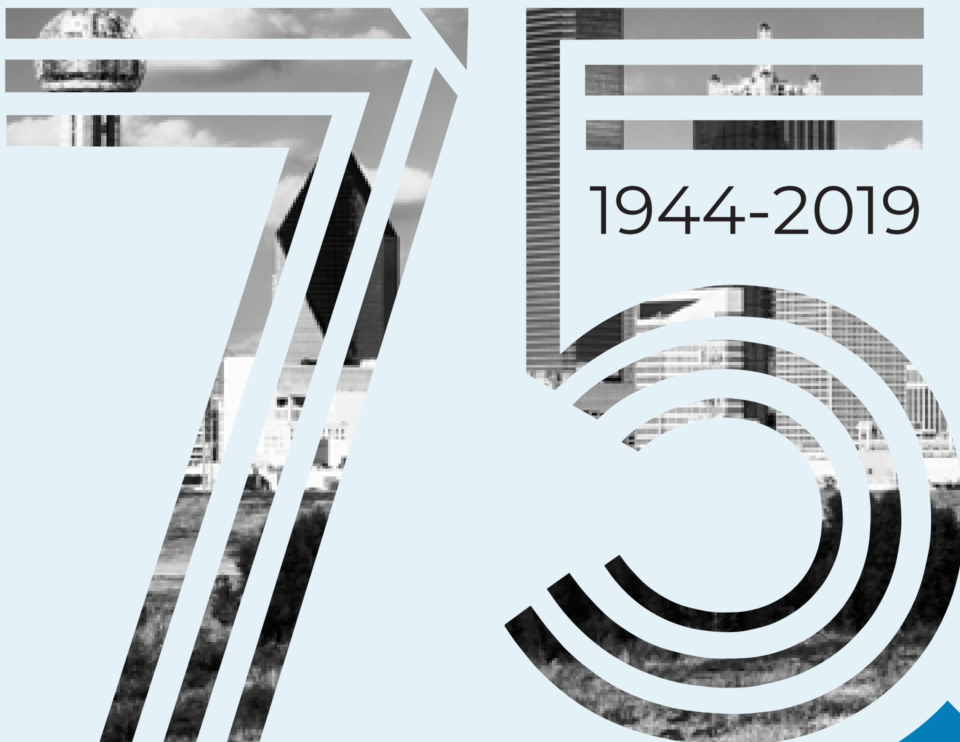
2019 COMPREHENSIVE ANNUAL FINANCIAL REPORT

FISCAL YEARS ENDED DECEMBER 31, 2019 & 2018



1944-2019

Only in Dallas

EMPLOYEES' RETIREMENT FUND
OF THE CITY OF DALLAS | DALLAS, TX

2019 AT – A – GLANCE

(unaudited)

($ in thousands)

Active Members	7,427
Benefit Recipients	7,405
Inactive Members	1,666
Fund Net Position	$3,658,088
Benefits Paid	$278,007
Refunds	$10,436
Member Contributions	$58,314
City Contributions	$62,177
Investment Rate of Return	17.6%

The Employees' Retirement Fund provides retirement, disability and death benefits to permanent civilian employees of the City of Dallas

COMPREHENSIVE ANNUAL FINANCIAL REPORT 2019

FISCAL YEARS ENDED DECEMBER 31, 2019 AND 2018

Prepared by the Staff of The Employees' Retirement Fund

CHERYL D. ALSTON
EXECUTIVE DIRECTOR

Employees' Retirement Fund of the City of Dallas

1920 McKinney Avenue, 10th Floor | Dallas, TX | 75201

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www.dallaserf.org

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INTRODUCTORY SECTION

Employees' Retirement Fund
of the City of DALLAS ®

LETTER OF TRANSMITTAL

July 8, 2020

Board of Trustees
Employees' Retirement Fund of the City of Dallas
1920 McKinney Avenue, 10th Floor
Dallas, Texas 75201

Dear Board Members:

The Comprehensive Annual Financial Report ("CAFR") of the Employees' Retirement Fund of the City of Dallas ("ERF" or "Plan") for the fiscal years ended December 31, 2019 and 2018 is submitted herewith. Our mission is to provide retirement benefits and superior service to advance the financial security of our members. Responsibility for both the accuracy of the data and the completeness and fairness of the presentation rests with the staff of ERF.

Report Contents

This CAFR is divided into five sections:

1. Introductory Section - contains this letter of transmittal, administrative organization, and the Plan Summary.
2. Financial Section - contains the report of the independent auditors, the financial statements of ERF, and certain required supplementary information.
3. Investment Section - contains a report on investment activity, investment policies, investment results, and various investment schedules.
4. Actuarial Section - contains an actuary's certification letter and the results of the annual actuarial valuation.
5. Statistical Section - contains significant data pertaining to ERF.

We trust that you and the members of ERF will find this CAFR helpful in understanding the retirement plan.

Plan Overview

ERF was established by ordinance in November 1943 and became effective in January 1944 after ratification by the voters of the City of Dallas. ERF is a single-employer defined benefit pension plan sponsored by the City of Dallas, Texas (the "City"), and it provides retirement, disability, and death benefits to its members. All employees of the City are members except police officers, firefighters, elected officers, non-salaried appointee members of administrative boards or commissions, temporary employees, individuals working under contract, and individuals whose salaries are paid in part by another government agency. Members are entitled to retirement benefits at the date of eligibility for retirement or to survivor benefits after two years of service.

Investments

The Board of Trustees oversees ERF's portfolio, managers, and performance, as well as reviews and approves potential investment opportunities, with input from the investment consultant and staff. The Board follows the "prudent person rule" which states that fiduciaries shall discharge their duties solely in the interest of ERF and its participants and beneficiaries with the degree of diligence, care and skill which prudent men and women would ordinarily exercise under similar circumstances in such a position.

Employees' Retirement Fund of the City of DALLAS ®

An integral part of the overall investment policy is the strategic asset allocation policy. This policy is designed to provide an optimal diversification to reduce risk and maximize the total rate of return relative to risk. This emphasizes a diversification of the portfolio that protects ERF from declines that a particular asset class may experience in a given period. The Plan had a return of 17.6% for 2019, in comparison to -4.4% for 2018, and 13.3% in 2017. The Plan expects and assumes an investment rate of 7.25% over the long term, which encompasses many years in the future.

Additions to Plan Net Position

The collection of employer and member contributions, as well as income from investments, is intended to provide the reserves needed to finance retirement benefits. Contribution and net investment income, including unrealized gains and losses, for 2019 total $671.7 million.

City and member contributions for the fiscal year were $120.5 million an increase of $2.8 million from the prior year. This increase is primarily attributable to merit raises. The City's contribution rate toward the pension plan was 14.20% in 2019. The City's total contribution rate was 22.68%, of which 8.48% was for debt service payments on pension obligation bonds. The members' contribution rate remained unchanged in 2019 at 13.32%. The City's contributions to the Plan in 2019 were $62.2 million and members' contributions were $58.3 million.

Deductions to Plan Net Position

The principal purpose for which ERF was established is to provide retirement benefits, survivor benefits, and total and permanent disability benefits to qualified members and their beneficiaries. The cost of such programs includes recurring benefit payments, refund of contributions to terminated employees, and the cost of administering ERF.

Deductions for fiscal year 2019 totaled $296.0 million, an increase of 5.7% over 2018. This increase is primarily due to an increase in the number of refund applicants, benefit payments, and administrative expenses. Administrative expenses, which are controlled by a budget approved by the Board of Trustees, increased from the prior year by $29 thousand.

Accounting System and Internal Controls

This CAFR was prepared to conform with accounting principles generally accepted in the United States of America ("GAAP") that apply to governmental accounting for fiduciary funds. The accompanying financial statements are prepared using the accrual basis of accounting. Member and employer contributions are recognized in the period in which employee services are performed. Expenses are recorded when the corresponding liabilities are incurred, regardless of when payment is made.

The statistical section presents detailed information, typically in ten-year trends, that assists users in utilizing the basic financial statements, notes to basic financial statements, and required supplementary information to assess the economic condition of a government. The statistical section is a required part of a CAFR.

In developing and evaluating ERF's accounting system, it was determined that internal controls adequately safeguard assets and provide reasonable assurance of proper recording of financial transactions.

Employees' Retirement Fund of the City of DALLAS ®

Funding

A pension fund is well funded when it is receiving enough money to meet all expected future obligations to its participants. ERF's funding objective is to meet long-term benefit payments through contributions that remain approximately level as a percent of member payroll. The actuarial accrued liability and actuarial value of assets of ERF as of December 31, 2019 amounted to $4.863 billion and $3.683 billion, respectively. A detailed discussion of funding is provided in the Actuarial Section of this report.

Professional Services

Consultants are appointed by the Board of Trustees to perform professional services that are essential to the effective and efficient operation of ERF. An opinion from the certified public accounting firm of Grant Thornton LLP, the actuarial report from Gabriel, Roeder, Smith & Company, and the investment consultant letter from Wilshire Associates are included in this report. The consultants appointed by the Board of Trustees are listed in the Introductory Section.

Awards and Acknowledgements

The Government Finance Officers Association of the United States and Canada ("GFOA") awarded a Certificate of Achievement for Excellence in Financial Reporting to the Employees' Retirement Fund of the City of Dallas for its CAFR for the fiscal year ended December 31, 2018. The Certificate of Achievement is a prestigious national award recognizing conformance with the highest standards for preparation of state and local government financial reports. This was the third consecutive year that ERF had achieved this prestigious award. To be awarded a Certificate of Achievement, the ERF had to publish an easily readable and efficiently organized CAFR that satisfied both GAAP and applicable program requirements.

A Certificate of Achievement is valid for a period of one year. We believe our current report continues to conform to the Certificate of Achievement Program requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

The compilation of this report reflects the combined effort of the staff under the leadership of the Board of Trustees. It is intended to provide complete and reliable information as a basis for making management decisions, as a means of determining compliance with legal provisions, and as a means of determining responsible stewardship of the funds of ERF. The report is available to all members of ERF.

We would like to express our gratitude to the staff, the advisors, and others who have worked so diligently to assure the successful operation of ERF.

Respectfully submitted,

Cheryl D. Alston
Executive Director/Chief Investment Officer

Edward R. Scott
Chief Financial Officer

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Employees' Retirement Fund of the City of Dallas, Texas

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

December 31, 2018

Executive Director/CEO

ADMINISTRATIVE STAFF

As of December 31, 2019

Cheryl D. Alston
Executive Director/Chief Investment Officer

David K. Etheridge
Deputy Director

Edward Scott, CPA
Chief Financial Officer

Natalie Jenkins Sorrell
Deputy Chief Investment Officer

Duc Lam
Chief Technology Officer

Melissa Harris
Chief of Communications

C. Kay Watson
Chief Compliance Officer

Juan Carlos Ayala
Benefit Counselor

Joshua Berman
Investment Analyst

Ruby Castelano
Senior Office Assistant

Anita Gage
Senior Pension Specialist

Micaela Galicia
Pension System Specialist

Yvonne Garcia
Administrative Specialist II

Re'Gine Green
Pension Officer

Todd Green
Pension Officer

Andrea Houston
Pension Officer

Patricia Jack
Pension Officer

Jessie Jeyakumar
System Analyst

Kaleb Jones
Pension Officer

Naveed Khan
Senior Accounting Specialist

Margaret Lara
Administrative Specialist II

Susan Oakey
Compliance Officer

Aditi Patel
Communications Specialist

Al Perez
Pension Officer

Phong Pham
Cyber Security Administrator

Kate Shaw
Communications Specialist

Jaladhi Shukla
Investment Analyst

Nicole Spencer-Berry
Senior Pension Specialist

Jody Thigpen
Senior Web Developer

Jason Thompson
System Administrator

Trevor Thompson
Desktop Support Engineer

Mubina Tukulic
Communications Specialist

Saki Vimal
Senior Accounting Specialist

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PROFESSIONAL SERVICE PROVIDERS

As of December 31, 2019

MASTER CUSTODIAN
The Northern Trust Company

CONSULTING ACTUARY
Gabriel, Roeder, Smith & Company

INVESTMENT CONSULTANT
Wilshire Associates

INVESTMENT ACCOUNTING FIRM
STP Investment Services

AUDITOR
Grant Thornton, LLP

LEGAL ADVISORS
FisherBroyles LLP
Foster Garvey PC
Locke Lord LLP

PLAN SUMMARY

Summary of Key Provisions
Employees' Retirement Fund of the City of Dallas
As of December 31, 2019

Membership

An employee becomes a member upon permanent employment and contributes to the Plan. Tier A members were hired prior to January 1, 2017. An amendment to the governing documents passed by voters on November 8, 2016 created a new tier of benefits, Tier B, for members hired on or after January 1, 2017.

Contributions

Member: 37% of the current adjusted total obligation rate. New rates effective October 1 after the valuation date.

City: 63% of the current adjusted total obligation rate. New rates effective October 1 after the valuation date.

Definitions Final Average Salary:

Tier A
Average monthly salary over the member's highest three years of service.

Tier B
Average monthly salary over the member's highest five years of service.

Credited Service:
Length of time as an employee of the City of Dallas and while making contributions to the Plan.

Retirement Pension Eligibility

Tier A

a. Attainment of age 60; or
b. Attainment of age 55 (if credited service began before May 9, 1972); or
c. At any age after completion of 30 years of credited service with a reduced benefit before age 50; or
d. Attainment of age 50, if the sum of an active member's age and credited service is at least equal to 78.

Tier B

a. Attainment of age 65 and 5 years of service; or
b. At any age after completion of 40 years of credited service; or
c. At any age if the sum of an active member's age and credited service is at least equal to 80. Under this eligibility rule, the member's pension will be actuarially reduced for each year prior to the age of 65 that the member retires.

Retirement Benefits

Tier A
The retirement benefit equals 2-3/4% multiplied by average monthly salary multiplied by credited service limited to a maximum of 36.3636 years plus a monthly $125 health supplement (prorated for service less than 5 years).

Tier B
The retirement benefit equals 2-1/2% multiplied by average monthly salary multiplied by credited service limited to a maximum of 40 years (no monthly health supplement).

Form of Payment

Tier A
An unreduced pension benefit under a joint and one-half survivor option with 10 years guaranteed or a ten-year certain and life option. An actuarially equivalent joint and full survivor option is also available after 15 years of service.

Tier B
An unreduced pension payable for life with 10 years guaranteed. Actuarially equivalent joint and survivor options (50% and 100%) are also available.

Deferred Retirement

Eligibility:
Deferred retirement pension benefit commencing at age 60 for Tier A members or at age 65 for Tier B members with at least five (5) years of credited service if accumulated contributions are left on deposit with the Fund.

Monthly Benefit:
The deferred retirement benefit is equal to the retirement pension based on earnings and credited service at the time of termination.

Disability Retirement Pension

Non-Service Disability:

Eligibility:
Five (5) years of service if active or ten (10) years of service if deferred vested and totally and permanently incapacitated for duty.

Monthly Benefit:
Computed based on average monthly earnings and credited service at time of disability but not less than 10 times the percentage multiplied by the average monthly earning.

Service Disability:

Eligibility:
Totally and permanently incapacitated from the further performance of duty as a result of injury while in the course of employment for the City.

Monthly Benefit:
Calculated as a non-service disability pension but not less than $1,000 per month.

Death Benefits

Form:
Benefit paid in accordance with the option on file; or the eligible option; or, if no eligible beneficiary, a lump sum equivalent of 10 years of benefit payments to the member's estate.

Monthly Benefit:
Based on average monthly earnings and credited service at death but not less than 10 times the percentage multiplier multiplied by the average monthly earnings.

Minimum Service Death Benefit:
Not less than $1,000 per month if death resulted from a service-related injury.

Return of Accumulated Contributions

A member at the time of termination is entitled to be paid accumulated member contributions without interest.

Cost-of-Living Adjustment

An annual cost-of-living adjustment to the base pension benefit shall be made based on the greater of:

a. The percentage of change in the price index for October of the current year over October of the previous year, up to 5% for Tier A and 3% for Tier B or
b. The percentage of annual average change in the price index for the 12-month period ending with the effective date of the adjustment, up to 5% for Tier A and 3% for Tier B.

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DALLAS AURORA FESTIVAL

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

FINANCIAL STATEMENTS

As Of December 31, 2019 and 2018
With Independent Certified Public Accountant's Report Thereon

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GRANT THORNTON LLP
1717 Main Street, Suite 1800
Dallas, TX 75201-4667

D +1 214 561 2300
F +1 214 561 2370

REPORT OF INDEPENDENT CERTIFIED PUBLIC ACCOUNTANTS

The Board of Trustees
Employees' Retirement Fund of the City of Dallas, Texas

We have audited the accompanying financial statements of Employees' Retirement Fund of the City of Dallas (the "Plan"), which comprise the statements of fiduciary net position as of December 31, 2019 and 2018, and the related statements of changes in fiduciary net position for the years then ended, and the related notes to the financial statements.

Management's responsibility for the financial statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; 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.

Auditor's 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 auditor's 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 Plan'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 Plan'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, information regarding the Employees' Retirement Fund of the City of Dallas, Texas' fiduciary net positon as of December 31, 2019 and 2018 and changes therein for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Required supplementary information
Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, the Schedule of Changes in Net Pension Liability and Related Ratios, the Schedule of Money-Weighted Rates of Return, the Schedule of the Net Pension Liability, and the Schedule of Contributions be presented to supplement the basic financial statements. Such information, although not a required 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. This required supplementary information is the responsibility of management. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America. These limited procedures consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits 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 information
Our audits were conducted for the purpose of forming an opinion on the financial statements as a whole. The Schedule of Administrative Expenses, Schedule of Investment Expenses, and Schedule of Payments for Professional Services are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such supplementary information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audits of the basic financial statements and certain additional procedures. These additional procedures included comparing and reconciling the information directly to the underlying accounting and other records used to prepare the basic financial 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, the supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

GrantThornton

Other information

Our audits were conducted for the purpose of forming an opinion on the financial statements as a whole. The introductory, investment, actuarial, and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information has not been subjected to the auditing procedures applied in the audits of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

Grant Thornton LLP

Dallas, TX
July 8, 2020

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MANAGEMENT'S DISCUSSION AND ANALYSIS

Required Supplementary Information

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MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

The Management's Discussion and Analysis of the Employees' Retirement Fund of the City of Dallas ("the Plan") financial performance provides an overview of the financial activities and funding conditions for the fiscal years ended December 31, 2019, 2018, and 2017. The intent of this discussion and analysis is to give a narrative overview and analysis of the Plan's financial performance as a whole. For more detailed information regarding performance, readers should also review the Financial Statements, Notes to the Financial Statements, and Required Supplementary Information in order to enhance their understanding of the Plan's financial performance.

FINANCIAL STATEMENTS

The Plan is a defined benefit plan that provides retirement, disability, and death benefits to full-time and permanent part-time civilian employees of the City of Dallas ("the City"). The Plan has two basic Financial Statements:

- A Statement of Fiduciary Net Position that provides information about the fair value and composition of plan assets, plan liabilities, and fiduciary net position; and
- A Statement of Changes in Fiduciary Net Position that provides information about the year-to-year Changes in Fiduciary Net Position.

There are also notes to the Financial Statements that include a brief Plan description, a summary of significant accounting policies, and information about contributions, legally required reserves, investment concentrations, and the net pension liability. The report also contains required supplementary information in addition to the basic financial statements. Collectively, this information presents the Net Position Restricted for Pension Benefits and summarizes the Changes in Net Position for those benefits.

FINANCIAL HIGHLIGHTS

Fiscal year 2019 experienced an increase in investments. The Plan's Financial Highlights for fiscal year ended December 31, 2019 are as follows:

- The Plan had a return of 17.6% for the year, a 5-year return of 6.5% and 10-year return of 8.6%.
- The Net Position Restricted for Pension Benefits was $3.7 billion as of December 31, 2019. This amount reflects an increase of $376 million from last year. This growth is primarily the result of net increases in investments.
- Total contributions for fiscal year 2019 were $120.5 million, an increase of approximately $2.8 million from last fiscal year. This is primarily attributed to a merit pay increase.
- Pension benefits paid to retirees and beneficiaries increased $14 million in 2019 compared to 2018, bringing the total benefit payments to $278 million. Refunds of contributions paid to former members after termination of employment were $10 million for 2019 and $9 million for 2018.
- Net Investment Income (net appreciation/(depreciation) in the fair value of investments, plus interest and dividend income, less investment expenses) increased $719 million compared to last fiscal year.
- Administrative Expenses of $7.5 million in 2019 were slightly higher than 2018.

CONDENSED FINANCIAL INFORMATION
($ in thousands)

As of and for the FY Ended December 31,	2019	2018	2017
Fiduciary Net Position			
Assets	$4,325,968	$4,120,996	$4,381,562
Liabilities	667,880	838,683	769,302
Fiduciary Net Position Restricted for Pension Benefits	$3,658,088	$3,282,313	$3,612,260
Changes in Fiduciary Net Position			
Additions:			
Employer contributions	$62,177	$60,924	$58,966
Employee contributions	58,314	56,772	55,175
Investment & other income/(loss), net	551,243	(167,662)	413,717
Deductions:			
Benefit payments	$278,007	$263,981	$253,534
Refund of contributions	10,436	8,515	8,156
Administrative expenses	7,513	7,484	5,951
Depreciation expense	3	1	-
Change in Fiduciary Net Position Restricted for Pension Benefits	$375,775	($329,947)	$260,217
Net Position Restricted for Pension Benefits:			
Beginning of Year	3,282,313	3,612,260	3,352,043
End of Year	$3,658,088	$3,282,313	$3,612,260

FINANCIAL POSITION AND RESULTS OF OPERATIONS

The Plan’s total investment return for fiscal year 2019 was 17.6% as compared to -4.4% in 2018 and 13.3% in 2017. The one-year return was below the policy benchmark of 18.3%. The Plan has performed well over longer time periods. The Plan’s 5-year return is 6.5% and the 10-year return is 8.6%, which is above the policy benchmark of 6.3% and 8.3%, respectively.

Overall, all of the Plan’s asset classes recorded gains for the year. The best performing asset classes in 2019 were Domestic Equity and Global Equity, returning 29.1% and 22.8%, respectively. High Yield Fixed Income returned 14.1% for the year.

The Plan’s Fiduciary Net Position increased from $3.3 billion in fiscal year 2018 to $3.7 billion in 2019, an increase of approximately $0.4 billion. This growth is primarily due to an increase in the fair value of equity investments, specifically Domestic, International, and Global Equity. Additions to the Plan’s Fiduciary Net Position consist of employer and employee contributions and investment income. For fiscal year 2019, additions to Fiduciary Net Position reflect an increase of $722 million, in comparison to 2018. City and employee contributions for fiscal year 2019 were $62 million and $58 million, respectively. Total contributions for 2019 were $120 million compared to $118 million in 2018 and $114 million in 2017.

