GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

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RETIREMENT PLAN FOR THE EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

ACTUARIAL VALUATION REPORT

AS OF DECEMBER 31, 2015

Gabriel Roeder Smith & Company

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May 10, 2016

Board of Trustees
Employees' Retirement Fund of the City of Dallas, Texas
600 North Pearl Street
Suite 2450
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, Texas ("ERF" or the "Fund") as of December 31, 2015.

This valuation provides information on the funding status of ERF. It includes a determination of the actuarially calculated contribution rates for the 2016 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, 2016 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 2017.

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, 2015. 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.

There were no changes in the actuarial assumptions or methods since the prior valuation. All actuarial assumptions and methods are described under Section O of this report. We believe the actuarial assumptions individually and collectively represent reasonable expectations of experience over the long-term future.

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.

Respectfully submitted,

Lewis Ward
Consultant

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

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TABLE OF CONTENTS

Section	Page Number	
		COVER LETTER
A	2	EXECUTIVE SUMMARY
B	3	PURPOSES OF THE ACTUARIAL VALUATION
C	4	REPORT HIGHLIGHTS
D	5	FUNDING PROCESS
E	6	ACTUARIAL CONTRIBUTIONS
F	7	ACTUARIAL ASSUMPTIONS
G	8	ERF BENEFITS
H	9	EXPERIENCE DURING PREVIOUS YEARS
I	10	ASSET INFORMATION
J	11	FUNDED STATUS
K	12	GASB DISCLOSURE
L	13	CLOSING COMMENTS
M	14	ACTUARIAL TABLES
N	31	EXPERIENCE TABLES
O	39	ACTUARIAL METHOD AND ASSUMPTIONS
P	46	SUMMARY OF BENEFIT PROVISIONS

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EXECUTIVE SUMMARY

($ in 000's)

The key results from the actuarial valuation of the Employees' Retirement Fund of the City of Dallas as of December 31, 2015, may be summarized as follows:

	December 31, 2014	December 31, 2015
	(1)	(2)
• Members		
- Actives	7,180	7,477
- Benefit recipients	6,598	6,756
- Deferred vested*	739	748
- Other terminated*	360	415
- Total	14,877	15,396
• Covered payroll (including overtime)	$ 363,109	$ 393,186
• Normal cost	$ 72,598	$ 78,818
as % of expected payroll	20.29%	20.36%
• Actuarial accrued liability	$ 4,004,055	$ 4,129,133
• Actuarial value of assets	$ 3,241,053	$ 3,320,387
• Market value of assets	$ 3,390,579	$ 3,194,582
• Unfunded actuarial accrued liability (UAAL)	$ 763,002	$ 808,746
• Estimated yield on assets (market value basis)	6.14%	(1.83)%
• Estimated yield on assets (actuarial value basis)	10.29%	7.02%
• Contribution Rates		
- Prior Adjusted Total Obligation Rate	35.29%	36.00%
- Current Total Obligation Rate	43.17%	42.54%
- Current Adjusted Total Obligation Rate	36.00%	36.00%
• Actuarial gains/(losses)		
- Assets	$ 61,000	$ (31,243)
- Actuarial liability experience	$ 21,967	$ 26,829
- Assumption and method changes	$ (292,637)	$ -
• 30-year level % of pay funding cost	$ 125,084	$ 134,824
as % of payroll (Employee + City)	34.32%	34.19%
• Funded ratio		
- Based on actuarial value of assets	80.9%	80.4%
- Based on market value of assets	84.7%	77.4%

** 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.*

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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, 2015.

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 2016 calendar year; and
- To develop the current total obligation rate and the current adjusted total obligation rate for the fiscal year beginning October 1, 2016.

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REPORT HIGHLIGHTS

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

	2015	2016
Contribution Rates (% of Payroll)		
Normal Cost (including administrative expense)	21.39%	21.53%
Total Actuarial Contribution Rate	34.32%	34.19%
Total Projected Actuarial Contribution	$125,084	$134,824

Funded Status (on AVA basis)	December 31, 2014	December 31, 2015
Actuarial Accrued Liability	$4,004,055	$4,129,133
Actuarial Value of Assets	3,241,053	3,320,387
Unfunded Actuarial Accrued Liability	$763,002	$808,746
Funded Ratio	80.94%	80.41%

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FUNDING PROCESS

Based on the previous work of the Employees' Retirement Fund Study Committee, which was ratified by both the 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%.

