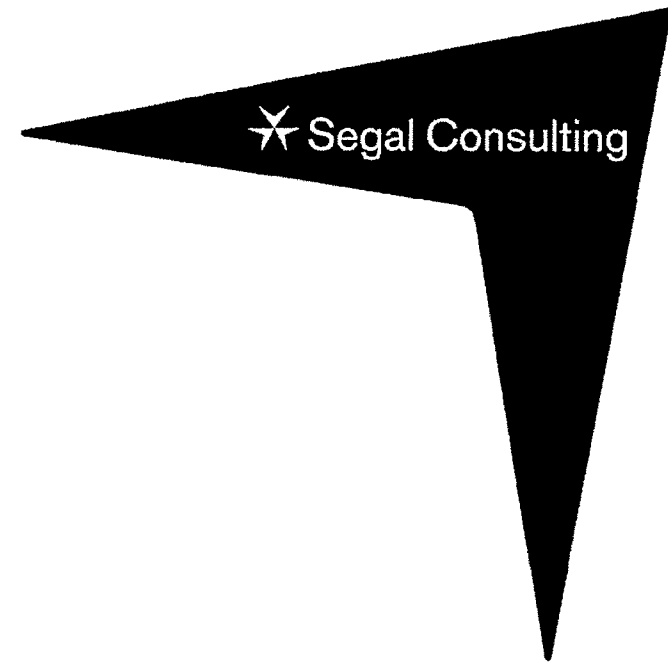


Exhibit A



City of Austin OPEB Plan

**Actuarial Valuation and Review of Other Postemployment
Benefits (OPEB) for Reporting Date
September 30, 2018 Measured at December 31, 2017 In
Accordance with GASB Statement No. 75**

This report has been prepared at the request of the City of Austin to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the City and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes
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July 2, 2018

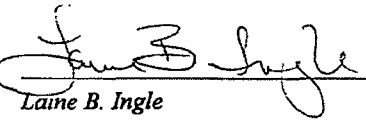
City of Austin Controller's Office
124 West Eighth Street, Suite 140
Austin, TX 78701


We are pleased to submit this Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) measured as of December 31, 2017, to be reported as of September 30, 2018 under Governmental Accounting Standards Board Statement No. 75. The report summarizes the actuarial data used in the valuation, discloses the Net OPEB Liability (NOL) as of September 30, 2018, and analyzes the preceding year's experience. This report was based on the census data provided by the City, claims data provided by United Healthcare, and the terms of the Plan. The actuarial calculations were completed under the supervision of Adam E. Condrick, MAAA, EA and Mark J. Noonan, ASA, MAAA.

The actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions used in this valuation and described in Section 4, Exhibit I are reasonably related to the experience of and the expectations for the Plan. The actuarial projections are based on these assumptions and the plan of benefits as summarized in Section 4, Exhibit II.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: 
Laine B. Ingle
Senior Health Consultant


Chad W. Brown, FSA, MAAA, EA
Consulting Actuary

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Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to defining future uncertain obligations of a postretirement health plan. As such, it will never forecast the precise future stream of benefit payments. It is an estimated forecast – the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. For example, a plan may provide health benefits to post-65 retirees that coordinates with Medicare. If so, changes in the Medicare law or administration may change the plan’s costs without any change in the terms of the plan itself. It is important for the City to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the plan. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is not necessary to have perfect data for an actuarial valuation: the valuation is an estimated forecast, not a prediction. The uncertainties in other factors are such that even perfect data does not produce a “perfect” result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. To determine the future costs of benefits, Segal collects claims, premiums, and enrollment data in order to establish a baseline cost for the valuation measurement, and then develops short- and long-term health care cost trend rates to project increases in costs in future years. This forecast also requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year, as well as forecasts of the plan’s benefits for each of those events. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan’s assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model necessarily uses approximations and estimates that may lead to significant changes in our results but will have no impact on the actual cost of the plan. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

Section 1: Executive Summary for the City of Austin OPEB Plan December 31, 2017 Measurement Date Under GASB 75

Given the above, the user of Segal's actuarial valuation (or other actuarial calculations) needs to keep the following in mind:

- The actuarial valuation is prepared for use by the City of Austin Controller's Office. It includes information for compliance with accounting standards and for the plan's auditor. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- If the City is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Sections of this report include actuarial results that are not rounded, but that does not imply precision.
- Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, and health care trend, not just the current valuation results.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The City should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the City upon delivery and review. The City should notify Segal immediately of any questions or concerns about the final content.

As Segal Consulting has no discretionary authority with respect to the management of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 1: Executive Summary for the City of Austin OPEB Plan December 31, 2017 Measurement Date Under GASB 75

Purpose

This report presents the results of our actuarial valuation of the City of Austin (the “Employer”) OPEB plan as of December 31, 2017, required by Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other than Pensions*. The actuarial computations made are for purposes of fulfilling City accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here.

Highlights of the Valuation

- This is the first valuation performed under GASB Statement 75 for City reporting. Prior year liabilities are based on the October 1, 2016 valuation (performed by the prior actuary), restated using the required actuarial cost method (entry age normal as a level percent of payroll) and discount rate under GASB 75. These values were also projected forward to a December 31, 2016 measurement date and are the restated liabilities for the September 30, 2017 reporting date. The current valuation calculates the Net OPEB Liability and the Annual OPEB Expense as of a December 31, 2017 measurement date, to be reflected as of the September 30, 2018 reporting date.
- Since the City does not maintain standalone financial statements for the OPEB plan, Plan reporting under GASB Statement 74 is not applicable.
- The **Net OPEB liability (NOL)** as of December 31, 2017 is \$2,524,897,289, an increase of \$469,269,870, from the restated \$2,055,627,419 NOL determined as of December 31, 2016. The NOL had been expected to increase to \$2,177,570,838 due to normal plan operations. The difference between actual and expected NOL was the net effect of several factors:
 - An **actuarial experience loss** increased the NOL by \$64,226,980. This was the net result of gains and losses due to demographic changes.
 - **Valuation assumption changes** increased the NOL by \$283,099,471. This was a net result of:
 - (1) an *increase* in obligations due to raising the valuation-year per capita health costs, primarily the result of net post-Medicare costs being greater than projected last year,
 - (2) a *decrease* in obligation due to adjusting the future trends on such costs, and
 - (3) an *increase* in obligations due to lowering the discount rate from 3.78% to 3.44%.
 - There were no **plan changes** that impacted the NOL in this year’s valuation. The current plan of benefits is summarized in Exhibit II of Section 4.
- We have valued all current retirees based on their existing plan elections (PPO, HMO, or CDHP) and the claims information provided. For those retiring in future years, we maintained the previous actuary’s assumption that 70% would enroll in the PPO and 30% in the HMO. We will continue to gather actual plan election experience and will monitor this assumption closely.
- The **Annual OPEB Expense** for the measurement date of December 31, 2017 is \$212,822,238.

Section 1: Executive Summary for the City of Austin OPEB Plan December 31, 2017 Measurement Date Under GASB 75

- The City has accrued a total of \$301,322,947 of deferred outflows as of December 31, 2017. Deferred outflows will increase future year OPEB expenses as they are recognized over the next seven years. Section 2, Exhibit 7 shows the projected recognition of these deferred outflows. Any deferred outflows or inflows attributable to net contributions (*i.e.* total retiree benefits paid less recipient contributions) made between the measurement date of December 31, 2017 and reporting date of September 30, 2018 are unknown as of the date of this report and thus have not been reflected.
- The City funds OPEB benefits on a pay-as-you-go basis. Therefore, the current funded ratio (ratio of assets to the Total OPEB Liability) is 0.00%. The City's projected payments (net of retiree contributions) toward OPEB benefits for the 2018 calendar year are \$53,075,828, or 6.0% of projected payroll (base salary).

Section 1: Executive Summary for the City of Austin OPEB Plan December 31, 2017 Measurement Date Under GASB 75

Summary of Key Valuation Results

Reporting Date	September 30, 2018	September 30, 2017
Measurement Date	December 31, 2017	December 31, 2016
Discount Rate	3.44%	3.78%
Total OPEB Liability	\$2,524,897,289	\$2,055,627,419
Plan Fiduciary Net Position (Assets)	--	--
Net OPEB Liability	2,524,897,289	2,055,627,419
Plan Fiduciary Net Position as a percentage of Total OPEB Liability	0.00%	0.00%
Annual OPEB Expense	\$212,822,238	N/A
Service Cost at Beginning of Year with Interest	89,964,161	N/A

Section 1: Executive Summary for the City of Austin OPEB Plan December 31, 2017 Measurement Date Under GASB 75

July 2, 2018

Actuarial Certification

This is to certify that Segal Consulting, a Member of The Segal Group, Inc. has conducted an actuarial valuation of certain benefit obligations of the City of Austin's other postemployment benefit programs as of December 31, 2017, in accordance with generally accepted actuarial principles and practices. The actuarial calculations presented in this report have been made on a basis consistent with our understanding of GASB Statement 75 for the determination of the liability for postemployment benefits other than pensions.

The actuarial valuation is based on the plan of benefits verified by the City and reliance on participant, premium, claims and expense data provided by the City or from vendors employed by the City. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security at termination of the plan, or determining short-term cash flow requirements.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience differing from that anticipated by the assumptions; changes in assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. The scope of the assignment did not include performing an analysis of the potential change of such future measurements except where noted.

To the best of our knowledge, this report is complete and accurate and in our opinion presents the information necessary to comply with GASB Statement 75 with respect to the benefit obligations addressed. The signing actuaries are members of the Society of Actuaries, the American Academy of Actuaries, and other professional actuarial organizations and collectively meet the "General Qualification Standards for Statements of Actuarial Opinions" to render the actuarial opinion contained herein.



Adam E. Condric, MAAA, EA
Vice President and Actuary



Mark J. Noonan, ASA, MAAA
Vice President and Health Actuary

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 1

General Information about the OPEB Plan

Plan Description

Plan administration. The City of Austin administers this single employer postemployment benefits other than pensions (OPEB) Plan that is used to provide benefits for all regular full-time employees. Management of the OPEB plan is governed by the City Council.

Plan membership. At December 31, 2017, plan membership consisted of the following:

Retired members currently receiving health and life insurance benefits	4,721
Retired members currently waiving health coverage (life insurance only)	2,231
Surviving spouses currently receiving health benefits	226
Vested terminated members entitled to but not yet receiving benefits	--
Active members	12,557
Total	19,735

Benefits provided. Other postemployment benefits (OPEB) are payable to eligible City employees, retirees and their dependents and include access to medical, dental, and vision insurance for the retiree and the retiree's family. In addition, \$1,000 of life insurance is available for the retiree. All retirees who are eligible to receive pension benefits under any of the City's three pension systems (City of Austin Employees' Retirement System, Austin Police Retirement System, and Austin Firefighters' Relief and Retirement Fund) are eligible for OPEB (see Section 4, Exhibit II for details). Retirees may also enroll eligible dependents under the medical, dental, and vision plan(s) in which they participate.

Plan members do not contribute to the OPEB plan while in active employment. In retirement, they must pay the remainder of the designated premium that is not subsidized by the City in order to maintain coverage. Based on current practice, the City subsidizes a maximum of 80% of retiree premiums, 50% of dependents' premiums, and 70% of surviving spouses' premiums (75% if pre-Medicare) based on service at retirement (see Section 4, Exhibit II for details).

City Contributions. Allocation of City funds to pay OPEB is determined on an annual basis by the City Council as part of the budget approval process on a pay-as-you-go basis. The City is under no obligation to pay any portion of these benefits for retirees or their dependents.

The City recognizes the cost of providing these benefits to active employees as an expense and corresponding revenue in the Employee Benefits Fund. The City pays actual claims for medical and 100% of the retiree's life insurance premium. Group dental and vision coverage is also available to retirees and their eligible dependents, but retirees are responsible for paying the full cost of those premiums.

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 2

Net OPEB Liability

Reporting Date for Employer under GASB 75	September 30, 2018	September 30, 2017
Measurement Date for Employer under GASB 75	December 31, 2017	December 31, 2016
The components of the Net OPEB Liability are as follows:		
Total OPEB Liability	\$2,524,897,289	\$2,055,627,419
Plan Fiduciary Net Position	--	--
Net OPEB Liability	2,524,897,289	2,055,627,419
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	0.00%	0.00%

The Net OPEB Liability was measured as of December 31, 2017 and December 31, 2016. The Total OPEB Liability was determined from actuarial valuations as of December 31, 2017 and September 30, 2016, respectively.

Actuarial assumptions. The total OPEB liability was measured by an actuarial valuation as of December 31, 2017 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

<i>Salary increases</i>	Vary by group, age, and years of service	
<i>Discount Rate</i>	3.44%	
<i>Healthcare costs trend rates</i>		
<i>Medical (pre-65)</i>	7.00% graded to 4.50% over 5 years	
<i>Medical (post-65)</i>	6.00% graded to 4.50% over 3 years	
<i>Prescription drug</i>	9.00% graded to 4.50% over 9 years	
<i>Administrative costs</i>	2.50%	
<i>Mortality Rates</i>		
	<i>General (Actives)</i>	RP-2014 Blue Collar Employee Mortality Tables projected generationally using Scale BB from 2014
	<i>General (Healthy Retirees)</i>	RP-2014 Blue Collar Healthy Annuitant Mortality Tables projected generationally using Scale BB from 2014
	<i>General (Disabled Retirees)</i>	RP-2014 Blue Collar Healthy Annuitant Mortality Tables, set forward 3 years, projected generationally using Scale BB from 2014, with a minimum 3% rate of mortality applicable at all ages

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

<i>Police (All Lives)</i>	RP-2000 Combined Healthy Mortality Tables
<i>Fire (Healthy Lives)</i>	RP-2000 Combined Healthy Mortality Tables, set back 2 years, projected generationally using Scale AA from 2000
<i>Fire (Disabled Lives)</i>	RP-2000 Disabled Retiree Mortality Tables

The majority of the demographic assumptions used in this valuation (including salary increases, mortality, disability, turnover, and retirement) are the same as used in the corresponding pension valuations:

- City of Austin Employees' Retirement System as of December 31, 2016 completed by Gabriel Roeder Smith & Company, dated May 12, 2017;
- Austin Police Retirement System as of December 31, 2016 completed by Foster & Foster Actuaries and Consultants, dated July 26, 2017; and
- Austin Firefighters' Relief and Retirement Fund as of December 31, 2016 completed by Foster & Foster Actuaries and Consultants, dated July 25, 2017.

Given that the covered population of the City of Austin OPEB Plan is generally the same as those of the pension plans, we were directed by the City Controller's Office, at the advice of their auditor, to use these demographic assumptions for the purpose of this measurement. Segal Consulting has no reason to question the reasonableness of these assumptions. Demographic assumptions unique to the OPEB plan (participation and coverage election, plan election, dependent assumptions) were determined by Segal Consulting and approved by the City Controller's Office.

Detailed information regarding all actuarial assumptions can be found in Section 4, Exhibit I.

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 3

Determination of Discount Rate

DEVELOPMENT OF DISCOUNT RATE

The discount rate for OPEB funded entirely on a pay-as-you-go basis is the yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). For this purpose, we used the Bond Buyer US Weekly Yields 20 General Obligation Bond Index. The index value as of the December 31, 2017 measurement date is 3.44%.

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 4
Sensitivity

The following presents the NOL of the City as well as what the City’s NOL would be if it were calculated using a discount rate that is 1-percentage-point lower (2.44%) or 1-percentage-point higher (4.44%) than the current rate. Also, shown is the NOL as if it were calculated using healthcare cost trend rates that were 1 percentage point lower or 1 percentage point higher than the current healthcare trend rates.

