

FIREMEN'S ANNUITY AND BENEFIT FUND OF CHICAGO
GASB STATEMENTS NOS. 67 AND 68 ACCOUNTING AND
FINANCIAL REPORTING FOR PENSIONS
DECEMBER 31, 2016

June 14, 2017

The Retirement Board of the
Firemen's Annuity and Benefit Fund of Chicago
20 South Clark Street, Suite 1400
Chicago, IL 60654

Dear Members of the Board:

This report provides accounting and financial reporting information as of December 31, 2016, that is intended to comply with the Governmental Accounting Standards Board ("GASB") Statement Nos. 67 and 68 for the Firemen's Annuity and Benefit Fund of Chicago ("FABF"). These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the FABF benefits (described in Section E) was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement Nos. 67 and 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than FABF only in its entirety and only with the permission of FABF.

This report is based upon information, furnished to us by FABF, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If the understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the funding actuarial valuation report that was provided to FABF and should be considered in conjunction with that report. Please see the funding actuarial valuation report as of December 31, 2016, for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

The funding objective is to provide employer and employee contributions sufficient to provide the benefits of the Fund when due. Pursuant to Public Act ("P.A.") 99-0506, effective May 30, 2016, the funding policy was amended and requires City contributions to be equal to \$199 million in payment year 2016, \$208 million in payment year 2017, \$227 million in payment year 2018, \$235

million in payment year 2019, and \$245 million in payment year 2020. For payment years after 2020, the City is required to make level percent of pay contributions for plan years 2020 through 2055 that along with member contributions and investment earnings are expected to generate a projected funded ratio of 90 percent by plan year end 2055. The projections are based on an open group, level percent of pay financing and the Entry Age Normal cost method.

This is a severely underfunded plan. Based on the results of the funding actuarial valuation, the funded ratio is only 20.2 percent (using market value of assets) and the unfunded liability is approximately \$4 billion as of December 31, 2016. The funded ratio based on the results of the funding actuarial valuation is not projected to reach 50 percent funded for another 26 years until 2042.

The funding policy defined in P.A. 99-0506 provides for fixed dollar City contributions for payment years 2016 to 2020, and level percent of pay contributions for years 2021 to 2055 that, along with member contributions and investment income, are projected to produce a funded ratio of 90 percent by 2055. This funding policy significantly defers contributions when compared to the provisions of the prior funding policy defined in P.A. 96-1495. The amount of annual contributions defined under P.A. 99-0506 does not even cover normal cost plus interest on the unfunded liability for the next 11 years. This means the unfunded liability is actually projected to increase to a high of \$4.7 billion in 2027, when contributions are finally sufficient to start reducing the unfunded liability.

We understand P.A. 99-0506 defines the amount of City contributions to the FABF. Nevertheless, we continue to recommend that the plan sponsor seriously consider making additional contributions (in excess of the minimum statutory requirement) to ensure that there are sufficient assets available in the fund in all years to pay the promised benefits.

We also recommend that the Board perform projections which include pessimistic scenarios such as investment return lower than assumed, lower contributions received than expected, higher benefit payments than expected, etc., to more fully understand the impact of less than optimal future expectations.

This actuarial valuation assumes that the City will be able to make future contributions on a timely basis. We did not perform an analysis of the ability of the City to make future contributions. Such an analysis is not within the scope of our assignment or within our analytical skill set. Failure to receive City contributions on a timely basis could jeopardize the sustainability of the Fund.

The actuarial valuation results set forth in this report are based on the data and actuarial techniques described above, and upon the provisions of the Fund as of the actuarial valuation date. To the best of our knowledge, the information contained in this report is complete and accurate based on the statutes in effect as of December 31, 2016, and fairly presents the actuarial position of the Fund as of December 31, 2016, for purposes of complying with the financial reporting requirements under GASB Statement Nos. 67 and 68. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.


The actuarial assumptions used in this actuarial valuation are reasonable and appropriate for purposes of measuring the GASB Statement Nos. 67 and 68 pension liability as of December 31, 2016, under the provisions of P.A. 99-0506 and P.A. 99-0905.

This report should not be relied on for any purpose other than the purpose stated.

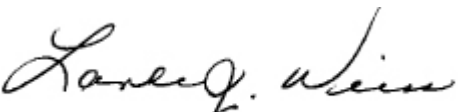
The signing actuaries are independent of the plan sponsor.

Alex Rivera and Lance J. Weiss are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

By 

Alex Rivera, F.S.A., E.A., M.A.A.A., F.C.A.
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Senior Consultant

Auditor's Note – This information is intended to assist in preparation of the financial statements of the Firemen's Annuity and Benefit Fund of Chicago. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

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SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

AS OF DECEMBER 31, 2016

	2016
Actuarial Valuation Date	December 31, 2016
Measurement Date of the Net Pension Liability	December 31, 2016
Employer's Fiscal Year Ending Date (Reporting Date)	December 31, 2016

Membership

Number of	
- Retirees and Beneficiaries	4,777
- Inactive, Nonretired Members	88
- Active Members	4,760
- Total	9,625
Covered Payroll	\$ 478,470,944

Net Pension Liability

Total Pension Liability	\$ 5,149,258,197
Plan Fiduciary Net Position	1,019,013,793
Net Pension Liability	\$ 4,130,244,404
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	19.79%
Net Pension Liability as a Percentage of Covered Payroll	863.22%

Development of the Single Discount Rate

Single Discount Rate Beginning of Year	7.16%
Single Discount Rate End of Year	7.30%
Long-Term Expected Rate of Investment Return Beginning of Year	7.50%
Long-Term Expected Rate of Investment Return End of Year	7.50%
Long-Term Municipal Bond Rate Beginning of Year*	3.57%
Long-Term Municipal Bond Rate End of Year*	3.78%
Last Year Trust Assets are Available to Pay Benefits	2066

Total Pension Expense \$ 576,785,999

Deferred Outflows and Deferred (Inflows) of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred (Inflows) of Resources
Difference Between Expected and Actual Non-Investment Experience	\$ 20,000,495	\$ 5,315,900
Changes in Assumptions	117,419,956	61,695,798
Net Difference Between Projected and Actual Earnings on Pension Plan Investments	56,645,600	-
Total	\$ 194,066,051	\$ 67,011,698

*Source: "20-Bond GO Index" is the Bond Buyer Index, general obligation, 20 years to maturity, mixed quality. In describing this index, the Bond Buyer notes that the bonds' average credit quality is roughly equivalent to Moody's Investors Service's Aa2 rating and Standard & Poor's Corp.'s AA. The rate shown is as of December 29, 2016, the most recent date available on or before the measurement date.

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (“GASB”) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain non-actuarial information, such as notes regarding accounting policies and investments, are not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan’s fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer’s contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, “Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer’s reporting period should be reported as a deferred outflow of resources related to pensions.” The information contained in this report does not incorporate any contributions made to FABF subsequent to the measurement date of December 31, 2016.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan’s reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1 percent higher and 1 percent lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5 percent, receivables and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability and the net pension liability as a percent of covered-employee payroll; and
- A comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Actuarial Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of December 31, 2016, and a measurement date of December 31, 2016.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) a tax-exempt municipal bond rate based on an index of 20-year mixed maturity general obligation bonds with an average Standard & Poor's Corp.'s AA credit rating (which is published by the Bond Buyer Index) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.50 percent; the municipal bond rate is 3.78 percent ((based on the most recent date available on or before the measurement date from the "20-Bond GO Index" from the Bond Buyer Index); and the resulting Single Discount Rate is 7.30 percent.

Effective Date and Transition

GASB Statement Nos. 67 and 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014, respectively; earlier application is encouraged by the GASB.

Provision Changes

Public Act 99-0506 ("P.A. 99-0506") became law on May 30, 2016, and changed the City of Chicago's required contribution, the funding policy, the actuarial cost method, and increased the minimum benefit for certain annuitants to 125 percent of the Federal Poverty level. The results presented in the report are based on the changes provided under P.A. 99-0506.

Public Act 99-0905 ("P.A. 99-0905") became law on November 29, 2016, and made changes to the benefit provisions of FABF. Under P.A. 99-0905, 3.00 percent annual COLA increases were extended to participants born after December 31, 1954, but before January 1, 1966. Additionally, the minimum benefit for widows was increased to 125 percent of the Federal poverty level. The results presented in this report are based on the changes provided under P.A. 99-0905.

