tax free provided that 90% of their income comes from natural resources such as oil, natural gas, coal, timber and other depletable resources.

### Investment-Grade Bonds

The investment-grade bond portfolio consists of debt instruments issued by the United States Treasury and governmental agencies, asset-backed securities, and corporate bonds that are rated investment grade by the major ratings agencies.

Additionally, this portfolio may contain minimal investments in short-term instruments, non-rated securities, private placement securities, convertible bonds and preferred stock.

The portfolio should exhibit an overall dollar-weighted average quality rating of AA with no investment rated lower than BBB- or equivalent as rated by Standard & Poor's (S&P), Moody's Investor Service or Fitch Investor's Service at the time of purchase or, if not rated, be deemed by the manager to be of similar quality.

### Cash and Cash Equivalents

The TCDRS Board of Trustees may select one or more commercial banks, depository trust companies or other entities to serve as custodian or custodians of the system's cash, cash equivalents and short-term investments, and may authorize the custodian to invest the cash in such short-term investments as the board determines. TCDRS has authorized its custodian to invest cash, on an overnight basis, in the custodian's Collective Trust Government Short Term Investment Fund (STIF). The investment objective of the STIF is to provide safety of principal, daily liquidity and competitive returns. The STIF owns high-quality debt instruments (which include U.S. government or U.S. government agencies, repurchase agreements, floating-rate notes, etc.). At Dec. 31, 2016 the dollar-weighted average maturity of the STIF was 37 days with an average current yield of 0.38%.

The investment officer manages cash in the STIF together with new contributions until they are allocated to a portfolio.

### F: SECURITIES LENDING

State statutes and the board's policies permit TCDRS to use its investments to enter into securities-lending transactions — loans of securities to broker-dealers and other entities in exchange for collateral with a simultaneous agreement to return the collateral for the same securities in the future. The system's custodian, The Bank of New York Mellon Corp. (BNY Mellon), is engaged as the lending agent to lend securities from the system's fixed-income portfolios for collateral of 102% of the fair value of the securities loaned.



Collateral, either cash or U.S. government securities, is initially pledged for the securities on loan and additional collateral is required from the borrower by the close of the next business day if its value falls to less than 100% of the fair value of the securities on loan. TCDRS does not have the ability to pledge or sell collateral securities unless the borrower defaults. At Dec. 31, 2016, BNY Mellon held \$39,743,527 of non-cash collateral.

Cash collateral is invested in short-term fixed-income instruments in accordance with the system's securities-lending guidelines. Table 3 lists the categories of collateral investments at Dec. 31, 2016 and 2015.

At the end of years 2016 and 2015, TCDRS had no credit risk exposure to borrowers because the amounts the system owed to borrowers exceeded the amounts the borrowers owed to TCDRS. Contracts with the lending agents require the agents to indemnify TCDRS if the borrowers fail to return the securities (and if the collateral is inadequate to replace the securities on loan) or fail to pay TCDRS for income distributions while the securities are on loan. At Dec. 31, 2016 and 2015, the fair value of securities on loan was \$43,726,236 and \$108,404,001, respectively.

Additionally, TCDRS invests in two commingled domestic and international equity portfolios that participate in securities-lending programs managed by State Street Global Advisors. TCDRS receives a proportionate share of the securities-lending income generated from these activities.

**TABLE 3:  
INVESTED SECURITIES-LENDING COLLATERAL**

Investment Type	Dec. 31,	
	2016	2015
Cash and Other Liquid Assets	\$ (13,734)	\$ (12,603)
Money Funds	446,000	5,214,000
Asset-Backed Securities	0	747
Agencies	0	0
Repurchase Agreements	4,498,676	30,017,728
Certificates of Deposit	0	0
Domestic Corporate Fixed-Income Securities	0	4,000,113
<b>Total Invested Securities-Lending Collateral</b>	<b>\$ 4,930,942</b>	<b>\$ 39,219,985</b>

**G: DEPOSIT AND INVESTMENT RISK**

Identification of credit risk, custodial credit risk, concentration of credit risk, interest rate risk and foreign currency risk is mandated by GASB Statement No. 40.

Credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. This is measured by the assignment of a rating by a nationally recognized statistical rating organization. The TIPS portfolio contains obligations of the U.S. government and is not considered to have credit risk. At both Dec. 31, 2016 and 2015, according to Standard and Poor's (S&P) evaluations, the investment-grade bond portfolio exhibited an overall quality rating of AA-. The Bloomberg Barclays U.S. Aggregate Bond Index is the benchmark for performance measurement of the investment-grade bond portfolio. At Dec. 31, 2016 and 2015, the Bloomberg Barclays U.S. Aggregate Bond Index had an average S&P quality rating of AA- and AA, respectively.

At both Dec. 31, 2016 and 2015, according to S&P evaluations, the high-yield bond portfolio exhibited an overall quality rating of B+. The Citigroup High-Yield Cash-Pay Capped Index is the benchmark for performance measurement of the high-yield bond portfolio. At both Dec. 31, 2016 and 2015, according to S&P evaluations, the benchmark exhibited an average quality rating of B+.

The investment policy does not explicitly outline an acceptable level of credit risk for the investment-grade bond or high-yield bond portfolios, but the board's adoption of their respective benchmark indices is an implicit adoption of the market risk inherent in these portfolios.

Table 4 lists the credit risk associated with the investment-grade bond portfolio and the high-yield investments portfolio.

At Dec. 31, 2016, according to Moody's Investors Service evaluations, the BNY Mellon STIF contained short-term securities with quality ratings of P-1/P-2 (Prime-1 and Prime-2), which exhibit a superior ability for repayment of senior short-term debt obligations, and long-term

## NOTES TO THE FINANCIAL STATEMENTS

TABLE 4: CREDIT RISK BY QUALITY

Dec. 31,									
Rating	Investment-Grade Bonds					High-Yield Investments			
	2016		2015		2016		2015		
	Fair Value (\$ Millions)	% of Total	Fair Value (\$ Millions)	% of Total	Fair Value (\$ Millions)	% of Total	Fair Value (\$ Millions)	% of Total	
Governments	\$ —	0%	\$ —	0%	\$ —	0%	\$ —	0%	
Aaa	549.6	56	494.0	52	—	0	—	0	
Aa	47.9	5	43.6	5	—	0	—	0	
A	110.2	11	109.2	11	—	0	—	0	
Baa	199.8	20	195.9	21	8.1	0	3.5	0	
Ba	21.4	2	28.8	3	138.6	4	116.8	3	
B	3.3	0	0.1	0	171.1	6	169.8	5	
Less than B	—	0	0.2	0	40.7	1	24.8	1	
Not Rated — Bonds	55.8	6	79.1	8	48.9	2	38.9	1	
Not Rated — Distressed Debt	—	0	—	0	575.5	19	569.3	17	
Not Rated — Direct Lending	—	0	—	0	471.3	15	372.6	11	
Not Rated — Opportunistic Credit	—	0	—	0	1,630.4	53	2,126.1	62	
<b>Total</b>	<b>\$ 988.0</b>	<b>100%</b>	<b>\$ 950.9</b>	<b>100%</b>	<b>\$ 3,084.6</b>	<b>100%</b>	<b>\$ 3,421.8</b>	<b>100%</b>	

Source: Mellon Performance and Risk Analytics Fund Analysis, Fourth Quarter 2016

investments (maturity date greater than one year) with an average quality rating of Aaa. Based upon the fair value of the fund at Dec. 31, 2016, 62% of the instruments were rated P-1, 36% of the instruments were rated Aaa and the remaining 2% was held in cash.

At Dec. 31, 2015, according to Moody's Investors Service evaluations, the BNY Mellon STIF exhibited average short-term quality ratings of P-1/P-2 and an average long-term quality rating of Aaa with 96% of the instruments rated P-1 or P-2 and 4% of the instruments rated Aaa.

Custodial credit risk is the risk that, in the event of the failure of a depository financial institution, TCDRS will not be able to recover deposits or will not be able to recover collateral securities that are in the possession of an outside party. TCDRS requires that demand deposit accounts be fully collateralized. Funds received by its master custodian are invested on an overnight basis or, if the funds are received late during a business day, are maintained in a U.S. dollar-denominated interest bearing deposit account insured by the FDIC.

TCDRS investments, evidenced by securities in physical or book entry form and not on loan, are

registered and held in safekeeping for TCDRS by its custodian bank.

Concentration of credit risk is the risk of loss attributed to the magnitude of investment in a single issuer. Investment guidelines established with the individual investment managers generally address concentration risk limits. At Dec. 31, 2016 and 2015, TCDRS did not have investments in any one issuer which were greater than 5% of net investments.

Interest rate risk is the risk that changes in market interest rates will adversely affect the fair value of an investment. The values of portfolios of longer duration are more affected by interest rate changes than are those of shorter duration. Increases in bond market yields result in fair value losses; decreases result in fair value gains. Multiplying the change in market yield by the duration of the portfolio can approximate the size of the gain or loss in fair value. For example, if one owned a portfolio of investment-grade bonds that had a duration of 6.5 years and if the yields within the bond market were to immediately fall 1%, the fair value gain of the portfolio would approximate 6.5%. This change in fair value indicates the level of interest rate risk inherent in the portfolio.

TABLE 5: INTEREST RATE RISK — FIXED-INCOME PORTFOLIOS

Asset Class	2016		2015	
	Fair Value	Effective Duration in Years	Fair Value	Effective Duration in Years
Investment-Grade Bonds	\$ 987,974,697	5.1	\$ 950,888,291	5.0
TIPS	508,931,316	0.0	48,642,878	4.8
High-Yield Bonds <sup>1</sup>	407,329,219	3.7	353,864,468	4.1

<sup>1</sup> Included in high-yield investments reported in the Statements of Fiduciary Net Position on page 26.

Table 5 discloses the level of interest rate risk inherent in the TCDRS fixed-income portfolios by reporting the effective duration of those portfolios.

The effective duration of the Bloomberg Barclays U.S. Aggregate Bond Index at Dec. 31, 2016 and 2015 was 5.8 and 5.5 years, respectively.

Performance of the TIPS portfolio was measured against the Bloomberg Barclays U.S. TIPS Index through July 2016. Effective August 2016, the portfolio transitioned to a breakeven strategy and is measured against the Bloomberg Barclays U.S. 10 Year Breakeven Inflation Index. The portfolio seeks to benefit from a rise in inflation expectations. The primary risk to the strategy is not interest rate risk, but a significant decline in inflation expectations.

The high-yield investment portfolio is measured against the Citigroup High-Yield Cash-Pay Capped Index. The effective duration of the Citigroup High-Yield Cash-Pay Capped Index at Dec. 31, 2016 and 2015 was 4.2 and 4.4 years, respectively.

TCDRS does not have a formal policy governing interest rate risk, but the board's adoption of the respective benchmark indices used to measure the investment-grade bond, TIPS, and high-yield bond portfolios against is an implicit adoption of the market risk inherent in these portfolios.

Cash collateral received from securities lending is invested in instruments whose maturity dates or periodic interest rate reset dates coincide with the maturity date of the particular securities loan providing the cash. This matching of investment and loan maturity/reset dates allows the agent to maintain the spread between the loan rate and the cash collateral investment rate over the term of

the loan and eliminates any material interest rate exposure to TCDRS over the term of the loan.

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or deposit. The asset allocation plan adopted in the Investment Policy includes a 19.5% allocation to international and global equities, a 3% allocation to distressed debt, a 3% allocation to REITs, a 5% allocation to private real estate partnerships and a 14% allocation to private equity, all of which allow non-U.S. dollar-denominated investments. TCDRS does not have a formal policy governing foreign currency risk. Accordingly, the foreign currency risks inherent in the benchmark indices assigned to these asset classes have been implicitly adopted as an acceptable level of foreign currency risk.

Table 6 lists the foreign currency risk associated within the international equities, REITs, high-yield investments, private equity and private real estate partnerships portfolios.

Additionally, at Dec. 31, 2016 and 2015, the international equity portfolio contained ten commingled funds subject to foreign currency risk with an aggregate fair value of \$4,468,963,509 and \$4,554,452,632, respectively.

Derivative instruments are financial contracts whose values depend on the values of one or more underlying assets, reference rates or financial indexes. The investment policy does not explicitly outline the use of derivatives, but investment guidelines allow the TIPS and investment-grade bond managers the use of exchange-traded treasury futures to replicate cash investments or to manage yield curve or other risk positions within their portfolio. In 2015, the board approved the implementation of a currency overlay program

# NOTES TO THE FINANCIAL STATEMENTS

TABLE 6: FOREIGN CURRENCY RISK

Dec. 31,

	Forward Currency Contracts— International Equities		REITs		High-Yield Investments		Private Equity & Private Real Estate Partnerships		Total	
	2016 <sup>1</sup>	2015	2016	2015	2016	2015	2016	2015	2016	2015
		\$	\$	\$	\$	\$	\$	\$	\$	\$
AUSTRALIAN DOLLAR		(462,505)	10,067,865	10,001,979					10,067,865	9,539,474
BRAZILIAN REAL		2,722,626	1,706,403	2,257,611					1,706,403	4,980,237
BRITISH POUND STERLING		4,938,744	14,703,144	15,989,126	69,967,620	122,521,370	26,380,589		122,430,978	169,829,830
CANADIAN DOLLAR		3,984,346	4,284,050	4,209,507					4,284,050	8,193,853
CHILEAN PESO		(76,122)								(76,122)
CHINESE YUAN RENMINBI		2,253,514								2,253,514
COLOMBIAN PESO		243,601								243,601
CZECH KORUNA		(48,916)								(48,916)
DANISH KRONE		(521,921)								(521,921)
EURO CURRENCY UNIT		(9,960,829)	17,198,728	14,612,703	30,996,659	15,256,993	185,693,862		286,459,828	205,602,729
HONG KONG DOLLAR		(7,068)	31,172,332	39,095,528					31,172,332	39,088,460
HUNGARIAN FORINT		(8,854)								(8,854)
INDIAN RUPEE		(593,792)								(593,792)
INDONESIAN RUPIAH		102,582							648,597	658,686
ISRAELI SHEKEL		41,481								41,481
JAPANESE YEN		(6,545,852)	25,679,950	21,210,820					25,679,950	14,664,968
MALAYSIAN RINGGIT		270,178								270,178
MEXICAN PESO		1,990,665								1,990,665
NEW TAIWAN DOLLAR		1,617,957								1,617,957
NEW TURKISH LIRA		276,415								276,415
NEW ZEALAND DOLLAR		(69,534)								(69,534)
NORWEGIAN KRONE		114,257	1,027,631	971,628					1,027,631	1,085,885
PERUVIAN NUEVO SOL		31,333								31,333
PHILIPPINE PESO		(108,360)	1,905,131	892,376					1,905,131	784,016
POLISH ZLOTY		(146,084)								(146,084)
QATARI RIYAL		(13,799)								(13,799)
RUSSIAN RUBLE		3,952,323								3,952,323
SOUTH AFRICAN COMM RAND		7,084,796	2,465,545	2,188,299					2,465,545	9,273,095
SINGAPORE DOLLAR		81,329	4,800,052	3,757,921					4,800,052	3,839,250
SOUTH KOREAN WON		2,544,179								2,544,179
SWEDISH KRONA		(1,107,413)	1,475,023	2,143,397					1,475,023	1,035,984
SWISS FRANC		(2,635,066)	1,524,092	1,965,931					1,524,092	(669,135)
THAI BAHT		91,898								91,898
UAE DIRHAM		(4,159)								(4,159)
<b>Total subject to currency risk</b>		<b>\$ 10,031,950</b>	<b>\$ 118,658,543</b>	<b>\$ 119,852,931</b>	<b>\$ 100,964,278</b>	<b>\$ 137,778,363</b>	<b>\$ 276,024,656</b>	<b>\$ 212,074,451</b>	<b>\$ 495,647,477</b>	<b>\$ 479,737,695</b>

<sup>1</sup> No activity in 2016.  
Due to rounding, totals and detail may not equal.



TABLE 7: FUTURES CONTRACTS

Dec. 31, 2016

Futures Contract	Expiration Date	Contracts	Value Per Point	Price Per Contract	Exposure	Base Notional Cost	Unrealized Gain/(Loss)
U.S. 10-Yr Ultra	Mar 2017	-4,095.00	1,000	134.063	\$(548,985,938)	\$(551,364,960)	\$2,379,022
U.S. 10-Yr Ultra	Mar 2017	-26.00	1,000	134.063	(3,485,625)	(3,493,031)	7,406
U.S. Treasury Bond	Mar 2017	-253.00	1,000	150.656	(38,116,031)	(38,371,766)	255,734
U.S. Treasury Bond	Mar 2017	-31.00	1,000	150.656	(4,670,344)	(4,670,250)	(94)
U.S. 10-Yr Treasury Notes	Mar 2017	-245.00	1,000	124.281	(30,448,906)	(30,548,664)	99,758
U.S. 10-Yr Treasury Notes	Mar 2017	162.00	1,000	124.281	20,133,563	20,277,636	(144,073)
U.S. 5-Yr Treasury Note	Mar 2017	35.00	1,000	117.664	4,118,242	4,136,563	(18,320)
U.S. 5-Yr Treasury Note	Mar 2017	306.00	1,000	117.664	36,005,203	36,087,082	(81,879)
U.S. 2-Yr Treasury Note	Mar 2017	-34.00	2,000	108.344	(7,367,375)	(7,353,125)	(14,250)
U.S. 2-Yr Treasury Note	Mar 2017	63.00	2,000	108.344	13,651,313	13,631,922	19,391
U.S. Ultra Bond	Mar 2017	-40.00	1,000	160.250	(6,410,000)	(6,410,625)	625
U.S. Ultra Bond	Mar 2017	-20.00	1,000	160.250	(3,205,000)	(3,246,362)	41,362
<b>Total</b>					<b>\$(568,780,898)</b>	<b>\$(571,325,580)</b>	<b>\$2,544,682</b>

to the passive developed international equity and emerging market allocations managed by State Street Global Advisors using foreign currency forward contracts which are over-the-counter (OTC) instruments used to hedge volatility in currency exchange rates on assets held within these portfolios. TCDRS's derivative instruments are considered investments and not hedges for accounting purposes. In 2016 the overlay program was suspended but may be re-engaged at a future date.

Table 7 lists TCDRS' exposure to derivative instruments at Dec. 31, 2016.

**H: FAIR VALUE MEASUREMENT AND APPLICATION**

TCDRS categorizes fair value measurements of investment assets and liabilities within the fair value hierarchy established by generally accepted accounting principles as mandated by GASB Statement No. 72. These investments are valued through industry standard practices for the respective type of security at a price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The hierarchy classifications are based on the transparency of inputs to the valuation techniques used and should not be perceived as the particular investment's risk. These classifications are

summarized into three broad levels, arranged from highest to lowest:

**Level 1** - Unadjusted inputs using quoted prices in active markets or exchanges for identical investments.

**Level 2** - Other significant observable inputs including quoted prices of securities that are comparable in coupon, rating, maturity and industry. Inputs other than quoted prices that are observable take into account operational, market, financial and non-financial factors (interest rates, yield curves, credit risk, and default rates) or other market corroborated inputs that are observable at commonly quoted intervals for the full term of the investment.

**Level 3** - Significant inputs that are not observable and cannot be corroborated by observable market data (assumptions, cash flows or earnings multiples).

In instances where inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation. The assessment of the significance of particular inputs to their fair value measurements requires judgment and considers factors specific to each asset.