	1% Decrease in Discount Rate (2.44%)	Current Discount Rate (3.44%)	1% Increase in Discount Rate (4.44%)
Net OPEB Liability (Asset)	\$3,043,664,647	\$2,524,897,289	\$2,123,411,488
	1% Decrease in Trend Rates	Current Trend Rates	1% Increase in Trend Rates
Net OPEB Liability (Asset)	\$2,087,263,002	\$2,524,897,289	\$3,101,314,756

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 5

Schedule of Changes in Net OPEB Liability – Last Two Fiscal Years

Reporting Date for Employer under GASB 75	September 30, 2018	September 30, 2017
Measurement Date for Employer under GASB 75	December 31, 2017	December 31, 2016
Total OPEB Liability		
Service cost	\$89,964,161	--
Interest	76,854,573	--
Change of benefit terms	--	--
Differences between expected and actual experience	64,226,980	--
Changes of assumptions	283,099,471	--
Expected benefit payments	<u>-44,875,315</u>	--
Net change in Total OPEB Liability	\$469,269,870	--
Total OPEB Liability – beginning	<u>2,055,627,419</u>	--
(a) Total OPEB Liability – ending	<u>\$2,524,897,289</u>	<u>\$2,055,627,419</u>
Plan Fiduciary Net Position		
Expected contributions – employer	\$44,875,315	--
Expected contributions – active employees and inactive employees not yet receiving benefit payments	--	--
Net investment income	--	--
Expected net benefit payments	-44,875,315	--
Administrative expenses not directly related to payment of claims	--	--
Other	--	--
Net change in Plan Fiduciary Net Position	--	--
Plan Fiduciary Net Position – beginning	--	--
(b) Plan Fiduciary Net Position – ending	--	--
(c) Net OPEB Liability – ending (a) – (b)	<u>\$2,524,897,289</u>	<u>\$2,055,627,419</u>
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	0.00%	0.00%
Covered employee payroll (base salary)	880,696,882	N/A
Plan Net OPEB Liability as percentage of covered employee payroll	286.69%	N/A

Notes to Schedule: See Section 4 for changes in actuarial assumptions applicable to the current measurement date. The September 30, 2017 reporting value is based on the assumptions as outlined in the October 1, 2016 valuation by the prior actuary, adjusted for GASB 75 requirements and a December 31, 2016 measurement date.

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 6

Deferred Outflows of Resources and Deferred Inflows of Resources

The following charts reflect the deferred inflows and outflows of resources related to OPEB. Deferred inflows and outflows are differences between actual and expected experience that are not reflected in the current year's expenses.

Reporting Date for Employer under GASB 75	September 30, 2018	September 30, 2017
Measurement Date for Employer under GASB 75	December 31, 2017	December 31, 2016
Deferred Outflows of Resources		
1. Changes of assumptions or other inputs	\$245,602,852	N/A
2. Net difference between projected and actual earnings on plan investments	0	N/A
3. Difference between expected and actual experience in the Total OPEB Liability	<u>55,720,095</u>	<u>N/A</u>
4. Total Deferred Outflows of Resources	\$301,322,947	N/A
Deferred Inflows of Resources		
5. Changes of assumptions or other inputs	\$0	N/A
6. Net difference between projected and actual earnings on investments	0	N/A
7. Difference between expected and actual experience in the Total OPEB Liability	<u>0</u>	<u>N/A</u>
8. Total Deferred Inflows of Resources	\$0	N/A

Deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized as follows:

Reporting Date for Employer under GASB 75 Year Ended September 30:

2019	\$46,003,504	N/A
2020	46,003,504	N/A
2021	46,003,504	N/A
2022	46,003,504	N/A
2023	46,003,504	N/A
Thereafter	71,305,427	N/A

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 7

Schedule of Recognition of Changes in Total Net OPEB Liability

Increase (Decrease) in OPEB Expense Arising from the Recognition of the
Effects of Differences between Expected and Actual Experience on Total OPEB Liability

Reporting Date for Employer under GASB 75 Year Ended September 30:

Reporting Date for Employer under GASB 75 Year Ended September 30	Differences between Expected and Actual Experience	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	Thereafter
2018	\$64,226,980	7.55	\$8,506,885	\$8,506,885	\$8,506,885	\$8,506,885	\$8,506,885	\$8,506,885	\$13,185,670
Net increase (decrease) in OPEB expense			\$8,506,885	\$8,506,885	\$8,506,885	\$8,506,885	\$8,506,885	\$8,506,885	\$13,185,670

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 7 (continued)
Schedule of Recognition of Changes in Total Net OPEB Liability

Increase (Decrease) in OPEB Expense Arising from the Recognition of the Effects of Assumption Changes									
Reporting Date for Employer under GASB 75 Year Ended September 30:									
Reporting Date for Employer under GASB 75 Year Ended September 30	Effect of Assumption Changes	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	Thereafter
2018	\$283,099,471	7.55	\$37,496,619	\$37,496,619	\$37,496,619	\$37,496,619	\$37,496,619	\$37,496,619	\$58,119,757
Net increase (decrease) in OPEB expense			\$37,496,619	\$37,496,619	\$37,496,619	\$37,496,619	\$37,496,619	\$37,496,619	\$58,119,757

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 7 (continued)
Schedule of Recognition of Changes in Total Net OPEB Liability

Total Increase (Decrease) in OPEB Expense									
Reporting Date for Employer under GASB 75 Year Ended September 30:									
Reporting Date for Employer under GASB 75 Year Ended September 30	Total Differences	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	Thereafter
2018	\$347,326,451	7.55	\$46,003,504	\$46,003,504	\$46,003,504	\$46,003,504	\$46,003,504	\$46,003,504	\$71,305,427
Net increase (decrease) in OPEB expense			\$46,003,504	\$46,003,504	\$46,003,504	\$46,003,504	\$46,003,504	\$46,003,504	\$71,305,427

Section 2: GASB 75 Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date

EXHIBIT 8 OPEB Expense

Reporting Date for Employer under GASB 75	September 30, 2018
Measurement Date for Employer under GASB 75	December 31, 2017
Components of OPEB Expense	
1. Service cost	\$89,964,161
2. Interest on the Total OPEB Liability	76,854,573
3. Expensed portion of current-period benefit changes	--
4. Expensed portion of current-period difference between expected and actual experience in the Total OPEB Liability	8,506,885
5. Expensed portion of current-period changes of assumptions or other inputs	37,496,619
6. Expected contributions – active employees and inactive employees not yet receiving benefit payments	--
7. Projected earnings on plan investments	--
8. Expensed portion of current-period differences between actual and projected earnings on plan investments	--
9. Administrative expenses not directly related to payment of claims	--
10. Other	--
11. Recognition of beginning of year deferred outflows of resources as OPEB expense	--
12. Recognition of beginning of year deferred inflows of resources as OPEB expense	--
OPEB Expense	\$212,822,238

Section 3: Employer Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

CHART A

Summary of Participant Data as of December 31, 2017

	Fire	Police	Civilian	Total
Number of retirees	671	731	5,550	6,952
<i>Number of retirees currently enrolled in health plans</i>	585	635	3,501	4,721
<i>Number of retirees currently waiving health plans (life insurance only)</i>	86	96	2,049	2,231
Average age of retirees	64.1	63.0	67.1	66.4
Average service of retirees	26.8	27.1	19.8	21.2
Number of spouses currently enrolled in health plans	332	271	948	1,551
Average age of spouses	61.2	59.8	64.0	62.7
Number of surviving spouses currently enrolled in health plans	36	41	149	226
Average age	74.9	72.9	74.6	74.3
Number of actives	1,048	1,852	9,657	12,557
Average age	42.5	40.2	45.0	44.1
Average service	13.2	11.3	9.1	9.8

Section 3: Employer Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

CHART B

Allocation of Total OPEB Liability by Department

Department	Fire	Police	Civilian	Total
E11	0	0	177,429,006	177,429,006
E15	0	0	39,612,153	39,612,153
E16	0	0	6,524,829	6,524,829
E22	0	0	57,146,792	57,146,792
E23	0	0	50,088,452	50,088,452
E24	0	0	17,334,005	17,334,005
E34	0	0	31,503,967	31,503,967
E55	0	0	4,467,224	4,467,224
E70	0	0	18,526,298	18,526,298
E78	0	0	3,723,981	3,723,981
E81	0	0	34,570,560	34,570,560
E92	0	0	22,370,240	22,370,240
G32	0	0	729,114	729,114
G33	0	0	1,114,740	1,114,740
G41	0	0	1,308,610	1,308,610
G42	0	0	135,183	135,183
G43	0	0	3,314,141	3,314,141
G44	0	0	3,858,632	3,858,632
G45	0	0	1,508,742	1,508,742
G46	0	0	14,057,523	14,057,523
G53	0	0	30,029,084	30,029,084
G56	0	0	29,735,740	29,735,740
G57	0	0	6,799,241	6,799,241
G58	0	0	9,580,842	9,580,842
G59	0	0	1,451,280	1,451,280
G60	0	0	41,489,039	41,489,039

Section 3: Employer Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

G69	0	0	4,303,051	4,303,051
G71	0	0	1,693,755	1,693,755
G72	0	0	4,608,851	4,608,851
G74	0	0	21,105,264	21,105,264
G79	0	0	3,130,268	3,130,268
G80	0	0	13,562,837	13,562,837
G83	149,415,117	0	7,132,450	156,547,567
G85	0	0	32,584,611	32,584,611
G86	0	0	54,102,420	54,102,420
G87	0	218,494,012	45,417,700	263,911,712
G90	0	0	6,726,779	6,726,779
G91	0	0	31,177,691	31,177,691
G93	0	0	60,393,765	60,393,765
G94	0	0	659,105	659,105
Pension System Employees	350,049	394,426	1,192,936	1,937,411
Active Total	149,765,166	218,888,438	896,200,901	1,264,854,505
Inactive Total	200,698,653	181,693,251	877,650,880	1,260,042,784
Grand Total	350,463,819	400,581,689	1,773,851,781	2,524,897,289

Section 3: Employer Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

CHART C

Gross Versus Net Liabilities

	Measurement Date December 31, 2017	
Gross actuarial accrued liability	\$3,316,764,035	
Present value of future retiree and surviving spouse contributions	-791,866,746	
Net actuarial accrued liability (GASB "total OPEB liability")	\$2,524,897,289	
	Year Ending December 31, 2018	Year Ending December 31, 2017
Expected gross medical/prescription drug/life insurance benefits	\$69,097,524	\$59,669,824
Expected administrative expenses directly related to the payment of claims	2,826,969	3,201,797
Expected retiree and surviving spouse contributions	-18,848,665	-17,996,306
Expected net cost to City (GASB "benefit payments")	\$53,075,828	\$44,875,315

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

EXHIBIT I

Actuarial Assumptions and Methods

Data:	Detailed census data, premium data, claim experience, and summary plan descriptions for OPEB were provided by the City of Austin.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age at the time the participant commenced employment. Normal Cost and Accrued Liability are calculated on an individual basis and are allocated by base salary.
Rationale for Assumptions:	<p>The majority of the demographic assumptions used in this valuation (including salary increases, mortality, disability, turnover, and retirement) are the same as used in the corresponding pension valuations:</p> <ul style="list-style-type: none">▪ City of Austin Employees' Retirement System as of December 31, 2016 completed by Gabriel Roeder Smith & Company, dated May 12, 2017;▪ Austin Police Retirement System as of December 31, 2016 completed by Foster & Foster Actuaries and Consultants, dated July 26, 2017; and▪ Austin Firefighters' Relief and Retirement Fund as of December 31, 2016 completed by Foster & Foster Actuaries and Consultants, dated July 25, 2017. <p>Given that the covered population of the City of Austin OPEB Plan is generally the same as those of the pension plans, we were directed by the City Controller's Office, at the advice of their auditor, to use these demographic assumptions for the purpose of this measurement. Segal Consulting has no reason to question the reasonableness of these assumptions. Demographic assumptions unique to the OPEB plan (participation and coverage election, plan election, dependent assumptions) were determined by Segal Consulting and approved by the City Controller's Office.</p>
Measurement Date:	December 31, 2017
Actuarial Valuation Date:	December 31, 2017
Discount Rate:	3.44%. The discount rate was set based on the Bond Buyer US Weekly Yields 20 General Obligation Bond Index as of the measurement date.

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Salary Increases:

Years of Service	General (A & B)	Police	Fire	Years of Service	General (A & B)	Police	Fire
0	6.25%	25.75%	9.00%	11	5.00%	3.45%	4.50%
1	6.25%	12.75%	11.50%	12	5.00%	3.45%	4.50%
2	6.25%	7.75%	10.50%	13	5.00%	9.75%	4.50%
3	6.25%	3.75%	7.00%	14	5.00%	3.95%	4.50%
4	6.25%	3.75%	4.00%	15	5.00%	9.75%	4.50%
5	6.25%	8.25%	8.00%	16	4.75%	3.25%	4.50%
6	6.25%	5.25%	8.00%	17	4.75%	3.25%	4.50%
7	6.25%	3.55%	8.00%	18	4.75%	3.25%	4.50%
8	6.00%	3.55%	8.00%	19	4.75%	3.25%	4.50%
9	5.50%	9.25%	8.00%	20	4.00%	3.25%	8.50%
10	5.25%	3.45%	4.50%	21+	4.00%	3.25%	4.00%

Mortality Rates:

<i>General (Actives)</i>	RP-2014 Blue Collar Employee Mortality Tables projected generationally using Scale BB from 2014
<i>General (Healthy Retirees)</i>	RP-2014 Blue Collar Healthy Annuitant Mortality Tables projected generationally using Scale BB from 2014
<i>General (Disabled Retirees)</i>	RP-2014 Blue Collar Healthy Annuitant Mortality Tables, set forward 3 years, projected generationally using Scale BB from 2014, with a minimum 3% rate of mortality applicable at all ages
<i>Police (All Lives)</i>	RP-2000 Combined Healthy Mortality Tables
<i>Fire (Healthy Lives)</i>	RP-2000 Combined Healthy Mortality Tables, set back 2 years, projected generationally using Scale AA from 2000
<i>Fire (Disabled Lives)</i>	RP-2000 Disabled Retiree Mortality Tables

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Disability Rates before Retirement:

Police		Fire		General (A & B)	
Age	Rate (%)	Age	Rate (%)	Age	Rate (%)
20	0.0070	20	0.0140	20	0.0004
22	0.0080	25	0.0190	25	0.0025
24	0.0090	30	0.0310	30	0.0099
26	0.0105	35	0.0520	35	0.0259
28	0.0125	40	0.0920	40	0.0494
30	0.0155	45	0.2090	45	0.0804
32	0.0200	50	0.3790	50	0.1188
34	0.0245	55	0.4900	55	0.1647
36	0.0270	60	0.9110	60	0.2180
38	0.0310				
40	0.0460				
42	0.0660				
44	0.0865				
46	0.1275				
48	0.1670				
50	0.1895				
52	0.2020				
54	0.2280				
56	0.2660				
58	0.3300				
60	0.4555				
62 & Over	0.0000				

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Termination Rates before Retirement:

Police	
Years of Service	Rate (%)
0	7.50
1-2	3.00
3-4	1.50
5-6	1.00
7-9	0.50
10-13	1.00
14 & Over	0.50

Fire	
Years of Service	Rate (%)
0-4	1.00
5-13	0.50
14 & Over	0.00

General (A & B) - Select Period		
Years of Service	Rate (%)	
	Males	Females
1	12.50	17.50
2	11.50	16.00
3	9.00	14.00

General (A & B) - After Select Period		
Years from Eligibility for Unreduced Retirement	Rate (%)	
	Males	Females
1	0.90	0.86
2	1.22	1.60
3	1.46	2.01
4	1.66	2.37
5	1.82	2.38
6	1.98	2.39
7	2.12	2.61
8	2.25	2.82
9	2.37	3.02
10	2.48	3.20
11	3.23	4.22
12	3.48	4.44
13	3.99	4.65
14	4.01	5.25
15-20	4.30	5.75
21-25	4.50	6.00
26-30	4.70	6.50
31 or More	5.00	7.00

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Active Retirement Rates:

Police - Rates of Retirement (%)							
Service	For Entry Ages Under 32*			Age	For Entry Ages 33 and Above		
	22 & Under	23-27	28-32		33-37	38-42	43 & Over
0-22	6.250	12.500	12.500	33-37	5.0		
23	18.750	18.750	28.125	38-42	5.0	10.0	
24	12.500	12.500	18.750	43-47	5.0	10.0	10.0
25	12.500	12.500	18.750	48	5.0	10.0	10.0
26	18.750	18.750	31.250	49	5.0	10.0	10.0
27	18.750	18.750	31.250	50	5.0	10.0	10.0
28	31.250	31.250	31.250	51	5.0	10.0	10.0
29	31.250	31.250	37.500	52	20.0	10.0	10.0
30	37.500	37.500	50.000	53	35.0	10.0	10.0
31	37.500	37.500	62.500	54	75.0	10.0	10.0
32	37.500	37.500	100.000	55	20.0	10.0	10.0
33	37.500	37.500		56	25.0	10.0	10.0
34	50.000	50.000		57	30.0	10.0	10.0
35	50.000	62.500		58	35.0	10.0	10.0
36	50.000	62.500		59	50.0	10.0	10.0
37	62.500	100.000		60	100.0	50.0	10.0
38	62.500			61		35.0	10.0
39	62.500			62		35.0	80.0
40	62.500			63		35.0	40.0
41	62.500			64		35.0	40.0
42	100.000			65		100.0	100.0

* 100% rate of retirement effective at age 60, if earlier

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Fire - Rates of Retirement	
Number of Years After First Eligibility for Early Retirement	Rate (%)
0	2.0
1	2.0
2	2.0
3	2.0
4	2.0
5	5.0
6	7.5
7	7.5
8	10.0
9	16.7
10	16.7
11	16.7
12	20.0
13	20.0
14	30.0
15	40.0
16	50.0
17	75.0
18	100.0

General (A & B) - Rates of Retirement**						
Age	Rate (%)		Age	Rate (%)		
	Males	Females		Males	Females	
44 & Under	22.0	25.0	60	22.0	21.0	
45	22.0	23.0	61	22.0	21.0	
46	22.0	23.0	62	27.0	24.0	
47	22.0	23.0	63	22.0	21.0	
48	22.0	23.0	64	22.0	21.0	
49	22.0	23.0	65	22.0	24.0	
50	22.0	26.0	66	30.0	24.0	
51	22.0	26.0	67	30.0	24.0	
52	22.0	26.0	68	22.0	21.0	
53	22.0	26.0	69	22.0	21.0	
54	22.0	26.0	70	22.0	20.0	
55	22.0	26.0	71	22.0	20.0	
56	22.0	26.0	72	22.0	20.0	
57	22.0	26.0	73	22.0	20.0	
58	22.0	26.0	74 & Older	100.0	100.0	
59	22.0	26.0				

** Rates are assumed for participants upon eligibility for normal retirement. For Group B members, the rate for the first year following normal retirement eligibility is twice the above rates. For Group B members that have attained early retirement eligibility, the rate of retirement will be 1% at age 55, increasing by 1% every two years to the ultimate rate of 5% at ages 63 and 64.

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Inactive Vested Participants:	Data for inactive vested participants of the pension systems who may be eligible for future OPEB coverage was not provided. Based on recent counts of the inactive vested participants from the corresponding pension valuations and actual enrollment experience among retirees from inactive vested status over the past year, the OPEB liability associated with inactive vested participants was deemed immaterial and has not been valued.
Unknown Data for Participants:	Missing census items for a given participant were assumed to equal the average value of that item over all other participants in the corresponding group of the same status for whom the item is known.
Participation and Coverage Election:	<p>75% of employees eligible to retire and receive subsidized postretirement welfare coverage were assumed to elect medical and prescription drug coverage. 100% of employees eligible to retire were assumed to receive life insurance coverage. Current retirees who have elected coverage are assumed to continue coverage for their lifetime. Current retirees who have waived coverage are assumed to continue waiving coverage for their lifetime.</p> <p>The participation and coverage election assumptions were based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual number of enrollments and the projected number based on the prior years' assumption over the past year.</p>
Plan Election:	<p>Plan election data was available for current retirees. Current retirees are assumed to continue in their current plan for their lifetime. Of those future retirees who are assumed to elect medical coverage, 30% were assumed to elect coverage under the HMO and the remaining 70% under the PPO.</p> <p>The plan election assumptions were based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual plan elections and the projected number based on the prior years' assumption over the past year.</p>
Dependents:	<p>Demographic data was available for spouses of current retirees. For future retirees, male participants are assumed to have female spouses and female participants are assumed to have male spouses, with female spouses being three years younger than their male spouse. Of those future retirees who elect to continue their health coverage at retirement, 30% were assumed to have an eligible spouse who also opts for health coverage at that time.</p> <p>The dependent assumption was based on historical and current demographic data, adjusted to reflect estimated future experience and professional judgment. As part of this analysis, a comparison was made between the actual number of spouse enrollments by gender and the projected number based on the prior years' assumption over the past year.</p>

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Per Capita Cost Development:

Medical

Per capita claims costs were based on paid experience for the period November 1, 2015 through October 31, 2017 for retired participants and their covered dependents¹. Claims were separated by Medicare and Non-Medicare participants and by plan type (HMO, PPO, CDHP), then adjusted as follows:

- actual large claims were replaced by the *expected* amount of large claims to smooth out random fluctuations in experience,
- a lag period of two months was applied to account for claims incurred but not yet paid,
- total claims were divided by the number of adult members to yield a per capita claim,
- the per capita claim was trended to the midpoint of the valuation year at assumed trend rates, and the per capita claim was adjusted for the effect of any plan changes

Actuarial factors were then applied to the per capita claims to estimate individual retiree and spouse costs by age and by gender.

Prescription Drug

Per capita claims costs were based on paid experience for the period December 1, 2015 through November 30, 2017 for retired participants and their covered dependents¹. Claims were separated by plan type (PPO, HMO, CDHP), then adjusted as follows:

- a lag period of one month was applied to account for claims incurred but not yet paid,
- total claims were divided by the number of adult members to yield a per capita claim,
- the per capita claim was trended to the midpoint of the valuation year at assumed trend rates, and the per capita claim was adjusted for the effect of any plan changes

Actuarial factors were then applied to the per capita claims to estimate individual retiree and spouse costs by age and by gender.

Administrative Expenses

Administrative expenses were based on current vendor contracts for 2018. A weighted average was determined based on actual plan election percentages.

¹ For the CDHP Plan, claims experience for active employees and their covered dependents was also used because the retiree-only experience was not fully credible.

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Per Capita Health Costs:

Annual per capita medical and prescription drug claims costs for the plan year beginning January 1, 2018, excluding assumed expenses, are shown in the table below for retirees and for spouses at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.

PPO Plan								
Age	Medical				Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
50	\$7,818	\$8,905	\$5,461	\$7,150	\$2,156	\$2,455	\$1,506	\$1,972
55	9,285	9,586	7,308	8,277	2,560	2,643	2,015	2,282
60	11,027	10,333	9,783	9,599	3,040	2,849	2,697	2,647
64	12,651	10,961	12,350	10,804	3,488	3,022	3,405	2,979
65	3,353	2,850	3,353	2,850	3,611	3,069	3,611	3,069
70	3,886	3,071	3,886	3,071	4,185	3,308	4,185	3,308
75	4,188	3,306	4,188	3,306	4,510	3,560	4,510	3,560
80+	4,510	3,564	4,510	3,564	4,857	3,838	4,857	3,838

HMO Plan								
Age	Medical				Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
50	\$8,069	\$9,191	\$5,636	\$7,380	\$1,800	\$2,050	\$1,257	\$1,646
55	9,583	9,894	7,542	8,542	2,138	2,207	1,682	1,905
60	11,380	10,664	10,096	9,907	2,539	2,379	2,252	2,210
64	13,056	11,313	12,746	11,151	2,912	2,524	2,843	2,487
65	4,417	3,754	4,417	3,754	3,015	2,563	3,015	2,563
70	5,119	4,046	5,119	4,046	3,494	2,762	3,494	2,762
75	5,517	4,355	5,517	4,355	3,766	2,973	3,766	2,973
80+	5,941	4,695	5,941	4,695	4,055	3,205	4,055	3,205

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

CDHP Plan*								
Age	Medical				Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
50	\$4,758	\$5,420	\$3,323	\$4,352	\$488	\$556	\$341	\$446
55	5,651	5,834	4,447	5,037	579	598	456	516
60	6,711	6,288	5,954	5,842	688	645	610	599
64	7,699	6,671	7,516	6,575	789	684	770	674
65	2,112	1,795	2,112	1,795	817	694	817	694
70	2,448	1,935	2,448	1,935	947	748	947	748
75	2,638	2,082	2,638	2,082	1,020	806	1,020	806
80+	2,841	2,245	2,841	2,245	1,099	868	1,099	868

* Excludes City's contribution to Health Reimbursement Account.

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Health Care Cost Trend Rates:

Health care trend measures the anticipated overall rate at which health plan costs are expected to increase in future years. The rates shown below are “net” and are applied to the net per capita costs shown above. The trend shown for a particular plan year is the rate that is applied to that year’s cost to yield the next year’s projected cost.

Year Ending December 31,	Medical (under 65)	Medical (over 65)	Prescription Drug	Administrative Expenses
2018	7.00%	6.00%	9.00%	2.50%
2019	6.50%	5.50%	8.50%	2.50%
2020	6.00%	5.00%	8.00%	2.50%
2021	5.50%	4.50%	7.50%	2.50%
2022	5.00%	4.50%	7.00%	2.50%
2023	4.50%	4.50%	6.50%	2.50%
2024	4.50%	4.50%	6.00%	2.50%
2025	4.50%	4.50%	5.50%	2.50%
2026	4.50%	4.50%	5.00%	2.50%
2027 & later	4.50%	4.50%	4.50%	2.50%

The trend rate assumptions were developed using Segal’s internal guidelines, which are established each year using data sources such as the Segal Health Trend Survey, internal client results, trends from other published surveys prepared by the S&P Dow Jones Indices, consulting firms and brokers, and CPI statistics published by the Bureau of Labor Statistics.

Retiree Contributions:

Retiree contributions are reset on a calendar year basis based on actual claims experience by plan during the preceding year. The total employer plus employee paid amount reflects the total expected cost of coverage for each plan for the upcoming calendar year. The employer subsidy is a percentage of the total cost which varies depending on service at retirement, plan, and coverage tier. The current employer subsidy structure is assumed to remain the same in all future years. In effect, this means that the retiree contribution rates, as a dollar amount, are assumed to increase at the same trend rates as total costs.

Administrative Expenses:

An administrative expense load of \$413 per covered individual. Administrative costs are assumed to increase at 2.50% per year and were added to projected incurred claim costs in developing the benefit obligations.

Plan Design:

Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit II.

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Excise Tax on High Cost Health Plans:

The effect of the excise tax on high-cost health plans scheduled to take effect for plan years beginning in 2022 is not included in this valuation. As outlined in the annual retiree guide distributed to all participants, the City will attempt to design a medical plan that is below the threshold level established by the Federal Government. However, if the threshold is reached, the cost of the excise tax will be passed on to employees and retirees.

Assumption Changes since Prior Valuation:

Based on past experience and future expectations, the following actuarial assumptions were changed as of the valuation date:

- The discount rate was decreased from 3.78% to 3.44% based on the Bond Buyer US Weekly Yields 20 General Obligation Bond Index as of the measurement date.
- Medical and prescription drug claim costs were updated to reflect more recent experience.
- Medical and prescription drug trend rates were modified (previously 8.00% decreased by 0.50% per year to an ultimate 5.00%).
- Administrative expenses were updated to reflect more recent vendor contracts and assumed trends on such costs (previously, \$487 annually per retiree with a 3.0% trend rate).

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

EXHIBIT II

Summary of Plan

This exhibit summarizes the major benefit provisions as included in the valuation. To the best of our knowledge, the summary represents the substantive plans as of the measurement date. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Eligibility:

Receiving a pension of any type from of the City's three pension plans (City of Austin Employees' Retirement System, Austin Police Retirement System, and Austin Firefighters' Relief and Retirement Fund). General retirement requirements are as follows:

City of Austin Employees' Retirement System Group A

- > Age 62, or
- > 23 years of service, or
- > Age 55 with 20 years of service, or
- > Total and permanent disability (if less than 5 years of service, disability must be job-related)

City of Austin Employees' Retirement System Group B

- > Age 65 with 5 years of service, or
- > Age 62 with 30 years of service, or
- > Age 55 with 10 years of service (early retirement), or
- > Total and permanent disability (if less than 5 years of service, disability must be job-related)

Police

- > Age 62, or
- > 23 years of service, or
- > Age 55 with 20 years of service, or
- > Total and permanent disability (if less than 10 years of service, disability must be job-related)

Fire

- > Age 50 with 10 years of service, or
- > 25 years of service (20 years for early retirement), or
- > Age 45 with 10 years of service (early retirement), or
- > Total and permanent disability (if less than 2.5 years of service, disability must be job-related)

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Benefit Types:	Medical and prescription drug benefits are provided to all eligible retirees through a PPO, HMO, or a CDHP plan. Retirees may choose among the three plan types. Life Insurance benefit of \$1,000 is payable upon the death of eligible retirees.
Duration of Coverage:	Lifetime.
Dependent Benefits:	Same as retirees (excluding life insurance).
Dependent Coverage:	Lifetime benefits (excluding life insurance) to spouse/domestic partner and dependent children under age 26 (unless disabled). Surviving spouses also covered for life, until remarriage or coverage is waived.
Retiree Contributions:	Currently the City of Austin pays a maximum of 80% of the medical premiums for retirees, 50% for dependents, and 70% (75% if pre-Medicare) for surviving spouses (rate shown on next page). The target percentage of the maximum subsidy, based on service at retirement, is shown below:

Years of Service	<5	5 - 9	10 - 14	15 - 19	20 and over
Target Percent of Maximum Subsidy	20%	30%	50%	70%	100%

In addition, if excise tax is payable in 2022 and beyond, retirees must also contribute that amount.