SECTION B

FINANCIAL STATEMENTS

Auditor's Note: This information is intended to assist in preparation of the financial statements of the Firemen's Annuity and Benefit Fund of Chicago. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

PENSION EXPENSE UNDER GASB STATEMENT NO. 68
FISCAL YEAR ENDED DECEMBER 31, 2016

A. Expense

1. Service Cost Including Pension Plan Administrative Expense	\$ 94,115,473
2. Interest on the Total Pension Liability	342,084,603
3. Current-Period Benefit Changes	227,212,695
4. Employee Contributions (made negative for addition here)	(48,959,929)
5. Projected Earnings on Plan Investments (made negative for addition here)	(75,180,225)
6. Other Changes in Plan Fiduciary Net Position	53,891
7. Recognition of Outflow/(Inflow) of Resources due to Liabilities	2,777,257
8. Recognition of Outflow/(Inflow) of Resources due to Assumption Changes	16,753,641
9. Recognition of Outflow/(Inflow) of Resources due to Assets	17,928,593
10. Total Pension Expense	\$ 576,785,999

B. Reconciliation of Net Pension Liability

1. Net Pension Liability Beginning of Year	\$ 3,780,982,945
2. Pension Expense	576,785,999
3. Employer Contributions (made negative for addition here)	(154,101,396)
4. Change in Liability Experience Outflows/(Inflows) Recognized in Current Liabilities	21,332,901
5. Change in Assumption Changes Experience Outflows/(Inflows) Recognized in Current Liabilities	(91,126,571)
6. Change in Investment Experience Outflows/(Inflows) Recognized in Current Assets	(3,629,474)
7. Net Pension Liability End of Year	\$ 4,130,244,404

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR REPORTING PERIODS
FISCAL YEAR ENDED DECEMBER 31, 2016

A. Outflows and (Inflows) of Resources Recognized in Current and Future Pension Expenses as of Plan Year End December 31, 2016

Experience (Gain)/Loss	Original Balance	Date Established	Original Recognition Period/ Amortization Factor	Amount Recognized in Past Pension Expenses	Amount Recognized in Current Pension Expense	Deferred (Inflows)	Deferred Outflows
						to be Recognized in Future Pension Expenses	to be Recognized in Future Pension Expenses
1. Differences Between Expected and Actual Non-Investment Experience	\$ 24,110,158	December 31, 2016	5.8667	\$ -	\$ 4,109,663	\$ -	\$ 20,000,495
	(7,980,712)	December 31, 2015	5.9897	(1,332,406)	(1,332,406)	(5,315,900)	-
	\$ 16,129,446		5.9282	\$ (1,332,406)	\$ 2,777,257	\$ (5,315,900)	\$ 20,000,495
2. Assumption Changes	\$ (74,372,930)	December 31, 2016	5.8667	\$ -	\$ (12,677,132)	\$ (61,695,798)	\$ -
	176,281,502	December 31, 2015	5.9897	29,430,773	29,430,773	-	117,419,956
	\$ 101,908,572		5.9282	\$ 29,430,773	\$ 16,753,641	\$ (61,695,798)	\$ 117,419,956
3. Difference Between Expected and Actual Investment Earnings	\$ 14,299,119	December 31, 2016	5.0000	\$ -	\$ 2,859,824	\$ -	\$ 11,439,295
	75,343,843	December 31, 2015	5.0000	15,068,769	15,068,769	-	45,206,305
	89,642,962		5.0000	\$ 15,068,769	\$ 17,928,593	\$ -	\$ 56,645,600
4. Total	\$ 207,680,980			\$ 43,167,136	\$ 37,459,491	\$ (67,011,698)	\$ 194,066,051

B. Deferred Outflows and Deferred (Inflows) of Resources by Year to be Recognized in Future Pension Expenses

Year Ending December 31	Differences Between Expected and Actual Non-Investment Experience	Assumption Changes	Differences Between Expected and Actual Investment Experience	Year Ending December 31	Deferred Outflows of Resources	Deferred (Inflows) of Resources	Net Deferred Outflows/ (Inflows) of Resources
2017	\$ 2,777,257	\$ 16,753,641	\$ 17,928,593	2017	\$ 51,469,029	\$ (14,009,538)	\$ 37,459,491
2018	2,777,257	16,753,641	17,928,593	2018	51,469,029	(14,009,538)	37,459,491
2019	2,777,257	16,753,641	17,928,591	2019	51,469,027	(14,009,538)	37,459,489
2020	2,790,981	16,450,505	2,859,823	2020	36,097,123	(13,995,814)	22,101,309
2021	3,561,843	(10,987,270)	-	2021	3,561,843	(10,987,270)	(7,425,427)
Thereafter	-	-	-	Thereafter	-	-	-
Total	\$ 14,684,595	\$ 55,724,158	\$ 56,645,600	Total	\$ 194,066,051	\$ (67,011,698)	\$ 127,054,353

STATEMENT OF FIDUCIARY NET POSITION
YEARS ENDED DECEMBER 31, 2016, AND 2015

	2016	2015
Assets		
Receivables		
Employer contributions - net	\$ 200,385,829	\$ 239,326,404
Investment income	2,404,085	2,502,243
Other receivables	2,940,740	2,208,616
Securities lending	88,214	47,550
Unsettled trades	2,874,296	1,365,430
Total receivables	208,693,164	245,450,243
Prepaid expenses	213,718	173,206
Investments - at fair value		
Cash deposits and short-term investments	66,904,580	66,939,944
Corporate bonds	112,584,442	107,812,011
Equities	520,286,225	517,424,574
Pooled funds	28,675,801	27,476,898
Private equity and venture capital	21,896,500	27,282,995
U.S. and Foreign Governmental obligations	64,043,527	55,569,442
Subtotal	814,391,075	802,505,864
Collateral held for securities on loan	123,059,048	140,197,357
Total investments - fair value	937,450,123	942,703,221
Total assets	1,146,357,005	1,188,326,670
Liabilities and net position		
Liabilities		
Accounts payable and accrued expenses	1,067,983	1,092,789
Participant accounts	574,919	557,734
Securities lending collateral	123,059,048	140,197,357
Securities lending	22,023	11,853
Unsettled trades	2,619,239	1,365,844
Total liabilities	127,343,212	143,225,577
Net Position - Restricted for Pension Benefits	\$ 1,019,013,793	\$ 1,045,101,093

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
YEARS ENDED DECEMBER 31, 2016, AND 2015

	2016	2015
Additions		
Contributions		
Employer ¹	\$ 154,101,396	\$ 236,104,362
Plan Member	48,959,929	46,552,247
Total Contributions	203,061,325	282,656,609
Investment Income		
Net appreciation in fair value of investments	40,957,812	(15,720,238)
Interest	8,071,511	8,291,214
Dividends	10,686,533	12,015,670
	59,715,856	4,586,646
Less investment expenses	(5,006,920)	(5,459,951)
Investment income - net	54,708,936	(873,305)
Securities lending		
Income	1,005,661	482,937
Lender (borrower) rebates	(135,212)	218,439
Management fees	(217,200)	(174,957)
Securities lending income - net	653,249	526,419
Gift Fund donations	4,680	4,680
Miscellaneous income	1,814	2,461
Tax levy interest	4,157	2,599
Interest on Lewis settlement	5,514,764	7,939,849
Total additions	263,948,925	290,259,312
Deductions		
Benefits ¹	283,085,767	274,459,754
Refunds	3,673,250	3,557,317
Administrative expenses	3,216,823	3,149,549
Litigation settlement	60,385	-
Total deductions	290,036,225	281,166,620
Net increase	(26,087,300)	9,092,692
Net Position Restricted for Pension Benefits		
Beginning of year	1,045,101,093	1,036,008,401
End of year	\$ 1,019,013,793	\$ 1,045,101,093

¹ Excludes health insurance supplement of \$2,056,995 paid in 2016 and \$2,381,458 paid in 2015.

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Auditor's Note: This information is intended to assist in preparation of the financial statements of the Firemen's Annuity and Benefit Fund of Chicago. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS
CURRENT PERIOD
FISCAL YEAR ENDED DECEMBER 31, 2016

A. Total Pension Liability

1. Service Cost Including Pension Plan Administrative Expense	\$ 94,115,473
2. Interest on the Total Pension Liability	342,084,603
3. Changes of benefit terms	227,212,695
4. Difference between expected and actual experience of the Total Pension Liability	24,110,158
5. Changes of assumptions	(74,372,930)
6. Benefit payments, including refunds of employee contributions	(286,759,017)
7. Pension Plan Administrative Expenses	(3,216,823)
8. Net change in total pension liability	<u>323,174,159</u>
9. Total pension liability – beginning	4,826,084,038
10. Total pension liability – ending	<u><u>\$ 5,149,258,197</u></u>

B. Plan Fiduciary Net Position

1. Contributions – employer	154,101,396
2. Contributions – employee	48,959,929
3. Net investment income	60,881,106
4. Benefit payments, including refunds of employee contributions	(286,759,017)
5. Pension Plan Administrative Expense	(3,216,823)
6. Other	(53,891)
7. Net change in plan fiduciary net position	<u>(26,087,300)</u>
8. Plan fiduciary net position – beginning	1,045,101,093
9. Plan fiduciary net position – ending	<u><u>\$ 1,019,013,793</u></u>

C. Net Pension Liability

\$ 4,130,244,404

D. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability

19.79%

E. Covered-Employee Payroll

\$ 478,470,944

F. Net Pension Liability as a Percentage of Covered Employee Payroll

863.22%

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS MULTIYEAR

Fiscal year ending December 31,	2016	2015	2014
Total Pension Liability			
Service Cost Including Pension Plan Administrative Expense	\$ 94,115,473	\$ 87,203,153	\$ 83,095,601
Interest on the Total Pension Liability	342,084,603	338,986,636	329,965,941
Benefit Changes	227,212,695	-	-
Difference between Expected and Actual Experience	24,110,158	(7,980,712)	-
Assumption Changes	(74,372,930)	176,281,502	88,448,895
Benefit Payments	(283,085,767)	(274,459,754)	(261,571,672)
Refunds	(3,673,250)	(3,557,317)	(2,321,666)
Pension Plan Administrative Expense	(3,216,823)	(3,149,549)	(3,069,192)
Net Change in Total Pension Liability	323,174,159	313,323,959	234,547,907
Total Pension Liability - Beginning	4,826,084,038	4,512,760,079	4,278,212,172
Total Pension Liability - Ending (a)	\$ 5,149,258,197	\$ 4,826,084,038	\$ 4,512,760,079
Plan Fiduciary Net Position			
Employer Contributions	154,101,396	236,104,362	107,334,399
Employee Contributions	48,959,929	46,552,247	48,056,393
Pension Plan Net Investment Income	60,881,106	7,595,562	30,867,889
Benefit Payments	(283,085,767)	(274,459,754)	(261,571,672)
Refunds	(3,673,250)	(3,557,317)	(2,321,666)
Pension Plan Administrative Expense	(3,216,823)	(3,149,549)	(3,069,192)
Other	(53,891)	7,141	7,393
Net Change in Plan Fiduciary Net Position	(26,087,300)	9,092,692	(80,696,456)
Plan Fiduciary Net Position - Beginning	1,045,101,093	1,036,008,401	1,116,704,857
Plan Fiduciary Net Position - Ending (b)	\$ 1,019,013,793	\$ 1,045,101,093	\$ 1,036,008,401
Net Pension Liability - Ending (a) - (b)	4,130,244,404	3,780,982,945	3,476,751,678
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	19.79%	21.66%	22.96%
Covered Employee Payroll	\$ 478,470,944	\$ 465,231,594	\$ 460,189,982
Net Pension Liability as a Percentage of Covered Employee Payroll	863.22%	812.71%	755.50%

Ten fiscal years will be built prospectively.