## NOTES TO THE FINANCIAL STATEMENTS

**TABLE 8: INVESTMENTS AND DERIVATIVE INSTRUMENTS MEASURED AT FAIR VALUE**

	Dec. 31, 2016			
	Fair Value 12/31/2016	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2	Significant Unobservable Inputs Level 3
<b>Short-Term Securities</b>				
Collective US Gov STIF	\$ 506,362,975	\$	\$ 506,362,975	
Total Short-Term Securities	506,362,975		\$ 506,362,975	
<b>Equity Securities</b>				
Corporate Stock - Preferred	20,470,506	6,225,584	14,244,922	
Corporate Stock - Common	874,531,038	874,531,038		
Limited Partnership - Public Equity	475,922,873	475,922,873		
Domestic Equity/Commingled	4,415,816,725	4,415,816,725		
International Equity/Commingled Funds	3,676,718,230	3,676,718,230		
Investment Derivative Instruments - Currency Futures/Swaps				
Total Equity Securities	9,463,459,372	9,449,214,450	14,244,922	
<b>Debt Securities</b>				
Corp Debt Instruments	775,740,703		775,380,630	360,073
Government Non-US	7,415,509		7,415,509	
Municipals	20,623,413		20,623,413	
US Government Securities	1,019,527,133		1,019,527,133	
Investment Derivative Instruments - Bond Futures/Swaps	2,544,681	2,544,681		
Total Debt Securities	1,825,851,439	2,544,681	1,822,946,685	360,073
Commodities/Commingled	386,197,582	386,197,582		
Invested Securities-Lending Collateral	4,930,942	446,000	4,484,942	
Leveled Assets at Fair Value	\$ 12,186,802,310	\$ 9,838,402,713	\$ 2,348,039,524	\$ 360,073

**INVESTMENTS MEASURED AT THE NET ASSET VALUE (NAV)**

	Fair Value 12/31/2016	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
<b>International Equity/Commingled Funds</b>				
Emerging	\$ 816,037,682	\$	Monthly, Quarterly	30-60 days
Global	532,580,996		Monthly	45 days
Commodities/Commingled	154,092,068		Monthly	5 days
Private Real Estate Partnerships	572,533,783	712,519,444	Not eligible	
<b>Private Equity Partnerships</b>				
Buyout	1,654,658,528	1,509,672,092	Not eligible	
Venture Capital	1,014,542,125	514,509,038	Not eligible	
Real Assets	431,112,890	319,014,401	Not eligible	
<b>Hedge Funds</b>				
Equity Long/Short	1,584,253,840		Monthly, Quarterly	30-65 days
Market Neutral	241,265,783		Quarterly	60 days
Event-Driven	1,263,775,271		Quarterly, Semi-Annual, Annually	30-65 days
Credit/Distressed	1,404,004,591		Quarterly, Annually	60-90 days
Global Macro	961,134,653		Monthly, Quarterly	2-90 days
Multi-Strategies	338,969,353		Quarterly, Semi-Annual	45-95 days
Terminating Funds/In Liquidation	364,816,151		Not eligible	
Opportunistic Credit	1,551,589,944	141,583,381	Monthly, Quarterly, Annually	60-90 days
Opportunistic Credit - not eligible for redemption	78,838,833	106,828,395	Not eligible	
Distressed Debt	575,496,038	366,286,101	Not eligible	
Direct Lending	471,306,988	541,404,813	Not eligible	
Total Investments Measured at the NAV	14,011,009,518			
Investment-related Cash, Receivables and Payables Not Included Above	(29,958,130)			
Total Investments and Securities-Lending Collateral Reinvested	\$ 26,167,853,698			

Due to rounding, totals and detail may not equal.

## NOTES TO THE FINANCIAL STATEMENTS

**TABLE 9: INVESTMENTS AND DERIVATIVE INSTRUMENTS MEASURED AT FAIR VALUE**

	Dec. 31, 2015			
	Fair Value 12/31/2015	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2	Significant Unobservable Inputs Level 3
<b>Short-Term Securities</b>				
Collective US Gov STIF	\$ 396,222,329	\$	\$ 396,222,329	
Total Short-Term Securities	396,222,329		\$ 396,222,329	
<b>Equity Securities</b>				
Corporate Stock - Preferred	84,646	84,646		
Corporate Stock - Common	799,649,244	799,649,244		
Limited Partnership - Public Equity	407,690,224	407,690,224		
Domestic Equity/Commingled	3,915,643,420	3,915,643,420		
International Equity/Commingled Funds	3,694,358,965	3,694,358,965		
Investment Derivative Instruments - Currency Futures/Swaps	10,031,951		10,031,951	
Total Equity Securities	8,827,458,450	8,817,426,499	10,031,951	
<b>Debt Securities</b>				
Corp Debt Instruments	739,647,971		739,227,260	420,711
Government Non-US	5,287,171		5,287,171	
Municipals	19,843,928		19,843,928	
US Government Securities	530,246,008		530,246,008	
Investment Derivative Instruments - Bond Futures/Swaps	(80,464)	(86,235)	5,771	
Total Debt Securities	1,294,944,614	(86,235)	1,294,610,138	420,711
Commodities/Commingled	108,508,414	108,508,414		
Invested Securities-Lending Collateral	39,219,985	5,214,000	34,005,985	
Leveled Assets at Fair Value	\$ 10,666,353,792	\$ 8,931,062,678	\$ 1,734,870,403	\$ 420,711

**INVESTMENTS MEASURED AT THE NET ASSET VALUE (NAV)**

	Fair Value 12/31/2015	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
<b>International Equity/Commingled Funds</b>				
Emerging	\$ 881,150,378	\$	Monthly, Quarterly	30-60 days
Global	512,500,022		Monthly	45 days
Commodities/Commingled	137,588,927		Monthly	5 days
Private Real Estate Partnerships	491,450,067	644,485,928	Not eligible	
<b>Private Equity Partnerships</b>				
Buyout	1,421,956,745	1,490,262,443	Not eligible	
Venture Capital	858,762,761	462,981,269	Not eligible	
Real Assets	287,301,062	368,756,297	Not eligible	
<b>Hedge Funds</b>				
Equity Long/Short	1,784,901,741		Monthly, Quarterly	30-65 days
Market Neutral	218,821,379		Quarterly	60 days
Event-Driven	1,247,342,183		Quarterly, Semi-Annual, Annually	30-65 days
Credit/Distressed	1,350,875,348		Quarterly, Annually	60-90 days
Global Macro	1,142,805,806		Monthly, Quarterly	2-90 days
Multi-Strategies	415,156,757		Quarterly, Semi-Annual	45-95 days
Terminating Funds/In Liquidation	28,510,374		Not eligible	
Opportunistic Credit	2,075,951,701	154,083,381	Monthly, Quarterly, Annually	60-90 days
Opportunistic Credit - not eligible for redemption	50,155,606	51,450,000	Not eligible	
Distressed Debt	569,306,301	422,922,671	Not eligible	
Direct Lending	372,563,884	274,124,840	Not eligible	
Total Investments Measured at the NAV	13,847,101,041			
Investment-related Cash, Receivables and Payables Not Included Above	(56,598,124)			
Total Investments and Securities-Lending Collateral Reinvested	\$ 24,456,856,709			

Due to rounding, totals and detail may not equal.

## NOTES TO THE FINANCIAL STATEMENTS

In 2015 and 2016 there were no changes in valuation techniques that had a significant impact on the result.

### **Short Term Securities**

Holdings in short-term securities at Dec. 31, 2016 and 2015 consist of a Government Short-Term Investment Fund (STIF) which invests principally or entirely in securities or other obligations issued by or guaranteed by the U.S. government or its agencies and repurchase agreements collateralized by securities or other obligations issued by or guaranteed by the U.S. government. The value of the fund is reported at cost plus accrued interest which approximates fair value. TCDRS classifies the STIF at level 2 based on the availability of a daily value, traded in an inactive market.

### **Equity, Debt and Other Securities**

Equity and debt securities classified in level 1 are valued using prices quoted in active markets. Investments classified in level 2 are derived using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features and ratings. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. Index linked securities are valued by using multiples of the external market price and the index ratio. Level 3 debt securities at Dec. 31, 2016 and 2015 are impaired assets and are valued using unobservable inputs in inactive markets such as proprietary information or single source pricing.

Commingled funds listed under level 1 are valued using daily or monthly prices available through an exchange or provided by the investment manager.

### **Investments Measured at the Net Asset Value (NAV)**

For assets that are measured at the NAV per share (or its equivalent), the non-lagged year-end valuation provided by the fund manager is used. All partnerships provide audited financial statements with unmodified opinions, along with unaudited quarterly reports. In addition, as part of the annual audit, a confirmation is obtained which includes additional information regarding the underlying holdings and TCDRS' ownership percentage of the total limited partnership.

### **Commingled Funds**

The commingled funds with fair values reported at NAV per share (or its equivalent), such as member units or an ownership interest in partners' capital to which a proportionate share of net assets is attributed, are reported in Tables 8 and 9 disclosures along with their redemption restrictions.

### **Hedge Funds & Opportunistic Credit Funds**

Most hedge funds and opportunistic credit funds are organized as limited partnerships under the laws of Delaware and use partnership accounting methodologies. These partnerships may invest their assets directly or through a master fund and may also use a wider range of investment techniques such as leverage, short selling and derivatives to achieve their objectives. The fair value of these investments has been determined using the NAV per share or its equivalent. Due to the inherent uncertainty of valuations of investments that are determined to be illiquid and/or do not have readily ascertainable fair values, the estimates of fair value may differ from the values ultimately realized by the partnership, and those differences can be material. The amount of notice the investor is required to give to the general partner in order to redeem ranges from two to ninety-five days. For hedge funds, investors are generally able to sell their interest in the partnerships at regular intervals ranging from monthly to every two years. Opportunistic credit funds can be organized using a traditional hedge fund structure, which provides investors regular intervals to sell their interest in the partnership ranging from quarterly to every two years, or organized using a shorter duration, private equity structure which allows for a two-year investment period, one-year harvest period, and an optional one- to two year extension. Certain funds may allow for the creation of "special investments" which are investments the investment manager believes lack a readily ascertainable fair value, are illiquid, or should be held until the resolution of a special event or circumstance.

TCDRS targets 25% of its hedge fund allocation to equity long/short funds in which the equity securities maintain some level of market exposure (either net long or net short); however, the level of exposure may vary through time. TCDRS



targets 5% of its hedge fund allocation to a market neutral strategy designed to maintain no net exposure to the overall direction of the equity market. Event-driven funds, which are targeted at 20% of TCDRS' hedge fund allocation, focus on identifying and analyzing securities that can benefit from the occurrence of an extraordinary corporate transaction or event such as mergers, acquisitions, buyouts, stock splits and bankruptcies. Credit/distressed debt funds can come in the form of bonds, mutual funds or the distressed firm itself. TCDRS targets 20% of its hedge fund allocation to this strategy which has a low correlation with factors that affect the stock markets. The global macro strategy structures its holdings, such as long and short positions, in order to take advantage of shifts in macroeconomic trends; TCDRS allocates 20% of hedge funds to this strategy. The remaining 10% uses a multi-strategy approach, which represents a mix of the other hedge fund strategies.

### Private Equity

Private equity is risk capital provided outside of the public markets. Investments are illiquid and traded only on acquisition or exit. The term private equity is very broad and includes many types of investments. TCDRS targets 50% of its private equity allocation to buyout funds which include investments in acquisitions, growth equity, recovery investments, and special situations (a class which represents a diversified strategy across many sub-classes). Buyouts use leverage (debt), aggressive restructuring and the purchase of large controlling stakes in the portfolio companies. Venture capital includes funds that invest in companies in a range of stages of development from start-up/seed-stage, early stage, and later/expansion stage. TCDRS targets 20% of its private equity allocation to venture capital funds. TCDRS targets 10% of its private equity allocation to real assets. Funds that invest in real assets have a return linked to inflation, such as energy or other commodity-based investments. The remaining allocation to private equity targets non-U.S. investments. These may be buyout, venture capital or real assets.

Fair value for these funds is determined by reference to observable valuation measures for comparable companies or transactions, adjusted

for differences between the investment and the referenced comparable, and in some instances by reference to option pricing models or other similar methods. Inputs may include, but are not limited to, significant developments such as meaningful third-party transactions, material progress or slippage in the development of the investee company's business, a change in the cash or debt on a company's balance sheet, dividend accretion on certain types of securities, valuation of comparable publicly traded companies, significant changes in the overall market environment and discounts for lack of marketability.

Private equity investments are illiquid and typically have expected holding periods of 10 to 12 years. These investments are not eligible for redemption. Distributions from each fund are received as the underlying investments in the funds are liquidated.

### Distressed Debt

Distressed debt includes investments in the debt instruments of companies which may be publicly traded or privately held that are financially distressed and are either in bankruptcy or likely candidates for bankruptcy. Typical holdings are senior and subordinated debt instruments and bank loans. Gains can be realized by holding the debt until there are some payments by the company at maturity or through distributions of cash, restructured debt or equity resulting from the bankruptcy process. Distressed debt investments are not eligible for redemption. Distributions are received as the underlying investments in the funds are liquidated. Investments are typically made in years one through five with capital typically returned in years three through ten.

### Direct Lending

Direct lending partnerships invest primarily in privately originated debt and preferred equity instruments to small and mid-sized companies and privately originated senior and mezzanine debt for real estate. Direct lending investments may also include other types of yield-oriented non-correlated funds including, but not limited to, royalty streams and aviation leases. Direct lending investments are not eligible for redemption. Distributions are received as the underlying investments in the funds are liquidated, which may take up to three to five years.

## NOTES TO THE FINANCIAL STATEMENTS

### **Private Real Estate**

Private real estate may behave as highly debt-like securities or as highly equity-like securities, depending on the characteristics of the property. Core properties tend to be held for a long time to take full advantage of the lease and rental cash flows that they provide. Value-added and opportunistic real estate achieve a substantial portion of their return from appreciation in value. Value-added real estate can involve repositioning, renovation, and redevelopment of existing properties while opportunistic real estate includes all of these activities as well as the purchase of raw land and ground-up development. These investments are not eligible for redemption. Distributions from each fund will be received as the underlying investments in the funds are liquidated.

As a private, non-exchange-traded asset, private real estate funds are illiquid. The life of a private real estate fund is typically 10 to 12 years.

### **I: RISK MANAGEMENT**

TCDRS is exposed to various risks related to torts; theft of, damage to and destruction of assets; errors and omissions; and natural disasters. To mitigate potential losses, TCDRS purchases commercial insurance in the areas of property damage, general and umbrella liability, fiduciary liability, public official and employee benefits errors and omissions, automobile, crime and workers' compensation. There were no changes in the types of insurance coverage TCDRS maintained in 2016 or 2015. Settlements have not exceeded coverages for each of the past three years.

## NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION

**TABLE 10: MONEY-WEIGHTED RATES OF RETURN (UNAUDITED)**

The money-weighted rates of return are presented to provide information regarding investment performance, net of investment expenses, adjusted for the changing amounts actually invested.

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Annual money-weighted rate of return, net of investment expenses	7.48%	-0.66%	6.84%	16.39%	12.63%	-1.15%	12.67%	26.54%	-29.04%	7.92%

See accompanying independent auditor's report.

Table 10 presents the money-weighted rate of return which provides information regarding TCDRS' investment performance, net of investment expenses, adjusted for the changing amounts actually invested.

## OTHER SUPPLEMENTARY INFORMATION

### CHANGES IN FIDUCIARY NET POSITION BY FUND AND INTERFUND TRANSFERS

**Pension Trust Fund**  
Year Ended Dec. 31, 2016

	Employees Saving Fund	Subdivision Accumulation Fund
<b>ADDITIONS</b>		
Employee Deposits and Employer Contributions	\$ 432,765,143	\$ 771,701,126
Investment Income		
Net Appreciation in Fair Value of Investments	—	—
Interest and Dividends	—	—
Total Investment Activity Loss	—	—
Less Investment Activity Expenses	—	—
Net Income from Investment Activities	—	—
Net Income from Securities-Lending Activities	—	—
Total Net Investment Income	—	—
Building Operations and Miscellaneous Income	—	—
<b>Total Additions</b>	<b>432,765,143</b>	<b>771,701,126</b>
<b>DEDUCTIONS</b>		
Benefits Paid	—	441,982,892
Withdrawals	76,582,913	—
Interest Allocation to Group Term Life Fund	—	—
Administrative and Building Operations Expenses	—	—
<b>Total Deductions</b>	<b>76,582,913</b>	<b>441,982,892</b>
<b>TRANSFERS OF FUNDS</b>		
Retirement Allowances	(480,378,001)	(478,967,777)
Income Allocation	409,650,478	1,021,200,329
Expense Fund Transfer	—	—
Partial-year Interest	13,240,451	—
Escheated Accounts, Net	(104,903)	—
Net Transfers	(57,591,975)	542,232,552
<b>Net Increase (Decrease) in Fiduciary Net Position</b>	<b>298,590,255</b>	<b>871,950,786</b>
<b>NET POSITION RESTRICTED FOR PENSION BENEFITS</b>		
Beginning of Period	6,264,773,284	10,746,192,702
End of Period	\$ 6,563,363,539	\$ 11,618,143,488

See accompanying independent auditor's report.



## OTHER SUPPLEMENTARY INFORMATION

### CHANGES IN FIDUCIARY NET POSITION BY FUND AND INTERFUND TRANSFERS, continued

#### Pension Trust Fund Year Ended Dec. 31, 2016

Current Service Annuity Reserve Fund	Endowment Fund	Income Fund	Expense Fund	Total
\$ —	\$ —	\$ —	\$ —	\$ 1,204,466,269
—	—	1,741,570,984	—	1,741,570,984
—	—	111,463,937	—	111,463,937
—	—	1,853,034,921	—	1,853,034,921
—	—	38,694,492	—	38,694,492
—	—	1,814,340,429	—	1,814,340,429
—	—	2,235,954	—	2,235,954
—	—	1,816,576,383	—	1,816,576,383
—	—	—	1,858,748	1,858,748
—	—	<b>1,816,576,383</b>	<b>1,858,748</b>	<b>3,022,901,400</b>
723,139,864	—	—	—	1,165,122,756
—	—	—	—	76,582,913
—	—	2,132,226	—	2,132,226
—	—	—	21,592,272	21,592,272
<b>723,139,864</b>	<b>—</b>	<b>2,132,226</b>	<b>21,592,272</b>	<b>1,265,430,167</b>
959,345,778	—	—	—	—
490,644,392	(107,051,042)	(1,814,444,157)	—	—
—	(24,700,000)	—	24,700,000	—
—	(13,240,451)	—	—	—
—	104,903	—	—	—
1,449,990,170	(144,886,590)	(1,814,444,157)	24,700,000	—
<b>726,850,306</b>	<b>(144,886,590)</b>	<b>—</b>	<b>4,966,476</b>	<b>1,757,471,233</b>
<b>7,011,478,083</b>	<b>478,348,846</b>	<b>—</b>	<b>28,884,753</b>	<b>24,529,677,668</b>
<b>\$ 7,738,328,389</b>	<b>\$ 333,462,256</b>	<b>\$ —</b>	<b>\$ 33,851,229</b>	<b>\$ 26,287,148,901</b>

## OTHER SUPPLEMENTARY INFORMATION

### CHANGES IN ENDOWMENT FUND

Pension Trust Fund  
Year Ended Dec. 31, 2016

	General Reserves Account	Perpetual Endowment Account	Reserve for Expense Fund	Total
<b>ADDITIONS</b>				
Escheated Accounts	—	\$ 247,944	—	\$ 247,944
<b>Total Additions</b>	<b>—</b>	<b>247,944</b>	<b>—</b>	<b>247,944</b>
<b>DEDUCTIONS</b>				
Transfer to Income Fund	107,051,042	—	—	107,051,042
Transfer to Expense Fund	—	—	24,700,000	24,700,000
Partial-year Interest to ESF	13,240,451	—	—	13,240,451
Reinstatements of Escheated Accounts	—	143,041	—	143,041
<b>Total Deductions</b>	<b>120,291,493</b>	<b>143,041</b>	<b>24,700,000</b>	<b>145,134,534</b>
<b>TRANSFERS</b>				
Expense Allocation	(21,000,000)	—	21,000,000	—
<b>Total Transfers</b>	<b>(21,000,000)</b>	<b>—</b>	<b>21,000,000</b>	<b>—</b>
<b>Net Increase (Decrease) in Fund</b>	<b>(141,291,493)</b>	<b>104,903</b>	<b>(3,700,000)</b>	<b>(144,886,590)</b>
<b>Beginning of Year</b>	<b>449,964,682</b>	<b>3,684,164</b>	<b>24,700,000</b>	<b>478,348,846</b>
<b>End of Year</b>	<b>\$ 308,673,189</b>	<b>\$ 3,789,067</b>	<b>\$ 21,000,000</b>	<b>\$ 333,462,256</b>

See accompanying independent auditor's report.

