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Retirement Plan for CTA Employees

Actuarial Valuation Report as of January 1, 2016, including supplementary disclosure information for GASB Statement No. 67

Revised February 2017

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February 2017

Board of Trustees and Executive Director
Retirement Plan for CTA Employees
10 S. LaSalle, Suite 1100
Chicago, IL 60602

Certification of Actuarial Valuation

Ladies and Gentlemen:

This report represents the results of the annual valuation of the assets and liabilities of The Retirement Plan for Chicago Transit Authority Employees ("the Plan") as of January 1, 2016, prepared in accordance with 40 ILCS 5/22-101(e). In addition it includes disclosure information as of December 31, 2015, as required under GASB Statement No. 67. The actuarial valuation of the Plan is performed annually and Buck Consultants was retained to perform the valuation as of January 1, 2016. This valuation has been conducted in accordance with all applicable Actuarial Standards of Practice (ASOPs) issued by the Actuarial Standards Board (ASB).

This report is revised from the original version sent in October of 2016 to update the Section 3 exhibits.

The actuarial valuation is based on unaudited financial and member data provided by the staff of the plan and summarized in this report. The benefits considered are those delineated in the plan and is governed by legislation contained in the Illinois Compiled statutes, particularly Chapter 40, as amended and restated effective December 31, 2012. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

Public Act 95-708, effective January 18, 2008, requires that the Plan's pension and retiree health care programs be separated into two distinct trusts by July 1, 2009 (40 ILCS 5/22-101B(a)). This January 1, 2016 valuation report for the Plan does not reflect the liabilities and assets that were spun off into the healthcare trust.

Contribution rates were determined in accordance with 40 ILCS 5/22-101(e) using the projected unit credit cost method and provide for a funded ratio of at least 60 percent no later than ten years after the implementation year (2015) through fiscal year end 2039. Contribution rates reflect the issuance of bond or notes by the Authority, as defined in 70 ILCS 3605/12c. Authority contribution rates are adjusted by a debt service credit, for debt service paid in the prior year, of up to six percent of compensation per year from 2009 to 2040, as defined in 40 ILCS 5/22-101(e)(2).

Results of this valuation deviated from what was expected based on the January 1, 2015 actuarial valuation for a number of reasons including market returns of -0.2% compared to 8.25% assumed and payroll and salaried increases that were less than expected. Overall these events caused the funded ratio to not meet the standards set forth in ILCS 5/22-101(e) and therefore there is a need to increase authority and employee contribution rates to comply with 40 ILCS 5/22-101(e) as follows:

	Annual Contributions to the Plan (Percentage of Compensation)	
Fiscal Year	Authority	Employees
2017 to 2040	17.925%	11.962%

Based on these rates, the sum of current assets, net bond proceeds, future contributions and investment earnings, less benefit payments and expenses, the Plan is projected to be at least equal to 60 percent of actuarial liabilities by 2025 and through fiscal year end 2040, if these contributions, expressed as a percentage of compensation, are made to the Plan and the Plan experiences no net actuarial losses in the future.

40 ILCS 5/22-101(e)(4) provides for a minimum contribution, determined either by the Board of Trustees or the Auditor General, to bring the funded ratio of the Plan "up to" or "no less than" 90% by December 31, 2059. Thus, the attached schedules contain such projected funded ratios.

While not required by 40 ILCS 5/22-101(e)(3), Buck has recommended that the Board of Trustees consider, as appropriate, moving towards contributing an amount equal to the Actuarial Math Contribution.

- Fund 100% of the entry age normal cost method
- Use an actuarial value of assets to help mitigate contribution volatility
- Pay off the unfunded liability over 20 years using layered amortization

This methodology suggests a contribution of approximately 34.04% (total contribution). The rates adopted by the Board pursuant to its ten-year plan are higher than the minimum required by 40 ILCS 5/22-101(e)(3). We understand that the Board anticipates an annual review of rates during the ten-year period.

The results documented in this report are estimated based on data that may be imperfect and on assumptions about future events. Assumptions may have been made about participant data or other factors. Reasonable efforts were made in this valuation to ensure that items that were significant in the context of the actuarial liabilities or costs are treated appropriately, and not excluded or included inappropriately. We believe that the use of approximation in our calculations, if any, has not resulted in a significant difference relative to the results we would have obtained using more detailed calculations.

A range of results, different from those presented in this report could be considered reasonable. The numbers are not rounded, but this is for convenience only and should not imply precision, which is not inherent in actuarial calculations.

This valuation was based on the actuarial assumptions and methods as approved by the Board of Trustees. Please see Section 6.2 and 6.3 of this report for a description of the assumptions and methods used. Actuarial Standards of Practice now require that the likelihood and extent of future mortality improvements be considered for valuations performed on or after June 30, 2011. Traditionally for the CTA Retirement Plan, experience studies are performed once in every five year period. Our initial conclusion is that the mortality tables currently in use and adopted by the Board provides for some future mortality improvements. The most recent study of the plan's experience, used in developing the current actuarial assumptions, was based on a period from January 1, 2008 – December 31, 2012 and first used with the January 1, 2014 actuarial valuation; the next review will cover the period from January 1, 2013 through December 31, 2017. The interest rate of 8.25% has been approved by the Board of Trustees. It is based upon a review of the existing portfolio structure, a review of recent experience, and future long-term expectations of rates of return. We believe that the economic and demographic assumptions adopted in accordance with the recent experience study and a review of recent experience are reasonable and appropriate for the purposes of this valuation.

All assumptions and methods used for this valuation are unchanged from the prior valuation.

The assumptions and methods used to determine the Actuarial Math Contribution of the Plan as outlined in this report and all supporting schedules meet the parameters and requirements for disclosure of Governmental Accounting Standards Board (GASB) Statement No. 67, Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans. Based on member data and asset information provided by the CTA Retirement Plan staff, we have prepared the Schedule of Funding Progress and Schedule of Employer Contributions that are included in the Financial Section of the Comprehensive Annual Financial Report. Because of the risk of misinterpretation of actuarial results, you should ask us to review any statement you wish to make on the results contained in this report. Buck will accept no liability for any such statement made without our prior review.

Future actuarial measurements may differ significantly from the current measurement presented in this report due to such factors as: plan experience different from that anticipated by the economic and demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. Due to the limited scope of this report, an analysis of the potential range of such future measurements has not been performed.

Please note that GASB Statement No. 25 (Financial Reporting for Defined Benefit Pension Plans) is applicable for fiscal years ending prior to 2014 and has been replaced by GASB Statement No. 67 (Financial Reporting for Pension Plans) for fiscal years ending 2014 and later. Similarly, GASB Statement No. 27 (Accounting for Pensions by State and Local Governmental Employers) is applicable for fiscal years ending prior to 2015 and has been replaced by GASB Statement No. 68 (Accounting and Financial Reporting for Pensions) for fiscal years ending 2015 and later. We have prepared the required accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67 for the fiscal year ending December 31, 2015 based on a valuation dates of December 31, 2014 and December 31, 2015.

All of the historical valuation results presented in this report represent results taken from prior actuarial reports and some years may reflect the funding methods and techniques used by the prior actuary. Our report/certification does not apply to those results other than to represent that our report has presented accurate information developed by prior actuaries.

Qualified actuaries completed the valuation in accordance with accepted actuarial procedures as prescribed by the Actuarial Standards Board. The qualified actuaries are members of the American Academy of Actuaries and are experienced in performing actuarial valuations of public employee retirement systems. To the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally accepted actuarial principles and practice. The undersigned with actuarial designations is qualified to render the opinions contained in this report and is available to respond to any questions you may have.

In our opinion the calculations also comply with Illinois law and where applicable, federal laws such as the Internal Revenue Code, and the Statements of the Governmental Accounting Standards Board. We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Plan as of January 1, 2016.

Respectfully submitted,

BUCK CONSULTANTS, LLC

Larry Langer, ASA, MAAA, EA
Principal and Consulting Actuary

cc: Wendy Ludbrook
Steve Evanego

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Executive Summary

Overview

The Retirement Plan for CTA Employees provides pension and ancillary benefit payments to the retired, disabled and terminated employees of the Chicago Transit Authority. A Board of Trustees comprised of appointed representatives is responsible for administering the Plan and making investment decisions. This report presents the results of the actuarial valuation of the Plan benefits as of the valuation date of January 1, 2016.

Purpose

An actuarial valuation is performed on the retirement plan annually as of the beginning of the fiscal year. The main purposes of the actuarial valuation detailed in this report are:

1. To certify the statutory contribution requirements for plan year 2016, as required under 40 ILCS 5/22-101(e)(3);
2. To disclose the funding assets, liability measures and funded ratio as of the valuation date;
3. To disclose the accounting measures for the Plan required by GASB No. 67 as of the end of the last fiscal year;
4. To compare actual and expected experience under the Plan during the last fiscal year;
5. And to report trends in contributions, assets, liabilities, and funded status over the last several years.

Because of the risk of misinterpretation of actuarial results, you should ask us to review any statement you wish to make on the results contained in this report. Buck will accept no liability for any such statement made without our prior review. This actuarial valuation provides a “snapshot” of the funded position of the Plan based on the Plan provisions, membership, assets, and actuarial assumptions as of the valuation date. Actuarial projections are also performed to provide a long-term view of the expected future funding status and contribution patterns.

Membership

Actives: As of January 1, 2016, there were 8,204 members in active service covered under the provisions of the Plan. The significant age, service, salary and accumulated contribution information for these members is summarized below, along with comparative figures from the last actuarial valuation one year earlier.

	January 1, 2016	January 1, 2015
Number of active employees [1]	8,204	8,251
Average age	48.4	48.2
Average years of service	13.7	13.8
Total annual valuation salary [2]	573,548,196	564,827,965
Average annual salary [2]	70,331	68,923
Total accumulated contributions	417,390,393	379,907,286
Average accumulated contributions	51,182	46,358

1 Active statistics include all participants w ho are actively employed w hich includes 19 participants w ho are on leave and 49 participants w ho have opted out of participating in the Plan and are only entitled to a return of their contributions.

2 The salary information for the 49 participants w ho have opted out of participating in the Plan is not included.

The number of active members decreased by 0.6% from the previous valuation date. The average age of the active members increased by 0.2 years, and the average service decreased by 0.1 years. The total annual valuation salary increased by 1.5%. The average salary increased by 2.0% from the previous valuation.

Distributions of active members by age and service are given in Section 5.2.

Inactives: In addition to the active members, there were 98 inactive vested members who did not elect to receive their accumulated contributions when they left covered employment. The significant age and annual benefit information for these inactive members is summarized below with comparative figures from the last actuarial valuation one year earlier.

	January 1, 2016	January 1, 2015
Number of inactive members	98	103
Average age	56.7	56.4
Average annual benefit payments	$26,737	$25,773

The number of inactive vested members decreased by 4.9% from the previous valuation. The average age of the inactive vested members increased by 0.3 years. The Average Monthly Pension Benefit for these members increased by 3.7% from the previous valuation.

Distributions of inactive members by age and pension benefit are given in Section 5.4.

Retirees and Beneficiaries: In addition to the active and inactive members, there were 7,991 retired members, 1,159 members with disability allowances and 878 beneficiaries who are receiving monthly benefit payments on the valuation date. The significant age and annual benefit information for these members are summarized below with comparative figures from the last actuarial valuation performed one year earlier.

	January 1, 2016	January 1, 2015
Number of members receiving payments		
➢ Retirees	7,991	7,886
➢ Disability Allowances	1,159	1,102
➢ Beneficiaries	878	902
➢ Total	10,028	9,890
Average age	70.0	69.7
Annual benefit amounts		
➢ Retirees	224,664,030	218,549,877
➢ Disability Allowances	18,714,100	17,430,033
➢ Beneficiaries	9,871,344	9,985,487
➢ Total	253,249,474	245,965,397
Average annual benefit payments	25,254	24,870

The number of retired members and beneficiaries increased by 1.4% from the previous valuation date. The average age of these members increased by 0.3 years. The total annual benefit payments for these members increased by 3.0% from the previous valuation date.

