Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago

GASB Statement Nos. 67 and 68 Accounting and Financial Reporting for Pensions

December 31, 2017

GRS Retirement Consulting

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May 2, 2018

The Retirement Board of the
Laborers' and Retirement Board Employees'
Annuity and Benefit Fund of Chicago
321 North Clark Street, Suite 1300
Chicago, IL 60654

Dear Members of the Board:

This report provides accounting and financial reporting information as of December 31, 2017, that is intended to comply with the Governmental Accounting Standards Board ("GASB") Statement Nos. 67 and 68 for the Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago ("LABF"). 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 summarized in this actuarial valuation report 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 LABF only in its entirety and only with the permission of LABF.

This report is based upon information, furnished to us by LABF, 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 the Fund and should be considered in conjunction with that report. Please see the actuarial valuation report as of December 31, 2017, 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.") 100-0023, effective July 6, 2017, the funding policy was amended and requires City contributions to equal $36 million in payment year 2018, $48 million in payment year 2019, $60 million in payment year 2020, $72 million in payment year 2021 and $84 million in payment year 2022. For payment years after 2022, the City contribution equals the sum of the net employer normal cost plus a level percent of payroll amortization of the unfunded liability needed to attain a 90% funded ratio by 2058 on an open group basis. After 2058, the City contribution equals the amount necessary to maintain the 90% funded ratio. While the new statutory funding policy is an improvement, it does not comply with generally accepted actuarial standards for the funding of retirement plans and therefore, we recommend strengthening the policy.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago under the reporting and disclosure requirements of 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 signing actuaries are independent of the plan sponsor.

Alex Rivera and Lance 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.

This report may be provided to parties other than LABF only in its entirety and only with the permission of LABF. GRS is not responsible for unauthorized use of this report.

Respectfully submitted,

By Alex Rivera
Alex Rivera
F.S.A., E.A., M.A.A.A., F.C.A.

By Lance J. Weiss
Lance J. Weiss
E.A., M.A.A.A., F.C.A.

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Auditor's Note – This information is intended to assist in preparation of the financial statements of the Laborers' and Retirement Board Employees' 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, 2017

		2017
Actuarial Valuation Date		December 31, 2017
Measurement Date of the Net Pension Liability		December 31, 2017
Employer's Fiscal Year Ending Date (Reporting Date)		December 31, 2017
Membership		
Number of		
- Retirees and Beneficiaries		3,703
- Inactive, Nonretired Members		1,469
- Active Members		2,794
- Total		7,966
Covered Payroll	$	208,442,487
Net Pension Liability		
Total Pension Liability	$	2,630,107,508
Plan Fiduciary Net Position		1,267,554,561
Net Pension Liability	$	1,362,552,947
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		48.19%
Net Pension Liability as a Percentage of Covered Payroll		653.68%
Development of the Single Discount Rate		
Single Discount Rate Beginning of Year		4.17%
Single Discount Rate End of Year		7.07%
Long-Term Expected Rate of Investment Return		7.25%
Long-Term Municipal Bond Rate Beginning of Year*		3.78%
Long-Term Municipal Bond Rate End of Year*		3.31%
Last year trust assets are available to pay benefits		2071
Total Pension Expense	$	114,513,005

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	$ -	$ (63,241,803)
Changes in assumptions	151,720,403	(793,687,874)
Net difference between projected and actual earnings on pension plan investments	66,790,945	(99,506,910)
Total	$ 218,511,348	$ (956,436,587)

**Source: The rate at the beginning of the year is based on the rate as of December 29, 2016, from the "20-Bond GO Index" which 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 Corps' AA.*

The rate at the end of the year is the rate for fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of December 29, 2017. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.

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, is 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 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.

Discussion

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% higher and 1% 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%, receivables and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Discussion

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.

These tables may be built prospectively as the information becomes available.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least once 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, 2017, and a measurement date of December 31, 2017.

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 general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) 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 7.25% for plan years beginning after December 31, 2017; the municipal bond rate is 3.31% (based on the weekly rate closest to but not later than the measurement date of the "state & local bonds" rate from Federal Reserve statistical release (H.15)); and the resulting Single Discount Rate is 7.07%.

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.

Discussion

Recent Legislation

Public Act ("P.A.") 100-0023, effective July 6, 2017, modified the City's funding policy and created a new tier of benefits for active members hired on or after July 6, 2017, and Tier 2 members under a one-time irrevocable election. The new benefit structure ("Tier 3") introduces new retirement eligibility ages, increases employee contributions and changes the provisions for automatic increases in annuities.

The City's funding policy was amended to achieve 90% funded status by 2058. Required City contributions are $36 million in payment year 2018, $48 million in payment year 2019, $60 million in payment year 2020, $72 million in payment year 2021, $84 million in payment year 2022, and for 2023 through 2058, contributions are determined as a level percentage of employee payroll sufficient to achieve 90% funding by 2058.

The total pension liability shown in this report reflects the funding and benefit changes pursuant to P.A. 100-0023.

Change in Assumptions

The actuarial assumptions have been changed since the last report to reflect the results of the experience study performed for the period January 1, 2012, through December 31, 2016. The Board adopted the new assumptions at their March 20, 2018, meeting.

Following is a summary of the actuarial assumptions adopted by the Board as a result of the most recent experience study:

Economic Assumptions

• **Price inflation**: Decrease the rate of price inflation from 3.00% to 2.25%.

• **Retiree Cost-of-Living Adjustment and Increases in the Pay Cap for Pensionable Pay for Participants Hired on and After January 1, 2011**: Reduce the assumed rate of COLA and increases in capped pay for participants hired on or after January 1, 2011, from 1.50% to 1.125% (from 50% of 3.00% to 50% of 2.25%).

• **Investment return**: Decrease the nominal investment return assumption from 7.50% to 7.25%, net of investment expenses and compounded annually. This reflects an underlying inflation assumption of 2.25%.

• **General wage inflation and payroll growth assumption**: Decrease general wage inflation assumption from 3.75% to 3.00%, which reflects an underlying general or price inflation assumption of 2.25%.

• **Salary increase**: Modify the current salary increase assumptions to reflect 3.00% wage inflation plus a service-based component for merit, longevity and promotion, ranging from 0.20% to 12.00% based on years of service.