## OTHER SUPPLEMENTARY INFORMATION

### CHANGES IN INCOME FUND

Pension Trust Fund  
Year Ended Dec. 31, 2016

#### INVESTMENT RESULTS

Net Appreciation in Fair Value of Investments	\$ 1,741,570,984
Interest and Dividends	111,463,937
Net Income from Securities-Lending Activities	2,235,954
Investment Activity Expenses	(38,694,492)
<b>Net Investment Results</b>	<b>1,816,576,383</b>

#### STATUTORY ALLOCATIONS

Allocation of Current Year Income:

Employees Saving Fund	(409,650,478)
Current Service Annuity Reserve Fund	(490,644,392)
Group Term Life Fund	(2,132,226)

**Total Statutory Allocations** **(902,427,096)**

#### BOARD OF TRUSTEES' ALLOCATIONS

Allocation to the Subdivision Accumulation Fund	(1,021,200,329)
Transfer from General Reserves Account	107,051,042

**Total Board of Trustees' Allocations** **(914,149,287)**

**Net Change in Fund<sup>1</sup>**

<b>Beginning of Year</b>	—
<b>End of Year</b>	<b>\$ —</b>

<sup>1</sup> Net Change in Fund is equal to: Net Investment Results less Total Statutory Allocations less Total Board of Trustees' Allocations.

See accompanying independent auditor's report.

## OTHER SUPPLEMENTARY INFORMATION

### ADMINISTRATIVE REVENUES AND EXPENSES

Year Ended Dec. 31, 2016

	Administrative Operations	Building Operations	Combined Operations
<b>Administrative Revenues:</b>			
Rental Income	\$ —	\$ 1,848,432	\$ 1,848,432
Other Income	10,316	—	10,316
<b>Total Administrative Revenues</b>	<b>10,316</b>	<b>1,848,432</b>	<b>1,858,748</b>
<b>Administrative Expenses:</b>			
Payroll and Temporary Employees	8,523,548	—	8,523,548
Payroll Taxes	569,562	—	569,562
Pension Contributions	1,109,292	—	1,109,292
Employee Insurance and Benefits	1,292,961	—	1,292,961
Professional Fees/Outsourcing Services	2,295,617	—	2,295,617
Software Support & Equipment Service	879,805	—	879,805
Building Operations	—	1,284,380	1,284,380
Office Supplies	32,855	—	32,855
Noncapitalized Equipment	178,497	—	178,497
Postage	295,696	—	295,696
Telephone	102,075	—	102,075
Printing	282,712	—	282,712
Records Management	11,597	—	11,597
Reference Materials and Memberships	85,923	—	85,923
Education and Training	60,826	—	60,826
Travel	323,437	—	323,437
Organization and Meeting	242,730	—	242,730
General Insurance	232,821	—	232,821
Depreciation and Amortization	3,105,294	682,643	3,787,937
<b>Total Administrative Expenses</b>	<b>\$ 19,625,249</b>	<b>\$ 1,967,023</b>	<b>\$ 21,592,272</b>

See accompanying independent auditor's report.



## INVESTMENT EXPENSES

Year Ended Dec. 31, 2016

## INVESTMENT-ACTIVITY EXPENSES

## Department Operating Expenses

Salaries	\$ 2,959,568
Payroll Taxes	178,489
Pension Contributions	649,075
Employee Health and Term Life Insurance	310,389
Professional Fees and Services	2,748,225
Investment Data Systems	97,578
Equipment Service and Repairs	6,751
Office Supplies	29,750
Telephone	10,938
Subscriptions and Memberships	12,403
Education and Travel	166,010
Depreciation and Amortization	4,891

Total Department Operating Expenses	7,174,067
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## Nondepartment Managers' Fees:

Equities	13,334,425
REITs	4,119,407
Master Limited Partnerships	3,176,628
Private Real Estate Partnerships	2,580,797
Investment-Grade Fixed Income	1,858,023
High-Yield Investments	1,469,254
Commodities	1,216,316
Private Equity	184,582
TIPS	241,837

Total Nondepartment Managers' Fees	28,181,268
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Total Department Operating Expenses and Managers' Fees	35,355,335
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Custodial Fees — Mellon Trust	589,158
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Investment Consultant Fees — Cliffwater LLC	2,750,000
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<b>Total Investment-Activity Expenses</b>	<b>\$ 38,694,492</b>
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## SECURITIES-LENDING EXPENSES

Borrower Rebates and Agent Fees	\$ 126,365
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See accompanying independent auditor's report.

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## OTHER SUPPLEMENTARY INFORMATION

### PROFESSIONAL/CONSULTANT FEES AND SERVICES

Year Ended Dec. 31, 2016

Professional/Consultant	Nature of Service	Administrative Operations	Investment Department <sup>1</sup>	Totals
iBridge Group, Inc.	Software consulting	\$ 1,513,871	\$ —	\$ 1,513,871
Ewell, Brown, & Blanke, LLP	Legal	—	856,071	856,071
Phidiax, LLC	Software consulting	831,338	—	831,338
Vinson & Elkins, LLP	Legal	—	752,292	752,292
Thought Leaders Group, LLC	Software consulting	693,860	—	693,860
Oshyn, Inc.	Website consulting	537,456	—	537,456
Milliman, Inc.	Actuary	420,190	—	420,190
Almanza, Blackburn, & Dickie, LLP	Legal	—	411,274	411,274
Pegasystems, Inc.	Software consulting	373,575	—	373,575
Icon Integration and Design, Inc.	Software consulting	302,845	—	302,845
PGH Petroleum & Environmental Engineers	Legal	—	209,913	209,913
Information Control Company, LLC	Technology services	209,631	—	209,631
KPMG, LLP	Auditing services (annual and SOC 1)	205,300	—	205,300
Linea Solutions, Inc.	Software consulting	186,358	—	186,358
Fiserv Solutions, Inc.	Annual statement & 1099 support	159,363	—	159,363
Reid, Collins, & Tsai LLP	Legal	—	144,647	144,647
Data Foundry, Inc.	Technology services	138,745	—	138,745
Agile Progress, LLC	Software consulting	122,195	—	122,195
Bradshaw & Bickerton, PLLC	Legal	—	119,925	119,925
Sungard Availability Services, LP	Technology services	97,019	—	97,019
Liquid Litigation Management, Inc.	Legal	—	89,994	89,994
McElvaney Public Affairs LLC	Consulting	69,050	—	69,050
Qual-Con General Contractor, Inc.	Building operations	66,879	—	66,879
FTI Consulting, Inc.	Legal	—	62,733	62,733
Jackson Walker, LLP	Legal	39,123	20,517	59,640
Rhino Security Labs, LLC	Technology services	56,400	—	56,400
JPMorgan Chase Bank	Banking services	56,251	—	56,251
Texhahn Media, Inc.	Communication services	53,539	—	53,539
Weisbart, Springer, Hayes, LLP	Legal	—	33,052	33,052
97 Degrees West, Inc.	Communication services	31,349	—	31,349
Whitehat Virtual Technologies	Software consulting	29,124	—	29,124
Gartner, Inc.	Software consulting	27,647	—	27,647
ADP, Inc.	Payroll and member transaction services	25,919	—	25,919
Elizabeth D. Osting	Communication services	24,240	—	24,240
Ice Miller, LLP	Legal	23,756	—	23,756
Visual Innovations Co., Inc.	Technology consultant	21,981	—	21,981
Thomas Galloway, Corp.	Technology services	20,500	—	20,500
Other		117,530	47,806	165,336
<b>Total Professional/Consultant Fees and Services</b>		<b>\$ 6,455,034</b>	<b>\$ 2,748,225</b>	<b>\$ 9,203,258</b>

<sup>1</sup> Pursuant to GFOA guidelines, investment advisor expenses are shown only on the investment expenses schedule on the preceding page. The members of the TCDRS Board of Trustees serve without compensation and are reimbursed for actual out-of-pocket travel expenses incurred.

See accompanying independent auditor's report.

# 3 Investment



**8.0%**

**30-YEAR  
RETURN**

By meeting our long-term return goal, we help employers provide affordable benefits. Investment earnings fund nearly 80 cents of every benefit dollar paid.







May 2017

Board of Trustees  
Texas County and District Retirement System  
P.O. Box 2034  
Austin, Texas 78768-2034

To the members of the Board:

It is our pleasure to be the investment consultant for the Texas County and District Retirement System (hereinafter referred to as "TCDRS") and to report on your investment performance and activities for the year ending 2016. Retained in 2005, Cliffwater LLC provides investment policy development and review, asset allocation analysis, asset class structure analysis, investment manager searches and investment performance monitoring and evaluation to the Board and its staff. In calculating investment performance, TCDRS uses the industry standard time-weighted rate of return methodology (net of fees) based upon market values.

2016 proved to be a volatile year for global markets and a year full of unexpected results. The first six weeks of the year were dominated by concerns of an energy led recession in the US, resulting in downward pressure on stocks, high yield bonds and energy related assets, followed by a rebound after dovish Federal Reserve comments. In June, the UK voted to be the first member of the EU to leave since its formation in 1993, leading to a flight to quality with the 10 Year US Treasury yield ending the first half of the year at a near record low of 1.47% versus 2.27% at the start of the year. Finally, the surprising outcome in the US presidential election in November resulted in a massive US equity rally on the expectations of lower taxes, regulatory reform and stimulative infrastructure spending but this also resulted in a sell-off in global fixed income and an increase in inflation expectations. With tight labor markets and inflation nearing targets, the Fed raised interest rates for only the second time in a decade in December and the 10 Year US Treasury yield ended up the year at 2.44%, doing a full circle from where it started. With the rebound in energy prices as well as OPEC agreeing to curtail production in November, energy related assets including MLPs and high yield bonds, which are heavily dominated by energy companies, had large rebounds in returns in 2016 following a difficult 2015.

TCDRS' diversified investment portfolio increased in total assets from \$24.4 billion to \$26.2 billion. The one year total fund return was 7.5% after fees which was slightly below the Board's Total Fund Policy Benchmark return of 7.9%. Over 10 years, the fund's 4.9% return exceeded the Board's Total Fund Policy Benchmark return of 4.0%. At the asset class level, TCDRS' passively-managed US equities portfolio returned 12.8% for the year. 2016, in general, was a difficult year for active management and TCDRS' balance of active and passive developed international managers resulted in a -0.2% return, below the 2.8% benchmark return. Additionally, the active global equity portfolio returned 3.9% vs. 7.5% for the benchmark. Emerging market equities had a 6.4% return compared to the benchmark of 11.2% with the underperformance also due to active management and an opportunistic currency hedge. The active REIT managers combined for a 4.9% return versus 7.3% for the benchmark. The MLP portfolio strongly rebounded with a 19.4% return vs. 18.3% for the benchmark and the commodities portfolio returned 12.9% versus 11.8% for the benchmark. The active core fixed income portfolio returned 4.9% relative to 2.7% for the benchmark, TIPS 9.8% versus the benchmark's 12.1%, and the hedge fund portfolio returned 3.5% compared to its benchmark of 0.5%. The active high yield and opportunistic credit asset classes returned 14.7% and 14.9%, respectively, relative to the benchmark's 17.3% return. The private equity program returned 12.4%, distressed debt returned 10.7%, direct lending returned 8.6% and the real estate program returned 9.5% for the year. Overall, it was a year where exposure to public equity and private market asset classes drove total fund level returns.

In terms of asset allocation, the TCDRS Board shifted 4% from public equities to private real estate and private equity, lowered commodity exposure by 2% while increasing REITS and MLPs, and shifted 3% from opportunistic credit to direct lending. The fund added several hedge funds and opportunistic credit managers to increase diversification. The fund also committed to new private equity, private real estate, distressed debt and direct lending partnerships in accordance with its annual commitment budget.

Respectfully submitted,

Kathleen K. Barchick, Sr. Managing Director



## A: THE TCDRS ACT AND INVESTMENT POLICY

Investment decisions of the TCDRS Board of Trustees (board) are subject to the Texas Constitution, the TCDRS Act and to the applicable statutory provisions of the Texas Trust Code that provide for a “prudent person” standard of care.

Additionally, the board has adopted, and reviews at least annually, an investment policy that defines investment authority and emphasizes the importance of a long-term investment philosophy with minimization of risk.

## B: INVESTMENT PHILOSOPHY AND STRATEGY

The board has established a long-term target investment return of 8% and has diversified the TCDRS portfolio to include:

- Equities
  - U.S., international developed and emerging markets, and global equities
- Hedge funds

**TABLE 1: CAPITAL MARKET ASSUMPTIONS**

As of Jan. 1, 2016

Asset Category (Portfolio)	Expected Return	Standard Deviation
Equities		
U.S. Equities	7.05%	17.00%
International Equities — Developed	7.05	18.00
International Equities — Emerging	8.05	26.00
Global Equities	7.35	18.00
Hedge Funds	6.85	6.10
High-Yield Investments		
High-Yield Bonds	6.70	11.00
Opportunistic Credit	6.69	7.16
Distressed Debt	9.70	11.00
Direct Lending	8.00	10.00
Private Equity	10.05	20.00
Real Assets		
REIT Equities	5.60	22.00
Commodities	1.50	18.00
Private Real Estate Partnerships	8.50	30.00
TIPS	2.25	7.00
Master Limited Partnerships (MLPs)	8.40	17.00
Investment-Grade Bonds	2.60	4.00
Cash and Cash Equivalents <sup>1</sup>	1.50	2.00

<sup>1</sup> Money awaiting allocation to an asset category and deposited with the system's custodian.

- High-yield investments
  - High-yield bonds, distressed debt, opportunistic credit and direct lending
- Private equity
- Real assets
  - Real estate investment trusts (REITs), commodities, private real estate partnerships, Treasury Inflation-Protected Securities (TIPS) and Master Limited Partnerships (MLPs)
- Investment-grade bonds

(For more information on these types of securities, please see the Glossary on page 89.)

The board uses a long-term, strategic approach to asset allocation based upon capital market assumptions that are reviewed and adopted annually. The assumptions in effect as of January 2016 are shown in Table 1 and include the long-term expected return and risk (standard deviation) for each asset class.

## C: ASSET ALLOCATION

The board has established asset allocation targets for each asset class within the TCDRS portfolio. Table 2 shows the target allocations in effect during 2016 for each asset class.

**TABLE 2: ASSET ALLOCATION TARGETS**

Asset Category	Target Allocation Percentages in Effect at:	
	Jan. 1, 2016	Dec. 31, 2016
Equities		
U.S. Equities	16.5%	14.5%
International Equities — Developed	11.0	10.0
International Equities — Emerging	9.0	8.0
Global Equities	1.5	1.5
Hedge Funds	25.0	25.0
High-Yield Investments		
High-Yield Bonds	3.0	3.0
Opportunistic Credit	5.0	2.0
Distressed Debt	3.0	3.0
Direct Lending	2.0	5.0
Private Equity	12.0	14.0
Real Assets		
REITs	2.0	3.0
Commodities	2.0	0.0
Private Real Estate Partnerships	3.0	5.0
TIPS	0.0	0.0
Master Limited Partnerships	2.0	3.0
Investment-Grade Bonds	3.0	3.0

## D: ASSET CLASSES, INVESTMENT STYLES AND INVESTMENT MANAGERS

TCDRS uses both active and passive styles of investment management. The passive style seeks to match the performance of an established market index by holding the same securities as the index. An active style seeks to exceed the performance of a benchmark by allowing the manager to actively trade securities that may be different from the index.

Asset classes managed actively are hedge funds, high-yield bonds, opportunistic credit, distressed debt, direct lending, private equity, REITs, TIPS, commodities, MLPs, private real estate partnerships, investment-grade bonds, global equities, and a portion of the developed international and emerging market equities portfolios. Asset classes managed passively are U.S. equities and the remainder of the developed international and emerging market equities.

The investment manager responsible for an externally managed portfolio holds any cash that portfolio generates in interest-bearing instruments or accounts until it is reinvested. The TCDRS Investment Officer manages cash as well as new contributions in a short-term investment fund until allocated to a portfolio.

## E: INVESTMENT RESULTS

TCDRS retains a professional performance measurement analyst that regularly reports investment performance to the board for each investment manager, for the aggregate of all managers in each asset class and for the total portfolio.

### Performance Reporting

Performance of each investment manager is measured against the performance of similar assets contained within a benchmark portfolio, as represented by a specific index. Comparisons indicate the value added by each manager, if any, in excess of the performance that was experienced by the specific benchmark index. When multiple investment managers are retained within a particular asset class, a benchmark portfolio is selected for measurement of the performance of the entire asset class. Table 3 identifies the benchmark portfolio associated with each asset class contained within the TCDRS investment portfolio.

TABLE 3: BENCHMARK PORTFOLIOS FOR PERFORMANCE MEASUREMENT

Asset Category	Benchmark Portfolio
Equities	U.S. Equity Index
	Dow Jones U.S. Total Stock Market Index
	Developed International Equity Index
	MSCI World ex U.S. Index (net)
	Emerging Market International Equity Index
	MSCI EM (Emerging Markets) Index (net)
Global Equity Index	MSCI World Index (net)
Hedge Funds	Hedge Fund Research, Inc. (HFRI) Fund of Funds Composite Index
High-Yield Investments	High-Yield Bond Index
	Citigroup High-Yield Cash-Pay Capped Index
	Distressed Debt Index
	Cambridge Associates Distressed Securities Index <sup>1</sup>
	Opportunistic Credit Index
	Citigroup High-Yield Cash-Pay Capped Index
Direct Lending Index	S&P/LSTA Leveraged Loan Index
Private Equity	Cambridge Associates Global Private Equity & Venture Capital Index <sup>2</sup>
Real Assets	REIT Index
	67% FTSE NAREIT Equity REITs Index, 33% FTSE EPRA/NAREIT Global Real Estate Index
	Commodities Index
	Bloomberg Commodities Index
	TIPS Index
	Bloomberg Barclays 10-Year Breakeven Inflation Index
	Private Real Estate Partnerships
	Cambridge Associates Real Estate Index <sup>3</sup>
	MLP Index
	Alerian MLP Index
Investment-Grade Bonds	Bloomberg Barclays U.S. Aggregate Bond Index

<sup>1</sup> Includes vintage years 2005-present of Quarter Pooled Horizon IRRs.

