

DENVER EMPLOYEES RETIREMENT PLAN
ACTUARIAL VALUATION REPORT
AS OF JANUARY 1, 2017



May 11, 2017

Board of Trustees
Denver Employees Retirement Plan
777 Pearl St
Denver, CO 80203

Re: Denver Employees Retirement Plan Actuarial Valuation as of January 1, 2017

Dear Board Members:

The results of the January 1, 2017 Annual Actuarial Valuation of the Denver Employees Retirement Plan (DERP) are presented in this report. The purpose of the valuation is to measure the Plan's funding progress and to determine the employer contribution rate for the next fiscal year.

This report was prepared at the request of the DERP Board and is intended to be used by those designated or approved by the Board. This report may be provided to parties other than DERP only in its entirety and only with the permission of DERP.

Regarding the contribution rate for the next fiscal year (2017), there is a slight decrease in the Total Computed Contribution Rate for the Medical Plan while the Pension Plan Rate increased, as shown on pages 9 and 10 of the valuation report. The Total Computed Contribution Rate (Pension and Medical) has increased from 19.55% for 2016 to 19.66% for 2017. The scheduled contribution rate is 19.50% and is therefore approximately sufficient to cover the Total Computed Contribution Rate for 2017. It should be noted that the difference between the scheduled contribution and the Total Computed Contribution Rate did grow from 0.05% to 0.16% since the last valuation. The Total Computed Contribution Amount (Pension and Medical) has increased from \$114.7M for 2016 to \$122.8M (a 5.6% increase) for 2017.

The 11.50% employer contribution and the 8.00% employee contribution are the rates that comply with current policy. Users of this report should be aware that contributions made at that rate do not necessarily guarantee benefit security. Additional contributions and/or additional investment earnings above the assumed 7.75% would contribute to enhancing benefit security.

The employer contribution requirement of this report is determined using the actuarial assumptions and methods disclosed in Section F of this report. This report does not include a detailed assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

The valuation was based upon information furnished by DERP concerning Plan benefits, financial transactions, active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not otherwise audit the data. These calculations may be subject to certain provisions of the agreement between the Denver Health and Hospital Authority (DHHA) and DERP. This report and these calculations are not intended as legal or accounting advice, and we would recommend review by legal counsel for the compliance of these calculations with all relevant agreements.

For the retiree medical benefits, the schedules illustrate the value of the explicit benefit as described in the Plan Summary. While the explicit benefit is valued in compliance with all the parameters established by GASB Statements No. 43 and 45, it is not the intention of these schedules to satisfy the requirements of those GASB Statements. The value of any implicit rate subsidy in the City-sponsored health plans will be illustrated in the disclosures related to those plans.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events for the Pension Plan, Retiree Medical Plan, and DHHA. We believe that the assumptions and methods used in this report are reasonable and appropriate for the purpose for which they have been used. However, other assumptions and methods could also be reasonable and could result in materially different results. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial.

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

If there is other information that you need in order to make an informed decision regarding the matters discussed in this report, please contact us.

We certify that the information contained in this report is accurate and fairly presents the actuarial position of DERP as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The actuaries submitting this statement are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report. Both are experienced in performing valuations for large public retirement systems.

Respectfully submitted,



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SECTION A
INTRODUCTION

Pension Plan - Executive Summary

(\$ in Millions)

Valuation Date:	January 1, 2017	January 1, 2016
Fiscal Year Ending:	December 31, 2017	December 31, 2016
Discount Rate	7.75%	7.75%
Actuarial Information:		
· Actuarial Accrued Liability (AAL)	\$3,108.32	\$3,003.59
· Unfunded Actuarial Accrued Liability (UAAL)	\$901.05	\$834.84
· Funded Ratio	71.01%	72.21%
· UAAL as % of Covered Payroll	144.29%	142.26%
· Equivalent Single Amortization Period	26.7 years	27.5 years
Required Contributions:		
· Normal Cost	\$58.04	\$57.17
· Amortization of the Unfunded Liability	<u>\$57.48</u>	<u>\$50.50</u>
· Total Contribution Amount*	\$115.52	\$107.67
· Normal Cost %	9.29%	9.74%
· Amortization of the Unfunded Liability %	<u>9.20%</u>	<u>8.61%</u>
· Percentage of Covered Payroll	18.49%	18.35%
Assets:		
· Market Value	\$2,011.67	\$1,945.67
· Actuarial Value	\$2,207.27	\$2,168.75
· Return on Market Value	7.54%	-1.96%
· Return on Actuarial Value	5.46%	5.09%
· Ratio – Actuarial Value to Market Value	109.72%	111.47%
Membership:		
· Number of:		
- Active Members	8,981	8,636
- Retirees and Beneficiaries	9,302	9,074
- Inactive, Non-retired Members**	5,947	5,697
- Total	24,230	23,407
· Covered Payroll	\$624.48	\$586.82

Highlights/Changes:

- A new tier of benefits is effective for new entrants as of July 1, 2011. See Section G for details.
- Total scheduled contribution increased 1.00% from 18.50% to 19.50%, effective January 1, 2015.
- The aggregate actuarial loss was \$95.65 million, with \$83.02 million due to continued recognition of past asset losses.
- The amortization methodology was changed from "open" to "closed" basis, effective January 1, 2013, detailed in Section B.
- Amortization of the Unfunded Liability includes an adjustment to the middle of the year, effective January 1, 2017

* These results are on a baseline basis. Baseline results are net of the DHHA supplement. The 2017 Total Contribution Amount including the DHHA supplement is \$118,292,103 (18.94% of payroll), and for 2016 is \$110,246,284 (18.79% of payroll).

** The number of Inactive, Non-retired Members includes 2,447 Non-vested Inactive Members as of January 1, 2017, and 2,233 Non-vested Inactive Members as of January 1, 2016, who are not vested in any benefit other than their accumulated contributions.

Retiree Medical Plan - Executive Summary

(\$ in Millions)

Valuation Date:	January 1, 2017	January 1, 2016
Fiscal Year Ending:	December 31, 2017	December 31, 2016
Discount Rate	7.75%	7.75%
Actuarial Information:		
· Actuarial Accrued Liability (AAL)	\$152.65	\$153.25
· Unfunded Actuarial Accrued Liability (UAAL)	\$73.93	\$72.87
· Funded Ratio	51.57%	52.45%
· UAAL as % of Covered Payroll	11.84%	12.42%
· Equivalent Single Amortization Period	26.1 years	27.1 years
Required Contributions:		
· Normal Cost	\$2.54	\$2.58
· Amortization of the Unfunded Liability	<u>\$4.77</u>	<u>\$4.44</u>
· Total Contribution Amount*	\$7.31	\$7.02
· Normal Cost %	0.41%	0.44%
· Amortization of the Unfunded Liability %	<u>0.76%</u>	<u>0.76%</u>
· Percentage of Covered Payroll	1.17%	1.20%
Assets:		
· Market Value	\$70.34	\$70.83
· Actuarial Value	\$78.72	\$80.38
· Return on Market Value	7.48%	-1.93%
· Return on Actuarial Value	5.05%	4.75%
· Ratio – Actuarial Value to Market Value	111.92%	113.49%

Highlights/Changes:

- No changes to benefit provisions.
- The aggregate investment and liability experience gain was \$1.28 million.
- The amortization methodology was changed from "open" to "closed" basis, effective January 1, 2013, and is detailed in Section B.
- Amortization of the Unfunded Liability includes an adjustment to the middle of the year, effective January 1, 2017

* These results are on a baseline basis. Baseline results are net of the DHHA supplement. The 2017 Total Contribution Amount including the DHHA supplement is \$7,357,416 (1.17% of payroll), and for 2016 is \$7,054,251 (1.21% of payroll).

Contribution Summary Combined Basis

Valuation Date:	January 1, 2017	January 1, 2016
Discount Rate	7.75%	7.75%
Fiscal Year Ending:	December 31, 2017	December 31, 2016
Total Contribution Percent		
· Pension	18.49%	18.35%
· Retiree Medical	1.17%	1.20%
· Total	<u>19.66%</u>	<u>19.55%</u>
Total Scheduled Contribution	19.50%	19.50%
Contribution Surplus / (Shortfall)*	(0.16%)	(0.05%)

*There is generally a one year lag in implementing a change in the contribution requirement.

Discussion

Actuarial Valuation

Valuations are prepared annually, as of January 1 of each year, the first day of DERP's fiscal year. Valuations are prepared for the Pension and Retiree Medical Plans. Normal Cost is separately calculated for the Hospital and Non-Hospital employee groups, in order to determine the DHHA supplemental contribution amount (see Section I).

The primary purposes of the valuation report are to measure the plan's liabilities, to determine the required contribution rate and to analyze changes in DERP's actuarial position.

In addition, the report provides summaries of the member data, financial data, plan provisions, and actuarial assumptions and methods.

Financing Objectives

DERP is supported by member contributions, employer contributions, and net earnings on the investments of the fund. The member and employer contribution rates are set by law. Employer rates increased from 11.20% to 11.50% effective January 1, 2015. Member rates increased from 7.30% to 8.00% effective January 1, 2015. There were no changes in contribution rates in 2016.

The combined member and employer contributions are intended to be sufficient to pay the normal cost and to amortize the Unfunded Actuarial Accrued Liability (UAAL) over a closed period of 30 years from the valuation date. An amortization base will be established each year and each new base will be paid off over 30 years, using annual payments determined as a level percentage of payroll.

Contribution Requirement

The Total Computed Contribution required for the Pension Plan for the fiscal year ending December 31, 2017 is \$115,522,060, 18.49% of covered payroll (\$118,292,103, 18.94% of covered payroll including the DHHA Supplement). This compares with a Total Computed Contribution for the fiscal year ending December 31, 2016 of \$107,668,331, 18.35% of covered payroll (\$110,246,284, 18.79% of covered payroll including the DHHA Supplement).