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Monthly contributions for retirees as of January 1, 2018 are shown below:

Years of Service	<5	5 - 9	10 - 14	15 - 19	20 & over
UnitedHealthcare PPO					
Medicare Eligible					
Retiree	\$428.64	\$387.70	\$305.83	\$223.93	\$101.11
Married Spouse	\$630.85	\$596.12	\$526.67	\$457.22	\$353.01
Surviving Spouse	\$439.68	\$404.26	\$333.47	\$262.61	\$156.38
Not Medicare Eligible					
Retiree	\$807.30	\$730.18	\$576.00	\$421.75	\$190.43
Married Spouse	\$817.51	\$771.99	\$680.91	\$589.85	\$453.25
Child	\$408.89	\$386.18	\$340.81	\$295.39	\$227.32
Surviving Spouse	\$816.32	\$743.67	\$598.49	\$453.29	\$235.54
UnitedHealthcare HMO					
Medicare Eligible					
Retiree	\$428.64	\$387.70	\$305.83	\$223.93	\$101.11
Married Spouse	\$630.85	\$596.12	\$526.67	\$457.22	\$353.01
Surviving Spouse	\$439.68	\$404.26	\$333.47	\$262.61	\$156.38
Not Medicare Eligible					
Retiree	\$817.30	\$740.18	\$586.00	\$431.75	\$200.43
Married Spouse	\$817.51	\$771.99	\$680.91	\$589.85	\$453.25
Child	\$408.89	\$386.18	\$340.80	\$295.39	\$227.32
Surviving Spouse	\$826.32	\$753.67	\$608.48	\$463.29	\$245.54
UnitedHealthcare CDHP					
Medicare Eligible					
Retiree	\$389.18	\$345.94	\$259.45	\$172.97	\$86.48
Married Spouse	\$507.18	\$479.00	\$450.83	\$394.48	\$281.77
Surviving Spouse	\$389.18	\$345.94	\$259.45	\$172.97	\$86.48
Not Medicare Eligible					
Retiree	\$760.83	\$676.29	\$507.22	\$338.15	\$169.07
Married Spouse	\$608.70	\$574.89	\$541.07	\$473.07	\$338.17
Child	\$304.36	\$287.45	\$270.54	\$236.72	\$169.09
Surviving Spouse	\$760.83	\$676.29	\$507.22	\$338.15	\$169.07

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Benefit Descriptions:

Medical and Prescription Drug		United Choice Plus PPO	
Description of Coverage		ACO Nexus Tier	In Network
Deductible			
Individual		\$500	\$500
Family		\$1,500	\$1,500
Out-of-Pocket Maximum			
Individual		\$4,000	\$4,000
Family		\$12,700	\$12,700
Co-Insurance		80%	70%
Medicare Integration		Coordination of Benefits	
Physician Office Visit		\$10 PCP / \$25 specialist	\$25 PCP / \$45 specialist
Prescription Drugs (Retail)			
Deductible		\$50 per person (tier 2 and 3 only)	\$50 per person (tier 2 and 3 only)
Formulary Generic		\$10 copay	\$10 copay
Formulary Brand Name		80% (\$30 min, \$60 max)	80% (\$30 min, \$60 max)
Non-formulary		80% (\$50 min, \$100 max)	80% (\$50 min, \$100 max)
Prescription Drugs (Mail Order)			
Deductible		\$50 per person (tier 2 and 3 only)	\$50 per person (tier 2 and 3 only)
Formulary Generic		\$20 copay	\$20 copay
Formulary Brand Name		80% (\$60 min, \$120 max)	80% (\$60 min, \$120 max)
Non-formulary		80% (\$100 min, \$200 max)	80% (\$100 min, \$200 max)
Out of Network Benefits		\$1,500 deductible per covered person. Plan pays 60%, up to maximum allowable charge. Subject to network benefit plan limits, pre-approval, and pre-notification requirements. Outpatient Surgery and Inpatient Admissions are subject to a \$250 per day facility fee.	

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Medical and Prescription Drug		United Choice Plus HMO	
Description of Coverage		ACO Nexus Tier	In Network
Deductible			
Individual		\$0	\$0
Family		\$0	\$0
Out-of-Pocket Maximum			
Individual		\$4,500	\$4,500
Family		\$8,000	\$8,000
Co-Insurance		100%	100%
Medicare Integration		Coordination of Benefits	
Physician Office Visit		\$10 PCP / \$35 specialist	\$25 PCP / \$55 specialist
Prescription Drugs (Retail)			
Deductible		\$50 per person (tier 2 and 3 only)	\$50 per person (tier 2 and 3 only)
Formulary Generic		\$10 copay	\$10 copay
Formulary Brand Name		80% (\$35 min, \$70 max)	80% (\$35 min, \$70 max)
Non-formulary		80% (\$55 min, \$110 max)	80% (\$55 min, \$110 max)
Prescription Drugs (Mail Order)			
Deductible		\$50 per person (tier 2 and 3 only)	\$50 per person (tier 2 and 3 only)
Formulary Generic		\$30 copay	\$30 copay
Formulary Brand Name		80% (\$105 min, \$210 max)	80% (\$105 min, \$210 max)
Non-formulary		80% (\$165 min, \$330 max)	80% (\$165 min, \$330 max)
Out of Network Benefits		None, except in case of medical emergency	

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Medical and Prescription Drug Description of Coverage	United Choice Plus CDHP		
	ACO Nexus Tier	In Network	Out of Network
Deductible			
Individual	\$1,500	\$1,500	\$3,000
Family	\$3,000	\$3,000	\$6,000
Out-of-Pocket Maximum			
Individual	\$5,000	\$5,000	\$10,000
Family	\$6,850	\$6,850	\$20,000
Co-Insurance	80%	70%	60%
Health Reimbursement Account			
Individual Maximum		\$500	
Family Maximum		\$1,000	
Proration by Service			
Less than 5		20%	
5 through 9		40%	
10 through 14		60%	
15 through 19		80%	
20 or more		100%	
Medicare Integration		Coordination of Benefits	
Physician Office Visit	80% coinsurance	70% coinsurance	60% coinsurance
Prescription Drugs (Retail)	Integrated with Medical	Integrated with Medical	Integrated with Medical
Deductible	80%	80%	80%
Formulary Generic	80%	80%	80%
Formulary Brand Name	80%	80%	80%
Non-formulary			
Prescription Drugs (Mail Order)	Integrated with Medical	Integrated with Medical	Integrated with Medical
Deductible			
Formulary Generic	80%	80%	80%
Formulary Brand Name	80%	80%	80%
Non-formulary	80%	80%	80%

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Plan Changes

Since Prior Valuation: There were no changes to the Plan since the prior valuation.

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

EXHIBIT III

Definition of Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial Assumptions:	<p>The estimates on which the cost of the Plan is calculated including:</p> <ul style="list-style-type: none">(a) <u>Investment return</u> — the rate of investment yield that the Plan will earn over the long-term future;(b) <u>Mortality rates</u> — the death rates of employees and pensioners; life expectancy is based on these rates;(c) <u>Retirement rates</u> — the rate or probability of retirement at a given age;(d) <u>Turnover rates</u> — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.
Total OPEB Liability:	Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.
Service Cost:	The amount of contributions required to fund the benefit allocated to the current year of service.
Actuarially Determined Contribution:	A target or recommended contribution to an OPEB plan for the reporting period based on the most recent measurement available.
Valuation Date:	The date at which the actuarial valuation is performed
Covered Employee Payroll:	The base pensionable payroll of the employees that are provided OPEB benefits

Section 4: Supporting Information for the City of Austin OPEB Plan December 31, 2017 Measurement Date for GASB 75

Discount Rate:	The single rate of return, that when applied to all projected benefit payments results in an actuarial present value that is the sum of the following: (1) the actuarial present value of projected benefit payments projected to be funded by plan assets using a long term rate of return, and (2) the actuarial present value of projected benefit payments that are not included in (1) using a yield or index rate for 20 year tax exempt general obligation municipal bonds with an average rating of AA/Aa or higher
Entry Age Actuarial Cost Method:	An actuarial cost method where the present value of the projected benefits for an individual is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age
Healthcare Cost Trend Rates:	The rate of change in per capita health costs over time
Net OPEB Liability:	The Total OPEB Liability less the Plan Fiduciary Net Position
Plan Fiduciary Net Position:	The market value of assets in trust dedicated to OPEB. For plans funded on a “pay-as-you-go” basis, this amount is zero.
Real Rate of Return:	The rate of return on an investment after removing inflation

EXHIBIT IV

Accounting Requirements

The Governmental Accounting Standards Board (GASB) issued Statement Number 74 – *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, and Statement Number 75 – *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. Under these statements, all state and local government entities that provide other post-employment benefits (OPEB) are required to report the cost of these benefits on their financial statements. The accounting standards supplement cash accounting, under which the expense for postemployment benefits is equal to benefit and administrative costs paid on behalf of retirees and their dependents (*i.e.*, a pay-as-you-go basis).

The statements cover postemployment benefits of health, prescription drug, dental, vision and life insurance coverage for retirees; long-term care coverage, life insurance and death benefits that are *not* offered as part of a pension plan; and long-term disability insurance for employees. The benefits valued in this report are limited to those described in Exhibit II of Section 4, which are based on those provided under the terms of the substantive plan in effect at the time of the valuation and on the pattern of sharing costs between the employer and plan members. The projection of benefits is not limited by legal or contractual limits on funding the plan unless those limits clearly translate into benefit limits on the substantive plan being valued.

The new standards introduce an accrual-basis accounting requirement, thereby recognizing the employer cost of postemployment benefits over an employee's career. The standards also introduce a consistent accounting requirement for both pension and non-pension benefits.

The total cost of providing postemployment benefits is projected, taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions. These assumptions are summarized in Exhibit I of Section 4. This amount is then discounted to determine the Total OPEB Liability. The Net OPEB Liability (NOL) is the difference between the Total OPEB Liability and market value of assets in the Plan, called the Plan Fiduciary Net Position.

Once the NOL is determined, the Annual OPEB Expense is determined as the change in NOL from the prior year with deferred recognition of certain elements. In addition, Required Supplementary Information (RSI) must be reported, including historical information about the Net OPEB liability and the Contributions made to the Plan. Exhibits III and V of Section 4 contain a definition of terms as well as more information about GASB 74/75 concepts.

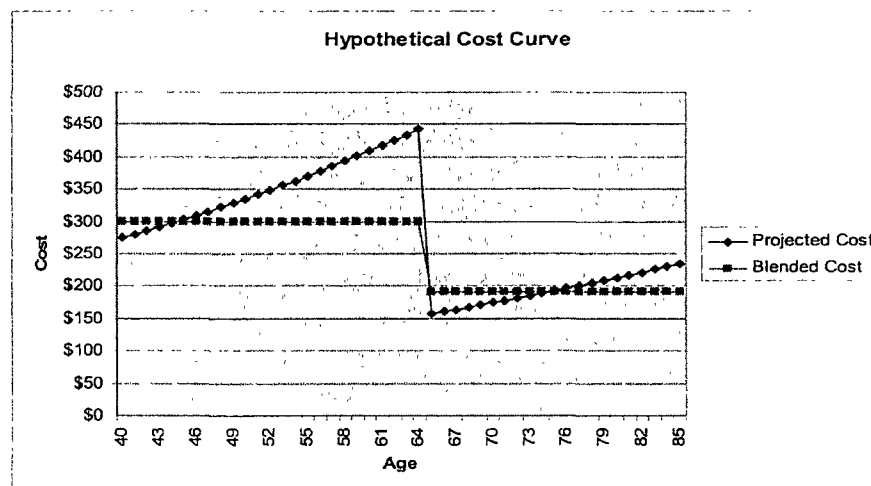
The calculation of an accounting obligation does not, in and of itself, imply that there is any legal liability to provide the benefits valued, nor is there any implication that the Employer is required to implement a funding policy to satisfy the projected expense.

Actuarial calculations reflect a long-term perspective, and the methods and assumptions use techniques designed to reduce short-term volatility in accrued liabilities and the actuarial value of assets, if any.

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future, and the actuarially determined amounts are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future.

EXHIBIT V
GASB 74/75 Concepts

The following graph illustrates why a significant accounting obligation may exist even though the retiree contributes most or all of the blended premium cost of the plan. The average cost for retirees is likely to exceed the average cost for the whole group, leading to an implicit subsidy for these retirees. The accounting standard requires the employer to identify and account for this implicit subsidy as well as any explicit subsidies the employer may provide.



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Exhibit B

WillisTowersWatson 

City of Austin

OPEB Plan

September 2017

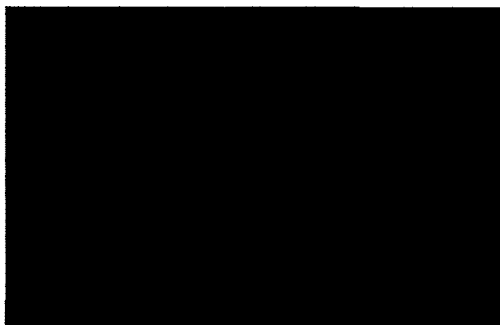


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Prepared as of October 1, 2016

This report describes the results of an actuarial valuation of the City of Austin OPEB Plan. The City of Austin retained Towers Watson Delaware Inc. ("Willis Towers Watson") to perform this actuarial valuation for the purposes of determining financial statement disclosure and reporting information for the fiscal years ending September 30, 2017 and September 30, 2018.

The consulting actuaries are members of the Society of Actuaries and other professional actuarial organizations and meet their "General Qualification Standard for Prescribed Statements of Actuarial Opinions" relating to OPEB Plans.

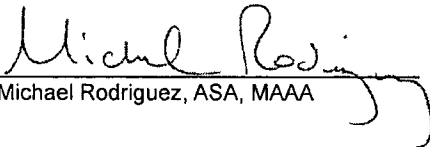
The calculations were made as of October 1, 2016. In preparing the results presented in this report, we have relied upon information provided to us regarding plan provisions and plan participants as of October 1, 2016. We have reviewed this information for overall reasonableness and consistency, but have neither audited nor independently verified this information. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information.

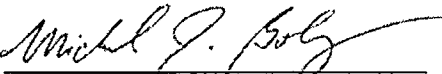
The actuarial assumptions and the accounting policies and methods employed in this report have been selected by the plan sponsor, with the concurrence of Willis Towers Watson. The funding determination portion of this actuarial valuation has been conducted in accordance with principles of practice prescribed by the Actuarial Standards Board.

The financial statement disclosure portion of this actuarial valuation has been conducted according to our understanding of Statements No. 43 and 45 of the Government Accounting Standards Board. The Government Accounting Standards Board requires the use of reasonable assumptions. The actuarial assumptions used are identical to the assumptions used for the funding determination portion of the valuation.

The results shown in this report have been developed based on actuarial assumptions that are considered to be reasonable and within the "best-estimate range" as described by the Actuarial Standards of Practice. Other actuarial assumptions could also be considered to be reasonable and within the best-estimate range. Thus, reasonable results differing from those presented in this report could have been developed by selecting different points within the best-estimate ranges for various assumptions.

The information contained in this report was prepared for the internal use of the City of Austin and its auditors in connection with our actuarial valuation of the OPEB Plan. It is neither intended nor necessarily suitable for other purposes. The City of Austin may also distribute this actuarial valuation report to the appropriate authorities who have the legal right to require the City of Austin to provide them this report, in which case the City of Austin will use best efforts to notify Willis Towers Watson in advance of this distribution. Further distribution to, or use by, other parties of all or part of this report is expressly prohibited without Towers Watson's prior written consent.


Michael Rodriguez, ASA, MAAA


Michael J. Bologna, FSA, EA

Management Summary

Key Results

The key results from the current valuation are as follows:

Actuarial Valuation Date	October 1, 2014	October 1, 2016
City's Normal Cost	\$ 54,219,217	\$ 89,470,899
Actuarial Accrued Liability (AAL)	\$ 1,449,238,342	\$ 2,004,664,451
Actuarial Value of Assets (AVA)	\$ 0	\$ 0
Funded Ratio (AVA/AAL)	0.0%	0.0%

Plan Year Ended	December 31, 2016	December 31, 2017
GASB 43 Annual Required Contribution (ARC)	\$ 153,422,394	\$ 203,571,220

Fiscal Year Ended	September 30, 2017	September 30, 2018
GASB 45 Annual OPEB Cost (AOC)	\$ 190,774,692	\$ 188,634,424

Funding Determination

Determination of Contribution Amounts and Funded Status

The current contribution amount has been determined based on the actuarial assumptions summarized in Appendix C and the actuarial cost method described in Appendix D.

The actuarial assumptions are used to predict the likelihood of various benefits becoming payable from the plan, the size of those benefits, and the estimated value today of those future benefits. Actual experience may deviate from these assumptions, resulting in actuarial gains and losses.

The actuarial cost method is a budgeting technique, used to allocate total estimated plan liabilities over past, current, and future years. Thus, the choice of the cost method does not affect the overall long-term plan costs, but only the incidence of when those costs are reflected.

An actuarial valuation is the process by which the actuarial assumptions and cost method are applied to actual plan provisions, assets, and participant data to develop a funding level sufficient to provide for future benefit payments, the actual ultimate value of which is not now known. The actuarial valuation also reviews the current funded status of the plan, a comparison of current assets to the value of benefits accrued to date.