<sup>2</sup> Includes vintage years 2006-present of Quarter Pooled Horizon IRRs.

<sup>3</sup> Includes vintage years 2007-present of Quarter Pooled Horizon IRRs.

A policy benchmark portfolio consisting of individual asset class benchmarks, weighted by asset class target allocation, is constructed for measurement of the performance of the entire portfolio.

### Performance Results

The TCDRS 2016 portfolio return was 7.5%, net of all fees, trailing its benchmark return of 7.9% by 0.4%. Resilience best describes markets in 2016. Markets overcame low energy prices at the beginning of the year, the surprise Brexit vote in

TABLE 4: RESULTS FROM INVESTING ACTIVITIES, NET OF ALL FEES<sup>1</sup>

Periods Ended Dec. 31, 2016

TCDRS Portfolio/Benchmark Portfolio	2016 Return	Annualized Returns				
		3-Year	5-Year	10-Year	20-Year	30-Year
Total Fund	7.5	4.5	8.4	4.9	7.1	8.0
Policy Benchmark Portfolio	7.9	3.3	6.8	4.0	6.1	6.9
Equities						
U.S. Equities	12.8	8.5	14.7	7.3	8.1	—
U.S. Equity Index Benchmark Portfolio	12.6	8.4	14.6	7.2	8.1	—
International Equities - Developed	-0.2	-0.5	7.5	1.5	—	—
Developed Intl Equity Index Benchmark Portfolio	2.8	-1.6	6.1	0.9	—	—
International Equities - Emerging	6.4	-2.4	1.3	1.0	—	—
Emerging Intl Equity Index Benchmark Portfolio	11.2	-2.6	1.3	1.8	—	—
Global Equity	3.9	8.5	—	—	—	—
Global Equity Benchmark Portfolio	7.5	3.8	—	—	—	—
Hedge Funds	3.5	2.4	5.8	3.5	—	—
Hedge Fund Benchmark Portfolio	0.5	1.2	3.4	1.3	—	—
High-Yield Investments						
High-Yield Bonds	14.7	3.8	7.0	7.0	—	—
High-Yield Bond Index Benchmark Portfolio	17.3	4.2	6.8	7.3	—	—
Opportunistic Credit	14.9	7.1	11.0	—	—	—
Opportunistic Credit Index Benchmark Portfolio	17.3	4.2	6.8	—	—	—
Distressed Debt	10.7	6.3	10.2	8.8	—	—
Distressed Debt Index Benchmark Portfolio	11.4	2.4	5.7	6.7	—	—
Direct Lending	8.6	3.1	—	—	—	—
Direct Lending Index Benchmark Portfolio	10.2	2.0	—	—	—	—
Private Equity	12.4	12.2	13.5	6.6	—	—
Private Equity Benchmark Portfolio	10.5	10.4	13.1	6.2	—	—
Real Assets						
REITs	4.9	10.2	11.0	3.2	—	—
REIT Index Benchmark Portfolio	7.3	10.7	11.4	3.8	—	—
Commodities	12.9	-10.2	-8.4	—	—	—
Commodities Index Benchmark Portfolio	11.8	-11.3	-9.0	—	—	—
TIPS	9.8	3.8	1.7	5.0	—	—
TIPS Benchmark Portfolio	12.1	4.6	2.3	5.1	—	—
Private Real Estate Partnerships	9.5	13.7	15.6	—	—	—
Private Real Estate Benchmark Portfolio	7.5	11.0	10.9	—	—	—
MLPs	19.4	-0.6	—	—	—	—
MLP Index Benchmark Portfolio	18.3	-5.8	—	—	—	—
Investment-Grade Bonds	4.9	4.0	3.5	4.7	6.1	7.4
Investment-Grade Bond Index Benchmark Portfolio	2.7	3.0	2.2	4.3	5.4	6.4

<sup>1</sup> Calculations of performance were prepared using time-weighted rates of return calculations and are reported net of all fees.

Source: BNY Mellon Performance and Risk Analytics Fund Analysis, Fourth Quarter 2016

the middle of the year and the U.S. elections late in the year to finish broadly higher. In particular, several asset classes that suffered in 2015 from lower energy prices rebounded sharply in 2016 as energy prices rose with MLPs up 19.4%, high-yield bonds up 14.7% and commodities up 12.9%. The private asset classes also produced strong returns with private equity up 12.4%, distressed debt up 10.7%, private real estate up 9.5% and direct lending up 8.6%. U.S. equities (+12.8%) and emerging market equities (+6.4%) led public market returns. The opportunistic credit portfolio (+14.9%) performed well while the hedge fund portfolio (+3.5%) was up modestly.

## F: LISTS OF LARGEST HOLDINGS<sup>1</sup>

### Equity Holdings

The system's exposure to equity markets is achieved through participation in commingled investment pools, such as State Street Global Advisors (SSgA) U.S. equity and international equity index funds, and direct investment in separately managed REIT and MLP portfolios. At Dec. 31, 2016, TCDRS' largest equity holdings were in the U.S. equity and REIT portfolios. Table 5 displays our exposure to the 10 largest equity holdings.

<sup>1</sup> A complete listing of all securities TCDRS owned at Dec. 31, 2016, is available upon written request.

**TABLE 5: LIST OF LARGEST EQUITY HOLDINGS<sup>1</sup>**

Dec. 31, 2016 (\$ Millions)

Company	Portfolio	Fair Value
Apple, Inc.	U.S. Equities	\$114.9
Microsoft Corporation	U.S. Equities	89.9
Exxon Mobil Corporation	U.S. Equities	69.8
Simon Property Group, Inc.	REITs	65.1
Enterprise Products Partners, LP	REITs	64.0
Johnson & Johnson	U.S. Equities	58.0
JPMorgan Chase	U.S. Equities	57.4
Berkshire Hathaway, Inc.	U.S. Equities	57.2
Amazon.com	U.S. Equities	55.1
General Electric Co.	U.S. Equities	52.1
Facebook, Inc.	U.S. Equities	49.9

<sup>1</sup> TCDRS invests in equity securities through separately managed and commingled equity portfolios. At Dec. 31, 2016, the equities contained in the U.S. Equities portfolio represent TCDRS' investment in a Dow Jones U.S. Total Stock Market Index Fund in which TCDRS owns an 84% undivided interest. The remaining largest equity holdings are separately managed shares held in the REIT portfolio.

## Fixed-Income Holdings

Table 6 presents the top 10 fixed-income securities owned by TCDRS. The securities are contained within the investment-grade bond and TIPS portfolios. At Dec. 31, 2016, the aggregate fair value of the investment-grade bond and TIPS portfolios was \$988 million and \$509 million, respectively.

## G: RESULTS OF SECURITIES-LENDING ACTIVITIES

TCDRS retains The Bank of New York Mellon Corp. as securities-lending agent to engage in lending securities from its fixed-income portfolios. Securities-lending transactions consist of loans of securities to broker-dealers and other entities in exchange for collateral with a simultaneous agreement to return the collateral for the same securities in the future. The gross income and expenses attributable to securities-lending activity and net lending income of \$0.1 million are shown in Table 7.

Additionally, SSgA passively manages the U.S. and international equity portfolios of TCDRS in commingled funds. The securities in these funds participate in the securities-lending program of SSgA with TCDRS receiving a proportionate share of the securities-lending income generated from this activity. Also shown in Table 7 is income of \$2.1 million representing TCDRS' share of the 2016 equity portfolios' securities-lending income.

**TABLE 6: LIST OF LARGEST FIXED-INCOME HOLDINGS**

Dec. 31, 2016 (\$ Millions)

Description	Maturity	Interest Rate	Fair Value
U.S. Treas-CPI Inflat	1/15/2027	2.375%	\$202.19
U.S. Treas-CPI Inflat	4/15/2028	3.625%	98.26
U.S. Treas-CPI Inflat	1/15/2028	1.750%	72.92
U.S. Treas-CPI Inflat	1/15/2029	2.500%	40.74
U.S. Treas-CPI Inflat	4/15/2029	3.875%	36.19
FNMA Pool #0AL8387	3/1/2046	4.000%	32.27
U.S. Treas-CPI Inflat	1/15/2026	0.625%	29.32
U.S. Treas-CPI Inflat	7/15/2026	0.125%	23.23
U.S. Treasury Bond	5/15/2045	3.000%	20.80
U.S. Treasury Note	5/31/2017	0.625%	17.85

**TABLE 7: SECURITIES-LENDING ACTIVITY**

Year Ended Dec. 31, 2016

Elements of Securities-Lending Activity	Amount
Gross Earnings	\$ 240,292
Less: Borrower Rebates and Agent Fees	126,365
Net Securities-Lending Income – Fixed Income	113,927
Securities-Lending Income (Commingled Funds)	2,122,027
<b>Net Securities-Lending Income</b>	<b>\$ 2,235,954</b>

## H: FEES AND COMMISSIONS

Table 8 presents the 2016 investment managers' fees TCDRS incurred, excluding securities-lending fees.

**Note that all returns presented throughout this CAFR are reported net of the amounts reported in Table 8.**

### Alternative Investment Fees

The investment management fees included in Investment Activity Expenses presented in the Statement of Changes in Fiduciary Net Position represent only those paid directly from the Pension Trust Fund and do not include fees incurred and charged by general partners in partnerships investing in private equity, distressed debt, direct lending, opportunistic credit, private real estate and hedge funds as these types of fees are netted directly against returns for those investments in accordance



TABLE 8: INVESTMENT MANAGERS' FEES

Year Ended Dec. 31, 2016

Asset Class	Fees Paid from the Pension Trust Fund <sup>1</sup>		Fees Netted Against Returns		Fair Value at Dec. 31, 2016
	Management Fees	Performance Fees	Management Fees	Performance Fees	
Equities	\$ 7,170,839	\$ 6,163,585	\$ 10,225,068	\$ —	\$ 9,417,361,229
MLPs	3,176,628	—	—	—	567,543,856
REITs	4,119,407	—	—	—	811,874,484
Investment-Grade Bonds	1,858,023	—	—	—	987,974,697
Commodities	1,216,316	—	—	—	540,289,650
High-Yield Bonds	1,469,254	—	—	—	407,329,219
TIPS	241,837	—	—	—	508,931,316
Cash Equivalents	—	—	—	—	413,319,532
<b>Alternative Investments</b>	<b>Management Fees</b>	<b>Performance Fees</b>	<b>Management Fees</b>	<b>General Partner Carried Interest</b>	<b>Fair Value at Dec. 31, 2016</b>
Private Equity	184,582	—	59,395,902	64,539,912	3,100,313,544
Private Real Estate Partnerships	2,580,797	—	12,119,927	10,935,605	572,533,783
Hedge Funds	—	—	93,930,310	59,343,015	6,158,219,643
Opportunistic Credit	—	—	19,097,379	28,532,057	1,630,428,777
Distressed Debt	—	—	10,908,298	22,843,546	575,496,038
Direct Lending	—	—	4,936,122	4,381,249	471,306,988
<b>Total</b>	<b>\$ 22,017,683</b>	<b>\$ 6,163,585</b>	<b>\$ 210,613,006</b>	<b>\$ 190,575,384</b>	<b>\$ 26,162,922,756</b>

<sup>1</sup> See Nondepartment Managers' Fees on page 53.

with FASB ASC 820. In the interest of greater transparency, fees and profit shares associated with these types of investments are disclosed in Table 8, based on information requested and received from fund general partners in conjunction with the annual audit.

The investment expenses related to TCDRS' investments in partnerships investing in private equity, distressed debt, direct lending, opportunistic credit, private real estate and hedge funds fall into the categories of management fees and profit share (also called "carried interest").

Management fees typically range from 1.5% to 2% of the value of invested assets (hedge funds and opportunistic credit) or committed capital (private equity, private real estate, distressed debt and direct lending) and are intended to compensate the general partner for its costs in operating the partnership.

Profit sharing or carried interest incentivizes and aligns the general partner's interest with TCDRS'

interest. The carried interest represents the general partner's share of the partnership's profits, typically 20%, with 80% going to the limited partners such as TCDRS. Carried interest earned by hedge funds and opportunistic credit funds is generally accrued monthly and paid annually since the underlying investments are relatively liquid and more easily valued. Due to the long-term nature of private equity, private real estate, distressed debt and direct lending partnerships (typically 8 to 12 years) and the illiquidity associated with the underlying investments, carried interest is accrued over the life of the partnership but is usually not finalized until the fund is fully liquidated. Generally, an agreed rate of return, or preferred return, must first be surpassed before carried interest is earned by the general partner. To incentivize general partners to maintain performance over the life of a partnership, periods of negative performance may result in previously accrued carried interest being reduced or "clawed back". During such periods, negative carried interest expense would be reported.

The fees reported in Table 8 are those that directly impact TCDRS' various partnership investments. General partners may receive additional economic benefits from their management of the partnerships in accordance with the partnerships' governing documents.

Table 9 presents the commissions paid to brokers by the system's equity managers. The managers executed trades of 57 million shares through 138 brokers. The \$842,000 in commissions earned by these brokers represents a cost of \$.01 per share traded.

## I: ASSET GROWTH OF THE SYSTEM

As shown in Figure 1, the total value of TCDRS' investment assets, including accrued interest and

**TABLE 9: BROKER COMMISSIONS PAID BY EQUITY MANAGERS**

Year Ended Dec. 31, 2016

Brokerage Firm	Shares Traded (Thousands)	Commissions	
		(Thousands)	Per Share
Goldman Sachs & Co.	4,503	\$ 127	\$ 0.03
Merrill Lynch Pierce Fenner Smith Inc NY	2,284	113	0.05
JPMorgan Clearing Corp, New York	3,480	82	0.02
Citigroup Gbl Mkts Inc, New York	1,637	49	0.03
Jefferies & Co Inc, New York	6,337	36	0.01
Wells Fargo Securities LLC, Charlotte	2,508	36	0.01
UBS Securities LLC, Stamford	994	29	0.03
Sanford C Bernstein & Co, New York	1,655	25	0.02
National Finl Svcs Corp, New York	746	19	0.03
RBC Capital Markets LLC, New York	1,459	19	0.01
Merrill Lynch Intl London Equities	2,754	18	0.01
Barclays Capital Inc./Le, New Jersey	993	17	0.02
Morgan Stanley & Co Inc, NY	615	16	0.03
Deutsche Bk Secs Inc, NY (Nwscus33)	425	15	0.03
Deutsche Sec Asia Ltd, Hong Kong	8,211	14	0.00
UBS Warburg Asia Ltd, Hong Kong	1,022	13	0.01
FBR Capital Markets & Co, Arlington	440	13	0.03
Summary of 121 remaining firms	16,566	200	0.01
<b>Totals</b>	<b>56,628</b>	<b>\$ 842</b>	<b>\$ 0.01</b>

dividends, has increased by \$8.58 billion over the past five years (from \$17.60 billion at Dec. 31, 2011 to \$26.18 billion at Dec. 31, 2016). The growth of investment assets in 2016 was attributable solely to investment return as the system had reached a stage in its maturity where cash flow from employee deposits and employer contributions was slightly less than the amounts required to meet annual benefits, withdrawals and administrative expenses.

## J: INVESTMENT SUMMARY

The total value of the portfolio and each asset class at Dec. 31, 2016 is shown in Table 10 and is composed of the fair value of the underlying investments plus the amount of accrued interest and dividends, if any. The values shown in each asset class under the column labeled "Fair Value" are the investment amounts presented in the Statements of Fiduciary Net Position shown on page 26 in the Financial Section of this CAFR.

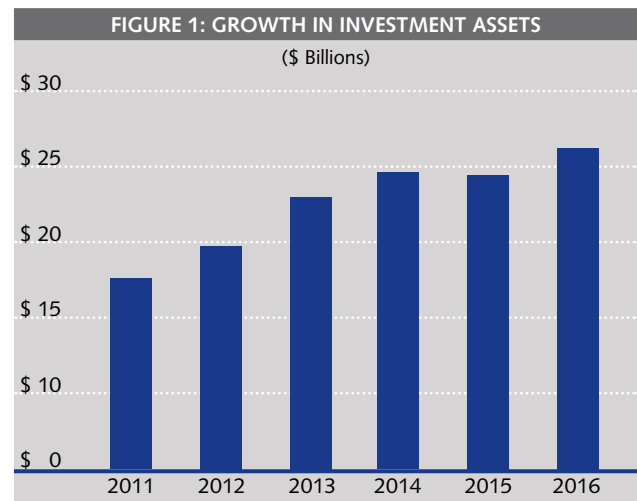


TABLE 10: INVESTMENTS BY ASSET SUBCLASS

Dec. 31, 2016

Type of Investment	Fair Value	Interest, Dividends and Other Receivables <sup>1</sup>	Total Value	% of Total Value
Equities				
US Equities	\$ 4,415,816,725	\$ 0	\$ 4,415,816,725	16.9%
International Equities	4,468,963,509	0	4,468,963,509	17.0%
Global Equities	532,580,995	0	532,580,995	2.0%
Hedge Funds	6,158,219,643	0	6,158,219,643	23.5%
High-Yield Investments				
High-Yield Bonds	407,329,219	5,786,258	413,115,477	1.6%
Opportunistic Credit	1,630,428,777	0	1,630,428,777	6.2%
Distressed Debt	575,496,038	0	575,496,038	2.2%
Direct Lending	471,306,988	0	471,306,988	1.8%
Private Equity	3,100,313,544	0	3,100,313,544	11.8%
Real Assets				
REITs	811,874,484	3,414,135	815,288,619	3.1%
Commodities	540,289,650	0	540,289,650	2.1%
TIPS	508,931,316	3,730,341	512,661,657	2.0%
Private Real Estate Partnerships	572,533,783	0	572,533,783	2.2%
MLPs	567,543,856	87,596	567,631,452	2.2%
Investment-Grade Bonds	987,974,697	6,536,184	994,510,881	3.8%
Cash and Cash Equivalents	413,319,532	125,867	413,445,399	1.6%
<b>Total Investments Shown on Statements of Fiduciary Net Position</b>	<b>\$ 26,162,922,756</b>	<b>\$ 19,680,381</b>	<b>\$ 26,182,603,137</b>	<b>100.0%</b>

<sup>1</sup> Includes \$9,080 of net foreign currency forwards payable included in Accounts and Investments Payable on page 26. Due to rounding, totals and detail may not equal. Percentages shown are based on rounded amounts and may differ slightly from actual.

**READER'S NOTES**



# 4 Actuarial

# \$13.8 BILLION

## BACK TO TEXAS



**TCDRS is an economic engine for Texas. Since we were created in 1967, we've paid more than \$13.8 billion in benefits to retirees and former members. Most of our retirees continue to live in their local communities after retirement. That means they are using their retirement benefits to enrich their hometowns.**





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May 12, 2017

Board of Trustees  
Texas County & District Retirement System  
Austin, Texas

Dear Trustees:

In accordance with the Texas County & District Retirement System (TCDRS) Act, the annual actuarial valuation of the assets and liabilities of TCDRS has been completed as of December 31, 2016. This valuation was performed using actuarial assumptions that were adopted by the Board in December 2013 and a new mortality projection scale that was adopted by the Board in December 2015. We recommended these assumptions to the Board.

We believe the assumptions individually and collectively represent reasonable expectations of experience over the long-term future and that all methods and assumptions used for funding and financial reporting are in compliance with the relevant Actuarial Standards of Practice. Nevertheless, the emerging costs of the TCDRS employers will vary from those presented in our report to the extent that actual experience differs from that projected by the actuarial assumptions.