Distributions of retired members by age and benefit amounts are given in Section 5.3.

In our opinion, the membership data collected and prepared for use in this actuarial valuation meets the data quality standards required under Actuarial Standards of Practice No. 23.

Plan Assets

The Plan's assets are held in trust and invested for the exclusive benefit of plan members. The trust is funded by member and employer contributions, and pays benefits directly to eligible members in accordance with plan provisions. The assets are audited annually and are reported at fair value. On a fair value basis, the Plan has Net Assets Available for Benefits of $1,743.2 million as of January 1, 2016. This includes a decrease of $112.7 million over the Net Assets Available for Benefits of $1,855.9 million as of January 1, 2015. During the prior year, the investment return was -0.2% as reported by the Plan.

Starting with the January 1, 2012 valuation, the Board of Trustees adopted the market value of assets to determine the actuarial value of assets used for funding purposes. This method recognizes gains and losses, i.e. the difference between actual investment return during the year and the expected return based on the valuation interest rate, immediately.

A summary of the assets held for investment, a summary of changes in assets, and the development of the actuarial value of assets is shown in Section 2.

Actuarial Experience

Differences between the expected experience based on the actuarial assumptions and the actual experience create changes in the actuarial accrued liability, actuarial value of assets, and the unfunded actuarial accrued liability from one year to the next. These changes create an actuarial gain if the experience is favorable and an actuarial loss if the experience is unfavorable. The Plan experienced a total net actuarial loss of $167.5 million during the prior year. This net loss is about 5.3% of the plan's prior year actuarial accrued liability. The net loss is a combination of two principal factors, demographic experience and investment performance.

The demographic experience tracks actual changes in the plan's population compared to the assumptions for decrements such as mortality, turnover, and retirement, as well as pay increases. The Plan experienced a demographic loss of $20.9 million during the year ending December 31, 2015. This loss increased the unfunded actuarial accrued liability by $20.9 million and decreased the funded ratio by 0.3%.

Continued tracking of the demographic experience is warranted in order to confirm the appropriateness of the actuarial assumptions. Details of the demographic, economic, and other assumptions used to value the plan liabilities and normal cost can be found in Section 6. In our opinion, the economic assumptions comply with Actuarial Standards of Practice No. 27 and the demographic assumptions comply with Actuarial Standards of Practice No. 35.

On the asset side, the Plan experienced a loss on an actuarial value of assets basis. The actual rate of return on the actuarial value of plan assets was -0.2% for the year ending December 31, 2015 compared to the assumption of 8.25%, resulting in a loss of $146.6 million. This loss increased the unfunded actuarial accrued liability by $146.6 million and decreased the funded ratio by 4.5%.

A summary of the actuarial gains and losses experienced during the prior year is shown in Section 1.4.

Funded Status

The funded status is a measure of the progress that has been made in funding the plan as of the valuation date. It is determined as a ratio of the actuarial value of assets divided by the total actuarial accrued liability on the valuation date. A ratio of over 100% represents a plan that is ahead in funding, and a ratio of less than 100% represents a plan that is behind in funding on the valuation date. The funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

As of January 1, 2016 the funded ratio of the Plan is 53.3%. This represents a decrease of 4.9% from last year's funded ratio of 58.2% as of January 1, 2015. Unless otherwise noted, the funded status shown in the report is based on the projected unit credit cost method.

A history of the unfunded actuarial accrued liability and the funded ratio is shown in Section 1.5.

Actuarial Math Contributions

Actual required contribution rates were determined in accordance with 40 ILCS 5/22-101(e) using the projected unit credit cost method and provide for a funded ratio of at least 60 percent no later than ten years after the implementation year (2015) through fiscal year end 2039 and 90 percent funding by fiscal year end 2059. Contribution rates reflect the issuance of bond or notes by the Authority, as defined in 70 ILCS 3605/12c. Authority contribution rates are adjusted by a debt service credit, for debt service paid in the prior year, of up to six percent of compensation per year from 2009 to 2040, as defined in 40 ILCS 5/22-101(e)(2).

While not required by 40 ILCS 5/22-101(e), white papers on funding policies for public sector plans developed over the past few years suggest a funding policy be sufficient to pay the normal cost on the entry age normal cost basis and amortize the unfunded actuarial accrued liability over a fixed period of 20 years. We will broadly refer to this type of policy as an Actuarial Math Funding Policy. Buck has recommended that the Board of Trustees consider, as appropriate, moving towards contributing based on the Actuarial Math Funding Policy. The rates adopted by the Board pursuant to its ten-year plan are higher than the minimum required by 40 ILCS 5/22-101(e)(3). We understand that the Board anticipates an annual review of rates during the ten-year period.

Under Actuarial Math, the normal cost represents the cost of the benefits that accrue during the year for active members under the Entry Age Normal Cost Method. It is determined as a level percent of pay over each individual career attributable to the respective plan year. The normal cost for 2016 has been determined to be $52.2 million, or 9.09% of pay. This represents a decrease in the normal cost rate of .94% of pay from last year's normal cost rate of 10.03%, primarily attributable to an increase in the average age of the active participant group.

Under Actuarial Math, the cost method under which the actuarial accrued liability is determined is the entry age normal cost method. Under the entry age normal cost method, the actuarial accrued liability (AAL) is equal to the present value of projected benefits less the present value of future benefits to be accrued. The AAL amount is compared to the actuarial value of assets to determine if the Plan is ahead or behind in funding as of the valuation date. The difference between the total actuarial accrued liability and the actuarial value of assets equals the amount of unfunded actuarial accrued liability or surplus (if negative) on the valuation date. This amount is amortized and added to the normal cost to determine the annual required contribution for the year suggested by public sector funding policy white papers.

The unfunded actuarial accrued liability under the entry age normal cost method as of January 1, 2016 is $1,632.2 million. This represents an increase of $192.7 million in the unfunded actuarial accrued liability from last year's amount of $1,439.5 million. The annual payment required to amortize the unfunded actuarial accrued liability of $1,632.2 million as of January 1, 2016 is $135.5 million, or 23.62% of pay.

The total contribution suggested by actuarial math is the sum of the normal cost and the payment to the UAAL, or 34.04% of pay.

The actuarial liabilities and development of the Actuarial Math Contribution is shown in the Comparative Summary and Section 1.1.

In our opinion, the measurement of the benefit obligations and determination of the actuarial cost of the Plan is performed in compliance with Actuarial Standards of Practice No. 4.

Accounting Information

The Governmental Accounting Standards Board (GASB) issues statements which establish financial reporting standards for defined benefit pension Plans and accounting for the pension expenditures and expenses for governmental employers. The required financial reporting information for the Plan and the Employer under GASB No. 67 can be found in Section 3 beginning on page 26.

Projections

As part of the annual actuarial valuation, a forecast of expected future valuation results is performed over a 50 year period beginning on the valuation date. This analysis provides a dynamic look into the future to identify trends in future employer contributions and funded status. The forecast replaces active members who are assumed to decrement (terminate, retire, etc.) during the period with new members resulting in a stable active membership. The forecast assumes all actuarial assumptions are exactly realized each year during the forecast period. The results of these forecasts can be found in Section 4.

Changes in Plan Provisions

There have been no significant changes in the plan provisions which changed the meaning of the Plan according to Plan Counsel since the last actuarial valuation performed as of January 1, 2015.

Changes in Actuarial Assumptions, Methods, or Procedures

There have been no changes in the actuarial assumptions, actuarial cost method, asset valuation method or valuation procedures since the last actuarial valuation performed as of January 1, 2015.

Comparative Summary of Key Actuarial Valuation Results

	January 1, 2016	January 1, 2015
1. Investment Return Assumption	8.25 %	8.25 %
2. Membership Data		
a. Active Employees		
Number	8,204	8,251
Annualized Salaries (in thousands)	573,548	564,828
Average Pay	70,331	68,923
b. Terminated Participants with Vested Benefits		
Number	98	103
Total Monthly Accrued Benefit	218,349	221,218
Average Monthly Accrued Benefit	2,228	2,148
c. Retirees and Beneficiaries		
Number	8,869	8,788
Total Monthly Pension	19,544,615	19,044,614
Average Monthly Pension	2,204	2,167
d. Disability Allowances		
Number	1,159	1,102
Total Monthly Pension	1,559,508	1,452,503
Average Monthly Pension	1,346	1,318
3. Statutory Minimum Contribution Rates (as a percentage of Payroll)[1]		
a. Employer Contribution Rate		
Gross Employer Rate	23.925 %	20.250 %
Credit for Debt Repayment	6.000 %	6.000 %
Net Employer Rate	17.925 %	14.250 %
b. Employee Contribution Rate	11.962 %	10.125 %
4. Actuarial Math Contribution*		
a. Amortization Payment for UAAL		
i. Amount	135,479,896	119,484,503
ii. As a % of pay	23.62 %	22.81 %
b. Normal Cost		
i. Amount	52,159,153	52,561,046
ii. As a % of pay	9.09 %	10.03 %
c. Interest Adjustment to Mid-Year		
i. Amount	7,586,735	6,815,730
ii. As a % of pay	1.32 %	1.3 %
d. Actuarial Contribution		
i. Amount	195,225,784	178,861,279
ii. As a % of pay	34.04 %	34.147 %
5. Actuarial Funded Status ($ in thousands)		
a. Actuarial Accrued Liability	3,267,121	3,186,187
b. Actuarial Value of Assets (AVA)	1,743,216	1,855,912
c. Unfunded Accrued Liability	1,523,905	1,330,275
d. Funded Ratio	53.4 %	58.2 %
e. Market Value of Assets (MVA)	1,743,216	1,855,912
f. Return on MVA (prior year)	(0.2) %	4.8 %
g. Return on AVA (prior year)	(0.2) %	4.8 %

[1] Contribution rate applicable for the plan year following the year of valuation.

Section 1
Actuarial Funding Results

Section 1.1 - Actuarial Liabilities and Normal Cost

Actuarial Accrued Liability	January 1, 2016	January 1, 2015
1. Active Members		
a. Retirement Benefits	976,491,538	945,335,933
b. Withdrawal Benefits	23,630,028	23,908,707
c. Disability Benefits	35,834,510	35,896,921
d. Death Benefits	15,032,557	14,519,552
Total	1,050,988,633	1,019,661,113
2. Inactive Members with Deferred Benefits	13,413,910	13,162,759
3. Retired Members and Beneficiaries Receiving Benefits	2,202,718,093	2,153,362,801
4. Total Actuarial Accrued Liability (1. + 2. + 3.)	3,267,120,636	3,186,186,673

Normal Cost	January 1, 2016	January 1, 2015
1. Active Members		
a. Retirement Benefits	53,679,623	52,410,522
b. Withdrawal Benefits	2,690,808	2,635,071
c. Disability Benefits	2,991,145	2,968,823
d. Death Benefits	1,110,701	1,065,043
2. Normal Cost (Dollar amount)	**60,472,277**	**59,079,459**
3. Total Normal Cost (As a % of pay)	**10.54%**	**10.46%**