Net investment income/(loss) is presented net of investment expenses and is comprised of interest, dividend income, gains/(losses) from the sale of investments, net unrealized appreciation/(depreciation) in the fair value of investments, and net income from securities lending activities. For fiscal year 2019, the Plan had a net investment income of $551 million, (excluding non-investment income of $301 thousand) compared to a net investment loss of $168 million in fiscal year 2018.

Fiscal year 2019 liabilities of $668 million showed a decrease of 20% from fiscal year 2018 liabilities of $839 million. Liabilities for 2018 increased $218 million or 9.7% over 2017. The decrease in 2019 was primarily due to decreased securities lending activity, and decreased use of currency contracts by the managers to hedge against changes in foreign currency rates in accordance with the managers' investment strategies and goals. Year-end balances for securities purchased were $15 million in 2019, $9 million in 2018 and $13 million in 2017. Foreign currency contracts at year end were $433 million in 2019, $548 million in 2018 and $458 million in 2017. The changes were due to investment managers' portfolio management.

Deductions from Fiduciary Net Position are largely from benefit payments. During fiscal year 2019, the increase is attributable to new retirements, as was the increase between 2018 and 2017.

New retirements were 376, 314 and 354, respectively, for fiscal years 2019, 2018 and 2017. Cost of Living Adjustments ("COLA") were 2.7% in 2019, 2.1% in 2018 and 1.4% in 2017. A COLA is granted effective January 1 of each year if there is an increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers ("CPI-W") based on the greater of either a) the change from October of the prior year to October of the current year; b) the monthly average change; or c) zero. During fiscal year 2019, refunds of contributions amounted to $10.4 million (726 refunds), compared to 2018 refunds of $8.5 million (626 refunds) and 2017 refunds of $8.2 million (546 refunds). The fiscal year 2019 refund amount reflects an increase in the number of members requesting refunds as compared to fiscal year 2018. Administrative expenses of approximately $7.5 million represent approximately 2.5% of total deductions for the year.

CURRENT ENVIRONMENT

Plan membership for active members decreased during fiscal year 2019. Active membership as of December 31, 2019 decreased from 7,584 to 7,427 members, a decrease of 1.0%. For 2019, the number of new retirements was 376 compared to 314 in 2018. The trend of benefit payments continues to increase. Similar to most mature plans, benefit payments exceed the level of contribution revenue received, and cash generated from investments is needed in order to meet benefit payments.

An actuarial valuation of the Plan's assets and benefit obligations is performed annually by an independent firm, Gabriel, Roeder, Smith & Company ("GRS"). Based on the actuarial value of assets, the funded ratio of the Plan decreased from 80.0% in 2018 to 75.7% in 2019 primarily due to changes to the Plan's actuarial assumptions. The Unfunded Actuarial Accrued Liability ("UAAL") increased from $907 million as of December 31, 2018 to $1.18 billion as of December 31, 2019. Based on accounting principles generally accepted in the United States of America ("GAAP") requirements, the Plan Fiduciary Net Position as a percentage of the Total Pension Liability was 64.65% in 2019 as compared to 59.16% in 2018. This is due to a blended discount rate of 5.93% in 2019. See Note 10 (c) for more information regarding the discount rate.

CONTACTING THE PLAN'S FINANCIAL MANAGEMENT

This financial report is designed to provide a general overview of the Plan's finances. Questions and requests for additional information should be addressed to the Employees' Retirement Fund of the City of Dallas, 1920 McKinney, 10th Floor, Dallas, TX 75201.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Statements of Fiduciary Net Position
December 31, 2019 and 2018
($ in thousands)

	2019	2018
ASSETS:		
Cash and short-term investments	$ 111,496	$ 102,781
Collateral on loaned securities	208,368	270,118
	319,864	372,899
Capital Assets:		
Construction In Progress	5,431	3,186
Furniture and Fixtures, net	14	17
Total capital assets (net)	5,445	3,203
Receivables:		
Currency contracts	433,426	547,775
Accrued dividends	4,586	3,664
Accrued interest	9,293	9,819
Accrued real estate income	588	-
Accrued securities lending	82	113
Securities sold	4,161	2,789
Employer contributions	2,307	2,058
Employee contributions	2,164	1,903
Total receivables	456,607	568,121
Investments, at fair value:		
Commingled index funds	176,734	152,656
Domestic equities	1,361,555	1,210,491
United States and foreign government fixed income securities	199,586	198,090
Domestic corporate fixed income securities	797,531	713,543
International equities	511,041	419,497
Investments, at estimated fair value:		
Private equities	267,422	245,809
Real estate	230,183	236,687
Total investments	3,544,052	3,176,773
Total assets	4,325,968	4,120,996
LIABILITIES:		
Accounts payable	7,267	7,455
Payable for securities purchased	14,884	8,597
Investment fees payable	3,563	3,564
Currency contracts	433,426	547,775
Currency contract losses	372	1,174
Securities lending collateral	208,368	270,118
Total liabilities	667,880	838,683
NET POSITION		
Net Investment in capital assets	5,445	3,203
Unrestricted	3,652,643	3,279,110
Net position RESTRICTED for PENSION benefits	$ 3,658,088	$ 3,282,313

(A Schedule of Net Pension Liability is presented on page 52)

The accompanying notes are an integral part of these financial statements.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Statements of Changes in Fiduciary Net Position
December 31, 2019 and 2018
($ in thousands)

	2019	2018
Additions:		
Contributions:		
Employer	$ 62,177	$ 60,924
Employee	58,314	56,772
Total contributions	120,491	117,696
Net investment income:		
Dividends	59,827	57,666
Interest	47,373	46,217
Real estate dividend income	6,622	6,268
Net appreciation/(depreciation) in fair value of investments	453,838	(261,974)
Securities lending rebates paid to borrowers	(5,972)	(5,419)
Securities lending income	7,383	7,144
Total investment income/(loss)	569,071	(150,098)
Less investment expenses:		
Investment management fees	(17,270)	(16,825)
Custody fees	(125)	(126)
Consultant fees	(452)	(389)
Securities lending management fees	(282)	(345)
Total investment expenses	(18,129)	(17,685)
Net investment income/(loss)	550,942	(167,783)
Other income	301	121
Total additions	671,734	(49,966)
Deductions:		
Benefit payments	278,007	263,981
Refund of contributions	10,436	8,515
Administrative expenses	7,513	7,484
Depreciation expense	3	1
Total deductions	295,959	279,981
Net increase/(decrease) in net position restricted for pension benefits	375,775	(329,947)
Net position RESTRICTED FOR PENSION benefits		
Beginning of year	3,282,313	3,612,260
End of year	$ 3,658,088	$ 3,282,313

The accompanying notes are an integral part of these financial statements.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

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1) Description of the Plan

General

a) The Employees' Retirement Fund of the City of Dallas ("ERF" or the "Plan") is a single-employer defined benefit pension plan that provides retirement, disability, and death benefits to its members, and is sponsored by the City of Dallas, Texas (the "City"). All employees of the City are members in the Plan, except police officers, fire-fighters, elected officers, non-salaried appointee members of administrative boards or commissions, part-time employees working less than one-half time, temporary employees, individuals working under contract, and individuals whose salaries are paid in part by another government agency. Members are entitled to retirement benefits after five years of service and to survivor benefits after two years of service or at the date of eligibility for retirement. The Plan was established and derives its authority to continue in operation from Chapter 40A of the Dallas City Code ("Chapter 40A"). The description of the Plan provisions in this report is for financial disclosure only. It is not intended to create or reduce legal rights. The rights and responsibilities of the Board of Trustees, the Plan, the members and the retirees are governed by the Plan as set forth in Chapter 40A. As of December 31, 2019 and 2018, the Plan's membership consisted of:

	2019	2018
Retirees and beneficiaries currently receiving benefits and inactive members entitled to benefits but not yet receiving them	9,071	8,716
Current members:		
Vested	4,302	4,420
Non-vested	3,125	3,164
Total current members	7,427	7,584
Total membership	16,498	16,300

Plan Administration

b) The Plan is governed by seven Board members, consisting of three members appointed by the City Council who may be Council members, three employee members of the Plan (elected by the membership) and the City Auditor (serving ex officio). The Board has general powers and duties to administer the Plan, including appointing an administrator to carry out the business of the Board, investing the assets of the Plan, making expenditures from the Plan, and determining members' eligibility for benefits.

Based on a Plan amendment passed by the voters of the City of Dallas in November 2004, the Board annually increases or decreases contribution rates in a ratio where the City pays 63% and the employee pays 37% of the contribution rate as determined by the actuarial valuation. The Plan requires notice to the City of the contribution rates and provides procedures by which the City may review and challenge those rates; codifying the Board's policies and procedures relating to the Plan's actuarial process and the City's participation in the selection of an actuarial firm to perform a peer review/audit; increasing the Board from five members to seven by adding another employee-elected representative and another council-appointed representative effective

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

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March 1, 2005; increasing from three to four the number of Board members required to constitute a quorum; increasing the terms of the employee-elected representatives from two to three years; requiring Council approval before the Board may grant temporary or permanent discretionary adjustments to retirement benefits over and above the regular cost-of-living increases; correcting section references to the term "qualified recipient"; and authorizing either the Council or the Board to propose amendments to Chapter 40A, subject to approval by the Board, the Council, and the voters of the City.

Based on a Plan amendment passed by the voters of the City of Dallas in November 2016, a new tier of benefits was added to the Plan (Tier B), effective January 1, 2017. Benefits provided to each tier of membership are outlined below.

The Plan may be terminated only by ordinance recommended by the Board, adopted by the City Council, and approved by a majority of the voters of the City voting in a general or special election. The Plan does not address allocation of the net position in the event of termination.

c) Pension Benefits

Tier A

Members of the Plan hired before January 1, 2017, are entitled to pension benefits equal to 2.75% of the average monthly earnings for each year of credited service. Average monthly earnings are based on the most beneficial to the member and are determined based on the member's earnings for the highest three calendars years, last 6,240 hours of credited services, or the length of credited service if less than three years. Normal retirement age is 55 if credited service began before May 9, 1972 or age 60.

Tier A members are also eligible to retire at age 50 if the sum of the member's age and credited service is equal to or greater than 78. Members who have completed 30 years of credited service may alternatively elect retirement before age 50; however, the pension benefits will be actuarially reduced based on the member's age at retirement.

Tier B

Members of the Plan hired on or after January 1, 2017 are entitled to pension benefits equal to 2.5% of the average monthly earnings of the member for each year of credited service. Average monthly earnings are based on the most beneficial to the member and are determined based on the member's earnings for the five highest calendar years, last 10,400 hours of credited service, or the length of credited service if less than five years. Normal retirement age is 65 with five years of credited service.

Tier B members who have completed 40 years of credited service may elect retirement at any age and are entitled to full pension benefits. Members who elect retirement before age 65 are entitled to an actuarially reduced pension benefits depending upon the age of the member. Active members may also elect to retire with actuarially reduced benefit once a combination of their age and years of service equal at least 80.

d) Cost of Living Adjustments

Cost of living adjustments for retirees are made each year on the first of January by adjusting the pension base by the percentage change of the Consumer Price Index ("CPI"), not to exceed 5% for Tier A and 3% for Tier B members. The cost of living adjustment effective January 2019 was 2.69% and 2.05% effective January 2018.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

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e) Disability and Death Benefits

Members who become totally and permanently disabled may qualify for a service-connected disability with no minimum service requirement, or a non-service connected disability with five or more years of credited service. Non-service connected benefits are based on actual credited service or a minimum of 10 years. Service-connected benefits are equal to normal retirement benefits or a minimum of $1,000.

Upon the death of an active married member with less than 15 years of service, the joint and one-half survivor option is the automatic death benefit.

If an active member has at least 15 years of service and is eligible to retire, the member may elect the joint and full survivor option. Under this option, the member receives a reduced base pension payment which is actuarially computed based on the member's age, average monthly earnings, years of credited service at retirement, and the relative age of the spouse. Upon the death of the member, this option pays the full amount of the member's pension payment to the surviving spouse for life.

Upon the death of a member before retirement, death benefits equal to the normal retirement benefit will be paid to a qualified recipient: surviving spouse, minor child under age 18, a disabled child who became disabled before age 18, a dependent parent, or a parent over age 65. Death benefits vary depending on the beneficiary. The surviving spouse, the disabled child, or the dependent parent will receive a lifetime benefit unless the ten-year option is taken. The minor child under age 18 will receive the normal retirement benefit for ten years or until reaching age 18. If the member has less than two years of credited service, the member's contributions will be refunded.

Upon the death of a retired member, a death benefit is paid in accordance with the option selected by the member at retirement. If there are no qualified recipients at the time of death and benefits have not been paid for ten years, death benefits are paid to the designee (an estate, a person or an entity) named by the member. The designee will receive a lump-sum payment based on ten years of benefit payments when the member's death occurs before retirement. If death occurs after retirement, the designee will receive a commuted lump-sum payment representing the balance of a guaranteed ten-year period starting from the date of retirement.

If a member does not have an eligible beneficiary, death benefits will be paid to the designee or member's estate in one commuted value payment. Benefit payments will vary depending on whether death occurred before or after retirement. Upon the death of a member before retirement, the designee or member's estate will receive a lump-sum payment based on ten years of benefit payments. Upon the death of a retired member, the designee or estate will receive a commuted value lump-sum payment representing the balance of a guaranteed ten-year period starting from the date of retirement.

f) Contributions

If employment ends before attaining five years of service and before attaining eligibility for retirement, the member's contributions will be refunded upon written request to the Plan.

If a member's employment is terminated after five years of service, the member may elect a refund of contributions upon a written request, or the member may elect to receive pension benefits at normal retirement age equal to the amount accrued to the date of termination.

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Based on the authorization in the Plan, the annual actuarial valuation will establish any new contribution rates for employees and the City. The new rates, which became effective October 1, 2019, are 13.32% for employees and a combined rate of 22.68% of pay for the City. The City's 22.68% is divided into 14.20% to the Plan and 8.48% for debt service payments on the pension obligation bonds. The former rates, effective October 1, 2018, were 13.32% of pay for employees and a combined rate of 22.68% of pay for the City.

The percent contributed may vary from the legally required rate as the annual required contribution is based upon covered payroll as of the actuarial valuation date, December 31, whereas contributions are calculated and paid based upon actual payrolls throughout the year. Certain factors, such as changes in benefit provisions, the size or composition of the population covered by the Plan or the actuarial assumptions used, may significantly affect the identification of trends in the amounts reported in the Schedule of Net Pension Liability and Schedule of Changes in Net Pension Liability located in the Required Supplementary Information section.

2) Summary of Significant Accounting Policies

a) Basis of Accounting

The accompanying financial statements are prepared on the economic resources measurement focus and accrual basis of accounting. Accordingly, interest earned but not received and dividends declared but not received as of the Plan's fiscal year end are recorded as accrued interest and dividends receivable, respectively. Contributions owed but not received as of the Plan's fiscal year end are recorded as contributions receivable. Benefits and refunds are recorded when paid. In addition, unsettled investment purchases and sales are accrued.

b) Administrative Expenses

Administrative expenses are paid from the Plan's contributions. The contribution rates calculated by the actuary take into consideration the expected administrative expenses.

c) Use of Estimates

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

d) Investments and Investment Income

The Plan's investment policy requires that investments comply at all times with applicable local, state and federal regulations. The Plan's investment policy is based upon an asset allocation study that considers the current and expected condition of the Plan, the expected long-term capital market outlook and the Plan's risk tolerance. Unless specifically permitted in the investment manager guidelines or other governing document, the investment policy prohibits the purchase of non-negotiable securities, short sales, selling on margin, puts, calls, straddles, options, or "letter" (restricted) stock. Also, unless specifically authorized in a manager's individual guidelines, the investment policy prohibits the use of derivatives (See derivatives disclosure in footnote 3).

Marketable securities are valued at fair value based on quoted market prices, where available. Purchases and sales of securities and any resulting gain or loss are recorded on a trade-date basis. Net appreciation/

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

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(depreciation) include the Plan's gains and losses on investments bought and sold as well as held during the year. In November 2019, the Plan modified the asset allocation. At December 31, 2019, the Plan was in the process of adjusting its portfolio to align with the new asset allocation. The Plan's asset allocation is shown in the following table.

Asset Class	**Allocation Percent**
US Equity	
Domestic Equity	12.5
Real Assets	12.5
REITs	2.5
Private Equity	7.5
Marketable Alternatives	2.5
Total US Equity	37.5
Non-US Equity	
International	12.5
Global	7.5
Global Low Volatility	12.5
Total Non-US Equity	32.5
Total Equity	**70.0**
Credit Opportunities	5.0
Global Investment Grade	15.0
High Yield	10.0
Total Fixed Income	**30.0**
Total Fund Allocation	**100.0**

e) Private Equity

To enhance the potential for earning higher rates of return relative to its other asset classes and to provide for broader portfolio diversification, the Plan allocates 7.5% of its total Plan portfolio to Private Equity. Recognizing that private equity investments have higher risk levels, this target of 7.5% is to be allocated within an acceptable range of 5.0% to 10.0% of private equity-oriented investments. Funding of committed capital in the private equity portfolio can occur over an extended time period and may take several years before the total allocation is fully invested. In order to reach the allocation target, a "committed" allocation up to 1.5 times the allocation is authorized. The Plan had three Private Equity managers at December 31, 2019.

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Investments in these funds as a limited partner are carried at estimated fair value. Estimated fair values of investments in private limited partnerships are determined by the fund managers or general partner based on the latest investee information available, including audited financial statements and other similar data necessary to the valuation process. The Private Equity value at December 31, 2019 and December 31, 2018 was $267 million and $246 million, respectively.

f) Real Assets

The Plan is authorized to allocate 12.5% of its portfolio to Real Assets. The Plan had two managers that manage Real Asset Funds for a value of $230 million at December 31, 2019 and $237 million at December 31, 2018. The Plan invests in Heitman's core real estate fund, Invesco's core fund, and in Invesco II which manages 1900 McKinney, LLC.

Estimated fair values of investments in these funds are determined by the fund managers based on their best estimates using fair value estimation techniques substantiated, in part, by their audited financial statements and supported by the due diligence of the Plan investment staff.

g) Foreign Currency Transactions

The Plan may enter into forward foreign currency exchange contracts for the purchase or sale of a specific foreign currency at a fixed price on a future date as a hedge against specific transactions or to position the portfolio to protect the Plan against adverse currency movements. Entering into these arrangements involves the risk of dealing with counterparties and their ability to meet the terms of the contracts. These contracts are valued at fair value at the financial statement date, and any realized and unrealized gains and losses are recorded when they are incurred.

Investments denominated in foreign currencies at December 31, 2019 and 2018 were converted to U.S. dollars at the foreign exchange rates quoted at December 31, 2019 and 2018. These foreign exchange gains and losses are included in net appreciation/(depreciation) in fair value of investments in the accompanying Statements of Changes in Fiduciary Net Position.

h) Securities Lending

The Board has authorized the Plan to enter into an agreement with The Northern Trust Company ("Northern Trust") for the lending of certain of the Plan's securities (the "Securities Lending Program" or "Program") including, but not limited to, stocks and bonds to counterparty brokers and banks ("borrowers") for a predetermined period of time and fee.

In 2009, the Board capped the securities lending exposure at $538.2 million.

i) Rate of Return

For the year ended December 31, 2019, the annual money-weighted rate of return on pension plan investment, net of investment fees, was 17.33%. The money-weighted rate of return expresses investment performance, net of investment expenses, adjusted for the changing amounts actually invested.

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Schedule of Money-Weighted Investment Returns

For Year Ended December 31	Annual Investment Returns*
2014	6.52%
2015	-1.92%
2016	8.88%
2017	13.08%
2018	-4.99%
2019	17.33%

* This schedule is intended to include information for ten years. Additional years will be included as they become available.

j) Capital Assets

Capital Assets, which include furniture, fixture, and software, are reported in the Plan's Financial Statements. Capital Assets are defined by the Plan as assets with an initial, individual cost of more than $5,000 and an estimated useful life in excess of two years. As the Plan constructs or develops additional Capital Assets each period, they are capitalized and reported at historical cost. The reported value excludes normal maintenance and repairs which are essentially amounts spent in relation to capital assets that do not increase the capacity or efficiency of the item or increase its estimated useful life.

Furniture and fixtures are depreciated using the straight line method over an estimated useful life of 5-20 years. Software is depreciated using the straight line method over an estimated useful life of 5-15 years. Construction in progress is not depreciated.

3) Derivatives

Derivatives are generally defined as contracts whose values depend on, or are derived from, the value of an underlying asset, reference rate, or index. The Plan has classified the following as derivatives:

a) Currency Forward Contracts

A Currency Forward is a contractual agreement between two parties to pay or receive specific amounts of foreign currency at a future date in exchange for another currency at an agreed upon exchange rate. Forward commitments are not standardized and carry credit risk due to the possible nonperformance by one of the counterparties. The maximum potential loss is the aggregate face value in U.S. dollars at the time the contract was opened; however, the likelihood of such loss is remote. No such losses occurred during fiscal years 2019 and 2018. Currency Forwards are usually traded over-the-counter. These transactions are entered into in order to hedge risks from exposure to foreign currency rate fluctuation and to facilitate trade settlement of foreign security transactions. Currency Forwards carry market risk resulting from adverse fluctuations in foreign exchange rates. Recognition of realized gain or loss depends on whether the currency exchange rate has moved favorably or unfavorably to the contract holder upon termination of the contract. Prior to termination of the contract, the Plan records the unrealized currency translation gain or loss based on the applicable exchange rates.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

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The Plan recognized a net realized gain on Currency Forward contracts of $2.6 million as of December 31, 2019 and a net realized loss of $2.5 million as of December 31, 2018. As of December 31, 2019, the Plan had a net unrealized loss on Currency Forward contracts of $159 thousand and a net unrealized gain of $959 thousand at December 31, 2018. These gains and losses are included in net appreciation/(depreciation) in fair value of investments in the accompanying Statements of Changes in Fiduciary Net Position.

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Currency Forward contracts outstanding at December 31, 2019 and 2018 were approximately $433 million and $548 million, respectively ($ in thousands).