Basic Valuation Results

Actuarial Valuation Date	October 1, 2014	October 1, 2016
1. Actuarial Accrued Liability		
a. Active Participants	\$ 698,034,306	\$ 1,085,177,357
b. Inactive Participants	<u>751,204,036</u>	<u>919,487,094</u>
c. Total: (a)+(b)	\$ 1,449,238,342	\$ 2,004,664,451
2. Actuarial Value of Plan Assets	\$ 0	\$ 0
3. Unfunded Actuarial Accrued Liability: (1)(c)-(2)	\$ 1,449,238,342	\$ 2,004,664,451
4. Employer Normal Cost (Beginning of Year)	\$ 54,219,217	\$ 89,470,899

Information for Financial Statements

Disclosure of OPEB

Actuarial calculations under Statement No. 43 of the Governmental Accounting Standards Board (GASB 43) are for purposes of providing the required supplementary information to the financial statement of the plan. Actuarial calculations under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45) are for purposes of providing the required supplementary information and the notes to the financial statement of the City. The calculations and disclosures reported in this section have been made on a basis consistent with our understanding of GASB 43 and GASB 45.

Beginning with the fiscal year ending September 30, 2008, the Fund has elected to prepare the plan's financial statements in accordance with GASB 43. Effective with the fiscal year ending September 30, 2008, the City has elected to prepare financial statements in accordance with GASB 45.

Schedule of Funding Progress — GASB 43 and 45

Actuarial Valuation Date	October 1, 2014	October 1, 2016
1. Actuarial Value of Assets	\$ 0	\$ 0
2. Actuarial Accrued Liability (AAL)	\$ 1,449,238,342	\$ 2,004,664,451
3. Unfunded AAL(UAAL): (2)-(1)	\$ 1,449,238,342	\$ 2,004,664,451
4. Funded Ratio: (1)-(2)	0%	0%

Schedule of Employer Contributions — GASB 43

Plan Year Ended	December 31, 2016	December 31, 2017
1. Actuarial Valuation Date(s)	October 1, 2014 / October 1, 2016	October 1, 2016
2. Annual Required Contribution (ARC)		
a. Employer ARC for fiscal year ending with current plan year	\$ 136,706,119	\$ 203,571,220
b. Employer ARC for fiscal year beginning with current fiscal year	\$ 203,571,220	\$ 203,571,220
c. Current plan year ARC [9/12x(a)+ 3/12x(b)]	\$ 153,422,394	\$ 203,571,220
3. Employer Contributions ¹	\$ 39,283,994	\$ 46,331,986
4. Percentage Contributed: (3)-(2)(c)	25.6%	22.8%
5. Excess Contributions/ (Contribution Deficiencies): (3)-(2)(c)	\$ (114,138,400)	\$ (157,239,234)

Annual OPEB Cost and Net OPEB Obligation — GASB 45

Fiscal Year Ended	September 30, 2017	September 30, 2018
1. Annual Required Contribution (ARC)	\$ 203,571,220	\$ 203,571,220
2. Interest on Net OPEB Obligation	\$ 36,358,149	\$ 42,439,187
3. Adjustment to ARC	\$ 49,154,677	\$ 57,375,983
4. Annual OPEB Cost (AOC): (1)+(2)-(3)	\$ 190,774,692	\$ 188,634,424
5. Contributions Made ²	\$ 46,331,986	\$ 48,647,676
6. Increase/(decrease) in Net OPEB Obligation: (4)-(5)	\$ 144,442,706	\$ 139,986,748
7. Net OPEB Obligation beginning of year	\$ 863,614,000	\$1,008,056,706
8. Net OPEB Obligation/(asset) end of year: (6)+(7)	\$1,008,056,706	\$1,148,043,454

¹ Contributions shown are for the fiscal year ending in the plan year.

² Estimated contributions for the fiscal year ending September 30, 2017 and September 30, 2018 are provided by the City of Austin

Notes to Required Schedules — GASB 43 and 45

	Plan Year Ended December 31, 2017, Fiscal Year Ending September 30, 2018
1. Actuarial Valuation Date	October 1, 2016
2. Actuarial Cost Method	Project Unit Credit
3. Amortization Method	Level Percentage Open
4. Remaining Amortization Period (Years)	30.0
5. Asset Valuation Method	N/A
6. Actuarial Assumptions	
a. Investment Rate of Return	4.21%
b. Health Care Trend Rate	8.0% in 2017, decreasing 0.5% per year for six years to an ultimate trend of 5.0% in 2023
7. Factors that significantly affect the identification of trends (changes in benefits, actuarial methods or assumptions, etc.)	N/A

Appendix A – Summary of Plan Provisions

Plan Provisions as of October 1, 2016

Medical Benefits

Eligibility	Retirement meeting one of the following requirements:
■ General Group A	<ul style="list-style-type: none"> ■ Age 62, or ■ 23 years of service, or ■ Age 55 with 20 years of service
■ General Group B	Normal retirement meeting one of the following requirements: <ul style="list-style-type: none"> ■ Age 65 with 5 years of service, or ■ Age 62 with 30 years of service Early retirement meeting the following requirement: <ul style="list-style-type: none"> ■ Age 55 with 10 years of service
■ Police	Retirement meeting one of the following requirements: <ul style="list-style-type: none"> ■ Age 62, or ■ 23 years of service, or ■ Age 55 with 20 years of service
■ Fire	Retirement meeting one of the following requirements: <ul style="list-style-type: none"> ■ Age 50, or ■ 20 years of service, or ■ Age 45 with 10 years of service
Disabled eligibility	With disability after 5 years of service
Dependent eligibility	Spouse or domestic partner, and unmarried dependent children
Survivor eligibility	Eligibility continues beyond death of retiree or active employee until remarriage, provided that the surviving spouse was covered at the time of death

Enrollment Options	United Choice Plus PPO	
	ACO Nexus Tier	In Network
■ Deductible ¹	\$500	\$500
■ Benefit percentage	80%	70%
■ Office visit copay	\$10 PCP/\$25 specialist	\$25 PCP/\$45 specialist
■ Out-of-pocket maximum	\$4,000	\$4,000
■ Medicare integration basis	Coordination of benefits	Coordination of benefits
■ Prescription Drug copays		
■ Deductible	\$50 per person (tier 2 and 3 only)	\$50 per person (tier 2 and 3 only)
■ Retail	\$10 Generic 80% (\$30 min; \$60 max) Preferred brand 80% (\$50 min; \$100 max) Non-preferred brand	\$10 Generic 80% (\$30 min; \$60 max) Preferred brand 80% (\$50 min; \$100 max) Non-preferred brand
■ Mail order	\$20 Generic 80% (\$60 min; \$120 max) Preferred brand 80% (\$100 min; \$200 max) Non-preferred brand	\$20 Generic 80% (\$60 min; \$120 max) Preferred brand 80% (\$100 min; \$200 max) Non-preferred brand

¹ Maximum family deductible is three times the individual deductible

United Choice Plus HMO

	ACO Nexus Tier	In Network
■ Deductible	\$0	\$0
■ Benefit percentage	100%	100%
■ Office visit copay	\$10 PCP/\$35 specialist	\$25 PCP/\$55 specialist
■ Out-of-pocket maximum	\$4,500	\$4,500
■ Medicare integration basis	Coordination of benefits	Coordination of benefits
■ Prescription Drug copays		
■ Deductible	\$50 per person (tier 2 and 3 only)	\$50 per person (tier 2 and 3 only)
■ Retail	\$10 Generic 80% (\$35 min; \$70 max) Preferred brand 80% (\$55 min; \$110 max) Non-preferred brand	\$10 Generic 80% (\$35 min; \$70 max) Preferred brand 80% (\$55 min; \$110 max) Non-preferred brand
■ Mail order	\$30 Generic 80% (\$105 min; \$210 max) Preferred brand 80% (\$165 min; \$330 max) Non-preferred brand	\$30 Generic 80% (\$105 min; \$210 max) Preferred brand 80% (\$165 min; \$330 max) Non-preferred brand

United Choice Plus CDHP

	ACO Nexus Tier	In Network
■ Deductible ¹	\$1,500	\$1,500
■ Benefit percentage	80%	70%
■ Office visit coinsurance	80%	70%
■ Out-of-pocket maximum	\$5,000	\$5,000
■ Medicare integration basis	Coordination of benefits	Coordination of benefits
■ Prescription Drug copays		
■ Deductible	Integrated with Medical	Integrated with Medical
■ Retail	80% Generic 80% Preferred brand 80% Non-preferred brand	80% Generic 80% Preferred brand 80% Non-preferred brand
■ Mail order	80% Generic 80% Preferred brand 80% Non-preferred brand	80% Generic 80% Preferred brand 80% Non-preferred brand

¹ Maximum family deductible is two times the individual deductible

Postretirement Contributions**2017 Retiree Rates**

Based on service:	<5	5 – 9	10 – 14	15 – 19	20+
UnitedHealthcare PPO					
Medicare eligible					
■ Retiree	\$428.64	\$387.70	\$305.83	\$223.93	\$101.11
■ Spouse	\$630.85	\$596.12	\$526.67	\$457.22	\$353.01
Not Medicare eligible					
■ Retiree	\$704.45	\$637.15	\$502.62	\$368.02	\$166.17
■ Spouse	\$713.36	\$673.65	\$594.16	\$514.70	\$395.51
■ Child unit	\$356.80	\$336.99	\$297.38	\$257.76	\$198.36
UnitedHealthcare HMO					
Medicare eligible					
■ Retiree	\$428.64	\$387.70	\$305.83	\$223.93	\$101.11
■ Spouse	\$630.85	\$596.12	\$526.67	\$457.22	\$353.01
Not Medicare eligible					
■ Retiree	\$714.45	\$647.15	\$512.62	\$378.02	\$176.17
■ Spouse	\$713.36	\$673.65	\$594.16	\$514.70	\$395.51
■ Child unit	\$356.80	\$336.99	\$297.38	\$257.76	\$198.36
UnitedHealthcare CDHP					
Medicare eligible					
■ Retiree	\$389.18	\$345.94	\$259.45	\$172.97	\$86.48
■ Spouse	\$507.18	\$479.00	\$450.83	\$394.48	\$281.77
Not Medicare eligible					
■ Retiree	\$709.73	\$630.87	\$473.16	\$315.44	\$157.66
■ Spouse	\$567.82	\$536.28	\$504.72	\$441.63	\$315.45
■ Child unit	\$283.92	\$268.14	\$252.36	\$220.81	\$157.72

Maximum City subsidy (target)

- Retirees 80% of price tag
- Dependents 50% of price tag

Target percent of maximum City subsidy	Based on service:
	<5 20%
	5 – 9 30%
	10 – 14 50%
	15 – 19 70%
	20+ 100%

Life Insurance Benefits

Eligibility	Same as medical
Postretirement contributions	None
Benefits	\$1,000 death benefits

Appendix B – Summary of Participant Data

Participant Data as of October 1, 2016

The employee data provided to Willis Towers Watson by the City of Austin was reviewed for reasonableness but no attempt was made to audit the data. All actuarial computations performed by Willis Towers Watson are directly dependent on the accuracy and completeness of the information provided.

Participant Data

Participant data for the current year is as follows:

	Fire	Police	Civilian	Total
1. Active Participants				
a. Number	1,003	1,814	9,284	12,101
b. Average age	42.9	40.6	45.0	44.2
c. Average service	13.6	11.2	8.8	9.5
2. Participants Currently Receiving Benefits				
a. Retirees	546	598	3,385	4,529
b. Retirees (Life Only)	79	76	1,877	2,032
c. Spouses	301	257	943	1,501
d. Surviving spouses	<u>31</u>	<u>37</u>	<u>145</u>	<u>213</u>
e. Total	957	968	6,350	8,275

Active Participant Distribution by Age and Completed Years of Service

Age Last Birthday	Completed Years of Service												Grand Total
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	Over 35	
Under 25	179	41	10	5	2								237
25-29	404	158	134	76	53	57	1						883
30-34	397	186	214	143	120	466	62	7					1,595
35-39	264	173	111	141	81	584	356	91	1				1,802
40-44	190	136	89	87	59	422	506	374	73	1			1,937
45-49	126	102	67	49	49	392	372	424	328	31	1		1,941
50-54	85	78	56	39	49	283	232	333	278	125	17		1,575
55-59	79	64	34	33	28	236	228	228	164	122	27	2	1,245
60-64	44	22	34	20	27	135	139	128	62	39	26	3	679
Over 65	11	4	6	4	8	50	47	38	20	10	3	6	207
Total	1,779	964	755	597	476	2,625	1,943	1,623	926	328	74	11	12,101

Average Age = 44.2

Average Service = 9.5

Inactive Data Summary

Age Band	Number of Retirees	Retirees (Life Only)	Number of Spouses	Number of Surviving Spouses
<40	3	0	1	0
40 – 44	9	3	4	0
45 – 49	99	23	35	0
50 – 54	417	113	148	5
55 – 59	829	230	261	14
60 – 64	1,066	376	353	20
65 – 69	1,016	557	351	33
70 – 74	506	320	173	29
75 – 79	285	189	100	37
>80	299	221	75	75
Total	4,529	2,032	1,501	213

Appendix C – Summary of Actuarial Assumptions

Funding Determination Actuarial Assumptions

1. Actuarial Assumptions

■ Investment Return:	4.21% per year, compounded annually
■ Mortality:	
■ Police (All Lives)	RP-2000 Combined Healthy without projection – Sex Distinct
■ Fire (Healthy Lives)	RP-2000 (Fully Generational using Scale AA) set back two years for males and females – Sex Distinct
■ Fire (Disabled Lives)	RP-2000 Disability Mortality Table
■ General (Actives)	RP-2014 Employee Healthy Mortality Tables with Blue Collar Adjustments. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014.
■ General (Healthy Retirees)	RP-2014 Combined Healthy Mortality Tables with Blue Collar Adjustments. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014.
■ General (Disabled Retirees)	RP-2014 Combined Healthy Mortality Tables with Blue Collar Adjustments, set forward three years. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014; minimum 3% rate of mortality at all ages.
■ Disablement	Annual rates based on age. See Sample Rates.
■ Termination of Employment	Annual rates based on age and service. See Sample Rates.
■ Retirement	Annual rates based on age and service. See Sample Rates.

2. Health Care Plan Assumptions

■ Health Care Inflation		
■ Medical and Prescription Drug Expenses	2017	8.0%
	2018	7.5%
	2019	7.0%
	2020	6.5%
	2021	6.0%
	2022	5.5%
	2023+	5.0%
■ Administrative Expenses	3.0% per year	
■ Starting Age-related Health Care Costs	Age	Blended Cost
	50 – 54	\$9,828
	55 – 59	11,796
	60 – 64	14,604
	65 – 69	5,988
	70 – 74	6,636
	75 – 79	7,140
	80 – 84	7,356
	85 – 89	7,344
	90 – 94	6,876
	95+	6,432
■ Health Care Cost for children	\$4,858 annually	
■ Annual administrative expense	\$487 annually per retiree	
■ Participation		
■ Actives	75% for future retirees	
■ Retirees	Based on actual data	
■ Plan Election for Future Retirees		
■ HMO	30%	
■ PPO	70%	
■ Married percent	30%	
■ Percent covering child (until age 55)	15%	
■ Spouses age	Wives three years younger than husband	

3. Sample Rates

■ Annual Rates of Disablement – Police, Fire and General

Age	Police
20	0.000070
22	0.000080
24	0.000090
26	0.000105
28	0.000125
30	0.000155
32	0.000200
34	0.000245
36	0.000270
38	0.000310
40	0.000460
42	0.000660
44	0.000865
46	0.001275
48	0.001670
50	0.001895
52	0.002020
54	0.002280
56	0.002660
58	0.003300
60	0.004555
62 & Above	0

Age	Fire
20	0.00014
25	0.00019
30	0.00031
35	0.00052
40	0.00092
45	0.00209
50	0.00379
55	0.00490
60	0.00911

Age	General
20	0.000004
25	0.000025
30	0.000099
35	0.000259
40	0.000494
45	0.000804
50	0.001188
55	0.001647
60	0.002180

■ Annual Rates of Termination – Police and Fire

Service	Police
0	0.075
1	0.030
2	0.030
3	0.015
4	0.015
5	0.010
6	0.010
7	0.005
8	0.005
9	0.005
10	0.010
11	0.010
12	0.010
13	0.010
14	0.005
15 & Above	0.005

Service	Fire
0 – 4	0.010
5 – 13	0.005
14 +	0

■ Annual Rates of Termination – General

- Rates of withdrawal are comprised of a select period for the first 3 years of employment and ultimate rates based on years of service from retirement after the end of the select period. The following rates during the select period apply at all ages during the applicable year of employment:

Years of Employment	Males	Females
1	0.125	0.175
2	0.115	0.160
3	0.090	0.140

- After the select period ends, rates of withdrawal are based on the number of years from employment. The rates are shown below for males and females.