The Total Computed Contribution required for the Retiree Medical Plan for the fiscal year ending December 31, 2017 is \$7,314,532, 1.17% of covered payroll (\$7,357,416, 1.17% of covered payroll including the DHHA Supplement). This compares with a Total Computed Contribution for the fiscal year ending December 31, 2016 of \$7,020,639, 1.20% of covered payroll (\$7,054,251, 1.21% of covered payroll including the DHHA Supplement).

The method used to determine the actuarial value of assets smoothes the differences between the actuarial and market values by recognizing 20% of the difference each year. The actuarial value is approaching the market value. Last year, the difference between the actuarial and market values was \$223 million for the pension plan. Due to the close to expected 2016 investment returns and the continued recognition of prior losses, the gap between the actuarial value and market value decreased to \$196 million. The rate of return on a market value basis was 7.54%; on an actuarial basis it was 5.46%.

The amortization payment is the 30 year, level percent of pay payment required on the new UAL base established for each year. The schedule is shown in Section B. In the early years (approximately the first 12 years) the base grows, and then declines to zero by the end of the 30 year period.

The contribution rate increased from 19.55% of pay to 19.66%. This increase was largely due to the return on investments being lower than expected and a small liability loss. The rate also did not increase as much as expected because payroll grew at a rate that exceeded the 3.25% assumption.

Funded Status

As of the valuation date, the Unfunded Actuarial Accrued Liability (UAAL) for the Pension Plan is \$901.05 million, and the funded ratio (the ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability) is 71.01%. At the time of last year's valuation, the UAAL was \$834.84 million, and the funded ratio was 72.21%. See Section D for a history of the funded ratios.

As of the valuation date, the Unfunded Actuarial Accrued Liability (UAAL) for the Retiree Medical Plan is \$73.93 million, and the funded ratio (the ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability) is 51.57%. At the time of last year's valuation, the UAAL was \$72.87 million, and the funded ratio was 52.45%. See Section D for a history of the funded ratios.

The funded status measure may be appropriate for assessing the level of needed future contributions. The funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. An increase in the funded status over time is a trending metric that may be used to illustrate the enhancing of the capability of the plan to meet the future obligations of the plan.

Gains and Losses

The Pension Plan experienced a total aggregate actuarial loss of \$95.64 million, which includes an actuarial investment loss of \$83.02 million (based on the Actuarial Value of Assets), and a non-investment loss of \$12.62 million. The actuarial investment loss is based on the return rate for the Actuarial Value of Assets, which continues to experience downward pressure due to deferred losses from prior years.

The Retiree Medical Plan experienced a total aggregate actuarial gain of \$1.28 million, which includes an actuarial investment loss of \$0.41 million (based on the Actuarial Value) and a non-investment gain of \$1.69 million.

Valuation Assets

The funding policy for both the Pension Plan and the Retiree Medical Plan includes smoothing returns. Smoothing assets creates a more stable contribution rate. The 2016 return on the Actuarial Value of Assets for the Pension Plan was 5.46%, while the return on a Market Value basis was 7.54%. The 2016 return on the Actuarial Value of Assets for the Retiree Medical Plan was 5.05%, while the return on a Market Value basis was 7.48%.

The Actuarial Value of Assets exceeds the Market Value of Assets by \$195.60 million for the Pension Plan and the Actuarial Value of Assets exceeds the Market Value of Assets by \$8.39 million for the Retiree Medical Plan as of the valuation date (see Section C).

Funded Ratio Based on the Market Value of Assets

If Market Value had been the basis for the valuation, the funded ratios would have been 64.72%, for the Pension Plan and 46.08% for the Retiree Medical Plan.

Benefit Provisions

This valuation reflects the benefits as summarized in Section G of this report.

Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an investment return assumption. The Retirement Board sets the actuarial assumptions and methods taking into account recommendations made by the plan's actuary and other advisors. There have been no assumption changes since the prior valuation

We believe the assumptions are internally consistent and are reasonable, based on the actual experience of DERP.

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 amortization periods.

In addition to the actuarial assumptions, the actuary also makes use of an Actuarial Cost Method to allocate costs to particular years. DERP uses the Projected Unit Credit method. This method determines an accrued liability based on projected compensation, and uses service to the valuation date. The unfunded accrued liability is then amortized on a 30-year amortization basis, as a level percent of pay, with bases established each year. Prior to the January 1, 2013 valuation, the unfunded liability was amortized on an open 30-year period on a level dollar basis.

Member Data

The number of active members increased by 3.99% from 8,636 to 8,981 and average covered pay for active members increased from \$67,950 to \$69,533, a 2.33% increase. Average age of active members is 44.5, compared to 45.1 last year. Average years of service is 10.0, compared to 10.6 last year. There are also 5,947 inactive vested members, which includes 2,447 members vested in member contributions only.

The number of members in payment status increased by 228, from 9,074 to 9,302. This number includes service retirees, disability retirees, and beneficiaries receiving benefits. The average annual service retiree benefit is \$21,472 and there are 0.97 active members for each member in payment status.

GASB Reporting

The Governmental Accounting Standards Board (GASB) Statement No. 67, Financial Reporting for Pension Plans (Issued 6/2012), has replaced the requirements under GASB Statement No.25, Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans (Issued 11/1994), effective for financial statements for fiscal years beginning after June 15, 2013. Actuarial information for GASB 67 has been supplied under a separate cover.

GASB No. 43

Governmental Accounting Standards Board (GASB) Statement No. 43 governs financial reporting for postemployment benefits other than pension plans. These liabilities shown in the report in Section D represent solely the value of the explicit benefit, without regard to the implicit rate subsidy. While the explicit benefit is valued in compliance with all parameters established by GASB Statements No. 43 and No. 45, it is not the intention of this report to satisfy the requirement of those GASB statements. The value of any implicit rate subsidy in the city-sponsored health plans will be illustrated in the disclosures related to those plans.

SECTION B
FUNDING RESULTS

Pension Plan
Principal Valuation Results
as of January 1*

Valuation Date	2017	2016
Covered Group		
A. Number of Participants:		
Actives Members	8,981	8,636
Vested Inactive Members**	5,947	5,697
Retirees and Beneficiaries	<u>9,302</u>	<u>9,074</u>
Total	24,230	23,407
Covered Annual Payroll	\$ 624,477,330	\$ 586,819,180
Development of Contribution Rate		
For Fiscal Year Ending		
2017		
2016		
B. Normal Cost	\$ 58,042,426	\$ 57,171,025
<i>% of pay</i>	<i>9.29%</i>	<i>9.74%</i>
C. Unfunded Actuarial Accrued Liabilities (UAAL):		
Actuarial Accrued Liability	\$ 3,108,319,987	\$ 3,003,589,809
Actuarial Value of Assets	<u>2,207,267,926</u>	<u>2,168,754,097</u>
UAAL	\$ 901,052,061	\$ 834,835,712
Payment required to amortize UAAL	\$ 57,479,634	\$ 50,497,306
<i>% of pay</i>	<i>9.20%</i>	<i>8.61%</i>
D. Total Computed Contribution	\$ 115,522,060	\$ 107,668,331
<i>% of pay</i>	<i>18.49%</i>	<i>18.35%</i>

* Separate figures for DHHA are provided in Section I of this report

** The number of Vested Inactive Members includes 2,447 Inactive Members as of January 1, 2017, and 2,233 Inactive Members as of January 1, 2016, who are only vested in their contribution account.

Retiree Medical Plan
Principal Valuation Results
as of January 1*

Development of Contribution Rate For Fiscal Year Ending	2017	2016
A. Normal Cost	\$ 2,544,653	\$ 2,581,047
<i>% of pay</i>	<i>0.41%</i>	<i>0.44%</i>
B. Unfunded Actuarial Accrued Liabilities (UAAL):		
Actuarial Accrued Liability	\$ 152,652,538	\$ 153,254,546
Actuarial Value of Assets	<u>78,722,647</u>	<u>80,383,172</u>
UAAL	\$ 73,929,891	\$ 72,871,374
Payment required to amortize UAAL	\$ 4,769,880	\$ 4,439,593
<i>% of pay</i>	<i>0.76%</i>	<i>0.76%</i>
C. Total Computed Contribution	\$ 7,314,533	\$ 7,020,640
<i>% of pay</i>	<i>1.17%</i>	<i>1.20%</i>

* Separate figures for DHHA are provided in Section I of this report

Amortization of Actuarial Liabilities as of January 1, 2017

			Pension			Retiree Medical		
UAAL as of January 1, 2017					\$901,052,061			\$73,929,891
Total Prior Remaining Bases as of January 1, 2017					845,124,633			73,735,214
2017 Base as of January 1, 2017					\$55,927,428			\$194,677
2017 Payment (30 years, level % of pay)					\$3,358,497			\$11,691
Year	Appendix	Years Remaining	Initial Base	Amortization Payment	Remaining Base	Initial Base	Amortization Payment	Remaining Base
2017	2017 Amortization Schedule	30	\$55,927,428	\$3,358,497	\$55,927,428	\$194,677	\$11,691	\$194,677
2016	2016 Amortization Schedule	29	63,055,926	3,909,633	64,012,199	1,221,535	75,738	1,240,060
2015	2015 Amortization Schedule	28	115,521,828	7,395,444	118,927,456	2,689,556	172,179	2,768,845
2014	2014 Amortization Schedule	27	13,967,932	923,890	14,575,933	106,216	7,024	110,810
2013	2013 Amortization Schedule	26	612,986,163	41,892,170	647,609,045	65,893,671	4,503,248	69,615,499
					\$901,052,061			
Total Amortization Payment at Mid Year					\$57,479,634	\$4,769,880		

Pension Plan
Actuarial Liabilities
as of January 1, 2017

	Actuarial Present Value of Future Benefits (1)	Portion Covered by Future Normal Cost Contributions (2)	Actuarial Accrued Liabilities (1) - (2)
Active members:			
Retirement	\$1,229,310,968	\$391,975,883	\$837,335,085
Disability	57,180,504	21,509,799	35,670,705
Death	25,734,071	9,890,663	15,843,408
Termination	133,262,529	50,035,514	83,227,015
Vested inactive members	197,029,032	0	197,029,032
DROP participant - account balances	116,492,681	0	116,492,681
Retirees and Beneficiaries	1,822,722,061	0	1,822,722,061
Total	\$3,581,731,846	\$473,411,859	\$3,108,319,987
Actuarial Value of Assets	\$2,207,267,926	\$0	\$2,207,267,926
Liabilities to be covered by Future Contributions	\$1,374,463,920	\$473,411,859	\$901,052,061