Section 1.2 - Actuarial (Gain) / Loss

Development of Actuarial (Gain) / Loss	Amount
1. Expected Actuarial Accrued Liability	
a. Actuarial Accrued Liability at January 1, 2015	3,186,186,672
b. Normal Cost at January 1, 2015	59,079,459
c. Interest on a. + b. to End of Year	267,734,456
d. Benefit Payments and Administrative Expenses for 2015, with Interest to End of Year	266,730,534
e. Expected Actuarial Accrued Liability Before Changes (a. + b. + c. - d.)	3,246,270,053
f. Change in Actuarial Accrued Liability at January 1, 2016 due to	
Change in Actuarial Assumptions	0
g. Change in Actuarial Accrued Liability at January 1, 2016 due to	
Change in Plan Provisions	0
h. Expected Actuarial Accrued Liability at January 1, 2016 (e. + f. + g.)	3,246,270,053
2. Actuarial Accrued Liability at January 1, 2016	3,267,120,637
3. Liability (Gain) / Loss (2. – 1.h.)	20,850,584
4. Expected Actuarial Value of Assets	
a. Actuarial Value of Assets at January 1, 2015	1,855,912,051
b. Interest on a. to End of Year	153,112,744
c. Contributions Made for 2015	141,793,202
d. Interest on c. to End of Year	5,733,068
e. Benefit Payments and Administrative Expenses for 2015, with Interest to End of Year	266,730,534
f. Change in Actuarial Value of Assets at January 1, 2016	
due to Change in Method	0
g. Expected Actuarial Value of Assets at January 1, 2016	
(a. + b. + c. + d. – e. – f.)	1,889,820,531
5. Actuarial Value of Assets as of January 1, 2016	1,743,216,432
6. Actuarial Asset (Gain) / Loss (4.g. - 5.)	146,604,099
7. Actuarial (Gain) / Loss (3. + 6.)	167,454,683

Section 1.3 - Actuarial Balance Sheet

Financial Resources	January 1, 2016	January 1, 2015
1. Actuarial Value of Assets (market)	1,743,216,432	1,855,912,051
2. Present Value of Future Contributions	511,755,531	508,866,647
3. Unfunded Actuarial Accrued Liability/(Reserve)	1,523,904,205	1,330,274,621
4. Total Assets (1 + 2 + 3)	3,778,876,168	3,695,053,319

Benefit Obligations	January 1, 2016	January 1, 2015
1. Present Value of Future Benefits		
a. Active Members	1,562,744,165	1,528,527,759
b. Inactive Members	13,413,910	13,162,759
c. Retirees, disabilities and beneficiaries	2,202,718,093	2,153,362,801
d. Total	3,778,876,168	3,695,053,319

Section 1.4 - Analysis of Financial Experience

Analysis of Actuarial (Gains) and Losses

Resulting From Differences Between Assumed Experience and Actual Experience

Type of (Gain) or Loss	Year End December 31, 2015	As a % of Last Year's AAL
(1) COLA Experience	0	0.00%
(2) Salary Experience	1,861,999	0.06%
(3) Retiree Mortality Experience	1,181,891	0.04%
(4) Other (turnover, retirement ages, service purchase, etc.)		
(a) Unexpected Participant Pick Up	6,288,584	0.20%
(b) Unexpected Data Change for Decrementing Actives	(631,332)	-0.02%
(c) Unexpected Data Change for Continuing Inactives	221,764	0.01%
(d) Unexpected Rehires	(664,375)	-0.02%
(e) Miscellaneous	1,250,352	0.04%
(f) Total	6,464,993	0.20%
(5) Active Decrements	6,335,085	0.20%
(6) New Entrants	5,006,616	0.16%
(7) Liability (Gain) or Loss During Year,		
(1) + (2) + (3) + (4)(f) + (5) + (6)	20,850,584	
(8) Investment Experience	146,604,099	4.60%
(8) Asset Valuation Method	0	0.00%
(10) Assumption and Method Changes	0	0.00%
(11) Benefit Changes	0	0.00%
(12) Other	0	0.00%
(13) Total (Gain) or Loss During Year, (7) + (8) + (9) + (10) + (11) + (12)	167,454,683	5.26%

Section 1.5 - History of UAAL and Funded Ratio

($’s in 000’s)

Valuation Date	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	Funded Ratio (AVA as a % of AAL)	Unfunded Actuarial Accrued Liability (UAAL)
January 1, 2016	3,267,121	1,743,216	53.36%	1,523,904
January 1, 2015	3,186,187	1,855,912	58.25%	1,330,275
January 1, 2014	3,105,567	1,892,714	60.95%	1,212,853
January 1, 2013	2,867,335	1,702,788	59.39%	1,164,547
January 1, 2012	2,808,184	1,662,196	59.19%	1,145,988
January 1, 2011	2,724,191	1,909,967	70.11%	814,224
January 1, 2010	2,588,462	1,936,849	74.83%	651,613
January 1, 2009	2,632,356	1,995,953	75.82%	636,403
January 1, 2008	2,531,440	941,864	37.21%	1,589,576
January 1, 2007	2,466,106	1,007,305	40.85%	1,458,801

Section 1.6 - Solvency Test - Comparative Summary of Accrued Liability and Actuarial Value of Assets

	Accrued Liability for:				Portion of Accrued Liability Covered by Actuarial Value of Assets		
Valuation as of January 1	(1) Active Member Contributions	(2) Retirees, Beneficiaries, TVRs and Disabled	(3) Active Member (Employer Financed Portion)	Actuarial Value of Assets[1]	(1)	(2)	(3)
2016	417,390,393	2,216,132,003	633,598,241	1,743,216,432	100.00 %	59.83 %	0.00 %
2015	379,907,286	2,166,525,560	639,753,826	1,855,912,051	100.00 %	68.13 %	0.00 %
2014	342,529,743	2,108,016,547	655,020,539	1,892,714,102	100.00 %	73.54 %	0.00 %
2013	306,193,043	1,987,917,394	573,224,876	1,702,787,884	100.00 %	70.25 %	0.00 %
2012	271,327,054	1,945,958,148	590,898,382	1,662,195,612	100.00 %	88.36 %	0.00 %

1. Excludes health care assets.

Section 1.7 - Projected Actuarial Results

Projection of Funded Status based on Board Approved Contribution Rates

	Board Adopted Contribution Rates			Board Adopted Contributions					
Year	Employee Contribution Percent	Employer Contribution Percent	Total Percent	Employee Contribution	Employer Contribution	Total Contribution	Actuarial Accrued Liability	Actuarial Value of Assets (Market)	Funded Ratio
2016	10.125%	14.250%	24.375%	58,008,052	81,640,962	139,649,014	3,267,120,637	1,743,216,432	53.36%
2017	11.962%	17.925%	29.887%	70,709,254	105,952,378	176,661,632	3,329,136,870	1,759,244,400	52.84%
2018	11.962%	17.925%	29.887%	73,006,864	109,395,170	182,402,034	3,391,579,560	1,807,575,946	53.30%
2019	11.962%	17.925%	29.887%	75,643,822	113,346,449	188,990,271	3,453,780,079	1,858,818,966	53.82%
2020	11.962%	17.925%	29.887%	78,912,028	118,243,605	197,155,633	3,516,206,241	1,914,431,986	54.45%
2021	11.962%	17.925%	29.887%	82,288,534	123,303,039	205,591,573	3,578,856,068	1,976,139,981	55.22%
2022	11.962%	17.925%	29.887%	85,731,018	128,461,336	214,192,354	3,641,367,699	2,044,355,319	56.14%
2023	11.962%	17.925%	29.887%	89,377,663	133,925,554	223,303,217	3,703,737,648	2,119,746,977	57.23%
2024	11.962%	17.925%	29.887%	93,155,763	139,586,745	232,742,508	3,766,364,241	2,203,846,654	58.51%
2025	11.962%	17.925%	29.887%	97,069,565	145,451,276	242,520,841	3,829,085,838	2,297,451,498	60.00%
2026	11.962%	17.925%	29.887%	101,223,321	151,675,360	252,898,681	3,891,100,219	2,400,822,451	61.70%
2027	11.962%	17.925%	29.887%	105,584,072	158,209,610	263,793,682	3,952,727,276	2,515,754,040	63.65%
2028	11.962%	17.925%	29.887%	110,236,986	165,181,645	275,418,631	4,014,002,117	2,643,800,562	65.86%
2029	11.962%	17.925%	29.887%	115,096,227	172,462,844	287,559,071	4,075,621,596	2,787,401,021	68.39%
2030	11.962%	17.925%	29.887%	120,141,795	180,023,239	300,165,034	4,138,418,743	2,948,911,413	71.26%
2031	11.962%	17.925%	29.887%	125,378,071	187,869,396	313,247,467	4,204,010,080	3,131,155,081	74.48%
2032	11.962%	17.925%	29.887%	130,782,442	195,967,429	326,749,871	4,274,388,093	3,337,693,559	78.09%
2033	11.962%	17.925%	29.887%	136,272,349	204,193,632	340,465,981	4,350,962,236	3,571,554,500	82.09%
2034	11.962%	17.925%	29.887%	141,902,572	212,630,089	354,532,661	4,435,090,107	3,835,634,156	86.48%
2035	11.962%	17.925%	29.887%	147,528,547	221,060,180	368,588,727	4,527,830,865	4,133,135,167	91.28%
2036	11.962%	17.925%	29.887%	153,319,040	229,736,788	383,055,828	4,630,761,362	4,467,182,353	96.47%
2037	11.962%	17.925%	29.887%	159,203,521	238,554,230	397,757,751	4,745,265,145	4,841,514,396	102.03%
2038	11.962%	17.925%	29.887%	164,916,567	247,114,790	412,031,357	4,870,897,262	5,258,421,980	107.96%
2039	11.962%	17.925%	29.887%	170,766,179	255,879,984	426,646,163	5,007,795,263	5,719,901,524	114.22%
2040	11.962%	17.925%	29.887%	176,833,306	264,971,107	441,804,413	5,157,198,118	6,230,261,464	120.81%

Section 2
Plan Assets

Section 2.1 - Statement of Net Plan Assets

($'s in 000's)

	As of December 31	
	2015	**2014**
ASSETS		
1. Total investments, at fair value	1,728,747	1,842,308
2. Invested securities lending cash collateral	192,405	257,370
3. Receivables:		
a. Employer contributions	7,943	7,975
b. Employee contributions	5,652	5,669
c. Securities sold, but not received	4,735	2,717
d. Accrued interest and dividends	2,125	2,253
e. Other	1,420	1,668
4. Total assets	1,943,027	2,119,960
LIABILITIES		
1. Payable upon return of securities	192,405	257,370
2. Accounts payable	3,574	3,964
3. Other payables	106	75
4. Securities purchased, but not paid	3,726	2,639
5. Total liabilities	199,811	264,048
Net assets held in trust for Plan benefits	**1,743,216**	**1,855,912**

Section 2.2 - Changes in Net Plan Assets

($'s in 000's)

	As of December 31	
	2015	**2014**
ADDITIONS		
1. Net investment (loss) income	8,230	78,662
2. Employer contributions	82,800	82,268
3. Employee contributions	58,993	58,566
4. Other income	0	0
Total additions	150,023	219,496
DEDUCTIONS		
1. Benefit payments	253,788	246,038
2. Contribution refunds, including interest	6,354	7,137
3. Administrative expenses	2,577	3,123
Total liabilities	262,719	256,298
NET ASSETS HELD IN TRUST FOR PLAN BENEFITS		
1. Beginning of year	1,855,912	1,892,714
2. Net (decrease) increase	(112,696)	(36,802)
End of year	**1,743,216**	**1,855,912**

Section 2.3 - Actuarial Value of Assets

The actuarial value of assets is the market value as of January 1, 2016 of $1,743,216,432.

Section 2.4 - Historical Asset Rate of Return

Year Ending December 31	Actuarial Value Annual Recognized Rate of Return	Fair Value Annual Market Rate of Return
2015	-0.20% [1]	-0.20% [1]
2014	4.80% [1]	4.80% [1]
2013	19.50% [1]	19.50% [1]
2012	11.27% [1]	11.27% [1]
2011	3.13% [1]	3.13% [1]

[1] As reported by the Plan.