Discussion

Mortality Assumptions

• Update post-retirement mortality tables to the most recently published national “blue collar” tables, the RP-2014 Blue Collar Healthy Annuitant Mortality tables. We also assume mortality rates will improve in the future using a fully generational approach, but with the most recently published projection scale, MP–2017. These new mortality tables are a move from a single-dimensional age-based table to a two-dimensional table, where the year a person was born also influences their mortality rate.

• Update pre-retirement mortality tables for active employees to the most recently published national “blue collar” tables, the RP-2014 Blue Collar Employee mortality tables. We also assume mortality rates will improve in the future using a fully generational approach, but with the most recently published projection scale, MP–2017.

• Apply certain scaling factors to the base tables based on the actual mortality experience and the credibility that can be applied to that experience.

Other Demographic Assumptions

• **Retirement rates**: Continue to use predominantly service-based rates with higher rates at older ages. The actual rates of retirement were less than expected for all ages signifying that members are retiring later and in less numbers than expected and thus decreased rates for all age and service bands.

• **Turnover rates**: Modified the current service based rates. These modifications include increasing the rate of termination during a member’s first year of service and decreasing rates for service beyond one year.

• Disability rates: Continue to value disability as a term cost only, as a majority of disabilities were short-term in nature. Disability costs were increased from 2.50% of payroll to 3.00% of payroll.

Actuarial Methods and Policies

• Cost method: Continue to use the Entry Age Normal cost method, which is required to be used by State Statute.

• Amortization method: The State Statute requires fixed City contributions for payment years 2018 through 2022 and level percentage of pay contributions thereafter, such that the funded ratio reaches 90% by the end of 2058. There is no separate amortization of the unfunded accrued liability that leads to a 100% funding of the accrued liability. This funding method may not comply with generally accepted actuarial principles for the funding of a retirement fund because the funding method targets 90% instead of 100%.

• Asset smoothing method: The asset smoothing method is also defined by State Statute. Gains and losses, the difference between the actual investment return and expected investment return, are smoothed in over a five-year period at a rate of 20% per year.

• **Administrative expenses**: Continue to include administrative expenses as an additional component of the normal cost. Administrative expenses are based on the previous years' administrative expenses and increased by the inflation assumption (2.25%) and discounted to the beginning of year. Future administrative expenses, for projection purposes, are assumed to increase at the assumed rate of inflation.

• **Dependent assumptions**: Decrease the current marriage assumption from 85% to 75% based on the demographics of the valuation census data over the experience study period. The male spouse is assumed to be three years older than the female spouse. No dependent assumptions are made for current retirees as actual eligible spouse data is provided.

• **Decrement timing**: Maintain decrement timing of middle of year.

A summary of the actuarial assumptions and methods used in this actuarial valuation are included in Section F of this report.

SECTION B

FINANCIAL STATEMENTS

Auditor’s Note: This information is intended to assist in preparation of the financial statements of the Laborers' and Retirement Board Employees' 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, 2017

A. Expense

1.	Service Cost Including Pension Plan Administrative Expense	$	80,231,718
2.	Interest on the Total Pension Liability		154,047,387
3.	Current-Period Benefit Changes		150,457
4.	Employee Contributions (made negative for addition here)		(17,410,821)
5.	Projected Earnings on Plan Investments (made negative for addition here)		(83,597,607)
6.	Other Changes in Plan Fiduciary Net Position		-
7.	Recognition of Outflow/(Inflow) of Resources due to Liabilities		(39,938,044)
8.	Recognition of Outflow/(Inflow) of Resources due to Assumption Changes		15,526,681
9.	Recognition of Outflow/(Inflow) of Resources due to Assets		5,503,234
10.	**Total Pension Expense**	**$**	**114,513,005**

B. Reconciliation of Net Pension Liability

1.	**Net Pension Liability Beginning of Year**	**$**	**2,525,904,577**
2.	Pension Expense		114,513,005
3.	Employer Contributions (made negative for addition here)		(35,456,607)
4.	Change in Liability Experience Outflows/(Inflows) Recognized in Current Liabilities		(22,240,189)
5.	Change in Assumption Changes Experience Outflows/(Inflows) Recognized in Current Liabilities		(1,090,280,967)
6.	Change in Investment Experience Outflows/(Inflows) Recognized in Current Assets		(129,886,872)
7.	**Net Pension Liability End of Year**	**$**	**1,362,552,947**

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods
Fiscal Year Ended December 31, 2017

A. Outflows and (Inflows) of Resources Recognized in Current and Future Pension Expenses as of Plan Year End December 31, 2017

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) to be Recognized in Future Pension Expenses	Deferred Outflows to be Recognized in Future Pension Expenses
1. Differences Between Expected	$ (62,178,234)	December 31, 2017	3.4919	$ -	$ (17,806,419)	$ (44,371,815)	$ -
and Actual Non-Investment Experience	(30,428,098)	December 31, 2016	3.4767	(8,752,006)	(8,752,006)	(12,924,086)	-
	(46,084,758)	December 31, 2015	3.4444	(26,759,238)	(13,379,619)	(5,945,902)	-
	$ (138,691,090)		3.4710	$ (35,511,244)	$ (39,938,044)	$ (63,241,803)	$ -
2. Assumption Changes	$ (1,074,754,286)	December 31, 2017	3.4919	$ -	$ (307,784,955)	$ (766,969,331)	$ -
	(62,905,368)	December 31, 2016	3.4767	(18,093,413)	(18,093,413)	(26,718,543)	-
	1,175,935,546	December 31, 2015	3.4444	682,810,096	341,405,048	-	151,720,403
	$ 38,275,892		3.4710	$ 664,716,683	$ 15,526,681	$ (793,687,874)	$ 151,720,403
3. Difference Between Expected	$ (124,383,638)	December 31, 2017	5.0000	$ -	$ (24,876,728)	$ (99,506,910)	$ -
and Actual Investment Earnings	30,155,090	December 31, 2016	5.0000	6,031,018	6,031,018	-	18,093,054
	121,744,726	December 31, 2015	5.0000	48,697,890	24,348,945	-	48,697,891
	27,516,178		5.0000	$ 54,728,908	$ 5,503,234	$ (99,506,910)	$ 66,790,945
4. Total	**$ (72,899,019)**			**$ 683,934,347**	**$ (18,908,129)**	**$ (956,436,587)**	**$ 218,511,348**

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
2018	$ (32,504,327)	$ (174,157,965)	$ 5,503,234
2019	(21,978,499)	(316,410,085)	5,503,236
2020	(8,758,977)	(151,399,421)	(18,845,710)
2021	-	-	(24,876,726)
2022	-	-	-
Thereafter	-	-	-
Total	**$ (63,241,803)**	**$ (641,967,471)**	**$ (32,715,966)**

Year Ending December 31	Deferred Outflows of Resources	Deferred (Inflows) of Resources	Net Deferred Outflows/ (Inflows) of Resources
2018	$ 182,100,366	$ (383,259,423)	$ (201,159,057)
2019	30,379,964	(363,265,312)	(332,885,348)
2020	6,031,018	(185,035,126)	(179,004,108)
2021	-	(24,876,726)	(24,876,726)
2022	-	-	-
Thereafter	-	-	-
Total	**$ 218,511,348**	**$ (956,436,587)**	**$ (737,925,239)**

Numbers may not add due to rounding.