As shown in Table 3 (under Section M) 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, 2015. 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, 2016. 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 40-A of the Dallas City Code

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ACTUARIAL CONTRIBUTIONS

The Actuarially Required Contribution Rate developed in this actuarial valuation is 34.19% 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 2017. As shown in Section M -Table 3 of this report, the debt service payment is determined to be 8.35% of projected payroll. The sum of these rates is 42.54% (the Current Total Obligation Rate), which is 6.54% 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 2017 (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 40-A 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, 8.35% of the City's contribution rate will go towards the debt service on the pension obligation bonds and the remaining 14.33% will be contributed towards the ERF. This means a total contribution rate of 27.65% will be contributed to the ERF, which compares to the actuarially calculated rate of 34.19%.

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ACTUARIAL ASSUMPTIONS

Section O 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 8.00% and includes an annual assumed rate of inflation of 3.00%.

There were no changes in the actuarial assumptions since the prior valuation report. Please see Section O for a complete description of these assumptions.

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ERF BENEFITS

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

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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 -1.83% (calculated on a dollar-weighted basis, net of investment expenses). Given this return, the actual investment income was less than the expected investment income on the actuarial value of assets; therefore, an investment income loss is being partially recognized this year (1/5) and partially deferred into the near future (4/5). After also recognizing prior years' deferred investment gains and losses (years 2014 - 2011), there was an overall actuarial loss of $31 million on the actuarial value of assets as of December 31, 2015. The rate of return on the actuarial value of assets for 2015 was 7.02% (calculated on a dollar-weighted basis, net of investment expenses). This result was less than the current investment return assumption of 8.00%.

During 2015, there was a liability actuarial gain of about $26.9 million derived from demographic assumptions and non-investment economic assumptions (cost-of-living-adjustment). As seen below, ERF experienced an overall experience actuarial loss in calendar year 2015 in the amount of $4.4 million.

The total (G)/L for the prior 4 years is broken down as follows ($ in millions):

		2012	2013	2014	2015
1)	Actuarial (Gain)/Loss on Assets	$209.96	($144.95)	($61.00)	$31.24
2)	Actuarial (Gain)/Loss on Liabilities	(6.04)	(19.70)	(21.97)	(26.83)
3)	Total Actuarial (Gain) or Loss (1+2)	203.92	(164.65)	(82.97)	4.41

The unfunded actuarial accrued liability (UAAL) also increased $30.6 million due to the difference between the calculated contribution rate and the actual contributions during 2015.

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ASSET INFORMATION

The assets of the Fund (on a market value basis) decreased from $3,391 million as of December 31, 2014 to $3,195 million as of December 31, 2015.

The assets recognized for actuarial valuation purposes (known as "the actuarial value of assets") are the product of a five-year market smoothing asset method. 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. See Table 6 in Section M of this report for the determination of the actuarial value of assets as of December 31, 2015.

The actuarial value of assets has increased from $3,241 million to $3,320 million during 2015. The assets are less than the expected assets, $3,352 million, due to investment losses in the five year averaging period.

The rate of return on investments for 2015 on the actuarial value of assets was 7.02%, compared to 10.29% in 2014. 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 M of this report.

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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 actuarial value of assets, the Funded Ratio of ERF decreased from 80.9% as of December 31, 2014 to 80.4% as of December 31, 2015.

The UAAL increased from $763.0 million as of December 31, 2014 to $808.7 million as of December 31, 2015. Since the UAAL is positive, this implies the actuarial accrued liabilities exceed the actuarial assets of the Fund as of December 31, 2015.

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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, TX. 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.

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CLOSING COMMENTS

The unfunded actuarial accrued liability of the Fund has increased since the prior valuation due to investment losses and larger than expected salary increases. A gain, due to a less-than-expected COLA, was also recognized and mostly offset the losses mentioned.

The calculated contribution rate necessary to pay the Fund's normal cost and amortize the UAAL over 30 years is 34.19% of pay. When the debt service payment on the Pension Obligation Bonds is considered, the total contribution rate is 42.54% of payroll. However, Chapter 40-A 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 2017 will be 36.00% of pay.

The Fund is deferring $126 million in investment losses to be recognized in future valuations. 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 for almost 20 years.