Currency	2019 Currency Forward Contracts Outstanding	2018 Currency Forward Contracts Outstanding
Australian Dollar	$26,396	$ 36,152
Brazilian Real	5,318	1,642
Canadian Dollar	21,157	31,866
Chile Peso	2,619	4,651
Chinese Yuan renminbi	-	2,038
Columbian Peso	4,814	2,341
Czech Koruna	1,494	2,985
Denmark Krone	97	249
Euro	21,973	29,519
Hong Kong Dollars	5.540	4,509
Hungary Forint	671	337
Indonesia-Rupiahs	899	1,088
Indian Rupee	10,483	11,484
Israel Shekel	5	1,221
Japanese Yen	22,748	32,826
Mexican Peso	17,233	6,082
New Zealand Dollar	6,200	23,178
Norwegian Krone	19,361	22,238
Philippine Peso	4,153	1,429
Poland Zloty	2,021	1,928
Russia Ruble	6,445	3,061
Saudi Riyal	1,546	0
Singapore Dollar	1,671	3,501
South Africa Rand	6,193	4,561
South Korea Won	3,300	5,031
Swedish Krona	7,303	19,532
Switzerland Franc	2,200	11,255
Thailand Baht	166	152
Turkey Lira	963	519
Taiwan New Dollar	1,038	556
UK Pound	15,635	16,004
US Dollar	213,784	265,840
Totals	$433,426	$547,775

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b) Other Forward Contracts

Forward Contracts other than Currency Forward Contracts include rights and warrants and various other contractual agreements between two parties to buy or sell an asset at a specified price on a certain future date. Forward Contracts carry credit risk due to the possible nonperformance by one of the counterparties. The maximum potential loss is the aggregate face value in U.S. dollars at the time the contract was opened; however, the likelihood of such loss is remote. No such losses occurred during fiscal years 2019 and 2018. Forward contracts are usually traded over-the-counter. These transactions are entered into in order to hedge risks from exposure to fluctuations in prices in securities, commodities, or other financial instruments. Forward Contracts carry market risk resulting from adverse fluctuations in price. Recognition of realized gain or loss depends on whether the price of the asset has moved favorably or unfavorably to the contract holder upon termination of the contract. Prior to termination of the contract, the Plan records the unrealized gain or loss based on the applicable rates.

The Plan recognized a net realized gain on Other Forward Contracts of $1.4 million as of December 31, 2019. As of December 31, 2019, the Plan had a net unrealized gain on Forward Contracts of $306 thousand. These gains are included in net appreciation/(depreciation) in fair value of investments in the accompanying Statements of Changes in Fiduciary Net Position.

c) Swaps

A Swap is an agreement between two or more parties to exchange a sequence of cash flows over a period of time in the future. No principal is exchanged at the beginning of the Swap. The cash flows that the counterparties exchange are tied to a "notional" amount. The agreements provide, at predetermined future dates, the Plan pays interest based upon a notional principal amount and receives a return based upon the underlying instrument. Notional amounts represent the volume of outstanding transactions and do not represent the potential gain or loss associated with market risk or credit risk of such instruments. Risk associated with Swaps includes adverse movements in the underlying instrument.

The Plan recognized a net realized loss on Swaps of $70 thousand. As of December 31, 2019, the Plan had a net unrealized gain on Swaps of $27 thousand. The gains and losses are included in net appreciation/(depreciation) in fair value of investments in the accompanying Statements of Changes in Fiduciary Net Position.

d) Futures

Financial Futures are agreements to purchase or sell a specific amount of an asset at a specified delivery or maturity date for an agreed upon price. These derivative securities are used to improve yield, adjust the duration of the Fixed Income portfolio, circumvent changes in interest rates, or to replicate an index. Futures Contracts are standardized and traded on organized exchanges, thereby minimizing the Plan's risk. There were no outstanding Futures Contracts at December 31, 2019 and December 31, 2018.

The Plan recognized a net realized gain of $791 thousand. The gain is included in net appreciation/(depreciation) in fair value of investments in the accompanying Statements of Changes in Fiduciary Net Position.

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As of December 31, 2019 and 2018 open derivatives contracts values were as follows ($ in thousands):

	12/31/2019		12/31/2018	
Derivative Type	**Total Notional Value**	**Total Fair Value**	**Total Notional Value**	**Total Fair Value**
Forward Contracts	$433,426	($159)	$547,775	($959)
Other Forwards	56,523	306	8,384	95
Swap Agreements	-	27	-	(310)
Totals	$489,949	$174	$556,159	($1,174)

4) Deposit and Investment Risk Disclosures

Deposits and investments of state and local governments are exposed to risks that have the potential to result in losses. The common deposit and investment risks include custodial credit risk, credit risk, concentration of credit risk, foreign currency risk and interest rate risk. The required disclosures related to these risks and the Plan's exposures to these risks are disclosed in the following sections.

a) Custodial Credit Risk

In the event of a failure of the counterparty, custodial credit risk is the risk that the Plan will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. The Plan's custodial credit risk policy is set forth in Chapter 40A of the Dallas City Code and in the master custody agreement which includes the Securities Lending Program. All investments are registered in the name of Employees' Retirement Fund of the City of Dallas or in the name of the Plan's custodian established through a master trust custodial agreement. The securities are held by the custodian in the name of the Plan.

As of December 31, 2019 the Plan had $3.6 million or 0.1% of its approximate $3.6 billion total investments (excluding short term investments) exposed to custodial credit risk. The custodial credit risk exposure at December 31, 2018 was $2.2 million or 0.1% of total investments (excluding short term investments) of approximately $3.2 billion. These exposures were uninsured and uncollateralized deposits held by custodian banks outside of the United States. The Plan has experienced no losses on these deposits during the year.

b) Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of an investment in a single issuer. A concentration of investments in any one single issuer of debt securities presents a greater risk for loss in the event that the issuer fails on its obligations.

The Board has contracted with third party investment managers to manage the investment portfolio of the Plan, subject to the policies and guidelines established by the Board. The Plan's Concentration of Credit Risk Policy is communicated to individual managers in their guidelines through limitations or restrictions to securities, sectors, debt ratings, and other factors that may be applicable to a particular manager. As the Plan's custodian bank, Northern Trust has responsibility for the safekeeping of certain investments, handling of transactions based on the instructions of investment managers, and recordkeeping for the investment transactions.

The Plan had no investments that individually represent 5% or more of the net position available for Plan benefits at December 31, 2019.

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c) Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. Credit quality ratings for the Plan's investments in Fixed Income securities as of December 31, 2019 and 2018 are included in the following schedule. Securities are rated using Standard and Poor's quality ratings as presented following in the rating scale.

The Plan's strategic Fixed Income Investment Policy allocates 30% of the total assets to Fixed Income. The Plan's Investment Policy provides for investment of up to 15% of the Fixed Income allocation in investment grade assets, up to 10% of the Fixed Income allocation in High Yield (below Investment Grade) assets, and up to 5% for Opportunistic Credit. The Investment Grade allocation also allows selected managers to invest in non-US dollar issues on an opportunistic basis up to 20% of their portfolio assets.

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Long term bond ratings as of December 31, 2019 and 2018 are as follows (in thousands):

	2019		2018	
Quality Rating	Fair Value	Percentage of Bond Portfolio	Fair Value	Percentage of Bond Portfolio
AAA	$36,777	3.69%	$57,599	6.32%
AA+	158,783	15.92	17,386	1.91
AA	3,490	0.35	4,828	0.53
AA-	7,134	0.72	6,344	0.70
A+	4,221	0.42	6,919	0.76
A	11,090	1.11	5,692	0.62
A-	27,103	2.72	23,476	2.58
BBB+	23,644	2.37	16,478	1.81
BBB	17,590	1.76	16,429	1.80
BBB-	17,343	1.74	20,193	2.22
BB+	21,242	2.13	28,069	3.08
BB	51,300	5.15	43,445	4.77
BB-	57,767	5.79	56,002	6.14
B+	53,685	5.39	45,113	4.95
B	33,181	3.33	40,248	4.42
B-	32,453	3.26	36,414	3.99
CCC+	10,898	1.09	11,647	1.28
CCC	2,488	0.25	2,716	0.30
CCC-	187	0.02	71	0.01
CC	-	0.00	226	0.02
C	-	0.00	371	0.04
DDD	-	0.00	149	0.02
D	482	0.05	1,455	0.16
Not rated (NR)*	234,837	23.55	257,858	28.29
U.S. Government fixed income securities (NR)**	191,422	19.20	212,505	23.31
	$997,117	100.00%	$911,633	100.00%

* NR-Investments that are not rated.

**NR-U.S. Treasury Bonds and Notes are obligations of the U.S. government or explicitly guaranteed by the U.S. government and therefore are not considered to have a credit risk.

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d) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or deposit. The Plan's Foreign Currency Risk policy is communicated to those managers who are authorized to hedge currencies in their guidelines and sets specific parameters for each manager individually.

The Plan's investment policies limit the aggregate amount that can be invested in each class of investments. The Equity Investment Policy sets an allocation of 12.5% of assets to International Equity, 7.5% of assets to Global Equity and 12.5% to Global Low Volatility Equity.

The Plan's positions in International Equity securities, directly and through commingled funds, were 14.42% and 13.21% of invested assets at December 31, 2019 and 2018, respectively. The Plan's position in Global Equity securities was 4.14% and 3.75% of invested assets at December 31, 2019 and 2018, respectively. The Plan's position in Global Low Volatility Equity was 10.54% at December 31, 2019 and 10.57% at 2018. The Plan's positions in Global Fixed Income assets were 5.16% and 6.24% of invested assets at December 31, 2019 and 2018, respectively.

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EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

Non-US Dollar denominated investments at December 31, 2019 and 2018 were as follows ($ in thousands):

	2019			2018		
	U.S. Dollars Balance of Investments			U.S. Dollars Balance of Investments		
Currency	Equities	Fixed	Currency Forward Contracts	Equities	Fixed	Currency Forward Contracts
Australian Dollar	$21,768	-	$26,396	$10,060	$3,001	$36,152
Brazil Real	12,848	-	5,318	4,332	-	1,642
British Pound Sterling	72,815	-	15,635	43,953	1,899	16,004
Canadian Dollar	37,723	$6,510	21,157	30,783	-	31,866
Chile Peso	1,202	-	2,619	-	-	4,651
Columbia Peso	-	-	4,814	-	-	2,341
Czech Republic-Koruna	2,200	-	1,494	1,739	-	2,985
Denmark Krone	8,493	-	97	7,443	-	249
Euro	143,099	-	21,973	88,926	13,243	29,519
Hong Kong Dollars	51,616	-	5,540	39,485	-	4,509
Hungary-Forint	1,408	-	671	893	-	337
Indian Rupee	7,129	-	10,483	-	-	11,484
Indonesia-Rupiahs	2,442	-	899	2,606	3,934	1,088
Israel Shekel	5,108	-	5	5,006	-	1,221
Japanese Yen	124,027	-	22,748	81,183	-	32,826
Malaysia Ringgit	1,826	-	-	1,802	-	-
Mexican Peso	2,363	2,257	17,233	1,793	-	6,082
New Zealand Dollar	4,391	-	6,200	4,203	-	23,178
Norwegian Krone	6,671	-	19,361	5,256	-	22,238
Offshore-Chinese-Renminbi	6,192	-	-	3,153	-	2,038
Philippines-Pesos	1,015	-	4,153	1,029	-	1,429
Poland-Zloty	1,012	-	2,021	1,006	-	1,928
Qatar-Riyal	804	-	-	800	-	-
Russian Ruble	-	-	6,445	3,928	-	3,061
Saudi Riyal	-	-	1,546	-	-	-
Singapore Dollar	5,156	-	1,671	2,406	-	3,501
South Africa Rand	4,178	-	6,193	4,206	4,258	4,561
South Korea-Won	24,200	-	3,300	14,810	-	5,031
Swedish Krona	11,800	-	7,303	13,005	-	19,532
Swiss Franc	44,710	-	2,200	30,817	-	11,255
Taiwan New Dollar	8,626	-	1,038	3,609	-	556
Thailand Baht	7,587	-	166	7,846	-	152
Turkish Lira	2,682	-	963	585	-	519
United Arab-Dirham	163	-	-	159	-	-
Total	$625,254	$8,767	$ 219,642	$ 416,822	$26,335	$ 281,935

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

e) Interest Rate Risk

Interest rate risk is the risk that future changes in prevailing market rates of interest will have an adverse effect on the fair value of debt investments. The fair value of securities with long terms to maturity may be highly sensitive to interest rate changes.

As of December 31, 2019 and 2018 the weighted-average maturity of the bonds by bond type are as follows ($ in thousands):

	2019		2018	
Bond Category	Fair Value 12/31/2019	Weighted Average Maturity (years)	Fair Value 12/31/2018	Weighted Average Maturity (years)
Asset Backed Securities	$35,985	11.89	$ 32,791	12.20
Bank Loans	22,159	4.88	25,806	5.45
Commercial Mortgage-Backed	32,264	28.21	29,389	27.36
Corporate Bonds	545,278	7.61	493,235	7.97
Government Agencies	99,371	37.01	56,211	18.95
Government Bonds	133,870	8.76	151,413	13.33
Government Mortgage-Backed Securities	72,918	21.40	91,145	20.47
Index Linked Government Bonds	1,062	29.15	7,635	11.93
Municipal/ Provincial Bonds	22,071	19.71	13,729	20.80
Non-Government Backed CMOs	32,139	22.89	10,279	24.23
Total	$997,117		$911,633	
Portfolio weighted average maturity		11.74		11.90

Government Mortgage Backed Securities are most sensitive to changes in interest rates as their prepayments can vary significantly with interest rate changes. This change in prepayments will generally cause the duration, or Interest Rate Risk, of these securities to increase when interest rates rise and decrease when interest rates fall. These securities represent 10.95% and 11.81% of the total fixed income portfolio for 2019 and 2018 at year end. Their fair values at year end 2019 and 2018 were $109.2 million and $107.7 million, respectively. The Plan's Interest Rate Risk policy is communicated to the Fixed Income managers through the Fixed Income Asset Policy and each manager's guidelines.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

5) Appreciation or (Depreciation) of Investments

In 2019 and 2018, the Plan's investments, including investments bought, sold, and held during the year, appreciated (depreciated) in value as follows ($ in thousands):

	2019	2018
Investments, at fair value:		
Commingled index funds	$28,549	($14,086)
Domestic equities	194,224	(175,581)
United States and foreign government fixed income securities	10,777	(14,947)
Domestic corporate fixed income securities	52,599	(39,187)
International equities	125,399	(42,464)
Short-term investments	430	(447)
Currency contracts	(510)	260
	$411,468	($286,452)
Investments, at estimated fair value:		
Real Assets*	$8,091	$11,876
Private Equity	34,279	12,602
	$453,838	($261,974)

Note:
*Real Assets included MLPs in 2018 and excluded MLPs in 2019.

6) Fair Value Measurement

The Plan's investments are measured and categorized according to fair value hierarchy guidelines established by GAAP.

The definition of fair value is the 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.

These guidelines recognize a three-tiered fair value hierarchy, as follows:

- *Level 1:* Quoted prices for identical investments in active markets;
- *Level 2:* Observable inputs other than quoted market prices in active market; and,
- *Level 3:* Significant unobservable inputs.

EMPLOYEES' RETIREMENT FUND OF
THE CITY OF DALLAS
Notes to the Financial Statements
December 31, 2019 and 2018

At December 31, 2019, the Plan had the following recurring fair value measurements ($ in thousands):

	Total	Fair Value Measurements Using		
	12/31/2019	**Level 1**	**Level 2**	**Level 3**
Investments by Fair Value Level				
Cash and Short Term Investment:				
Short-Term Investment Fund	$111,496	$111,496	-	-
Total Cash and Short Term Investment	$111,496	$111,496	-	-
Fixed Income:				
Foreign Government Bonds	$8,164	-	$8,164	-
US Government and Agency Obligations	191,422	-	191,422	-
Corporate and Taxable Municipal Bonds	749,152	-	749,061	$91
Total Fixed Income	$948,738	-	$948,647	$91
Equity:				
Domestic Common and Preferred Stock	$1,153,068	$1,150,914	$244	$1,910
International Common and Preferred Stock	503,270	502,896	374	-
Total Equity	$1,656,338	$1,653,810	$618	$1,910
Directly-Owned Real Estate	$230,183	-	-	$230,183
Total Investments by Fair Value Level	$2,946,755	$1,765,306	$949,265	$232,184
Investments Measured at Net Asset Value				
Commingled Funds:				
Index Funds	$176,734			
Fixed Income	48,379			
Domestic Equity and Collective Trust	208,487			
International Equity	7,771			
Total Commingled Funds	$441,371			
Alternative Investments - Private Equity	267,422			
Total Investments Measured at Net Asset Value	$708,793			

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

At December 31, 2018, the Plan had the following recurring fair value measurements ($ in thousands):

	Total	**Fair Value Measurements Using**		
	12/31/2018	**Level 1**	**Level 2**	**Level 3**
Investments by Fair Value Level				
Cash and Short Term Investment:				
Short-Term Investment Fund	$102,781	$102,781	-	-
Total Cash and Short Term Investment	$102,781	$102,781	-	-
Fixed Income:				
Domestic Asst-Backed and Mortgage Backed	$73,347	-	$73,347	-
US Government and Agency Obligations	271,958	-	271,958	-
Domestic Corporate and Taxable Municipal Bond	543,401	-	543,401	-
Total Fixed Income	$888,706	-	$888,706	$0
Equity:				
Domestic Common and Preferred Stock	$840,247	$838,861	$0	$1,386
International Common and Preferred Stock	461,302	461,066	54	182
Total Equity	$1,301,549	$1,299,927	$54	$1,568
Directly-Owned Real Estate	$236,687	-	-	$236,687
Total Investments by Fair Value Level	$2,529,723	$1,402,708	$888,760	$238,255
Investments Measured at Net Asset Value				
Collective Trust	$481,095			
Alternative Investments				
Private Equity	245,809			
Private Debt	22,927			
Total Alternative Investments	$268,736			
Total Investments Measured at Net Asset Value	$749,831			

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

7) Securities Lending

During the year, Northern Trust lent, on behalf of the Plan, securities held by Northern Trust as Plan custodian and received cash, United States government securities, agency securities, and irrevocable bank letters of credit as collateral. Northern Trust did not have the ability to pledge or sell collateral securities absent a borrower default. Northern Trust's Core USA Collateral Section establishes requirements for participation, collateralization levels, cash and non-cash collateral guidelines, and investment guidelines for the collateral received from borrowers. Borrowers were required to put up collateral for each loan equal to: (i) in the case of loaned securities, the collateral for which is all denominated in the same currency as the loaned securities, 102% of the fair market value of the loaned securities plus any accrued but unpaid distributions thereon, and (ii) in the case of loaned securities denominated in a different currency from the loaned securities, 105% of the fair market value of the loaned securities plus any accrued but unpaid distributions thereon. Additionally, the guidelines set maturity/liquidity requirements for the collateral received from borrowers. The following table shows for open loans at December 31, 2019 and 2018, the type of collateral held, the fair value of the securities on loan, and the fair value of the collateral held ($ in thousands).

	12/31/2019			12/31/2018		
Collateral Type	Fair Value	Collateral Market Value	Collateral Percentage	Fair Value	Collateral Market Value	Collateral Percentage
Cash	$202,972	$208,368	103%	$264,410	$270,118	102%

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EMPLOYEES' RETIREMENT FUND OF
THE CITY OF DALLAS
Notes to the Financial Statements
December 31, 2019 and 2018

The following represents the balances relating to the Securities Lending transactions as of December 31, 2019 and 2018 ($ in thousands):

	12/31/2019			12/31/2018		
Securities Lent	Underlying Securities	Securities Collateral Value	Cash Collateral Investment Value	Underlying Securities	Securities Collateral Value	Cash Collateral Investment Value
Lent for cash collateral:						
Domestic equities	$103,943	$ -	$106,349	$119,521	$ -	$121,813
Domestic corporate fixed income	48,876	-	50,051	80,135	-	81,783
Global corporate fixed income	1,197	-	1,280	2,476	-	2,598
Global government fixed income	2,125	-	2,270	6,062	-	6,396
International equities	3,353	-	3,558	8,408	-	8,848
Global Agencies	205	-	215	199	-	203
US Agencies		-		497	-	505
US government fixed	43,273	-	44,645	47,112	-	47,971
Subtotal	$202,972	$ -	$208,368	$264,410	$ -	$270,118

Disclosure of securities lending income is shown gross with the associated reductions for investment expenses on the Statements of Changes in Fiduciary Net Position, and the cash collateral and associated securities lending payable is shown on the Statements of Fiduciary Net Position for December 31, 2019 and 2018. The net income from securities lending in 2019 was $1.1 million compared to $1.4 million in 2018.

8) Federal Income Tax Status

The Internal Revenue Service issued a determination letter dated May 24, 2016, stating that the Plan was designed in accordance with applicable Internal Revenue Code requirements as of that date. The Plan is currently designed and being operated in compliance with the applicable requirements of the Internal Revenue Code. Therefore, the Plan was qualified and the related trust was tax exempt as of the financial statement dates.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

9) Capital Assets

Capital Assets activity for the year ended December 31, 2019, was as follows ($ in thousands).

	Balance 12/31/2017	Increases	Decreases	Balance 12/31/2018	Increases	Decreases	Balance 12/31/2019
Capital Assets not being depreciated:							
Construction in progress	$ -	$ 3,186	$ -	$ 3,186	$ 2,245	$ -	$ 5,431
Capital Assets being depreciated:							
Furniture and fixtures	-	18	-	18	-	-	18
Less: Accumulated Depreciation for:							
Furniture and Fixtures	-	(1)	-	(1)	(3)	-	(4)
Total Capital Assets being depreciated, net of Accumulated Depreciation	-	17	-	17	(3)	-	14
Total Capital Assets, net of Accumulated Depreciation	$ -	$ 3,203	$ -	$ 3,203	$ 2,242	$ -	$ 5,445

10) Schedule of Net Pension Liability

a) The components of the net pension liability of the City at December 31, 2019 and 2018 respectively were as follows ($ in thousands).

Description	2019	2018
Total Pension Liability	$5,658,726	$5,547,964
Plan Fiduciary Net Position	3,658,088	3,282,313
Net Pension Liability	2,000,638	2,265,651
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	64.65%	59.16%

b) Actuarial Methods and Assumptions:

Valuation date Employer	December 31, 2018 for most recent Actuarially Determined Contribution ("ADEC") shown on Schedule of Contributions, December 31, 2019 for Net Pension Liability

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

Actuarial cost method	Entry Age Normal
Asset valuation method	5-year smoothed market
Amortization method	The ADEC is initially based on a 30-year open amortization period. As specified in the Plan's governing documents, the rate may not change from year to year if the calculated rate is less than 300 basis points different from the current rate.
Remaining Amortization Period	Not determined, see description of amortization method
Investment rate of return	ADEC: 7.75% NPL: 7.25%
Salary increases	ADEC: 3.25% to 6.25% including inflation NPL: 3.00% to 8.25%, including inflation
Inflation	ADEC: 2.75% per year NPL: 2.50% per year
Retirement Age	Experienced-based table of rates that are specific to the type of eligibility condition. Last updated for the December 31, 2019 valuation pursuant to an experience study of the 5-year period ended December 31, 2019.
Mortality (ADEC)	For Actives: Males – RP-2000 Employee Mortality Table for male employees, set forward 4 years. Females – RP-2000 Employee Mortality Table for female employees, set back 5 years. For Healthy Retirees: Males – RP-2000 Combined with Blue Collar Adjustment for male annuitants, with a 109% multiplier and fully generational morality using improvement scale BB. Females – RP-2000 Combined with Blue Collar Adjustment for female annuitants, with a 103% multiplier and fully generational mortality using improvement scale BB. For Disabled Lives: RP-2000 Disabled Mortality Table for male annuitants, set forward one year.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

Mortality (NPL)	For Actives: The PUB(10) Mortality Table for General Employees tables are used for males and females respectively. The rates are projected on a fully generational basis using Scale UMP. For Healthy Retirees: The gender-distinct 2019 Texas Municipal Retirees Mortality Tables are used for males and females respectively. The rates are projected on a fully generational basis by Scale UMP to account for future mortality improvements. For Disabled Lives: The gender-distinct 2019 Texas Municipal Retirees Mortality Table for males and females respectively, set forward 4 years for males and 3 years for females. The rates are projected on a fully generational basis by Scale UMP to account for future mortality improvements.