Please see the following page for additional notes relating to the Schedule of Changes in Net Pension Liability and Related Ratios.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION
ADDITIONAL NOTES TO THE SCHEDULE OF CHANGES IN NET PENSION LIABILITY
AND RELATED RATIOS MULTITYEAR

Beginning of year total pension liability for fiscal year 2016 used a Single Discount Rate of 7.16 percent and the benefit provisions and funding policy in effect as of the December 31, 2015, funding actuarial valuation. The Single Discount Rate of 7.16 percent was based on a long-term expected rate of return on pension plan investments of 7.50 percent used in the December 31, 2015, funding actuarial valuation for the years 2015 through 2061, and a long-term municipal bond rate as of December 30, 2015, of 3.57 percent for subsequent years.

End of year total pension liability for fiscal year 2016 uses a Single Discount Rate of 7.30 percent and the benefit provisions and funding policy in effect as of the December 31, 2016, funding actuarial valuation. The Single Discount Rate of 7.30 percent was based on a long-term expected rate of return on pension plan investments of 7.50 percent used in the December 31, 2016, funding actuarial valuation for the years 2016 through 2066 and a long-term municipal bond rate as of December 29, 2016, of 3.78 percent for subsequent years.

The increase in the total pension liability for fiscal year 2016 due to benefit changes is a result of the change in plan provisions pursuant to P.A. 99-0506 and P.A. 99-0905. This change was measured at the end of the year, December 31, 2016, using a Single Discount Rate of 7.16 percent.

The increase in the total pension liability for fiscal year 2016 due to actuarial assumption and method changes includes the impact of changing the funding policy used in the funding actuarial valuation and the change in the municipal bond rate from December 30, 2015, to December 29, 2016. Changes in actuarial assumptions, methods, plan provisions and statutory funding policy led to the change in the Single Discount Rate from 7.16 percent to 7.30 percent (based on the long-term expected rate of return on pension plan investments of 7.50 percent used in the December 31, 2015, and December 31, 2016, funding actuarial valuations and the long-term municipal bond rate of 3.57 percent as of December 30, 2015, and 3.78 percent as of December 29, 2016, respectively). This change was measured at the end of the year using the benefit provisions in effect as of December 31, 2016.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF THE NET PENSION LIABILITY MULTIYEAR

FY Ending December 31,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll*	Net Pension Liability as a % of Covered Payroll
2014	\$ 4,512,760,079	\$ 1,036,008,401	\$ 3,476,751,678	22.96%	\$ 460,189,982	755.50%
2015	4,826,084,038	1,045,101,093	3,780,982,945	21.66%	465,231,594	812.71%
2016	5,149,258,197	1,019,013,793	4,130,244,404	19.79%	478,470,944	863.22%

* Covered payroll is the amount in force as of the valuation date and likely differs from actual payroll paid during the fiscal year.

Ten fiscal years will be built prospectively.

**SCHEDULE OF CONTRIBUTIONS MULTIYEAR
LAST 10 FISCAL YEARS**

FY Ending December 31,	Actuarially Determined Contribution*	Actual Contribution	Contribution Deficiency/ (Excess)	Covered Payroll**	Actual Contribution as a % of Covered Payroll	Statutory Contribution***
2007	\$ 188,201,379	\$ 72,022,810	116,178,569	\$ 389,124,547	18.51%	\$ 78,426,754
2008	189,940,561	81,257,754	108,682,807	396,181,778	20.51%	91,112,448
2009	203,866,919	89,211,671	114,655,248	400,912,173	22.25%	84,424,004
2010	218,388,037	80,947,311	137,440,726	400,404,320	20.22%	82,904,631
2011	250,056,273	82,869,839	167,186,434	425,385,354	19.48%	85,315,391
2012	271,505,718	81,521,883	189,983,835	418,964,763	19.46%	85,869,109
2013	294,877,895	103,669,015	191,208,880	416,491,784	24.89%	106,980,765
2014	304,265,411	107,334,399	196,931,012	460,189,982	23.32%	109,697,945
2015	323,544,987	236,104,362	87,440,625	465,231,594	50.75%	196,618,542
2016	333,952,291	154,101,396	179,850,895	478,470,944	32.21%	205,943,005

* *The historical FABF Statutory Funding Policy does not conform to Actuarial Standards of Practice; therefore, the Actuarially Determined Contribution is equal to the normal cost plus an amount to amortize the unfunded liability using level dollar payments and a 30-year amortization period. Amounts for fiscal years prior to 2015 were based on the "ARC" which was equal to normal cost plus an amount to amortize the unfunded liability using a 30-year open period level dollar amortization.*

** *Covered payroll is the amount in force as of the valuation date and likely differs from actual payroll paid during the fiscal year.*

****Excludes amounts paid for health insurance supplement.*

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date: December 31, 2016

Methods and Assumptions Used to Determine Contribution Rates as of the Valuation Date:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Prior to 2015, the total City contribution was generated by a tax equal to 2.26 times the contributions by the firemen to the Fund two years prior to the year of the tax levy. For tax levy years 2015-2019, the statutory contributions are equal \$199 million, \$208 million, \$227 million, \$235 million and \$245 million respectively. For tax levy years on and after 2020, the statutory contributions are equal to a level percentage of pay contribution determined so that the Fund attains a 90 percent funded ratio by the end of 2055 on an open group basis.
Remaining Amortization Period	Not Applicable. An amortization payment is not directly calculated. The amortization payment is the difference between the total statutory contribution and the employer normal cost contribution.
Asset Valuation Method	5-year smoothed market
Inflation	2.50 percent
Salary Increases	Salary increase rates based on age-related productivity and merit rates plus wage inflation of 3.75 percent.
Postretirement Benefit Increases	A retiree born before January 1, 1966, with at least 20 years of service or receiving a mandatory retirement minimum annuity, receives an increase of 3 percent of the original annuity, starting on the first of the month following the first anniversary of his retirement or the first of the month following attainment of age 55, whichever is later, and shall not be subject to a 30 percent maximum increase. For retirees born on or after January 1, 1966, automatic increases are 1.5 percent of the original annuity, commencing at age 60, or the first anniversary of retirement, if later, to a maximum of 30 percent. For participants who first became members on or after January 1, 2011, increases are equal to the lesser of 3.00 percent and 50 percent of CPI-U of the original benefit, commencing at age 60.
Investment Rate of Return	7.50 percent as of the December 31, 2016, actuarial valuation.
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the December 31, 2011, actuarial valuation pursuant to an experience study of the period January 1, 2003, through December 31, 2010.
Mortality	RP2000 Combined Healthy mortality table, sex distinct for post retirement mortality. RP2000 Combined Healthy mortality table, sex distinct, set forward six years for post retirement mortality post-disabled mortality. Pre-retirement mortality is 80 percent of the post-retirement rates.

Other Information:

Notes The actuarial valuation is based on the statutes in effect as of December 31, 2016. Benefit changes as a result of PA 99-0506 and PA 99-0905 were recognized in the Total Pension Liability as of December 31, 2016.

Methods and Assumptions Used for Accounting Purposes as of the Valuation Date:

Actuarial Cost Method	Entry Age Normal
Discount Rate	7.16 percent as of the December 31, 2015, actuarial valuation. 7.30 percent as of the December 31, 2016, actuarial valuation.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Auditor's Note: This information is intended to assist in preparation of the financial statements of the Firemen's Annuity and Benefit Fund of Chicago. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Single Discount Rate

A Single Discount Rate of 7.30 percent was used to measure the total pension liability. This Single Discount Rate was based on an expected rate of return on pension plan investments of 7.50 percent and a municipal bond rate of 3.78 percent. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between the statutory contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments only through the year 2066. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2066, and the municipal bond rate was applied to all benefit payments after that date.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 7.30 percent, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

SENSITIVITY OF NET PENSION LIABILITY TO THE SINGLE DISCOUNT RATE ASSUMPTION

1% Decrease	Current Single Discount Rate Assumption	1% Increase
6.30%	7.30%	8.30%
\$ 4,700,967,631	\$ 4,130,244,404	\$ 3,644,822,548

SUMMARY OF POPULATION STATISTICS

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	4,777
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	88
Active Plan Members ¹	<u>4,760</u>
Total Plan Members	9,625

¹*Includes three participants on ordinary disability who continue to accrue benefit service as of December 31, 2016.*

Additional information about the member data used is included in the December 31, 2016, funding actuarial valuation report.

SECTION E

SUMMARY OF BENEFITS

PLAN DESCRIPTION (AS OF DECEMBER 31, 2016)

PARTICIPANTS

Person employed by the City of Chicago in its fire service as firefighter, fire paramedic, fire engineer, marine engineer or fire pilot, whose duty it is to participate in the work of controlling and extinguishing fire at the location of any such fire, whether or not he is assigned to fire service other than the actual extinguishing of fire.