Given the difference between the calculated contribution rate and the maximum allowed contribution rate, and the likelihood this difference may increase in the future since the current contribution rate is less than the calculated contribution rate, we are concerned that the current benefits and financing structure may not be sustainable over the long term. We have communicated this information to the Board of Trustees. The Board has responded by proposing changes to the benefit structure for newly hired employees covered by the ERF that when enacted should restore confidence in the long term sustainability of the Fund.

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ACTUARIAL TABLES

Table Number	Content of Tables	Page
1	Summary of Actuarial Values	15
2	Development of Actuarially Required Contribution for 2017	16
3	Information for City Ordinance 25695	17
4	Net Assets Available for Benefits	21
5	Change in Assets Available for Benefits	22
6	Development of Actuarial Value of Assets	23
7	Historical Investment Performance	24
8	Analysis of Change in Unfunded Actuarial Accrued Liability	25
9	Analysis of Actuarial Gains and Losses for 2015	26
10	Schedule of Funding Progress	27
11	Summary of Data Characteristics	28
12	Distribution of Active Members and Payroll by Age and Years of Service	29
13	Distribution of Benefit Recipients	30

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TABLE 1

Summary of Actuarial Values
As of December 31, 2015
($ in 000's)

		Entry Age Actuarial Values		
	APV* of Projected Benefits	**Actuarial Accrued Liability (AAL)**	**Normal Cost $**	**Normal Cost % of Pay****
1 Active Members				
a. Retirement	$ 1,662,120	$ 1,302,183	$ 54,196	14.01%
b. Death	36,313	23,007	2,085	0.54%
c. Disability	20,536	8,282	1,888	0.49%
d. Termination	133,883	10,542	17,878	4.62%
e. Health Subsidy	50,352	34,774	2,771	0.70%
Total	1,903,204	1,378,788	78,818	20.36%
2 Benefit Recipients	2,650,638	2,650,638		
3 Other Inactive	99,707	99,707		
4 Total Actuarial Values of Benefits	4,653,549	4,129,133	78,818	20.36%
5 Actuarial Value of Assets		3,320,387		
6 Unfunded Actuarial Accrued Liability (4 - 5)		808,746		
7 Funding Ratio		80.41%		
8 Market Value Measurements				
UAAL on market value		934,551		
Funded Ratio on market value		77.37%		

* *APV – Actuarial Present Value*
** *Percentage of expected payroll for continuing active members.*

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TABLE 2

Development of Actuarially Required Contribution for FY 2017

($ in 000's)

	$	% of Pay
Actuarial Requirement		
a. Payment to Amortize UAAL over 30 years*	$ 51,271	12.66%
b. Normal Cost	78,818	20.36%
c. Administrative Expense	4,735	1.17%
Total	$ 134,824	34.19%

** Amortization is determined as a level percentage of projected payroll*

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TABLE 3

Information for Ordinance 25695

For the Fiscal Year Commencing October 1, 2016

1	**Prior Adjusted Total Obligation Rate**	36.00%
2	**Actuarially Required Contribution Rate**	34.19%
3	**Debt Service**	
	a Scheduled Debt Service Payment for FY 2016	33,803,365
	b Projected Payroll	404,981,377
	c Pension Obligation Bond Credit Rate (a/b)	8.35%
4	**Current Total Obligation Rate (2 + 3c)**	42.54%
5	**Current Adjusted Total Obligation Rate**	36.00% *
6	**Allocation of Contribution Rates for FY 2014**	
	a Employee (5 x .37)	13.32%
	b City (5 x .63)	22.68%

* 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%.

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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:

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

(B) 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:

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

(D) 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:

(A) 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:

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

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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.

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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.

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TABLE 4

Net Assets Available for Benefits
($ in 000's)

	December 31, 2014	December 31, 2015
1 Assets		
a. Cash & Short-Term	$128,958	$85,936
2 Receivables		
a. Accrued Investment Income	15,069	15,303
b. Securities Sold	19,535	4,220
c. Employer Contribution	1,100	1,463
d. Employee Contribution	1,103	1,409
e. Pending Contracts	1,601	606
	38,408	23,001
3 Investments		
a. Index Funds	119,878	109,994
b. Fixed Income	908,305	878,185
c. Equities	1,880,176	1,724,367
d. Real Estate	235,696	244,462
e. Private Equity	116,122	146,051
	3,260,177	3,103,059
4 Total Assets	3,427,543	3,211,996
5 Liabilities		
a. Accounts Payable	5,101	6,193
b. Investment Transactions	31,863	11,221
	36,964	17,414
6 Net Assets Available For Benefits	3,390,579	3,194,582