Section 2.5 - Forecast of Expected Benefit Payments

Year Ending December 31	Active Members	Inactive Members	Total Payments
2016	9,725,615	252,636,987	262,362,602
2017	22,935,353	246,614,804	269,550,157
2018	35,326,244	240,797,101	276,123,345
2019	47,538,869	234,717,006	282,255,875
2020	59,953,832	228,585,114	288,538,946
2021	72,950,197	222,103,315	295,053,512
2022	85,912,173	215,582,574	301,494,747
2023	98,596,248	208,823,038	307,419,286
2024	111,479,900	201,995,111	313,475,011
2025	125,222,935	195,023,506	320,246,441
2026	139,706,063	187,787,377	327,493,440
2027	154,249,836	180,328,135	334,577,971
2028	168,234,129	172,701,149	340,935,278
2029	181,631,077	165,005,889	346,636,966
2030	194,194,978	157,187,739	351,382,717
2031	205,394,420	149,282,954	354,677,374
2032	215,887,082	141,283,281	357,170,363
2033	225,763,754	133,247,860	359,011,614
2034	234,496,565	125,189,976	359,686,541
2035	241,646,593	117,193,245	358,839,838
2036	247,458,713	109,283,108	356,741,821
2037	252,245,347	101,433,315	353,678,662
2038	255,856,744	93,706,564	349,563,308
2039	258,246,827	86,157,766	344,404,593
2040	259,410,381	78,825,834	338,236,215
2041	259,443,319	71,749,414	331,192,733
2042	258,675,650	64,964,579	323,640,229
2043	257,066,543	58,501,016	315,567,559
2044	254,875,475	52,383,755	307,259,230
2045	252,154,345	46,637,973	298,792,318
2046	249,124,565	41,283,509	290,408,074
2047	245,494,462	36,329,948	281,824,410
2048	241,384,913	31,781,599	273,166,512
2049	236,703,970	27,633,232	264,337,202
2050	231,613,043	23,876,113	255,489,156
2051	225,981,293	20,497,307	246,478,600
2052	219,487,817	17,480,472	236,968,289
2053	212,274,955	14,807,779	227,082,734
2054	204,486,544	12,458,320	216,944,864
2055	196,295,289	10,408,324	206,703,613
2056	187,673,336	8,632,384	196,305,720
2057	178,688,129	7,106,450	185,794,579
2058	169,469,457	5,806,168	175,275,625
2059	160,134,211	4,708,084	164,842,295
2060	150,781,053	3,788,961	154,570,014
2061	141,466,403	3,026,825	144,493,228
2062	132,235,927	2,400,546	134,636,473
2063	123,145,777	1,890,827	125,036,604
2064	114,249,693	1,479,912	115,729,605
2065	105,595,434	1,151,650	106,747,084
2066	97,215,093	891,537	98,106,630
2067	89,139,937	686,915	89,826,852
2068	81,397,255	527,022	81,924,277

Section 2.5 – Forecast of Expected Benefit Payments (continued)

Year Ending December 31	Active Members	Inactive Members	Total Payments
2069	74,008,237	403,007	74,411,244
2070	66,991,570	307,413	67,298,983
2071	60,353,916	234,194	60,588,110
2072	54,094,395	178,399	54,272,794
2073	48,211,764	136,106	48,347,870
2074	42,705,096	104,102	42,809,198
2075	37,574,425	79,967	37,654,392
2076	32,817,211	61,802	32,879,013
2077	28,432,202	48,203	28,480,405
2078	24,420,658	38,054	24,458,712
2079	20,780,170	30,525	20,810,695
2080	17,507,570	24,906	17,532,476
2081	14,593,137	20,659	14,613,796
2082	12,025,674	17,391	12,043,065
2083	9,791,599	14,817	9,806,416
2084	7,875,792	12,716	7,888,508
2085	6,253,722	10,945	6,264,667
2086	4,899,523	9,401	4,908,924
2087	3,785,614	8,015	3,793,629
2088	2,884,303	6,742	2,891,045
2089	2,166,721	5,546	2,172,267
2090	1,604,723	4,429	1,609,152
2091	1,171,607	3,458	1,175,065
2092	843,127	2,642	845,769
2093	598,301	1,962	600,263
2094	418,557	1,419	419,976
2095	288,616	990	289,606
2096	196,205	670	196,875
2097	131,553	434	131,987
2098	87,040	273	87,313
2099	56,809	164	56,973
2100	36,577	98	36,675
2101	23,229	59	23,288
2102	14,554	35	14,589
2103	8,991	21	9,012
2104	5,474	13	5,487
2105	3,286	8	3,294
2106	1,932	5	1,937
2107	1,114	3	1,117
2108	633	2	635
2109	349	1	350
2110	185	1	186
2111	93	0	93
2112	44	0	44
2113	19	0	19

Note: Forecast based on the present members w ithout assumption about replacement members

Section 3
Accounting Information

Section 3.1 - Actuarial Methods and Assumptions for GASB 67/68 Disclosure Purposes

The total pension liability as of December 31, 2015 was determined by rolling forward the total pension liability as of January 1, 2015 to December 31, 2015 using the following actuarial methods and assumptions, applied to all periods included in the measurement. All other assumptions such as retirement rates, termination rates, and disability rates used to determine the total pension liability are set forth in Section 6 - Basis of the Actuarial Valuation.

Valuation Date:	January 1, 2015
Actuarial Cost Method:	Entry Age Normal – Level Percentage of Pay
Amortization Method:	For pension expense; the difference between expected and actual liability experience and changes of assumptions are amortized over the average of the expected remaining service lives of all members. The difference between projected and actual earnings is amortized over a closed period of five years.
Mortality:	Healthy pensioners: RP2000 Blue Collar Table, base year 2000 fully generational based on Scale BB Active members: RP2000 Blue Collar Table, base year 2000 fully generational based on Scale BB.
Experience Study:	The actuarial assumptions used were based on the results of an actuarial experience study for the period January 1, 2008 through December 31, 2013.

Section 3.2 - Schedule of Expected Changes in Net Pension Liability as of December 31, 2015

The GASB Statement No. 67 Change in Net Pension Liability

Schedule of Changes in Net Pension Liability		
Fiscal Year Ending	**Dec. 31, 2015**	**Dec. 31, 2014**
Total Pension Liability		
Service Cost	$ 51,357,649	$ 49,066,078
Interest	264,578,983	259,592,822
Changes of Benefit Terms	-	-
Difference between Expected and Actual Experience	13,082,408	-
Change of Assumptions	-	-
Benefit Payments, including Refund of Member Contributions	(260,141,627)	(246,037,562)
Net Change in Total Pension Liability	68,877,413	62,621,338
Total Pension Liability - Beginning of Year	$ 3,283,153,697	$ 3,220,532,359
Total Pension Liability - End of Year	$ 3,352,031,110	$ 3,283,153,697
Plan Fiduciary Net Position		
Employer Contributions	$ 82,799,918	$ 82,268,465
Member Contributions	58,993,284	58,566,279
Net Investment Income	8,230,003	71,524,132
Benefit Payments, including Refund of Member Contributions	(260,141,627)	(246,037,562)
Administrative Expenses	(2,577,197)	(3,123,365)
Other	-	-
Net Change in Plan Fiduciary Net Position	(112,695,619)	(36,802,051)
Plan Fiduciary Net Position - Beginning of Year	$ 1,855,912,051	$ 1,892,714,102
Plan Fiduciary Net Position - End of Year	$ 1,743,216,432	$ 1,855,912,051

Section 3.3 - Net Pension Liability (Asset)

The GASB Statement No. 67 Net Pension Liability

Net Pension Liability (Asset)		
Valuation Date	**December 31, 2015**	**December 31, 2014**
Total Pension Liability	$ 3,352,031,110	$ 3,283,153,697
Plan Fiduciary Net Position	1,743,216,432	1,855,912,051
Net Pension Liability (Asset)	$ 1,608,814,678	$ 1,427,241,646
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (Asset)	52.00%	56.53%

Section 3.4 - Sensitivity

The GASB Statement No. 67 Sensitivity of Net Pension Liability

Sensitivity of the Net Pension Liability to Changes in the Discount Rate			
December 31, 2015	**1% Decrease**	**Current**	**1% Increase**
Discount Rate	7.25%	8.25%	9.25%
Net Pension Liability (Asset)	$ 1,937,758,642	$ 1,608,814,678	$ 1,327,140,187

The discount rate used to measure the total pension liability was 8.25%. The projection of cash flows used to determine the discount rate assumed that the System's contributions will continue to follow the current funding policy. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

Section 3.5 - Pension Expense

The GASB Statement No. 68 Pension Expense

Pension Expense		
Measurement Year Ending	**Dec. 31, 2015**	**Dec. 31, 2014**
Service Cost	$ 51,357,649	$ 49,066,078
Interest	264,578,983	259,592,822
Difference between Expected and Actual Experience	2,894,338	-
Change of Assumptions	-	-
Member Contributions	(58,993,284)	(58,566,279)
Projected Earnings on Plan Investments	(148,223,407)	(151,680,458)
Difference between Expected and Actual Earnings	44,029,946	16,031,265
Administrative Expense	2,577,197	3,123,365
Other	-	-
Changes of Benefit Terms	-	-
Total Pension Expense	158,221,423	117,566,793

Section 3.6 - Supporting Exhibits

Schedule of Deferred Inflows and Outflows

Amortization of the Difference Between Expected and Actual Experience

Measurement Date	2014	2015	2016	2017	2018	2019	Outflows	Inflows	Total
Amount Established	$ -	$ 13,082,408							
Recognition Period	-	4.52							
Amount Recognized in FY									
2014	$ -							$ -	$ -
2015	-	$ 2,894,338					$ -	2,894,338	2,894,338
2016	-	2,894,338					-	2,894,338	2,894,338
2017	-	2,894,338					-	2,894,338	2,894,338
2018	-	2,894,338					-	2,894,338	2,894,338
2019	-	1,505,056					-	1,505,056	1,505,056
2020	-	-					-	-	-
Deferred Balance at 12/31									
2014	-							$ -	$ -
2015	-	$ 10,188,070					$ -	10,188,070	10,188,070
2016	-	7,293,732					-	7,293,732	7,293,732
2017	-	4,399,394					-	4,399,394	4,399,394
2018	-	1,505,056					-	1,505,056	1,505,056
2019	-	-					-	-	-
2020	-	-					-	-	-

Amortization of Changes in Assumptions

Measurement Date	2014	2015	2016	2017	2018	2019	Outflows	Inflows	Total
Amount Established	$ -	$ -							
Recognition Period									
Amount Recognized in FY									
2014									
2015	-	$ -					$ -	$ -	$ -
2016	-	-					-	-	-
2017	-	-					-	-	-
2018	-	-					-	-	-
2019	-	-					-	-	-
2020	-	-					-	-	-
Deferred Balance at 12/31									
2014									
2015	-	$ -					$ -	$ -	$ -
2016	-	-					-	-	-
2017	-	-					-	-	-
2018	-	-					-	-	-
2019	-	-					-	-	-
2020	-	-					-	-	-

Amortization of the Difference Between Projected and Actual Earnings

Measurement Date	2014	2015	2016	2017	2018	2019	Outflows	Inflows	Total
Amount Established	$ 80,156,326	$ 139,993,404							
Recognition Period	5.00	5.00							
Amount Recognized in FY									
2014	$ 16,031,265						$ 16,031,265	$ -	$ 16,031,265
2015	16,031,265	$ 27,998,681					44,029,946	-	44,029,946
2016	16,031,265	27,998,681					44,029,946	-	44,029,946
2017	16,031,265	27,998,681					44,029,946	-	44,029,946
2018	16,031,265	27,998,681					44,029,946	-	44,029,946
2019	-	27,998,681					27,998,681	-	27,998,681
2020	-	-					-	-	-
Deferred Balance at 12/31									
2014	$ 64,125,061						$ 64,125,061	$ -	$ 64,125,061
2015	48,093,796	$ 111,994,723					160,088,519	-	160,088,519
2016	32,062,531	83,996,042					116,058,573	-	116,058,573
2017	16,031,265	55,997,361					72,028,627	-	72,028,627
2018	-	27,998,681					27,998,681	-	27,998,681
2019	-	-					-	-	-
2020	-	-					-	-	-