SERVICE

In computing service, the following periods shall be counted:

All periods of active service, vacation, leave of absence with whole or part pay, military service, periods of disability for which he receives disability benefit and leave of absence without pay to perform the duties of a member of the General Assembly prior to January 9, 1997. It is computed on a day-to-day basis. Employees may purchase the 1980-strike time and periods of suspension less than one year. Employees may purchase, with 4 percent interest, periods of employment of the Chicago Fire Department from 1970 until the employee entered this fund.

RETIREMENT ANNUITY

Eligibility

For participants who first became members before January 1, 2011, attainment of age 50 with at least 10 years of service.

For participants who first became members on or after January 1, 2011, attainment of age 55 with at least 10 years of service. Participants may retire at attainment of age 50 with 10 years of service with a reduced benefit.

Mandatory

Retirement is mandatory for a participant who has attained age 63, except for emergency medical technicians.

Accumulation Annuity

At age 50 or more, with 10 or more years of service, the employee is entitled to an annuity based on the sums accumulated for age and service annuity plus 1/10 of the sum accumulated from the contributions by the City for the age and service annuity for each completed year of service after the first 10 years. At age 50 or more with 20 or more years or at age 63, the employee is entitled to an annuity based on all sums accumulated to his or her credit. The maximum is 75 percent of highest salary.

Minimum Formula Annuity

If the employee has 20 or more years of service (the annuity will begin no earlier than age 50), he or she is entitled to the following annuity: 50 percent plus 2.5 percent of the final average salary for each year or fraction of service over twenty years. Maximum is 75 percent of the final average salary.

Retirement at Age 63 with Less than 20 Years of Service¹

An employee who reaches compulsory retirement age with less than 20 years but greater than 10 years of service shall be entitled to a minimum annuity equal to 30 percent of final average salary for the first 10 years of service plus an additional 2 percent for each year in excess of 10, not to exceed 50 percent of final average salary.

Minimum Annuity

The minimum monthly annuity is \$1,050 or 125 percent of the Federal Poverty Level if the firefighter retired at age 50 or over with at least 20 years of service.

For participants who first became members on or after January 1, 2011, the member is entitled to an annuity based on an accrual rate of 2.5 percent of the final average salary for each fraction of service. Maximum is 75 percent of the final average salary. Final average salary is calculated using salary from the eight highest consecutive years within the last 10 years of service prior to retirement. Pensionable salary is limited to \$106,800 in 2011, increased by the lesser of 3 percent and one-half of the annual unadjusted percentage increase in the Consumer Price Index-U (but not less than zero) as measured in the preceding 12-month period ending with the September preceding the November 1, which is the date that the new amount will be calculated and made available to the pension funds.

For participants who first became members on or after January 1, 2011, who retire after age 50 but before age 55 is attained, the member is entitled to an annuity based on an accrual rate of 2.5 percent of the final average salary for each fraction of service, reduced by one half of one percent per month for retirement prior to age 55, subject to a maximum benefit of 75 percent.

Automatic Increase in Annuity

If an employee qualifies for a minimum formula annuity, 1.5 percent of the original annuity, starting on the first of the month one year after retirement or the first of the month following attainment of age 60 (age 55 if born before January 1, 1966, effective November 29, 2016), whichever is later, with a maximum of 30 percent (20 years). Such increases shall be 3 percent for firefighters born before January 1, 1966, (effective November 29, 2016) and such firefighters shall not be subject to the 30 percent maximum increase.

For participants who first became members on or after January 1, 2011, increases are equal to the lesser of 3.00 percent and 50 percent of CPI-U of the original benefit, commencing at age 60.

WIDOW/WIDOWER ANNUITY

Payable until remarriage if widow/widower remarries before age 60, except Compensation and Supplemental Annuities. If the annuity is suspended because the widow/widower remarries before age 60, annuity payments will be resumed if the subsequent marriage ends. Any widow/widower's annuity, which was suspended on account of remarriage prior to December 31, 1989, will be resumed, if subsequent marriage ends, the later of July 14, 1995, or when the marriage ended. Beginning January 16, 2004, widows retain their rights to benefits after remarriage at any age.

Benefits are not available to a widow of a fireman who received a refund of contributions for widow's benefits, unless the refund is repaid with 4 percent interest per year.

¹ Between January 1994 and December 2000, benefits have been administered as if there were no compulsory retirement age. Beginning December 2000 benefits have been administered as if age 63 is the compulsory retirement age for non-EMT participants and there is no compulsory retirement age for EMT participants.

Death in Service (Non-Duty)

- (1) If the firefighter dies with at least 1.5 years of service, 30 percent of the salary attached to the rank of a first class firefighter in the classified career service at the time of the firefighter's death; or,
- (2) 50 percent of the annuity the deceased firefighter would have received if he or she had retired just prior to the date of death; or,
- (3) Money purchase based on the total salary deductions and City contributions for age and service annuity and widow/widower's annuity.
- (4) The widow of an active fireman with 10 or more years of service will receive no less than 50 percent of the benefit that the active fireman would have received had they attained age 50 and 20 years of service.

Death In Service (Duty Related)***Compensation Annuity²***

The annuity paid to the spouse equals 75 percent of the firefighter's salary attached to his or her civil service position at the time of his or her death. This amount increases as the salary of the position increases. This benefit is payable until the year in which the firefighter would have reached the compulsory retirement age.

Death In Service (Duty Disability)***Compensation Annuity***

The annuity paid to the spouse of a member who dies in receipt of duty disability benefits equals 75 percent of the firefighter's salary attached to his or her civil service position at the time of his or her death. This amount increases as the salary of the position increases.

Death after Retirement

- (1) If the firefighter dies after retirement, the annuity is 50 percent of the retirement annuity that the deceased firefighter was receiving at the time of his or her death; or,
- (2) Money purchase based on the sums accumulated for the spouse annuity plus 10 percent of the accumulated City contributions for each year of service from 10 to 20 years, and full accumulated City contributions after 20 years of service.

Maximum Annuity

No maximum dollar amount.

Minimum Annuity

The minimum monthly annuity for any widow/widower is the greater of \$1,000 or 125 percent of the Federal Poverty Level.

For participants who first became members on or after January 1, 2011, widow benefits are equal to 66-2/3 percent of the firemen's earned annuity at the date of death. Automatic increases to the

² Between January 1994 and December 2000, benefits have been administered as if there were no compulsory retirement age. Beginning December 2000 benefits have been administered as if age 63 is the compulsory retirement age for non-EMT participants and there is no compulsory retirement age for EMT participants.

annuity are equal to the lesser of 3.00 percent and 50 percent of CPI-U, commencing when the survivor reaches age 60, and applied to the original granted retirement annuity.

CHILD ANNUITY

Upon the death of the firefighter, unmarried children less than age 18 (except where child is so physically or mentally handicapped as to be unable to support himself) are eligible to receive an annuity. The amount of annuity payable for a child is 10 percent of the current annual maximum salary of a first class firefighter while a widow/widower survives; 15 percent when no widow/widower survives.

FAMILY MAXIMUM

The total annuities for widow/widower and children cannot exceed 60 percent for non-duty death, or 100 percent for duty death, of the current maximum annual salary of a first class firefighter.

PARENT ANNUITY

Parent's annuity is provided for each surviving parent of a firefighter who dies prior to separation from service, or while out of service with at least 20 years, provided there is no widow/widower or child and that the deceased firefighter was contributing to their support. The benefit is an amount equal to 18 percent of the current annual salary attached to the classified position held by the firefighter at the time of death.

DISABILITIES

Duty Disability Benefit³

Injury incurred in the performance of duty. The amount of the benefit is 75 percent of salary at the time the disability is allowed payable to employee's compulsory retirement age plus \$30 per month for each unmarried child less than age 18 (except where the child is so physically or mentally handicapped as to be unable to support him/herself), but the total amount of child benefits shall not exceed 25 percent of salary. Effective January 1, 1994, the minimum benefit, if the employee has been on disability at least 10 years, is 50 percent of current salary at the rank held by the employee when he was removed from the Department payroll. Salary deductions are contributed by the City. There are no age or service requirements for retirement on money purchase annuity and receiving full contributions.

Occupational Disease Disability³

A firefighter who has 10 or more years of service and is unable to perform his or her duties by reason of heart disease, tuberculosis or any disease of the lungs or respiratory tract, resulting solely from his or her service as a firefighter. Occupational disease also includes disabling cancer of the type which may be caused by exposure to heat, radiation or a known carcinogen as defined by the International Agency for Research on Cancer. The amount of the benefit is 65 percent of salary at the time of the employee's removal from the Department payroll payable to compulsory retirement age plus \$30 a month for each unmarried child less than age 18 (except where the child is so physically or mentally handicapped as to be unable to support him/ herself), but the total amount of child's benefits shall not exceed 25 percent of salary. Effective January 1, 1994, the minimum benefit, if the employee has been on disability at least 10 years, is 50 percent of current salary at the rank held by the employee when he or she was removed from Department payroll. Salary

³ Between January 1994 and December 2000, benefits have been administered as if there were no compulsory retirement age. Beginning December 2000 benefits have been administered as if age 63 is the compulsory retirement age for non-EMT participants and there is no compulsory retirement age for EMT participants.

deductions are contributed by the City. There are no age or service requirements for retirement on money purchase annuity and receiving full contributions.

Ordinary Disability Benefit

Cause other than the performance of an act of duty, payable after 30 days for a period equal to 50 percent of total service (not including any previous O.D. time), but not to exceed 5 years. The disability benefit is 50 percent of salary at time of disability less pension deductions. When the disabled firefighter becomes eligible for the minimum formula annuity, the disability benefit shall cease, and he or she shall thereafter receive an annuity; however, there are no age or service requirements to retire on money purchase from disability prior to qualification for the minimum formula annuity if the disability then terminates.