Other Information

Notes:	There were no benefit changes during the year. The assumptions described above were for the most recent ADEC shown in the schedule of contributions unless otherwise noted. The assumptions used in determining the NPL as of December 31, 2019 were those used in the actuarial valuation as of December 31, 2019 and are noted as in the Schedule of Contributions. Please see the Actuarial Valuation Report for a complete description of those assumptions.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

The long term rate of return on pension plan investments was estimated using a building block methodology in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long term expected rate of return by weighting the expected future real return rates by the target asset allocation percentage and by adding expected inflation. The following table shows the best estimates of arithmetic real rates of return for each of the Plan's asset classes.

Asset Class	Long-Term Expected Real Rate of Return
Domestic Equity	6.00%
International Equity	6.75
Global Equity	6.45
Low Volatility Global Equity	6.41
Private Equity	8.05
Core Fixed Income	2.70
High Yield Fixed Income	4.20
Credit Opportunities	5.35
REITs	4.70
Private Real Estate - Core	5.40
Private Real Estate – Value Add	8.00
MLPs	7.60
Global Public Infrastructure	7.23
Marketable Alternative	4.42

c) Discount rate: A single discount rate of 5.93% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.25% and the municipal bond rate of 2.75%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions and employer contributions will be made at the projected future contribution rates assuming that the Plan annually earns 7.25% on its market value of assets and that the number of active members remains constant in the future. Based on these assumptions and the Plan's funding policy, the last year in the single discount rate projection period for which projected benefit payments were fully funded was 2058, and the resulting single discount rate is 5.93%.

EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

Notes to the Financial Statements
December 31, 2019 and 2018

d) Sensitivity of the net pension liability to changes in the discount rate. Below is a table providing the sensitivity of the net pension liability to changes in the discount rate. In particular, the table presents the plan's net pension liability, if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher than the single discount rate:

Sensitivity of the Net Pension Liability
To the Single Discount Rate Assumption
($ in thousands)

1% Decrease	Current Single Discount Rate	1% Increase
4.93%	5.93%	6.93%
$2,748,259	$2,000,638	$1,382,052

11) Subsequent Events

The Plan has evaluated its December 31, 2019 financial statements for subsequent events through July 8, 2020, the date the financial statements were available to be issued. The Plan is not aware of any subsequent events which would require recognition or disclosure in the financial statements, except as mentioned below.

In March 2020, the World Health Organization declared the outbreak of a novel coronavirus (COVID-19) as a pandemic, which continues to spread throughout the United States. The spread of COVID-19 has caused significant volatility in U.S. and international markets. To date there has not been a material decline in investment values, however, future values and volatility are uncertain.

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REQUIRED SUPPLEMENTARY INFORMATION

(unaudited)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS

($ in thousands)

FY ended December 31,	2019	2018	2017	2016	2015	2014
Total Pension Liability						
Service Cost	$121,319	$84,843	$81,178	$133,457	$78,020	$62,065
Interest on the Total Pension Liability	325,678	332,011	325,620	305,826	313,847	290,948
Difference between Expected and Actual Experience	(4,760)	4,793	(59,066)	(38,327)	(26,829)	(21,967)
Assumption Changes	(43,302)	1,020,969	-	(1,227,079)	1,238,431	292,137
Benefit Payments	(278,007)	(263,981)	(253,534)	(243,775)	(235,106)	(225,614)
Refunds	(10,436)	(8,515)	(8,156)	(5,864)	(4,854)	(4,629)
Net Change in Total Pension Liability	110,762	1,170,121	86,042	(1,075,762)	1,363,509	392,940
Total Pension Liability - Beginning	5,547,964	4,377,844	4,291,802	5,367,564	4,004,055	3,611,115
Total Pension Liability – Ending (a)	$5,658,726	$5,547,964	$4,377,844	$4,291,802	$5,367,564	$4,004,055
Plan Fiduciary Net Position						
Employer Contributions	$62,177	$60,924	$58,966	$56,130	$50,721	$45,833
Employee Contributions	58,314	56,772	55,175	53,436	50,742	46,536
Pension Plan Net Investment Income	550,942	(167,783)	413,5110	294,918	(53,344)	207,992
Benefit Payments	(278,007)	(263,981)	(253,534)	(243,775)	(235,106)	(225,614)
Refunds	(10,436)	(8,515)	(8,156)	(5,864)	(4,598)	(4,629)
Pension Plan Administrative Expense	(7,513)	(7,485)	(5,951)	(5,343)	(4,598)	(4,150)
Other	298	121	207	333	162	157
Net Change in Plan Fiduciary Position	375,775	(329,947)	260,217	149,835	(196,277)	66,125

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS, CONT.

($ in thousands)

Plan Fiduciary Net Position - Beginning	3,282,313	3,612,260	3,352,043	3,202,208	3,398,485	3,332,360
Plan Fiduciary Net Position – Ending (b)	3,658,088	3,282,313	3,612,260	3,352,043	3,202,208	3,398,485
Net Pension Liability – Ending (a)-(b)	$2,000,638	$2,265,651	$765,584	$939,759	$2,165,356	$605,570
Plan Fiduciary Net Position as Percentage of Total Pension Liability	64.65%	59.16%	82.51%	78.10%	59.66%	84.68%
Covered Employee Payroll	$433,890	$423,083	$410,913	$402,077	$383,669	$363,109
Net Pension Liability as a Percentage of Covered Employee Payroll	461.09%	535.51%	186.31%	233.73%	564.38%	168.95%

Notes to Schedule:
The covered employee payroll is the sum of the active members’ pay for valuation purposes as of the measurement date. An active member’s valuation pay is the greater of their actual pay for the just completed calendar year or their current annual rate of pay.

SCHEDULE OF MONEY-WEIGHTED RATES OF RETURN

	2019	2018	2017	2016	2015	2014
Rate of Return	17.33%	-4.99%	13.08%	8.88%	-1.92%	6.52%

Note to Schedule: This schedule is intended to show information for ten years. Additional years’ information will be displayed as it comes available.

SCHEDULE OF CONTRIBUTIONS

Last 10 Fiscal Years
($ in thousands)

FY Ending December 31,	Actuarially Determined Contribution[1]	Actual Contributions[2]	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2010	$33,952	$27,323	$6,629	$336,490	8.12%
2011	33,612	27,302	6,310	312,380	8.74%
2012	41,570	30,363	11,207	319,274	9.51%
2013	56,394	37,823	18,571	340,748	11.05%
2014	61,747	45,833	15,914	353,650	12.62%
2015	64,648	50,721	13,927	383,669	13.22%
2016	84,316	56,130	28,186	402,077	13.96%
2017	86,785	58,966	27,819	410,913	14.35%
2018	90,328	60,924	29,404	423,083	14.40%
2019	97,558	62,177	35,381	433,591	14.34%

Notes to Schedule:

1. The Actuarially Determined Contribution (Actuarially Determined Employer Contribution, or "ADEC") shown is the employer contribution based on a 30-year open amortization period and actual payroll.

2. Since the City's fiscal year is October 1 to September 30 and the Plan's fiscal year is the calendar year, the contribution amounts shown above are a blend of the City's two fiscal year rates that occur during the calendar year.

OTHER SUPPLEMENTARY INFORMATION

(unaudited)

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SCHEDULE OF ADMINISTRATIVE EXPENSES

as of December 31, 2019

($ in thousands)

Personal Services:	
Salaries	3,228
Retirement	499
Insurance	278
Total Personal Services	**$4,005**
Professional Services:	
Actuary Service	$136
Accounting & Audit Fees	104
Legal Fees	827
Medical	12
Total Professional Services	**$1,079**
Operating Services:	
Data Processing	$268
Parking	8
Printing	71
Rent	482
Supplies and Services	95
Telephone	4
Travel and Training	163
Membership Dues	6
Board Expenses	3
Indirect and Other Costs	899
Total Operating Services	**$1,999**
Furniture & Fixtures:	
Furniture	33
Other	397
Total Furniture & Fixtures	**$430**
Total Administrative Expenses	**$7,513**

SCHEDULE OF INVESTMENT EXPENSES

as of December 31, 2019

($ in thousands)

Manager Fees	$17,270
Custodian Fees	125
Securities Lending Fees*	282
Investment Consultant Fees	452
Total Investment Expenses	**$18,129**

*Securities lending fees include broker rebates and the lending agent's fees.

SCHEDULE OF PAYMENTS FOR PROFESSIONAL SERVICES

as of December 31, 2019

($ in thousands)

Accounting and Audit:	
Grant Thornton, LLP	$48
STP Investment Services	56
Actuarial:	
Gabriel, Roeder, Smith & Company	136
Legal:	
FisherBroyles, LLP	19
Foster Garvey PC	215
Locke Lord, LLP	593
Medical:	
Various	12
Total Professional Services Payments	**$1,079**

INVESTMENT SECTION

Wilshire

Thomas Toth, CFA
Managing Director, Wilshire Associates

May 5th, 2020

Ms. Cheryl Alston
Executive Director
Employees' Retirement Fund of the City of Dallas
1920 McKinney Ave. 10th Floor
Dallas, TX 75201

Re: 2019 Performance Results

Dear Cheryl:

The purpose of this letter is to review the 2019 investment performance results of the Employees' Retirement Fund of the City of Dallas ("ERF", "the Fund").

For investors, 2019 was a sensational year, as all major asset classes increased and most produced double-digit returns. U.S. equities were as strong as they have been in six years – while international equities also produced double-digit returns. Equity markets outside of the U.S. produced very strong results in 2019, although they generally underperformed the U.S. equity market. Emerging Markets were up, in aggregate, for the quarter but generally trailed developed markets for the year. The U.S. Treasury yield curve fell in the short portion of the curve but rose across intermediate and long-term maturities. The largest increase occurred with the 20-year Treasury, up 31 basis points. U.S. core bonds in total were up around 9%, returns not seen since 2002.

In 2019, global GDP and corporate earnings growth was at the weakest pace since the global financial crisis a decade ago. Rising trade barriers and associated uncertainty weighed on business sentiment and activity globally. In some cases (advanced economies and China), these developments magnified cyclical and structural slowdowns already under way. China and other Asian economies and capital markets were impacted by the spread of the Corona Virus late in the year that would soon affect every country. Overall, U.S. GDP slowed to 2.3% in 2019, hurt by decreases in private investment and geopolitical concerns. Inflation remained moderate and aligned with the Federal Reserve's plan to modestly increase interest rates. Commodities were positive for the year, rebounding from previous years. Crude Oil was generally lower in 2019 that the previous year, averaging $64 a barrel for the year, ending 2019 at $61.06.

Overall, 2019 saw low equity volatility and positive investor sentiment. Thanks to a well-diversified investment structure, the Fund's total return participated nicely in the bull market and returned 17.6% for the year, compared to the -4.4% return the prior year. The Fund maintains positive absolute and long-term relative results versus its policy benchmark, and in stark contrast to the prior year, all the Fund's asset classes ended the year in positive territory. All equity segments posted double-digit year-to-date results ranging from 29.1% in U.S. equities to 21.5% for Global Low Volatility equities. The Fund's fixed income exposures also managed to post solid gains for the year with Global Fixed Income, Opportunistic Credit and High Yield ending the year at 9.0%, 12.0% and 14.1% respectively. Looking over a longer horizon, the Fund's track record remains in good shape as it continues to track closely with the policy benchmark while outperforming over the three-, five- and ten-year time periods.

Wilshire

The approved allocations as of the end of 2019 were:

Asset Class	Allocation
Domestic Equity	12.5%
International Equity	12.5%
Global Equity	7.5%
Global Low Volatility Equity	12.5%
Investment Grade Fixed Income	15.0%
High Yield	10.0%
Credit Opportunities	5.0%
Global Public Infrastructure	5.0%
REIT	2.5%
Private Real Estate – Core	5.0%
Private Real Estate – Value Add	2.5%
Private Equity	7.5%
Marketable Alternatives	2.5%

Wilshire

Wilshire annually publishes a research paper detailing our long-term nominal return forecast for the next ten years. Our geometric return forecasts are shown below.

	TOTAL RETURN			RISK		
	DEC. 2018	**DEC. 2019**	CHANGE	DEC. 2018	**DEC. 2019**	CHANGE
INVESTMENT CATEGORIES						
US STOCK	7.00 %	**5.75 %**	-1.25 %	17.00 %	**17.00 %**	0.00 %
DEV EX-US STOCK (USD)	7.50	**6.25**	-1.25	18.00	**18.00**	0.00
EMERGING MARKET STOCK	7.50	**6.25**	-1.25	26.00	**26.00**	0.00
GLOBAL STOCK	7.45	**6.20**	-1.25	17.05	**17.10**	0.05
PRIVATE EQUITY	10.05	**7.95**	-2.10	28.00	**28.00**	0.00
CASH EQUIVALENTS	2.65	**1.85**	-0.80	1.25	**1.25**	0.00
CORE BOND	3.85	**2.85**	-1.00	5.15	**5.15**	0.00
LT CORE BOND	4.25	**3.25**	-1.00	9.85	**9.85**	0.00
US TIPS	3.00	**2.15**	-0.85	6.00	**6.00**	0.00
HIGH YIELD BOND	5.90	**4.30**	-1.60	10.00	**10.00**	0.00
NON-US BOND (HDG)	1.25	**1.05**	-0.20	3.50	**3.50**	0.00
US RE SECURITIES	5.65	**5.00**	-0.65	17.00	**17.00**	0.00
PRIVATE REAL ESTATE	6.65	**6.60**	-0.05	14.00	**14.00**	0.00
COMMODITIES	4.35	**3.60**	-0.75	15.00	**15.00**	0.00
REAL ASSET BASKET	6.40	**5.90**	-0.50	8.75	**8.75**	0.00
INFLATION	1.70	**1.75**	0.05	1.75	**1.75**	0.00
TOTAL RETURNS MINUS INFLATION						
U.S. STOCKS	5.30	**4.00**	-1.30			
U.S. BONDS	2.15	**1.10**	-1.05			
CASH EQUIVALENTS	0.95	**0.10**	-0.85			
STOCKS MINUS BONDS	3.15	**2.90**	-0.25			
BONDS MINUS CASH	1.20	**1.00**	-0.20			

As always, we thank you for the opportunity to be of service to ERF.

Sincerely,

Thomas Toth, CFA
Managing Director
Wilshire Associates

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INVESTMENT POLICIES SUMMARY

Statement of Goals

The general investment goals are broad in nature to encompass the purpose of the Employees' Retirement Fund of the City of Dallas ("ERF" or the "Fund") and its investments. The goals articulate the philosophy by which the ERF Board of Trustees ("Board") will manage the Fund's assets within the applicable regulatory constraints.

1. The overall goal of the Fund is to provide benefits, as anticipated under the Plan document, Dallas City Code Chapter 40A, to its participants and their beneficiaries through a carefully planned and executed investment program.
2. The Fund seeks to produce the highest return on investments which is consistent with sufficient liquidity and investment risk that are prudent and reasonable, given prevailing capital market conditions. While the importance of the preservation of capital is recognized, the theory of capital market pricing which maintains that varying degrees of investment risk should be rewarded with compensating returns is also recognized. Consequently, prudent risk taking is reasonable and necessary.
3. The Fund investment program shall at all times comply with existing and applicable local, state and federal regulations.

Investment Philosophy

The Fund is long term in nature, and the selection of investments is regulated by: the investment time horizon; the limits of acceptable risk; and the objective of optimizing the total rate of return. Each investment manager is authorized to execute investment transactions on behalf of the Board.

Investment decisions are made under the framework of the goal established for the rate of return, limits of acceptable risk, and Fund objectives. The goal is to optimize the return of the portfolio, as opposed to maximizing the rate of return.

The optimal portfolio mix is one that carefully equates expected rate of return with expected risk of all investment categories utilized in the portfolio. In setting the optimal mix of assets for the portfolio, the Board has developed a strategic asset allocation policy which incorporates a diversified asset mix. The strategic asset allocation is designed to provide an optimal diversification to reduce risk and maximize total rate of return relative to risk and the existing and projected liability structure.

The Board bases its investment strategy and goals on advice obtained from the investment consultant, the staff, and the external investment managers. The Board uses the annual external audit and annual actuarial valuation in its evaluation of the Fund's performance each year.

Article XVI, Section 67 of the Texas Constitution and Chapter 40A of the Dallas City Code give complete responsibility for the management and investment actions of the Employees' Retirement Fund to the Board of Trustees. The Board is held to the standard of conduct of fiduciaries in discharging their responsibilities. According to Chapter 40A the Trustees, as fiduciaries, must carry out their functions solely in the interest of the members and beneficiaries.

Corporate Governance

The Board considers the active voting of proxies an integral part of the investment process. Proxy voting may be delegated to the discretion of investment managers retained by the Board. The managers shall be required to establish a proxy voting policy and maintain records of proxy votes and shall make these records available quarterly to the Board or its designee. The Board may at its discretion establish an overall policy of voting proxies in which case the managers' proxy voting policy shall be in accordance with that of the Board's. The Board recognizes that in certain non-U.S. markets, investment managers may, balancing the costs and benefits, not exercise proxy voting.

INVESTMENT RESULTS

The investment managers and the returns by investment category are shown in the following tables.

Time-weighted rate of return, based on fair value.

Investment Category	2019 Rate of Return
Public Real Assets (MLPs)	11.84%
High Yield Bonds	14.14%
Credit Opportunities	11.97%
Domestic Equities	29.06%
Global Low Volatility	21.54%
Real Estate	15.08%
Global Equities	22.83%
International Equities	22.60%
Private Equity	11.69%
Global Fixed Income	9.02%
Cash Equivalents	2.28%
Total Portfolio	**17.58%**

INVESTMENT MANAGERS

Domestic Equities, REITs, Master Limited Partnerships, & Commingled Index Funds

Adelante Capital Management, LLC
Atlantic Trust
CenterSquare
Channing Capital Management, LLC
Harvest Fund Advisors
Northern Trust Asset Management
Redwood Investments, LLC
Smith Graham & Co. Investments Advisors
Systematic Financial Management, LLP
T. Rowe Price Associates, Inc.

International Equities

Acadian Asset Management, LLC
AQR Capital Management, LLC
Ativo Capital Management, LLC
Baillie Gifford
Earnest Partners

Global Equity

Acadian Global Low Volatility
Ariel Investments
BlackRock, Inc.
Northern Trust Asset Management
Wellington Management Company, LLP

Fixed Income

Aberdeen Asset Management, Inc.
BlackRock, Inc.
Garcia Hamilton & Associates, L.P.
Neuberger Berman
Oaktree Capital Management, LLC
Securian Asset Management

Cash Equivalents

The Northern Trust Company

Private Equity

Fairview Capital Partners
Grosvenor Capital Management
Hamilton Lane

Real Estate

Heitman Real Estate Investment Management
Invesco Real Estate

TOTAL PLAN RESULTS

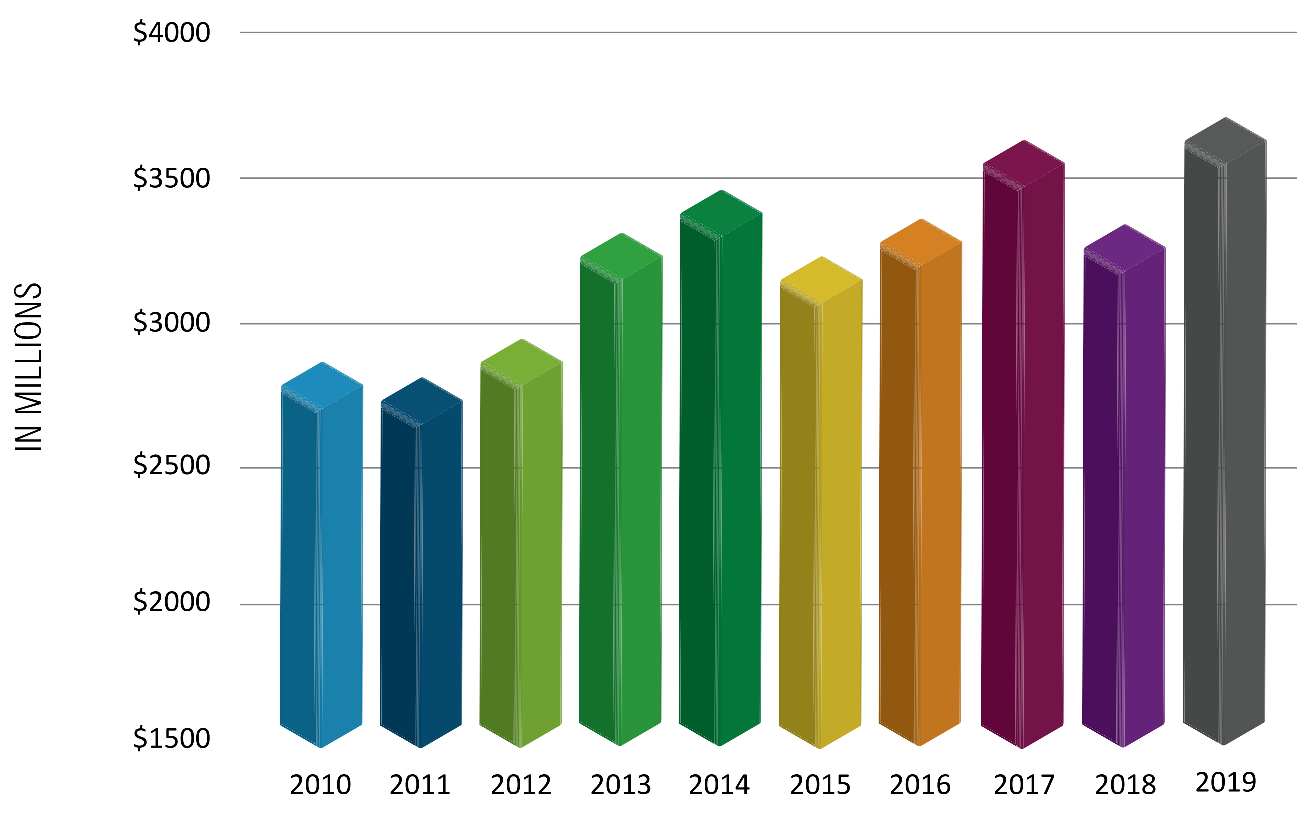
The Employees' Retirement Fund of the City of Dallas ("ERF" or "Plan") investment portfolio generated a double digit return of 17.6% (net of fees) for calendar year 2019. The best performing asset class in 2019 was Domestic Equity. ERF's Domestic Equity portfolio earned 29.1%. Both Global Equity had a return of and International Equity had a return of 22.8% and 22.6%, respectively for 2019. Global Low Volatility Equity returned 21.5%.