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TABLE 5

Change in Assets Available for Benefits
Fiscal Year Ending December 31, 2015
($ in 000's)

	2014	2015
1 Assets Available at Beginning of Year	$ 3,325,440	$ 3,390,579
Adjustment *	6,920	7,905
	3,332,360	3,398,484
2 Revenues		
a. Employer Contributions	45,833	50,721
b. Employee Contributions	46,536	50,742
c. Investment Income	100,762	98,977
d. Investment Expense	(17,156)	(17,885)
e. Realized and Unrealized Gains (Losses)	114,632	(143,102)
f. Other (Security Lending)	2,093	1,202
Total Revenues	292,700	40,655
3 Expenses		
a. Benefits	225,614	235,106
b. Refunds	4,859	4,854
c. Administration Expense	4,008	4,597
Total Expense	234,481	244,557
4 Assets Available at End of Year (1 + 2 - 3)	3,390,579	3,194,582

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

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Development of Actuarial Value of Assets
As of December 31, 2015
($ in 000's)

	Market Value	Actuarial Value
1 Value of Assets @ 12-31-2014	$ 3,390,579	$ 3,241,053
2 Non-Investment Cash Flows during 2015		
a. Employer Contributions	50,721	50,721
b. Employee Contributions	50,742	50,742
c. Benefits (including refunds)	(239,960)	(239,960)
d. Administrative Expenses	(4,597)	(4,597)
Total	(143,094)	(143,094)
3 Expected Investment Returns @ 8.00%	253,671	253,671
4 Expected Assets @ 12-31-2015 (1 + 2 + 3)	3,501,156	3,351,630
5 Actual Assets Available for Benefits	3,194,582	
6 Gain/ (Loss) From Investment Returns (5 - 4)	(306,574)	
7 Recognition of Gains / (Losses)		
a. One-fifth of Current Year Gain/(Loss) (one-fifth of 6)		(61,315)
b. One-fifth of 2014 Gain/(Loss)		(8,126)
c. One-fifth of 2013 Gain/(Loss)		52,493
d. One-fifth of 2012 Gain/(Loss)		29,667
e. One-fifth of 2011 Gain/(Loss)		(43,962)
Total		(31,243)
8 Actuarial Value of Assets @ 12-31-2015 (4 + 7)		3,320,387

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TABLE 7

Historical Investment Performance
Dollar Weighted Basis Net of Investment Expenses

Calendar Year	On Market Value	On Actuarial Value
1999	16.74%	17.69%
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%
5-year average ending in 2015	7.00%	6.32%
10-year average ending in 2015	5.81%	6.07%

TABLE 8

Analysis of Change in Unfunded Actuarial Accrued Liability
For the Year Ending December 31, 2015
($ in 000's)

1 UAAL as of December 31, 2014		$ 763,002
2 Expected Change in UAAL during 2015		
a. Expected Amortization Payment for CY 2015	(48,358)	
b. Interest adjustments on 1 & 2a to Year End @ 8.00%	59,106	
c. Expected change in UAAL		10,748
3 Increase/(Decrease) in UAAL Due to Difference Between Calculated Contribution Rate and Actual Contribution Rate		30,582
4 Net Actuarial Experience (Gains) & Losses		4,414
5 Assumption and Method Changes		0
6 UAAL as of December 31, 2015		$ 808,746

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TABLE 9

Analysis of Actuarial (Gains) and Losses
For 2015
($ in 000's)

	2015
Investment Return	$ 31,243
Salary Increase	32,560
Age and Service Retirement	(5,616)
General Employment Termination	2,376
Disability Incidence	(137)
Active Mortality	(417)
Benefit Recipient Mortality	531
Actual vs. Expected Cost of Living Adjustment (COLA)*	(50,876)
Other	(5,250)
Total Actuarial (Gain)/ Loss	$ 4,414

* Actual COLA of 0.00% versus expected COLA of 3.00%

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TABLE 10

Schedule of Funding Status
($ in 000's)