Years from Eligibility for Unreduced Retirement	Males (After Select Period)	Females (After Select Period)
1	0.0090	0.0086
2	0.0122	0.0160
3	0.0146	0.0201
4	0.0166	0.0237
5	0.0182	0.0238
6	0.0198	0.0239
7	0.0212	0.0261
8	0.0225	0.0282
9	0.0237	0.0302
10	0.0248	0.0320
11	0.0323	0.0422
12	0.0348	0.0444
13	0.0399	0.0465
14	0.0401	0.0525
15	0.0430	0.0575
16	0.0430	0.0575
17	0.0430	0.0575
18	0.0430	0.0575
19	0.0430	0.0575
20	0.0430	0.0575
21	0.0450	0.0600
22	0.0450	0.0600
23	0.0450	0.0600
24	0.0450	0.0600
25	0.0450	0.0600
26	0.0470	0.0650
27	0.0470	0.0650
28	0.0470	0.0650
29	0.0470	0.0650
30	0.0470	0.0650
31+	0.0500	0.0700

■ Annual Rates of Retirement – Police

Service	For Entry Ages Under 32			Age	For Entry Ages 33 and Above		
	22 & Under	23 – 27	28 – 32		33 – 37	38 – 42	43 & Over
0-22	0.0625	0.1250	0.12500	33-37	0.05		
23	0.1875	0.1875	0.28125	38-42	0.05	0.10	
24	0.1250	0.1250	0.18750	43-47	0.05	0.10	0.10
25	0.1250	0.1250	0.18750	48	0.05	0.10	0.10
26	0.1875	0.1875	0.31250	49	0.05	0.10	0.10
27	0.1875	0.1875	0.31250	50	0.05	0.10	0.10
28	0.3125	0.3125	0.31250	51	0.05	0.10	0.10
29	0.3125	0.3125	0.37500	52	0.20	0.10	0.10
30	0.3750	0.3750	0.50000	53	0.35	0.10	0.10
31	0.3750	0.3750	0.62500	54	0.75	0.10	0.10
32	0.3750	0.3750	1.00000 ¹	55	0.20	0.10	0.10
33	0.3750	0.3750		56	0.25	0.10	0.10
34	0.5000	0.5000		57	0.30	0.10	0.10
35	0.5000	0.6250		58	0.35	0.10	0.10
36	0.5000	0.6250		59	0.50	0.10	0.10
37	0.6250	1.0000 ¹		60	1.00	0.50	0.10
38	0.6250			61		0.35	0.10
39	0.6250			62		0.35	0.80
40	0.6250			63		0.35	0.40
41	0.6250			64		0.35	0.40
42	1.0000 ¹			65		1.00	1.00

¹ 100% retirement rate will be effective at age 60, if earlier.

■ Annual Rates of Retirement – Fire

Number of Years After First Eligibility for Early Retirement	Probability
0	0.020
1	0.020
2	0.020
3	0.020
4	0.020
5	0.050
6	0.075
7	0.075
8	0.100
9	0.167
10	0.167
11	0.167
12	0.200
13	0.200
14	0.300
15	0.400
16	0.500
17	0.750
18	1.000

■ Annual Rates of Retirement – General

- The following rates of retirement are assumed for members eligible for normal retirement.

Age	Males	Females
44 & under	0.22	0.25
45	0.22	0.23
46	0.22	0.23
47	0.22	0.23
48	0.22	0.23
49	0.22	0.23
50	0.22	0.26
51	0.22	0.26
52	0.22	0.26
53	0.22	0.26
54	0.22	0.26
55	0.22	0.26
56	0.22	0.26
57	0.22	0.26
58	0.22	0.26
59	0.22	0.26
60	0.22	0.21
61	0.22	0.21
62	0.27	0.24
63	0.22	0.21
64	0.22	0.21
65	0.22	0.24
66	0.30	0.24
67	0.30	0.24
68	0.22	0.21
69	0.22	0.21
70	0.22	0.20
71	0.22	0.20
72	0.22	0.20
73	0.22	0.20
74 & older	1.00	1.00

- Group B members are assumed to retire at twice the applicable rate upon the first year they attain eligibility for normal retirement. Early retirement rates (of 1% at age 55 increasing by 1% every two years to 5% at ages 63 and 64) apply for Group B members.

4. Impact of PPACA Excise tax

The Actuarial Accrued Liability and Normal Cost as of October 1, 2016 do not reflect excise tax under the PPACA provision beginning in 2018.

5. Benefits Not Valued

We did not attempt to estimate the liability for retirees that are currently not enrolled in the plan. We did not have sufficient data to estimate how many are expected to join at a later date.

OPEB Cost Determination Actuarial Assumptions

The actuarial assumptions outlined in the Appendix C for funding determination were also used for OPEB cost determination.

Appendix D – Description of Actuarial Methods and Procedures

Funding Determination Actuarial Cost Methods and Procedures

Calculation of Normal Cost and Actuarial Accrued Liability

The method used to determine the Normal Cost and Actuarial Accrued Liability is the Projected Unit Credit Actuarial Cost Method, described below.

Projected Unit Credit Actuarial Cost Method

- The Projected Benefits at retirement or termination are determined for each individual included in the actuarial valuation. These Projected Benefits are then prorated, on the basis of service and benefit formula attribution, and allocated to:
 - all valuation years preceding the actuarial valuation date;
 - the current valuation year; and
 - all subsequent valuation years.
- The sum of the Actuarial Present Values of all benefits allocated to the current valuation year determined above for all individuals is the Normal Cost for the valuation year.
- The sum of the Actuarial Present Values of all benefits allocated to all valuation years preceding the actuarial valuation date determined above is the Actuarial Accrued Liability. The excess of the Actuarial Accrued Liability over the Actuarial Value of Plan Assets, if any, is the Unfunded Actuarial Accrued Liability.
- The actuarial gain (loss) is a measure of the difference between actual experience and that expected based upon the actuarial assumptions between two actuarial valuation dates. Under this actuarial cost method, the actuarial gains (losses) are directly calculated and reduce (increase) the Unfunded Actuarial Accrued Liability, if such liability exists.
- Adjustments to the Unfunded Actuarial Accrued Liability can result from changes in actuarial assumptions and plan provisions. Such adjustments are determined by calculating, as of the actuarial valuation date, the increase or decrease in the Unfunded Actuarial Accrued Liability resulting from the change.

Appendix E – Allocation of Liability by Department

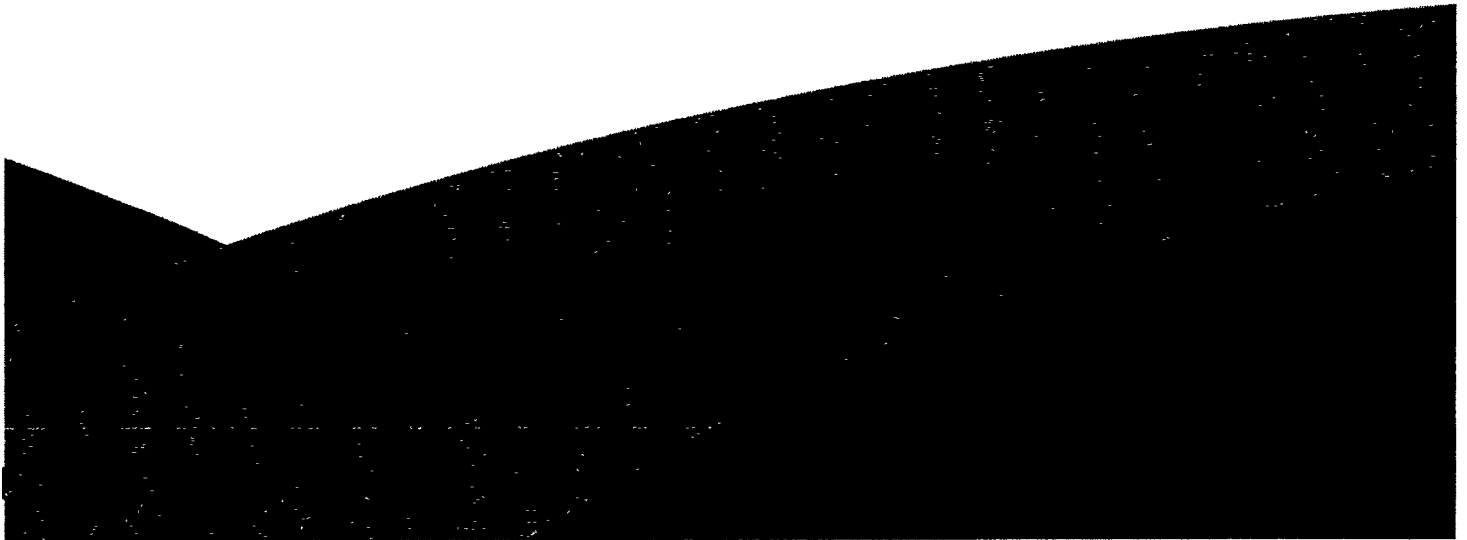
Allocation based on Department Number included valuation data provided by the City of Austin

	Civilian	Fire	Police	Total by Department
Active Participants				
E11	144,979,337	0	0	144,979,337
E15	30,427,999	0	0	30,427,999
E16	6,144,368	0	0	6,144,368
E22	45,751,916	0	0	45,751,916
E23	41,739,255	0	0	41,739,255
E24	12,331,206	0	0	12,331,206
E34	25,111,458	0	0	25,111,458
E55	3,572,792	0	0	3,572,792
E70	16,896,311	0	0	16,896,311
E78	2,845,661	0	0	2,845,661
E81	27,663,128	0	0	27,663,128
E92	17,209,245	0	0	17,209,245
G32	730,679	0	0	730,679
G33	1,038,685	0	0	1,038,685
G41	685,387	0	0	685,387
G42	250,356	0	0	250,356
G43	2,855,431	0	0	2,855,431
G44	3,458,053	0	0	3,458,053
G45	1,394,486	0	0	1,394,486
G46	11,129,517	0	0	11,129,517
G53	23,427,758	0	0	23,427,758
G56	25,896,534	0	0	25,896,534
G57	4,444,737	0	0	4,444,737
G58	8,288,396	0	0	8,288,396
G59	1,253,464	0	0	1,253,464
G60	31,048,005	0	0	31,048,005
G69	3,158,836	0	0	3,158,836
G71	1,239,054	0	0	1,239,054
G72	3,569,429	0	0	3,569,429
G74	17,200,680	0	0	17,200,680
G79	2,653,508	0	0	2,653,508
G80	11,125,912	0	0	11,125,912
G83	5,672,053	163,097,127	0	168,769,180
G85	26,638,340	0	0	26,638,340
G86	41,333,306	0	0	41,333,306
G87	37,459,675	0	204,637,534	242,097,209
G90	4,948,252	0	0	4,948,252
G91	27,891,381	0	0	27,891,381
G93	43,433,966	0	0	43,433,966
G94	544,140	0	0	544,140
Active Total	717,442,696	163,097,127	204,637,534	1,085,177,357
Inactive Participants	648,406,629	138,950,896	132,129,569	919,487,094
Grand Total	1,365,849,325	302,048,023	336,767,103	2,004,664,451

Exhibit C

City of Austin Employees' Retirement System

Actuarial Valuation Report
for the Year Ending December 31, 2017





April 24, 2018

Mr. Christopher Hanson
Executive Director
City of Austin Employees' Retirement System
418 E. Highland Mall Blvd.
Austin, TX 78752

Dear Mr. Hanson:

Subject: Actuarial Valuation as of December 31, 2017

We are pleased to present our report on the actuarial valuation of the City of Austin Employees' Retirement System (COAERS or the System). This report describes the current actuarial condition of COAERS, determines the period over which the unfunded liabilities of the System are expected to be paid off and determines the funded status of the System.

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 COAERS plan year. This report was prepared at the request of the Board and is intended for use by the COAERS staff and those designated or approved by the Board. This report may be provided to parties other than COAERS staff only in its entirety and only with the permission of the Board.

As you know, the employee and employer contribution rates are set by statute. It is expected that these contribution rates will remain level as a percentage of payroll. The System's funding policy is for the contribution rates to be sufficient to cover the normal cost of the plan and to amortize any unfunded actuarial accrued liabilities over a period not to exceed 25 years.

Currently, the total contribution rate is sufficient to amortize the System's unfunded liabilities in approximately 30 years. Therefore, the Board's funding policy is not currently being met. As of the prior valuation, the total contribution rate was sufficient to amortize the unfunded liabilities in 31 years. The decrease in the funding period is primarily due to an increase in the active membership and the corresponding increase in covered payroll.

In 2010 the City of Austin adopted the Amended Supplemental Funding Plan (ASFP). The ASFP provides for an additional City contribution rate of up to a maximum of 10.0% above the base 8.0% rate. The City is now contributing an additional 10.0%, or a total rate of 18.0%. The additional contribution rate is intended to stay in place until the ASFP is amended or repealed.

We certify that the information presented herein is accurate and fairly portrays the actuarial position of COAERS as of December 31, 2017. All of the supporting schedules and tables contained in this actuarial valuation report were prepared by GRS Retirement Consulting (GRS), including various

Mr. Christopher Hanson
April 24, 2018
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accounting and statistical tables which should help you compare the results of this plan year with prior years. The information presented in the trend data schedules of this report has been prepared by GRS. The information for years 1993 through 2000 was prepared by Watson Wyatt & Company.

The following schedules in the actuarial section of the COAERS Comprehensive Annual Financial Report were prepared by GRS: Summary of Cost Items, Analysis of Normal Cost by Component, Actuarial Present Value of Future Benefits and Calculation of Actuarial Accrued Liability, Development of Actuarial Value of Assets, Change in Net Position, Change in Unfunded Actuarial Accrued Liability, Relative Size of Unfunded Actuarial Accrued Liability, Schedule of Active Member Valuation Data, Schedule of Retirees and Beneficiaries Added to and Removed from Rolls, Solvency Test, Schedule of Funding Progress.

GRS provided COAERS with the information used in preparing the following trend schedules in the financial section of the CAFR: Notes to the Financial Statements - Schedule of Net Pension Liability, and Sensitivity of the Net Pension Liability to Changes in the Discount Rate; Required Supplementary Information - Schedule of Changes in the Net Pension Liability and Related Ratios. GRS provided no additional assistance in the preparation of any other schedules in the financial section of the CAFR. These schedules were provided to COAERS in a separate GASB report.

As authorized under Article 6243n of the Vernon's Civil Statutes of the State of Texas, 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, 2015. As a result of that study, revised assumptions were adopted by the Board effective with the valuation as of December 31, 2015. We believe the assumptions are internally consistent, reasonable, and, where appropriate, based on the actual experience of COAERS. All of the assumptions and methods used in this valuation were selected in compliance with the Actuarial Standards of Practice.

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. 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.

Member data for retired, active and inactive participants was supplied as of December 31, 2017, by the COAERS staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was also supplied by the COAERS staff.

The last actuarial valuation of COAERS was prepared as of December 31, 2016 by GRS. Valuations are prepared annually as of December 31st.




Mr. Christopher Hanson
April 24, 2018
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The undersigned are independent actuaries and consultants. Mr. Falls 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. Falls and Mr. Ward are experienced in performing valuations for large public retirement systems.