Statement of Fiduciary Net Position
Year Ended December 31, 2017, and 2016

	2017	2016
Assets		
Receivables		
Employer	$ 35,489,913	$ 14,539,917
Plan member	672,467	658,664
Due from broker - net	-	2,013,322
Interest and dividends	2,413,577	2,003,614
Other receivables	99,880	60,759
Total receivables	38,675,837	19,276,276
Investments - at fair value		
Cash and short-term investments	40,133,923	27,042,260
Equities	696,436,254	611,831,285
Fixed income	255,736,740	223,888,913
Private equity	25,044,888	34,178,770
Real estate	65,763,113	63,490,674
Hedge funds	84,710,561	79,436,011
Global asset allocation funds	74,836,012	113,969,017
Subtotal	1,242,661,491	1,153,836,930
Forward currency contracts	-	1,332,733
Securities lending cash collateral	51,184,334	55,358,674
Total investments - fair value	1,293,845,825	1,210,528,337
Property and equipment	930	5,255
Total assets	1,332,522,592	1,229,809,868
Deferred outflows		
Accumulated decrease in fair value of hedging derivatives	274,037	-
Liabilities and net position		
Liabilities		
Due to brokers - net	8,119,779	-
Refunds, professional fees payable and other liabilities	2,656,046	2,702,842
OPEB liability	3,007,872	2,674,895
Securities lending cash collateral	51,184,334	55,358,674
Total liabilities	65,242,068	60,736,411
Deferred inflows		
Accumulated increase in fair value of hedging derivatives	-	1,332,733
Net Position - Restricted for Pension Benefits	$ 1,267,554,561	$ 1,167,740,724

Statement Changes in Fiduciary Net Position
Year Ended December 31, 2017, and 2016

	2017	2016
Additions		
Contributions		
Employer[a]	$ 35,456,607	$ 12,603,498
Plan Member	17,410,821	17,245,913
Total Contributions	52,867,428	29,849,411
Investment Income		
Net appreciation in fair value of investments	196,485,683	45,918,109
Interest	7,188,153	6,223,155
Dividends	9,354,027	9,689,646
Private equity income - net	(1,066,395)	222,095
Real estate operating income - net	1,363,394	1,912,695
Hedge funds income - net	1,057,188	514,222
Global Net Investment Income	1,823,299	2,121,924
	216,205,349	66,601,846
Less investment expenses	(8,462,764)	(8,864,044)
Investment income - net	207,742,585	57,737,802
Securities lending		
Income	769,069	400,188
Lender (borrower) rebates	(432,062)	(64,000)
Management fees	(98,347)	(76,661)
Securities lending income - net	238,660	259,527
Total additions	260,848,673	87,846,740
Deductions		
Benefits[a]	154,767,434	151,922,150
Refunds	2,282,455	2,760,872
Administrative and OPEB expenses	3,984,947	4,080,239
Total deductions	161,034,836	158,763,261
Net increase	99,813,837	(70,916,521)
Net Position Restricted for Pension Benefits		
Beginning of year	1,167,740,724	1,238,657,245
End of year	$ 1,267,554,561	$ 1,167,740,724

[a]*Excludes amount paid for health insurance supplement of $1,839,997 for fiscal year ending December 31, 2016.*

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Auditor’s Note: This information is intended to assist in preparation of the financial statements of the Laborers' and Retirement Board Employees' 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.

Statement of Changes in Net Position Liability and Related Ratios
Current Period
Fiscal Year Ended December 31, 2017

A. Total Pension Liability		
1. Service Cost Including Pension Plan Administrative Expense	$	80,231,718
2. Interest on the Total Pension Liability		154,047,387
3. Changes of Benefit Terms		150,457
4. Difference Between Expected and Actual Experience of the Total Pension Liability		(62,178,234)
5. Changes of Assumptions		(1,074,754,286)
6. Benefit Payments, Including Refunds of Employee Contributions		(157,049,889)
7. Pension Plan Administrative Expenses		(3,984,947)
8. Net Change in Total Pension Liability		(1,063,537,793)
9. Total Pension Liability – Beginning		3,693,645,301
10. Total Pension Liability – Ending	**$**	**2,630,107,508**
B. Plan Fiduciary Net Position		
1. Contributions – Employer		35,456,607
2. Contributions – Employee		17,410,821
3. Net Investment Income		207,981,245
4. Benefit Payments, Including Refunds of Employee Contributions		(157,049,889)
5. Pension Plan Administrative Expense		(3,984,947)
6. Other		-
7. Net Change in Plan Fiduciary Net Position		99,813,837
8. Plan Fiduciary Net Position – Beginning		1,167,740,724
9. Plan Fiduciary Net Position – Ending	**$**	**1,267,554,561**
C. Net Pension Liability	**$**	**1,362,552,947**
D. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability		**48.19%**
E. Covered-Employee Payroll	**$**	**208,442,487**
F. Net Pension Liability as a Percentage of Covered Employee Payroll		**653.68%**