DEATH BENEFIT

In active service, on an authorized leave of absence, if death occurs within 60 days of receipt of salary, receiving duty or ordinary disability benefit, occurring within 60 days of termination of such benefit, or occurring on retirement while in receipt of annuity and separation was effective after age 50 and application was made within 60 days from separation; payable to written beneficiaries or, if none, to estate.

<u>Age</u>	<u>Death in Service After July 1, 1983</u>	<u>Death After Retirement After July 1, 1983</u>
49 and under	\$12,000	\$6,000
50	11,600	6,000
51	11,200	6,000
52	10,800	6,000
53	10,400	6,000
54	10,000	6,000
55	9,600	6,000
56	9,200	6,000
57	8,800	6,000
58	8,400	6,000
59	8,000	6,000
60	7,600	6,000
61	7,200	6,000
62	6,800	6,000
63	6,400	6,000
64 and over	6,000	6,000

GROUP HEALTH HOSPITAL AND SURGICAL INSURANCE PREMIUMS

The pension fund shall provide payments in the amount of \$95 per month for non-Medicare eligible city annuitants and \$65 per month for Medicare eligible city annuitants from July 1, 2008, through December 31, 2016.

REFUNDS

To Firefighters

Of entire amount (excluding ordinary disability pension deductions) with interest at 4 percent if entered before June 30, 1953, and 3 percent otherwise, before age 50, or before age 57 and less than 10 years of service. A firefighter who receives a refund and who subsequently reenters the service shall not receive, nor his or her widow/widower or parents, any annuity benefit or pension unless

the refund is repaid with 4 percent interest. Repayment must be made within two years after reentry.

FOR WIDOW/WIDOWER ANNUITY

If the firefighter is not married when he or she retires on annuity, he or she will receive a refund of all his or her contributions, with interest, for spouse's annuity.

REFUNDS OF REMAINING AMOUNTS

If amounts contributed by a firefighter (with interest) are not paid out to him or her, in the form of a refund or annuity, or his or her widow/widower in the form of annuity, the remaining amounts (with interest) shall be paid out to his or her heirs, or to administrator of estate, for burial expense. If there are children under age 18, amount necessary to pay children annuities will not be refunded. There will be no refund paid to a widow/widower whose annuity is suspended because of remarriage.

DEDUCTIONS AND CONTRIBUTIONS

	<u>Deductions</u>	<u>City Contributions¹</u>
Employee	7.125%	8.500%
Spouse	1.500%	2.000%
Ordinary Disability	0.125%	0.000%
Annuity Increase	<u>0.375%</u>	<u>0.000%</u>
	9.125%	10.500%

¹ Credited to participant's Accumulation Annuity and Widow's Annuity accounts

Prior to 2015, the City shall levy a tax annually at a rate on the dollar of the assessed valuation of all taxable property that will produce an amount not to exceed the total amount of contributions by the firefighters to the Fund made in the calendar year two years prior multiplied by 2.26 for 1982 and each year thereafter, plus \$142,000 for the Ordinary Death Benefit.

Under P.A. 99-0506, City contributions are equal to \$199 million in payment year 2016, \$208 million in payment year 2017, \$227 million in payment year 2018, \$235 million in payment year 2019 and \$245 million in payment year 2020. For payment years after 2020, annual City contributions combined with member contributions and other Fund revenue must equal the amount, as a level percentage of payroll, that is sufficient to produce 90 percent funding by the end of fiscal year 2055.

DEATH BENEFIT

Employees contribute \$2.50 per month at the same time and with the same frequency as other deductions (with each payment of salary).

TAX SHELTER OF EMPLOYEE SALARY DEDUCTIONS

Beginning January 1, 1982, employee contributions were designated for income tax purposes to be made by the employer. The W-2 salary is therefore reduced by the amount of contribution. For pension purposes the salary remains unchanged. Income tax will be paid when a refund or annuity is received. For the purpose of benefits, refunds or financing, these contributions will be treated as employee contributions.

COMPULSORY RETIREMENT AGE

Effective January 1, 1994, the federal law (ADEA) allowing compulsory retirement at age 63 lapsed. As such, duty disability and occupational disease disability benefits and widow/widower compensation benefits may be “open ended”; i.e., without limiting age.

Effective December 2000 the City of Chicago enacted a compulsory retirement age of 63 for non-EMT participants. As such, all disability benefits for non-EMT participants cease at age 63 and become payable as retiree benefits.

COMPENSATION WIDOWS

Beginning January 1, 2001, mandatory retirement will have no impact on Widow benefits. Therefore, effective with the December 31, 2001, actuarial valuation, all Supplemental Widows have been re-classified as Compensation Widows. The classification of Supplemental Widows has been discontinued.

SALARY CAP AND COLA DEVELOPMENT FOR MEMBERS HIRED ON OR AFTER JANUARY 1, 2011

Year Ending	CPI-U	½ CPI-U	COLA	Maximum Annual Pensionable Earnings
2011			3.00%	\$ 106,800.00
2012	3.90%	1.95%	1.95%	108,882.60
2013	2.00%	1.00%	1.00%	109,971.43
2014	1.20%	0.60%	0.60%	110,631.26
2015	1.70%	0.85%	0.85%	111,571.63
2016	0.00%	0.00%	0.00%	111,571.63
2017	1.50%	0.75%	0.75%	112,408.42

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

I. ACTUARIAL COST METHOD

An Actuarial Cost Method is a set of techniques used by the actuary to develop contribution levels under a retirement plan. The Actuarial Cost Method used in this actuarial valuation for statutory funding and State reporting purposes and GASB accounting purposes is the Entry Age Normal cost method.

Under the Entry Age Normal Cost Method, each participant's projected benefit is allocated on a level percent of pay basis from entry age to assumed exit age. The Actuarial Accrued Liability is the portion of the present value of benefits associated with pay prior to the actuarial valuation date. The Normal Cost is the present value of benefits associated with pay during the current plan year.

To the extent that current assets are less than the Actuarial Accrued Liability, an Unfunded Actuarial Accrued Liability ("UAAL") develops. The UAAL is generally amortized over a fixed period of time (e.g., 30 years) from the date incurred. The total contribution developed under this method is the sum of the Normal Cost and the payment toward the UAAL.

II. CURRENT ACTUARIAL ASSUMPTIONS

On May 11, 2016, the Board approved a reduction in the discount rate assumption to 7.50 percent and the assumed inflation rate was lowered to 2.50 percent. This change was first effective with the December 31, 2015, actuarial valuation. The other current actuarial assumptions were adopted and became effective for the December 31, 2011, actuarial valuation, and were based on an experience study for the period January 1, 2003, to December 31, 2010.

A. *Demographic Assumptions*

Mortality: RP-2000 Combined Healthy Mortality Table, sex distinct. The mortality table used is a static table and provides an estimated margin of 15 percent for future mortality improvements as of the experience study performed as of December 31, 2011.

Disabled Mortality: RP-2000 Combined Healthy Mortality Table, sex distinct, set forward six years.

Pre-Retirement Mortality: Pre-retirement mortality is 80 percent of the post-retirement rates.

Rates of Disability: Rate at which members are assumed to become disabled under the provisions of the Fund. The rates assumed are as follows:

<u>Attained Age</u>	<u>Rates</u>
20-24	0.0008
25-29	0.0010
30-34	0.0020
35-39	0.0020
40-44	0.0028
45-49	0.0054
50-54	0.0140
55-59	0.0265
60-63	0.0300

Of the participants who become disabled, 50 percent are assumed to be duty disability, 45 percent are assumed to be occupational disease disability and 5 percent are assumed to be ordinary disability.

Rate of Retirement: The tables below show the assumed rates of retirement.

For members hired before January 1, 2011:

<u>Attained Age</u>	<u>Firefighters Rates</u>	<u>Paramedic Rates</u>
50	0.02	0.03
51	0.03	0.03
52	0.03	0.04
53	0.04	0.05
54	0.04	0.06
55	0.05	0.07
56	0.06	0.07
57	0.07	0.07
58	0.07	0.07
59	0.07	0.07
60	0.25	0.20
61	0.30	0.20
62	0.45	0.30
63	1.00	0.30
64		0.40
65		1.00

For members hired on or after January 1, 2011:

<u>Attained Age</u>	<u>Firefighters Rates</u>	<u>Paramedic Rates</u>
50	0.01	0.01
51	0.01	0.01
52	0.01	0.01
53	0.01	0.01
54	0.01	0.01
55	0.07	0.07
56	0.07	0.07
57	0.07	0.07
58	0.07	0.07
59	0.07	0.07
60	0.25	0.20
61	0.30	0.20
62	0.45	0.30
63	1.00	0.30
64		0.40
65		1.00

Rate of Termination:

The following are sample rates from the table:

<u>Years of Service</u>	<u>Rate</u>
1	0.020
5	0.006
10	0.006
15	0.005
20	0.005
25	0.005
30	0.000

B. Economic Assumptions

Investment Return Rate: 7.50 percent per annum effective December 31, 2015.

General Inflation: 2.50 percent per annum.

Future Salary Increases: Assumed rates of individual salary increase at 3.75 percent per year, plus an additional percentage based on the following service scale:

Completed Years of Service	Rates
0	21.25%
1	5.25%
2	5.25%
3	5.00%
4	5.00%
5-9	0.00%
10	3.50%
11-14	0.00%
15	3.50%
16-19	0.00%
20	4.00%
21-24	0.00%
25	3.20%
26-29	0.00%
30	1.50%
Over 30	0.00%

Asset Value: For State reporting, the actuarial value of assets is smoothed by using a five-year average market value.

For the GASB Statement Nos. 67 and 68 Actuarially Determined Contribution, the actuarial value of assets is smoothed by using a five-year average market value.