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)
1995	1,176,000	1,459,000	283,000	80.60%	243,357	116.30%
1996	1,310,081	1,585,081	275,000	82.65%	257,169	106.90%
1997	1,437,533	1,673,761	236,228	85.89%	261,799	90.20%
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	2,916,946	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%

* *Projected to following year.*

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TABLE 11

Summary of Data Characteristics

	December 31, 2013	December 31, 2014	December 31, 2015
Active Members			
Number	6,993	7,180	7,477
Total Annualized Earnings of Members as of 12/31 (000's)	$342,219	$363,109	$393,186
Average Earnings	48,937	50,572	52,586
Benefit Recipients			
Number	6,447	6,598	6,756
Total Annual Retirement Income (000's)	$210,028	$219,150	$226,019
Total Annual Health Supplement (000's)	$9,391	$9,611	$9,924
Average Total Annual Benefit	$34,034	$34,671	$34,945
Inactive Members*			
Deferred Vested	744	739	748
Deferred Nonvested	308	360	415
Total	1,052	1,099	1,163

** The number of inactives on 12/31/2015 includes 748 members who have applied for a deferred pension and 415 other members who have terminated and still have contribution balances in the Fund.*

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TABLE 12

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

	Years of Service								
Age	**Under 1**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 & Over**	**Totals**
Under 20	5								5
	101,913								101,913
20-24	109	78							187
	3,166,237	2,917,487							6,083,724
25-29	198	309	56						563
	7,214,868	12,839,737	2,645,928						22,700,533
30-34	144	309	188	37	3				681
	5,699,952	14,304,221	9,980,935	1,962,805	188,005				32,135,918
35-39	136	307	187	110	62				802
	5,505,851	14,992,211	9,940,813	6,225,469	3,394,588				40,058,932
40-44	103	238	196	142	179	51	1		910
	4,266,234	12,601,999	10,606,616	7,842,205	9,716,061	2,880,955	54,090		47,968,160
45-49	122	237	195	159	194	149	56	12	1,124
	4,785,463	10,611,884	10,257,564	8,922,335	11,586,776	9,453,376	3,629,093	802,916	60,049,407
50-54	90	197	243	201	270	140	106	59	1,306
	3,640,486	9,993,820	12,821,286	11,623,752	14,902,238	8,933,492	7,148,606	3,922,555	72,986,235
55-59	60	173	178	146	219	108	85	62	1,031
	2,327,779	9,441,302	9,475,183	8,345,274	12,542,849	6,945,241	6,004,401	4,575,692	59,657,721
60-64	19	73	131	86	147	55	42	42	595
	1,033,232	3,791,003	6,972,403	4,762,380	8,305,545	3,418,872	3,083,115	3,007,909	34,374,459
65&Over	4	22	51	67	55	26	21	27	273
	243,788	1,111,104	2,620,142	4,284,444	3,670,258	1,763,807	1,486,437	1,888,821	17,068,801
Totals	990	1,943	1,425	948	1,129	529	311	202	7,477
	37,985,803	92,604,768	75,320,870	53,968,664	64,306,320	33,395,743	21,405,742	14,197,893	393,185,803

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TABLE 13

Distribution of Benefit Recipients
as of December 31, 2015

Age	Number	Annual Benefit*	Annual Average Benefit*
Under 50	62	$ 1,081,424	$ 17,442
50-54	276	11,768,306	42,639
55-59	730	31,451,109	43,084
60-64	1,366	50,535,832	36,995
65-69	1,603	58,896,645	36,742
70-74	1,039	31,066,656	29,901
75-79	680	18,993,329	27,931
80-84	486	11,623,082	23,916
85-89	312	7,004,173	22,449
90 & Over	202	3,598,735	17,816
Total	6,756	$ 226,019,290	$ 33,455

* *Does not include Health Benefit Supplement.*

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EXPERIENCE TABLES

Table Number	Content of Tables	Page
14	Analysis of Pay Experience (Valuation Pay)	32
15a	Analysis of Retirement Experience – Each Age	33
15b	Analysis of Retirement Experience – Age Groups	34
16	Analysis of Turnover Experience	35
17	Analysis of Active Mortality Experience	36
18	Analysis of Disability Experience	37
19	Analysis of Retiree Mortality Experience	38