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Fiscal year ending December 31,	2017	2016	2015	2014
Total Pension Liability				
Service Cost Including Pension Plan Administrative Expense	$ 80,231,718	$ 82,960,086	$ 38,388,765	$ 38,523,054
Interest on the Total Pension Liability	154,047,387	150,166,006	153,811,897	174,071,492
Benefit Changes	150,457	-	384,032,638	(324,166,854)
Difference between Expected and Actual Experience	(62,178,234)	(30,428,098)	(46,084,758)	-
Assumption Changes	(1,074,754,286)	(62,905,368)	1,175,935,546	28,201,429
Benefit Payments	(154,767,434)	(151,922,150)	(150,013,189)	(145,586,268)
Refunds	(2,282,455)	(2,760,872)	(2,516,351)	(2,071,694)
Pension Plan Administrative Expense	(3,984,947)	(4,080,239)	(3,844,346)	(3,835,170)
Net Change in Total Pension Liability	(1,063,537,793)	(18,970,635)	1,549,710,202	(234,864,011)
Total Pension Liability - Beginning	3,693,645,301	3,712,615,936	2,162,905,734	2,397,769,745
Total Pension Liability - Ending (a)	$ 2,630,107,508	$ 3,693,645,301	$ 3,712,615,936	$ 2,162,905,734
Plan Fiduciary Net Position				
Employer Contributions	35,456,607	12,603,498	12,412,471	$ 12,160,815
Employee Contributions	17,410,821	17,245,913	16,844,246	16,359,082
Pension Plan Net Investment Income	207,981,245	57,997,329	(22,318,476)	53,393,517
Benefit Payments	(154,767,434)	(151,922,150)	(150,013,189)	(145,586,268)
Refunds	(2,282,455)	(2,760,872)	(2,516,351)	(2,071,694)
Pension Plan Administrative Expense	(3,984,947)	(4,080,239)	(3,844,346)	(3,835,170)
Other	-	-	-	-
Net Change in Plan Fiduciary Net Position	99,813,837	(70,916,521)	(149,435,645)	(69,579,718)
Plan Fiduciary Net Position - Beginning	1,167,740,724	1,238,657,245	1,388,092,890	1,457,672,608
Plan Fiduciary Net Position - Ending (b)	$ 1,267,554,561	$ 1,167,740,724	$ 1,238,657,245	$ 1,388,092,890
Net Pension Liability - Ending (a) - (b)	1,362,552,947	2,525,904,577	2,473,958,691	774,812,844
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	48.19%	31.61%	33.36%	64.18%
Covered Employee Payroll	$ 208,442,487	$ 208,154,918	$ 204,772,903	$ 202,673,014
Net Pension Liability as a Percentage of Covered Employee Payroll	653.68%	1213.47%	1208.15%	382.30%

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 Position Liability and Related Ratios Multiyear

The significant decrease in the Total Pension Liability during fiscal year end December 31, 2017, was primarily due to the increase in the Single Discount Rate from 4.17% at the beginning of the fiscal year to 7.07% at the end of the fiscal year. The change in the funding policy under P.A. 100-0023 was the primary reason for the increase in the Single Discount Rate.

The Total Pension Liability at the beginning of fiscal year 2017 used a Single Discount Rate of 4.17% and the benefit provisions and funding policy in effect as of the December 31, 2016, funding actuarial valuation. The Single Discount Rate of 4.17% was based on a long-term expected rate of return on pension plan investments of 7.50% for years 2017 through 2027 and a long-term municipal bond rate as of December 29, 2016, of 3.78% for subsequent years after 2027.

The Total Pension Liability at the end of fiscal year 2017 used a Single Discount Rate of 7.07% and the benefit provisions and funding policy in effect as of the December 31, 2017, funding actuarial valuation. The Single Discount Rate of 7.07% was based on a long-term expected rate of return on pension plan investments of 7.25% for years 2018 through 2071 and a long-term municipal bond rate as of December 29, 2017, of 3.31% for subsequent years after 2071.

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[a]	Net Pension Liability as a % of Covered Payroll
2014	$ 2,162,905,734	$ 1,388,092,890	$ 774,812,844	64.18%	$ 202,673,014	382.30%
2015	3,712,615,936	1,238,657,245	2,473,958,691	33.36%	204,772,903	1208.15%
2016	3,693,645,301	1,167,740,724	2,525,904,577	31.61%	208,154,918	1213.47%
2017	2,630,107,508	1,267,554,561	1,362,552,947	48.19%	208,442,487	653.68%

[a] *Covered payroll is the amount in force as of the actuarial 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,	Actuarial Determined Contribution[a]	Actual Contribution	Contribution Deficiency/ (Excess)	Covered Payroll[b]	Actual Contribution as a % of Covered Payroll	Statutory Contribution[c]	Statutory Contribution Deficiency/(Excess)
2008	$ 17,652,023	$ 15,232,804	$ 2,419,219	$ 216,744,211	7.03%	$ 15,543,376	$ 310,572
2009	33,517,429	14,626,771	18,890,658	208,626,493	7.01%	14,982,660	355,889
2010	46,664,704	15,351,944	31,312,760	199,863,410	7.68%	15,652,734	300,790
2011	57,258,593	12,778,697	44,479,896	195,238,332	6.55%	13,055,795	277,098
2012	77,566,394	11,852,905	65,713,489	198,789,741	5.96%	12,336,770	483,865
2013	106,199,410	11,583,051	94,616,359	200,351,820	5.78%	12,098,712	515,661
2014	106,018,725	12,160,815	93,857,910	202,673,014	6.00%	12,714,800	553,985
2015	79,850,835	12,412,471	67,438,364	204,772,903	6.06%	12,857,827	445,356
2016	117,033,100	12,603,498	104,429,603	208,154,918	6.05%	13,179,003	575,505
2017	124,226,042	35,456,607	88,769,435	208,442,487	17.01%	36,000,000	543,393

[a] *The LABF Statutory Funding Policy does not conform to Actuarial Standards of Practice; therefore, the Actuarial Determined Contribution is equal to the normal cost plus an amount to amortize the unfunded liability using level dollar payments and a 30-year open amortization period.*

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

[c] *Excludes amounts paid for health insurance supplement in fiscal years prior to December 31, 2017.*