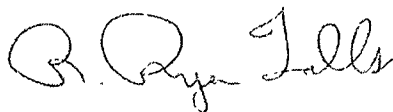
We would like to thank you and your staff for your assistance in providing all necessary information to complete this valuation. Your courteous help is very much appreciated. We look forward to discussing this actuarial valuation report with you at your convenience. Please do not hesitate to let us know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

Sincerely,



Lewis Ward
Consultant
zz1

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R. Ryan Falls, F.S.A, E.A., M.A.A.A.
Senior Consultant



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SECTION A

EXECUTIVE SUMMARY

Executive Summary

The key results from the valuation of the City of Austin Employees' Retirement System as of December 31, 2017 may be summarized as follows:

	December 31, 2017 (1)	December 31, 2016 (2)
• Members		
— Actives	9,612	9,364
— Retirees (including disabled) and beneficiaries	6,225	5,934
— Vested - terminated	<u>964</u>	<u>981</u>
— Total	16,801	16,279
• Covered payroll	\$ 629,943,122	\$ 599,574,934
• Normal cost as % of payroll*	17.73%	18.01%
• Actuarial accrued liability	\$ 3,797,823,303	\$ 3,591,376,306
• Actuarial value of assets	\$ 2,592,460,631	\$ 2,423,269,015
• Unfunded actuarial accrued liability (UAAL)	\$ 1,205,362,672	\$ 1,168,107,291
• Estimated yield on assets		
— Actuarial value basis	8.10%	5.74%
— Market value basis	16.48%	8.03%
• Contribution rate		
— Employee	8.00%	8.00%
— Employer	18.00%	18.00%
• Benefit and refund payments	\$ 190,332,179	\$ 179,128,881
• Amortization period of unfunded actuarial accrued liability	30 years	31 years
• Funding Policy employer contribution rate	19.33%	19.61%
• Funded ratio	68.3%	67.5%
• Funded ratio using market value of assets	69.8%	64.0%

* Includes 0.51% of payroll for administrative expenses beginning in December 31, 2015 valuation.

SECTION B

DISCUSSION

Introduction

This December 31, 2017 actuarial valuation of the City of Austin Employees' Retirement System has been prepared by GRS Retirement Consulting. The primary purpose of the valuation is to value the liabilities of the System as of December 31, 2017, determine the funding period of any unfunded liability for the plan year beginning January 1, 2018, and to provide certain required disclosure information. We are pleased to have the privilege of working for the Board, and look forward to discussing the results with you at your convenience.

Pages B-2 and B-3 of this report provides the current funded status of the plan and reviews the valuation results. Assets are discussed on page B-4, while page B-5 contains an analysis of the actuarial gains and losses during the past year.

Page B-6 discusses some of the historical comparisons and statistical summaries for the plan. Page B-7 provides a summary of the valuation results along with other comments.

Various tables supporting the report are contained in Sections C and D. Section E describes the actuarial methods and assumptions used in the valuation, and Section F outlines the Plan's benefit provisions, including any changes since the last valuation. Finally, Section G provides definitions of terms used throughout this report.

Funded Status of the Plan

The funded status of the plan is shown in Table 1, Table 2, and Table 3. Table 1 summarizes the various cost items from the current year's and prior year's actuarial valuations, while Table 2 provides an allocation of the normal cost by its various components. Table 3 shows the components of the actuarial liability.

Reviewing the composition of normal cost of the System, Table 2 indicates that the employer normal cost as of December 31, 2017, is 17.73% of pay. This compares with 18.01% of pay as of the last valuation on December 31, 2016. This normal cost is developed based on the Individual Entry Age Normal (EAN) actuarial cost method. As may be seen in Item 1, the normal cost for the retirement benefits is 14.10% of pay. The normal cost for the deferred termination benefits is 1.06% and 1.38% for refunds of terminated employees (both vested and non-vested). The normal cost for disability benefits is 0.20%, and the normal cost for death benefits is 0.48%. In addition, the cost of anticipated administrative expenses is being added to the normal cost rate. This adds 0.51% of pay to the normal cost rate as of December 31, 2017. The decline in the average normal cost reflects the continued shift in the active membership from Group A to Group B. We expect this pattern of declining normal costs (as a percentage of payroll) to continue until the active population is mostly Group B.

Table 1 illustrates a number of the key actuarial items for the 2017 valuation. As mentioned above, the total normal cost rate is 17.73% of covered payroll. The actuarial accrued liability is \$3,797.8 million as shown in Item 5 and as detailed in Table 3. The actuarial value of assets equals \$2,592.5 million, as shown in Item 6. Item 7 of Table 1 shows that the plan has an \$1,205.4 million unfunded liability (i.e. liabilities exceed plan assets) as of the valuation date. As of the last valuation (December 31, 2016), the System was underfunded by \$1,168.1 million. The increase in the unfunded liability is described in greater detail on page B-5 and Table 6.

On October 1, 2012, the City began contributing 18% of payroll and the employees are contributing 8% of payroll. Combining the employees' contributions with the City contribution, the System will have 26.00% of payroll to fund benefits. The current normal cost of the plan is 17.73%, which means that the System is currently receiving contributions in excess of the normal cost equal to 8.27% of pay (26.00% less 17.73%). These excess contributions are available to amortize any unfunded actuarial accrued liability. Based on these contribution rates, if all assumptions are exactly met then the current unfunded liability will be fully amortized over the next 30 years.

Funded Status of the Plan (Continued)

The actuarial valuation report as of December 31, 2017 reveals that the funded ratio (the ratio of actuarial assets to actuarial accrued liability) is 68.3%. On a market value of asset basis the funded status is 69.8%. The funded status is one of many metrics used to show trends and develop future expectations about the health of the System. The funded status measure itself is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations or assessing the need for or the amount of future contributions since it does not reflect normal cost contributions, the timing of amortization payments, or future experience other than expected.

Under the Amended Supplemental Funding Plan (ASFP) the total City contribution rate is 18.0% of pay. The additional contribution is intended to stay in place until the ASFP is amended or repealed. The normal cost was determined using the Individual Entry Age Normal (EAN) actuarial cost method. This method determines the normal cost for all employees on an individual basis, based on the benefits applicable to each individual member. Because employees hired on or after January 1, 2012 (Group B) have a less valuable benefit tier than employees hired prior to that date (Group A), the normal cost for Group B is less than the normal cost of Group A. With the application of the Individual EAN method, the normal cost is equal to the average of the individual members' normal costs. Since the current group of employees is primarily Group A, this means that the average normal costs for the group will decline over time as Group B employees replace Group A employees.

Because the contributions to the System are a fixed percentage of payroll, this means that the percentage of payroll that will go to pay off the unfunded liability will increase in the future as the average normal cost decreases. This result makes it difficult to calculate the funding period using a mathematical formula since the amount of contributions to pay off the unfunded liability will not be either a constant dollar amount or a constant percentage of payroll in the future. For this reason we are using an open group projection to determine when the System is expected to pay off its unfunded liability. The open group projection assumes a constant active population and that there will be no actuarial gains or losses on liabilities or the actuarial value of assets. Based on the open group projection the funding period of the System as of the valuation date is 30 years.

Change in Assets

Table 4 shows the development of the actuarial value of assets. Item 11 of Table 4, shows that the actuarial value of assets as of December 31, 2017 is \$2,592.5 million. Table 4 also shows the development of the gain/(loss) on the actuarial value of assets for the prior plan year. As shown in Item 12, the System had a gain on an actuarial asset basis of \$14.5 million in 2017. This compares to the \$41.1 million loss in 2016.

The method for determining the actuarial value of assets offsets excesses or shortfalls in the current year's investment income dollar for dollar against prior years' deferred gains or losses. Any remaining amounts from the current or prior years continue to be recognized over a five-year period. The investment income exceeded the assumed 7.50% rate of return on a market value of assets (MVA) basis. As shown in column 2 of Table 4, this excess investment income fully offset the prior years' deferred shortfalls in investment income. In addition, \$72.5 million in excess income remained 20% of which (\$14.5 million) is recognized in this year's actuarial value of assets with the remainder deferred for future valuations.

The total deferral of all Excess/(Shortfall) investment income for the year (shown in Table 4, Column 6 of Item 8) is \$58.0 million.

An analysis of the change in the System's market value of assets for the last two plan years and an estimate of the return on assets for the System are included in Table 5. The estimated average annual rate of return for the year ending December 31, 2017, assuming that income, revenue, and expenditures are evenly distributed throughout the year is 16.48% on a market value of assets basis. The rate of return for the year ending December 31, 2017, on an actuarial value basis was 8.03%. This compares with the actuarial assumed investment return at the beginning of the year of 7.50%.

Actuarial Gains and Losses

An important part of the change in unfunded actuarial accrued liability from year to year is due to the impact of actuarial gains and losses of the System. This section summarizes the combined asset and liability experience changes since the prior valuation on December 31, 2016.

As can be seen in Item 7 of Table 6, the expected value of the unfunded actuarial accrued liability as of December 31, 2017, was an underfunded position of \$1,202.7 million. This expected value reflects an assumed investment return assumption of 7.50% on the beginning of year unfunded actuarial accrued liability, normal cost, and contributions during 2017.

Since the actual unfunded actuarial accrued liability as of December 31, 2017 is \$1,205.4 million, it represents a total unexpected net increase for the period of \$2.6 million, as shown in Item 9 of Table 6. That is, the unfunded actuarial accrued liability is greater than expected. The net increase in the unfunded actuarial accrued liability includes an asset gain of \$14.5 million as shown in Table 4, and an unexpected increase on the liability side equal to \$17.1 million, which is broken out by source in Items 15-22 of Table 6.

Please see Section E for a more detailed description of the assumptions and methods.

Historical Comparisons and Statistical Summaries

Various statistical data on the System is shown in the tables contained in Section D. In addition, Tables 7 through 10 of Section C contain certain actuarial trend information which may be of interest.

Table 7 relates the size of the unfunded actuarial accrued liability (UAAL) to three different measurements. In Columns 3 and 4 the UAAL is related to the covered payroll of the System. Columns 5 and 6 relate the UAAL to the actuarial value of assets, while Columns 7 and 8 relate the UAAL to the total actuarial liabilities of the System.

Tables 8 through 10 provide information which should be included in your annual report. Table 8 provides a schedule of active member valuation data. Table 9 provides a schedule of retirees and beneficiaries added to and removed from payment rolls. Solvency test results are presented in Table 10.

Summary and Closing Comments

It is our opinion that the results of this valuation provide a reasonable reflection of the funded status of the System. The System's contributions are currently sufficient to amortize the unfunded liability of the System.

As previously mentioned, in 2010 the City of Austin adopted an Amended Supplemental Funding Plan (ASFP) which provides for an additional contribution from the City, above the 8.0% base rate, which has resulted in a gradual increase the City's total contribution rate to the System to 18.0%. This additional contribution is intended to remain in place until the ASFP is either amended or repealed.

The overall funded position of the System increased from 67.5% at the prior valuation to 68.3% at this valuation. Using an open group projection, we have determined that the System is expected to be fully funded in 30 years, assuming all valuation assumptions are realized in the future. The decrease in the funding period is primarily due to an increase in active membership and the corresponding increase in covered payroll. Because the payroll base is larger, we are now expecting larger future contributions towards the unfunded liability than in the prior year. Of course these projections could change with the addition of any unfunded liabilities (such as cost of living adjustments) or if there is a significant downturn in the financial markets.

SECTION C

ACTUARIAL TABLES

Actuarial Tables

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Table 1
Summary of Cost Items

	December 31, 2017		December 31, 2016	
	Cost Item (1)	Cost as % of Pay (2)	Cost Item (3)	Cost as % of Pay (4)
1. Participants				
a. Active	9,612		9,364	
b. Terminated vested	964		981	
c. Retired participants and beneficiaries	6,116		5,822	
d. Disabled	109		112	
e. Total	16,801		16,279	
2. Covered Payroll	\$ 629,943,122		\$ 599,574,934	
3. Averages for Active Participants				
a. Average age	44.9		45.0	
b. Average years of service	9.4		9.4	
c. Average pay	\$ 65,537		\$ 64,030	
4. Total Normal Cost				
a. Normal Cost Rate	17.22%		17.50%	
b. Administrative Expenses	0.51%		0.51%	
c. Total	17.73%		18.01%	
5. Actuarial Accrued Liability				
a. Active participants	\$ 1,712,224,107		\$ 1,642,806,001	
b. Terminated vested participants	67,799,224		66,281,482	
c. Refunds of terminated nonvested participants	10,694,535		9,251,513	
d. Retired participants and beneficiaries	1,987,299,166		1,853,906,622	
e. Disabled participants	19,806,271		19,130,688	
f. Total	\$ 3,797,823,303	602.88%	\$ 3,591,376,306	598.99%
6. Actuarial Value of Assets	\$ 2,592,460,631	411.54%	\$ 2,423,269,015	404.16%
7. Unfunded Actuarial Accrued Liability (UAAL)	\$ 1,205,362,672	191.34%	\$ 1,168,107,291	194.82%
8. Relative Size of UAAL				
a. As percent of actuarial value of assets	46.49%		48.20%	
b. As percent of covered payroll	191.34%		194.82%	
9. Funding period using open group projection	30		31	
10. Employer contribution rate to satisfy funding policy*	19.33%		19.61%	

* employer rate that produces fully funded plan in 25-years in open group projection

Table 2
Analysis of Normal Cost by Component

Benefit Component (1)	Cost as % of Pay	
	December 31, 2017 (2)	December 31, 2016 (3)
1. Retirement Benefits	14.10%	14.41%
2. Termination - Deferred Benefits	1.06%	1.08%
3. Termination - Refund Benefits	1.38%	1.34%
4. Disability Benefits	0.20%	0.19%
5. Death Benefits	0.48%	0.48%
6. Administrative Expenses	<u>0.51%</u>	<u>0.51%</u>
7. Normal Cost	17.73%	18.01%

Table 3
Actuarial Present Value of Future Benefits
and Calculation of Actuarial Accrued Liability

	<u>December 31, 2017</u>	<u>December 31, 2016</u>
	(1)	(2)
A. Present Value of Future Benefits		
1. Active participants		
a. Retirement benefits	\$ 2,340,048,470	\$ 2,259,029,975
b. Deferred termination benefits	87,649,687	85,420,239
c. Refund of contributions terminations	56,829,069	50,184,142
d. Disability benefits	16,162,004	14,987,500
e. Death benefits	<u>58,706,177</u>	<u>56,424,009</u>
f. Total	\$ 2,559,395,407	\$ 2,466,045,865
2. Retired participants		
a. Service retirements and beneficiaries	\$ 1,987,299,166	\$ 1,853,906,622
b. Disability retirements	<u>19,806,271</u>	<u>19,130,688</u>
c. Total	\$ 2,007,105,437	\$ 1,873,037,310
3. Inactive participants		
a. Vested terminations with deferred benefits	\$ 67,799,224	\$ 66,281,482
b. Nonvested terminations with refunds payable	<u>10,694,535</u>	<u>9,251,513</u>
c. Total	\$ 78,493,759	\$ 75,532,995
4. Total actuarial present value of future benefits	\$ 4,644,994,603	\$ 4,414,616,170
B. Normal Cost Rate (including administrative expenses)	17.73%	18.01%
C. Present Value of Future Normal Costs	\$ 847,171,300	\$ 823,239,864
D. Actuarial Accrued Liability for Active Members		
1. Present value of future benefits (Item A.1.f)	\$ 2,559,395,407	\$ 2,466,045,865
2. Less present value of future normal costs (Item C)	<u>847,171,300</u>	<u>823,239,864</u>
3. Actuarial accrued liability	\$ 1,712,224,107	\$ 1,642,806,001
E. Total Actuarial Accrued Liability (Item A.2.c + Item A.3.c + Item D.3)	\$ 3,797,823,303	\$ 3,591,376,306

Table 4

	Year Ending December 31, 2017
1 Actuarial value of assets at beginning of year	\$ 2,423,269,015
2 Net new investments	
a. Contributions	\$ 167,040,174
b. Benefits and refunds paid	(190,332,179)
c. Administrative expenses	(2,778,290)
d. Subtotal	\$ (26,070,295)
3. Assumed investment return rate for fiscal year	7.50%
4. Expected net investment income	\$ 180,767,540
5. Expected actuarial value at end of year (Item 1+ Item 2 + Item 4)	\$ 2,577,966,260
6. Market value of assets at end of year	\$ 2,650,438,116
7. Difference (Item 6 - Item 5)	\$ 72,471,856

8. Development of amounts to be recognized as of December 31, 2017:

	Remaining Deferrals					
Fiscal	of Excess (Shortfall)	Offsetting of	Net Deferrals	Years	Recognized for	Remaining after
Year End	of Investment Income	Gains/(Losses)	Remaining	Remaining	this valuation	this valuation
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2013	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0
2014	0	0	0	2	0	0
2015	(122,462,263)	122,462,263	0	3	0	0
2016	(1,118,366)	1,118,366	0	4	0	0
2017	196,052,485	(123,580,629)	72,471,856	5	14,494,371	57,977,485
Total	\$ 72,471,856	\$ 0	\$ 72,471,856		\$ 14,494,371	\$ 57,977,485

9	Preliminary actuarial value of plan assets, end of year (Item 5 + Item 8: Column 5)	\$	2,592,460,631
10.	Actuarial value of assets corridor		
a.	80% of market value, end of year	\$	2,120,350,493
b.	120% of market value, end of year	\$	3,180,525,739
11.	Final actuarial value of plan net assets, end of year (Item 9, but recognize 1/3 of any deferred gains or losses outside of Item 10)	\$	2,592,460,631
12.	Asset gain (loss) for year (Item 11 - Item 5)	\$	14,494,371
13.	Asset gain (loss) as % of final actuarial value of assets		0.56%
14.	Ratio of actuarial value to market value		97.8%

Notes: Remaining deferrals in Column (1) for prior years are from Column (6) in last year's report. The number in the current year is the difference between the remaining deferrals for prior years and Item 7 (which is the difference between the market value of assets and the expected actuarial value of assets). Column 2 is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type.