C. Other Assumptions

Marital Status: It is assumed that 85 percent of members have an eligible spouse. The male spouse is assumed to be four years older than the female spouse. No assumption is made about other dependents.

Group Health Insurance: Due to PA 98-0043 effective June 28, 2013, it is assumed for actuarial valuation purposes that the health insurance supplement in effect prior to June 30, 2013, will only continue through December 31, 2016, for all employee annuitants (and their future widows) and is not valued beginning with the December 31, 2016, actuarial valuation.

Prior to December 31, 2016, the amount of the Fund-paid health insurance after June 30, 2008, until December 31, 2016, was \$95.00 per month for each annuitant (employees and widows) not qualified to receive Medicare benefits and \$65.00 if qualified. It was assumed that all annuitants age 65 and over will be eligible for Medicare and all annuitants less than age 65 will not be eligible for Medicare. Future widows of retirees were assumed to be eligible for Medicare at age 65, as well as widow annuitants that were currently receiving a health insurance supplement. Only retirees, beneficiaries and children who the Fund indicated had Fund paid insurance were valued with this benefit.

Required Ultimate Multiple:

The actuarial requirements (adjusted for tax levy loss) less expected employee contributions divided by the actual employee contributions made in the second prior year.

D. Projection Assumptions

Active Population:

Active members who terminate, retire, become disabled or die during the year are replaced by new entrants such that the number of active members remains level during the projection period based on the most recent actuarial valuation. The number of active members as of the valuation at December 31, 2016, is 4,760.

New Entrant Profile:

The entry age of future new entrants, which is summarized below, is based on the profile of current active members hired over the last five years with one or more years of service as of December 31, 2016. These members were hired from January 1, 2012, through December 31, 2015. The group hired due to the Lewis Settlement was excluded from the development of the new entrant profile.

Entry Age	Number
Less than 25	8
25 to 30	220
30 to 35	271
35 to 40	87
40 to 45	8
45 and Over	2

Approximately 84 percent of the new entrants are assumed to be male.

New Entrant Pay: Based on the most recent employment contract, new entrants were assumed to earn \$56,304 for the plan year ending December 31, 2016. The new entrant pay for members hired after 2017 is assumed to increase by the wage inflation assumption of 3.75 percent

New Entrant Pay Increases: Pay for a specific new entrant is assumed to increase in the future by the wage inflation and the service based increase assumptions.

The projections assume a pay cap of \$111,571.63 for plan year 2016, and a pay cap of \$112,408.42 for plan year 2017, increasing by 1.25 percent per year after plan year 2017. The annual increase of 1.25 percent per year is based on 50 percent of the CPI-U increase which is assumed to be 2.50 percent per year.

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement Nos. 67 and 68 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed actuarial valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The Single Discount Rate (“SDR”) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) a tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.50 percent; the municipal bond rate is 3.78 percent; and the resulting Single Discount Rate is 7.30 percent.

The sponsor finances benefits using a funding policy defined in state statutes. Sponsor contributions are equal to a fixed payment schedule for payment years 2016 through 2020 and a level percentage of pay contribution determined so that the Fund attains a 90 percent funded ratio by the end of 2055 on an open group basis for payment years on and after 2021. The statutory contribution does not explicitly separate projected employer contributions between current plan members and future plan members.

For purposes of developing the Single Discount Rate, we have projected actuarial liabilities on an Entry Age Normal basis, and compared against projected market value of assets. We have assumed the actuarial liability for future member will be fully financed, to the extent that assets are available, any remaining asset will be assigned to current plan members. Based on this assignment of assets and employer contributions, plan assets assigned to current members are projected to be depleted by 2066.

The tables in this section provide background for the development of the Single Discount Rate.

The following tables show the assignment of assets and employer contributions and the projection of assets for current members as of the actuarial valuation date. Our projections assume the sponsor will make the required statutory contributions. The projections are based on the statutory funding projections performed during the December 31, 2016, actuarial valuation.

Total administrative expenses are assumed to increase at the assumed rate of inflation, or 2.50 percent. Total administrative expenses are allocated between current and future hires by total payroll.

PROJECTION OF FUNDED STATUS AND ASSIGNMENT OF ASSETS

PYE 12/31	Open Group Actuarial Liability	Closed Group Actuarial Liability	Future Member Actuarial Liability	Open Group Assets	Future Member Assigned Assets	Closed Group Assigned Assets	Funded Ratio Current Members	Funded Ratio Future Members
	(a)	(b)	(c)=(a)-(b)	(d)	(e)=min[(c),(d)]	(f)=(d)-(e)	(g)=(f)/(b)	(h)=(e)/(c)
2016	\$5,045,890,302	\$5,045,890,302	\$ -	\$ 1,019,013,793	\$ -	\$ 1,019,013,793	20.19%	0.00%
2017	5,200,475,088	5,200,475,088	-	1,041,518,039	-	1,041,518,039	20.03%	0.00%
2018	5,354,300,627	5,351,706,387	2,594,241	1,062,593,005	2,594,241	1,059,998,764	19.81%	100.00%
2019	5,505,024,018	5,496,503,454	8,520,565	1,080,209,317	8,520,565	1,071,688,752	19.50%	100.00%
2020	5,652,084,014	5,633,724,942	18,359,073	1,178,435,047	18,359,073	1,160,075,975	20.59%	100.00%
2021	5,795,202,992	5,762,519,132	32,683,859	1,275,078,954	32,683,859	1,242,395,095	21.56%	100.00%
2022	5,933,613,449	5,881,425,609	52,187,840	1,371,857,251	52,187,840	1,319,669,412	22.44%	100.00%
2023	6,067,171,670	5,989,611,407	77,560,264	1,469,986,672	77,560,264	1,392,426,409	23.25%	100.00%
2024	6,194,695,257	6,085,239,560	109,455,697	1,568,155,823	109,455,697	1,458,700,126	23.97%	100.00%
2025	6,315,072,982	6,166,421,898	148,651,084	1,665,796,950	148,651,084	1,517,145,866	24.60%	100.00%
2026	6,428,050,910	6,232,144,227	195,906,683	1,762,905,105	195,906,683	1,566,998,422	25.14%	100.00%
2027	6,534,923,751	6,282,924,118	251,999,633	1,862,504,014	251,999,633	1,610,504,381	25.63%	100.00%
2028	6,637,277,634	6,319,629,818	317,647,816	1,967,264,810	317,647,816	1,649,616,994	26.10%	100.00%
2029	6,736,057,943	6,342,988,471	393,069,473	2,076,592,217	393,069,473	1,683,522,744	26.54%	100.00%
2030	6,831,743,419	6,353,351,748	478,391,671	2,190,774,791	478,391,671	1,712,383,120	26.95%	100.00%
2031	6,922,717,894	6,348,745,386	573,972,507	2,306,624,348	573,972,507	1,732,651,841	27.29%	100.00%
2032	7,008,651,745	6,328,213,699	680,438,046	2,424,201,381	680,438,046	1,743,763,335	27.56%	100.00%
2033	7,089,719,666	6,291,349,309	798,370,356	2,543,774,324	798,370,356	1,745,403,968	27.74%	100.00%
2034	7,165,604,128	6,237,274,648	928,329,480	2,664,752,853	928,329,480	1,736,423,374	27.84%	100.00%
2035	7,237,282,809	6,166,425,168	1,070,857,641	2,788,216,460	1,070,857,641	1,717,358,819	27.85%	100.00%
2036	7,305,268,531	6,078,949,816	1,226,318,715	2,914,684,329	1,226,318,715	1,688,365,614	27.77%	100.00%
2037	7,371,269,596	5,976,208,829	1,395,060,766	3,046,621,013	1,395,060,766	1,651,560,247	27.64%	100.00%
2038	7,436,331,588	5,859,109,998	1,577,221,590	3,185,835,902	1,577,221,590	1,608,614,312	27.45%	100.00%
2039	7,501,392,372	5,728,502,417	1,772,889,955	3,333,994,288	1,772,889,955	1,561,104,332	27.25%	100.00%
2040	7,568,350,886	5,586,321,816	1,982,029,070	3,493,940,831	1,982,029,070	1,511,911,760	27.06%	100.00%
2041	7,636,780,066	5,432,450,143	2,204,329,924	3,665,753,007	2,204,329,924	1,461,423,083	26.90%	100.00%
2042	7,706,612,884	5,267,129,283	2,439,483,601	3,850,166,287	2,439,483,601	1,410,682,686	26.78%	100.00%
2043	7,777,660,934	5,090,795,214	2,686,865,720	4,047,690,450	2,686,865,720	1,360,824,730	26.73%	100.00%
2044	7,849,309,696	4,903,788,690	2,945,521,006	4,258,277,646	2,945,521,006	1,312,756,640	26.77%	100.00%
2045	7,921,484,647	4,707,180,521	3,214,304,126	4,482,832,993	3,214,304,126	1,268,528,867	26.95%	100.00%
2046	7,994,083,358	4,502,242,219	3,491,841,138	4,722,341,426	3,491,841,138	1,230,500,287	27.33%	100.00%
2047	8,067,442,462	4,290,729,058	3,776,713,405	4,978,336,024	3,776,713,405	1,201,622,619	28.01%	100.00%
2048	8,142,427,416	4,075,083,537	4,067,343,879	5,253,131,937	4,067,343,879	1,185,788,059	29.10%	100.00%
2049	8,219,686,076	3,857,619,143	4,362,066,933	5,548,907,568	4,362,066,933	1,186,840,634	30.77%	100.00%
2050	8,300,186,674	3,640,753,533	4,659,433,141	5,868,250,005	4,659,433,141	1,208,816,863	33.20%	100.00%
2051	8,384,200,692	3,426,068,167	4,958,132,525	6,213,030,686	4,958,132,525	1,254,898,162	36.63%	100.00%
2052	8,471,948,003	3,214,661,396	5,257,286,607	6,585,020,583	5,257,286,607	1,327,733,977	41.30%	100.00%
2053	8,563,872,409	3,007,428,413	5,556,443,996	6,986,308,548	5,556,443,996	1,429,864,552	47.54%	100.00%
2054	8,660,617,580	2,805,269,552	5,855,348,027	7,419,357,363	5,855,348,027	1,564,009,335	55.75%	100.00%
2055	8,762,913,356	2,609,002,444	6,153,910,912	7,886,858,091	6,153,910,912	1,732,947,179	66.42%	100.00%
2056	8,871,565,522	2,419,469,443	6,452,096,078	7,984,408,972	6,452,096,078	1,532,312,893	63.33%	100.00%
2057	8,987,139,165	2,237,195,796	6,749,943,368	8,088,425,251	6,749,943,368	1,338,481,882	59.83%	100.00%
2058	9,110,176,544	2,062,597,247	7,047,579,298	8,199,158,892	7,047,579,298	1,151,579,594	55.83%	100.00%
2059	9,241,074,405	1,895,875,588	7,345,198,817	8,316,966,966	7,345,198,817	971,768,150	51.26%	100.00%
2060	9,380,210,913	1,737,202,058	7,643,008,855	8,442,189,825	7,643,008,855	799,180,970	46.00%	100.00%
2061	9,527,842,617	1,586,610,760	7,941,231,858	8,575,058,359	7,941,231,858	633,826,501	39.95%	100.00%
2062	9,684,155,741	1,444,114,379	8,240,041,362	8,715,740,171	8,240,041,362	475,698,809	32.94%	100.00%
2063	9,849,284,188	1,309,697,112	8,539,587,077	8,864,355,774	8,539,587,077	324,768,697	24.80%	100.00%
2064	10,023,288,677	1,183,313,299	8,839,975,378	9,020,959,814	8,839,975,378	180,984,436	15.29%	100.00%
2065	10,206,180,513	1,064,909,214	9,141,271,299	9,185,562,466	9,141,271,299	44,291,168	4.16%	100.00%
2066	10,397,917,689	954,405,153	9,443,512,537	9,358,125,926	9,358,125,926	-	0.00%	99.10%