Section 3.6 - Supporting Exhibits (continued)

Schedule of County Contributions

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Actuarially determined contribution	$ 178,861	$ 165,500	$ 157,594	$ 155,600	$ 123,158	$ 108,478	$ 118,717	$ 206,670	$ 198,457	$ 194,926
Contributions in relation to the actuarially determined contribution	$ 82,800	$ 82,268	$ 79,518	$ 62,788	$ 60,318	$ 56,216	$ 41,448	$ 1,165,947	$ 25,038	$ 23,931
Contribution deficiency (excess)	$ 96,061	$ 83,232	$ 78,076	$ 92,812	$ 62,840	$ 52,262	$ 77,269	$ (959,277)	$ 173,419	$ 170,995
Covered-employee payroll	$ 573,548	$ 564,827	$ 550,616	$ 548,515	$ 541,354	$ 528,288	$ 567,173	$ 594,139	$ 571,314	$ 562,567
Contributions as a percentage of covered-employee payroll	31.19%	29.30%	28.62%	28.37%	22.75%	20.53%	20.93%	34.78%	34.74%	34.65%

Notes to Schedule:

Valuation Date: Actuarially determined contribution rates are calculated as of January 1, one year prior to the end of the fiscal year in which contributions are reported

Methods and assumptions used to determine the 2015 contribution rates:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level, open
Remaining amortization period	20 years with 2% escalator
Asset valuation method	Market
Inflation	3.25%
Salary increases	5 year select and ultimate at 4.00%, including inflation
Investment rate of return	8.25%, net of pension plan investment expenses, including inflation
Retirement Age	In the 2014 actuarial valuation, expected retirement ages of plan members were adjusted to more closely reflect actual experience
Mortality	RP2000 Blue Collar Table, base year 2000 fully generation using scale BB.

Other information:

Beginning in 2015, the Actuarial cost method was changed from Projected Unit Credit to Entry Age Normal; the Amortization period was changed to 20 years with a 2% escalator from 30 years with no escalator.

The demographic assumptions were updated in 2014 to bring the assumptions more in line with actual plan experience

Section 3.6 - Supporting Exhibits (continued)

Projection of Fiduciary Net Position

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expense (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
12/31/2015	1,743,216,432	139,802,373	262,373,996	2,600,000	138,754,341	1,756,799,150
12/31/2016	1,756,799,150	173,261,634	269,560,753	2,652,000	140,935,079	1,798,783,110
12/31/2017	1,798,783,110	175,430,717	276,133,417	2,705,040	144,218,562	1,839,593,932
12/31/2018	1,839,593,932	178,246,217	282,265,905	2,759,141	147,449,153	1,880,264,257
12/31/2019	1,880,264,257	182,096,530	288,549,180	2,814,324	150,703,853	1,921,701,137
12/31/2020	1,921,701,137	185,882,072	295,064,014	2,870,610	154,009,768	1,963,658,353
12/31/2021	1,963,658,353	189,655,619	301,504,911	2,928,022	157,361,069	2,006,242,108
12/31/2022	2,006,242,108	193,789,137	307,429,938	2,986,583	160,799,425	2,050,414,149
12/31/2023	2,050,414,149	197,958,672	313,486,461	3,046,314	164,364,908	2,096,204,953
12/31/2024	2,096,204,953	201,962,669	320,258,341	3,107,241	168,028,273	2,142,830,314
12/31/2025	2,142,830,314	206,777,993	327,505,569	3,169,385	171,774,024	2,190,707,377
12/31/2026	2,190,707,377	211,800,728	334,589,947	3,232,773	175,637,961	2,240,323,346
12/31/2027	2,240,323,346	217,368,239	340,947,271	3,297,429	179,696,731	2,293,143,616
12/31/2028	2,293,143,616	223,439,354	346,649,147	3,363,377	184,066,666	2,350,637,112
12/31/2029	2,350,637,112	229,883,374	351,394,710	3,430,645	188,875,833	2,414,570,964
12/31/2030	2,414,570,964	236,908,769	354,688,932	3,499,258	194,298,462	2,487,590,006
12/31/2031	2,487,590,006	244,466,914	357,182,232	3,569,243	200,524,489	2,571,829,934
12/31/2032	2,571,829,934	252,124,231	359,023,324	3,640,628	207,706,561	2,668,996,774
12/31/2033	2,668,996,774	260,248,566	359,697,871	3,713,440	216,021,095	2,781,855,124
12/31/2034	2,781,855,124	268,718,092	358,850,558	3,787,709	225,705,611	2,913,640,560
12/31/2035	2,913,640,560	277,854,817	356,752,344	3,863,463	237,029,104	3,067,908,674
12/31/2036	3,067,908,674	287,563,088	353,688,849	3,940,732	250,269,495	3,248,111,675
12/31/2037	3,248,111,675	297,224,208	349,573,205	4,019,547	265,690,086	3,457,433,217
12/31/2038	3,457,433,217	307,257,969	344,413,900	4,099,938	283,570,158	3,699,747,506
12/31/2039	3,699,747,506	317,936,940	338,244,913	4,181,937	304,238,978	3,979,496,574
12/31/2040	3,979,496,574	329,315,334	331,200,997	4,265,576	328,059,757	4,301,405,093
12/31/2041	4,301,405,093	341,156,811	323,648,243	4,350,887	355,397,920	4,669,960,694
12/31/2042	4,669,960,694	353,323,361	315,575,214	4,437,905	386,618,577	5,089,889,513

Section 3.6 - Supporting Exhibits (continued)

Projection of Fiduciary Net Position (continued)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expense (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
12/31/2043	5,089,889,513	365,922,325	307,266,648	4,526,663	422,104,462	5,566,122,989
12/31/2044	5,566,122,989	378,599,314	298,799,756	4,617,196	462,244,965	6,103,550,316
12/31/2045	6,103,550,316	391,567,700	290,415,307	4,709,540	507,442,336	6,707,435,505
12/31/2046	6,707,435,505	404,903,869	281,831,476	4,803,731	558,145,339	7,383,849,506
12/31/2047	7,383,849,506	417,977,287	273,173,539	4,899,806	614,824,265	8,138,577,714
12/31/2048	8,138,577,714	431,428,371	264,343,981	4,997,802	677,986,244	8,978,650,546
12/31/2049	8,978,650,546	445,470,948	255,495,891	5,097,758	748,213,740	9,911,741,585
12/31/2050	9,911,741,585	460,028,954	246,485,122	5,199,713	826,142,575	10,946,228,279
12/31/2051	10,946,228,279	475,083,361	236,974,487	5,303,707	912,476,752	12,091,510,198
12/31/2052	12,091,510,198	490,681,850	227,088,622	5,409,781	1,007,988,620	13,357,682,265
12/31/2053	13,357,682,265	506,821,029	216,950,502	5,517,977	1,113,505,900	14,755,540,716
12/31/2054	14,755,540,716	523,208,258	206,709,083	5,628,336	1,229,901,426	16,296,312,980
12/31/2055	16,296,312,980	540,007,871	196,310,868	5,740,903	1,358,110,265	17,992,379,345
12/31/2056	17,992,379,345	557,298,695	185,799,542	5,855,721	1,499,155,211	19,857,177,988
12/31/2057	19,857,177,988	574,587,729	175,280,415	5,972,836	1,654,120,720	21,904,633,187
12/31/2058	21,904,633,187	592,467,110	164,846,956	6,092,292	1,824,175,706	24,150,336,755
12/31/2059	24,150,336,755	611,016,606	154,574,547	6,214,138	2,010,606,669	26,611,171,345
12/31/2060	26,611,171,345	630,259,754	144,497,636	6,338,421	2,214,805,984	29,305,401,026
12/31/2061	29,305,401,026	650,165,014	134,640,760	6,465,189	2,438,278,168	32,252,738,258
12/31/2062	32,252,738,258	670,703,351	125,040,769	6,594,493	2,682,646,832	35,474,453,179
12/31/2063	35,474,453,179	691,906,276	115,733,644	6,726,383	2,949,666,581	38,993,566,009
12/31/2064	38,993,566,009	713,800,009	106,750,986	6,860,911	3,241,236,363	42,834,990,484
12/31/2065	42,834,990,484	736,303,286	98,110,390	6,998,129	3,559,407,562	47,025,592,814
12/31/2066	47,025,592,814	759,575,743	89,830,461	7,138,091	3,906,402,340	51,594,602,345
12/31/2067	51,594,602,345	783,629,972	81,927,724	7,280,853	4,284,631,958	56,573,655,697
12/31/2068	56,573,655,697	808,447,317	74,414,517	7,426,470	4,696,705,179	61,996,967,206
12/31/2069	61,996,967,206	834,171,618	67,302,066	7,575,000	5,145,450,050	67,901,711,808
12/31/2070	67,901,711,808	860,823,185	60,590,989	7,726,500	5,633,934,292	74,328,151,796
12/31/2071	74,328,151,796	888,472,818	54,275,456	7,881,030	6,165,482,643	81,319,950,771
12/31/2072	81,319,950,771	917,071,710	48,350,305	8,038,650	6,743,695,583	88,924,329,108
12/31/2073	88,924,329,108	946,606,026	42,811,398	8,199,423	7,372,468,396	97,192,392,709
12/31/2074	97,192,392,709	977,145,113	37,656,355	8,363,412	8,056,020,220	106,179,538,275
12/31/2075	106,179,538,275	1,008,550,539	32,880,739	8,530,680	8,798,915,859	115,945,593,254

Section 3.6 - Supporting Exhibits (continued)

Actuarial Present Value of Projected Benefit Payments

Year	Projected Beginning Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	8.25% Present Value of Funded Benefit Payments	3.20% Present Value of Unfunded Benefit Payments	8.25% Present Value of Benefit Payments Using Single Discount Rate
12/31/2015	1,743,216,432	262,373,996	262,373,996	-	242,377,825	-	242,377,825
12/31/2016	1,756,799,150	269,560,753	269,560,753	-	230,038,671	-	230,038,671
12/31/2017	1,798,783,110	276,133,417	276,133,417	-	217,688,382	-	217,688,382
12/31/2018	1,839,593,932	282,265,905	282,265,905	-	205,563,878	-	205,563,878
12/31/2019	1,880,264,257	288,549,180	288,549,180	-	194,124,486	-	194,124,486
12/31/2020	1,921,701,137	295,064,014	295,064,014	-	183,378,669	-	183,378,669
12/31/2021	1,963,658,353	301,504,911	301,504,911	-	173,100,792	-	173,100,792
12/31/2022	2,006,242,108	307,429,938	307,429,938	-	163,050,794	-	163,050,794
12/31/2023	2,050,414,149	313,486,461	313,486,461	-	153,591,663	-	153,591,663
12/31/2024	2,096,204,953	320,258,341	320,258,341	-	144,951,061	-	144,951,061
12/31/2025	2,142,830,314	327,505,569	327,505,569	-	136,934,139	-	136,934,139
12/31/2026	2,190,707,377	334,589,947	334,589,947	-	129,234,369	-	129,234,369
12/31/2027	2,240,323,346	340,947,271	340,947,271	-	121,653,457	-	121,653,457
12/31/2028	2,293,143,616	346,649,147	346,649,147	-	114,261,380	-	114,261,380
12/31/2029	2,350,637,112	351,394,710	351,394,710	-	106,998,242	-	106,998,242
12/31/2030	2,414,570,964	354,688,932	354,688,932	-	99,770,272	-	99,770,272
12/31/2031	2,487,590,006	357,182,232	357,182,232	-	92,814,421	-	92,814,421
12/31/2032	2,571,829,934	359,023,324	359,023,324	-	86,182,755	-	86,182,755
12/31/2033	2,668,996,774	359,697,871	359,697,871	-	79,764,137	-	79,764,137
12/31/2034	2,781,855,124	358,850,558	358,850,558	-	73,511,541	-	73,511,541
12/31/2035	2,913,640,560	356,752,344	356,752,344	-	67,511,978	-	67,511,978
12/31/2036	3,067,908,674	353,688,849	353,688,849	-	61,831,169	-	61,831,169
12/31/2037	3,248,111,675	349,573,205	349,573,205	-	56,454,208	-	56,454,208
12/31/2038	3,457,433,217	344,413,900	344,413,900	-	51,381,994	-	51,381,994
12/31/2039	3,699,747,506	338,244,913	338,244,913	-	46,615,854	-	46,615,854
12/31/2040	3,979,496,574	331,200,997	331,200,997	-	42,166,359	-	42,166,359
12/31/2041	4,301,405,093	323,648,243	323,648,243	-	38,064,473	-	38,064,473
12/31/2042	4,669,960,694	315,575,214	315,575,214	-	34,286,373	-	34,286,373