To test how well the financing objective for each plan is being achieved, annual actuarial valuations are made. These valuations recognize differences in the past year between the actuarial assumptions and the actual experience, and any benefit changes for each plan.

The financing objective for each TCDRS plan is to provide retirement, death and disability benefits for a county's or a district's employees financed by an employer contribution rate. This rate is determined annually and is expected to remain approximately level as a percent of the employer's covered payroll. The employer contribution rate consists of the normal cost contribution rate plus the unfunded actuarial accrued liability (UAAL) contribution rate. The UAAL as of December 31, 2008 and any subsequent gains and losses are amortized over closed 20-year periods (open 30-year period if the employer is in an overfunded position). Benefit increases are amortized over closed 15-year periods. The methods for calculating the required contribution rates are specified in the funding policy which has been adopted by the Board.

A separate actuarial valuation for each participating county and district was performed based on the plan benefits in effect on January 1, 2017. The aggregate results of the actuarial valuation of system-wide assets and liabilities are presented in the Actuarial Section in the Summary Actuarial Valuation Results schedule. The assumptions and methods used in this valuation are summarized in the actuarial section. The member, annuitant and asset data used in the valuation were all prepared and furnished by TCDRS. We relied on that data after examining it for general reasonableness and year-to-year consistency. Please refer to the December 31, 2016 System-wide Actuarial Valuation Report for further disclosures.

Milliman provided the information that TCDRS used in preparing Tables 1, 10, and 11 and the TCDRS Bridge Program Health Reimbursement Arrangement section of the Notes to the Financial Statements in the financial section, all of the supporting schedules in the actuarial section, and Tables 3 and 4 of the statistical section.

Sincerely,

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

Nick J. Collier, ASA, EA, MAAA  
Consulting Actuary

Offices in Principal Cities Worldwide

**A: ACTUARIAL ASSUMPTIONS**

Except for the mortality assumptions, the actuarial assumptions for funding valuation purposes described below were developed from an actuarial experience investigation of TCDRS over the years 2009-2012. They were recommended by Milliman, Inc., adopted by the TCDRS Board of Trustees in 2013 and first used in the Dec. 31, 2013 actuarial valuation. The mortality assumptions were developed by Milliman, Inc. and adopted by the TCDRS Board of Trustees in 2015, and first used in the Dec. 31, 2015 actuarial valuation. The assumptions used for the funding calculations are the same as those used for financial reporting. Financial reporting rules require the discount rate to be gross of administrative expenses. The 8.1% discount rate for financial reporting purposes is consistent with the 8.0% investment return assumption used for funding purposes increased by 0.1% for assumed administrative expenses.

**Termination Rates**

The termination rates are used to estimate future terminations of employment for reasons other than death, disability or retirement. The rates vary by length of service, entry-age group (age at hire), gender and termination group assignments, and do not apply after an employee is eligible for retirement.

TABLE 1: SELECT TERMINATION RATES							
Entry Age	Years of Service	Male			Female		
		Low	Mid	High	Low	Mid	High
20 to 29	0	.265	.331	.397	.287	.359	.431
	3	.106	.133	.160	.115	.144	.173
	6	.062	.077	.092	.067	.084	.101
	9	.044	.055	.066	.048	.060	.072
	12	.032	.040	.048	.034	.043	.052
	15	.022	.027	.032	.023	.029	.035
30 to 39	0	.219	.274	.329	.237	.296	.355
	3	.087	.109	.131	.095	.119	.143
	6	.051	.064	.077	.055	.069	.083
	9	.037	.046	.055	.039	.049	.059
	12	.026	.033	.040	.029	.036	.043
	15	.018	.022	.026	.019	.024	.029
40 to 49	0	.196	.245	.294	.212	.265	.318
	3	.078	.098	.118	.085	.106	.127
	6	.046	.057	.068	.050	.062	.074
	9	.033	.041	.049	.035	.044	.053
	12	.023	.029	.035	.026	.032	.038
	15	.016	.020	.024	.017	.021	.025

Sample rates for three of the seven termination groups are shown in Table 1.

Each employer was assigned to a termination group based primarily upon the termination characteristics of the members of that employer’s plan during the years 2009-2012 relative to the termination characteristics of TCDRS members system-wide during the same period.

For plans that have adopted the partial lump-sum payment option, adjustments are made to the termination rates. Rates are reduced at ages near retirement as it is assumed that if the partial lump-sum payment option is available, members are less likely to terminate employment so they can withdraw their accounts.

**Withdrawal Rates**

Members who terminate employment with their county or district may either elect to leave their accounts with TCDRS or withdraw their accounts. The likelihood that an active member who terminates employment will elect to withdraw varies by length of service and vesting requirement. Sample withdrawal rates are shown in Table 2.

Members who have already terminated employment and are neither vested nor active with another TCDRS employer are assumed to withdraw their accounts. Otherwise, they are assumed to defer their benefit until retirement eligible.

**Disability Rates**

There are two types of disability rates, occupational disability rates (predicts disabilities that occur during the performance of job duties) and all-other-causes

TABLE 2: RATES OF WITHDRAWAL UPON TERMINATION			
Years of Service	Vesting Requirement		
	5 Years	8 Years	10 Years
0	100%	100%	100%
4	100	100	100
6	60	100	100
8	50	50	100
10	48	48	48
15	40	40	40
20	30	30	30
25	20	20	20
Over 28	0	0	0

ACTUARIAL

## RETIREMENT PLAN: SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

disability rates (predicts all disabilities that are not occupational). Sample disability rates are shown in Table 3. Before a member is vested, only the occupational disability rates are applicable. For members who are vested, but not eligible for service retirement, the rate of disablement is the sum of the occupational rate and the all-other-causes rate. Rates are assumed to be zero after the member is eligible for service retirement.

### Service Retirement Rates

Retirement rates predict when active retirement eligible members will commence receiving benefit payments and are based on age. Retirement eligible members age 75 or older are assumed to commence receiving benefits immediately. Sample rates are shown in Table 4, and vary by age.

Non-depositing members are assumed to retire at the later of first retirement eligibility or age 60.

### Mortality Rates

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.

### Investment Return

An 8% annual discount rate is used in the valuation based on the expected long-term investment return of 8%. The components of the 8% investment return

TABLE 3: DISABILITY RATES

Age	Male and Female Occupational	Male and Female All Other Causes
35	.00001	.00023
40	.00003	.00053
45	.00006	.00086
50	.00009	.00156
55	.00014	.00278
60	.00000	.00000

TABLE 4: SERVICE RETIREMENT RATES

Age	Male and Female
40-44	.045
45-49	.090
50-51	.100
52-54	.105
55-57	.110
58-59	.120
60	.140
61	.120
62	.250
63	.160
64	.160
65	.300
66	.250
67	.240
68-74	.220
Over 74	1.000

assumption are a 3% rate of inflation and a 5% real rate of return. This rate of 8% is net of investment and administrative expenses.

### Salary Increases

The salary increase assumption predicts salary increases for individuals over their projected careers. These rates vary by the employee's service and age at hire (entry age). Annual increase percentages consist of a general wage inflation component of 3.5% and a merit, promotion and longevity component that varies from 0.40% to 5.25% based on entry age and service. The 3.5% wage inflation component is based on the underlying price inflation assumption of 3.0% and 0.5% for assumed increases in productivity. The salary scale varies by entry age, with an approximately 4.9% average annual increase over a typical employee's entire career. Because the TCDRS benefit is not based on final average salary, this assumption is generally not as significant as for other defined benefit retirement systems. Refer to Table 5 for sample salary increase rates.



TABLE 5: ANNUAL RATE OF SALARY INCREASE

Years of Service	Entry-Age Group			
	< 30	30-39	40-49	> 50
1	8.2%	7.6%	7.1%	6.6%
3	7.1	6.6	6.1	5.6
5	6.2	5.7	5.2	4.7
10	5.4	4.9	4.4	3.9
15	4.9	4.4	3.9	3.9
20	4.5	4.2	3.9	3.9
25	4.3	3.9	3.9	3.9

**Payroll Increase**

The payroll increase assumption projects the rate of growth of the employer’s aggregate payroll. The rate varies by employer, with a maximum of 3.5%, or a smaller percentage as considered appropriate based on the employer’s number of employees and prior experience. The payroll increase assumption does not consider future growth in the number of employees.

**Cost-of-Living Adjustment**

An annual increase of 0% cost-of-living adjustment for retirees and beneficiaries is assumed. Within certain parameters, employers may elect on an ad hoc basis to increase benefit payment amounts to retirees and beneficiaries.

**B: ACTUARIAL METHODS**

**Actuarial Cost Method**

For funding calculations, TCDRS uses an entry-age actuarial cost method assuming the current plan provisions had always been in place. 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.

For financial reporting, TCDRS also uses the entry-age actuarial cost method but with a slight difference. This method varies from the method used in the funding calculations in that it uses the actual historical plan provisions in the calculation, as specified by GASB, whereas, the method used in

funding assumes the current plan has always been in place. Additionally, as required by GASB, the entry age for financial reporting is based on the age a member began contributing to the TCDRS plan, whereas for funding purposes the entry age is the member’s current age minus all of the member’s service time with TCDRS, including proportionate service.

**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, when actual investment or demographic experience varies from the actuarial assumptions (actuarial gains and losses), or when there are changes in actuarial assumptions or methods.

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 except for changes due to scheduled amortization are amortized over 20-year closed periods.

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.

If extra lump-sum contributions are made to a plan during the year, the extra contributions are used to offset the UAAL increase, if any, related to plan changes elected during the current year. Extra contributions over the required amount due to an elected rate and any remaining lump-sum contribution amounts are then used to pay down existing loss bases, in the order of oldest to most recent.



## RETIREMENT PLAN: SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

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 determining required plan funding, TCDRS smooths each year's actuarial investment gains and losses in the following manner. First, to the extent that there is a loss for the year and there are unrecognized gains from previous years, or to the extent that there is a gain for the year and there are unrecognized losses from previous years, the gain or loss for the year shall be used to offset unrecognized gains or losses from previous years in the order of oldest to most recent. Any remaining gain or loss for the year is recognized over a five-year period. For the Dec. 31, 2016 valuation, this approach was applied to all unrecognized gains and losses from prior years. 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. This method stabilizes employer rates while still resulting in rates that are reasonably reflective of current market conditions.

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.

### C: CHANGES IN ACTUARIAL ASSUMPTIONS AND METHODS

There were no changes in assumptions reflected in the Dec. 31, 2016 actuarial valuation, but there were changes in methods.

The asset valuation method for the Dec. 31, 2016 actuarial valuation is described in Section B. For the prior valuation there was no offsetting of unrecognized gains and unrecognized losses, and all asset gains and losses for a year were recognized over a five-year period.

There was also a change in how extra plan contributions are treated effective with the Dec. 31, 2016 actuarial valuation. The current method is described in the amortization policy in Section B. For the prior valuation, extra contributions were first used to offset increases to the UAAL, if any, related to plan changes elected during the year. Any remaining extra contributions were then incorporated into the actuarial gains or losses for the current year.

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## SUMMARY ACTUARIAL DATA

### FUNDED STATUS AND FUNDING PROGRESS

#### Pension Trust Fund

The funded status of the pension plan as of Dec. 31, 2016, the most recent actuarial valuation date is:

	(\$ Millions)
Actuarial Value of Assets (a)	\$ 26,951.9
Actuarial Accrued Liability (AAL) (b)	\$ 30,473.9
Unfunded AAL (UAAL) (b-a)	\$ 3,522.0
Funded Ratio (a/b)	88.4 %
Covered Payroll (c)	\$ 6,378.4
UAAL as a Percentage of Covered Payroll [(b-a) / c]	55.2 %

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment and mortality. Actuarially determined amounts are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress presents multi-year trend information about whether the actuarial values of plan assets are increasing or decreasing over time relative to the actuarial accrued liabilities for benefits.

## RETIREMENT PLAN: SUMMARY ACTUARIAL DATA

**TABLE 6: FUNDING PROGRESS**

(\$ Millions)

Actuarial Valuation Date <sup>1</sup>	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) <sup>2</sup> (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Annual Covered Payroll <sup>3</sup> (c)	UAAL as a Percentage of Covered Payroll [(b-a)/c]
12/31/07	\$ 14,483.0	\$ 15,364.5	\$ 881.5	94.3%	\$ 4,420.5	19.9%
12/31/08	14,861.8	16,767.9	1,906.1	88.6	4,830.3	39.5
12/31/09 <sup>4</sup>	16,564.2	18,448.1	1,883.9	89.8	5,168.0	36.5
12/31/10	17,808.6	19,931.2	2,122.6	89.4	5,213.9	40.7
12/31/11	19,016.4	21,409.5	2,393.1	88.8	5,202.5	46.0
12/31/12	20,250.3	22,953.0	2,702.7	88.2	5,283.6	51.2
12/31/13 <sup>4</sup>	21,912.7	24,514.8	2,602.1	89.4	5,483.8	47.5
12/31/14	23,751.8	26,252.8	2,501.0	90.5	5,779.0	43.3
12/31/15	25,398.8	28,632.5	3,233.7	88.7	6,122.3	52.8
12/31/16	26,951.9	30,473.9	3,522.0	88.4	6,378.4	55.2

<sup>1</sup> Each county and district participating in TCDRS is financially responsible for its own plan. Therefore, the aggregate numbers shown above reflect only the aggregate condition of TCDRS and are not indicative of the status of any one plan. The valuations above reflect changes in benefits elected by individual employers.

<sup>2</sup> The entry-age actuarial cost method is used for all plans. Each valuation above reflects the actuarial cost method, assumptions and benefits in effect as of the valuation date.

<sup>3</sup> The annual covered payroll is based on the employee deposits received by TCDRS for the year ending with the valuation date.

<sup>4</sup> Revised economic and demographic assumptions due to an experience review were first used in this valuation.

Actuarial calculations reflect a long-term perspective. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial values of assets, consistent with the long-term perspective of the calculations.

Additional information as of the latest actuarial valuation for the retirement plan follows:

**Valuation Date:** Dec. 31, 2016

**Actuarial Cost Method:** Entry-age

**Amortization Method:** Level percent

Unfunded AAL Closed

Overfunded AAL Open

**Remaining Amortization Period:**

Unfunded AAL 20 years

Overfunded AAL 30 years

**Asset Valuation Method:** 5-year smoothed value

**Actuarial Assumptions:**

Investment Return 8.0%

Career Average Projected

Salary Increases 4.9% avg.<sup>1</sup>

Payroll Increase (varies by plan) 3.5% or less

Inflation 3.0%

Cost-of-Living Adjustments 0.0%

<sup>1</sup> Includes inflation at the indicated rate.

**TABLE 7: EMPLOYER CONTRIBUTIONS**

(\$ Millions)

Plan Year Ended Dec. 31	Actuarial Minimum Required Contributions (ARC)		Actual Contributions		Percentage of ARC Contributed
	Average Rate	Dollar Amount	Average Rate	Dollar Amount	
2007	9.50%	\$ 420.1	9.73%	\$ 430.3	102%
2008	9.17	443.0	9.54	460.6	102
2009	9.28	479.8	9.87	510.3	104
2010	10.20	531.8	10.55	550.1	102
2011	9.89	514.6	10.97	570.6	109
2012	10.32	545.2	11.05	583.9	106
2013	10.93	599.4	11.75	644.5	106
2014	11.36	656.7	11.84	684.2	103
2015	11.42	699.0	12.14	743.1	104
2016	11.20	714.2	12.10	771.7	108

ACTUARIAL

## RETIREMENT PLAN: SUMMARY ACTUARIAL DATA

TABLE 8: RETIREE AND BENEFICIARY DATA — ACCOUNTS\*

Year Ended	New Accounts Added	Accounts Removed	Net Change in Accounts	Total Number of Accounts	Percent Change in Number of Accounts
12/31/07	2,576	735	1,841	33,943	5.7%
12/31/08	2,899	804	2,095	36,038	6.2
12/31/09	2,748	807	1,941	37,979	5.4
12/31/10	3,654	797	2,857	40,836	7.5
12/31/11	3,682	883	2,799	43,635	6.9
12/31/12	4,099	933	3,166	46,801	7.3
12/31/13	3,961	942	3,019	49,820	6.5
12/31/14	4,504	1,155	3,349	53,169	6.7
12/31/15	4,277	1,084	3,193	56,362	6.0
12/31/16	4,783	1,160	3,623	59,985	6.4

\* Accounts reflect the total number of members being paid by separate employers.

TABLE 9: RETIREE AND BENEFICIARY DATA — AMOUNTS

Year Ended	New Annual Benefits Added	Annual Benefits Removed	Net Change in Annual Benefits Amount	Annual Benefits	Percent Change in Annual Benefits	Average Annual Benefit*
12/31/07	\$ 50,559,930	\$ 5,561,096	\$ 44,998,835	\$ 494,136,757	10.02 %	\$ 14,558
12/31/08	61,436,639	5,408,943	56,027,696	550,164,453	11.34	15,266
12/31/09	56,323,360	9,407,651	46,915,709	597,080,162	8.53	15,721
12/31/10	86,661,972	11,490,572	75,171,400	672,251,562	12.59	16,462
12/31/11	83,906,489	8,997,023	74,909,466	747,161,028	11.14	17,123
12/31/12	94,155,638	10,559,930	83,595,708	830,756,736	11.19	17,751
12/31/13	91,413,679	10,968,524	80,445,155	911,201,891	9.68	18,290
12/31/14	114,372,968	13,737,044	100,635,924	1,011,837,815	11.04	19,031
12/31/15	108,470,125	12,908,359	95,561,766	1,107,399,581	9.44	19,648
12/31/16	129,666,055	13,856,779	115,809,276	1,223,208,857	10.46	20,388

\* The average annual benefits are based on the regular benefits paid in January following the valuation date.

TABLE 10: SOLVENCY TEST

(\$ Millions)

Valuation Date	Actuarial Accrued Liabilities for			Actuarial Value of Assets	Portion of Actuarial Accrued Liabilities Covered by Net Position		
	(1)	(2)	(3)		(1)	(2)	(3)
	Current Member Deposits	Retirees and Beneficiaries	Current Members (Employer-Financed Portion)				
12/31/07	\$ 3,835.4	\$ 4,684.8	\$ 6,844.2	\$ 14,483.0	100%	100%	87.1%
12/31/08	4,145.6	5,209.5	7,412.9	14,861.8	100	100	74.3
12/31/09	4,518.3	5,710.5	8,219.3	16,564.2	100	100	77.1
12/31/10	4,810.3	6,459.3	8,661.6	17,808.6	100	100	75.5
12/31/11	5,090.7	7,202.8	9,116.0	19,016.4	100	100	73.7
12/31/12	5,364.3	8,014.5	9,574.2	20,250.3	100	100	71.8
12/31/13	5,668.9	8,796.9	10,049.0	21,912.7	100	100	74.1
12/31/14	5,931.8	9,785.8	10,535.2	23,751.8	100	100	76.3
12/31/15	6,264.8	10,552.7	11,815.0	25,398.8	100	100	72.6
12/31/16	6,563.4	11,601.0	12,309.5	26,951.9	100	100	71.4

Presented above is one short-term means of checking a system's progress under its funding program. The present assets are compared with: (1) current member contributions on deposit; (2) the liabilities for future benefits to current retirees and beneficiaries; and (3) the employer-financed portion of the liabilities for service already rendered by current members. In a system that has been following the discipline of level percent of payroll financing, the liabilities for current member contributions on deposit (liability 1) and the liabilities for future benefits to current retirees and beneficiaries (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the employer-financed portion of liabilities for service already rendered by current members (liability 3) will be at least partially covered by the remainder of present assets. Generally, the funded portion of liability 3 will move toward 100% over time if there are no changes in the plan benefits.