Table 5
Change in Net Position

	Valuation Period Ending December 31,	
	2017	2016
	(1)	(2)
1. Assets in plan at beginning of year (A)	\$ 2,299,688,386	\$ 2,144,804,122
2. Employer contributions	110,846,582	104,272,793
3. Employee contributions	56,193,592	60,801,253
4. Benefit payments made*	186,286,855	175,218,095
5. Refunds of contributions	4,045,324	3,910,786
6. Expenses paid from trust	2,778,290	2,700,917
7. Investment expense	5,687,391	4,781,660
8. Investment return	<u>382,507,416</u>	<u>176,421,676</u>
9. Assets in plan at end of year (B) (1 + 2 + 3 - 4 - 5 - 6 - 7 + 8)	\$ 2,650,438,116	\$ 2,299,688,386
10. Approximate rate of return on average invested assets		
a. Net investment income (8 - 7 = I)	\$ 376,820,025	\$ 171,640,016
b. Estimated yield based on $(2I/(A + B - I))$	16.48%	8.03%

* Benefit payments exclude any distributions from the 415 Restoration Plan

Table 6
Change in Unfunded Actuarial Accrued Liability
as of December 31, 2017

<u>CALCULATION OF TOTAL ACTUARIAL GAIN OR LOSS</u>	<u>2017</u>	<u>2016</u>
1. Unfunded actuarial accrued liability (UAAL) as of prior year	\$ 1,168,107,291	\$ 1,083,708,976
2. Actual normal cost paid during year (includes service purchases)	<u>115,956,014</u>	<u>118,920,262</u>
3. Subtotal (1 + 2)	\$ 1,284,063,305	\$ 1,202,629,238
4. Interest at prior valuation's rate of 7.50%	91,956,397	85,737,683
5. Contributions during year	(167,040,174)	(165,074,046)
6. Interest on contributions for one-half year	(6,264,007)	(6,190,277)
7. Expected UAAL as of December 31st (3 + 4 + 5 + 6)	\$ 1,202,715,521	\$ 1,117,102,598
8. Actual UAAL as of December 31st	1,205,362,672	1,168,107,291
9. Unexpected Change in UAAL for the period (8 - 7)	\$ 2,647,151	\$ 51,004,693
 <u>SOURCE OF CHANGE IN UAAL</u>		
10. Asset (gain)/loss (See Table 4)	\$ (14,494,371)	\$ 41,100,346
11. Total unanticipated increase/(decrease) in liabilities for the period (9-10)	17,141,522	9,904,347
12. Increase/(decrease) due to benefit enhancements	0	0
13. Increase/(decrease) due to assumption & method changes	<u>0</u>	<u>0</u>
14. Liability experience (gain)/loss (11 - 12 - 13)	\$ 17,141,522	\$ 9,904,347
 <u>SOURCE OF LIABILITY (GAINS) AND LOSSES</u>		
15. Salary Increases	\$ (3,049,050)	\$ 4,580,328
16. Service Retirement	(2,383,543)	(8,416,978)
17. Withdrawal	4,523,214	3,455,296
18. Disability Retirement	(20,028)	(74,347)
19. Active Mortality	689,417	784,778
20. Retiree Mortality	3,438,647	(2,412,086)
21. Rehires	2,518,641	2,447,155
22. Other (Data) including proportionate program	<u>11,424,224</u>	<u>9,540,201</u>
23. Total Liability Experience (Gain)/Loss	\$ 17,141,522	\$ 9,904,347

Table 7
Relative Size of Unfunded Actuarial Accrued Liability

Valuation as of 31-Dec	Unfunded/ (Overfunded) Actuarial Accrued Liability	Relative to Covered Payroll		Relative to Actuarial Value of Present Assets		Relative to Total Actuarial Accrued Liability	
		Covered Payroll	Percent of Covered Payroll	Present Assets	Percent of Present Assets	Actuarial Accrued Liability	Percent of Actuarial Accrued Liability
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1998	(74,816,812)	219,326,742	(34.1%)	952,634,480	(7.9%)	877,817,668	(8.5%)
1999	(60,632,797)	244,538,110	(24.8%)	1,105,121,657	(5.5%)	1,044,488,860	(5.8%)
2000	(18,353,201)	268,635,564	(6.8%)	1,230,971,746	(1.5%)	1,212,618,545	(1.5%)
2001	48,980,941	316,793,390	15.5%	1,311,288,668	3.7%	1,360,269,609	3.6%
2002	189,347,298	322,007,672	58.8%	1,250,851,348	15.1%	1,440,198,646	13.1%
2003	203,040,300	312,790,966	64.9%	1,348,790,502	15.1%	1,551,830,802	13.1%
2004	321,383,795	326,590,164	98.4%	1,356,797,448	23.7%	1,678,181,243	19.2%
2005	395,382,953	348,619,141	113.4%	1,398,798,722	28.3%	1,794,181,675	22.0%
2006	476,226,660	390,963,991	121.8%	1,497,783,958	31.8%	1,974,010,618	24.1%
2007	459,277,808	417,450,797	110.0%	1,653,533,484	27.8%	2,112,811,292	21.7%
2008	765,526,422	448,740,469	170.6%	1,481,377,439	51.7%	2,246,903,861	34.1%
2009	658,466,636	422,539,199	155.8%	1,672,470,344	39.4%	2,330,936,980	28.2%
2010	749,087,565	438,877,002	170.7%	1,711,577,229	43.8%	2,460,664,794	30.4%
2011	932,942,173	451,831,198	206.5%	1,790,902,641	52.1%	2,723,844,815	34.3%
2012	1,070,656,825	470,231,969	227.7%	1,897,722,867	56.4%	2,968,379,692	36.1%
2013	861,988,246	490,553,170	175.7%	2,047,929,504	42.1%	2,909,917,750	29.6%
2014	900,174,491	539,158,693	167.0%	2,193,881,221	41.0%	3,094,055,712	29.1%
2015	1,083,708,976	559,829,504	193.6%	2,308,087,140	47.0%	3,391,796,116	32.0%
2016	1,168,107,291	599,574,934	194.8%	2,423,269,015	48.2%	3,591,376,306	32.5%
2017	1,205,362,672	629,943,122	191.3%	2,592,460,631	46.5%	3,797,823,303	31.7%

Table 8
Schedule of Active Member Valuation Data

Year Ending 31-Dec	Active Participants	Percent Change	Covered Payroll	Percent Change	Average Salary	Percent Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1998	6,311	-7.2%	219,326,742	0.1%	34,753	7.8%
1999	6,512	3.2%	244,538,110	11.5%	37,552	8.1%
2000	6,894	5.9%	268,635,564	9.9%	38,967	3.8%
2001	7,713	11.9%	316,793,390	17.9%	41,073	5.4%
2002	7,647	-0.9%	322,007,672	1.6%	42,109	2.5%
2003	7,432	-2.8%	312,790,966	-2.9%	42,087	-0.1%
2004	7,489	0.8%	326,590,164	4.4%	43,609	3.6%
2005	7,638	2.0%	348,619,141	6.7%	45,643	4.7%
2006	8,055	5.5%	390,963,991	12.1%	48,537	6.3%
2007	8,358	3.8%	417,450,797	6.8%	49,946	2.9%
2008	8,643	3.4%	448,740,469	7.5%	51,920	4.0%
2009	8,142	-5.8%	422,539,199	-5.8%	51,896	0.0%
2010	8,270	1.6%	438,877,002	3.9%	53,069	2.3%
2011	8,348	0.9%	451,831,198	3.0%	54,124	2.0%
2012	8,387	0.5%	470,231,969	4.1%	56,067	3.6%
2013	8,592	2.4%	490,553,170	4.3%	57,094	1.8%
2014	9,028	5.1%	539,158,693	9.9%	59,721	4.6%
2015	9,063	0.4%	559,829,504	3.8%	61,771	3.4%
2016	9,364	3.3%	599,574,934	7.1%	64,030	3.7%
2017	9,612	2.6%	629,943,122	5.1%	65,537	2.4%

Table 9
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		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2001	224	5,278,490	95	2,046,233	2,592	65,647,094	7.9%	25,327
2002	309	7,754,803	118	2,534,050	2,783	72,520,159	10.5%	26,058
2003	271	7,706,066	59	1,502,757	2,995	78,596,302	8.4%	26,243
2004	227	5,619,478	85	1,741,624	3,137	82,121,249	4.5%	26,178
2005	258	6,699,023	98	2,438,555	3,297	85,324,686	3.9%	25,879
2006	259	6,788,190	89	1,883,938	3,467	90,312,037	5.8%	26,049
2007	289	8,523,459	123	2,262,126	3,633	96,071,149	6.4%	26,444
2008	290	8,299,468	88	2,056,217	3,835	101,840,870	6.0%	26,556
2009	331	9,953,411	80	1,630,148	4,086	109,656,152	7.7%	26,837
2010	341	10,495,807	92	2,029,423	4,335	117,954,059	7.6%	27,210
2011	324	9,851,119	117	2,785,375	4,542	124,748,580	5.8%	27,466
2012	405	13,035,228	116	3,011,032	4,831	134,653,163	7.9%	27,873
2013	387	12,451,142	98	2,176,950	5,120	144,755,297	7.5%	28,273
2014	397	12,737,257	121	2,568,479	5,396	154,937,553	7.0%	28,713
2015	411	13,547,663	128	2,980,334	5,679	165,579,191	6.9%	29,156
2016	385	12,920,841	130	3,199,901	5,934	175,327,721	5.9%	29,546
2017	422	14,942,887	131	2,979,178	6,225	187,304,849	6.8%	30,089

Table 10
Solvency Test

Valuation Date	Aggregated Accrued Liabilities for			Reported Assets	Portions of Accrued Liabilities Covered by Reported Assets		
	Active and Inactive Members Contributions	Retirees and Beneficiaries	Active and Inactive Members (Employer Financed Portion)		(5)/(2)	[(5)-(2)]/3	[(5)-(2)-(3)]/(4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
December 31, 2001	248,579,180	654,307,118	457,383,311	1,311,288,668	100.0%	100.0%	89.3%
December 31, 2002	265,812,595	718,187,586	456,198,465	1,250,851,348	100.0%	100.0%	58.5%
December 31, 2003	252,182,701	777,100,825	522,547,276	1,348,790,502	100.0%	100.0%	61.1%
December 31, 2004	261,905,526	812,266,336	604,009,381	1,356,797,448	100.0%	100.0%	46.8%
December 31, 2005	280,994,642	848,185,652	665,001,381	1,398,798,722	100.0%	100.0%	40.5%
December 31, 2006	295,166,238	904,166,079	774,678,301	1,497,783,958	100.0%	100.0%	38.5%
December 31, 2007	333,340,167	968,493,997	810,977,128	1,653,533,484	100.0%	100.0%	43.4%
December 31, 2008	357,423,035	1,025,407,475	864,073,351	1,481,377,439	100.0%	100.0%	11.4%
December 31, 2009	362,288,592	1,109,773,550	858,874,838	1,672,470,344	100.0%	100.0%	23.3%
December 31, 2010	377,651,365	1,195,328,215	887,685,214	1,711,577,229	100.0%	100.0%	15.6%
December 31, 2011	413,944,399	1,267,467,354	1,042,433,062	1,790,902,641	100.0%	100.0%	10.5%
December 31, 2012	417,481,360	1,375,244,710	1,175,653,622	1,897,722,867	100.0%	100.0%	8.9%
December 31, 2013	436,164,975	1,478,146,019	995,606,756	2,047,929,504	100.0%	100.0%	13.4%
December 31, 2014	453,220,166	1,580,320,342	1,060,515,204	2,193,881,221	100.0%	100.0%	15.1%
December 31, 2015	471,000,910	1,771,674,810	1,149,120,396	2,308,087,140	100.0%	100.0%	5.7%
December 31, 2016	497,752,958	1,873,037,310	1,220,586,038	2,423,269,015	100.0%	100.0%	4.3%
December 31, 2017	517,234,871	2,007,105,437	1,273,482,995	2,592,460,631	100.0%	100.0%	5.3%

Table 11
Schedule of Funding Progress

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Covered Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
December 31, 1998	952.6	877.8	(74.8)	108.5%	219.3	(34.1%)
December 31, 1999	1,105.1	1,044.5	(60.6)	105.8%	244.5	(24.8%)
December 31, 2000	1,231.0	1,212.6	(18.4)	101.5%	268.6	(6.8%)
December 31, 2001	1,311.3	1,360.3	49.0	96.4%	316.8	15.5%
December 31, 2002	1,250.9	1,440.2	189.3	86.9%	322.0	58.8%
December 31, 2003	1,348.8	1,551.8	203.0	86.9%	312.8	64.9%
December 31, 2004	1,356.8	1,678.2	321.4	80.8%	326.6	98.4%
December 31, 2005	1,398.8	1,794.2	395.4	78.0%	348.6	113.4%
December 31, 2006	1,497.8	1,974.0	476.2	75.9%	391.0	121.8%
December 31, 2007	1,653.5	2,112.8	459.3	78.3%	417.5	110.0%
December 31, 2008	1,481.4	2,246.9	765.5	65.9%	448.7	170.6%
December 31, 2009	1,672.5	2,330.9	658.5	71.8%	422.5	155.8%
December 31, 2010	1,711.6	2,460.7	749.1	69.6%	438.9	170.7%
December 31, 2011	1,790.9	2,723.8	932.9	65.7%	451.8	206.5%
December 31, 2012	1,897.7	2,968.4	1,070.7	63.9%	470.2	227.7%
December 31, 2013	2,047.9	2,909.9	862.0	70.4%	490.6	175.7%
December 31, 2014	2,193.9	3,094.1	900.2	70.9%	539.2	167.0%
December 31, 2015	2,308.1	3,391.8	1,083.7	68.0%	559.8	193.6%
December 31, 2016	2,423.3	3,591.4	1,168.1	67.5%	599.6	194.8%
December 31, 2017	2,592.5	3,797.8	1,205.4	68.3%	629.9	191.3%

Note: Dollar amount in millions.