Retiree Medical Plan
Actuarial Liabilities
as of January 1, 2017

	Actuarial Present Value of Future Benefits (1)	Portion Covered by Future Normal Cost Contributions (2)	Actuarial Accrued Liabilities (1) - (2)
Active members:			
Retirement	\$53,329,018	\$16,148,062	\$37,180,956
Disability	3,052,927	1,120,911	1,932,016
Death	1,244,043	470,376	773,667
Termination	3,495,835	1,276,836	2,218,999
Vested inactive members	9,034,778	0	9,034,778
DROP participants	0	0	0
Retirees and Beneficiaries	101,512,122	0	101,512,122
Total	\$171,668,723	\$19,016,185	\$152,652,538
Actuarial Value of Assets	\$78,722,647	\$0	\$78,722,647
Liabilities to be covered by Future Contributions	\$92,946,076	\$19,016,185	\$73,929,891

Pension Plan
Actuarial Balance Sheet as of January 1
Assets and Present Value of Expected Future Contributions

	2017	2016
A. Actuarial Value of Assets		
1. Net assets from system financial statements	\$2,011,665,398	\$1,945,673,317
2. Adjustment for Valuation Assets*	195,602,528	223,080,780
3. Actuarial Value of Assets	<u>\$2,207,267,926</u>	<u>\$2,168,754,097</u>
B. Actuarial Present Value of Expected Future Contributions		
1. For Normal Costs	\$473,411,859	\$463,396,183
2. For Unfunded Actuarial Accrued Liability	901,052,061	834,835,712
3. Total	<u>\$1,374,463,920</u>	<u>\$1,298,231,895</u>
C. Total Present and Expected Future Resources (equals Present Value of Benefits)	<u>\$3,581,731,846</u>	<u>\$3,466,985,992</u>

*See page 23 for the development of the actuarial value of assets.

Retiree Medical Plan
Actuarial Balance Sheet as of January 1
Assets and Present Value of Expected Future Contributions

	2017	2016
A. Actuarial Value of Assets		
1. Net assets from system financial statements	\$70,336,513	\$70,826,147
2. Adjustment for Valuation Assets*	8,386,134	9,557,025
3. Actuarial Value of Assets	\$78,722,647	\$80,383,172
B. Actuarial Present Value of Expected Future Contributions		
1. For Normal Costs	\$19,016,185	\$19,130,074
2. For Unfunded Actuarial Accrued Liability	73,929,891	72,871,374
3. Total	\$92,946,076	\$92,001,448
C. Total Present and Expected Future Resources (equals Present Value of Benefits)	\$171,668,723	\$172,384,620

*See page 24

Pension Plan
 Reconciliation of Actuarial Accrued Liability
 as of January 1
 (rounded to the nearest \$100)

1. Actuarial Accrued Liability (AAL) as of January 1, 2016:	\$ 3,003,589,800
2. Development of expected AAL as of January 1, 2017:	
a. Normal cost (NC) for prior plan year	\$ 59,749,000
b. Actual benefit payments paid during plan year (BP)	194,541,600
c. Interest on AAL and NC less interest on BP to December 31, 2016	226,883,600
d. Expected AAL as of January 1, 2017 (1.+2.a.-2.b.+2.c.)	\$ 3,095,680,800
3. Changes in AAL due to:	
a. Actual experience versus demographic assumptions (Gain)/Loss:	
i. Salary increases	\$ 3,661,700
ii. Retirement	(2,565,400)
iii. Mortality - pre and post	1,256,300
iv. Vested termination	1,090,500
v. Non vested termination	2,152,000
vi. Disability	(526,700)
vii. Other plan experience and data changes	3,856,500
viii. New entrants	3,714,300
Total change due to experience	\$ 12,639,200
b. Change in actuarial assumptions	-
c. Total (3.a.+ 3.b)	\$ 12,639,200
4. Actuarial Accrued Liability as of January 1, 2017 (2.d.+3.c.)	\$ 3,108,320,000

Retiree Medical Plan
 Reconciliation of Actuarial Accrued Liability
 as of January 1
 (rounded to the nearest \$100)

1. Actuarial Accrued Liability (AAL) as of January 1, 2016:		\$ 153,254,500
2. Development of expected AAL as of January 1, 2017:		
a. Normal cost (NC) for plan year		\$ 2,614,700
b. Actual benefit payments paid during plan year (BP)		12,957,600
c. Interest on AAL and NC less interest on BP to December 31, 2016		11,432,700
d. Expected AAL as of January 1, 2017 (1.+2.a.-2.b.+2.c.)		<u>\$ 154,344,300</u>
3. Changes in AAL due to:		
a. Actual experience versus demographic assumptions (Gain)/Loss:		
i. Salary increases		-
ii. Retirement	\$	180,500
iii. Mortality - pre and post		(786,200)
iv. Vested termination		(84,700)
v. Non-vested termination and benefit opt-outs		(718,800)
vi. Disability		17,000
vii. Other plan experience and data changes		(465,500)
viii. New entrants		165,900
Total change due to experience		<u>\$ (1,691,800)</u>
b. Change in actuarial assumptions		-
c. Total (3.a.+ 3.b)		<u>\$ (1,691,800)</u>
4. Actuarial Accrued Liability as of January 1, 2017 (2.d.+3.c.)		\$ 152,652,500

SECTION C
PLAN ASSETS

Pension Plan
Statement of Plan Assets
(Assets at Market or Fair Value)

Item	December 31	
	2016	2015
A. Assets:		
1. Cash and Cash Equivalents (Operating Cash)	\$48,394,709	\$42,022,653
2. Securities Lending Collateral	170,997,563	224,498,009
3. Capital Assets	4,199,009	4,599,634
4. Prepaid items	3,678	0
5. Total Assets	<u>\$223,594,959</u>	<u>\$271,120,296</u>
B. Receivables:		
1. Contributions	\$0	\$0
2. Unsettled Securities Sold	353,131	2,851,063
3. Interest and Dividends	1,580,727	1,751,919
4. Total Receivables	<u>\$1,933,858</u>	<u>\$4,602,982</u>
C. Investments:		
1. U.S. Government Obligations	\$125,350,901	\$146,887,967
2. Domestic Fixed Income	280,881,116	233,731,028
3. Domestic Equities	437,559,740	437,047,513
4. International Equities	471,136,254	464,643,057
5. Real Estate	158,829,934	177,139,987
6. Alternative Investments	397,050,442	340,871,122
7. Absolute Return	89,434,160	100,328,943
8. Total Investments	<u>\$1,960,242,547</u>	<u>\$1,900,649,617</u>
D. Liabilities:		
1. Unsettled Securities Purchased	(\$606,046)	(\$224,498,009)
2. Securities Lending Obligations	(170,997,563)	(2,498,435)
3. Accounts Payable	(2,502,357)	(3,703,134)
4. Total Liabilities	<u>(\$174,105,966)</u>	<u>(\$230,699,578)</u>
E. Total Market Value of Assets Available for Benefits	\$2,011,665,398	\$1,945,673,317
F. Allocation of Investments:		
1. U.S. Government Obligations	6.39%	7.73%
2. Domestic Fixed Income	14.33%	12.30%
3. Domestic Equities	22.32%	22.99%
4. International Equities	24.03%	24.45%
5. Real Estate	8.10%	9.32%
6. Alternative Investments	20.26%	17.93%
7. Absolute Return	4.57%	5.28%
8. Total Investments	<u>100.00%</u>	<u>100.00%</u>

Retiree Medical Plan
Statement of Plan Assets
(Assets at Market or Fair Value)

Item	December 31	
	2016	2015
A. Assets:		
1. Cash and Cash Equivalents (Operating Cash)	\$1,726,038	\$1,560,108
2. Securities Lending Collateral	5,975,857	8,168,562
3. Capital Assets	146,743	167,362
4. Prepaid items	129	0
5. Total Assets	<u>\$7,848,767</u>	<u>\$9,896,032</u>
B. Receivables:		
1. Contributions	\$0	\$0
2. Unsettled Securities Sold	12,341	103,739
3. Interest and Dividends	55,242	63,745
4. Total Receivables	<u>\$67,583</u>	<u>\$167,484</u>
C. Investments:		
1. U.S. Government Obligations	\$4,380,641	\$5,344,651
2. Domestic Fixed Income	9,815,960	8,504,513
3. Domestic Equities	15,291,412	15,902,366
4. International Equities	16,464,812	16,906,455
5. Real Estate	5,550,634	6,445,397
6. Alternative Investments	13,875,733	12,402,902
7. Absolute Return	3,125,458	3,650,559
8. Total Investments	<u>\$68,504,650</u>	<u>\$69,156,843</u>
D. Liabilities:		
1. Unsettled Securities Purchased	(\$21,180)	(\$134,742)
2. Securities Lending Obligations	(5,975,857)	(8,168,562)
3. Accounts Payable	(87,450)	(90,908)
4. Total Liabilities	<u>(\$6,084,487)</u>	<u>(\$8,394,212)</u>
E. Total Market Value of Assets Available for Benefits	\$70,336,513	\$70,826,147
F. Allocation of Investments:		
1. U.S. Government Obligations	6.39%	7.73%
2. Domestic Fixed Income	14.33%	12.30%
3. Domestic Equities	22.32%	22.99%
4. International Equities	24.03%	24.45%
5. Real Estate	8.10%	9.32%
6. Alternative Investments	20.26%	17.93%
7. Absolute Return	4.57%	5.28%
8. Total Investments	<u>100.00%</u>	<u>100.00%</u>