The projections in this report are strictly for the purpose of determining the GASB Single Discount Rate and are different from a funding projection for the ongoing plan.

CURRENT MEMBER PROJECTION OF ASSETS AND ASSIGNMENT OF EMPLOYER CONTRIBUTIONS

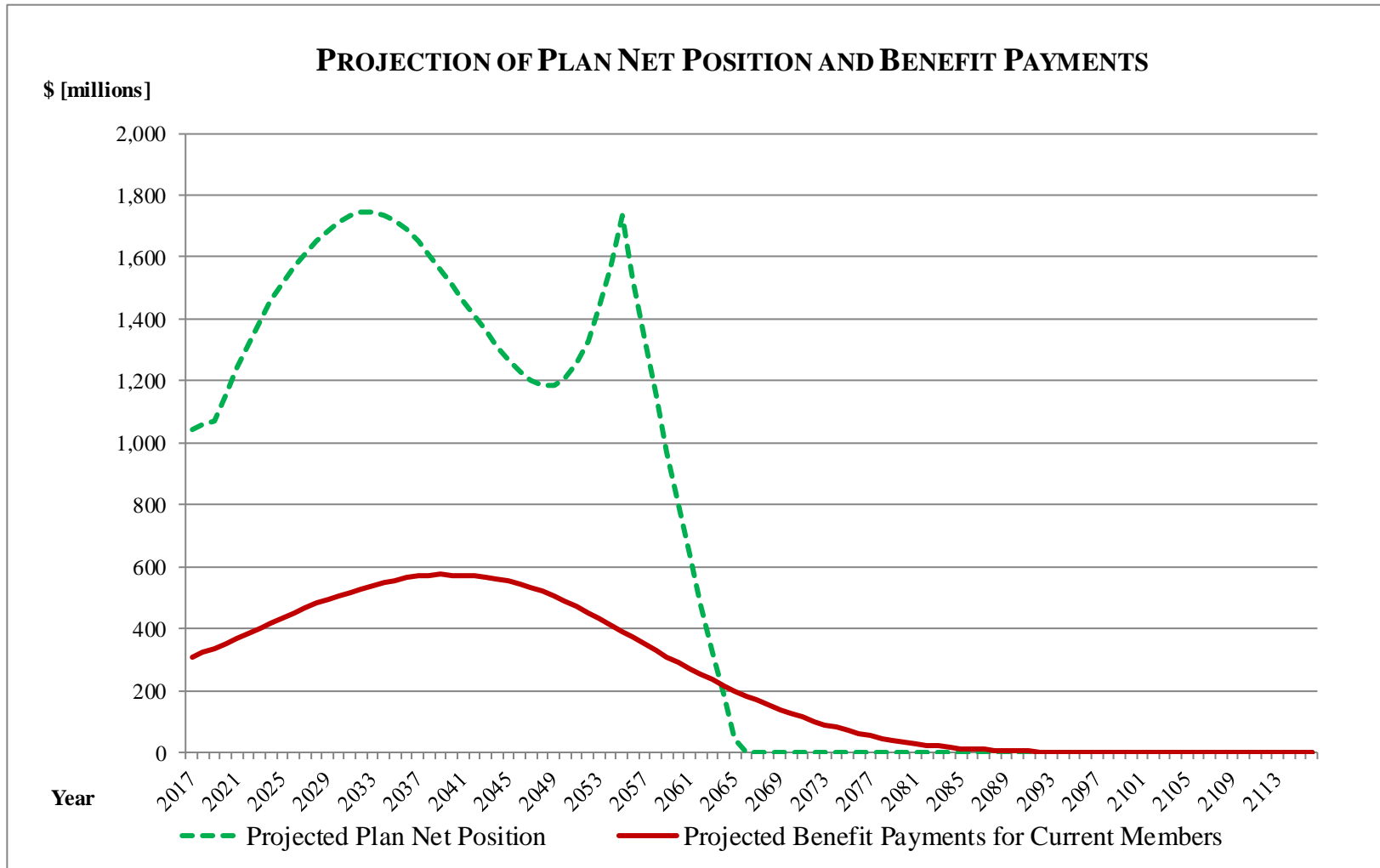
PYE 12/31	Assets (boý)	Member Contributions	Administrative Expenses	Benefit Payments	Assigned Employer/City Contribution	Income on Asset and Cash Flow	Assets (eoy)
2017	\$ 1,019,013,793	\$ 44,614,373	\$ 3,297,244	\$ 308,539,501	\$ 227,000,000	\$ 62,726,617	\$ 1,041,518,039
2018	1,041,518,039	46,161,440	3,284,777	321,681,414	233,810,157	63,475,319	1,059,998,764
2019	1,059,998,764	45,553,382	3,245,439	337,091,801	242,332,030	64,141,815	1,071,688,752
2020	1,071,688,752	44,760,091	3,193,180	352,819,261	335,391,556	64,248,016	1,160,075,975
2021	1,160,075,975	43,791,811	3,129,862	368,473,480	341,655,805	68,474,846	1,242,395,095
2022	1,242,395,095	42,636,852	3,052,374	384,574,205	348,368,460	73,895,584	1,319,669,412
2023	1,319,669,412	41,397,682	2,960,050	400,614,765	356,005,144	78,928,986	1,392,426,409
2024	1,392,426,409	40,074,138	2,861,566	417,497,362	362,986,602	83,571,906	1,458,700,126
2025	1,458,700,126	38,506,468	2,750,442	434,861,486	369,836,255	87,714,945	1,517,145,866
2026	1,517,145,866	36,721,389	2,629,616	451,776,975	376,255,461	91,282,296	1,566,998,422
2027	1,566,998,422	34,851,996	2,501,964	466,981,430	383,863,757	94,273,600	1,610,504,381
2028	1,610,504,381	33,145,723	2,374,308	480,644,996	392,157,443	96,828,751	1,649,616,994
2029	1,649,616,994	31,570,975	2,258,702	492,889,957	398,385,599	99,097,834	1,683,522,744
2030	1,683,522,744	30,074,448	2,160,442	504,010,256	403,896,784	101,059,842	1,712,383,120
2031	1,712,383,120	28,549,476	2,068,208	516,039,953	407,204,904	102,622,502	1,732,651,841
2032	1,732,651,841	26,796,604	1,964,142	527,496,987	410,179,666	103,596,353	1,743,763,335
2033	1,743,763,335	25,034,975	1,857,490	538,224,156	412,770,824	103,916,480	1,745,403,968
2034	1,745,403,968	23,218,207	1,749,186	548,561,302	414,565,614	103,546,073	1,736,423,374
2035	1,736,423,374	21,317,689	1,633,488	557,111,236	415,905,069	102,457,411	1,717,358,819
2036	1,717,358,819	19,474,972	1,518,927	564,470,897	416,854,510	100,667,138	1,688,365,614
2037	1,688,365,614	17,654,782	1,401,820	569,405,586	418,117,315	98,229,943	1,651,560,247
2038	1,651,560,247	16,020,401	1,293,504	572,708,388	419,768,147	95,267,408	1,608,614,312
2039	1,608,614,312	14,472,683	1,189,445	574,328,146	421,633,064	91,901,864	1,561,104,332
2040	1,561,104,332	13,007,974	1,087,639	573,278,937	423,874,886	88,291,144	1,511,911,760
2041	1,511,911,760	11,670,020	991,497	571,755,142	426,019,039	84,568,903	1,461,423,083
2042	1,461,423,083	10,281,989	887,865	569,107,597	428,181,929	80,791,147	1,410,682,686
2043	1,410,682,686	8,890,881	780,192	565,261,069	430,254,090	77,038,335	1,360,824,730
2044	1,360,824,730	7,521,673	670,834	560,369,524	432,057,793	73,392,801	1,312,756,640
2045	1,312,756,640	6,194,038	561,776	553,806,530	433,996,750	69,949,745	1,268,528,867
2046	1,268,528,867	4,947,688	456,208	545,518,365	436,139,810	66,858,496	1,230,500,287
2047	1,230,500,287	3,813,294	357,328	535,180,829	438,539,600	64,307,594	1,201,622,619
2048	1,201,622,619	2,817,412	268,182	522,286,921	441,366,192	62,536,938	1,185,788,059
2049	1,185,788,059	2,053,159	198,367	507,266,042	444,641,395	61,822,430	1,186,840,634
2050	1,186,840,634	1,478,157	144,838	490,106,692	448,298,673	62,450,929	1,208,816,863
2051	1,208,816,863	1,098,235	109,024	471,781,100	452,182,371	64,690,817	1,254,898,162
2052	1,254,898,162	837,951	84,217	452,737,198	456,054,606	68,764,673	1,327,733,977
2053	1,327,733,977	607,623	61,823	433,118,537	459,835,796	74,867,517	1,429,864,552
2054	1,429,864,552	423,429	43,615	413,004,595	463,580,561	83,189,004	1,564,009,335
2055	1,564,009,335	270,228	28,179	392,515,205	467,283,879	93,927,122	1,732,947,179
2056	1,732,947,179	156,895	16,563	371,693,685	63,629,992	107,289,075	1,532,312,893
2057	1,532,312,893	80,777	8,633	350,898,858	56,216,012	100,779,691	1,338,481,882
2058	1,338,481,882	34,191	3,699	330,262,391	56,186,097	87,143,514	1,151,579,594
2059	1,151,579,594	11,452	1,254	310,012,506	56,319,549	73,871,314	971,768,150
2060	971,768,150	3,305	367	290,182,298	56,479,372	61,112,807	799,180,970
2061	799,180,970	-	-	270,906,129	56,676,290	48,875,370	633,826,501
2062	633,826,501	-	-	252,205,461	56,919,179	37,158,589	475,698,809
2063	475,698,809	-	-	234,105,594	57,214,675	25,960,808	324,768,697
2064	324,768,697	-	-	216,634,178	57,571,225	15,278,692	180,984,436
2065	180,984,436	-	-	199,795,691	57,994,390	5,108,033	44,291,168
2066	44,291,168	-	-	183,611,305	139,320,138	-	-