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TABLE 14

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 2015			
	Number	Expected Pay	Actual Pay	Ratio A/E
Under 5	1,806	82,417,379	85,799,745	104.10%
5-9	1,404	70,818,421	73,720,901	104.10%
10-14	999	54,878,492	56,512,517	102.98%
15-19	1,124	62,058,305	63,643,374	102.55%
20-24	602	36,402,063	37,350,585	102.61%
25-29	309	20,727,757	21,125,196	101.92%
30 & Over	233	15,954,032	16,327,640	102.34%
Total	6,477	$ 343,256,449	$ 354,479,958	103.27%
Over 10 Years	3,267	$ 190,020,649	$ 194,959,312	102.60%

Service Beginning of Year	Experience for 2015/2015			
	Number	Expected Pay	Actual Pay	Ratio A/E
Under 5	1,806	82,417,379	85,799,745	104.10%
5-9	1,404	70,818,421	73,720,901	104.10%
10-14	999	54,878,492	56,512,517	102.98%
15-19	1,124	62,058,305	63,643,374	102.55%
20-24	602	36,402,063	37,350,585	102.61%
25-29	309	20,727,757	21,125,196	101.92%
30 & Over	233	15,954,032	16,327,640	102.34%
Total	6,477	$ 343,256,449	$ 354,479,958	103.27%
Over 10 Years	3,267	$ 190,020,649	$ 194,959,312	102.60%

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TABLE 15a

Analysis of Retirement Experience

	2015 Retirement			2015/2015 Retirement		
Age	**Actual**	**Expected**	**Ratio A/E**	**Actual**	**Expected**	**Ratio A/E**
46	-	-	N/A	-	-	N/A
47	-	-	N/A	-	-	N/A
48	1	0.70	142.86%	1	0.70	142.86%
49	2	1.40	142.86%	2	1.40	142.86%
50	14	16.60	84.34%	14	16.60	84.34%
51	11	12.75	86.27%	11	12.75	86.27%
52	13	13.85	93.86%	13	13.85	93.86%
53	11	13.80	79.71%	11	13.80	79.71%
54	8	12.75	62.75%	8	12.75	62.75%
55	6	15.63	38.39%	6	15.63	38.39%
56	8	15.36	52.08%	8	15.36	52.08%
57	8	13.57	58.95%	8	13.57	58.95%
58	7	12.61	55.51%	7	12.61	55.51%
59	10	17.45	57.31%	10	17.45	57.31%
60	22	25.88	85.01%	22	25.88	85.01%
61	17	21.24	80.04%	17	21.24	80.04%
62	15	20.40	73.53%	15	20.40	73.53%
63	12	16.75	71.64%	12	16.75	71.64%
64	9	11.85	75.95%	9	11.85	75.95%
65	15	18.93	79.24%	15	18.93	79.24%
66	11	11.80	93.22%	11	11.80	93.22%
67	7	10.70	65.42%	7	10.70	65.42%
68	4	5.15	77.67%	4	5.15	77.67%
69	5	4.80	104.17%	5	4.80	104.17%
70 & Over	11	58.00	18.97%	11	58.00	18.97%
Total	227	351.97	64.49%	227	351.97	64.49%
Total Under 70	216	293.97	73.48%	216	293.97	73.48%

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TABLE 15b

Analysis of Retirement Experience

Age Groups

Age Group	2015 Retirements			2015/2015 Retirements		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
Under 55	60	71.85	83.51%	60	71.85	83.51%
55-59	39	74.62	52.26%	39	74.62	52.26%
60-64	75	96.12	78.03%	75	96.12	78.03%
65-69	42	51.38	81.74%	42	51.38	81.74%
70 & Over	11	58.00	18.97%	11	58.00	18.97%
Total	227	351.97	64.49%	227	351.97	64.49%
Total Under 70	216	293.97	73.48%	216	293.97	73.48%

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TABLE 16

Analysis of Turnover Experience

Years of Service	2015 Quits			2015/2015 Quits		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
0-4	308	307.59	100.13%	308	307.59	100.13%
5-9	83	82.02	101.19%	83	82.02	101.19%
10-14	36	35.26	102.10%	36	35.26	102.10%
15-19	21	23.53	89.26%	21	23.53	89.26%
20-24	9	7.42	121.33%	9	7.42	121.33%
25-29	-	0.60	0.00%	-	0.60	0.00%
Total	457	456.42	100.13%	457	456.42	100.13%