Notes to Schedule of Contributions

Valuation Date: December 31, 2017

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

Actuarial Cost Method	Entry Age Normal
Amortization Method	Prior to 2017, the total City contribution is generated by a tax equal to 1.00 times the contributions by participants to the Fund two years prior to the year of the tax levy. For tax levy years 2017-2021, the statutory contributions are equal to $36 million, $48 million, $60 million, $72 million, and $84 million, respectively. For tax levy years on and after 2022, the statutory contributions are equal to a level percentage of pay contribution determined so that the Fund attains a 90% funded ratio by the end of 2058 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	Five-year smoothed market
Inflation	2.25% as of the December 31, 2017, actuarial valuation.
Salary Increases	Salary increase rates based on service-related productivity and merit rates plus wage inflation of 3.00%.
Postretirement Benefit Increases	Post retirement benefit increases are equal to 3.00%, compounded annually, for Tier 1 members. Post retirement increases for Tier 2 and Tier 3 members are equal to the lesser of 3.00% or one-half the annual unadjusted percentage increase (but no less than zero) in the Consumer Price Index-U for the 12 months ending with the September preceding the date of the increase, using simple interest.
Investment Rate of Return	7.25% as of the December 31, 2017, actuarial valuation.
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the December 31, 2017, valuation pursuant to an experience study of the period January 1, 2012, through December 31, 2016.
Mortality	Post Retirement Mortality: Scaling factors of 117% for males, and 102% for females of the RP-2014 Blue Collar Healthy Annuitant mortality table, sex distinct, with generational mortality improvement using MP-2017 2-dimensional mortality improvement scales. No adjustment is made for post-disabled mortality. Pre Retirement Mortality: Scaling factors of 109% for males, and 103% for females of the RP-2014 Blue Collar Employee mortality table, sex distinct, with generational mortality improvement using MP-2017 2-dimensional mortality improvement scales.

Other Information:

Notes	The actuarial valuation is based on the statutes in effect as of December 31, 2017. Benefit changes as a result of Public Act 100-0023 were recognized in the Total Pension Liability as of December 31, 2017.

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

Actuarial Cost Method	Entry Age Normal
Asset Valuation Method	Market
Discount Rate	4.17% as of the December 31, 2016, actuarial valuation. 7.07% as of the December 31, 2017, actuarial valuation.

Schedule of Investment Returns Multiyear

FY Ending December 31,	Annual Market Value Return
2014	3.20 %
2015	(1.50)%
2016	5.00 %
2017	18.67 %

The annual money-weighted rates of return, net of investment expenses for each fiscal year were provided by the Fund.

Ten fiscal years will be built prospectively.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Auditor's Note: This information is intended to assist in preparation of the financial statements of the Laborers' and Retirement Board Employees' 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.

Sensitivity of Net Pension Liability
To the Single Discount Rate Assumption

Single Discount Rate

A Single Discount Rate of 7.07% 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 7.25% and a municipal bond rate of 3.31%. 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 under the statutory funding policy. 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 2071. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2071, 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 7.07%, 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 6.07%	Current Single Discount Rate Assumption 7.07%	1% Increase 8.07%
$ 1,680,427,775	$ 1,362,552,947	$ 1,096,678,255

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	3,703
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	1,469
Active Plan Members[a]	2,794
Total Plan Members	7,966

[a]*Active members include disabled employees.*

Additional information about the member data used is included in the December 31, 2017, funding actuarial valuation report.

Section E

Summary of Benefits

Plan Description (as of December 31, 2017)

Any employee of the City of Chicago or the Board of Education employed under the provisions of the municipal personnel ordinance as labor service or any person employed by a retirement board of any annuity and benefit fund in the city is covered by the Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago (Laborers' Plan) which is a defined benefit single employer pension plan with a money purchase minimum. Although this is a single employer plan, the defined benefits, as well as the employer and employee contribution levels, are mandated in Illinois Compiled Statutes (Chapter 40, Pensions, Article 5/11) and may be amended only by the Illinois legislature. The City of Chicago accounts for the plan as a pension trust fund. The City of Chicago payroll for employees covered by the Laborers' Plan for the year ended December 31, 2017, was $208,442,487. At December 31, 2017, the Laborers' Plan membership consisted of:

Retiree, surviving spouse, reversionary annuitant and child annuitants currently receiving benefits	3,703
Terminated inactive employees entitled to benefits or a refund of contributions but not yet receiving them	1,469
Current employees (includes 219 disabilities)	2,794

The Laborers' Fund provides retirement benefits as well as death and disability benefits. Employees age 55 or more with at least 10 years of service are entitled to receive a money purchase annuity with partial city contributions if under age 60 with less than 20 years of service. Employees age 55 or more with at least 20 years of service or age 50 or more with at least 30 years of service are entitled to receive a minimum formula annuity of 2.4% per year of service times the final average salary (highest average annual salary for any four consecutive years within the last 10 years of service immediately preceding the date of retirement). If the employee retires prior to age 60, the annuity shall be reduced by ¼ of 1.00% for each month the employee is under age 60, unless the employee is 50 or over with at least 30 years of service or 55 or over with at least 25 years of service. The original annuity is limited to 80% of the highest average annual salary. Beginning January 1, 1999, there is a 10-year deferred vested benefit payable at age 60. Employees who retire at age 60 or over with at least 10 years of service are entitled to a minimum of $850 per month.

The monthly annuity is increased by 3.00% in January of the year of the first payment date following the later of age 60 or the first anniversary of retirement, and by 3.00% annually thereafter; except that for an employee retiring prior to age 60 the first increase will occur no later than January of the year of the first payment date following the later of (1) the third anniversary of retirement or (2) the attainment of age 53.

Participants who first became members on or after January 1, 2011, are subject to different retirement eligibility conditions and benefit provisions as described on the following pages.

Plan Description (as of December 31, 2017)

Covered employees are required to contribute 8.50% of their salary to the Laborers' Plan. If an employee leaves covered employment without qualifying for an annuity, accumulated contributions are refunded with 3.00% annual interest.

The City of Chicago is required by state statutes to contribute the remaining amounts necessary to finance the requirements of the Fund. In payment years prior to 2018, it is required to levy a tax at a rate not more than an amount equal to the total amount of contributions by the employees to the Fund made in the calendar year two years prior to the year for which the annual applicable tax is levied, multiplied by 1.00 annually. Beginning in payment year 2018, City contributions are equal to $36 million in payment year 2018, $48 million in payment year 2019, $60 million in payment year 2020, $72 million in payment year 2021 and $84 million in payment year 2022. For payment years after 2022, the City contribution equals the sum of the net employer normal cost plus a level percent of payroll amortization of the unfunded liability needed to attain a 90% funded ratio by 2058 on an open group basis. After 2058, the City contribution equals the amount necessary to maintain the 90% funded ratio.

Participants who first became members on or after January 1, 2011, are subject to a cap on pensionable salary upon which contributions are made as described on the following pages.