The projections in this report are strictly for the purpose of determining the GASB Single Discount Rate and are different from a funding projection for the ongoing plan.

DEVELOPMENT OF SINGLE DISCOUNT RATE

PYE 12/31	Benefit Payments	Discount Rate	Discounted Benefit Payment	Single Discount Rate	Discounted Benefit Payment
2017	\$ 308,539,501	7.50%	\$ 297,581,920	7.30%	\$ 297,859,826
2018	321,681,414	7.50%	288,611,261	7.30%	289,420,604
2019	337,091,801	7.50%	281,337,114	7.30%	282,653,250
2020	352,819,261	7.50%	273,919,317	7.30%	275,715,002
2021	368,473,480	7.50%	266,114,260	7.30%	268,359,310
2022	384,574,205	7.50%	258,364,950	7.30%	261,031,488
2023	400,614,765	7.50%	250,364,030	7.30%	253,420,660
2024	417,497,362	7.50%	242,711,444	7.30%	246,133,722
2025	434,861,486	7.50%	235,168,419	7.30%	238,929,980
2026	451,776,975	7.50%	227,270,822	7.30%	231,337,539
2027	466,981,430	7.50%	218,529,834	7.30%	222,855,803
2028	480,644,996	7.50%	209,231,509	7.30%	213,772,128
2029	492,889,957	7.50%	199,592,476	7.30%	204,304,975
2030	504,010,256	7.50%	189,856,341	7.30%	194,702,113
2031	516,039,953	7.50%	180,825,883	7.30%	185,787,690
2032	527,496,987	7.50%	171,944,697	7.30%	176,992,926
2033	538,224,156	7.50%	163,201,267	7.30%	168,306,710
2034	548,561,302	7.50%	154,730,897	7.30%	159,869,541
2035	557,111,236	7.50%	146,179,115	7.30%	151,315,981
2036	564,470,897	7.50%	137,776,930	7.30%	142,885,038
2037	569,405,586	7.50%	129,285,020	7.30%	134,328,832
2038	572,708,388	7.50%	120,962,725	7.30%	125,916,713
2039	574,328,146	7.50%	112,841,709	7.30%	117,682,599
2040	573,278,937	7.50%	104,777,269	7.30%	109,476,387
2041	571,755,142	7.50%	97,208,156	7.30%	101,757,602
2042	569,107,597	7.50%	90,007,468	7.30%	94,395,977
2043	565,261,069	7.50%	83,161,971	7.30%	87,379,690
2044	560,369,524	7.50%	76,690,530	7.30%	80,730,613
2045	553,806,530	7.50%	70,504,501	7.30%	74,357,389
2046	545,518,365	7.50%	64,604,040	7.30%	68,261,802
2047	535,180,829	7.50%	58,957,952	7.30%	62,412,451
2048	522,286,921	7.50%	53,523,256	7.30%	56,765,199
2049	507,266,042	7.50%	48,357,151	7.30%	51,382,014
2050	490,106,692	7.50%	43,461,737	7.30%	46,266,674
2051	471,781,100	7.50%	38,917,821	7.30%	41,506,920
2052	452,737,198	7.50%	34,741,271	7.30%	37,121,752
2053	433,118,537	7.50%	30,917,034	7.30%	33,097,209
2054	413,004,595	7.50%	27,424,421	7.30%	29,413,168
2055	392,515,205	7.50%	24,245,470	7.30%	26,052,279
2056	371,693,685	7.50%	21,357,521	7.30%	22,991,999
2057	350,898,858	7.50%	18,755,954	7.30%	20,229,066
2058	330,262,391	7.50%	16,421,312	7.30%	17,744,155
2059	310,012,506	7.50%	14,339,020	7.30%	15,523,074
2060	290,182,298	7.50%	12,485,407	7.30%	13,541,655
2061	270,906,129	7.50%	10,842,818	7.30%	11,782,080
2062	252,205,461	7.50%	9,390,082	7.30%	10,222,567
2063	234,105,594	7.50%	8,108,083	7.30%	8,843,406
2064	216,634,178	7.50%	6,979,510	7.30%	7,626,707
2065	199,795,691	7.50%	5,987,915	7.30%	6,555,390
2066	183,611,305	7.50%	5,118,945	7.30%	5,614,540
2067	168,112,692	3.78%	25,814,300	7.30%	4,790,905
2068	153,321,131	3.78%	22,685,492	7.30%	4,072,128
2069	139,257,754	3.78%	19,854,178	7.30%	3,446,998
2070	125,935,547	3.78%	17,300,840	7.30%	2,905,175
2080	34,264,170	3.78%	3,248,048	7.30%	390,740
2090	4,535,004	3.78%	296,636	7.30%	25,565
2100	246,080	3.78%	11,107	7.30%	686
2110	3,880	3.78%	121	7.30%	5
2115	252	3.78%	7	7.30%	0
Total Present Value			\$ 6,013,065,532		\$ 6,013,065,532

The projections in this report are strictly for the purpose of determining the GASB Single Discount Rate and are different from a funding projection for the ongoing plan.



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SECTION H

GLOSSARY OF TERMS

GLOSSARY OF TERMS

<i>Accrued Service</i>	Service credited under the system which was rendered before the date of the actuarial valuation.
<i>Actuarial Accrued Liability (“AAL”)</i>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
<i>Actuarial Assumptions</i>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<i>Actuarial Cost Method</i>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<i>Actuarial Equivalent</i>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<i>Actuarial Gain (Loss)</i>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<i>Actuarial Present Value (“APV”)</i>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
<i>Actuarial Valuation</i>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability and related actuarial present value of projected benefit payments for pensions.
<i>Actuarial Valuation Date</i>	The date as of which an actuarial valuation is performed.
<i>Actuarially Determined Contribution (“ADC”) or Annual Required Contribution (“ARC”)</i>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

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<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered-Employee Payroll</i>	The payroll of employees that are provided with pensions through the pension plan.
<i>Deferred Inflows and Outflows</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Deferred Retirement Option Program (“DROP”)</i>	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
<i>Discount Rate</i>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none"> 1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

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<i>Entry Age Actuarial Cost Method (“EAN”)</i>	The EAN is a cost method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
<i>Fiduciary Net Position</i>	The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.
<i>GASB</i>	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
<i>Long-Term Expected Rate of Return</i>	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
<i>Money-Weighted Rate of Return</i>	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
<i>Multiple-Employer Defined Benefit Pension Plan</i>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<i>Municipal Bond Rate</i>	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
<i>Net Pension Liability (“NPL”)</i>	The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.
<i>Non-Employer Contributing Entities</i>	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contributing entities.
<i>Normal Cost</i>	The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

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<i>Other Postemployment Benefits (“OPEB”)</i>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<i>Total Pension Expense</i>	The total pension expense is the sum of the following items that are recognized at the end of the employer’s fiscal year: <ol style="list-style-type: none"> 1. Service Cost 2. Interest on the Total Pension Liability 3. Current-Period Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
<i>Total Pension Liability (“TPL”)</i>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<i>Unfunded Actuarial Accrued Liability (“UAAL”)</i>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<i>Valuation Assets</i>	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.