Each employer participating in TCDRS is financially responsible for its own plan. Therefore, the aggregate numbers shown above reflect only the aggregate condition of TCDRS and are not indicative of the status of any one plan.

## RETIREMENT PLAN: SUMMARY ACTUARIAL DATA

**TABLE 11: CONTRIBUTION RATE INFORMATION FOR PARTICIPATING EMPLOYERS**

Distribution of TCDRS Plans by Year 2018 Employer Actuarial Determined Contribution Rate

Number of Depositing Members as of 12/31/2016	Year 2018 Employer Actuarial Determined Contribution Rate Based on the Plan of Benefits in Effect 1/1/2017						Total
	Under 5.00%	5.00% – 6.99%	7.00% – 8.99%	9.00% – 10.99%	11.00% – 12.99%	Over 12.99%	
1 – 5	47	24	23	16	10	16	136
6 – 15	39	28	19	25	16	24	151
16 – 30	16	14	15	10	9	13	77
31 – 50	15	12	15	13	9	11	75
51 – 85	12	19	19	8	13	9	80
86 – 150	12	7	10	19	13	7	68
151 – 250	10	9	17	12	11	10	69
251 – 500	2	6	6	9	8	6	37
Over 500	0	3	3	11	14	14	45
<b>Total</b>	<b>153</b>	<b>122</b>	<b>127</b>	<b>123</b>	<b>103</b>	<b>110</b>	<b>738</b>

**TABLE 12: PARTICIPATING EMPLOYERS AND DEPOSITING MEMBERS**

Valuation Date	Number of Participating Employers	Depositing Members		Average Annual Pay	Percent Increase in Average Annual Pay	Employer Contributions <sup>1</sup>	Average Employer Rate Paid
		Number	Annual Payroll				
12/31/07	567	116,858	\$ 4,420,511,353	\$ 37,828	3.4%	\$ 430,335,867	9.73%
12/31/08	585	120,347	4,830,298,018	40,136	6.1	460,635,617	9.54
12/31/09	601	123,446	5,167,980,232	41,864	4.3	510,261,262	9.87
12/31/10	618	122,889	5,213,892,696	42,428	1.3	550,102,572	10.55
12/31/11	624	121,919	5,202,460,203	42,671	0.6	570,562,898	10.97
12/31/12	641	121,963	5,283,625,749	43,322	2.1	583,902,381	11.05
12/31/13	656	124,525	5,483,787,404	44,038	1.7	644,462,694	11.75
12/31/14	677	125,860	5,779,022,617	45,916	4.3	684,212,315	11.84
12/31/15	701	129,217	6,122,322,455	47,380	3.2	743,149,234	12.14
12/31/16	738	131,140	6,378,374,324	48,638	2.7	771,701,126	12.10

<sup>1</sup> Employer contributions includes additional contributions.

**TABLE 13: ANALYSIS OF FINANCIAL EXPERIENCE**

Gains and Losses in Actuarial Accrued Liabilities During Year Ended 2015–16  
Resulting from Differences Between Assumed Experience and Actual Experience  
(\$ Millions)

Source of Change	\$ Gain (or Loss) for Year	
	2016	2015
Age and Service Retirements	\$ 42.2	\$ (1.6)
Death In-Service Benefits	2.0	1.4
Other Termination	2.6	58.1
Pay Increases	26.1	(18.9)
Contribution Income	26.5	32.4
Investment Income	(409.3)	(231.9)
Death After Retirement	54.0	1.5
Other	(5.2)	(16.0)
<b>Gain (Loss) During Year from Financial Experience</b>	<b>(261.1)</b>	<b>(175.0)</b>
Non-Recurring Items		
Plan Changes	(17.7)	(23.9)
Assumption and Method Changes	0.0	(556.6)
<b>Gain (or Loss) from Non-Recurring Items</b>	<b>(17.7)</b>	<b>(580.5)</b>
<b>Composite Gain (or Loss) for Year</b>	<b>\$ (278.8)</b>	<b>\$ (755.5)</b>
<b>Composite Gain (or Loss) as a % of Actuarial Accrued Liabilities</b>	<b>(0.9)%</b>	<b>(2.6)%</b>

## RETIREMENT PLAN: SUMMARY OF PLAN PROVISIONS

### A: ORGANIZATION

TCDRS is a statewide, agent multiple-employer, public-employee retirement system that provides the employees of participating counties and districts with retirement, disability and survivor benefits. Each county or district that participates in TCDRS maintains its own customized plan of benefits which may be changed annually. The governing body of each employer has the option to adopt or change plan provisions based on their needs and budget.

Each employer has a savings-based defined benefit plan where member benefits are based on each member's account balance at retirement and employer matching. All plan assets are pooled for investment purposes, but each employer's plan assets may be used only for the payment of benefits to the members of that employer's plan. This summary describes the plan provisions in general terms.

Any questions related to the actual administration, provisions or policies of the retirement plans should be directed to TCDRS.

### B: MEMBERSHIP

All full- and part-time non-temporary employees become members in TCDRS, regardless of the number of hours they work in a year. Employees in a temporary position are not eligible for membership.

### C: TERMINATION OF MEMBER ACCOUNTS

TCDRS member accounts are terminated by a member's death, retirement or withdrawal.

### D: MEMBER 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 his or her TCDRS account. By law, member accounts earn 7% interest annually.

### E: SERVICE

Members 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 and certain other service.

Within TCDRS, all periods of service with any

TCDRS participating employers are 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.

### F: ELIGIBILITY REQUIREMENTS

#### Service Retirement Benefits

The amount of service a member needs to earn a future monthly benefit is called the vesting requirement. When a member 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. In addition, members may retire before age 60 if they meet one of the following requirements, set by the employer:

- **“Rule of” eligibility:** Under these rules, vested members can retire if their age plus years of service time add up to at least 75 or 80.
- **20-year or 30-year retirement at any age:** This lets members retire when they have at least 20 or 30 years of service time.

#### Disability Retirement Benefits

A member who is vested and who is totally and permanently disabled is eligible for an immediate disability retirement benefit. A member who is not vested is eligible for an immediate disability retirement benefit 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.

### G: DETERMINATION OF RETIREMENT BENEFITS

The service or disability retirement benefit is calculated based on the member's account balance and employer matching as selected by the employer, and may include other employer provided funds. The employer matching can range from a “dollar for dollar,” up to \$2.50 per \$1.00 in the member's account. The member's account and employer



## RETIREMENT PLAN: SUMMARY OF PLAN PROVISIONS

provided funds are combined and converted to a lifetime annuity. The retiree receives a payment every month for the rest of his or her life. Conversions to a lifetime annuity are based on a 7% discount rate and the following mortality assumptions:

- The portion of the benefit that accrues before 2018, including member deposits made before 2018 and interest and employer matching on those deposits, shall be calculated based on the UP-1984 table with an age setback of five years for retirees and an age setback of 10 years for beneficiaries, with a 30% reserve refund assumption for the single life option.
- The portion of the benefit that accrues after 2017, including member deposits made after 2017 and interest and employer matching on those deposits, shall be calculated on a generational mortality basis using the RP-2000 Combined Mortality Table, with a one-year set-forward for males and no set-forward for females, projected to 2014 using Scale AA and for projections after 2014 using 110% of MP-2014 Ultimate Projection Scale, with a 32.79% reserve refund assumption for the single life option. Mortality assumptions for these calculations are blended 50% male and 50% female for retirees, and blended 30% male and 70% female for beneficiaries.

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 allow partial lump-sum payments. This 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.

### H: FUNDING PROVISIONS

Contributions are made monthly by both the employees and the employers based on covered payroll.

Each year the actuary determines the required contribution rate for the following year to adequately fund each employer's benefit plan using the actuarial methods described beginning on page 67. Employers may also elect to fund at a rate higher than the required rate, and may also make additional lump-sum contributions.

### I: CHANGES IN PROVISIONS

There were changes in plan provisions that are reflected in the Dec. 31, 2016 actuarial valuation. State legislation passed in 2015 and effective Jan. 1, 2017, alters fund accounting related to annuitants. Note that these changes do not impact benefit amounts but do affect the actuarial valuation.

Prior to the 2015 legislation, when a member retired, the member's account balance in the ESF plus an equal amount from the employer's SAF account was transferred to the CSARF, a system-wide fund. This transfer funded a portion of the retiree's benefit, with monthly payments for this portion being paid from the CSARF, and the remainder of the retiree's monthly benefit being paid from the employer's SAF account.

The 2015 legislation changed this structure. Effective with 2017 retirements, there is no transfer of funds to the CSARF at retirement. Instead the member's account balance in the ESF is transferred to the

## RETIREMENT PLAN: SUMMARY ACTUARIAL VALUATION RESULTS

employer's SAF at retirement. Also effective Jan. 1, 2017, each employer received a percentage of the total Jan. 1, 2017 CSARF balance. This percentage was equal to the CSARF liabilities related to retirements from each employer divided by the total CSARF liabilities for the system as a whole, determined using the assumptions and methods previously described in Sections A and B of the

Summary of Actuarial Assumptions and Methods. Subsequently, all monthly benefit payments for each employer's retirees are paid from that employer's SAF account. These changes were reflected in the Dec. 31, 2016 actuarial valuation.

SUMMARY ACTUARIAL VALUATION RESULTS			
	Dec. 31, 2016	Dec. 31, 2015	
<b>Valuation Results for Employer Plans</b>			
1 Actuarial present value of future benefits			
Annuitants	\$ 11,589,137,569		\$ 3,478,968,257
Members	25,962,980,793		24,886,137,740
Total	37,552,118,362		28,365,105,997
2 Actuarial present value of future normal cost contributions	7,090,057,368		6,807,049,105
3 Actuarial accrued liability [1 - 2]		30,462,060,994	21,558,056,892
4 Actuarial value of assets			
Employees Saving Fund	6,563,363,539		6,264,773,284
Subdivision Accumulation Fund	20,376,746,354		12,122,510,787
Total	26,940,109,893		18,387,284,070
5 Total unfunded actuarial accrued liability (UAAL)	3,561,207,307		3,217,130,234
6 Total overfunded actuarial accrued liability (OAAL)	(39,256,206)		(46,357,413)
7 Unfunded actuarial accrued liability (UAAL), net of overfunded actuarial accrued liability (OAAL) [5 + 6]. Also equals [3 - 4].		3,521,951,101	3,170,772,822
<b>Valuation Results for Pooled Benefits</b>			
8 Actuarial present value of future benefits from the Current Service Annuity Reserve Fund for annuities in effect	11,832,158		7,074,392,987
9 Actuarial value of assets of the Current Service Annuity Reserve Fund	11,832,158		7,011,478,083
10 Underfunded actuarial accrued liability (UAAL) [8 - 9]		0	62,914,904
11 System-wide UAAL [7 + 10]		\$ 3,521,951,101	\$ 3,233,687,726
12 System-wide Funded Ratio [(4 + 9) / (4 + 9 + 11)]		88.4%	88.7%



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May 12, 2017

Board of Trustees  
Texas County & District Retirement System  
Austin, Texas

Dear Trustees:

Milliman has performed an actuarial valuation for the Group Term Life Fund (GTLF) which is administered by the Texas County & District Retirement System for purposes of complying with GASB 43/45. The GTLF is an optional cost-sharing multiple-employer defined benefit OPEB plan which provides death benefits to active and, if elected, retired employees of participating subdivisions. This valuation was performed using actuarial assumptions that were adopted by the Board in December 2013 and a new mortality projection scale that was adopted by the Board in December 2015. We recommended these assumptions to the Board. We believe the assumptions individually and collectively represent reasonable expectations of experience over the long-term future and that all methods and assumptions used for funding and financial reporting are in compliance with the relevant Actuarial Standards of Practice. Nevertheless, the emerging costs of the TCDRS employers will vary from those presented in our report to the extent that actual experience differs from that projected by the actuarial assumptions.


The financing objective of the GTLF is to operate as a group term insured benefit, charging each employer its premium based on current actuarial assumptions and its own demographic membership (number of active and retired members covered by GTLF). The funding of the GTLF is in accordance with Section 845.406 of the TCDRS statute. Contribution rates are established as a percentage of pay.


The GTLF provides death benefits to both active and retired members. Each participating subdivision can elect to cover just active members, or active and retired members. Only those employers that have elected to cover both active members and retired members are included in the actuarial valuation for purposes of the OPEB valuation under GASB 43/45. The required contribution rates are equal to a premium rate which is individually determined for each participating employer annually, and is based on the mortality and service experience of all employees covered by the fund and the demographics specific to the workforce of TCDRS' participating employers. The rate is expressed as a percentage of the compensation of members employed by the participating employer. The required contributions are determined using a one year term cost funding method. However, this method does not meet the parameters under GASB 43/45. Therefore, for purposes of meeting the GASB financial reporting requirements, GTLF retiree benefits are evaluated using the entry age normal cost method. Active accruals are assumed to be equal to the corresponding premium rate.

The GASB required valuation was performed for all counties and districts participating in the retiree benefit for the GTLF based on the plan benefits in effect on January 1, 2017. The results of this valuation are presented in the following tables, as well as in the Financial Section. The assumptions and methods used in this valuation are summarized in the actuarial section and are intended to meet the parameters of Governmental Accounting Standards Board Statement No. 43. The member, annuitant and asset data used in the valuation were all prepared and furnished by TCDRS. We relied on that data after examining it for general reasonableness and year-to-year consistency. Please refer to the December 31, 2016 System-wide Actuarial Valuation Report for further disclosures.

Milliman provided the information that TCDRS used in preparing Tables 1, 10, and 11 and the TCDRS Bridge Program Health Reimbursement Arrangement section of the Notes to the Financial Statements in the financial section, all of the supporting schedules in the actuarial section, and Tables 3 and 4 of the statistical section.

Sincerely,

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

  
Nick J. Collier, ASA, EA, MAAA  
Consulting Actuary

Offices in Principal Cities Worldwide

ACTUARIAL

## GTLF: SUMMARY OF ACTUARIAL ASSUMPTIONS, METHODS AND DATA

### A: ACTUARIAL ASSUMPTIONS AND METHODS

Except for the mortality assumptions, the actuarial assumptions described below for the Group Term Life plan, an other post-employment benefit (OPEB) plan, were developed from an actuarial investigation of the experience of TCDRS over the years 2009-2012. They were recommended by Milliman, Inc., adopted by the TCDRS Board of Trustees in 2013 and first used in the Dec. 31, 2013 actuarial valuation. The mortality assumptions were developed by Milliman, Inc. and adopted by the TCDRS Board of Trustees in 2015, and first used in the Dec. 31, 2015 actuarial valuation.

#### Termination Rates

Same as for retirement plan.

#### Withdrawal Rates

Same as for retirement plan.

#### Disability Rates

Same as for retirement plan.

#### Service Retirement Rates

Same as for retirement plan.

#### Mortality Rates

Same as for retirement plan.

#### Investment Return

The rate of return is 7%, which is a statutory allocation and is not dependent on investment earnings.

#### Salary Increases

Same as for retirement plan.

#### Actuarial Value of Assets

All assets are valued at fund value. The fund's assets are pooled with those of the Pension Trust Fund under provisions of the TCDRS Act.

#### Actuarial Cost Method

For funding purposes, the unit credit cost method is used for determining the cost of one-year term life insurance for both active employees and retirees. The only demographic assumptions used for determining

funding requirements are active employee mortality rates and retiree mortality rates.

For accounting reporting purposes, the unit credit cost method for determining one-year term life insurance is used for the active insurance benefit. Thus, the normal cost is equal to the active premium rate. For the retiree Group Term Life benefit, the entry-age actuarial cost method is used. The normal cost rate used in the valuation was calculated based on all current employees who are covered under the Group Term Life program, but only if the participating employer also covers its retirees. The aggregate normal cost is the ratio of the actuarial present value of projected insurance benefits payable after retirement to the projected salaries of all employees covered by the Group Term Life program. The total Group Term Life normal cost is the sum of this normal cost and the entry-age normal cost for the retiree insurance benefit.

#### Changes in Actuarial Assumptions and Methods

There were no changes in assumptions or methods reflected in the Dec. 31, 2016 Group Term Life Plan actuarial valuation.

### B: PLAN PROVISIONS

#### Participation in the Group Term Life Plan

Employers who participate in the TCDRS retirement plan may elect to participate in the Group Term Life plan. Employers may elect to cover members who are active employees only or both members who are active employees and retirees, and may elect to change or discontinue coverage annually.

#### Benefit Eligibility

The county or district must have elected the applicable Group Term Life coverage for the calendar year in which a member who is an active employee or retiree dies.

#### Amount of Insurance Benefit

If death occurs while the member is actively employed, the benefit is an amount equal to the employee's most recent regular annualized salary. The insurance benefit payable to retirees is \$5,000.

## GTLF: SUMMARY OF ACTUARIAL ASSUMPTIONS, METHODS AND DATA

**TABLE 14: GTLF — RETIREES COVERED**

Year Ended	New Retirees Added	Retirees Removed	Net Change in Retirees	Total Number of Retirees <sup>1</sup>	Percent Change in Number Covered
12/31/11	555	4,806	(4,251)	5,814	(42.2)%
12/31/12	623	136	487	6,301	8.4
12/31/13	618	196	422	6,723	6.7
12/31/14	676	183	493	7,216	7.3
12/31/15	639	203	436	7,652	6.0
12/31/16	797	254	543	8,195	7.1

<sup>1</sup> A single individual may have coverage with more than one participating employer.

**TABLE 15: GTLF — RETIREES COVERAGE AMOUNTS**

Year Ended	New Annual Coverage Added	Annual Coverage Removed	Net Change in Annual Coverage Amount	Annual Coverage Amount <sup>1</sup>	Percent Change in Annual Coverage	Average Annual Coverage Per Retiree
12/31/11	\$ 2,775,000	\$ 24,030,000	\$ (21,255,000)	\$ 29,070,000	(42.2)%	\$ 5,000
12/31/12	3,115,000	680,000	2,435,000	31,505,000	8.4	5,000
12/31/13	3,090,000	980,000	2,110,000	33,615,000	6.7	5,000
12/31/14	3,380,000	915,000	2,465,000	36,080,000	7.3	5,000
12/31/15	3,195,000	1,015,000	2,180,000	38,260,000	6.0	5,000
12/31/16	3,985,000	1,270,000	2,715,000	40,975,000	7.1	5,000

<sup>1</sup> A single individual may have coverage with more than one participating employer.



## GTLF: SUMMARY OF ACTUARIAL ASSUMPTIONS, METHODS AND DATA

**TABLE 16: GROUP TERM LIFE SOLVENCY INFORMATION**

Valuation Date	GTL Fund Balance	Expected Annual Insurance Benefits	Ratio of Fund Balance to Expected Benefits
12/31/11	21,704,456	3,949,356	5.50
12/31/12	23,299,773	4,203,456	5.54
12/31/13	24,810,155	4,510,866	5.50
12/31/14	26,422,693	4,766,129	5.54
12/31/15	29,674,064	4,962,423	5.98
12/31/16	33,645,516	4,073,446	8.26

**TABLE 17: GTLF PARTICIPATING EMPLOYERS AND COVERED MEMBERS<sup>1</sup>**

Valuation Date	Number of Participating Employers	Covered Members		Average Annual Pay	Percent Increase in Average Annual Pay	Employer Contributions	Average Employer Rate
		Number	Annual Payroll				
12/31/11	269	32,499	\$ 2,064,853,871	\$ 39,190	(10.5)%	\$ 5,927,549	0.29%
12/31/12	276	32,579	1,293,840,378	39,714	1.3	3,949,356	0.31
12/31/13	279	33,118	1,343,369,311	40,563	2.1	4,203,456	0.31
12/31/14	289	33,394	1,419,012,335	42,493	4.8	4,510,866	0.32
12/31/15	298	34,548	1,502,084,556	43,478	2.3	4,766,129	0.32
12/31/16	312	34,800	1,561,487,281	44,879	3.2	4,962,423	0.32

<sup>1</sup> Includes only employers that participate in the Group Term Life program.