The Real Estate portfolio consists of publicly traded real estate called Real Estate Investment Trust ("REITs") and Private Core Real Estate. The Real Estate portfolio generated 15.1% return for the year. Public Real Assets consists of Energy Master Limited Partnerships ("MLPs"). The MLP portfolio earned 11.8%. The investment in Private Equity returned 11.7%.

Fixed Income is 30% of the ERF investment portfolio. Investment in Global Fixed Income returned 9.0%. High Yield Fixed Income investments posted a return of 14.1% and the Credit Opportunities posted a return of 12.0%.

At December 31, 2019, the total assets increased to $3.7 billion from $3.3 billion in 2018. This represents a $400 million increase over last year. The Market Value of Assets graph below for the Plan provides a pictorial history of the Plan's overall growth over the past 10 years.

MARKET VALUE OF ASSETS



ASSET ALLOCATION

The Plan's long-term strategic asset allocation policy sets the following targets: 70% in equity and 30% in fixed income. Although no specific allocation to cash and equivalents is targeted, cash must be available for the payment of benefits and other expenses of the Plan. To accommodate constantly changing market values, the Board has approved ranges for each of the asset classes.

ASSET ALLOCATION, CONT.

As of December 31, 2019

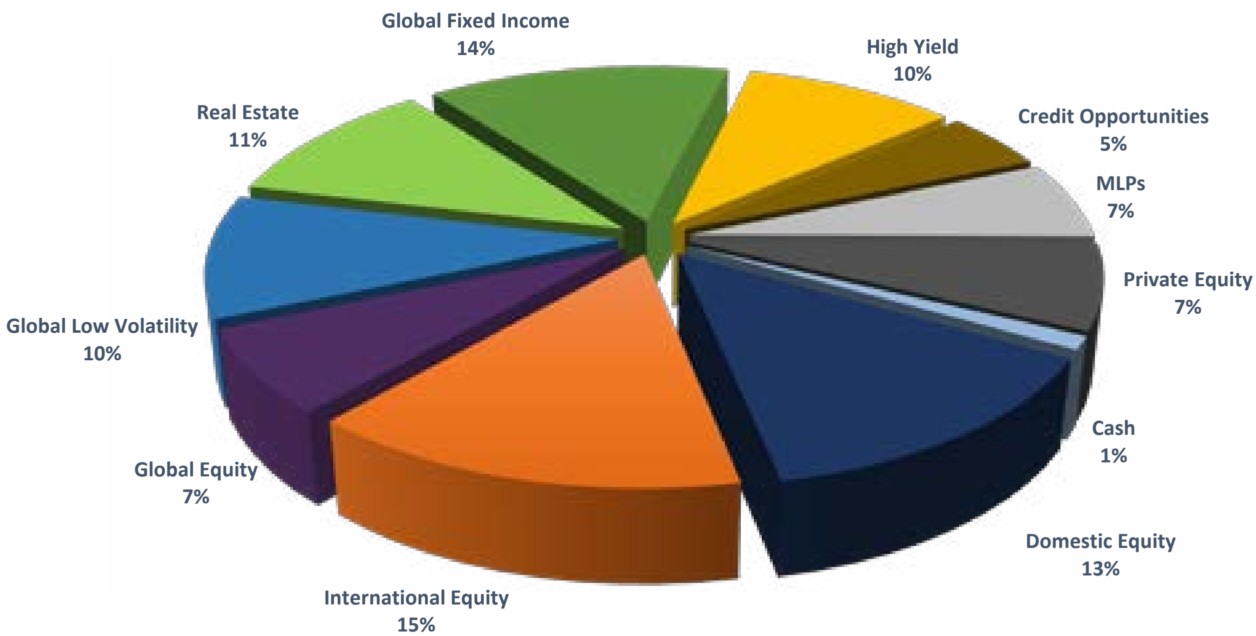
Investment Category	% of Total Fund
US Equity	
Domestic Equity	12.5
Real Estate	12.5
REITs	2.5
Private Equity	7.5
Marketable Alternatives	2.5
Total US Equity	**37.5**
Non-US Equity	
International	12.5
Global Equity	7.5
Global Low Volatility	12.5
Total Non-US Equity	**32.5**
Total Equity	**70.0**
Fixed Income	
Global Investment Grade	15.0
Credit Opportunities	5.0
High Yield	10.0
Total Fixed Income	**30.0**
Total Fund	**100.0**

DOMESTIC, INTERNATIONAL AND GLOBAL EQUITY

The Plan's allocation to US Equity is targeted at 37.50% of the Plan's total assets including 12.5% to Domestic Equity, 12.5% allocated to Real Assets, 7.5% to Private Equity, 2.50% to Marketable Alternatives and 2.5% to REITs. Domestic Equity assets at year-end had both Passively and Actively managed index funds each with 50% of the total investment. Total US Equity had a return of 29.06% for the year while the benchmark Wilshire 5000 Index had a return of 31.02%.

Non-US Equity has a target allocation of 32.50% and it is split between International Equity 12.5%, Global Equity 7.50% and Global Low Volatility 12.50%. The Plan's International Equity composite return was 22.60% while the MSCI All World ex-US Index reported a return of 21.63% for the year, and the MSCI EAFE Index reported 22.01%. The Global Equity funds allocation reported a return of 22.83%.

ACTUAL ASSET ALLOCATION



**Source: Wilshire Associates, Inc.*

CREDIT OPPORTUNITIES

Credit Opportunities has a target of 5.0% allocated to one investment manager. During the year Credit Opportunites had a return of -2.2% relative to its' custom benchmark (33% ML High Yield Master II, 33% S&P LSTA Leveraged Loan Index, 33% JPM EMBI Global Diversified Index) which returned -3.11%.

GLOBAL FIXED INCOME

Global Fixed Income has a target of 15% of total assets allocated amongst three investment managers. During the year the Global Fixed Income had a return of 9.02% while the Bloomberg Aggregate Bond Index returned 8.72%.

HIGH YIELD FIXED INCOME

High Yield Fixed Income has a target of 10%. This allocation is evenly split between two investment managers. The High Yield return for 2019 was 14.14% and the Citigroup High Yield Cash Pay Index returned 14.06%.

PRIVATE EQUITY

Private Equity has a target allocation of 7.5%. This allocation is split between three investment managers. At year end the fair value was approximately 7.1% of the Fund. The rate of return for the year was 11.69%.

REAL ESTATE

Real Estate is comprised of Real Estate securities ("REITs") and Real Estate. REITs and Real Estate have a 2.5% and 7.5% allocation of total US Equity of 37.5%. REITs had a return of 27.11% against the Wilshire Real Estate Securities Index of 25.79%, and the Private Real Estate had a return of 7.03% against the NCREIF Property Index had a return of 4.41%.

PUBLIC REAL ASSETS (MLPs)

Public Real Assets have a target allocation of 3.33%. The allocation is split between two investment managers. Public Real Assets had a return of 11.84% against the Alerian MLP index of 6.56%.

ANNUALIZED RATE OF RETURN

As of December 31, 2019

Time-weighted rate of return based on fair value

	1-Year	3-Year	5-Year
Total Fund	**17.58%**	**8.39%**	**6.45%**
Domestic Equity	**29.06**	**12.73**	**10.34**
S&P 500 Index	31.49	15.27	11.70
Wilshire 5000 Index	31.02	14.52	11.38
International Equity	**22.60**	**9.60**	**6.18**
MSCI ACWI x-US IMI (Net)	21.63	9.84	5.71
MSCI EAFE Index	22.01	9.56	5.67
Global Equity	**22.83**	**11.53**	**7.40**
MSCI ACWI	26.60	12.44	8.41
Global Low Volatility	**21.54**	**11.97**	
MSCI ACWI Minimum Volatility	21.05	12.01	
MSCI ACWI	26.60	12.44	8.41
Global Fixed Income	**9.02**	**4.22**	**3.40**
Bloomberg Aggregate Bond Index	8.72	4.03	3.05
High Yield Fixed Income	**14.14**	**5.63**	**5.54**
Citigroup High Yield Cash Pay	14.06	6.09	5.84
Cash Equivalents	**2.28**	**1.67**	**1.07**
T-Bills	2.28	1.67	1.07
Real Estate	**15.08**	**7.14**	**7.60**
Wilshire RE Securities Index	25.79	7.88	7.21
NCREIF ODCE INDEX	4.41	6.14	7.99
Private Equity	**11.69**	**14.32**	**12.04**
S&P 500 Index	31.49	15.27	11.70
Public Real Assets	**11.84**	**-2.37**	**-4.93**
Alerian MLP Index	6.56	-4.45	-7.00

INVESTMENT MANAGEMENT FEES

as of December 31, 2019

($ in thousands)

Investment*	Assets Under Management	Fees	Basis Points
Domestic Equity	$492,532	$2,175	44.2
International Equity	534,622	3,058	57.2
Global Equity	629,683	2,079	33.0
Global Fixed Income	695,592	1,627	23.4
High Yield Fixed Income	360,368	1,688	45.2
Real Estate	230,183	1,495	65.0
Master Limited Partnerships	235,905	1,566	66.4
Private Equity	267,422	2,613	97.7
REITs	163,223	969	59.3
Subtotal	**$3,609,529**	**$17,270**	**47.8**

OTHER INVESTMENT SERVICES

As of December 31, 2019

($ in thousands)

Investment Consultant	$452
Investment Management Fees	17,270
Custodian	125
Securities Lending**	282
Total Investment Expenses	**$18,129**

**Excludes cash (see Investment Holdings for cash value)*

***Securities lending fees include broker rebates and the lending agent's fees.*

TEN LARGEST HOLDINGS - EQUITY

As of December 31, 2019

($ in thousands)

Equity	Shares	Fair Value
CF BLACKROCK MSCI ACWI MINIMUM	10,172,380	$186,538,061
MFB NTGI-QM COLTV DAILY S&P 50	11,951	137,719,866
CF HEITMAN AMERICA REAL ESTATE	70,765	85,733,645
CF INVESCO CORE RE FUND	379	70,920,005
1900 MCKINNEY HARWOOD, LLC	63,446,978	69,756,337
CREDIT SUISSE DALLAS ERF PARTN	44,804,441	54,315,730
GCM GROSVENOR - DALLAS ERF PAR	44,535,438	47,537,239
CF NEUBERGER HIGH INCOME FUND	746,529	39,013,629
GCM GROSVENOR - DALLAS ERF	23,253,109	34,861,744
FAIRVIEW CAPITAL III	27,732,510	34,141,818

TEN LARGEST HOLDINGS - FIXED INCOME

As of December 31, 2019

($ in thousands)

Fixed Income	Par Value	Fair Value
MFO NEUBERGER BERMAN 0.40 % due 12/31/2049	$4,977,276	$48,379,124
UNITED STATES TREAS BDS 3% Due 2/15/2049	10,320,700	11,673,672
UTD STATES TREAS 1.625% DUE 12/15/22	10,696,400	10,706,840
UNITED STATES TREAS NTS 1.500 % due 11/30/2024	10,625,000	10,539,044
WI TREASURY SEC. 1.625% due 11/30/2026	10,000,000	9,873,430
UNITED STATES TREAS NTS 2.625% due 6/15/2021	8,450,000	8,572,779
U.S.A. TREASURY BOND 2.500% due 05/15/2046	6,025,000	6,166,467
U.S.A. TREASURY NOTES 2.375% due 05/15/2027	5,425,000	5,627,374
WI TREASURY SEC 2.5% due 02/15/2022	5,200,000	5,298,696
INTL BK FOR RECON FIXED 1.800% due 07/26/2024	5,855,000	4,474,678

A complete list of investments is available by contacting the Employees' Retirement Fund of the City of Dallas at 1920 McKinney Avenue, 10th Floor, Dallas, Texas 75201

INVESTMENT HOLDINGS SUMMARY

As of December 31, 2019

($ in thousands)

	Market Value	Percentage of Market Value
Fixed Income		
Government Bonds	$199,586	5.46%
Corporate Bonds	797,531	21.82
Total Fixed Income	997,117	27.28
Equity		
Common Stock	$1,872,596	51.23
Index & Commingled	176,734	4.83
Total Equity	2,049,330	56.06
Real Estate		
Real Estate	$230,183	6.30
Total Real Estate	230,183	6.30
Alternative Investments		
Private Equity	$267,422	7.31
Total Alternative Investments	267,422	7.31
Total Cash and Cash Equivalents	$111,496	3.05
Total Fund	**$3,655,548**	**100.00%**


THANKSGIVING SQUARE

The Report of the December 31, 2019 Actuarial Valuation of the Employees' Retirement Fund of the City of Dallas

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P: 469.524.0000 | www.grsconsulting.com

June 1, 2020

Board of Trustees

Employees' Retirement Fund of the City of Dallas

1920 McKinney Avenue

10th Floor

Dallas, Texas 75201

Dear Members of the Board:

We are pleased to present our report of the actuarial valuation of the Employees' Retirement Fund of the City of Dallas ("ERF" or the "Fund") as of December 31, 2019.

This valuation provides information on the funding status of ERF. It includes a determination of the actuarially calculated contribution rates for the 2020 calendar year. In addition, it also contains the information necessary to determine the current total obligation rate and the current adjusted total obligation rate for the fiscal year beginning October 1, 2020 per City Ordinance. This rate is a function of the previous year's adjusted total obligation rate, this year's actuarially calculated contribution rate, and the rate necessary to make the debt service payment on the previously issued pension obligation bonds for fiscal year 2021.

In addition, the report provides various summaries of the data. A separate report is issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67 and 68. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of December 31st, the last day of the ERF plan year. This report was prepared at the request of the Board and is intended for use by the ERF staff and those designated or approved by the Board. This report may be provided to parties other than ERF staff only in its entirety and only with the permission of the Board.

As authorized in Chapter 40A-4(a)(16) of the Dallas City Code, the actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary. An experience investigation was performed for the five year period ending December 31, 2019. As a result of that study, revised assumptions were adopted by the Board effective with the valuation as of December 31, 2019. We believe the assumptions are internally consistent, reasonable, and, where appropriate, based on the actual experience of the ERF. All of the assumptions and methods used in this valuation were selected in compliance with the Actuarial Standards of Practice. All actuarial assumptions and methods are described under Section P of this report.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

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Board of Trustees

June 1, 2020

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Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. Due to the limited scope of this assignment, GRS did not perform an analysis of the potential range of such possible future differences. The actuarial calculations are intended to provide information for rational decision making. Other than the sensitivity analysis shown in Section L, this report does not include a more robust assessment of the future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This report does not reflect the recent and still developing impact of the COVID-19 pandemic, which may significantly impact the demographic and economic experience occurring after this valuation date.

This valuation is based on the provisions of ERF in effect as of the valuation date, data on the ERF membership and information on the asset values of the Fund as of December 31, 2019. The member, annuitant and asset data used in the valuation were all prepared and furnished by ERF staff. While certain checks for reasonableness were performed, the data used was not audited.

To the best of our knowledge, this report is complete and accurate and was conducted in accordance with the Actuarial Standards of Practice as set forth by the Actuarial Standards Board and in compliance with the provisions of the Dallas City Code. The undersigned are independent actuaries and consultants. Mr. Randall is an Enrolled Actuary and a Member of the American Academy of Actuaries and he meets the Qualification Standards of the American Academy of Actuaries. Both Mr. Randall and Mr. Ward have significant experience in performing valuations for large public retirement systems.

We would like to thank the ERF staff for their assistance in providing all necessary information to complete this valuation. Their courteous help is very much appreciated. We look forward to discussing this actuarial valuation report with you at your convenience. Please do not hesitate to let us know if you have any questions or need additional information.

Respectfully submitted,

Lewis Ward

Lewis Ward
Consultant

Mark R. Randall

Mark R. Randall, MAAA, FCA, EA
Chief Executive Officer

GRS

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TABLE OF CONTENTS

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EXECUTIVE SUMMARY

($ in 000s)

The key results from the actuarial valuation of the Employees' Retirement Fund of the City of Dallas as of December 31, 2019 may be summarized as follows:

	December 31, 2018	December 31, 2019
· Members		
- Actives	7,584	7,427
- Benefit recipients	7,224	7,405
- Deferred vested*	819	877
- Other terminated*	673	789
- Total	16,300	16,498
· Covered payroll (including overtime)	$ 423,723	$ 433,890
· Normal cost	$ 81,299	$ 87,509
as % of expected payroll	19.56%	20.50%
· Actuarial accrued liability	$ 4,526,996	$ 4,863,326
· Actuarial value of assets	$ 3,620,319	$ 3,682,959
· Market value of assets	$ 3,265,402	$ 3,658,088
· Unfunded actuarial accrued liability (UAAL)	$ 906,677	$ 1,180,367
· Estimated yield on assets (market value basis)	(5.15)%	17.30%
· Estimated yield on assets (actuarial value basis)	5.23%	6.74%
· Contribution Rates		
- Prior Adjusted Total Obligation Rate	36.00%	36.00%
- Current Total Obligation Rate	43.07%	43.92%
- Current Adjusted Total Obligation Rate	36.00%	36.00%
· Actuarial gains/(losses)		
- Assets	$ (88,729)	$ (35,798)
- Actuarial liability experience	$ (11,356)	$ 6,156
- Assumption and method changes	$ -	$ (205,391)
· 30-year level % of pay funding cost	$ 146,729	$ 157,348
as % of payroll (Employee + City)	34.59%	35.38%
· Funded ratio		
- Based on actuarial value of assets	80.0%	75.7%
- Based on market value of assets	72.1%	75.2%

** Deferred vested are members who have applied for a deferred pension. Other terminations are other members who have terminated and still have contribution balances in the Fund.*

PURPOSES OF THE ACTUARIAL VALUATION

At your request, we have performed the actuarial valuation of the Employees' Retirement Fund of the City of Dallas ("ERF" or the "Fund") as of December 31, 2019.

The purposes of an actuarial valuation are as follows:

- To determine the funding status of ERF as of the valuation date;
- To develop the actuarially determined level of contributions for ERF for the 2020 calendar year; and
- To develop the current total obligation rate and the current adjusted total obligation rate for the fiscal year beginning October 1, 2020.

REPORT HIGHLIGHTS

($ in 000s)

The following is a set of key actuarial results from the prior year's valuation as compared to the current year:

	Valuation Date	
	December 31, 2018	December 31, 2019
Contribution Rates (% of Payroll)		
Normal Cost (including administrative expense)	20.95%	22.23%
Total Actuarial Contribution Rate	34.59%	35.38%
Total Projected Actuarial Contribution	$146,729	$157,348
Funded Status (on AVA basis)		
Actuarial Accrued Liability	$4,526,996	$4,863,325
Actuarial Value of Assets	3,620,319	3,682,959
Unfunded Actuarial Accrued Liability	$906,677	$1,180,366
Funded Ratio	79.97%	75.73%

FUNDING PROCESS

Based on the previous work of the Employees' Retirement Fund Study Committee, which was ratified by the ERF Board, the Dallas City Council and the voters of Dallas, a new funding process commenced October 1, 2005. From this date forward, a new "current adjusted total obligation rate" will be contributed jointly by the City (63%) and the Membership (37%). This current adjusted total obligation rate will cover both the debt service tied to the pension obligation bonds issued in 2005 and the contributions to the ERF. In subsequent years, the contribution rate changes only if the actuarial valuation develops a "current total obligation rate" which differs from the "prior adjusted total obligation rate" by more than 3.00% (plus or minus).

As shown in Section N – Table 3 and discussed later in this report, the "current total obligation rate" (Item 4 in Table 3) exceeds the "prior adjusted total obligation rate" (Item 1 in Table 3) as of December 31, 2019. This means that the "current adjusted total obligation rate" will remain at 36.00% of active member payroll for the fiscal year beginning October 1, 2020. It should be noted that under the contribution corridor methodology, the "current adjusted total obligation rate" would have been higher if not for the maximum rate of 36.00% allowed under Chapter 40A of the Dallas City Code.

ACTUARIAL CONTRIBUTIONS

As shown in Section N – Table 2, the Actuarially Required Contribution Rate developed in this actuarial valuation is 35.38% of active member payroll. This rate excludes the amount needed to make the City's debt service payment on the pension obligation bonds in fiscal year 2021. This rate is the total level rate of pay (member + City) that would need to be contributed each of the next 30 years to pay off the unfunded liability of the Fund over that 30-year period. Note that because the total rate is assumed to remain level and the average normal cost as a percentage of pay is expected to decline over that time period (due to the new Tier B), the payment towards the unfunded liability as a percentage of pay is expected to increase over the 30-year period.

As shown in Section N -Table 3 of this report, the debt service payment is determined to be 8.54% of projected payroll. The sum of these rates is 43.92% (the Current Total Obligation Rate), which is 7.92% more than the Prior Adjusted Total Obligation Rate of 36.00%. Because the total contribution rate cannot exceed 36.00%, the total contribution rate in fiscal year 2021 (the Current Adjusted Total Obligation Rate) to fund the ERF and make the debt service payment on the pension obligation bonds will be 36.00%, which is the maximum rate allowed under Chapter 40A of the Dallas City Code.

The members contribute 37% of the Current Adjusted Total Obligation Rate and the City contributes 63%. Hence, the members' portion of the 36.00% total contribution rate will be 13.32% and the City portion will be 22.68%. All of the member contribution rate will be contributed to the ERF. As noted above, 8.54% of the City's contribution rate will go towards the debt service on the pension obligation bonds and the remaining 14.14% will be contributed towards the ERF. This means a total contribution rate of 27.46% will be contributed to the ERF, which compares to the actuarially calculated rate of 35.38%.

ACTUARIAL ASSUMPTIONS

Section P of this report includes a summary of the actuarial assumptions and methods used in this valuation. In short, costs are determined using the Entry Age Normal actuarial cost method. The assumed annual investment return rate is 7.25% and includes an annual assumed rate of inflation of 2.50%.