Section 3.6 - Supporting Exhibits (continued)

Actuarial Present Value of Projected Benefit Payments (continued)

Year	Projected Beginning Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	8.25% Present Value of Funded Benefit Payments	3.20% Present Value of Unfunded Benefit Payments	8.25% Present Value of Benefit Payments Using Single Discount Rate
12/31/2043	5,089,889,513	307,266,648	307,266,648	-	30,839,418	-	30,839,418
12/31/2044	5,566,122,989	298,799,756	298,799,756	-	27,704,039	-	27,704,039
12/31/2045	6,103,550,316	290,415,307	290,415,307	-	24,874,505	-	24,874,505
12/31/2046	6,707,435,505	281,831,476	281,831,476	-	22,299,572	-	22,299,572
12/31/2047	7,383,849,506	273,173,539	273,173,539	-	19,967,227	-	19,967,227
12/31/2048	8,138,577,714	264,343,981	264,343,981	-	17,849,278	-	17,849,278
12/31/2049	8,978,650,546	255,495,891	255,495,891	-	15,937,025	-	15,937,025
12/31/2050	9,911,741,585	246,485,122	246,485,122	-	14,203,198	-	14,203,198
12/31/2051	10,946,228,279	236,974,487	236,974,487	-	12,614,473	-	12,614,473
12/31/2052	12,091,510,198	227,088,622	227,088,622	-	11,166,961	-	11,166,961
12/31/2053	13,357,682,265	216,950,502	216,950,502	-	9,855,357	-	9,855,357
12/31/2054	14,755,540,716	206,709,083	206,709,083	-	8,674,478	-	8,674,478
12/31/2055	16,296,312,980	196,310,868	196,310,868	-	7,610,273	-	7,610,273
12/31/2056	17,992,379,345	185,799,542	185,799,542	-	6,653,844	-	6,653,844
12/31/2057	19,857,177,988	175,280,415	175,280,415	-	5,798,738	-	5,798,738
12/31/2058	21,904,633,187	164,846,956	164,846,956	-	5,037,941	-	5,037,941
12/31/2059	24,150,336,755	154,574,547	154,574,547	-	4,363,975	-	4,363,975
12/31/2060	26,611,171,345	144,497,636	144,497,636	-	3,768,575	-	3,768,575
12/31/2061	29,305,401,026	134,640,760	134,640,760	-	3,243,882	-	3,243,882
12/31/2062	32,252,738,258	125,040,769	125,040,769	-	2,782,994	-	2,782,994
12/31/2063	35,474,453,179	115,733,644	115,733,644	-	2,379,536	-	2,379,536
12/31/2064	38,993,566,009	106,750,986	106,750,986	-	2,027,574	-	2,027,574
12/31/2065	42,834,990,484	98,110,390	98,110,390	-	1,721,440	-	1,721,440
12/31/2066	47,025,592,814	89,830,461	89,830,461	-	1,456,038	-	1,456,038
12/31/2067	51,594,602,345	81,927,724	81,927,724	-	1,226,738	-	1,226,738
12/31/2068	56,573,655,697	74,414,517	74,414,517	-	1,029,321	-	1,029,321
12/31/2069	61,996,967,206	67,302,066	67,302,066	-	859,990	-	859,990
12/31/2070	67,901,711,808	60,590,989	60,590,989	-	715,229	-	715,229
12/31/2071	74,328,151,796	54,275,456	54,275,456	-	591,852	-	591,852
12/31/2072	81,319,950,771	48,350,305	48,350,305	-	487,058	-	487,058
12/31/2073	88,924,329,108	42,811,398	42,811,398	-	398,394	-	398,394
12/31/2074	97,192,392,709	37,656,355	37,656,355	-	323,716	-	323,716
12/31/2075	106,179,538,275	32,880,739	32,880,739	-	261,120	-	261,120

Section 4
Actuarial Funding Projections

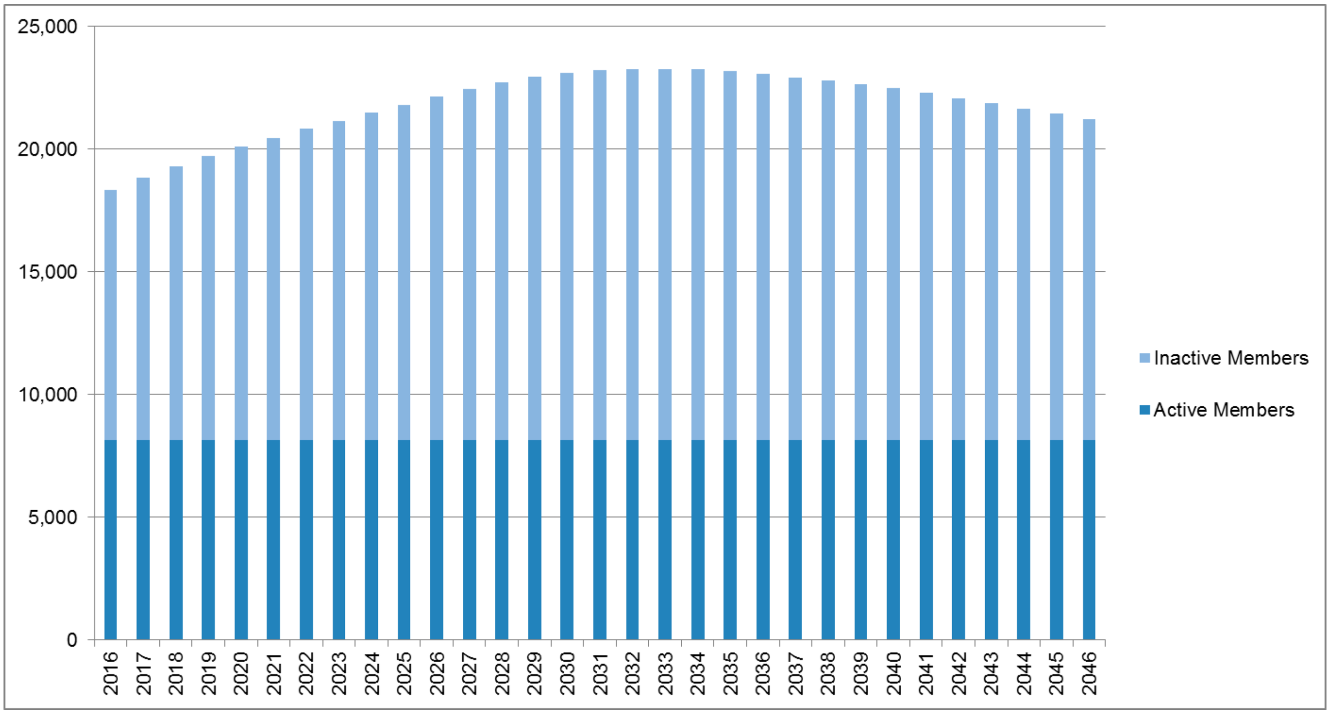
Section 4.1 - Projection Assumptions and Methods

Key Assumptions

- 8.25% investment return on the Fair Value of Assets in all future years.
- The Actuarial Value of Assets is the Market Value of Assets.
- Actuarial assumptions and methods as described in Section 6. All future demographic experience is assumed to be exactly realized.
- The actuarially calculated contribution is contributed each year.
- Projections assume a 0% increase in the total active member population. All new future members are expected to enter the plan after 12 months of continuous service and contribution rates are determined as a percent of total payroll.