Definitions

These terms are defined in Article 1A of the Illinois Pension Code *Regulation of Public Pensions.*

"Accrued liability" means the actuarial present value of future benefit payments and appropriate administrative expenses under a plan, reduced by the actuarial present value of all future normal costs (including any participant contributions) with respect to the participant included in the actuarial valuation of the plan.

"Actuarial present value" means the single amount, as of a given valuation date, that results from applying actuarial assumptions to an amount or series of amounts payable or receivable at various times.

"Actuarial value of assets" means the value assigned by the actuary to the assets of a plan for the purposes of an actuarial valuation.

"Beneficiary" means a person eligible for or receiving benefits from the pension fund.

"Credited projected benefit" means that portion of a participant's projected benefit based on an allocation taking into account service to date determined in accordance with the terms of the plan based on anticipated future compensation.

"Current value" means the fair market value when available; otherwise, the fair value as determined in good faith by a trustee, assuming an orderly liquidation at the time of the determination.

"Normal cost" means that part of the actuarial present value of all future benefit payments and appropriate administrative expenses assigned to the current year under the actuarial valuation method used by the plan (excluding any amortization of the unfunded accrued liability).

"Participant" means a participating member or deferred pensioner or annuitant of the pension fund, or a beneficiary thereof.

"Pension Fund" or "Fund" means the Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago established under Article 11 of the Illinois Pension Code.

"Plan year" means the calendar year for which the records of a given plan are kept.

"Projected benefits" means benefit amounts which are expected to be paid at various future times under a particular set of actuarial assumptions, taking into account, as applicable, the effect of advancement in age and past and anticipated future compensation and service credits.

"Supplemental annual cost" means that a portion of the unfunded accrued liability is assigned to the current year under one of the following bases:

1. The level annual amount required to amortize the unfunded accrued liability over a period not exceeding 30 years (40 years for pension unfunded accrued liability prior to 2007); and
2. The amount required for the current year to amortize the unfunded accrued liability over a period not exceeding 30 years as a level percentage of payroll (40 years for pension unfunded accrued liability prior to 2007).

"Total annual cost" means the sum of the normal cost plus the supplemental annual cost.

"Unfunded accrued liability" means the excess of the accrued liability over the actuarial value of the assets of a plan.

"Vested pension benefit" means an interest obtained by a participant or beneficiary in that part of an immediate or deferred benefit under a plan which arises from the participant's service and is not conditional upon the participant's continued service for an employer any of whose employees are covered under the plan, and which has been forfeited under the terms of the plan.

Participants

Any person employed by the City or the Board of Education in a position classified as labor service of the employer, any person employed by the Board, and any person employed by the Retirement Board of any other Annuity and Benefit Fund which is in operation for the employer.

Service

For minimum annuity, one half-year credit is given for one complete month of service and a full year credit is given for one complete month of service plus service in at least five other months. For money purchase annuity, 700 hours of service in any calendar year constitutes one year of service credit. For Ordinary Disability credit, the exact number of days, months and years is used.

Retirement Annuity

Money Purchase Formula

Maximum is 60% of highest salary. This applies in cases where an employee is age 55 or older and has a minimum of 10 years of service. If employee is age 55 to 60 with service less than 20 years, the annuity is based on all employee deductions plus 1/10th of the City contributions for each year over 10. In the case of withdrawal before age 55 and application after age 55, the annuity is based on employee deductions plus 1/10th of the City contributions for each year over 10, with interest to date of application or age 55, whichever is later. The age factor for age 55 is used.

The annuity is based on all employee deductions and City contributions in cases where the employee is (a) age 55 to 60 with 20 or more years of service; (b) age 60 or older; or (c) resigning at the time of disability credit expiration.

Minimum Annuity Formula

Maximum is 80% of final average salary.

An employee age 60 or older with at least 10 years of service, or an employee age 55 or older, with at least 20 years of service, or an employee age 50 or older with at least 30 years of service, is entitled to an annuity equal to 2.40%, for each year of service of the final average salary during the four highest consecutive years within the last 10 years of service prior to retirement. If the employee withdraws from service before age 60 with less than 20 years of service, he can begin to receive an annuity no earlier than age 60. For an employee who is eligible to begin receiving an annuity before age 60, the annuity is discounted 0.25% for each month the employee is younger than age 60, unless he has at least 30 years of service and is age 50 or over, or has at least 25 years of service and is age 55 or over.

The employee will receive a minimum annuity of $850 per month if the employee withdraws from service at age 60 or older with at least 10 years of service.

Participants who first became members on or after January 1, 2011, but prior to July 6, 2017, are first eligible for an unreduced annuity benefit upon attainment of age 67 with 10 years of service. Members are first eligible to begin receiving a reduced annuity benefit upon attainment of age 62 with 10 years of service. The annuity is discounted 0.50% for each full month the employee is younger than age 67. 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% 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.

Participants who first became members on or after July 6, 2017, or participants that first became members on or after January 1, 2011, but prior to July 6, 2017, and irrevocably elected this benefit structure are first eligible for an unreduced annuity benefit upon attainment of age 65 with 10 years of service. Members are first eligible to begin receiving a reduced annuity benefit upon attainment of age 60 with 10 years of *service. The annuity is discounted 0.50% for each full month the employee is younger than age 65. 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% 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.*

Reversionary Annuity

An employee may elect to reduce his or her annuity by an amount less than or equal to $400 to provide a reversionary annuity for a spouse, parent, child, brother or sister, to begin upon the employee's death. The election must be made before retirement and have been in effect one year prior to death. The one-year requirement is waived if the beneficiary is the employee's spouse. The death of the employee before retirement voids this election. The reversionary annuity cannot exceed 100% of the employee's reduced annuity. If the employee resigns after June 30, 1983, the 3.00% automatic annual increase in the annuity will be computed on the original, not the reduced, annuity; if the beneficiary dies before the employee annuitant, the full annuity is restored for annuities granted after June 30, 1983. The amount of the monthly reversionary annuity is determined by multiplying the amount of the monthly reduction in the employee's annuity by a factor based on the age of the employee and the difference between the ages of the employee and the reversionary annuitant at the starting date of the employee's annuity.

Automatic Increase in Annuity

An employee annuitant is entitled to receive an increase of 3.00% of the currently payable annuity (compound). This increase begins in January of the year of the first payment date following the earlier of:

1.) The later of the third anniversary of retirement and age 53, and
2.) The later of the first anniversary of retirement and age 60.