# 5 Statistical

# 0.25%

## OPERATING COSTS



By counties and districts coming together to administer retirement benefits, they benefit from economies of scale and low-cost investing. Our operating costs are one-quarter of one percent of assets using a five-year average. We do not charge fees to employers or members.



## INTRODUCTION

The Statistical Section provides additional detail to assist you in interpreting the information in the Financial Statements, Notes to Financial Statements and Required Supplementary Information. The information is presented in two main categories: Financial Trends Data and Demographic and Operating Information.

The Financial Trends Data illustrates how TCDRS' financial position has changed over time. The changes in net position for the last 10 fiscal years show additions by source, deductions by type and the total change in Pension Trust Fund and Group Term Life Fund (GTLF) net position for each year. The pension benefit expenses by type gives data on benefits paid and withdrawal deductions for the last 10 fiscal years.

The Demographic and Operating Information provides details about TCDRS' operations and membership. The schedule of New Retiree Average Benefits gives the average monthly benefit and number of retired members, organized by five-year increments of credited service, for the last 10 fiscal years. Data is given for both pension benefits and for GTLF benefit payments. This section also includes information on the number of annuitants grouped by age and by type of benefits, along with a description of the retirement payment options. The schedule of largest participating employers compares the number of current members for those employers for the most recent year-end and as of nine years ago.

TABLE 1: CHANGES IN NET POSITION, LAST TEN FISCAL YEARS

Pension Trust Fund	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Additions</b>										
Employee Deposits	\$ 303,430,433	\$ 332,040,768	\$ 354,627,084	\$ 357,797,427	\$ 347,995,322	\$ 353,349,948	\$ 367,313,130	\$ 383,186,524	\$ 414,806,917	\$ 432,765,143
Employer Contributions	430,335,867	460,635,617	510,261,262	550,102,572	570,562,898	583,902,381	644,462,694	684,212,315	743,149,234	771,701,126
Total Net Investment Income (Loss)	1,226,671,070	(5,052,167,722)	3,285,201,407	1,980,909,842	(208,287,663)	2,212,163,773	3,239,794,960	1,568,660,707	(172,638,528)	1,816,576,383
Other Additions	1,243,332	1,284,521	1,357,102	1,410,153	1,402,399	1,465,105	1,524,722	1,588,730	2,475,483	1,858,748
<b>Total Additions</b>	<b>1,961,680,702</b>	<b>(4,258,206,816)</b>	<b>4,151,446,855</b>	<b>2,890,219,994</b>	<b>711,672,956</b>	<b>3,150,881,207</b>	<b>4,253,095,506</b>	<b>2,637,648,276</b>	<b>987,793,106</b>	<b>3,022,901,400</b>
<b>Deductions</b>										
Benefits Paid:										
Service Retirements	462,436,351	507,344,095	564,892,564	619,134,926	701,095,589	774,927,826	864,546,467	948,890,194	1,053,112,636	1,149,053,001
Disability Retirements	12,991,513	13,297,812	13,870,874	14,176,535	14,702,551	15,112,328	15,400,094	15,566,244	15,996,931	16,069,755
Total Benefits Paid	475,427,864	520,641,907	578,763,438	633,311,461	715,798,140	790,040,154	879,946,561	964,456,438	1,069,109,567	1,165,122,756
Withdrawals:										
Separation	64,927,703	61,781,877	55,060,952	63,952,250	79,979,067	80,628,521	89,227,565	81,243,255	80,373,803	74,737,725
Death / Ineligible	744,887	1,198,103	777,907	1,221,183	1,203,984	1,321,511	1,791,138	959,497	1,685,020	1,845,188
Total Withdrawals	65,672,590	62,979,980	55,838,859	65,173,433	81,183,051	81,950,032	91,018,703	82,202,752	82,058,823	76,582,913
Administrative and Building Operations Expenses	12,093,768	12,746,067	15,202,472	16,362,612	17,009,339	18,116,762	19,816,891	20,048,081	20,215,681	21,592,272
Interest Allocation to Group Term Life Fund	603,773	747,465	920,949	1,152,389	1,376,030	1,524,820	1,625,589	1,738,911	1,889,834	2,132,226
Payments to Terminating Employers	351,055	22,900	—	—	—	—	46,835	—	—	—
<b>Total Deductions</b>	<b>554,149,050</b>	<b>597,138,319</b>	<b>650,725,718</b>	<b>715,999,895</b>	<b>815,366,560</b>	<b>891,631,768</b>	<b>992,454,579</b>	<b>1,068,446,182</b>	<b>1,173,273,905</b>	<b>1,265,430,167</b>
<b>Change in Net Position</b>	<b>\$1,407,531,652</b>	<b>\$(4,855,345,135)</b>	<b>\$3,500,721,137</b>	<b>\$ 2,174,220,099</b>	<b>\$ (103,693,604)</b>	<b>\$ 2,259,249,439</b>	<b>\$ 3,260,640,927</b>	<b>\$ 1,569,202,094</b>	<b>\$ (185,480,799)</b>	<b>\$ 1,757,471,233</b>
<b>Group Term Life Fund</b>										
<b>Additions</b>										
Employer Premiums	\$ 5,983,265	\$ 6,522,399	\$ 7,130,058	\$ 7,340,463	\$ 5,927,549	\$ 3,949,356	\$ 4,203,456	\$ 4,510,866	\$ 4,766,129	\$ 4,962,423
Income Allocation from Pension Trust Fund	603,773	747,465	920,949	1,152,389	1,376,030	1,524,820	1,625,589	1,738,911	1,889,834	2,132,226
<b>Total Additions</b>	<b>6,587,038</b>	<b>7,269,864</b>	<b>8,051,007</b>	<b>8,492,852</b>	<b>7,303,579</b>	<b>5,474,176</b>	<b>5,829,045</b>	<b>6,249,777</b>	<b>6,655,963</b>	<b>7,094,649</b>
<b>Deductions</b>										
Insurance Benefits	4,579,865	5,269,548	4,946,963	4,537,617	4,852,898	3,878,859	4,318,663	4,637,239	3,404,592	3,123,197
<b>Total Deductions</b>	<b>4,579,865</b>	<b>5,269,548</b>	<b>4,946,963</b>	<b>4,537,617</b>	<b>4,852,898</b>	<b>3,878,859</b>	<b>4,318,663</b>	<b>4,637,239</b>	<b>3,404,592</b>	<b>3,123,197</b>
<b>Change in Net Position</b>	<b>\$ 2,007,173</b>	<b>\$ 2,000,316</b>	<b>\$ 3,104,044</b>	<b>\$ 3,955,235</b>	<b>\$ 2,450,681</b>	<b>\$ 1,595,317</b>	<b>\$ 1,510,382</b>	<b>\$ 1,612,538</b>	<b>\$ 3,251,371</b>	<b>\$ 3,971,452</b>

# FINANCIAL TRENDS DATA

FIGURE 1: ADDITIONS BY SOURCE — 2016

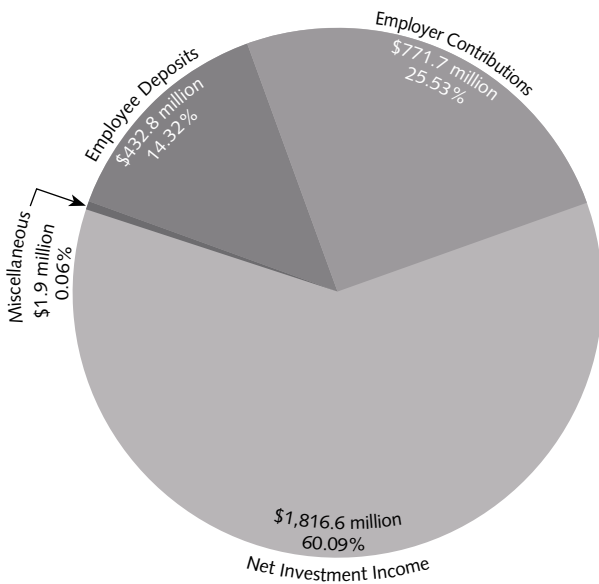


FIGURE 2: DEDUCTIONS BY TYPE — 2016

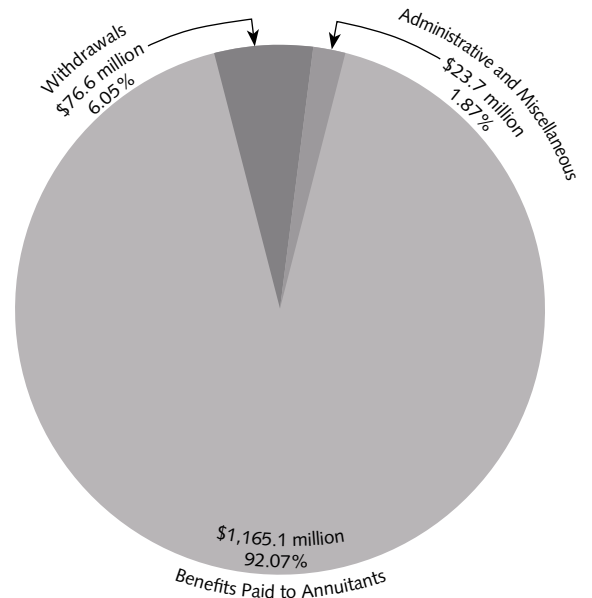
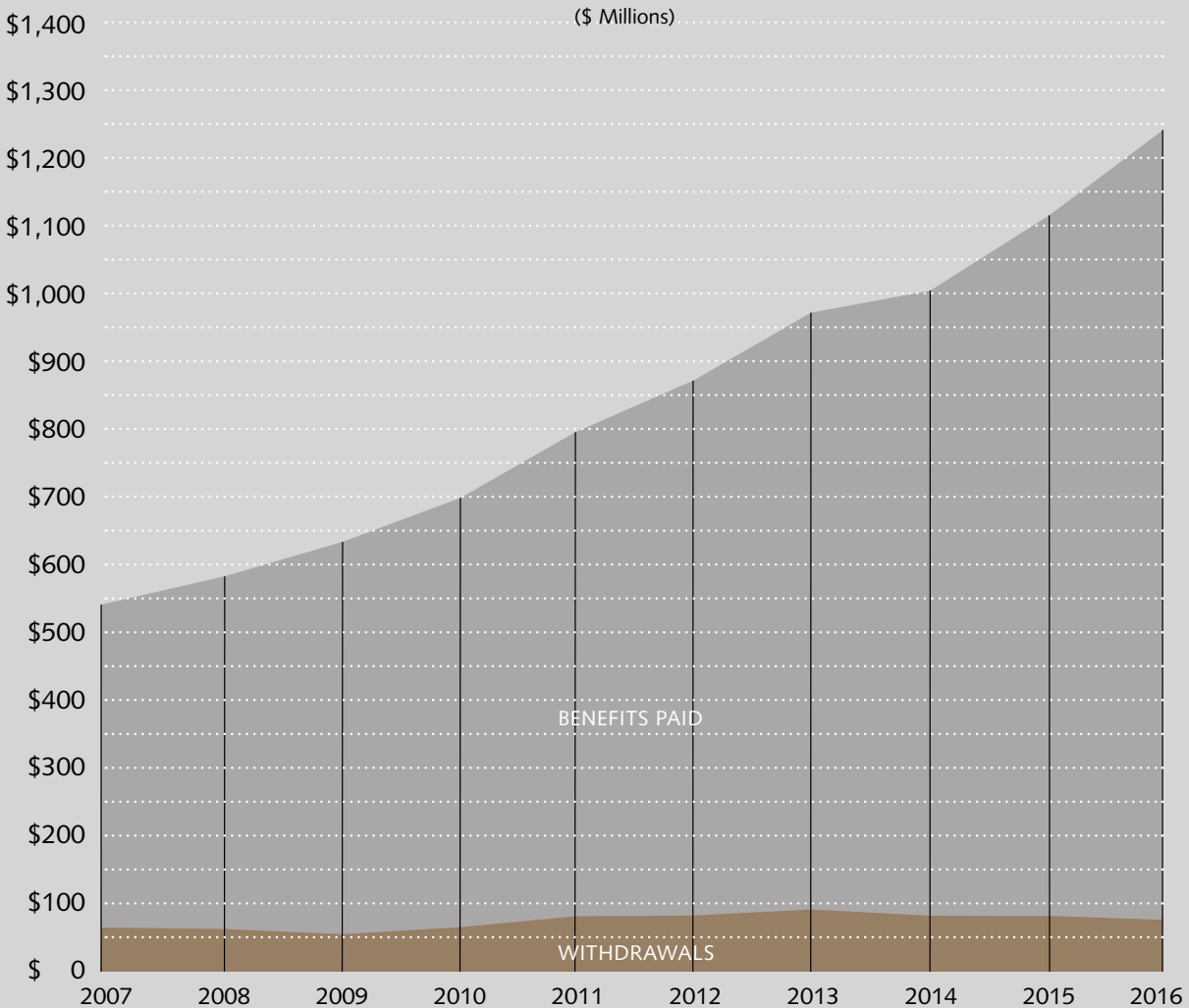


FIGURE 3: BENEFIT EXPENSES BY TYPE





## DEMOGRAPHIC AND OPERATING INFORMATION

**TABLE 2: BENEFIT AT RETIREMENT FOR RECENT RETIREES**

This schedule reports the number and average monthly benefit at retirement for recent retirees grouped by years of credited service and year of retirement.

	Years of Credited Service						
	0–5	5–10	10–15	15–20	20–25	25–30	30+
<b>2007</b>							
Average Monthly Benefit	\$208	\$593	\$919	\$1,344	\$1,968	\$2,671	\$3,768
Number of Annuitants	231	378	492	427	490	351	181
<b>2008</b>							
Average Monthly Benefit	\$184	\$630	\$961	\$1,446	\$2,023	\$2,883	\$4,353
Number of Annuitants	243	440	527	479	511	400	247
<b>2009</b>							
Average Monthly Benefit	\$230	\$608	\$1,009	\$1,503	\$1,998	\$3,059	\$4,096
Number of Annuitants	268	421	513	439	474	392	220
<b>2010</b>							
Average Monthly Benefit	\$237	\$731	\$1,026	\$1,604	\$2,190	\$3,192	\$4,463
Number of Annuitants	400	538	639	557	616	573	342
<b>2011</b>							
Average Monthly Benefit	\$256	\$683	\$1,064	\$1,558	\$2,376	\$3,206	\$4,712
Number of Annuitants	412	569	651	546	652	477	356
<b>2012</b>							
Average Monthly Benefit	\$253	\$649	\$1,125	\$1,626	\$2,250	\$3,220	\$4,841
Number of Annuitants	484	687	717	590	700	508	411
<b>2013</b>							
Average Monthly Benefit	\$235	\$668	\$1,210	\$1,648	\$2,247	\$3,396	\$4,735
Number of Annuitants	449	671	684	575	642	462	415
<b>2014</b>							
Average Monthly Benefit	\$253	\$708	\$1,228	\$1,707	\$2,423	\$3,691	\$5,002
Number of Annuitants	459	782	761	677	745	599	512
<b>2015</b>							
Average Monthly Benefit	\$289	\$756	\$1,239	\$1,841	\$2,518	\$3,462	\$5,390
Number of Annuitants	450	733	741	626	674	495	492
<b>2016</b>							
Average Monthly Benefit	\$254	\$765	\$1,301	\$1,875	\$2,590	\$3,792	\$5,420
Number of Annuitants	483	786	891	722	735	608	593

Note: Benefits are not based on final average salary data, therefore final average salary data is not presented. Instead, TCDRS' benefits are account-based consisting of member deposits over their working career.

**TABLE 3: AVERAGE BENEFITS**

This schedule reports the average benefit for retirees and for all retirees and beneficiaries.<sup>1</sup>

As of Dec. 31,	Retirees Only		All Payees	
	Monthly	Annually	Monthly	Annually
2010	\$ 1,465	\$ 17,580	\$ 1,372	\$ 16,464
2011	1,526	18,312	1,427	17,124
2012	1,581	18,972	1,479	17,748
2013	1,629	19,548	1,524	18,288
2014	1,693	20,316	1,586	19,032
2015	1,752	21,024	1,637	19,644
2016	1,817	21,804	1,699	20,388

<sup>1</sup> In cases of retirees with multiple accounts from a single employer, the accounts are considered as a single benefit. Benefits from multiple employers to a single retiree are calculated as multiple benefits.

**TABLE 4: AVERAGE BENEFIT PROFILE BY EMPLOYER TYPE**

As of Dec. 31, 2016

	Retirees Only		All Payees	
	Monthly	Annually	Monthly	Annually
Counties	\$ 1,853	\$ 22,236	\$ 1,730	\$ 20,760
Districts	1,516	18,192	1,436	17,232

## DEMOGRAPHIC AND OPERATING INFORMATION

TABLE 5: ANNUITANTS BY TYPE OF BENEFIT

Amount of Monthly Benefit	Annuitants				Retirement Option Selected							
	Retiree	Beneficiary	Single Life	100% to Beneficiary	100% to Beneficiary with Pop-up	75% to Beneficiary	50% to Beneficiary	25% to Beneficiary <sup>1</sup>	15-year Guarantee	10-year Guarantee	5-year Guarantee	
\$ 0 – 499	10,035	3,745	5,330	3,051	1,518	335	1,127	159	1,469	667	125	
500 – 999	11,014	2,418	5,263	2,927	1,653	413	1,209	68	1,103	657	139	
1,000 – 1,499	7,997	1,199	3,360	1,907	1,345	350	994	69	664	406	100	
1,500 – 1,999	5,715	658	2,378	1,213	908	352	745	47	380	282	68	
2,000 – 2,499	4,293	383	1,724	895	687	211	639	18	271	199	32	
2,500 – 2,999	3,048	239	1,243	595	518	169	429	11	173	130	21	
3,000 – 3,499	2,281	166	888	460	353	141	345	10	129	103	18	
3,500 – 3,999	1,614	96	662	305	242	87	243	3	92	70	8	
4,000 – 4,499	1,208	69	472	245	198	75	162	2	57	63	4	
4,500 – 4,999	858	35	343	157	112	56	150	2	37	32	4	
5,000 – 5,499	721	32	284	137	92	53	114	2	27	43	2	
5,500 – 5,999	502	12	194	96	76	45	67	0	18	18	0	
6,000 – 6,499	405	9	153	69	49	34	75	2	13	19	0	
6,500 – 6,999	259	10	96	51	32	23	41	0	13	13	1	
7,000 & Over	935	30	312	199	103	84	182	2	41	41	1	
Subtotals	50,884	9,101	22,701	12,306	7,886	2,427	6,522	394	4,485	2,742	523	
<b>Totals</b>	<b>59,985</b>						<b>59,985</b>					

<sup>1</sup> Retirement payment option is no longer available to new retirees.