All actuarial assumptions and methods have been updated to reflect the five-year experience study recommendations that were adopted by the Board on May 22, 2020 to be effective with the December 31, 2019 actuarial valuation. Please see the experience study report dated June 2020 for a complete description of the new assumptions as well as the rationale for their selection. The adoption of the new actuarial assumptions increased the liabilities of the Fund by $205 million.

Please see Section P of this report for a summary description of these assumptions and methods.

ERF BENEFITS

As the reader may be aware, City of Dallas voters approved a new tier of benefits for City of Dallas municipal employees hired after December 31, 2016.

There were no changes in the benefit provisions of ERF since the prior valuation. Please see Section Q for a summary description of the ERF benefits.

EXPERIENCE DURING PREVIOUS YEARS

An Actuarial (Gain)/Loss Analysis [(G)/L] reviews the effects of the actual experience that differs from the assumed experience based on the actual results for the year. If any difference increases assets or reduces liabilities, we have an actuarial gain. The reverse is an actuarial loss.

On a market value return basis, the Fund returned approximately 17.30% (calculated on a dollar-weighted basis, net of investment expenses). Given this return, the actual investment income was much higher than the expected investment income on the market value of assets; therefore, an investment excess occurred. However, because the prior year was a shortfall, the current year's excess income was offset dollar for dollar against the prior year shortfall. Please see Table 6 for the determination of the actuarial value of assets (AVA) and page 47 for a description of the AVA methodology. As developed on Table 9A, there was a $35.8 million loss on the actuarial value of assets as of December 31, 2019. The rate of return on the actuarial value of assets for 2019 was 6.74% (calculated on a dollar-weighted basis, net of investment expenses). This result was less than the prior year's investment return assumption of 7.75%.

As developed on Table 8, ERF experienced an overall actuarial experience loss in calendar year 2019 in the amount of $29.6 million. Since there was a $35.8 million loss on the actuarial value of assets, this implies there was a liability actuarial gain of about $6.2 million derived from demographic assumptions and non-investment economic assumptions (cost-of-living-adjustment). Please see Table 9B for an analysis of the experience loss by source.

The total (G)/L for the prior 5 years is broken down as follows ($ in millions):

		2015	2016	2017	2018	2019
1)	Actuarial (Gain)/Loss on Assets	$31.24	($16.41)	($19.85)	$88.73	$35.80
2)	Actuarial (Gain)/Loss on Liabilities	(26.83)	(32.35)	(61.02)	11.35	(6.16)
3)	Total Actuarial (Gain) or Loss (1+2)	$4.41	($48.76)	($80.87)	$100.08	$29.64

The unfunded actuarial accrued liability (UAAL) also increased $30 million due to the shortfall between the calculated contribution rate and the actual contributions during 2019.

ASSET INFORMATION

The assets of the Fund (on a market value basis) increased from $3,265 million as of December 31, 2018 to $3,658 million as of December 31, 2019.

The assets recognized for actuarial valuation purposes (known as "the actuarial value of assets") were equal to the market value of assets in the December 31, 2017 valuation. Beginning with the December 31, 2018 valuation, a new smoothing method is now being used to recognize future asset gains and losses. The purpose of such a smoothing method is to allow the use of market values, but to dampen the effect of the typical year-to-year market fluctuations. Please see page 47 of this report for a description of the new smoothing method (actuarial value of asset method). See Table 6 in Section N of this report for the determination of the actuarial value of assets as of December 31, 2019.

The actuarial value of assets has increased from $3,620 million to $3,683 million during 2019. The actuarial assets are less than the expected actuarial assets, $3,719 million, due to recognition of the prior year's deferred investment losses. This resulted in an actuarial loss on the actuarial assets of $35.8 million.

The rate of return on investments for 2019 on the actuarial value of assets was 6.74%, compared to 5.23% in 2018. The detailed determinations of asset values utilized in this valuation and the change in assets in the last year are exhibited in Tables 4 and 5 of Section N of this report.

FUNDED STATUS

The funded status of ERF is measured by the Funded Ratio and the Unfunded Actuarial Accrued Liability (UAAL). The Funded Ratio is the ratio of the actuarial value of assets available for benefits to the actuarial accrued liability (AAL) of the Fund on the valuation date. Therefore, it reflects the portion of the AAL that is covered by ERF assets. The UAAL is the difference between these two amounts.

A Funded Ratio of 100% means that the funding of ERF is precisely on schedule as of the particular valuation date. In addition, an increasing funded ratio from year-to-year may also mean that the funding of ERF is on schedule. By monitoring changes in the Funding Ratio each year, we can determine whether or not funding progress is being made.

Based on the market value of assets, the Funded Ratio of ERF increased from 72.1% as of December 31, 2018 to 75.2% as of December 31, 2019. Based on the actuarial value of assets, the Funded Ratio of ERF decreased from 80.0% as of December 31, 2018 to 75.7% as of December 31, 2019.

The UAAL increased from $906.7 million as of December 31, 2018 to $1180.4 million as of December 31, 2019. Since the UAAL is positive, this implies the actuarial accrued liabilities exceed the actuarial assets of the Fund as of December 31, 2019.

The primary reason for the increase in the UAAL and the decrease in the funded ratio was the adoption of new actuarial assumptions, including the decrease in the investment return assumption from 7.75% to 7.25%. The recognition of prior year's deferred investment losses and the shortfall between the actuarially determined contribution rate and the actual contribution rate were also contributing factors.

GASB DISCLOSURE

Governmental Accounting Standards Board (GASB) Statement Numbers 67 and 68 detail the current accounting standards for ERF and the Fund's sponsor, the City of Dallas, Texas. These new standards were effective with the plan year ending December 31, 2014 for the Fund and the fiscal year ending September 30, 2015 for the City. The new standards created a clear distinction between the funding requirements of a pension plan and the accounting requirements. Because of these changes, the GASB disclosure information will no longer be included in the actuarial valuation report, but will instead be provided under separate cover.

ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

a. Investment risk – actual investment returns may differ from the expected returns;
b. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
c. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
d. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
e. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
f. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS (Continued)

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The Current Adjusted Total Obligation Rate shown in the Executive Summary may be considered as a minimum contribution rate that complies with Chapter 40A of the Dallas City Code. However, due to the contribution rate cap, this is less than the actuarially calculated rate. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Several generally accepted plan maturity measures are described below and are followed by a table showing a 10-year history of the measurements for Dallas ERF.

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS (Continued)

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees, resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives, resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

DURATION OF PRESENT VALUE OF BENEFITS

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

ADDITIONAL RISK ASSESSMENT

Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. While a robust measurement of additional risk assessment is outside the scope of the annual actuarial valuation, we have included a scenario test of a 1% increase or 1% decrease in the investment return assumption. The results of this test are shown at the end of this section.

ASSESSMENT AND DISCLOSURE OF RISK ASSOCIATED WITH MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN CONTRIBUTIONS (Continued)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Ratio of the market value of assets to total payroll	8.43	7.71	8.55	8.13	8.12	9.34	9.72	9.01	8.87	8.90
Ratio of actuarial accrued liability to payroll	11.21	10.68	10.39	10.48	10.50	11.03	10.55	10.64	10.95	10.18
Ratio of actives to retirees and beneficiaries	1.00	1.05	1.11	1.10	1.11	1.09	1.08	1.09	1.09	1.17
Ratio of net cash flow to market value of assets	-4.8%	-5.1%	-4.3%	-4.4%	-4.5%	-4.2%	-4.4%	-5.1%	-5.3%	-4.6%
Duration of the actuarial present value of benefits*	12.84	12.37	NA	NA	NA	NA	NA	NA	NA	NA

*Duration measure not available prior to 2018

Impact on Funding Metrics of Investment Return Assumption +/- 1%

	Investment Return Assumption		
Cost Item	6.25%	7.25%	8.25%
Normal Cost % (excluding admin expenses)	25.35%	20.50%	16.84%
UAAL ($ in millions)	$1,765.1	$1,180.4	$695.4
30-year funding rate (employee + City)	44.46%	35.38%	26.40%
Funded Ratio	67.60%	75.73%	84.12%
Funding Period	Infinite	65 years	23 years

CLOSING COMMENTS

The unfunded actuarial accrued liability of the Fund has increased since the prior valuation primarily due to the adoption of the new actuarial assumptions including the lowering of the investment return assumption to 7.25%.

The calculated contribution rate necessary to pay the Fund's normal cost and amortize the UAAL over 30 years is 35.38% of pay. When the debt service payment on the Pension Obligation Bonds is considered, the total contribution rate is 43.92% of payroll. However, Chapter 40A of the Dallas City Code limits the contribution rate to 36.00% of payroll, therefore, the total rate to be contributed by the employees and the City for fiscal year 2019 will be 36.00% of pay.

Additionally, the calculated contribution rate is above the 36.00% of pay maximum. When the Pension Obligation Bond debt is repaid, the calculated contribution rate is expected to drop between 8.50% - 9.00% of pay. However, that is not expected to happen until fiscal year 2035.

Following adoption of the proposed changes by the ERF Board, the Dallas City Council, and approval by the City of Dallas voters, the new tier of benefits became effective for employees hired after December 31, 2016 and the outlook for the ERF improved. Based on our projections, reflecting the new tier of benefits and assuming the actuarial assumptions are exactly met (including a 7.25% return on the actuarial value of assets), ERF is expected to be fully funded in approximately 65 years.

ACTUARIAL TABLES

Summary of Actuarial Values
As of December 31, 2019
($ in 000s)

		Entry Age Actuarial Values		
	APV* of Projected Benefits	Actuarial Accrued Liability (AAL)	Normal Cost $	Normal Cost % of Pay**
1 Active Members				
a. Retirement	$ 1,917,069	$ 1,460,755	$ 63,862	14.96%
b. Death	18,931	11,437	1,037	0.25%
c. Disability	12,111	4,615	1,036	0.24%
d. Termination	139,829	(3,187)	19,182	4.50%
e. Health Subsidy	48,485	34,729	2,392	0.55%
Total	$ 2,136,425	$ 1,508,349	$ 87,509	20.50%
2 Benefit Recipients	3,228,576	3,228,576		
3 Other Inactive	126,400	126,400		
4 Total Actuarial Values of Benefits	$ 5,491,401	$ 4,863,325	$ 87,509	20.50%
5 Actuarial Value of Assets		$ 3,682,959		
6 Unfunded Actuarial Accrued Liability (4 - 5)		$ 1,180,366		
7 Funding Ratio		75.73%		
8 Market Value Measurements				
UAAL on market value		$ 1,205,237		
Funded Ratio on market value		75.22%		

* *APV – Actuarial Present Value*

** *Percentage of expected payroll for continuing active members.*

DEMONSTRATION OF ACTUARIALLY DETERMINED CONTRIBUTION RATE FOR FY 2021

Valuation as of December 31,	Actuarially Determined Total Contribution Rate	Projected Compensation for Plan Year (in Millions)	Total Contributions to Fund for Plan Year (in Millions)	Actuarial Accrued Liability (AAL $M)	Actuarial Value of Assets (AVA $M)	Unfunded Actuarial Accrued Liability (UAAL $M)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2019	35.38%	$ 433.9	$ 153.5	$ 4,863.3	$ 3,683.0	$ 1,180.4
2020	35.38%	445.0	157.4	4,996.9	3,788.6	1,208.3
2021	35.38%	457.2	161.8	5,132.0	3,897.8	1,234.3
2022	35.38%	469.7	166.2	5,260.8	4,002.6	1,258.2
2023	35.38%	482.5	170.7	5,383.7	4,103.6	1,280.0
2024	35.38%	495.7	175.4	5,500.3	4,200.8	1,299.5
2025	35.38%	509.2	180.2	5,610.4	4,294.0	1,316.4
2026	35.38%	523.1	185.1	5,714.0	4,383.4	1,330.5
2027	35.38%	537.4	190.1	5,811.2	4,469.6	1,341.7
2028	35.38%	552.2	195.4	5,902.7	4,553.1	1,349.6
2029	35.38%	567.6	200.8	5,989.4	4,635.3	1,354.1
2030	35.38%	583.2	206.3	6,071.9	4,717.2	1,354.7
2031	35.38%	599.5	212.1	6,151.1	4,799.9	1,351.2
2032	35.38%	616.1	218.0	6,227.1	4,884.0	1,343.1
2033	35.38%	632.6	223.8	6,299.7	4,969.7	1,330.0
2034	35.38%	649.4	229.8	6,369.0	5,057.4	1,311.5
2035	35.38%	666.6	235.8	6,435.2	5,147.9	1,287.3
2036	35.38%	684.3	242.1	6,498.7	5,241.9	1,256.9
2037	35.38%	702.5	248.5	6,560.1	5,340.4	1,219.7
2038	35.38%	721.1	255.1	6,619.9	5,444.6	1,175.2
2039	35.38%	740.4	262.0	6,678.9	5,556.0	1,122.9
2040	35.38%	760.2	269.0	6,738.1	5,676.0	1,062.1
2041	35.38%	780.7	276.2	6,798.0	5,806.0	992.0
2042	35.38%	801.5	283.6	6,859.5	5,947.6	911.9
2043	35.38%	823.0	291.2	6,923.4	6,102.2	821.2
2044	35.38%	845.3	299.1	6,990.9	6,272.1	718.8
2045	35.38%	868.1	307.1	7,063.8	6,459.8	604.1
2046	35.38%	891.3	315.4	7,143.3	6,667.5	475.8
2047	35.38%	915.0	323.7	7,230.4	6,897.4	333.0
2048	35.38%	939.0	332.2	7,326.0	7,151.3	174.7
2049	35.38%	963.4	340.9	7,430.5	7,430.9	(0.4)

Information for City Ordinance 25695

For the Fiscal Year Commencing October 1, 2020

1 Prior Adjusted Total Obligation Rate	36.00%
2 Actuarially Required Contribution Rate*	35.38%
3 Debt Service	
a Scheduled Debt Service Payment for FY 2021	$ 37,987,077
b Projected Payroll	$ 444,737,003
c Pension Obligation Bond Credit Rate (a/b)	8.54%
4 Current Total Obligation Rate (2 + 3c)	43.92%
5 Current Adjusted Total Obligation Rate	36.00% **
6 Allocation of Contribution Rates Commencing October 1, 2020	
a Employee (5 x .37)	13.32%
b City (5 x .63)	22.68%

* Actuarially determined level contribution rate as demonstrated on Table 2.

** If the absolute value of the difference between the Prior Adjusted Total Obligation Rate (PATOR) and the Current Total Obligation Rate (CTOR) is less than or equal to 3.0% then:

Current Adjusted Total Obligation Rate (CATOR) = PATOR

otherwise:

1) If PATOR - CTOR > 3.00% then the CATOR is set equal to the greater of:

a) the average of the Prior Adjusted Total Obligation Rate and the Current Total Obligation Rate; or

b) 90% of the Prior Adjusted Total Obligation Rate

or

2) If PATOR - CTOR < -3.00% then the CATOR is set equal to the lesser of:

a) the average of the Prior Adjusted Total Obligation Rate and the Current Total Obligation Rate; or

b) 110% of the Prior Adjusted Total Obligation Rate

Additionally, the CATOR cannot exceed 36.00%.

EXCERPTS FROM CITY ORDINANCE 25695

ACTUARIALLY REQUIRED CONTRIBUTION RATE – means, for any fiscal year, a rate of contribution to the fund, expressed as a percentage of members' projected wages for such fiscal year, which is the sum of the following as determined in the actuarial valuation report for the preceding plan year:

(A) the actuarial present value of the pension plan benefits and expenses that are allocated to a valuation period by the actuarial cost method; and

(B) the contribution that will amortize the difference between the actuarial accrued liability of the fund and the actuarial value of the assets of the fund over the period of years required by generally accepted accounting principles.

CITY CONTRIBUTIONS – means, for each pay period ending during a transition year, the city shall contribute to the retirement fund an amount equal to:

63% times the current total obligation rate for that fiscal year times the members' wages for the pay period, minus

The pension obligation bond credit rate for that fiscal year times the members' wages for the pay period;

and, for each pay period ending during each fiscal year, except for a transition year, the city shall contribute to the retirement fund an amount equal to:

63% times the current adjusted total obligation rate for that fiscal year times the members' wages for the pay period, minus

The pension obligation bond credit rate for that fiscal year times the members' wages for the pay period.

EMPLOYEE CONTRIBUTIONS – means, for each pay period ending during a transition year, each member shall contribute to the retirement fund an amount equal to:

37% times the current total obligation rate for that fiscal year times the member's wages for the pay period;

and, for each pay period ending during each fiscal year, except for a transition year, the member shall contribute to the retirement fund an amount equal to:

37% times the current adjusted total obligation rate for that fiscal year times the member's wages for the pay period.

CURRENT ADJUSTED TOTAL OBLIGATION RATE – means, for any fiscal year, the rate determined by the board as follows, using whichever formula is applicable:

(A) If the current total obligation rate minus the prior adjusted total obligation rate is greater than three, then the current adjusted total obligation rate for such fiscal year is equal to the lesser of:

(i) the prior adjusted total obligation rate plus one-half times the difference of the current total obligation rate minus the prior adjusted total obligation rate; or

(ii) 110 percent times the prior adjusted total obligation rate; or

(iii) 36 percent.

(B) If the difference between the current total obligation rate and the prior adjusted total obligation rate is less than three, then the current adjusted total obligation rate for such fiscal year is equal to the prior adjusted total obligation rate.

(C) If the prior adjusted total obligation rate minus the current total obligation rate is greater than three, then the current adjusted total obligation rate for such fiscal year is equal to the greater of:

(i) the prior adjusted total obligation rate minus one-half times the difference of the prior adjusted total obligation rate minus the current total obligation rate; or

(ii) 90 percent times the prior adjusted total obligation rate.

CURRENT TOTAL OBLIGATION RATE – means, for any fiscal year, the rate adopted by the board that is equal to the sum of the pension obligation bond credit rate for such fiscal year plus the actuarially required contribution rate for such fiscal year.

PENSION OBLIGATION BOND CREDIT RATE – means, for any fiscal year, the rate adopted by the board that is a percentage calculated by dividing:

(A) the debt service due during such fiscal year on any pension obligation bonds, the proceeds of which have been deposited in the fund, by:

(B) the total members' projected wages for such fiscal year, as reported in the relevant actuarial valuation report.

PRIOR ADJUSTED TOTAL OBLIGATION RATE – means:

(A) for the fiscal year commencing October 1, 2006, the current total obligation rate that was effective for the prior fiscal year; and

(B) for each fiscal year commencing on or after October 1, 2007, the current adjusted total obligation rate that was effective for the prior fiscal year.

PROJECTED PAYROLL – means the covered payroll for the valuation proceeding the fiscal year multiplied by the payroll growth assumption.

TRANSITION YEAR – means each of the following:

(A) the first fiscal year in which debt service payments related to pension obligation bonds are due from the city;

(B) the first fiscal year in which no debt service payments related to pension obligation bonds are due from the city; and

(C) the fiscal year beginning October 1, 2005.

Net Assets Available for Benefits
($ in 000s)

	December 31, 2018	December 31, 2019
1 Assets		
a. Cash & Short-Term	$ 102,781	$ 325,309
2 Receivables		
a. Accrued Investment Income	$ 14,201	$ 14,467
b. Securities Sold	2,789	4,243
c. Employer Contribution	2,058	2,307
d. Employee Contribution	1,903	2,164
e. Pending Contracts	-	438,841
	$ 20,951	$ 462,022
3 Investments		
a. Index Funds	$ 119,550	$ 176,734
b. Fixed Income	911,461	997,117
c. Equities	1,871,968	1,872,596
d. Real Estate	232,171	230,183
e. Private Equity	27,111	267,422
	$ 3,162,261	$ 3,544,052
4 Total Assets	$ 3,285,993	$ 4,331,383
5 Liabilities		
a. Accounts Payable	$ 7,434	$ 7,267
b. Investment Transactions	13,157	666,028
	$ 20,591	$ 673,295
6 Net Assets Available For Benefits	$ 3,265,402	$ 3,658,088

Change in Assets Available for Benefits

Fiscal Year Ending December 31, 2019

($ in 000s)

	2018	2019
1 Assets Available at Beginning of Year	$ 3,601,612	$ 3,265,402
Adjustment *	10,647	16,911
	$ 3,612,259	$ 3,282,313
2 Revenues		
a. Employer Contributions	$ 60,924	$ 62,177
b. Employee Contributions	56,760	58,314
c. Investment Income	104,544	114,123
d. Investment Expense	(14,446)	(18,129)
e. Realized and Unrealized Gains (Losses)	(272,937)	453,838
f. Other (Security Lending)	1,381	1,411
Total Revenues	$ (63,774)	$ 671,734
3 Expenses		
a. Benefits	$ 263,963	$ 278,007
b. Refunds	8,443	10,436
c. Operating Expense	10,677	7,516
Total Expense	$ 283,083	$ 295,959
4 Assets Available at End of Year (1 + 2 - 3)	$ 3,265,402	$ 3,658,088

** Change due to difference between unaudited asset value used for prior valuation and audited asset value reported the following year.*

Development of Actuarial Value of Assets

($ in 000s)

		December 31, 2019
1.	Market value of assets at beginning of year	$ 3,265,402
2.	External cashflow	
	a. Contributions	$ 120,491
	b. Benefits and refunds paid	(288,443)
	c. Administrative and miscellaneous expenses	(7,513)
	d. Subtotal	(175,465)
3.	Assumed investment return rate for fiscal year	7.75%
4.	Assumed investment income for fiscal year	$ 246,396
5.	Expected Market Value at end of year (1+ 2 + 4)	$ 3,336,333
6.	Market value of assets at end of year	$ 3,658,088
7.	Difference (6 - 5)	$ 321,755

8. Development of amounts to be recognized as of December 31, 2019:

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2015	$ 0	$ 0	$ 0	1	$ 0	$ 0
2016	0	0	0	2	0	0
2017	0	0	0	3	0	0
2018	(354,917)	321,755	(33,162)	4	(8,291)	(24,871)
2019	321,755	(321,755)	0	5	0	0
Total	$ (33,162)	$ 0	$ (33,162)		$ (8,291)	$ (24,871)

9.	Final actuarial value of plan net assets, end of year (Item 6 - Item 8, Column 6)	$ 3,682,959
10.	Ratio of actuarial value to market value	100.7%

Notes: Remaining deferrals in Column (1) for prior years are from last year's report Table 6, column 6. The number in the current year is Item 7, above. Column 2 is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type.