**Pension Plan
Reconciliation of Plan Assets**

Item	December 31	
	2016	2015
A. Market Value of Assets at Beginning of Year	\$1,945,673,317	\$2,055,272,548
B. Revenues and Expenditures:		
1. Contributions:		
a. Employee Contributions	\$48,037,800	\$46,689,696
b. Employer Contributions	68,794,871	67,234,597
c. Purchased Service Credit	-	-
d. Total	<u>\$116,832,671</u>	<u>\$113,924,293</u>
2. Investment Income:		
a. Interest, Dividends, and Other Income	\$161,193,791	(\$21,824,960)
b. Net Securities Lending Income	957,156	953,808
c. Investment Expenses	<u>(14,707,470)</u>	<u>(14,874,877)</u>
d. Net Investment Income	\$147,443,477	(\$35,746,029)
3. Benefits and Refunds:		
a. Refunds	(\$2,751,016)	(\$2,164,104)
b. Regular Monthly Benefits	(186,088,489)	(176,046,015)
c. DROP and DROP II Benefits	(5,702,111)	(5,781,960)
d. Partial Lump-Sum Benefits Paid	-	-
e. Total	<u>(\$194,541,616)</u>	<u>(\$183,992,079)</u>
4. Administrative and Miscellaneous Expenses	(\$3,742,451)	(\$3,785,416)
5. Transfers	<u>\$0</u>	<u>\$0</u>
C. Market Value of Assets at End of Year	\$2,011,665,398	\$1,945,673,317

Retiree Medical Plan Reconciliation of Plan Assets

Item	December 31	
	2016	2015
A. Market Value of Assets at Beginning of Year	\$70,826,147	\$77,855,933
B. Revenues and Expenditures:		
1. Contributions:		
a. Employee Contributions	\$3,012,052	\$3,026,103
b. Employer Contributions	4,364,140	4,380,107
c. Purchased Service Credit	-	-
d. Total	<u>\$7,376,192</u>	<u>\$7,406,210</u>
2. Investment Income:		
a. Interest, Dividends, and Other Income	\$5,713,229	(\$793,022)
b. Net Securities Lending Income	34,302	35,530
c. Investment Expenses	<u>(522,212)</u>	<u>(551,036)</u>
d. Net Investment Income	\$5,225,319	(\$1,308,528)
3. Benefits and Refunds:		
a. Refunds	(\$98,273)	(\$80,925)
b. Regular Monthly Benefits	(12,859,361)	(12,905,247)
c. Partial Lump-Sum Benefits Paid	-	-
d. Total	<u>(\$12,957,634)</u>	<u>(\$12,986,172)</u>
4. Administrative and Miscellaneous Expenses	(\$133,511)	(\$141,296)
5. Transfers	<u>\$0</u>	<u>\$0</u>
C. Market Value of Assets at End of Year	\$70,336,513	\$70,826,147

Pension Plan
Development of Actuarial Value of Assets

Year Ending – December 31	2016	2015
A. Actuarial Value of Assets (AVA) Beginning of Year	\$2,168,754,097	\$2,132,024,635
B. Market Value (MV) End of Year	2,011,665,398	1,945,673,317
C. Market Value Beginning of Year	1,945,673,317	2,055,272,548
D. Increases During the Year:		
D1. Member Contributions	\$48,037,800	\$46,689,696
D2. Employer Contributions	68,794,871	67,234,597
D3. Expected Return	165,123,406	162,567,443
D4. Total Increases	<u>\$281,956,077</u>	<u>\$276,491,736</u>
E. Decreases During the Year:		
E1. Retirement Benefits	(\$191,790,600)	(\$181,827,975)
E2. Refund of Member Accounts	(2,751,016)	(2,164,104)
E3. Member Balance Transfers	0	0
E4. Total Decreases	<u>(\$194,541,616)</u>	<u>(\$183,992,079)</u>
F. Projected Actuarial Value of Assets (A. + D.4. + E.4.)	\$2,256,168,558	\$2,224,524,292
G. Difference in Projected AVA and MV (B.-F.)	(\$244,503,160)	(\$278,850,975)
H. Appreciation/(Depreciation) recognized: 20% of G.	(\$48,900,632)	(\$55,770,195)
I. Actuarial Value of Assets End of Year (F. + H.)	\$2,207,267,926	\$2,168,754,097
J. Unrecognized Difference in AVA and MV (B.-I.)	(\$195,602,528)	(\$223,080,780)
K. Actuarial Rate of Return	5.46%	5.09%
L. Market Value Rate of Return	7.54%	-1.96%
M. Ratio of Actuarial Value of Assets to Market Value	110%	111%

Retiree Medical Plan

Development of Actuarial Value of Assets

Year Ending – December 31	2016	2015
A. Actuarial Value of Assets (AVA) Beginning of Year	\$80,383,172	\$82,194,505
B. Market Value (MV) End of Year	\$70,336,513	70,826,147
C. Market Value Beginning of Year	\$70,826,147	77,855,933
D. Increases During the Year:		
D1. Member Contributions	\$3,012,052	\$3,026,103
D2. Employer Contributions	4,364,140	4,380,107
D3. Refund of Member Accounts	0	0
D4. Expected Return	6,017,450	6,157,885
D5. Total Increases	<u>\$13,393,642</u>	<u>\$13,564,095</u>
E. Decreases During the Year:		
E1. Retirement Benefits	(\$12,859,361)	(\$12,905,247)
E2. Refund of Member Accounts	(98,273)	(80,925)
E3. Member Balance Transfers	0	0
E4. Total Decreases	<u>(\$12,957,634)</u>	<u>(\$12,986,172)</u>
F. Projected Actuarial Value of Assets (A. + D.5. + E.4.)	\$80,819,180	\$82,772,428
G. Difference in Projected AVA and MV (B.-F.)	(\$10,482,667)	(\$11,946,281)
H. Appreciation/(Depreciation) recognized: 20% of G.	(\$2,096,533)	(\$2,389,256)
I. Actuarial Value of Assets End of Year (F. + H.)	\$78,722,647	\$80,383,172
J. Unrecognized Difference in AVA and MV (B.-I.)	(\$8,386,134)	(\$9,557,025)
K. Actuarial Rate of Return	5.05%	4.75%
L. Market Value Rate of Return	7.48%	-1.93%
M. Ratio of Actuarial Value of Assets to Market Value	112%	113%

History of Investment Return Rates

Plan Year Ending December 31 of	<u>Pension Plan</u>		<u>Retiree Medical</u>	
	<u>Market</u>	<u>Actuarial</u>	<u>Market</u>	<u>Actuarial</u>
(1)	(2)	(3)	(4)	(5)
2007	10.57%	9.10%	10.60%	9.04%
2008	(26.17%)	1.74%	(26.06%)	1.74%
2009	13.74%	3.39%	13.59%	3.23%
2010	13.89%	4.98%	13.66%	4.66%
2011	(0.31%)	3.94%	(0.23%)	3.61%
2012	12.54%	5.41%	12.60%	4.97%
2013	17.99%	7.59%	18.22%	7.11%
2014	4.91%	7.06%	4.97%	6.65%
2015	(1.96%)	5.09%	(1.93%)	4.75%
2016	7.54%	5.46%	7.48%	5.05%
Average annual returns:				
Last five years:	7.99%	6.12%	8.05%	5.70%
Last ten years:	4.47%	5.36%	4.49%	5.06%
Standard deviation:				
Last five years:	7.57%	1.12%	7.64%	1.09%
Last ten years:	12.76%	2.14%	12.73%	2.09%

The above rates are based on the retirement plan's financial information reported to the actuary. They may differ from figures that the investment consultant reports, in part because of differences in the handling of administrative and investment expenses, and in part because of differences in the handling of cash flows.

Pension Plan
History of Cash Flow in Trust Fund

Plan Year Ending December 31	Total Contributions	Benefits and Refunds	Administrative Expenses	Transfers and Other	Net Investment Return*	Market Value of Assets at End of Year
2007	\$52,934,416	(\$105,316,959)	(\$2,469,185)	-	\$199,977,322	\$2,040,171,774
2008	57,167,418	(115,583,559)	(2,839,820)	-	(523,370,681)	1,455,545,132
2009	55,976,584	(121,622,108)	(2,558,311)	-	198,018,642	1,585,359,939
2010	63,367,957	(138,058,331)	(2,555,677)	-	217,566,113	1,725,680,001
2011	71,814,123	(143,057,219)	(2,883,909)	-	(2,396,020)	1,649,156,976
2012	80,419,886	(150,418,610)	(3,334,741)	-	205,809,820	1,781,633,331
2013	93,565,820	(159,337,067)	(3,597,603)	-	318,274,197	2,030,538,678
2014	99,462,492	(172,686,029)	(3,638,296)	-	101,595,704	2,055,272,548
2015	113,924,293	(183,992,079)	(3,785,416)	-	(35,746,029)	1,945,673,317
2016	116,832,671	(194,541,616)	(3,742,451)	-	147,443,477	2,011,665,398

Retiree Medical Plan
History of Cash Flow in Trust Fund

Plan Year Ending December 31	Total Contributions	Benefits and Refunds	Administrative Expenses	Transfers and Other	Net Investment Return*	Market Value of Assets at End of Year
2007	\$5,802,249	(\$10,632,418)	(\$123,382)	-	\$10,012,367	\$100,732,855
2008	5,437,137	(10,846,558)	(138,364)	-	(25,408,688)	69,776,382
2009	5,842,767	(11,023,712)	(120,955)	-	9,252,242	73,726,724
2010	4,875,366	(11,738,126)	(115,362)	-	9,714,426	76,463,028
2011	6,531,390	(12,513,090)	(125,390)	-	(42,792)	70,313,146
2012	6,733,970	(12,486,097)	(139,510)	-	8,635,748	73,057,257
2013	6,678,438	(12,625,256)	(145,169)	-	12,911,917	79,877,187
2014	7,057,692	(12,905,100)	(140,710)	-	3,966,863	77,855,933
2015	7,406,210	(12,986,172)	(141,296)	-	(1,308,528)	70,826,147
2016	7,376,192	(12,957,634)	(133,511)	-	5,225,319	70,336,513