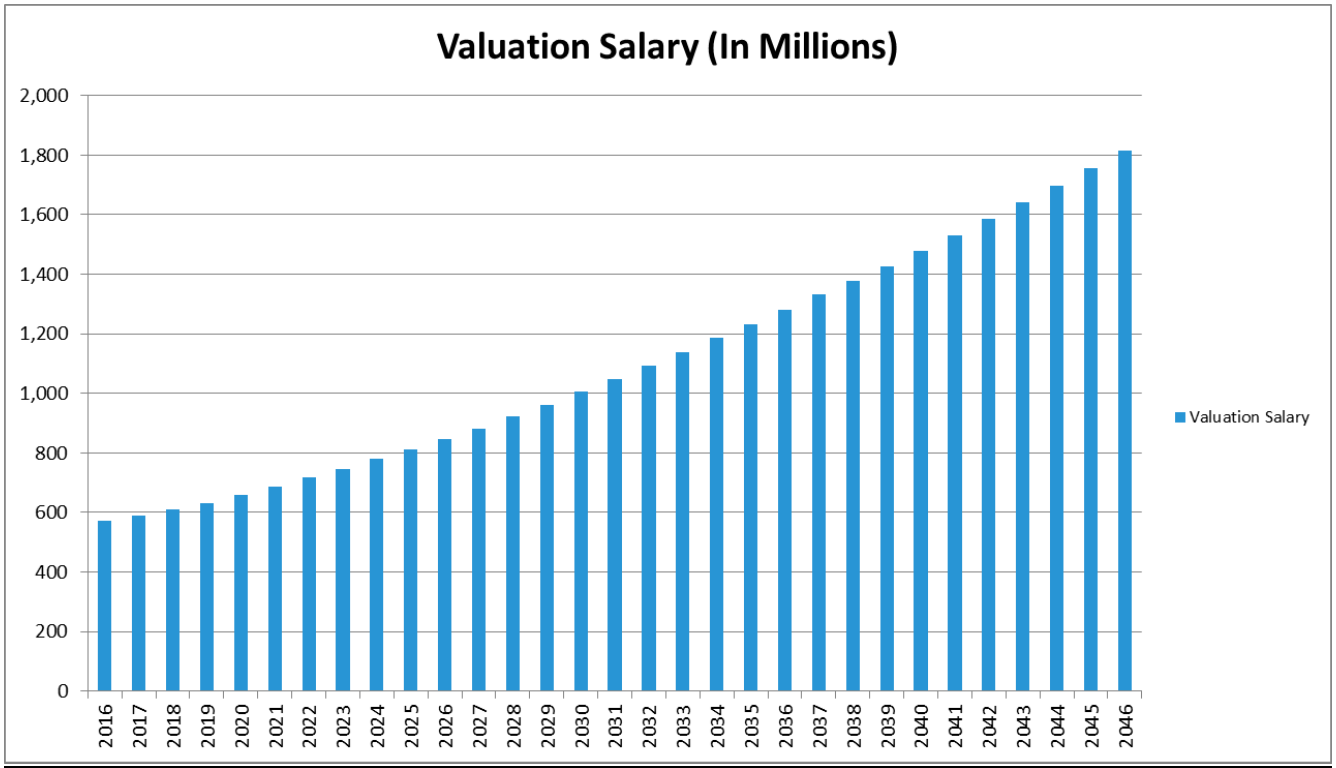
Section 4.2 - Membership Projection

Projected Member Count

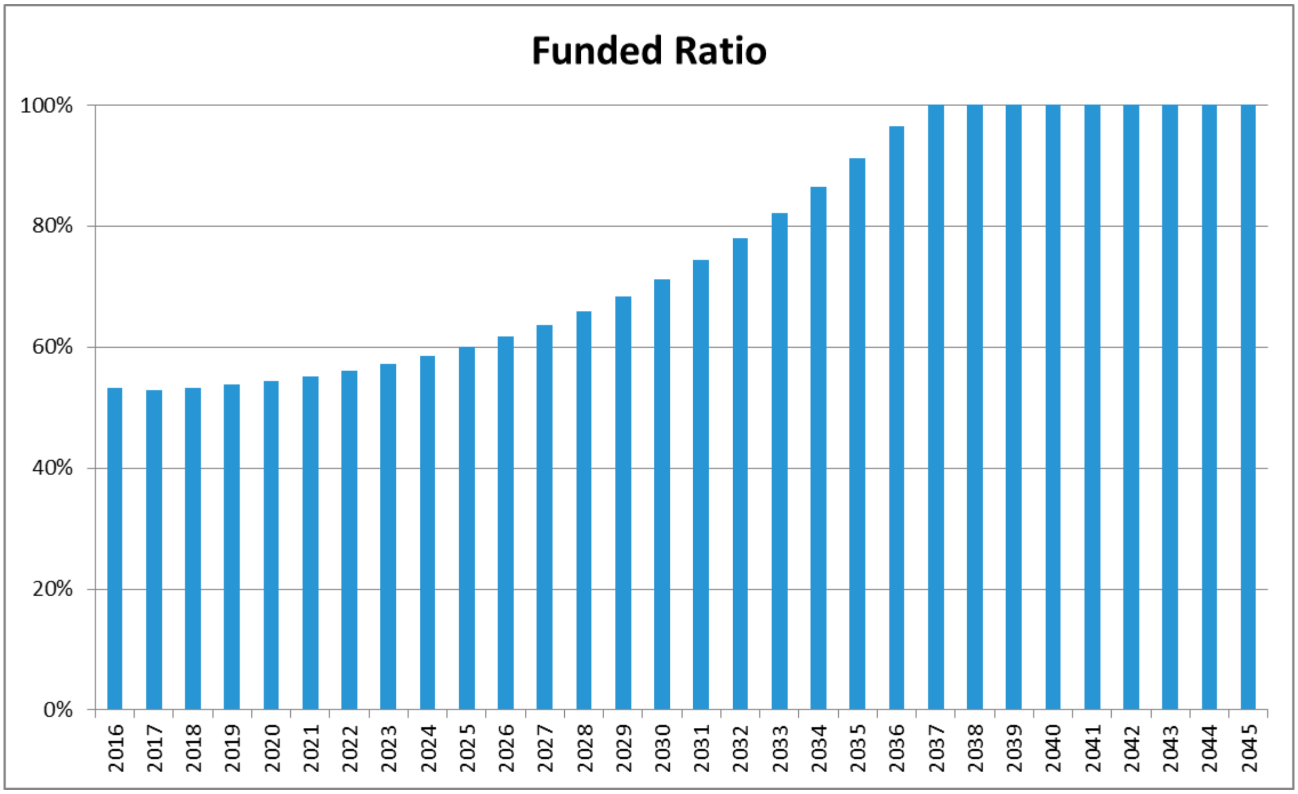


Section 4.2 – Membership Projection (continued)

Projected Current and New Member Payroll



Section 4.3 - Projection of Funded Status



Section 5
Member Data

Section 5.1 - Summary of Membership Data as of January 1, 2016

($ in 000's)

Active Employees

Item	Male	Female	Total
Number of Members [1]	5,757	2,447	8,204
Annual Salaries [2]	$421,516	$152,032	$573,548
Average Age [1]	48.73	47.55	48.38
Average Service [1]	14.11	12.61	13.66

Terminated Vested Employees

Item	Male	Female	Total
Number of Members	68	30	98
Annual Accrued Benefit	$1,843	$777	$2,620
Average Age	56.59	56.83	56.66

Retirees and Beneficiaries

Item	Male	Female	Total
Number of Members	6,629	2,240	8,869
Annual Retirement Benefit	$189,947	$44,693	$234,641
Average Age	70.76	71.39	70.92

Disability Allowances

Item	Male	Female	Total
Number of Members	655	504	1,159
Annual Disability Benefit	$11,324	$7,390	$18,714
Average Age	63.51	62.02	62.86

[1] Active statistics include all participants who are actively employed which includes 19 participants who are on leave and 49 participants who have opted out of participating in the Plan and are only entitled to a return of their contributions.

[2] The salary information for the 49 participants who have opted out of participating in the Plan is not included.

Section 5.2 - Age and Service Distribution of Active Members as of January 1, 2016

Number of Participants

	Years of Service									
Age	**Under 5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**Over 40**	**Total**
Under 25	21	-	-	-	-	-	-	-	-	21
25-29	189	27	1	-	-	-	-	-	-	217
30-34	292	202	76	3	-	-	-	-	-	573
35-39	276	206	266	111	5	-	-	-	-	864
40-44	256	211	288	312	93	5	-	-	-	1,165
45-49	268	185	329	380	305	113	2	-	-	1,582
50-54	212	165	262	381	321	225	40	-	-	1,606
55-59	153	126	208	285	241	202	73	23	4	1,315
60-64	68	63	98	155	129	95	27	21	13	669
Over 65	15	24	36	37	29	22	4	12	13	192
Total	1,750	1,209	1,564	1,664	1,123	662	146	56	30	8,204

Section 5.3 - Retirement Retiree and Beneficiary Data as of January 1, 2016

Number and Average Annual Allowance

Age Last Birthday	Number	Annual Allowance	Average Allowance
Retired Annuitants			
Under 50	34	$1,279,542	$37,634
50-54	193	$7,803,922	$40,435
55-59	533	$20,123,883	$37,756
60-64	1,242	$42,218,900	$33,993
65-69	2,109	$61,820,232	$29,313
70-74	1,800	$47,951,787	$26,640
75-79	1,082	$25,357,651	$23,436
Over 79	998	$18,108,113	$18,144
Total	7,991	$224,664,030	$28,115
Surviving Spouses			
Under 50	6	$72,874	$12,146
50-54	16	$231,475	$14,467
55-59	35	$436,732	$12,478
60-64	57	$841,312	$14,760
65-69	128	$2,009,605	$15,700
70-74	159	$1,951,755	$12,275
75-79	127	$1,372,682	$10,809
Over 79	342	$2,954,909	$8,640
Total	870	$9,871,344	$11,346
Disability Allowances			
Under 50	136	$2,137,845	$15,719
50-54	135	$2,638,728	$19,546
55-59	173	$3,237,279	$18,713
60-64	196	$3,486,099	$17,786
65-69	234	$3,460,296	$14,788
70-74	146	$2,057,282	$14,091
75-79	93	$1,132,226	$12,174
Over 79	46	$564,345	$12,268
Total	1,159	$18,714,100	$16,147

Section 5.4 - Inactive Vested Employee Data as of January 1, 2016

Number and Average Accrued Benefit

Age Last Birthday	Number	Annual Accrued Benefit	Average Accrued Benefit
Terminated Vested			
Under 35	-	-	-
35-39	-	-	-
40-44	3	$54,499	$18,166
45-49	8	$175,397	$21,925
50-54	18	$598,760	$33,264
55-59	42	$1,245,628	$29,658
60-64	27	$545,909	$20,219
65-69	-	-	-
Over 70	-	-	-
Total	98	$2,620,193	$26,737

Section 6
Basis of the Actuarial Valuation

Section 6.1 - Summary of Plan and Contribution Provisions

Eligibility—All full-time permanent employees of the Chicago Transit Authority are included in the Plan after completing 12 months of continuous service unless specifically excluded by the terms of a collective bargaining agreement. Exempt non-vested employees may opt out of the plan. Chicago Transit Authority Board members are not included.

Contributions—The Chicago Transit Authority will contribute a percent of compensation for all participating employees and each participating employee will contribute a percent of his compensation to the Plan:

Annual Contributions to the Plan (Percentage of Compensation)	
Authority	Employees
14.250%	10.125%

For years through 2040, the amount paid by the Authority with respect to debt service on bonds issued for contribution to the Retirement Plan shall be treated as a credit against the amount of required contribution up to an amount not to exceed six percent of compensation paid by the Authority in the following year. The amount paid in debt service is always greater than six percent of projected compensation.

In order to be eligible for the credit, the debt service payment may not be paid with the proceeds of bonds or notes issued by the CTA for any calendar year after 2008. Buck has confirmed that the debt service payment for the year triggering the credit was not paid with the proceeds of bonds or notes issued by the CTA for any calendar year after 2008.

Minimum contributions as set forth elsewhere in this report may also apply.

Normal Retirement—The normal retirement age is 65. For employees retiring on or after January 1, 2001 the annual normal retirement pension is equal to the sum of (a) and (b) below, but not greater than 70.0% of the employee's average annual compensation:

(a) 1% of the employee's past service compensation as of May 31, 1948, for each full year of continuous service prior to June 1, 1949, plus

(b) 2.15% of average annual compensation for each year (and fraction of completed calendar months) of continuous service after June 1, 1949.

Average annual compensation is equal to the highest average compensation over any four calendar years out of the final 10 calendar years prior to normal retirement (or actual retirement, if later). If an employee has at least 20 years of service, his minimum annual pension is $2,220.

Section 6.1 – Summary of Plan and Contribution Provisions (continued)

Early Retirement:

Employees hired before January 18, 2008: An employee may retire early after attaining age 55 and completing at least three years of continuous service, or after completion of 25 years of continuous service. The early retirement pension is equal to the accrued normal retirement pension based on compensation and service at early retirement, reduced by 5% for each year or fraction younger than age 65. The 5% per year reduction is not applied if the employee has at least 25 years of service. Employees hired after September 5, 2001 may retire early with unreduced benefits after attaining age 55 and completing at least 25 years of service.

Employees hired on and after January 18, 2008: An employee may retire with unreduced benefits upon attainment of age 64 with 25 years of service. An employee may retire with a benefit reduced as described above upon attainment of age 55 with 10 years of continuous service.

Disability Allowance:

An employee is eligible for a disability allowance if he becomes disabled after completing 10 years of service, or if his disability after completing five years of service is covered under the Workmen's Compensation Act. An employee is disabled if he either (a) is totally and permanently disabled or (b) is unable to return to work at their same job after receiving 26 weeks of benefits under the Authority's Group Accident and Sickness Insurance or from the Authority under the Workmen's Compensation Act. The disability allowance is equal to the normal retirement pension based on compensation and service at disability subject to a minimum annual pension of $4,800.

Death Benefits:

If an employee dies prior to retirement or disability and after one year of service, his contributions, accumulated with interest, are paid to his beneficiary. "Interest" is equal to the rate of interest earned by the Fund (to a maximum of 2%) prior to January 1, 1971, 1/2 of the rate of interest earned by the Fund (to a maximum of 3%) between January 1, 1971, and January 1, 1980, and 3% after December 31, 1979. If an employee dies after 90 days of service but prior to one year of service, his contributions, without interest, are paid to his beneficiary; and if he dies prior to 90 days of service, his contributions are not refunded.

If an employee is eligible for early retirement, he is automatically covered by a surviving spouse benefit, payable upon his death prior to retirement, in lieu of a return of his contributions. The spouse benefit is equal to 1/2 of the pension which would have been payable to the employee if he had retired on the first day of the month of his death and had elected an optional form of pension providing 1/2 of his reduced pension to his surviving spouse. Employees may elect not to be covered by this option and provide for the payment of their contributions with interest to their beneficiary in lieu thereof.

If an employee dies after his retirement pension has commenced, his beneficiary receives the excess, if any, of his contributions, accumulated with interest to his retirement date, over the sum of the pension payments made to him. However, if his surviving spouse is entitled to a pension after his death, such excess will not be paid to his beneficiary. At the death of the surviving spouse, the excess, if any, of the contributions accumulated with interest to his retirement date over the sum of the pension payments made to him and his surviving spouse will be paid.