Historical Investment Performance
Dollar Weighted Basis Net of Investment Expenses

Calendar Year	On Market Value	On Actuarial Value
2000	-3.45%	9.59%
2001	-5.46%	2.76%
2002	-9.81%	-5.37%
2003	27.05%	2.03%
2004	15.22%	9.38%
2005	7.93%	13.71%
2006	16.90%	13.03%
2007	3.56%	9.58%
2008	-31.31%	-3.76%
2009	30.35%	6.79%
2010	15.77%	4.30%
2011	0.86%	1.15%
2012	14.29%	2.82%
2013	16.75%	10.65%
2014	6.14%	10.29%
2015	-1.83%	7.02%
2016	8.65%	8.51%
2017*	12.34%	8.99%
2018	-5.15%	5.23%
2019	17.30%	6.74%
5-year average ending in 2019	5.92%	7.29%
10-year average ending in 2019	8.23%	6.53%

*The yield on the actuarial value of assets for 2017 includes the impact of the method change for the Actuarial Value of Assets.

Analysis of Change in Unfunded

Actuarial Accrued Liability

For the Year Ending December 31, 2019

($ in 000s)

1. UAAL as of December 31, 2018		$ 906,677
2. Expected Change in UAAL during 2019		
a. Expected Amortization Payment for CY 2019	(59,385)	
b. Interest adjustments on 1 & 2a to Year End @ 7.75%	68,009	
c. Expected change in UAAL		8,624
3. Increase/(Decrease) in UAAL Due to Difference Between Calculated Contribution Rate and Actual Contribution		30,032
4. Net Actuarial Experience (Gains) & Losses		29,642
5. Assumption and Method Changes		205,391
6. UAAL as of December 31, 2019		$ 1,180,366

Investment Experience (Gain) or Loss

($ in 000s)

Item	Valuation as of December 31, 2019
1. Actuarial assets, beginning of year	$ 3,620,319
2. Contributions	120,491
3. Benefits and refunds paid with administrative expenses	(295,956)
4. Assumed net investment income at 7.75% on	
a. Beginning of year assets	280,575
b. Contributions	4,582
c. Benefits and refunds paid with administrative expenses	(11,254)
d. Total	$ 273,903
5. Expected actuarial assets, end of year (Sum of Items 1 through 4)	3,718,757
6. Actual actuarial assets, end of year	3,682,959
7. Asset experience (gain)/loss for year	35,798

Analysis of Actuarial (Gains) and Losses
For 2019
($ in 000s)

	2019
Investment Return	$ 35,798
Salary Increase	35,205
Age and Service Retirement	(1,775)
General Employment Termination	(5,315)
Disability Incidence	(124)
Active Mortality	(152)
Benefit Recipient Mortality	(2,131)
Actual vs. Expected Cost of Living Adjustment (COLA)*	(23,237)
Other	(8,627)
Total Actuarial (Gain)/ Loss	$ 29,642
Actuarial Assumption Change	$ 205,391

* Actual COLA of 1.64% versus expected COLA of 2.75%

Schedule of Funding Status
($ in 000s)

End of Year	Actuarial Value of Assets (a)	AAL (b)	UAAL (b-a)	Funding Ratio (a/b)	Payroll* (c)	UAAL as % of Payroll ((b-a)/c)
1998	$1,617,468	$1,750,430	$132,962	92.40%	$275,547	48.30%
1999	1,862,644	1,873,998	11,353	99.39%	282,127	4.00%
2000	1,997,828	2,038,078	40,250	98.03%	298,355	13.50%
2001	2,017,041	2,276,488	259,447	88.60%	332,842	77.90%
2002	1,863,701	2,399,569	535,868	77.67%	324,615	165.08%
2003	1,843,099	2,489,071	645,972	74.05%	318,492	202.82%
2004	2,482,082	2,488,270	6,188	99.75%	331,201	1.87%
2005	2,739,269	2,606,173	(133,096)	105.11%	332,446	-40.04%
2006	2,998,099	2,761,404	(236,695)	108.57%	344,997	-68.61%
2007	3,183,260	2,915,164	(268,096)	109.20%	370,150	-72.43%
2008	2,957,506	3,075,385	117,879	96.17%	389,362	30.27%
2009	3,031,652	3,192,120	160,468	94.97%	375,164	42.77%
2010	3,027,439	3,282,126	254,687	92.24%	332,045	76.70%
2011	2,916,746	3,391,652	474,906	86.00%	318,972	148.89%
2012	2,846,124	3,518,356	672,232	80.89%	340,452	197.45%
2013	3,074,284	3,610,845	362,477	85.14%	352,486	102.83%
2014	3,241,053	4,004,055	763,002	80.94%	374,002	204.01%
2015	3,320,387	4,129,133	808,746	80.41%	404,981	199.70%
2016	3,451,463	4,291,802	840,339	80.42%	420,693	199.75%
2017	3,601,612	4,377,844	776,232	82.27%	432,854	179.33%
2018	3,620,319	4,526,996	906,677	79.97%	435,375	208.25%
2019	3,682,959	4,863,325	1,180,366	75.73%	444,737	265.41%

Summary of Data Characteristics

As of December 31,	2017	2018	2019
Active Members			
Number	7,838	7,584	7,427
Total Annualized Earnings of Members as of 12/31 (000s)	$ 421,269	$ 423,723	$ 433,890
Average Earnings	53,747	55,871	58,421
Benefit Recipients			
Number	7,042	7,224	7,405
Total Annual Retirement Income (000s)	$ 244,768	$ 258,085	$ 269,263
Total Annual Health Supplement (000s)	10,220	10,523	10,984
Average Total Annual Benefit	36,223	37,200	37,871
Inactive Members*			
Deferred Vested	793	819	877
Deferred Nonvested	455	673	789
Total	1,248	1,492	1,666

** The number of inactives on 12/31/2019 includes 877 members who have applied for a deferred pension and 789 other members who have terminated and still have contribution balances in the Fund.*

Distribution of Active Members and Payroll by Age and Years of Service

Age	Years of Service: Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30 & Over	Totals
Under 20									0
									$0
20-24	86	73	2						161
	$2,849,884	$2,801,922	$73,380						$5,725,186
25-29	165	353	65	0					583
	$6,879,660	$15,604,905	$3,310,646	$0					$25,795,211
30-34	166	369	201	50					786
	$7,810,585	$18,234,364	$10,737,310	$2,959,678					$39,741,937
35-39	124	296	210	157	30	4			821
	$5,716,094	$15,908,958	$12,748,779	$10,029,673	$2,045,043	$261,773			$46,710,320
40-44	118	278	197	171	90	59	1		914
	$5,886,426	$15,779,853	$12,297,592	$10,833,785	$6,413,293	$3,904,144	$54,485		$55,169,578
45-49	93	243	173	158	128	168	54	1	1,018
	$4,285,543	$13,202,222	$11,095,547	$9,986,786	$8,177,526	$11,347,728	$3,778,037	$102,420	$61,975,809
50-54	88	233	167	183	147	186	88	20	1,112
	$4,296,923	$12,892,287	$9,440,982	$11,971,392	$10,449,642	$13,374,124	$6,301,224	$1,475,778	$70,202,352
55-59	58	197	154	220	162	169	39	46	1,045
	$2,786,560	$11,189,742	$8,798,023	$13,167,752	$10,520,389	$11,488,765	$3,032,084	$3,779,556	$64,762,871
60-64	33	109	111	140	89	97	44	42	665
	$1,807,222	$5,999,567	$6,784,405	$8,771,980	$5,777,913	$6,588,005	$3,256,067	$3,576,112	$42,561,271
65&Over	8	35	51	71	47	56	18	36	322
	$388,926	$2,153,435	$2,924,287	$4,718,790	$3,296,824	$3,564,028	$1,329,005	$2,869,929	$21,245,224
Totals	939	2,186	1,331	1,150	693	739	244	145	7,427
	$42,707,823	$113,767,255	$78,210,951	$72,439,836	$46,680,630	$50,528,567	$17,750,902	$11,803,795	$433,889,759

Distribution of Benefit Recipients as of December 31, 2019

Age	Number	Annual Benefit*	Annual Average Benefit*
Under 50	45	$ 741,627	$ 16,481
50-54	197	8,598,939	43,649
55-59	657	30,317,521	46,145
60-64	1,303	50,806,210	38,992
65-69	1,724	64,763,938	37,566
70-74	1,523	58,046,066	38,113
75-79	886	27,848,855	31,432
80-84	547	15,658,193	28,626
85-89	316	7,801,810	24,689
90 & Over	207	4,679,946	22,608
Total	7,405	$ 269,263,106	$ 36,362

* *Does not include Health Benefit Supplement.*

Schedule of Active Member Valuation Data

Year Ending December 31,	Active Participants	Percent Change	Covered Payroll	Percent Change	Average Salary	Percent Change
2007	8,117	-	$ 359,369,000	-	$ 44,274	-
2008	8,371	3.1%	378,021,000	5.2%	45,158	2.0%
2009	7,654	-8.6%	364,237,000	-3.6%	47,588	5.4%
2010	7,034	-8.1%	322,374,000	-11.5%	45,831	-3.7%
2011	6,745	-4.1%	309,682,000	-3.9%	45,913	0.2%
2012	6,864	1.8%	330,536,000	6.7%	48,155	4.9%
2013	6,993	1.9%	342,219,000	3.5%	48,937	1.6%
2014	7,180	2.7%	363,109,000	6.1%	50,572	3.3%
2015	7,477	4.1%	393,186,000	8.3%	52,586	4.0%
2016	7,619	1.9%	409,433,000	4.1%	53,738	2.2%
2017	7,838	2.9%	421,269,000	2.9%	53,747	0.0%
2018	7,584	-3.2%	423,723,000	0.6%	55,871	4.0%
2019	7,427	-2.1%	433,890,000	2.4%	58,421	4.6%

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

Year Ending December 31,	Added to Rolls		Removed from Rolls		Rolls-End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
2007	239	$ 7,250,468	205	$ 4,551,742	5,304	$142,267,609	-	$ 26,823
2008	383	8,905,680	211	4,684,964	5,476	154,692,846	8.7%	28,249
2009	446	9,268,740	216	4,795,982	5,706	165,826,328	7.2%	29,062
2010	508	12,798,268	221	4,907,000	5,993	179,730,384	8.4%	29,990
2011	404	10,012,165	198	4,396,317	6,199	193,851,170	7.9%	31,271
2012	325	9,795,464	204	4,529,539	6,320	202,120,582	4.3%	31,981
2013	324	11,246,955	197	4,327,990	6,447	210,027,512	3.9%	32,578
2014	370	12,415,771	219	4,821,713	6,598	219,150,070	4.3%	33,215
2015	476	13,777,204	318	6,847,464	6,756	226,019,290	3.1%	33,455
2016	384	12,746,549	237	5,562,549	6,903	237,992,528	5.3%	34,477
2017	383	9,893,931	244	6,375,641	7,042	244,768,143	2.8%	34,758

Solvency Test
($ in 000s)

	Aggregated Accrued Liabilities for				Portions of Accrued Liabilities Covered by Reported Assets		
Valuation Date	Active and Inactive Members Contributions	Retirees and Beneficiaries	Active and Inactive Members (Employer Financed Portion)	Reported Assets	(5)/(2)	[(5)-(2)]/3	[(5)-(2)-(3)]/(4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
December 31, 2007	$ 206,090	$ 1,591,731	$ 1,117,343	$ 3,183,260	100.0%	100.0%	100.0%
December 31, 2008	221,667	1,707,599	1,146,119	2,957,506	100.0%	100.0%	89.7%
December 31, 2009	228,666	1,834,491	1,128,963	3,031,652	100.0%	100.0%	85.8%
December 31, 2010	232,727	2,041,322	1,008,077	3,027,439	100.0%	100.0%	74.7%
December 31, 2011	240,821	2,181,731	969,100	2,916,746	100.0%	100.0%	51.0%
December 31, 2012	257,716	2,250,533	1,010,107	2,846,124	100.0%	100.0%	33.4%
December 31, 2013	278,892	2,319,424	1,012,529	3,074,284	100.0%	100.0%	47.0%
December 31, 2014	301,567	2,578,071	1,124,417	3,241,053	100.0%	100.0%	32.1%
December 31, 2015	325,607	2,650,638	1,152,888	3,320,387	100.0%	100.0%	29.9%
December 31, 2016	350,646	2,770,533	1,170,623	3,451,463	100.0%	100.0%	28.2%
December 31, 2017	373,193	2,854,818	1,149,833	3,601,612	100.0%	100.0%	32.5%
December 31, 2018	392,004	2,989,597	1,145,395	3,620,319	100.0%	100.0%	20.8%
December 31, 2019	408,984	3,228,576	1,225,766	3,682,959	100.0%	100.0%	3.7%

EXPERIENCE TABLES

Pay Experience for Employees who are Active at Beginning and End of Year
Valuation Pay Analysis
Analyzed by Years of Service

Service Beginning of Year	Experience for 2019			
	Number	Expected Pay	Actual Pay	Ratio A/E
Under 5	1,947	$ 98,967,990	$ 101,463,637	102.52%
5-9	1,486	84,069,981	85,411,055	101.60%
10-14	1,108	68,206,392	69,882,938	102.46%
15-19	701	46,217,700	47,290,563	102.32%
20-24	777	50,700,220	52,514,418	103.58%
25-29	273	18,992,878	19,612,917	103.26%
30 & Over	165	13,023,614	13,313,549	102.23%
Total	6,457	$ 380,178,775	$ 389,489,077	102.45%
Over 10 Years	3,024	$ 197,140,804	$ 202,614,385	102.78%

Service Beginning of Year	Experience for 2015-2019			
	Number	Expected Pay	Actual Pay	Ratio A/E
Under 5	10,109	$ 480,328,582	$ 488,026,238	101.60%
5-9	6,752	370,185,321	372,968,512	100.75%
10-14	5,930	347,219,232	349,453,654	100.64%
15-19	4,407	263,721,804	265,996,461	100.86%
20-24	3,519	223,059,586	225,920,091	101.28%
25-29	1,444	100,584,035	101,596,476	101.01%
30 & Over	978	72,436,290	72,892,156	100.63%
Total	33,139	$ 1,857,534,850	$ 1,876,853,588	101.04%
Over 10 Years	16,278	$ 1,007,020,947	$ 1,015,858,838	100.88%

Analysis of Retirement Experience
Each Age

	2019 Retirement			2015-2019 Retirement		
Age	**Actual**	**Expected**	**Ratio A/E**	**Actual**	**Expected**	**Ratio A/E**
46	-	-	N/A	-	-	N/A
47	-	-	N/A	-	-	N/A
48	-	-	N/A	1	0.90	111.11%
49	-	0.10	0.00%	4	2.90	137.93%
50	5	6.20	80.65%	45	49.80	90.36%
51	10	8.65	115.61%	42	51.25	81.95%
52	7	10.32	67.83%	44	57.32	76.76%
53	9	7.90	113.92%	53	58.55	90.52%
54	6	8.50	70.59%	47	52.52	89.49%
55	18	13.20	136.36%	55	59.86	91.88%
56	8	13.07	61.21%	52	70.31	73.96%
57	23	18.62	123.52%	70	79.43	88.13%
58	12	15.37	78.07%	51	76.11	67.01%
59	21	20.74	101.25%	60	87.52	68.56%
60	22	25.31	86.92%	114	132.88	85.79%
61	17	23.83	71.34%	76	116.82	65.06%
62	24	21.30	112.68%	86	104.45	82.34%
63	9	19.65	45.80%	60	95.40	62.89%
64	16	17.00	94.12%	61	72.70	83.91%
65	22	16.90	130.18%	79	83.68	94.41%
66	20	14.40	138.89%	79	73.10	108.07%
67	21	14.00	150.00%	54	55.35	97.56%
68	8	6.45	124.03%	36	36.20	99.45%
69	8	6.85	116.79%	28	28.55	98.07%
70 & Over	21	90.00	23.33%	68	381.00	17.85%
Total	307	378.36	81.14%	1,265	1,826.60	69.25%
Total Under 70	286	288.36	99.18%	1,197	1,445.60	82.80%

Analysis of Retirement Experience

Age Groups

Age Group	2019 Retirements Actual	2019 Retirements Expected	2019 Retirements Ratio A/E	2015-2019 Retirements Actual	2015-2019 Retirements Expected	2015-2019 Retirements Ratio A/E
Under 55	37	41.67	88.79%	236	273.24	86.37%
55-59	82	81.00	101.23%	288	373.23	77.16%
60-64	88	107.09	82.17%	397	522.25	76.02%
65-69	79	58.60	134.81%	276	276.88	99.68%
70 & Over	21	90.00	23.33%	68	381.00	17.85%
Total	307	378.36	81.14%	1,265	1,826.60	69.25%
Total Under 70	286	288.36	99.18%	1,197	1,445.60	82.80%

Analysis of Turnover Experience

Years of Service	2019 Quits Actual	2019 Quits Expected	2019 Quits Ratio A/E	2015-2019 Quits Actual	2015-2019 Quits Expected	2015-2019 Quits Ratio A/E
0-4	530	356.72	148.58%	2,175	1,797.26	121.02%
5-9	180	103.67	173.64%	598	440.33	135.81%
10-14	57	37.09	153.66%	260	205.55	126.49%
15-19	17	15.76	107.85%	90	92.42	97.38%
20-24	19	9.10	208.84%	48	42.00	114.30%
25-29	2	0.74	269.54%	4	3.12	128.12%
Total	805	523.08	153.90%	3,175	2,580.68	123.03%

Analysis of Active Mortality Experience

Age	2019 Deaths			2015-2019 Deaths*		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
20-24	-	0.05	0.00%	1	0.22	445.21%
25-29	-	0.21	0.00%	1	1.01	99.19%
30-34	-	0.42	0.00%	1	1.99	50.31%
35-39	-	0.64	0.00%	3	3.21	93.32%
40-44	-	1.11	0.00%	7	5.39	129.94%
45-49	-	1.68	0.00%	3	9.29	32.29%
50-54	2	3.04	65.77%	14	16.56	84.53%
55-59	-	4.78	0.00%	10	23.27	42.97%
60 and Over	6	8.19	73.23%	26	37.45	69.43%
Total	8	20.11	39.77%	66	98.39	67.08%

Analysis of Disability Experience

	2019 Disabilities			2015-2019 Disabilities		
Age	**Actual**	**Expected**	**Ratio A/E**	**Actual**	**Expected**	**Ratio A/E**
20-24	-	0.02	0.00%	-	0.11	0.00%
25-29	-	0.14	0.00%	-	0.67	0.00%
30-34	-	0.26	0.00%	-	1.21	0.00%
35-39	-	0.39	0.00%	-	1.93	0.00%
40-44	1	0.78	128.30%	3	3.84	78.15%
45-49	-	1.68	0.00%	2	9.06	22.07%
50-54	-	3.27	0.00%	10	17.35	57.64%
55-59	3	4.09	73.31%	7	20.07	34.88%
60 and Over	1	1.54	64.75%	5	6.55	76.39%
Total	5	12.18	41.05%	27	60.78	44.43%

Analysis of Retiree Mortality Experience*

	2019 Experience			2015-2019 Experience		
Age	**Actual**	**Expected**	**Ratio A/E**	**Actual**	**Expected**	**Ratio A/E**
Under 60	20	2.90	690.51%	42	15.78	266.10%
60-64	18	9.03	199.33%	61	47.74	127.77%
65-69	26	20.52	126.69%	109	105.07	103.74%
70-74	40	29.22	136.91%	134	121.47	110.31%
75-79	23	26.71	86.11%	117	118.86	98.43%
80-84	27	24.37	110.78%	119	113.37	104.97%
85-89	25	21.61	115.69%	122	114.32	106.72%
90 & over	35	22.89	152.89%	127	103.06	123.22%
Total	214	157.25	136.09%	831	739.68	112.35%

**This analysis does not include beneficiary, QDRO, or disabled deaths.*

ACTUARIAL METHODS AND ASSUMPTIONS

The most recent experience study was completed in conjunction with the December 31, 2019 actuarial valuation. Please see our experience study, dated June 2020, to see more detail of the rationale for the current assumptions. As authorized under Sec. 40A-9 of Chapter 40A, the actuarial assumptions and methods are established set by the Board of Trustees based upon recommendations from the Fund's actuary.

Entry Age Normal Method

The Entry Age Normal actuarial cost method is the actuarial valuation method used for all purposes under ERF. The concept of this method is that funding of benefits for each member should be affected as a, theoretically, level contribution (as a level percentage of pay) from entry into ERF to termination of active status.

The Normal Cost (NC) for a fiscal year under this method is determined as described in the prior paragraph for each member. The ERF NC for the year is the total of individual normal costs determined for each active member. The Actuarial Accrued Liability (AAL) under this method is the theoretical asset balance of the normal costs that would have accumulated to date based upon current actuarial assumptions. To the extent that the assets of the fund are insufficient to cover the AAL, an Unfunded Actuarial Accrued Liability (UAAL) develops.

Actuarially Determined Contribution

The actuarially determined contribution rate is developed using an open group projection. The total contribution rate (member plus City) is the level percentage of pay needed to fund the Normal Cost for each year and pay off the UAAL over 30 years.

In the open group projection, the demographic assumptions are applied to the current active employees and any employees that are assumed to leave employment are replaced one for one with a new employee. Over time this results in the change of the employee group from mostly Tier A members to Tier B members. The projection is built to assume no gains or losses on the actuarial accrued liability or the actuarial value of assets.

In the projection, new members' pay is assumed to increase at 3.00% year over year (i.e. a new employee in 2020 is assumed to be hired at a salary that is 3.00% greater than a new employee hired in 2019). The 3.00% growth rate is equal to our wage inflation assumption of 3.00% (ultimate salary increase assumption). Note that this is not an assumption that payroll will grow at 3.00% per year. Payroll could grow more slowly in the near-term due to membership demographics.

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

New Entrant Profile

For the purposes of determining the funding period, an open group projection is used which replaces on a one-to-one basis each active member who leaves employment with an average new hire. The average new hire is determined based on a new entrant profile, which is created from the valuation data by determining the entry age and entry pay for anyone with eight or less years of service as of the valuation date, with salaries normalized to the valuation date. A summary of the new entrant profile is shown in the table below, with 25.9% of the population being male. The salaries below would be applicable for the year preceding the valuation date. Future cohorts of new hires have starting salaries that are assumed to grow at the General Wage Inflation of 3.00% over the salaries of the previous year.

New Entrant Profile

Entry Age	# of Employees	Average Salary
15-19	3	39,150
20-24	127	37,261
25-29	201	43,196
30-34	193	46,921
35-39	160	51,724
40-44	141	55,026
45-49	120	56,755
50-54	105	56,915
55-59	73	51,121
60-64	36	61,036
65-69	4	56,905
Total	1,163	49,498

Actuarial Value of Asset Method

The method for determining the actuarial value of assets in future years is equal to the market value of assets less a five-year phase in of the excess (shortfall) between expected investment return and actual income. The actual calculation is based on the difference between actual market value and the expected actuarial value of assets each year, and recognizes the cumulative excess return (or shortfall) at a minimum rate of 20% per year. Each year, a base is set up to reflect this difference. If the current year's base is of opposite sign to the deferred bases, then it is offset dollar for dollar against the deferred bases. Any remaining bases are then recognized over the remaining period for the base.