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TABLE 17

Analysis of Active Mortality Experience

	2015 Deaths			2015/2015 Deaths		
Age	**Actual**	**Expected**	**Ratio A/E**	**Actual**	**Expected**	**Ratio A/E**
20-24	-	0.04	0.00%	-	0.04	0.00%
25-29	-	0.17	0.00%	-	0.17	0.00%
30-34	-	0.35	0.00%	-	0.35	0.00%
35-39	-	0.63	0.00%	-	0.63	0.00%
40-44	-	1.03	0.00%	-	1.03	0.00%
45-49	-	1.97	0.00%	-	1.97	0.00%
50-54	-	3.43	0.00%	-	3.43	0.00%
55-59	1	4.34	23.02%	1	4.34	23.02%
60 and Over	-	6.74	0.00%	-	6.74	0.00%
Total	1	18.70	5.35%	1	18.70	5.35%

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TABLE 18

Analysis of Disability Experience

	2015 Disabilities			2015/2015 Disabilities		
Age	**Actual**	**Expected**	**Ratio A/E**	**Actual**	**Expected**	**Ratio A/E**
20-24	-	0.02	0.00%	-	0.02	0.00%
25-29	-	0.11	0.00%	-	0.11	0.00%
30-34	-	0.21	0.00%	-	0.21	0.00%
35-39	-	0.36	0.00%	-	0.36	0.00%
40-44	1	0.75	132.78%	1	0.75	132.78%
45-49	2	1.87	107.15%	2	1.87	107.15%
50-54	3	3.48	86.09%	3	3.48	86.09%
55-59	1	3.67	27.24%	1	3.67	27.24%
60 and Over	1	1.21	82.67%	1	1.21	82.67%
Total	8	11.69	68.45%	8	11.69	68.45%

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TABLE 19

Analysis of Retiree Mortality Experience*

	2015 Experience			2015/2015 Experience		
Age	**Actual**	**Expected**	**Ratio A/E**	**Actual**	**Expected**	**Ratio A/E**
Under 60	12	3.45	347.70%	12	3.45	347.70%
60-64	10	10.12	98.82%	10	10.12	98.82%
65-69	21	20.00	104.99%	21	20.00	104.99%
70-74	30	21.03	142.68%	30	21.03	142.68%
75-79	23	21.65	106.24%	23	21.65	106.24%
80-84	30	22.15	135.45%	30	22.15	135.45%
85-89	26	23.46	110.82%	26	23.46	110.82%
90 & over	23	20.41	112.72%	23	20.41	112.72%
Total	175	142.26	123.01%	175	142.26	123.01%

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

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ACTUARIAL METHOD AND ASSUMPTIONS

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 effected 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.

The actuarially calculated contribution for a year is the Normal Cost for that year plus an amount to amortize the UAAL over 30 years as a level percentage of pay.

Actuarial Value of Asset Method.

The actuarial value of assets is equal to the expected actuarial value of assets adjusted for a five-year phase-in of actual investment return in excess of (or less than) expected investment return. The actual return is calculated net of investment expenses, and the expected investment return is equal to the assumed investment return rate multiplied by the prior year's actuarial value of assets, adjusted for contributions, benefits paid, and refunds.

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ACTUARIAL METHOD AND ASSUMPTIONS
(AS OF DECEMBER 31, 2015)

Annual Rate of Investment Return: For all purposes under the Fund, the rate of investment return is assumed to be 8.00% per annum, net of investment expenses. This rate includes an annual assumed rate of inflation of 3.00%. In addition, annual cost-of-living adjustments are assumed to occur on average at the rate of 3.00% per annum.

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	3.00 %	3.50 %	6.50 %
1	3.00	3.50	6.50
2	2.75	3.50	6.25
3	2.00	3.50	5.50
4	1.50	3.50	5.00
5	1.50	3.50	5.00
6	1.50	3.50	5.00
7	1.00	3.50	4.50
8	1.00	3.50	4.50
9	0.75	3.50	4.25
10	0.75	3.50	4.25
11	0.75	3.50	4.25
12	0.50	3.50	4.00
13	0.50	3.50	4.00
14	0.50	3.50	4.00
15	0.50	3.50	4.00
16	0.50	3.50	4.00
17	0.50	3.50	4.00
18	0.25	3.50	3.75
19 & Over	0.00	3.50	3.50

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ACTUARIAL METHOD AND ASSUMPTIONS (cont.)