*Net of Investment Expense

SECTION D
HISTORICAL SCHEDULES

Pension Plan
Schedule of Funding Progress
(\$ in millions)

Valuation Date January 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) [(3) - (2)]	Funded Ratio [(2)/(3)]	Covered Payroll	UAAL as a Percentage of Covered Payroll [(4)/(6)]
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2008	1,950.01	1,985.65	35.64	98.21%	545.84	6.53%
2009	1,924.99	2,095.89	170.90	91.85%	564.99	30.25%
2010	1,923.56	2,176.24	252.68	88.39%	506.05	49.93%
2011	1,942.87	2,284.76	341.88	85.04%	517.40	66.08%
2012	1,946.84	2,386.53	439.69	81.58%	517.40	84.98%
2013	1,980.20	2,593.19	612.99	76.36%	531.56	115.32%
2014	2,062.32	2,699.00	636.68	76.41%	540.23	117.85%
2015	2,132.02	2,893.67	761.64	73.68%	568.56	133.96%
2016	2,168.75	3,003.59	834.84	72.21%	586.82	142.26%
2017	2,207.27	3,108.32	901.05	71.01%	624.48	144.29%

Retiree Medical Plan
Schedule of Funding Progress*
(\$ in millions)

Valuation Date January 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) [(3) - (2)]	Funded Ratio [(2)/(3)]	Covered Payroll	UAAL as a Percentage of Covered Payroll [(4)/(6)]
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2008	96.46	128.61	32.15	75.00%	545.84	5.89%
2009	92.68	134.00	41.32	69.17%	564.99	7.31%
2010	90.41	141.64	51.23	63.83%	506.05	10.12%
2011	87.61	143.11	55.50	61.22%	517.40	10.73%
2012	84.68	142.97	58.29	59.23%	517.40	11.27%
2013	82.99	148.89	65.89	55.74%	531.56	12.40%
2014	82.74	149.78	67.05	55.24%	540.23	12.41%
2015	82.19	152.92	70.73	53.75%	568.56	11.93%
2016	80.38	153.25	72.87	52.45%	586.82	12.42%
2017	78.72	152.65	73.93	51.57%	624.48	11.84%

*These liabilities represent solely the value of the explicit benefit, without regard to the implicit rate subsidy. The explicit benefit is valued in compliance with all the parameters established by GASB Statements No. 43 and No.45. The value of any implicit rate subsidy in the city-sponsored health plans will be illustrated in the disclosures related to those plans.

Schedule of Employer Contributions Pension Plan

Year Beginning January 1:	Actuarially Determined Contribution (ADC)		Contributions		Percentage of ADC Contributed [(5)/(3)]
	% of Payroll ⁹	Amount	% of Payroll ⁹	Amount ¹	
(1)	(2)	(3)	(4)	(5)	(6)
2008	7.64%	\$41,699,683	8.13%	\$44,362,545	106.39%
2009	9.63%	54,392,610	7.63%	43,127,064	79.29%
2010 ²	9.68%	48,995,846	8.34%	42,228,203	86.19%
2011 ³	10.05%	52,000,472	8.83%	45,703,351	87.89%
2012 ⁴	10.83%	56,054,792	9.62%	49,756,639	88.76%
2013 ⁵	10.42%	55,397,564	10.62%	56,427,308	101.86%
2014 ⁶	10.34%	55,871,677	11.10%	59,941,041	107.28%
2015 ⁷	10.52%	59,811,786	11.83%	67,234,597	112.41%
2016 ⁸	10.83%	66,135,502	11.72%	68,794,871	104.02%
2017	10.94%	68,344,652	N/A	N/A	N/A

¹ Employers made contributions based on the legally required rates.

² Beginning on January 1, 2010, the employers and employees contributed 8.50% and 4.50%, respectively.

³ Beginning on January 1, 2011, the employers and employees contributed 9.50% and 5.50%, respectively.

⁴ Beginning on January 1, 2012, the employers and employees contributed 10.25% and 6.25%, respectively.

⁵ Beginning on January 1, 2013, the employers and employees contributed 11.00% and 7.00%, respectively and amortization method changed from level dollar 30-year open to level percent of pay 30-year closed bases.

⁶ Beginning on January 1, 2014, the employers and employees contributed 11.20% and 7.30%, respectively.

⁷ Beginning January 1, 2015, the employer and employee contributions are 11.50% and 8.00%, respectively.

⁸ Based on 10.83% of the Projected Valuation Payroll Plus \$2,611,565 in DHHA Supplemental Contributions

⁹ Estimated Payroll

Schedule of Employer Contributions*
Retiree Medical Plan*

Year Beginning January 1:	Annual Required Contribution (ARC)		Contributions		Percentage of ARC Contributed
	% of Payroll⁸	Amount	% of Payroll⁸	Amount¹	[(5)/(3)]
	(1)	(2)	(3)	(4)	(5)
2008	0.83%	\$4,532,574	0.78%	\$4,253,783	93.85%
2009	0.91%	5,156,984	0.81%	4,551,097	88.25%
2010 ²	0.85%	4,290,712	0.58%	2,924,858	68.17%
2011 ³	0.96%	4,965,060	0.81%	4,202,033	84.63%
2012 ⁴	1.00%	5,153,185	0.82%	4,241,292	82.30%
2013 ⁵	0.89%	4,721,761	0.78%	4,135,064	87.57%
2014 ⁶	0.76%	4,093,763	0.80%	4,332,376	105.83%
2015 ⁷	0.76%	4,322,064	0.77%	4,380,107	101.34%
2016	0.72%	4,253,678	0.74%	4,364,140	102.60%
2017	0.72%	4,469,405	N/A	N/A	N/A

*These liabilities represent solely the value of the explicit benefit, without regard to the implicit rate subsidy. The explicit benefit is valued in compliance with all the parameters established by GASB Statements No. 43 and No.45. The value of any implicit rate subsidy in the city-sponsored health plans will be illustrated in the disclosures related to those plans.

¹ Employers made contributions based on the legally required rates.

² Beginning on January 1, 2010, the employers and employees contributed 8.50% and 4.50%, respectively.

³ Beginning on January 1, 2011, the employers and employees contributed 9.50% and 5.50%, respectively.

⁴ Beginning on January 1, 2012, the employers and employees contributed 10.25% and 6.25%, respectively.

⁵ Beginning on January 1, 2013, the employers and employees contributed 11.00% and 7.00%, respectively and amortization method changed from level dollar 30-year open to level percent of pay 30-year closed bases.

⁶ Beginning on January 1, 2014, the employers and employees contributed 11.20% and 7.30%, respectively.

⁷ Beginning January 1, 2015, the employer and employee contributions are 11.50% and 8.00%, respectively.

⁸ Estimated Payroll

Notes to Required Supplementary Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation Date	January 1, 2017
Actuarial Cost Method	Projected Unit Credit
Amortization Method	Level Percent of Pay, Annually Established 30-year Closed Bases
Equivalent Single Amortization Period	26.7 years
Valuation Asset Method	Smoothed Market
Actuarial Assumptions:	
Investment Rate of Return *	7.75%
Projected Salary Increase *	3.25% to 7.25%
Payroll Growth *	3.25%
* Includes Price Inflation at	2.75%
Cost-of-Living Adjustments	Ad-Hoc Only

SECTION E
PARTICIPANT DATA

Retirees, Beneficiaries and Disabled Reconciliation (Pension Only)

Valuation Date January 1	No. Added to Rolls	No. Removed from Rolls	Rolls End of Year	
			No.	Annual Benefits
2008	477	-259	6,614	\$101,802,055
2009	474	-215	6,873	\$109,243,231
2010	733	-183	7,423	\$124,695,435
2011	410	-227	7,606	\$130,319,793
2012	457	-287	7,776	\$138,317,723
2013	540	-271	8,045	\$146,837,873
2014	658	-221	8,482	\$159,503,726
2015	597	-264	8,815	\$169,735,929
2016	560	-301	9,074	\$179,304,283
2017	558	-330	9,302	\$188,483,949

Age and Service Distribution
January 1, 2017
(Pension Only)

Nearest Whole Age	Whole Years of Service at Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Number	Active Payroll
Less than 20									
20-24	197							197	\$ 7,834,258
25-29	748	55	1					804	37,723,071
30-34	845	200	58	2				1,105	60,769,072
35-39	648	239	200	70	2			1,159	71,394,767
40-44	414	232	177	217	51	2		1,093	74,646,135
45-49	391	176	194	280	226	56		1,323	96,060,894
50-54	274	156	137	254	278	163	61	1,323	99,341,981
55-59	207	160	138	217	153	97	78	1,050	76,910,347
60-64	124	78	81	123	90	73	93	662	53,948,253
65-69	27	41	31	45	33	22	18	217	16,342,550
70 & Over	5	6	15	9	9	2	2	48	4,129,965
Totals	3,880	1,343	1,032	1,217	842	415	252	8,981	\$ 599,101,293

Historical Summary of Active Member Data* (Pension Only)

1-Jan	Active Members		Covered Payroll		Average Payroll		Average	
	Number	% Increase	\$ Amount	% Increase	\$ Amount	% Increase	Age	Service
2008	9,304	3.5%	\$543,728,238	11.1%	\$58,440	7.3%	45.4	11.0
2009	9,323	0.2%	564,986,660	3.9%	60,601	3.7%	45.5	11.0
2010	8,604	(7.7%)	506,045,186	(10.4%)	58,815	(2.9%)	45.7	11.2
2011	8,403	(2.3%)	517,398,105	2.2%	61,573	4.7%	46.2	11.7
2012	8,149	(3.0%)	517,396,257	(0.0%)	63,492	3.1%	46.3	11.9
2013	8,175	0.3%	531,559,017	2.7%	65,023	2.4%	46.4	11.8
2014	8,304	1.6%	540,229,189	1.6%	65,057	0.1%	45.9	11.3
2015	8,489	2.2%	568,562,500	5.2%	66,976	3.0%	45.5	10.9
2016	8,636	1.7%	586,819,180	3.2%	67,950	1.5%	45.1	10.6
2017	8,981	4.0%	624,477,330	6.4%	69,533	2.3%	44.5	10.0

* This schedule does not include participants in DROP and DROP II.