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

Annual Rate of Investment Return: For all purposes under the Fund, the rate of investment return is assumed to be 7.25% per annum, net of investment expenses. This rate includes an annual assumed rate of inflation of 2.50%. In addition, annual cost-of-living adjustments are assumed to occur on average at the rate of 2.50% per annum for Tier A members and 2.20% for Tier B members (due to the lower maximum on cost-of-living-adjustments).

Annual Compensation Increases: Each member's compensation is assumed to increase in accordance with a table based on actual ERF experience. Sample rates follow:

Years of Service	Merit, Promotion, Longevity	General	Total
0	5.25 %	3.00 %	8.25 %
1	4.25	3.00	7.25
2	3.25	3.00	6.25
3	2.50	3.00	5.50
4	2.00	3.00	5.00
5	1.75	3.00	4.75
6	1.75	3.00	4.75
7	1.25	3.00	4.25
8	1.25	3.00	4.25
9	1.00	3.00	4.00
10	1.00	3.00	4.00
11	1.00	3.00	4.00
12	0.75	3.00	3.75
13	0.75	3.00	3.75
14	0.75	3.00	3.75
15	0.75	3.00	3.75
16	0.75	3.00	3.75
17	0.75	3.00	3.75
18	0.50	3.00	3.50
19 & Over	0.00	3.00	3.00

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

Mortality:

Disabled Lives: The gender-distinct 2019 Texas Municipal Retirees Mortality Table for males and females respectively, set forward 4 years for males and 3 years for females. The rates are projected on a fully generational basis by Scale UMP to account for future mortality improvements.

Sample rates as of 2019 follow (rate per 1,000):

	Disability Mortality Rate	
Age	**Male**	**Female**
20	35	30
30	35	30
40	35	30
50	35	30
60	35	30
70	35	30
80	84	51
90	240	164

Other Benefit Recipients:

The gender-distinct 2019 Texas Municipal Retirees Mortality Tables are used for males and females respectively. The rates are projected on a fully generational basis by Scale UMP to account for future mortality improvements.

Sample rates as of 2019 follow (rate per 1,000), with projected mortality applied:

	Mortality Rate	
Age	**Male**	**Female**
30	0.4	0.1
40	0.8	0.4
50	2.8	1.2
60	7.5	3.6
70	20.2	11.3
80	55.9	35.8
90	157.2	114.2

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

Mortality:

Active Members: The PUB(10) Mortality Table for General Employees tables are used for males and females respectively. The rates are projected on a fully generational basis using Scale UMP.

Sample rates follow (rate per 1,000):

	Mortality Rate	
Age	**Male**	**Female**
30	0.3	0.1
40	0.6	0.3
50	1.4	0.8
60	2.9	1.7
70	6.4	4.5
80	15.8	12.2
90	134.9	105.6

10% of active deaths are assumed to be service related.

Disability: A client-specific table of disability incidence with sample rates follows (rate per 1,000):

20% of disabilities are assumed to be service related. There is a 0% assumption of disability for members who have over 10 years of service and are eligible for retirement.

Age	Disability Rate
30	0.1
40	0.5
50	1.2
60	2.2

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

Retirement: Upon eligibility, active members are assumed to retire as follows (rate per 1,000):

Tier A:

Age	**Male**		**Female**	
	First Year Eligible	Thereafter	First Year Eligible	Thereafter
48-49	100	100	100	100
50	550	550	450	350
51	500	450	400	350
52	500	300	400	300
53	400	300	350	300
54	350	250	350	200
55	300	250	350	250
56	300	250	350	250
57	300	250	350	250
58-59	300	250	250	200
	Service < 18 yrs.	Service 18 yrs.+	Service < 18 yrs.	Service 18 yrs. +
60	80	230	90	200
61	90	230	90	180
62	100	230	90	200
63	100	230	150	150
64	150	230	120	130
65	150	230	120	300
66	200	230	150	300
67	200	230	250	300
68	200	230	150	300
69	200	230	150	300
70	1,000	1,000	1,000	300

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

Retirement, Continued: Upon eligibility, active members are assumed to retire as follows (rate per 1,000):

Tier B:

Age	Male		Female	
	Service < 40 yrs.	Service 40 yrs. +	Service < 40 yrs.	Service 40 yrs. +
<55	10	350	10	350
55-56	20	350	20	350
57-58	30	350	30	350
59-60	40	350	40	350
61-62	50	350	50	350
63-64	60	350	60	350
65	180	600	200	450
66	200	250	250	250
67	200	250	250	250
68	200	250	150	250
69	200	250	150	250
70	1,000	1,000	1,000	1,000

*For service < 40 yrs, rates shown are for those who met the rule of 80.

Retirement of Deferred Vested Members: All deferred vested members are assumed to commence payment at their normal retirement age, which is age 60 for Tier A members and age 65 for Tier B members.

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

General Turnover: A table of termination rates based on ERF experience as shown below.

	Terminations (per 1,000)	
Years of Service	**Male**	**Female**
0	228	200
1	180	165
2	144	150
3	110	120
4	90	95
5	75	90
6	67	80
7	60	65
8	51	48
9	43	48
10	33	45
11	33	32
12	30	30
13	30	30
14	22	20
15	22	14
16	19	14
17	19	14
18	19	14
19	19	14
20	12	14
21	12	14
22	12	6
23	12	6
24	12	6
25	12	6
26 & Over	5	6

There is 0% assumption of termination for members eligible for retirement.

Mortality Improvement: Scale UMP is used to project mortality improvements for retirees on a fully generational basis.

Refunds of Contributions: Members are assumed to choose the most valuable termination benefit.

Operational Expenses: The amount of estimated administrative expenses expected in the next year is assumed to be equal to the prior year's expenses and is incorporated in the Normal Cost.

ACTUARIAL METHODS AND ASSUMPTIONS (CONT.)

Marital Status: 75% of active male members and 50% of active female employees are assumed to be married.

Vacation Leave Conversions: Members with 20 or more years of service are assumed to convert unused vacation leave to 1.5 months of service. Other members are assumed to convert unused vacation leave to 1 month of service. No vacation leave conversion is assumed for disability retirement.

Spouse Age: The female spouse is assumed to be 3 years younger than the male spouse.

Payroll Growth Rate: Used to estimate projected payroll for the following fiscal year. Assumed to be equal to the inflation rate of 2.50%.

Member's Pay: In determining the member's valuation salary, the greater of the prior calendar year's gross pay and the member's rate of compensation is used.

Form of Payment: For Tier A it is assumed that 60% of married active male members and 84% of married active female employees will elect a Joint & 50% Survivor form of payment. Taking into consideration the marriage assumption and the inherent subsidy in the System's Joint & 100% Survivor factors, the male employees are valued with Joint and 28.0% Survivor annuities and the female employees are valued with Joint and 19.5% Survivor annuities. It is also assumed that 100% of Tier B employees will elect the normal form of payment under Tier B.

Data Adjustments: Certain records are missing spousal information. For these records we use the marital status assumption and spousal age difference assumption to value these records. No other adjustments are made to the data.

Actuarial Equivalence Assumptions: for form of payment conversion and Tier B early retirement factors are based on the following assumptions:

a. Interest Rate of 8.00%.
b. Mortality: Unisex blend (60% male and 40% female) of the following assumptions for males and females. 109% of the RP-2000 Combined Healthy Table for males with Blue Collar adjustment projected to 2026 using improvement scale BB for males. 103% of the RP-2000 Combined Healthy Table for females with Blue Collar adjustment projected to 2026 using improvement scale BB for females.
c. Cost-of-living-adjustments (COLA): a 3.0% COLA assumption for Tier A members and a 2.50% COLA assumption for Tier B members.

Changes in Assumptions and Methods Since Prior Valuation: Changes were made to salary, mortality, retirement, and turnover rates. The discount rate, payroll growth rate, and form of payment assumptions have also been updated. Please see the experience study report dated June 2020 for more information.

SUMMARY OF BENEFIT PROVISIONS

Employees' Retirement Fund of the City of Dallas
As of December 31, 2019

Membership	An employee becomes a member upon permanent employment and contributes to the Fund.
Tier A	A person who was employed by the City prior to January 1, 2017, or who was re-employed by the City on or after January 1, 2017 and whose pre January 1, 2017 credited service was not cancelled by withdrawal or forfeiture or was reinstated.
Tier B	A person who was employed by the City on or after January 1, 2017, or who was re-employed by the City on or after January 1, 2017 and whose pre January 1, 2017 credited service has been cancelled by withdrawal or forfeiture.
Contributions	Member: 37% of the current adjusted total obligation rate. New rates effective October 1 after the valuation date. City: 63% of the current adjusted total obligation rate. New rates effective October 1 after the valuation date.
Definitions	Final Average Salary: **Tier A** Average monthly salary over the member's highest three years (or 36 months) of service. **Tier B** Average monthly salary over the member's highest five years (or 60 months) of service. Credited Service: Length of time as an employee of the City of Dallas and while making contributions to the Fund.

SUMMARY OF BENEFIT PROVISIONS (CONT.)

Retirement Pension

Eligibility:

Tier A

a. Attainment of age 60; or
b. Attainment of age 55 (if credited service began before May 9, 1972); or
c. At any age after completion of 30 years of credited service with a reduced benefit before age 50; or
d. Attainment of age 50, if the sum of an active member's age and credited service is at least equal to 78.

Tier B

a. Attainment of age 65 and 5 years of service; or
b. At any age after completion of 40 years of credited service; or
c. At any age if the sum of an active member's age and credited service is at least equal to 80 (under this eligibility the member's pension will be actuarially reduced for each year prior to the age of 65 that the member retires).

Retirement Benefits:

Tier A

The retirement benefit equals 2-3/4% multiplied by average monthly earnings multiplied by credited service limited to a maximum of 36.3636 years plus a monthly $125 health supplement (prorated for service less than 5 years).

Tier B

The retirement benefit equals 2-1/2% multiplied by average monthly earnings multiplied by credited service limited to a maximum of 40 years (no monthly health supplement).

Form of Payment:

Tier A

An unreduced pension benefit under a joint and one-half survivor option with 10 years guaranteed or a ten-year certain and life option. An actuarially equivalent joint and full survivor option is also available.

Tier B

An unreduced pension payable for life with 10 years guaranteed. Actuarially equivalent joint and survivor options (50% and 100%) are also available.

SUMMARY OF BENEFIT PROVISIONS (CONT.)

Early Retirement Factors:

Tier A

For members retiring prior to age 50 with 30 or more years of service the pension shall be multiplied by the following percentage:

Age	Percentage
49	93.3
48	87.2
47	81.5
46	76.3
45	71.5
44	67.0

Tier B

For members retiring prior to age 65 with less than 40 years of service, the pension shall be multiplied by the following percentage:

Age	Percentage	Age	Percentage
64	89.72	56	40.03
63	80.66	55	36.41
62	72.64	54	33.15
61	65.53	53	30.22
60	59.21	52	27.57
59	53.58	51	25.18
58	48.56	50	23.01
57	44.06	49	21.05

Deferred Retirement

Eligibility: Deferred retirement pension benefit commencing at age 60 for Tier A members or at age 65 for Tier B members, with at least five (5) years of credited service, and accumulated contributions are left on deposit with the Fund.
Monthly Benefit: The deferred retirement benefit is equal to the retirement pension based on earnings and credited service at the time of termination.

SUMMARY OF BENEFIT PROVISIONS (CONT.)

Disability Retirement Pension

Non-Service Disability:

1. Eligibility: Five (5) years of service and totally and permanently incapacitated for duty.
2. Monthly Benefit: Computed based on average monthly earnings and credited service at time of disability but not less than 10 times the percentage multiplier multiplied by the average monthly earnings.

Service Disability:

1. Eligibility: Totally and permanently incapacitated from the further performance of duty as a result of injury while in the course of employment for the City.
2. Monthly Benefit: Calculated as a non-service disability pension but not less than $1,000 per month.

Death Benefits

Eligibility: active or inactive members who die prior to retirement

Benefit: For members with less than 2 years of service or inactive member with less than 5 years of service: refund of the members contributions.

Benefit: For members with more than 2 years of service but less than 15 years of service: an unreduced pension to designated beneficiary for 120 months or a one-half survivor option for life with 120 payments guaranteed.

Benefit: For members eligible for retirement or members and inactive members with more than 15 years of service: an unreduced pension to designated beneficiary for 120 months or a Full Survivor option for life with 120 payments guaranteed.

Form: Benefit paid in accordance with the option on file, or the eligible option, or if no eligible beneficiary, a lump sum equivalent of 10 years of benefit payments to the member's estate.

Minimum Benefit for Service Death: For job-related death a minimum of 10 years of service used in calculation of benefit. Benefit will not be less than $1,000 per month.

SUMMARY OF BENEFIT PROVISIONS (CONT.)

Return of Accumulated Contributions

A member at the time of termination is entitled to be paid accumulated contributions without interest.

Cost-of-Living Adjustments

An annual cost-of-living adjustment to the base pension benefit shall be made based on the greater of:

Tier A

a. The percentage of change in the price index for October of the current year over October of the previous year, up to 5%, or
b. The percentage of annual average change in the price index for the 12-month period ending with the effective date of the adjustment, up to 5%.

Tier B

a. The percentage of change in the price index for October of the current year over October of the previous year, up to 3%, or
b. The percentage of annual average change in the price index for the 12-month period ending with the effective date of the adjustment, up to 3%.

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STATISTICAL SECTION

The Statistical Section provides additional historical perspective, context and detail to assist the reader using the information in the financial statements, notes to the financial statements and required supplementary information to understand the economic condition of the Plan. The schedules presented contain information on financial trends, operations, and additional analytical information on employees' membership and retirement benefits. The information in this section is obtained from CAFRs for relevant years, actuarial reports, and various internal sources.

Schedule of Additions by Source: Presents contributions, investment revenue and contributions as a percent of covered payroll for ten years.

Schedule of Deductions by Type: Presents benefit payments, administrative expenses and refunds for ten years.

Schedule of Changes in Net Position: Presents the increase or decrease in net position for ten years.

Schedule of Benefit Expenses by Type: Presents retiree, beneficiary, disability and supplemental benefit expenses for ten years.

Average Benefit Payment: Presents the average monthly benefit payment, average final salary, and number of retired members based on years of credited service for nine years. An additional year will be displayed as it becomes available.

Retired Members by Type of Benefit: Presents the number or retirees receiving various ranges of monthly benefit amounts. The information is further broken out by type of retirement and retirement option selected.

Average Age and Monthly Pension at Retirement: Presents the average age, average monthly pension, and average age at retirement based on status (members only, members and survivors, and survivors only).

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SCHEDULE OF ADDITIONS BY SOURCE

($ in thousands)

Year Ending	Member Contributions	Employer Contributions	% of Annual Covered P/R	Investment Income/ (Loss)	Investment Professional Expenses	Other Income	Total Additions
2010	$31,666	$27,323	8.2	$409,886	($11,173)	$888	$458,590
2011	31,748	27,302	8.6	38,580	(14,026)	405	84,009
2012	35,644	30,371	9.6	401,532	(15,854)	429	452,122
2013	41,730	37,823	11.0	509,784	(16,286)	626	573,677
2014	46,536	45,833	12.6	226,670	(18,678)	157	300,518
2015	50,742	50,721	13.2	(35,158)	(18,185)	162	48,282
2016	53,436	56,130	13.9	310,730	(15,812)	333	404,817
2017	55,175	58,966	14.4	430,396	(16,886)	207	527,858
2018	56,772	60,924	14.4	(150,098)	(17,685)	121	(49,966)
2019	58,314	62,177	14.3	569,071	(18,129)	301	671,734

SCHEDULE OF DEDUCTIONS BY TYPE

($ in thousands)

Year Ending	Benefit Payments	Administrative and Depreciation Expenses	Refunds	Total Deductions
2010	$182,883	$3,235	$4,476	$190,594
2011	195,270	3,492	4,982	203,744
2012	209,097	3,446	4,369	216,912
2013	216,988	3,595	4,405	224,988
2014	225,614	4,150	4,629	234,393
2015	235,106	4,594	4,854	244,554
2016	243,775	5,343	5,864	254,982
2017	253,534	5,951	8,156	267,641
2018	263,981	7,485	8,515	279,981
2019	278,007	7,516	10,436	295,959

SCHEDULE OF CHANGES IN NET POSITION

($ in thousands)

Year Ending	Change in Net Position
2010	$267,996
2011	(119,735)
2012	235,210
2013	348,689
2014	66,125
2015	(196,277)
2016	149,835
2017	260,217
2018	(329,947)
2019	375,775

SCHEDULE OF BENEFIT PAYMENTS BY TYPE

($ in thousands)

Year Ending	Retiree	Beneficiary	Disability	Supplement	Total
2010	$162,042	$7,984	$4,322	$8,535	$182,883
2011	176,028	5,767	4,536	8,939	195,270
2012	187,712	7,561	4,677	9,147	209,097
2013	196,525	6,470	4,656	9,337	216,988
2014	205,172	6,147	4,743	9,552	225,614
2015	214,343	6,101	4,908	9,754	235,106
2016	220,979	7,926	4,884	9,986	243,775
2017	229,843	8,317	5,194	10,180	253,534
2018	240,186	8,276	5,109	10,410	263,981
2019	253,636	8,640	5,046	10,685	278,007

AVERAGE BENEFIT PAYMENT

as of December 31, 2019

Retirement Effective Dates	Years of Credited Service						
	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30+
Period 01/01/2019 to 12/31/2019							
Average monthly benefit	$411.49	$868.60	$1,559.50	$2,554.02	$3,007.07	$4,360.05	$5,478.80
Average final average salary	$4,573.78	$3,200.67	$3,625.18	$4,812.60	$4,531.23	$5,776.53	$6,132.39
Number of retired members	13	50	51	56	106	68	39
Period 01/01/2018 to 12/31/2018							
Average monthly benefit	$452.84	$901.30	$1,727.75	$2,169.69	$3,120.36	$4,181.67	$5,731.43
Average final average salary	$2,312.10	$2,700.97	$4,721.44	$3,588.84	$5,033.05	$5,807.68	$6,395.12
Number of retired members	18	28	43	47	65	62	55
Period 01/01/2017 to 12/31/2017							
Average monthly benefit	$395.27	$840.28	$1,456.48	$2,422.33	$3,365.92	$4,441.36	$5,039.49
Average final average salary	$4,260.11	$1,821.11	$3,470.15	$4,985.34	$5,366.59	$6,123.49	$5,798.23
Number of retired members	12	41	51	44	53	56	37
Period 01/01/2016 to 12/31/2016							
Average monthly benefit	$325.38	$762.64	$1,487.94	$2,427.06	$2488.97	$4,170.49	$4,974.11
Average final average salary	$4,28971	$3,561.23	$4,840.13	$5,273.92	$4,942.79	$5,650.83	$5,719.72
Number of retired members	20	37	40	65	45	50	65
Period 01/01/2015 to 12/31/2015							
Average monthly benefit	$144.71	$882.40	$1,36.61	$2,125.58	$3,025.21	$4,105.72	$4,922.06
Average final average salary	$3,346.57	$4,697.46	$4,059.07	$4,581.92	$4,947.81	$5,592.10	$5,691.11
Number of retired members	4	33	24	50	46	62	57
Period 01/01/2014 to 12/31/2014							
Average monthly benefit	$327.07	$643.96	$1,451.21	$1,933.56	$2,948.51	$4,012.32	$5,568.28
Average final average salary	$3,844.96	$3,210.89	$4,108.76	$4,164.61	$4,888.48	$5,444.86	$6,371.13
Number of retired members	7	42	36	56	45	71	38
Period 01/01/2013 to 12/31/2013							
Average monthly benefit	$302.03	$577.63	$1,688.96	$2,012.42	$2,909.37	$3,823.04	$4,639.47
Average final average salary	$3,891.55	$3,100.14	$4,953.89	$4,223.11	$4,763.82	$5,259.98	$5,389.69
Number of retired members	8	29	33	33	49	62	44
Period 01/01/2012 to 12/31/2012							
Average monthly benefit	$325.10	$845.25	$1,590.56	$2,009.64	$2,829.45	$3,963.86	$4,516.58
Average final average salary	$2,932.66	$4,442.19	$4,632.86	$4,117.88	$4,570.14	$5,396.80	$5,268.80
Number of retired members	12	39	32	26	39	61	32
Period 01/01/2011 to 12/31/2011							
Average monthly benefit	$323.02	$787.06	$1,259.41	$2,027.33	$3,098.78	$3,753.60	$4,262.55
Average final average salary	$3,797.67	$3,757.08	$3,701.60	$4,260.84	$5,052.09	$5,105.35	$4,990.11
Number of retired members	15	33	41	48	58	105	61
Period 01/01/2010 to 12/31/2010							
Average monthly benefit	$223.93	$734.08	$1,302.73	$1830.30	$2,995.36	$3,710.91	$4,116.13
Average final average salary	$2,594.83	$3,678.95	$4,364.32	$4,784.05	$4,903.64	$5,039.60	$4,771.62
Number of retired members	8	36	49	44	70	133	91

* Data includes disability retirements

RETIRED MEMBERS BY TYPE OF BENEFIT

As of December 31, 2019

Amount of Monthly		Type of Retirement							Option Selected		
Benefits		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**#1**	**#2**	**#3**
$1	$250	51		11	1				10	16	37
$251	$500	130	1	43	28		1	8	23	80	109
$501	$750	217	4	57	58		4	19	39	153	167
$751	$1,000	248	8	59	34		17	25	55	169	168
$1,001	$1,250	233	8	55	23	5	13	16	51	151	150
$1,251	$1,500	240	12	63	18	10	15	4	73	122	164
$1,501	$1,750	236	11	73	13	8	15	5	59	121	187
$1,751	$2,000	248	14	53	13	10	8	6	90	120	143
over	$2,000	4,309	128	362	76	8	46	24	1,182	2,034	1,732
Total		5,912	186	776	264	41	119	107	1,582	2,966	2,857

a) Type of Retirement

1) Normal retirement

2) Early retirement

3) Beneficiary payment, normal or early retirement

4) Beneficiary payment, service connected death

5) Service connected disability retirement

6) Non-Service connected disability retirement

7) Beneficiary payment, disability retirement

b) Option Selected

1) Joint & 100%-beneficiary receives 100% of member's benefit

2) Joint & 50%-beneficiary receives 50% of member's benefit

3) 10 Year Certain-beneficiary receives member's unused benefits

AVERAGE AGE AND MONTHLY PENSION AT RETIREMENT

As of December 31, 2019

Status	Average Age	Average Pension	Average Age at Retirement
Members Only	69	$3,299	55.86
Members and Survivors	70	$3,085	N/A
Survivors Only	74	$1,937	N/A

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