Increases apply only to life annuities.

An employee annuitant who first became a member on or after January 1, 2011, that is eligible to receive an increase in annuity benefit, shall receive an annual increase equal to the lesser of 3% 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 increase. The increase is based on the amount of the originally granted benefit (simple). This increase begins on January 1 of the year of the first payment date following the later of:

1.) Attainment of age 67 for members hired on or after January 1, 2011, but prior to July 6, 2017;
2.) Attainment of age 65 for members hired on or after July 6, 2017, or participants that first became members on or after January 1, 2011, but prior to July 6, 2017, and irrevocably elected the Tier 3 benefit structure; and
3.) The first anniversary of the annuity start date.

Spouse Annuity

The surviving spouse annuity is the greater of the annuity under the money purchase formula or the minimum annuity formula. Surviving spouses who remarry on or after September 4, 2000, will not have their annuities terminated.

Money Purchase Formula

When an employee retires, the spouse's annuity is fixed, based on employee deductions and City contributions made for spouses' annuity purposes and a joint life age factor. (If the employee is a female, these are deductions accumulated since October 1974.)

If the employee dies in service, the spouse's annuity is based on all sums accumulated to their credit. For 3.00% annuities fixed on or after August 1, 1983, the "Combined Annuity Mortality Table" shall continue to be used; however, surviving spouse's single life annuities and reversionary annuities shall be computed using the best factor (the factor producing the highest annuity), without regard to gender.

Spouses' Minimum Annuity Formula

If the employee retires or dies in service and is at least age 55 with 20 or more years of service, or is at least age 50 with 30 or more years of service, the spouse's annuity is equal to half the amount of annuity the employee was entitled to receive at the time of retirement or death in service. This annuity must then be discounted 0.25% for each month the spouse is under age 55 (or age 50 if the employee had at least 25 years of service) at the time the employee retires or dies in service.

If the employee dies while receiving a retirement annuity, the spouse is eligible for an annuity of one-half of the employee's annuity at death. This annuity is discounted for his/her age under 55 at the time of the employee's death, unless the employee had at least 25 years of service and withdrew from service on or after June 27, 1997, in which case the spouse annuity would be discounted for spouse age under 50 at the time of the employee's death.

If the employee dies in service on or after January 1, 2002, with at least 10 years of service, the spouse is entitled to an annuity of half of the minimum formula annuity earned and accrued to the credit of the employee at the date of death. For the purposes of this benefit, the minimum formula annuity earned and accrued to the credit of the employee is equal to 2.40% for each year of service of the highest average annual salary for any four consecutive years within the last 10 years of service immediately preceding the date of death, up to a maximum of 80% of the highest average annual salary. This annuity is not reduced due to the age of the employee or spouse. The spouse is eligible for this annuity only if the marriage was in effect for 10 full years or more.

The spouse will receive a minimum annuity of $800 per month if the employee retires with at least 10 years of service or dies in service with at least five years of service.

For participants who first became members on or after January 1, 2011, the annuity payable to the surviving spouse is equal to 66 2/3% of the participant's earned retirement annuity at the date of death without a reduction due to age.

Automatic Increase in Annuity

The widow or survivor of a participant that first became a member on or after January 1, 2011, shall receive an annual increase equal to the lesser of 3% 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 date of the increase. The increase is based on the amount of the originally granted survivor's benefit (simple). This annual increase begins on January 1 following the commencement of the widow's or survivor's annuity if the deceased member died while receiving an annuity benefit and on January 1 following the first anniversary of the commencement of the annuity otherwise.

Child's Annuity

A child's annuity is provided for unmarried children of a deceased employee who are under the age of 18, if the child was conceived or born before the withdrawal from service. The annuity is $220 per month while the spouse of the deceased employee is alive and $250 per month if the spouse is deceased.

Family Maximum

Non-Duty Death: 60% of final monthly salary.
Duty Death: 70% of final monthly salary.

Disabilities

Duty Disability Benefits

Any employee who becomes disabled as the result of an injury incurred in the performance of any act of duty shall have a right to receive a duty disability benefit in the amount of 75% of salary at date of injury, plus $10 a month for each unmarried child (the issue of the employee) less than age 18. Child's duty disability benefit is limited to 15% of the employee's salary as of the date of injury. Duty disability benefits begin one day after the later of the last day worked or the last day paid.

If the disability has resulted from any mental disorder, physical defect or disease which existed at the time such injury was sustained, the duty disability benefit shall be 50% of salary at date of injury. Disablement because of heart attacks, strokes or any disablement due to heart disease shall not be considered the result of an accident suffered in the performance of duty; however, the employee will receive service credit and the City will contribute salary deductions for annuity purposes if the employee is receiving Workers' Compensation.

A duty disability benefit is payable to age 65 if the disability benefits begin before age 60. For an employee who begins disability on or after age 60, disability will continue for five years. A duty disability benefit which continues for more than five years and which starts before the employee's age 60, will be increased by 10% on January 1st of the sixth year. The City contributes salary deductions for annuity purposes for the duty disability benefit. Such amounts contributed by the City after December 31, 1983, while the employee is receiving duty disability benefits, are not refundable to the employee and will be used for annuity purposes only.

Ordinary Disability Benefit

This benefit is granted for disability incurred other than in performance of an act of duty and is 50% of salary as of the last day worked. The first payment shall be made one month after the disablement occurs. Disability is payable until age 65 and limited to a maximum of 25% of the employee's total service or five years, whichever occurs first.

For ordinary disability benefits paid on or after January 1, 2001, the Fund credits amounts equal to the amounts ordinarily contributed by an employee for annuity purposes for any period during which the employee receives ordinary disability. These amounts are used for annuity purposes but are not credited for refund purposes.

Refunds

To Employees

An employee who resigns before age 55, or before age 60 with less than 10 years of service, is entitled to all salary deductions for retirement annuity and spouse annuity accumulated with interest to date of resignation, plus the 0.50% deducted for annuity increase purposes without interest.

If the annuity of an employee is less than $800 a month, the employee may elect to receive a refund, as above, in lieu of an annuity.

Spouse's annuity deductions are payable to the employee if not married when he retires.