Summary of Membership Data by Category (Pension Only)

	January 1	
	2017	2016
Active Members:		
Number	8,981	8,636
Average age (years)	44.5	45.1
Average service (years)	10.0	10.6
Average covered payroll	\$69,533	\$67,950
Total covered payroll supplied, annualized	\$624,477,330	\$586,819,180
Vested Inactive Members:		
Number	3,500	3,464
Average age (years)	51.02	50.70
Total annual deferred benefits	\$24,376,796	\$23,472,323
Average annual deferred benefit	\$6,965	\$6,776
Nonvested Inactive Members:		
Number	2,447	2,233
Average age (years)	44.83	44.85
Contribution account balance	\$8,038,219	\$6,110,912
Service Retirees:*		
Number	7,856	7,664
Average age (years)	69.63	69.53
Total annual benefits	\$168,683,401	\$160,862,662
Average annual benefit	\$21,472	\$20,989
Disability Retirees:		
Number	309	311
Average age (years)	65.52	65.13
Total annual benefits	\$4,891,480	\$4,771,127
Average annual benefit	\$15,830	\$15,341
Beneficiaries:		
Number	1,137	1,099
Average age (years)	68.88	69.00
Total annual benefits	\$14,909,068	\$13,670,494
Average annual benefit	\$13,113	\$12,439

**Includes 43 former spouses for 2016 and 43 former spouses for 2017 under domestic relations orders.*

Membership Data Reconciliation

	Actives	Disability	Terminated Vested	Terminated Nonvested	Retiree	Beneficiary	Total
GRS Counts as of January 1, 2016	8,636	311	3,464	2,233	7,664	1,099	23,407
Actives (Rehires)	50		(24)	(19)	(7)		
Disability	(5)	11	(3)		(3)		
Terminated Vested	(218)		218				
Terminated Nonvested	(495)			495			
Retiree	(294)		(147)	(1)	442		
No Liability	(2)	(1)	(4)	(420)	(14)	(4)	
Deceased	(8)	(12)	(4)		(232)	(60)	
New Beneficiaries						101	
New Participants	1,317			159			
Data Correction					6	1	
GRS Counts as of January 1, 2017	8,981	309	3,500	2,447	7,856	1,137	24,230
Continuing	7,614	298	3,282	1,793	7,408	1,035	21,430

SECTION F
METHODS & ASSUMPTIONS

Valuation Methods-Liabilities

Actuarial Cost Method - The Projected Unit Credit (PUC) Cost Method was used in the valuation.

The Projected Unit Credit Cost Method develops a normal cost and an accrued liability based on the benefit accrued as of the valuation date.

The normal cost is the present value of the benefits that accrue during the year. The benefit accrued during the year is the retirement benefit based on pay projected to a member's retirement date, based on service accrued as of the valuation date. The actuarial accrued liability is the present value of benefits allocated to service prior to the valuation date.

Finally, for all funding methods, the total present value of benefits is equal to the accrued liability plus the present value of future normal costs.

Financing of Unfunded Actuarial Accrued Liabilities - Unfunded Actuarial Accrued Liabilities (full funding credit if assets exceed liabilities) were amortized by level (principal & interest combined) percent of pay contributions over a reasonable period of future years.

Deferred Retirement Option Plan (DROP) and DROP II – The DROPs are closed and no new members are assumed to enter either of the two DROPs. For members who were in DROP and remained employed upon their exit from the DROP program, their accrued liability is calculated as the value of their deferred benefit based on compensation and service earned before their DROP participation plus the value of their additional benefit earned based on compensation and service accrued after their DROP participation ended, as well as their accrued DROP balance. Further detail describing the DROPs can be found in the Plan Provisions, Section G of this report.

Benefits Limited to Maximums Specified in Internal Revenue Code (IRC) – Benefits in pay status are limited to the maximum specified by Section 415 of the IRC, as adjusted annually. The benefits in pay status are limited to the maximum compensation permitted by Section 401(a)(17) of the IRC.

Valuation Methods-Assets

Actuarial Value of Assets – The Actuarial Value of Assets recognizes 20% of the difference between the projected actuarial value and the market value at the valuation date. This method has the effect of smoothing volatility in investment returns. Returns are measured net of all administrative and investment expenses.

Actuarial Standards of Practice Statement #44 provides some guidance in the selection of a method for determining the actuarial value of assets. In particular, when considering utilizing an asset method other than the market value of assets, the method should be selected that is designed to produce actuarial values of assets that bear a reasonable relationship to the corresponding market values. The qualities of the DERP asset value method should include:

The actuarial value of assets should sometimes be greater than, and sometimes less than, the market value of assets. The method employed in the DERP valuation does produce asset values which are sometimes greater than, and sometimes less than the market value of assets.

The asset values fall within a sufficiently narrow range around the corresponding market values.

Development of Amortization Payment

Determination of UAAL Contribution Rate

The unfunded accrued liability as of January 1, 2017 is calculated as of the beginning of the fiscal year for which contributions are being made.

The unfunded accrued liability is amortized over the appropriate period to determine the amortization payment. This payment is divided by the projected fiscal year payroll to determine the amortization payment as a percentage of active member payroll.

Effective January 1, 2013, the funding policy for the development of the annual amortization payment was changed from 30-year open to year-by-year 30-year closed. An amortization base will be established each year and each base will be paid off over 30 years, using annual payments determined as a level percentage of payroll.

Valuation Assumptions

The actuarial assumptions used in the valuation are shown in this Section. Both the economic and demographic assumptions were based on an Experience Study performed as of January 1, 2013, and adopted for the January 1, 2013 valuation report. The discount rate was changed effective October 1, 2015, from 8.00% to 7.75%.

A. Demographic Assumptions

Mortality rates were adjusted to include margin for future longevity improvement as described below.

1. Post-Retirement and Beneficiary Mortality Table: *This table shows the probability of dying after leaving employment either as a vested terminated member, a retiree or a beneficiary of a deceased member.*
 - a. Male: RP-2000 Combined Mortality Table for males projected with Scale AA to 2020
 - b. Female: RP-2000 Combined Mortality Table for females projected with Scale AA to 2020 with a multiplier of 90%

Ages	% Dying Within Next Year Non-Disabled	
	Men	Women
50	0.15%	0.11%
55	0.25%	0.21%
60	0.49%	0.41%
65	0.96%	0.79%
70	1.64%	1.36%
75	2.85%	2.15%
80	5.26%	3.59%

2. Disabled Mortality Table: *This table shows the probability of dying at sample attained ages.*
 - a. Male: RP-2000 Disabled Life Mortality Table for males projected with Scale AA to 2020
 - b. Female: RP-2000 Disabled Life Mortality Table for females projected with Scale AA to 2020

Ages	% Dying Within Next Year Disabled	
	Men	Women
50	2.01%	0.82%
55	2.41%	1.41%
60	3.05%	1.98%
65	3.78%	2.54%
70	4.63%	3.40%
75	6.19%	4.45%
80	8.95%	6.28%

3. Active Mortality: *This table for active members shows the probability of dying before retirement or termination of employment. 15% of the deaths are assumed to be duty-related and 85% are assumed to be non-duty related.*

- a. Male: RP-2000 Combined Mortality Table for males projected with Scale AA to 2020 with a multiplier of 85%
- b. Female: RP-2000 Combined Mortality Table for females projected with Scale AA to 2020 with a multiplier of 85%

Ages	% Dying Within Next Year Non-Disabled	
	Men	Women
20	0.02%	0.01%
25	0.03%	0.01%
30	0.03%	0.02%
35	0.06%	0.03%
40	0.08%	0.04%
45	0.10%	0.07%
50	0.13%	0.10%

4. Rates of Disability: *15% of the disabilities are assumed to be duty-related and 85% are assumed to be non-duty related.*

Ages	% Becoming Disabled Within Next Year	
	Duty	Non-Duty
20	0.00%	0.02%
25	0.00%	0.02%
30	0.00%	0.02%
35	0.00%	0.03%
40	0.01%	0.06%
45	0.02%	0.11%
50	0.04%	0.23%
55	0.07%	0.37%
60	0.10%	0.57%
65	0.15%	0.85%

5. Rates of Separation from Active Membership: *Rates do not apply to members eligible to retire and do not include separation on account of death or disability. Inactive members are assumed to retire at the earliest eligible age. If an inactive member is not vested, the liability valued is equal to their employee contributions plus interest. Rates are not applied after the member is eligible for reduced or unreduced retirement benefits.*

Non Hospital			Non Hospital		
Years of Service	Select Period		Ages	Ultimate Rates	
	% of Active Members Separating Within Next Year			% of Active Members Separating Within Next Year*	
	Men	Women		Men	Women
1	15.97%	19.84%	25	6.25%	9.00%
2	13.73%	17.11%	30	5.50%	7.75%
3	11.81%	14.76%	35	4.75%	6.50%
4	10.15%	12.72%	40	4.00%	5.50%
5	8.73%	10.97%	45	3.25%	4.50%
6	7.51%	9.46%	50	2.50%	3.50%
7	6.46%	8.16%	55	1.90%	2.70%
8	5.55%	7.04%	60	1.90%	2.70%
9	4.77%	6.07%	64	1.90%	2.70%

*Members with 10 or more years of service

Hospital		
Ages	% of Active Members Separating Within Next	
	Men	Women
30	14.84%	15.41%
35	12.92%	11.91%
40	10.72%	8.40%
45	7.97%	5.60%
50	4.40%	5.60%
55	1.10%	5.60%
60	1.10%	5.60%
64	1.10%	5.60%

6. Rates of Retirement: *This table for active members shows the probability of eligible members retiring during the next year.*