Mortality:

Disabled Lives: RP-2000 Disabled Mortality Table for male annuitants**,** set forward one year.

Sample rates follow (rate per 1,000):

	Disability Mortality Rate	
Age	**Male**	**Female**
20	23	23
30	23	23
40	23	23
50	30	30
60	43	43
70	66	66
80	116	116
90	200	200

Other Benefit Recipients:

a. Males – RP-2000 Healthy Mortality Table for male annuitants, with a 109% multiplier and fully generational mortality using improvement Scale BB.

b. Females – RP-2000 Healthy Mortality Table for female annuitants, with a 103% multiplier and fully generational mortality using improvement Scale BB.

Sample rates follow (rate per 1,000):

	Mortality Rate	
Age	**Male**	**Female**
30	0.8	0.3
40	1.4	0.9
50	2.5	1.9
60	8.1	4.4
70	23.3	16.0
80	61.3	42.1
90	167.8	119.3

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ACTUARIAL METHOD AND ASSUMPTIONS (cont.)

Mortality:

Active Members:

a. Males – RP2000 Healthy Mortality Table for male employees, set forward 4 years.
b. Females – RP2000 Healthy Mortality Table for female employees, set back 5 years.

Sample rates follow (rate per 1,000):

	Mortality Rate	
Age	**Male**	**Female**
30	0.7	0.2
40	1.4	0.5
50	2.8	1.1
60	7.0	2.5
70	33.9	5.8
80	99.8	28.1
90	250.7	77.4

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):

Age	Disability Rate
30	0.3
40	0.6
50	2.4
60	6.0

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.

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ACTUARIAL METHOD AND ASSUMPTIONS (cont.)

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

Age	Male		Female	
	First Year Eligible	Thereafter	First Year Eligible	Thereafter
48-49	100	100	100	100
50	600	550	400	350
51	500	450	400	350
52	500	330	400	350
53	450	300	400	300
54	400	280	400	250
55	350	280	300	250
56	350	280	300	250
57	350	280	300	220
58-59	350	280	300	220
	Service < 18 yrs.	Service 18 yrs.+	Service < 18 yrs.	Service 18 yrs. +
60	80	250	100	300
61	90	250	150	220
62	100	250	150	200
63	150	250	150	150
64	150	250	100	100
65	180	250	200	200
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

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ACTUARIAL METHOD AND ASSUMPTIONS (cont.)

General Turnover: A table of termination rates based on ERF experience. A sample of the ultimate rates follows:

Years of Service	Terminations (per 1,000)
0	210.0
1	160.0
2	130.0
3	105.0
4	85.0
5	67.5
6	62.5
7	57.5
8	49.0
9	46.0
10-14	37.0
15-19	22.0
20 & Over	14.0

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

Mortality Improvement: Scale BB is used to project mortality improvements for Healthy Retirees. No margin is included in the current disabled mortality assumption to account for future mortality improvement. No future mortality improvement after the measurement date is assumed except as described above.

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.

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

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ACTUARIAL METHOD AND ASSUMPTIONS (cont.)

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: In determining the level percent amortization of UAAL rate, the payroll of the entire system is assumed to increase at 3% each year.

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: 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 29.0% Survivor annuities and the female employees are valued with Joint and 16.5% Survivor annuities.

Changes in Assumptions and Methods Since Prior Valuation: Please refer to Section F and to the December 31, 2014 Experience Study report for a listing of assumptions changes. The assumptions shown in this section reflect the adopted assumption changes.

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SUMMARY OF BENEFIT PROVISIONS

Employees' Retirement Fund of the City of Dallas as of December 31, 2015

Membership

An employee becomes a member upon permanent employment and contributes to the Fund.

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

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

Retirement Pension

Eligibility:

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.

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SUMMARY OF BENEFIT PROVISIONS (cont.)

Retirement Benefits: 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).

Form of Payment: An unreduced pension benefit under a joint and one-half survivor option or a ten-year certain and life option. An actuarially equivalent joint and full survivor option is also available.

Deferred Retirement

Eligibility: Deferred retirement pension benefit commencing at age 60 or at age 55, if employment commenced prior to May 9, 1972, 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.

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.

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SUMMARY OF BENEFIT PROVISIONS (cont.)

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 $500 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 $500 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 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:

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%.

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