Section 6.1 – Summary of Plan and Contribution Provisions (continued)

A retired employee's beneficiary will receive a death benefit equal to the amount from the following schedule according to the employee's age and service at retirement:

Age	Service	Age + Service	Death Benefit
65	20	N/A	$8,000
60	N/A	90	$8,000
N/A	25	N/A	$8,000
N/A	N/A	94	$8,000
60-64	20	N/A	$6,000
55-59	20	N/A	$5,000
All Others			$2,000

Termination Benefits:

If an employee terminates his employment prior to eligibility for retirement or disability and after completing one year of service, he receives a refund of his contributions plus interest (3% after December 31, 1979). If he terminates after 90 days but prior to one year, he receives his contributions without interest, and if he terminates less than 90 days after hire, he receives no refund. If an employee has completed 10 years of continuous service and elects to leave his contributions in the Plan, he remains entitled to his normal retirement pension beginning at age 65 but based on his compensation and service at termination.

Optional Benefit Forms:

In lieu of a normal pension, an employee may elect an optional annuity of equivalent actuarial value providing payments of 1/2, 2/3, or all of his reduced pension to his spouse after his death (Option A). Alternatively, an employee may elect an optional annuity of equivalent actuarial value providing payments of 1/2, 2/3, or all of his reduced pension to his spouse after his death with the further provision that his benefit will be restored to the full amount to him after the death of his spouse (Option B).

Retired Employees:

Benefits for retired employees have been valued according to benefits in effect at time of retirement as modified by subsequent amendments. Such benefits are kept on records maintained by the Authority.

Voluntary Early Retirement Incentive Program:

During 1997, the Plan was amended to offer enhanced retirement benefits to all employees who have at least 25 years of continuous service on or before December 31, 1999, and who have not retired prior to January 1, 1997. Those eligible on or before June 30, 1997 must elect to participate during the period March 1, 1997, to June 30, 1997. Employees eligible during the period July 1, 1997, to December 31, 1999, must elect to participate between July 1, 1997, and February 28, 1998. All eligible employees who elect to participate must retire no later than December 31, 1999. The benefit is determined based on a formula multiplier of 2.40% of average annual compensation with the benefit cap at 70.0% of such average annual compensation.

Section 6.1 – Summary of Plan and Contribution Provisions (continued)

Ad hoc increases in retiree benefits:

As part of the Arbitration Award ruling of November 13, 2003, the following ad hoc increases were given to retirees in payment status as of January 1, 2000:

(a) $75 per month for members retired before January 1,1980

(b) $50 per month for members who retired on or after January 1, 1980, but before January 1, 1991

(c) $40 per month for members who retired on or after January 1, 1991, but before January 1, 2000

As part of an Arbitration Award ruling of June 26, 2007, another ad hoc adjustment was made for participants.

Contribution Requirements Under P.A. 95-0708

Beginning January 18, 2008, the Authority shall make contributions to the Retirement Plan in an amount equal to 12 percent of compensation and participating employees shall make contributions in an amount equal to six percent of compensation. For years through 2040, the amount paid by the Authority with respect to debt service on bonds issued for contribution to the Retirement Plan shall be treated as a credit against the amount of required contribution, up to an amount not to exceed six percent of compensation paid by the Authority in the following year.

If the funded ratio is projected to decline below 60 percent in any year before 2040 using reasonable actuarial assumptions and the projected unit credit funding method, the contribution shall be increased so that the funded ratio is not projected to drop below 60 percent. If the funded ratio actually drops below 60 percent in any year before 2040, the contribution shall be increased so that the funded ratio is projected to reach 60 percent within 10 years. The increase in contributions shall be effective as of the January 1 following the determination, or 30 days following the determination, whichever is later. One-third of the increase in contributions shall be paid by participating employees and two-thirds by the Authority.

Beginning in 2040, the minimum contribution for each fiscal year shall be predetermined each year as the amount required to bring the total assets of the Retirement Plan up to 90 percent of the total actuarial liabilities by the end of 2059, using the projected unit credit funding actuarial cost method and reasonable actuarial assumptions. Participating employees shall be responsible for one-third of the required contribution and the Authority shall be responsible for two-thirds of the required contribution.

Beginning in 2060, the minimum contribution for each year shall be an amount needed to maintain the total assets of the Retirement Plan at 90 percent of the total actuarial liabilities of the Plan and the contribution shall be funded one-third by participating employees and two-thirds by the Authority.

Section 6.2 - Description of Actuarial Methods and Valuation Procedures

A. Actuarial Cost Method

Liabilities and contributions shown in this report are computed using the **Projected Unit Credit Cost Method** of funding.

Sometimes called a "funding method," this is a particular technique used by actuaries for establishing the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily the annual contribution to the plan is comprised of (1) the normal cost and (2) an amortization payment on the unfunded actuarial accrued liability.

Under the Projected Unit Credit Cost Method, the **Normal Cost** for the given year is computed as the present value of the unit of benefit attributable to that year for each active Member. The Normal Cost for the Plan is determined by summing individual results for each active Member.

The **Actuarial Accrued Liability** under this method at any point in time is equal to the present value of benefits accrued to the measurement date using a service pro-rate method.

The **Unfunded Actuarial Accrued Liability** is the excess of the Actuarial Accrued Liability over the Actuarial Value of Plan Assets actually on hand on the valuation date. The Unfunded Actuarial Accrued Liability is amortized as a level dollar amount over a fixed period of 30 years.

Under this method experience gains or losses, i.e. decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the Unfunded Actuarial Accrued Liability.

Section 6.2 – Description of Actuarial Methods and Valuation Procedures (continued)

B. Asset Valuation Method

The actuarial value of assets equals the market value of assets.

C. Valuation Procedures

No actuarial liability is included for members who terminated non-vested prior to the valuation date, except those due a refund of contributions.

The compensation amounts used in the projection of benefits and liabilities were January 1, 2016 rates of pay provided by staff of the Retirement Board of Trustees.

No termination or retirement benefits were projected to be greater than the dollar limitation required by the Internal Revenue Code Section 415 for governmental plans.

Annual increases in salary were limited to the dollar amount defined under Internal Revenue Code Section 401(a)(17) for affected members.

Section 6.3 - Summary of Actuarial Assumptions and Changes in Assumptions

Rate of Covered Pay: The rate of covered pay for participants has been estimated at $573,548,196 for 2016. The following adjustments were made to the actual covered earnings for 2015 supplied by the Authority:

(a) No earnings or a fractional year of earnings were submitted for employees with a work status date in 2015 who were hired during 2014. We have annualized the 2015 earnings and assumed minimum earnings of $50,750 per year for this group.

(b) For employees on layoff, extended leave of absence, or inactive status, we have assumed minimum earnings of $50,750 per year.

(c) For all employees, 2016 salary was assumed to increase 1.50% from 2015.

Retiree Benefits: The benefit amounts received for retirees were compared to information received from the Authority for the prior valuation.

Earnings on Plan Assets: 8.25% per annum, compounded annually.

Salary Inflation: 3.25%

Compensation Increases: According to the following table, compounded annually, assumed end of year (includes inflation):

Years of Service	Rate
1	9.00%
2	11.00%
3	16.00%
4	5.00%
>=5	4.00%

Mortality:

(a) *Active Members* — RP2000 Blue Collar Table, base year 2000 fully generational based on Scale BB.

(b) *Retirees & Survivors* — RP2000 Blue Collar Table, base year 2000 fully generational based on Scale BB.

(c) *Disabled Employees* — RP2000 Disabled Table, base year 2000 fully generational based on Scale BB.

Section 6.3 – Summary of Actuarial Assumptions and Changes in Assumptions (continued)

Withdrawals from Service: According to the following table shown for illustrative ages:

Age	Rates of Termination for Reasons Other than Death or Disability
25	7.00%
30	5.10%
35	4.10%
40	2.90%
45	2.40%
50	1.90%
55 & Older	0.00%

If service is 25 or greater, no withdrawal is assumed.

Recovery from disability without returning to work: Disabled members are assumed to recover according to the following table as shown for illustrative ages:

Sample Attained Ages	Disabled Recovery [1]	
	Men	Women
30	0.412%	0.461%
35	0.406%	0.447%
40	0.382%	0.422%
45	0.326%	0.393%
50	0.216%	0.343%
55	0.013%	0.248%
60	0.000%	0.012%
65	0.000%	0.000%
70	0.000%	0.000%
75	0.000%	0.000%
80	0.000%	0.000%

1. Disability recovery after verification of the ability to return to work in the same position as determined by the Plan's Disability manager.

Section 6.3 – Summary of Actuarial Assumptions and Changes in Assumptions (continued)

Disability Allowance: According to the following table as shown for illustrative ages:

Age	Rate of Disability
25	0.10%
30	0.10%
35	0.20%
40	0.30%
45	0.40%
50	0.50%
55	0.60%
60	0.70%
65 & older	0.78%

Section 6.3 – Summary of Actuarial Assumptions and Changes in Assumptions (continued)

Service Retirements:

Age	Pre 1/19/2008 Hires Probability of Retirement		Post 1/18/2008 Hires Probability of Retirement	
	Service<25	Service>25	Service<25	Service>25
45-54	0.00%	20.00%	0.00%	0.00%
55	1.50%	20.00%	1.50%	1.50%
56	1.50%	22.50%	1.50%	1.50%
57	2.00%	25.00%	2.00%	2.00%
58	2.00%	27.50%	2.00%	2.00%
59	2.00%	30.00%	2.00%	2.00%
60	2.50%	32.50%	2.50%	2.50%
61	4.00%	35.00%	4.00%	4.00%
62	15.00%	37.50%	20.00%	20.00%
63	15.00%	40.00%	15.00%	15.00%
64	20.00%	42.50%	15.00%	15.00%
65	30.00%	45.00%	60.00%	60.00%
66	30.00%	45.00%	25.00%	25.00%
67	30.00%	45.00%	25.00%	25.00%
68	30.00%	45.00%	25.00%	25.00%
69	30.00%	45.00%	25.00%	25.00%
70-74	30.00%	45.00%	30.00%	30.00%
75	100.00%	100.00%	100.00%	100.00%

Spouse Data: 75% of employees eligible at retirement are assumed to be married, 50% of those married are assumed to elect a spouse option (Option A–50%) and the average equivalency factor to convert their accrued pension to a spouse option (Option A–50%) is assumed to be 85%. A wife is assumed to be 3 years younger than her husband. Actual dependent coverage data was used for participants retired as of the valuation date.

Section 6.3 – Summary of Actuarial Assumptions and Changes in Assumptions (continued)

Miscellaneous and Technical Assumptions:

Pay Increase Timing:	End of (Fiscal) year.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	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.
Benefit Service:	Exact fractional service from date of participation is used to determine the amount of benefit payable.
Decrement Relativity:	Decrement rates are used directly based on assumptions, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and turnover do not operate after 25 years of service.

Summary of changes since January 1, 2015 Valuation

All assumptions and methods used for this valuation are unchanged from the prior valuation.

Glossary of Terms

Actuarial Accrued Liability	Total accumulated cost to fund pension benefits arising from service in all prior years.
Actuarial Cost Method	Technique used to assign or allocate, in a systematic and consistent manner, the expected cost of a pension plan for a group of plan members to the years of service that give rise to that cost.
Actuarial Present Value of Future Benefits	Amount which, together with future interest, is expected to be sufficient to pay all future benefits.
Actuarial Valuation	Study of probable amounts of future pension benefits and the necessary amount of contributions to fund those benefits.
Actuary	Person who performs mathematical calculations pertaining to pension and insurance benefits based on specific procedures and assumptions.
Annual Required Contribution	Disclosure measure of annual pension cost.
Normal Cost	That portion of the actuarial present value of benefits assigned to a particular year in respect to an individual participant or the plan as a whole.
Unfunded Actuarial Accrued Liability (UAAL)	The portion of the actuarial accrued liability not offset by plan assets.