Non Hospital			Hospital		
	Percent of Eligible Active Members Retiring Within Next Year			Percent of Eligible Active Members Retiring Within Next Year	
Ages	Early Retirement	Normal Retirement	Ages	Early Retirement	Normal Retirement
55	2.50%	N/A	55	2.50%	N/A
56	2.75%	N/A	56	2.75%	N/A
57	3.00%	N/A	57	3.00%	N/A
58	3.25%	N/A	58	3.25%	N/A
59	3.50%	N/A	59	3.50%	N/A
60	3.75%	N/A	60	3.75%	N/A
61	4.00%	N/A	61	4.00%	N/A
62	10.00%	N/A	62	10.00%	N/A
63	10.00%	N/A	63	10.00%	N/A
64	10.00%	N/A	64	10.00%	N/A
65	N/A	20.00%	65	N/A	20.00%
66	N/A	18.00%	66	N/A	18.00%
67	N/A	18.00%	67	N/A	18.00%
68	N/A	18.00%	68	N/A	18.00%
69	N/A	18.00%	69	N/A	18.00%
70	N/A	100.00%	70	N/A	18.00%
			71	N/A	18.00%
			72	N/A	18.00%
			73	N/A	18.00%
			74	N/A	18.00%
			75	N/A	100.00%

	Percent of Eligible Active Members Retiring Within Next Year
Ages	Rule of 75 Retirement
NAR*	22.00%
NAR+1	14.00%
NAR+2	14.00%
NAR+3	14.00%
NAR+4	14.00%
NAR+5	14.00%
NAR+6	18.00%
NAR+7	22.00%
NAR+8	26.00%
NAR+9	30.00%
NAR+10	30.00%

*NAR, Normal Age at Retirement, is defined as the first age at which a member is eligible to retire under the Rule of 75 with a minimum age of 55 (or Rule of 85 with a minimum age of 60 if hired after July 1, 2011) (Refer to Section G). After attainment of age 70 (age 75 for the Hospital group), or NAR +11, the retirement rate assumption is 100.00%.

B. Economic Assumptions

1. Investment Return Rate: 7.75% per annum, compounded annually, net of investment and administrative expenses.
2. Cost of Living Increases: 0.00% per annum
3. Inflation Rate: 2.75% per annum
4. Real Rate of Return: 5.00% per annum
5. The Rates of Salary Increase: *Assumed salary increases for active members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefits will be based.*

Non Hospital			
% Increase in Salary for the Year			
Sample Ages	Merit and Seniority	Base (Economic)*	Increase for the Year
20	4.00%	3.25%	7.25%
25	3.50%	3.25%	6.75%
30	2.50%	3.25%	5.75%
35	2.00%	3.25%	5.25%
40	1.25%	3.25%	4.50%
45	0.50%	3.25%	3.75%
50	0.00%	3.25%	3.25%
55	0.00%	3.25%	3.25%
60	0.00%	3.25%	3.25%
65	0.00%	3.25%	3.25%

Hospital			
% Increase in Salary for the Year			
Sample Ages	Merit and Seniority	Base (Economic)*	Increase for the Year
30	0.00%	3.25%	3.25%
35	0.00%	3.25%	3.25%
40	0.00%	3.25%	3.25%
45	0.00%	3.25%	3.25%
50	0.00%	3.25%	3.25%
55	0.00%	3.25%	3.25%
60	0.00%	3.25%	3.25%
65	0.00%	3.25%	3.25%

**Salary increases shown include wage inflation of 3.25% per annum.*

C. Miscellaneous and Technical Assumptions

<i>Administrative & Investment Expenses</i>	The investment return assumption is intended to be the return net of investment and administrative expenses.
<i>Benefit Service</i>	Exact fractional service is used to determine the amount of benefit payable.
<i>COLA</i>	None assumed.
<i>Covered Payroll</i>	Annual payroll projected forward with one year's salary increase.
<i>Death after termination but before Retirement (or Continuation)</i>	A load of 0.7% (1.3% for members hired after January 1, 2010) is added to the vested terminated benefit to account for the benefit paid to the spouse if the participant dies before retirement.
<i>Decrement Operation</i>	All decrements other than withdrawal are in force during retirement eligibility.
<i>Decrement Timing</i>	Decrements of all types are assumed to occur mid-year.
<i>Eligibility Testing</i>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<i>Incidence of Contributions</i>	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
<i>Marriage Assumption</i>	75% of males and 60% of females are assumed to be married for purposes of death-in-service benefits and 75% of males and 60% of females are assumed to be married for purposes of retiree medical benefits. Male spouses are assumed to be the same age as female spouses for active member valuation purposes.
<i>Normal Form of Benefit</i>	A straight life annuity is the normal form of benefit.
<i>Pay Increase Timing</i>	Beginning of (fiscal) year. This is equivalent to assuming that reported pay represents amount paid to members during the year ended on the valuation date.
<i>Service Credit Accruals</i>	It is assumed that members accrue one year of service credit per year.
<i>Split of Member and Employer Contributions</i>	For the Schedule of Employer Contributions the member and employer contributions are split between the pension and medical funds based on their respective ratios to the Total Computed Contribution Rate developed in the previous year's actuarial valuation.

Terminal Pay

For members hired prior to January 1, 2010, unused sick and vacation hours are converted into pay at retirement, death, disability or termination. That converted amount is included in the Final Average Compensation (FAC). The valuation accounts for this by assuming the FAC will be increased by 5.00% for active retirement benefits and increased by 2.25% for active ordinary death and termination benefits for members hired prior to January 1, 2010.

Retiree Medical Election Percentage

It is assumed that 85% of members who retire elect medical benefits, 30% of members who terminate elect medical benefits, 80% of beneficiaries elect medical benefits, and 80% of members who leave as disabled members elect retiree medical benefits.

SECTION G
PLAN PROVISIONS

Plan Provisions

- A. Ordinances** Amended and Restated under Denver Municipal Code Section 18-391 through 18-430.7. Most recently amended under Ordinance No. 15-0591, adopted September 2015.
- B. Effective Date** January 1, 1963
- C. Plan Year** January 1 through December 31
- D. Type of Plan** Qualified, 401(a) governmental defined benefit retirement plan; for GASB purposes it is a multi-employer cost sharing plan.
- E. Eligibility Requirements** Elected Officials, Appointed Officials, and Employees as defined in Denver Municipal Code Sections 18-402 and 18-406.
- F. Credited Service** Service measured in months from date of employment to date of retirement or prior termination.
- G. Compensation** *Gross pay, compensation and salary* shall mean that amount of remuneration, including wages, salaries, other amounts received for personal services actually rendered in the course of employment with the employer, and other amounts actually included or that could be included in gross income of and due to an employee, including employees on disability leave as provided for in division 4 of article V of chapter 18 of the Denver Municipal Code, or otherwise, from the employer in the full amount as calculated before any reductions or deductions are made for any purpose, including reductions or deductions by reason of sections 125, 132(f)(4) or 457 of the Internal Revenue Code, but not including distributions made from a plan of the employer designed to be eligible under section 457. Employer provided fringe benefits receiving special tax benefits, such as premiums for group term life insurance (to the extent excludible from gross income), shall be excluded from the definition of compensation. The calendar year shall be the limitation year (determination period) for purposes of section 415 of the Internal Revenue Code.
- H. Final Average Compensation (FAC)** Average monthly rate of compensation during the highest 36 (60 for members hired on or after July 1, 2011) successive calendar months of covered service.
- I. Normal Retirement**
1. Eligibility: For employees hired prior to July 1, 2011, attainment of age 65, or attainment of age 55 with age plus credited service equal to 75. For Employees hired July 1, 2011 or after, attainment of age 65 with 5 years of service, or attainment of age 60 with age plus credited service equal to 85.
 2. Benefit: 1.5% (2.0% if hired before September 1, 2004) of FAC times credited service.
 3. Normal Form: straight life annuity.

J. Early Retirement

1. Eligibility: Attainment of age 55 (60 for members hired on or after July 1, 2011) and completion of 5 years.
2. Benefit: Benefit accrued to date of retirement, reduced by 3% (6% for members hired on or after July 1, 2011) per year from age 65 to reflect commencement of benefit at an earlier age.

K. Temporary Early Retirement

Pending approval of a disability application, a retirement benefit is available to an active, vested member who is at least age 55 or age 60, if hired on or after July 1, 2011. This benefit is designed to provide income to the member during the process of fulfilling the disability application requirements. There is a three year limit on this retirement benefit.

L. Deferred Retirement

1. Eligibility: Any vested employee who terminates service for any reason other than retirement, disability, or death and leaves their accumulated contributions on deposit in the trust fund.
2. Benefit: Based on the formula in effect at the time of separation from service. Payment may commence any month after the member's 55th birthday, if hired prior to July 1, 2011, or after the member's 60th birthday, if hired July 1, 2011 or later.

M. Service Connected Disability

1. Eligibility: Any employee who becomes totally and permanently disabled as defined in Denver Municipal Code Section 18-408(d) which arises out of and in the course of the member's employment with the employer.
2. Benefit: Based on the greater of 20 years of service or actual service plus 10 years. Total credited service cannot exceed the credited service the member would have earned at age 65.
3. Normal Form: straight life annuity.

N. Non-Service Connected Disability

1. Eligibility: Any vested employee who becomes totally and permanently disabled as defined in Denver Municipal Code Section 18-408(e) which does not occur as a result of a service connected disability.
2. Benefit: The higher of 75% of the amount calculated for a service-connected disability or the amount calculated for an early retirement.
3. Normal Form: straight life annuity.

O. Death in the Line of Duty

The active member's surviving spouse is awarded the retirement benefit the member would have been entitled at their normal retirement date based on the higher of 15 years of service or actual credited service plus 5 years. Total credited service cannot exceed the credited service the member would have earned at age 65. If there is no surviving spouse but the member has children under age 21, then the benefit shall be paid until the youngest child becomes age 21. If there is no surviving spouse and no children under age 21, then the benefit shall be paid to a designated beneficiary.