### RETIREMENT BENEFIT PAYMENT OPTIONS

All options pay the retiree a monthly benefit for life and, when a retiree passes away, guarantee that the total benefit paid will equal, at a minimum, the total accumulated contributions of the retiree.

#### Single Life

Payments cease upon the death of the retiree.

#### 15-year Guaranteed Term

If the retiree dies within 15 years of retirement, the beneficiary will receive the same monthly payment as the retiree for the balance of the 15-year period, at which time payments cease.

#### 10-year Guaranteed Term

If the retiree dies within 10 years of retirement, the beneficiary will receive the same monthly payment as the retiree for the balance of the 10-year period, at which time payments cease.

#### 50% to Beneficiary

At the death of the retiree, the beneficiary will receive 50% of the retiree's monthly payment throughout the beneficiary's life.

#### 75% to Beneficiary

At the death of the retiree, the beneficiary will receive 75% of the retiree's monthly payment throughout the beneficiary's life.

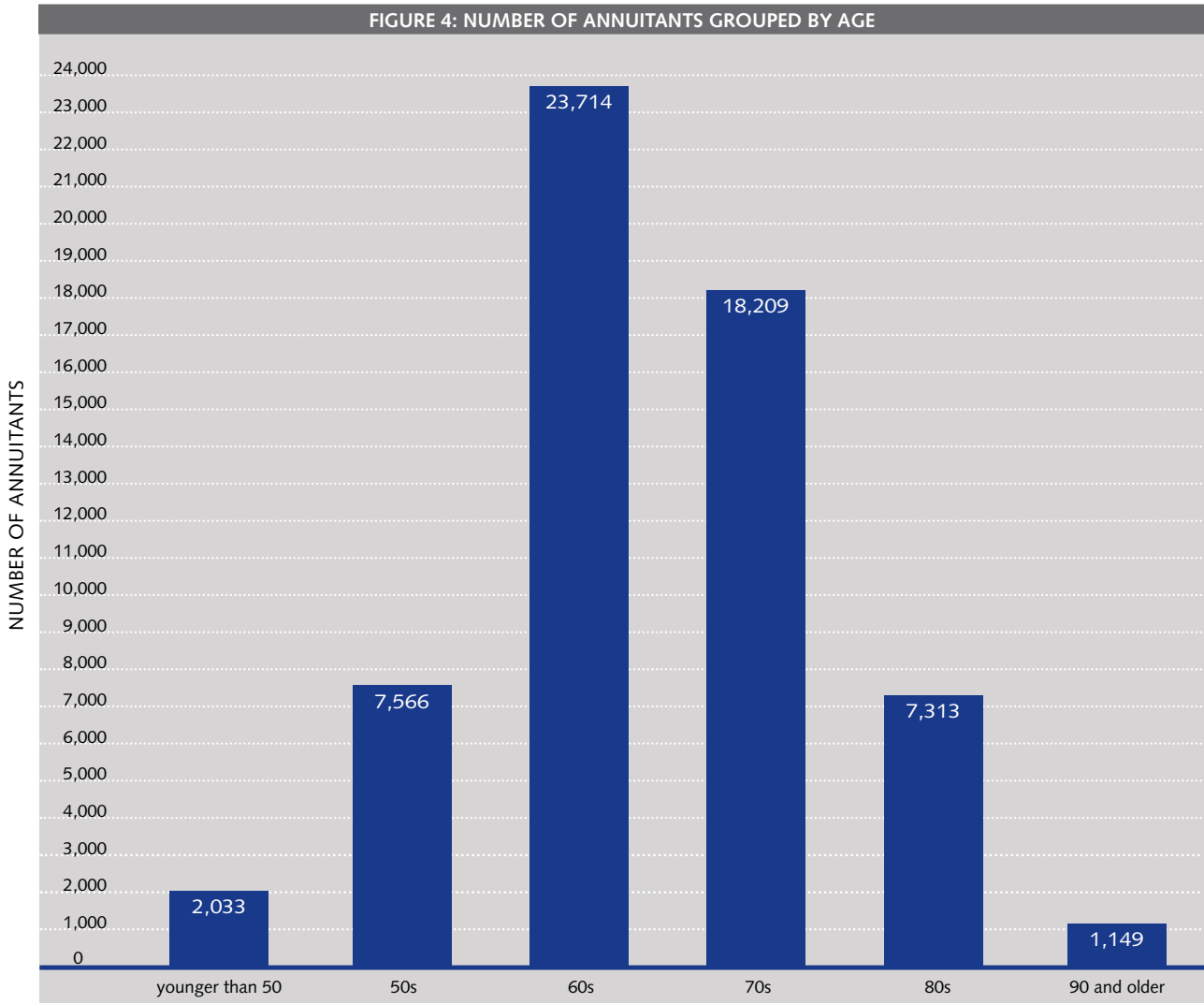
#### 100% to Beneficiary

At the death of the retiree, the beneficiary will receive 100% of the monthly amount paid to the retiree throughout the beneficiary's life.

#### 100% to Beneficiary with Pop-up

If the beneficiary survives the retiree, monthly payments equal to 100% of the monthly amount paid to the retiree continue to the beneficiary for life. If the retiree outlives the beneficiary, the monthly payment amount will increase (pop up) after the beneficiary's death to the higher amount of the Single Life option.

## DEMOGRAPHIC AND OPERATING INFORMATION



**TABLE 6: LARGEST PARTICIPATING EMPLOYERS — CURRENT YEAR AND NINE YEARS AGO**

Employer	2016			2007		
	Number of Current Employee Accounts	Rank	% of Total System	Number of Current Employee Accounts	Rank	% of Total System
Harris County	16,772	1	12.8%	15,866	1	13.6%
Dallas County	6,843	2	5.2%	7,026	2	6.0%
Travis County	5,226	3	4.0%	4,733	4	4.1%
Bexar County	5,199	4	4.0%	4,994	3	4.3%
Tarrant County	4,389	5	3.3%	4,258	5	3.6%
Hidalgo County	3,072	6	2.3%	2,704	7	2.3%
El Paso County	2,960	7	2.3%	2,815	6	2.4%
Fort Bend County	2,778	8	2.1%	1,982	8	1.7%
El Paso Co. Hospital District	2,694	9	2.1%	1,863	10	1.6%
Montgomery County	2,297	10	1.8%	1,904	9	1.6%
All others	78,910		60.1%	68,713		58.8%
<b>Totals</b>	<b>131,140</b>		<b>100.0%</b>	<b>116,858</b>		<b>100.0%</b>

## DEMOGRAPHIC AND OPERATING INFORMATION

**TABLE 7: GROUP TERM LIFE FUND — AVERAGE BENEFITS PAID**

This schedule reports the number of GTLF insurance payments and the average benefits paid.

	<b>Active</b>	<b>Retirees</b>
<b>2007</b>		
Average Benefit Payment	\$36,459	\$5,000
Number of Payments	89	267
<b>2008</b>		
Average Benefit Payment	\$37,068	\$5,000
Number of Payments	111	231
<b>2009</b>		
Average Benefit Payment	\$39,161	\$5,000
Number of Payments	93	261
<b>2010</b>		
Average Benefit Payment	\$36,918	\$5,000
Number of Payments	90	243
<b>2011</b>		
Average Benefit Payment	\$30,026	\$5,000
Number of Payments	113	292
<b>2012</b>		
Average Benefit Payment	\$35,890	\$5,000
Number of Payments	83	180
<b>2013</b>		
Average Benefit Payment	\$38,659	\$5,000
Number of Payments	83	222
<b>2014</b>		
Average Benefit Payment	\$41,205	\$5,000
Number of Payments	89	194
<b>2015</b>		
Average Benefit Payment	\$36,819	\$5,000
Number of Payments	63	217
<b>2016</b>		
Average Benefit Payment	\$38,763	\$5,000
Number of Payments	54	206

**ACTUARIAL ACCRUED LIABILITY**

The portion, as determined by the actuarial cost method, of the Actuarial Present Value of pension plan benefits and expenses that is not provided for by future Normal Costs.

**ACTUARIAL ASSUMPTIONS**

In order to estimate the cost of funding benefits, the actuaries use long-term assumptions. Examples include mortality, termination, disablement and retirement; changes in salary; payroll growth; investment returns and other relevant items. Actuarial assumptions are adopted by the board of trustees upon recommendation of the consulting actuaries. The assumptions are reviewed every four years.

**ACTUARIAL GAIN (LOSS)**

The difference between actual results and what was projected to happen based on Actuarial Assumptions during the period between annual Actuarial Valuations.

**ACTUARIAL PRESENT VALUE**

The calculated value of a series of projected cash flows expressed in present day dollars as of the valuation date using actuarial assumptions.

**ACTUARIAL VALUATION**

The process to calculate the employer contribution rate. This process determines the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets and Actuarial Present Values.

**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.

**ACTUARIALLY EQUIVALENT PAYMENT OPTIONS**

Different benefit payment options that pay different amounts per month, but are of equal value at the time the option is selected.

**ALERIAN MLP INDEX**

This index is a composite of the 50 most prominent energy Master Limited Partnerships. The index is

calculated using a float-adjusted, capitalization-weighted methodology.

**BASIC BENEFIT**

Benefits attributable to the member's accumulated deposits and an equal matching amount provided by the employer.

**BENCHMARK PORTFOLIOS**

Portfolios represented by specific indices that are created for the purpose of measuring the relative performance of investment managers, asset classes and, in the case of the Policy Benchmark Portfolio, the entire TCDRS portfolio. Data regarding performance of these benchmark portfolios during any period indicate the returns that were available during the period for comparable investments that were passively managed. Comparisons indicate the value added by each manager, if any, in excess of the performance that was experienced by the specific benchmark index.

**BLOOMBERG BARCLAYS U.S. AGGREGATE BOND INDEX**

This index incorporates all domestic debt issues with maturities greater than one year and in amounts greater than \$1 million. Included are publicly issued, nonconvertible, domestic debt issues of the U.S. government and its agencies and corporations in industrial, utility or financial segments.

**BLOOMBERG BARCLAYS U.S. 10-YEAR BREAKEVEN INFLATION INDEX**

This index is designed to provide access to 10-year breakeven inflation by capturing the returns of a simultaneous long position in 10-year inflation linked securities and a short position in suitable nominal comparator U.S. Treasury bonds.

**BLOOMBERG COMMODITIES INDEX**

This index is composed of futures contracts on physical commodities. It provides broad-based exposure to commodities, with no single commodity or sector dominating the index. The liquidity and diversity of the benchmark makes it suitable for institutional investment.

**CAMBRIDGE ASSOCIATES DISTRESSED SECURITIES INDEX**

A custom benchmark index provided by Cambridge



## GLOSSARY

Associates based on data compiled from more than 200 distressed debt funds, including fully liquidated partnerships with first cash flows beginning in 2005. The benchmark return is net of fees, expenses and carried interest.

### **CAMBRIDGE ASSOCIATES GLOBAL PRIVATE EQUITY & VENTURE CAPITAL INDEX**

A custom benchmark index provided by Cambridge Associates based on data compiled from more than 1,500 global private equity and venture capital funds, including fully liquidated partnerships, with first cash flows beginning 2006. The benchmark return is net of fees, expenses and carried interest.

### **CAMBRIDGE ASSOCIATES REAL ESTATE INDEX**

A custom benchmark index provided by Cambridge Associates based on data compiled from nearly 400 global private real estate funds, including fully liquidated partnerships with first cash flows beginning 2007. The benchmark return is net of fees, expenses and carried interest.

### **CITIGROUP HIGH-YIELD CASH-PAY CAPPED INDEX**

This index includes cash-pay bonds with a below-investment-grade rating by both Moody's Investor Services and Standard & Poor's. The bonds must have a maturity of at least one year and a minimum amount outstanding of \$100 million. The par value of individual issuers is capped at \$5 billion par outstanding.

### **COMMODITIES**

Investment in resources that can be perishable (grains, sugar, etc.) and non-perishable (metals, energy, etc.). Commodities provide protection against inflation and have low correlation to stocks and other asset classes.

### **DIRECT LENDING**

Privately originated debt made to small to medium-sized companies or to real estate investors in order to take advantage of disruptions in the banking system.

### **DISTRESSED DEBT**

Distressed debt investments are investments in partnerships that purchase the debt of companies

experiencing financial distress ranging from deteriorating financial conditions to bankruptcy. Strategies employed include trading, participating in restructuring transactions and controlling bankruptcy proceedings.

### **DOW JONES U.S. TOTAL STOCK MARKET INDEX**

This index is one of the broadest measures of domestic equity performance since it is computed based upon all equity trades of U.S. stocks during any day. Each company included within the index is not equally weighted within the index, but rather is weighted according to its market value among the market values of all U.S. companies.

### **EMPLOYER REQUIRED CONTRIBUTION RATE**

The percentage of payroll the employer is required to contribute to fund future benefits for their current employees, former employees and retirees. It is the sum of the Normal Cost Contribution Rate and the Unfunded Actuarial Accrued Liability Contribution Rate.

### **ENTRY-AGE ACTUARIAL COST METHOD**

An actuarial cost method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a Valuation Date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.

### **FOREIGN CURRENCY FORWARD CONTRACTS**

Forward contracts are over-the-counter agreements between two parties to buy and sell a currency at a set price on a future date. The contracts are marked-to-market on each valuation date with any resulting unrealized appreciation or depreciation recorded on such date. Realized gains or losses equal to the value of the contract when it was opened and the settlement amount at the time the contract is closed (or rolled) are recorded upon receipt of the currency.

**FTSE EPRA/NAREIT GLOBAL REAL ESTATE INDEX**

This index, developed by The Financial Times and London Stock Exchange (FTSE) in conjunction with the European Public Real Estate Association (EPRA) and National Association of Real Estate Investment Trusts (NAREIT) includes worldwide listed stocks of income-producing real estate.

**FTSE NAREIT ALL EQUITY REIT INDEX**

This index gives a broad exposure to U.S. publicly traded equity REITs in every property sector.

**GLOBAL EQUITY**

Investments in stocks included in all public markets, both domestic and international.

**HEDGE FUND RESEARCH INSTITUTE (HFRI) FUND OF FUNDS COMPOSITE INDEX**

This index consists of more than 650 funds with each managing a group of diverse hedge funds. Each fund of funds has at least \$50 million under management or has been actively trading for at least twelve months. The index includes both domestic and offshore funds that offer diverse strategies. All constituent funds report returns net of fees on a monthly basis.

**HEDGE FUNDS**

An investment strategy applied to a variety of different investments to help manage risk within the entire portfolio. Over a full market cycle, hedge funds produce equity-like returns with less than half the risk of stocks. Hedge funds do well when markets are up and mitigate losses during market downturns.

**HIGH-YIELD BONDS**

Domestic fixed-income securities that have not been highly rated by national rating agencies, such as Moody's Investors Service (Moody's) or Standard & Poor's (S&P). A security is considered a high-yield bond if it is rated below Baa3 by Moody's or below BBB- by S&P. To pay for the risk, the interest rates earned are higher than investment-grade bonds.

**INVESTMENT-GRADE BONDS**

The investment-grade bonds portfolio consists of

debt securities issued by the U.S. Treasury or an agency or government-sponsored entity (GSE) of the United States (U.S. governments); mortgage-related instruments, U.S. dollar-denominated fixed-income securities issued by U.S. and foreign corporations; and U.S. dollar-denominated debt issued by foreign governments and supranationals. Additionally, these portfolios may contain minimal investments in short-term instruments, non-rated securities, private placement securities, convertible bonds and preferred stock. The portfolio should exhibit an overall dollar-weighted average quality rating of AA.

**MASTER LIMITED PARTNERSHIPS (MLPs)**

Publicly traded partnership interests created by Congress to encourage investment in domestic energy infrastructure. At the entity level, these interests are tax free provided that 90% of their income comes from natural resources such as oil, natural gas, coal, timber and other depletable resources.

**MSCI EAFE INDEX (EUROPE, AUSTRALASIA, FAR EAST)**

This index, prepared by Morgan Stanley Capital International (MSCI), is designed to measure developed market equity performance excluding the United States and Canada.

**MSCI EMERGING MARKETS (EM) INDEX**

This index, prepared by Morgan Stanley Capital International (MSCI), captures large and mid-cap performance across 23 emerging market countries with 835 constituents.

**MSCI WORLD EX U.S.**

This index, prepared by Morgan Stanley Capital International (MSCI), is designed to measure developed market equity performance excluding the United States.

**NORMAL COST**

The portion of the Actuarial Present Value of pension plan benefits and expenses that is allocated to a valuation year by the actuarial cost method.

## GLOSSARY

### **NORMAL COST CONTRIBUTION RATE**

This is the rate required to fund current employees' benefits over their projected careers. It is equal to the Actuarial Present Value at hire of Projected Benefits divided by the Actuarial Present Value at hire of anticipated future compensation. It is calculated for each contributing member and the average is weighted by compensation.

### **OPPORTUNISTIC CREDIT**

Comprises investments primarily in debt instruments that provide return opportunities resulting from dislocations in capital markets.

### **OVERFUNDED ACTUARIAL ACCRUED LIABILITY (OAAL)**

The excess, if any, of the Actuarial Value of Assets over the Actuarial Accrued Liability.

### **PLAN YEAR**

The period from Jan. 1 to Dec. 31 inclusive.

### **PRIOR SERVICE**

Benefits attributable to an amount provided by the employer for service rendered by an employee prior to employer participation in TCDRS.

### **PRIVATE EQUITY**

Private partnerships that (a) take public companies private in order to improve their operations and resell them in the future; (b) invest in start-up companies with new ideas or technologies; and (c) invest in both traditional and renewable energy discovery and production.

### **PRIVATE REAL ESTATE**

Non-publicly traded vehicles that invest in a broad array of real estate properties and ventures. Private real estate investments are expected to be very illiquid and long term in nature. The vehicles for private real estate investments are typically partnerships, but may also include other entities such as limited liability companies or offshore corporations.

### **PROJECTED BENEFITS**

Retirement benefit amounts that are estimated to be paid at various future times under a particular set

of Actuarial Assumptions, taking into account such factors as the effect of advancement in age, and past and anticipated future compensation and service time.

### **REITS**

Real estate investment trusts are companies that own and operate income-producing real estate, such as commercial office buildings, apartments, malls, warehouses and storage facilities. Under provisions of the U.S. tax law, if REITs pay out most of their income, they do not pay income taxes. This means higher income earnings along with any increase in the value of the real estate.

### **S&P/LSTA LEVERAGED LOAN TOTAL RETURN INDEX**

This index is a market value-weighted index designed to measure the performance of the U.S. leveraged loan market based upon market weights, spreads and interest payments.

### **TIPS**

Treasury Inflation-Protected Securities are bonds issued by the U.S. Treasury just like other U.S. government bonds. However, the principal amount of TIPS increases with the rate of inflation so that inflation does not decrease the value of the bond. They provide a way to protect against inflation.

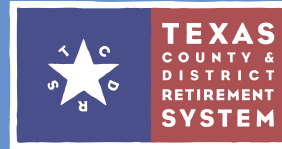
### **UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)**

The excess, if any, of the Actuarial Accrued Liability over the Actuarial Value of Assets.

### **UNFUNDED ACTUARIAL ACCRUED LIABILITY CONTRIBUTION RATE**

The amount needed to amortize the Unfunded Actuarial Accrued Liability over a closed period of 20 years, expressed as a percent of payroll. If the plan has an Overfunded Actuarial Accrued Liability, it is amortized over an open period of 30 years, and the resulting negative Unfunded Actuarial Accrued Liability Contribution Rate is offset against the Normal Cost Contribution Rate.





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