P. Other Pre-Retirement Death

The active member's surviving spouse is awarded 75% of the benefit that would have been entitled had the death been service connected. If an active member who has attained the age of fifty-five (55) or the age of sixty (60) if hired on or after July 1, 2011 dies prior to the actual retirement date, the member shall be deemed to have retired on the first day of the month following the month in which death occurs and the surviving spouse will receive an annuity as if the member had elected the 100% joint and survivor option if this will result in a greater benefit to the spouse than the above provision.

Q. Post-Retirement Death

1. For Normal Retirement (with at least 5 years of service), Disability Retirement (after age 65), and for Temporary Early Retirement (pending approval of disability) the lump-sum death benefit is \$5,000.
2. For Disability Retirement before age 65, the death benefit is 150% of the member's annualized average monthly salary, limited to \$50,000. This benefit reduces to \$5,000 upon the disabled member reaching age 65.
3. If hired prior to July 1, 2011, for Early Retirement the lump-sum at age: 64 is \$4,750; 63 is \$4,500; 62 is \$4,250; 61 is \$4,000; 60 is \$3,750; 59 is \$3,500; 58 is \$3,250; 57 is \$3,000; 56 is \$2,750; 55 is \$2,500.
4. If hired on or after July 1, 2011, for Early Retirement the lump-sum at age: 64 is \$4,500; 63 is \$4,000; 62 is \$3,500; 61 is \$3,000; 60 is \$2,500.
5. In lieu of the single lump-sum payment that would be paid upon death, a retired member may elect to receive the appropriate death benefit limited to five thousand dollars (\$5,000.00) in the form of periodic payments.

R. Optional Forms

Joint and Survivor Option - Any employee retiring under the normal retirement provision may elect a joint and survivor benefit. The member's benefit is actuarially reduced based on their election: 100%, 75%, or 50%. Once the benefit commences this election cannot be changed. If the spouse or designated beneficiary predeceases the member, the benefit paid to the member shall be increased to the full single straight life annuity as if no joint and survivor benefit had been selected.

S. Medical Benefits

Retiree Medical Plan Benefits – Participants and their surviving spouses or dependents receiving retirement benefits are eligible to elect to receive plan-provided retiree medical coverage and a plan-provided subsidy (benefit) to help provide for the payment of health insurance premiums. The Plan contributes \$6.25 per month for each year of service for members who are Medicare eligible. The Plan contributes \$12.50 per month for each year of service for members not eligible for Medicare. In the event of the election of a Joint and Survivor option, the benefit is calculated based on the age of the member. If the member predeceases the joint and survivor beneficiary then the full benefit is transferred to the surviving spouse or dependent regardless of the joint and survivor election percentage. The monthly benefit is limited to the monthly premium amount for the coverage elected. If a member dies and leaves a beneficiary who is not a spouse or dependent, that beneficiary can elect to participate in the group health plan, but must pay the full cost. No plan contribution can be made for non-spouse or non-dependent beneficiaries.

- T. Refunds**
1. Eligibility: All members leaving covered employment with less than 5 years of service are eligible. Vested members (those with 5 or more years of service) may not withdraw their accumulated contributions plus interest in lieu of the deferred benefits otherwise due.
 2. Benefit: The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 1.00%.
- U. Member Contributions** 8.00% of compensation, effective January 1, 2015.
- V. Employer Contributions** 11.50% of compensation, effective January 1, 2015 for each member.
- W. Cost of Living Increases** Given on an ad-hoc basis. There have been no cost of living increases since 2002.
- X. Changes from Previous ...** There have been no changes in the plan provisions since the previous actuarial valuation, except for those specified herein.
- Y. Deferred Retirement Option Plan**
1. DROP – From January 1, 2001 through April 30, 2003, in lieu of immediate termination of employment and receipt of a normal retirement benefit, eligible members were permitted to continue employment for four years and have their normal retirement benefit paid into the deferred retirement option plan (DROP) account, after which time the participant either terminated employment or continued to be employed and resume regular membership with the retirement plan.
 2. DROP II – From May 1, 2003 through September 1, 2003, in lieu of immediate termination of employment and receipt of a normal retirement benefit, eligible members were permitted to continue employment for five years and have their normal retirement benefit paid into the DROP II account after which time all participants terminated employment.
- Z. Other Ancillary Benefits** Social Security Make-Up Benefit – For members hired before July 1, 2011 and retiring on or after January 1, 1996, an additional retirement benefit equal to the applicable percentage (per Denver Municipal Code Section 18-409(i)) of the member's estimated primary Social Security benefit multiplied by credited service with the City/DHHA during which the contributions were made to Social Security (up to a maximum of 35 years of credited service) divided by 35. This additional benefit is payable beginning on the first day of the month after the member's 62nd birthday or the member's retirement date, whichever is later, but will not be paid before retirement benefits have begun from the Plan. Members retiring under a disability form of retirement are not eligible for this benefit.

SECTION H
GLOSSARY

Glossary

<i>Actuarial Accrued Liability (AAL)</i>	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs. The total present value of benefits is the sum of the AAL and the Present Value of Future Normal Costs.
<i>Actuarial Assumptions</i>	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement, and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
<i>Actuarial Cost Method</i>	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of future Normal Costs and the Actuarial Accrued Liability.
<i>Actuarial Equivalent</i>	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
<i>Actuarial Present Value</i>	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
<i>Actuarial Present Value of Future Benefits</i>	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
<i>Actuarial Valuation</i>	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB No. 25, such as the Funded Ratio and the Annual Required Contribution (ARC).
<i>Actuarial Value of Assets</i>	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the actuarially required contribution (ARC). The actuarial value of assets is the asset amount used to determine the unfunded accrued liability, the funded ratio and the ARC

Glossary

<i>Amortization Method</i>	A method for determining the Amortization Payment. The choices are level dollar and level percentage of payroll; and open period versus closed period. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase. For an open amortization method (either level dollar or level percent of pay), the amortization period does not decline each year. Thus, at the end of a given period, an open amortization period may still have a remaining UAAL balance.
<i>Amortization Payment</i>	That portion of the plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability. As a special note, it is possible that an open method level percent of pay payment may not pay off principal in early years.
<i>Amortization Period</i>	The period used in calculating the Amortization Payment.
<i>Annual Required Contribution (ARC)</i>	Originally described under GASB 25, the employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ARC consists of the Employer Normal Cost and Amortization Payment. For Section D, the ARC is defined to be the sum of (a) the employer normal cost, and (b) the amount needed to amortize the UAAL as a level dollar amount over 30 years.
<i>Closed Amortization Period</i>	A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.
<i>Employer Normal Cost</i>	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
<i>Equivalent Single Amortization Period</i>	For plans that do not establish separate amortization bases (separate components of the UAAL), this is the same as the Amortization Period. For plans that do establish separate amortization bases, this is the period over which the UAAL would be amortized if all amortization bases were combined upon the current UAAL payment.

Glossary

<i>Experience Gain/Loss</i>	A measure of the liability difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge which may be larger or smaller than projected. Gains are due to favorable experience, e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience, i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.
<i>Funded Ratio</i>	The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability.
<i>GASB</i>	Governmental Accounting Standards Board.
<i>GASB No. 67 and GASB No. 68</i>	These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 67 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 68 sets the rules for the systems themselves.
<i>GASB No. 43 and GASB No. 45</i>	These are the governmental accounting standards that set the accounting rules for postemployment benefits other than pensions for the public retirement systems and employers that sponsor or contribute to them. Statement No. 43 sets the accounting rules for the employers, while Statement No. 45 sets the rules for the systems themselves.
<i>Normal Cost</i>	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
<i>Open Amortization Period</i>	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.
<i>Select Period for Separation Rates</i>	A select period sets separation rates for an employee's first "select" years of service. After the employee works beyond the select period, then the ultimate separation rates are used based on the employee's age.
<i>Unfunded Actuarial Accrued Liability</i>	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
<i>Valuation Date</i>	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.

SECTION I
OTHER SPECIAL REQUIREMENTS

Determination of DHHA Supplemental Contributions

Determination of DHHA Supplemental Contributions – Pension Plan

	2017	2016
Average Age for Active Members at Hospital	53.89	53.34
Number of Active Members at Hospital	467	512
Average Age for Active Members Non-Hospital	44.03	44.55
Number of Active Members Non-Hospital	8,514	8,124
Normal Cost for Hospital	\$7,319,039	\$7,577,492
Estimated Payroll for Hospital	48,940,685	51,353,645
Normal Cost as a Percent of Hospital Payroll	14.95%	14.76%
Normal Cost for Non-Hospital	\$53,493,430	\$52,171,487
Estimated Payroll for Non-Hospital	575,536,645	535,465,534
Normal Cost as a Percent of Non-Hospital Payroll	9.29%	9.74%
Difference in Normal Cost as a Percent of Payroll	5.66%	5.02%
Estimated Payroll for Hospital	\$48,940,685	\$51,353,645
Difference in Normal Cost as a Dollar Amount	\$2,770,043	\$2,577,953

Determination of DHHA Supplemental Contributions – Retiree Medical Plan

	2017	2016
Average Age for Active Members at Hospital	53.89	53.34
Number of Active Members at Hospital	467	512
Average Age for Active Members Non-Hospital	44.03	44.55
Number of Active Members Non-Hospital	8,514	8,124
Normal Cost for Hospital	\$242,309	\$259,484
Estimated Payroll for Hospital	48,940,685	51,353,645
Normal Cost as a Percent of Hospital Payroll	0.49511%	0.50529%
Normal Cost for Non-Hospital	\$2,345,227	\$2,355,175
Estimated Payroll for Non-Hospital	575,536,645	535,465,534
Normal Cost as a Percent of Non-Hospital Payroll	0.40749%	0.43984%
Difference in Normal Cost as a Percent of Payroll	0.087623%	0.065451%
Estimated Payroll for Hospital	\$48,940,685	\$51,353,645
Difference in Normal Cost as a Dollar Amount	\$42,883	\$33,612
Total Difference in Normal Cost as a Dollar Amount	\$2,812,926	\$2,611,565