For participants who first became members on or after January 1, 2011, an employee who resigns before age 62 without regard to length of service or with less than 10 years of service regardless of age is entitled to all salary deductions for retirement annuity and spouse annuity accumulated with interest to date of resignation, plus the 0.50% deducted for annuity increase purposes without interest.

To Spouses

The spouse may choose a refund in lieu of annuity if the annuity would be less than $800 per month.

Remaining Amounts

Amounts contributed by the employee excluding 0.50% deductions for annuity increases, and which have not yet been paid out as annuity, are refundable to his estate with interest to his retirement or death if the employee died in service.

Deductions and Contributions

Tier 1 members (hired before January 1, 2011) are required to contribute 8.50% of their salary to the pension fund.

Tier 2 members (hired on or after January 1, 2011, and before July 6, 2017) are required to contribute 8.50% of their pensionable salary to the pension fund.

Required Tier 3 members (hired on or after July 6, 2017) are required to contribute the minimum of 11.50% or the total normal cost (subject to a floor of 8.50%) of their pensionable salary to the pension fund.

Elective Tier 3 members (Tier 2 members who irrevocable elect to be subject to the Tier 3 benefit structure) are required to contribute a percentage of their pensionable salary to the pension fund, according to the following schedule:

- 9.50% beginning July 6, 2017;
- 10.50% beginning January 1, 2018; and
- Minimum of 11.50% or the total normal cost (subject to a floor of 8.50%) beginning January 1, 2019.

Beginning with the first pay period on or after the date when the funded ratio of the Fund is first determined to have reached the 90% funding goal and each pay period thereafter for as long as the Fund maintains a funding ratio of 75% or more, employee contributions for required and elective Tier 3 members shall be 7.50% of their pensionable salary.

For participants who first became members on or after January 1, 2011, pensionable salary, upon which member contributions are made, is limited to $106,800 in 2011, increased by the lesser of 3% 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.

Beginning in payment year 2018, the City's required annual contribution to the Fund for payment years 2018 through 2022 shall be:

- Payment year 2018 — $36,000,000
- Payment year 2019 — $48,000,000
- Payment year 2020 — $60,000,000
- Payment year 2021 — $72,000,000
- Payment year 2022 — $84,000,000

For payment years 2023 through 2058, the City's required annual contribution to the Fund shall be equal to the sum of (1) the City's portion of the projected normal cost for that fiscal year, plus (2) an amount determined on a level percentage of applicable employee payroll basis that is sufficient to bring total assets of the Fund up to 90% of the total actuarial liabilities of the Fund by the end of 2058.

For payment years after 2058, the City's required annual contribution to the Fund shall be equal to the amount, if any, needed to bring the total actuarial assets of the Fund up to 90% of the total actuarial liabilities of the Fund as of the end of the year.

If the City does not make the statutorily required contributions, then the State, starting in payment year 2018, could withhold State grants to the City, and directly deposit the withheld funds in the Laborers' and Retirement Board Employees' Annuity and Benefit Fund of Chicago. The withheld funds are limited to 33% of total State grants to the City in payment year 2018, 67% in payment year 2019, and 100% on and after payment year 2020.

Tax Shelter of Employee Salary Deductions

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

Beginning September 1, 1981, the Board of Education paid contributions in the amount of 7.00% of the employee's salary. The 1985 amendments contained a provision whereby the amount of pick-up, if any, is included in the pensionable salary for contributions and benefits. Such provision was retroactive to September 1, 1981. Beginning May 28, 2000, the remainder of contributions due for Board of Education employee salary deductions was designated for income tax purposes to be made by the employer and treated in the same manner as City employee salary deductions.

Salary and Cola Development for Members Hired on or after January 1, 2011

Calendar Year	CPI-U	1/2 CPI-U	COLA	Maximum Annual Pensionable Earnings
2011				$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
2018	2.20%	1.10%	1.10%	$113,644.91

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Cost Method and Actuarial Assumptions

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 principal Actuarial Cost Method used in this valuation is the Entry Age Normal Actuarial Cost Method. Under this Method, a Normal Cost is developed by spreading the actuarial value of benefits expected to be received by each active participant over the total working lifetime of that participant, from date of hire to termination, as a level percentage of pay.

To the extent that current assets and future Normal Costs do not support participants' expected future benefits, an Unfunded Actuarial Accrued Liability ("UAAL") develops. The UAAL is generally amortized over a defined period of time (e.g., 30 years). The total contribution developed under this method is typically the sum of the Normal Cost and the payment toward the UAAL.

Estimated annual administrative expenses are usually added to the normal cost. This method is used for LABF.

Current Actuarial Assumptions

(Adopted as of December 31, 2017, unless otherwise stated)

Demographic Assumptions

Mortality:

Post Retirement Mortality: Scaling factors of 117% for males, and 102% for females of the RP-2014 Blue Collar Healthy Annuitant mortality table, sex distinct, with generational mortality improvement using MP-2017 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements. No adjustment is made for post-disabled mortality.

Pre-Retirement Mortality: Scaling factors of 109% for males, and 103% for females of the RP-2014 Blue Collar Employee mortality table, sex distinct, with generational mortality improvement using MP-2017 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements.

Future mortality improvements in pre- and post-retirement mortality are reflected by projecting the base mortality tables back from the year 2014 to the year 2006 using the MP-2014 projection scale and projecting from 2006 using the MP-2017 projection scale.

Disability: Disability cost valued as a one-year term cost of 3.00% of payroll.

Rate of Retirement:

Attained Age	Tier 1 Age-and-Service-Based Rates of Retirement								
	Years of Service								
	10	11-14	15-19	20-24	25-29	30-32	33-34	35-39	40+
50-54	-	-	-	-	-	17 %	28 %	25 %	100 %
55-59	-	-	-	9 %	13 %	13	22	19	100
60-64	9 %	6 %	6 %	9	13	13	22	19	100
65-69	11	11	17	17	17	17	28	25	100
70-79	17	17	17	17	17	17	28	28	100
80+	100	100	100	100	100	100	100	100	100

Attained Age	Tier 2 Age-and-Service-Based Rates of Retirement	
	Years of Service	
	10-39	40+
62-66	24 %	100 %
67-69	40	100
70-79	40	100
80+	100	100

Attained Age	Tier 3 Age-and-Service-Based Rates of Retirement	
	Years of Service	
	10-39	40+
60-64	24 %	100 %
65-69	40	100
70-79	40	100
80+	100	100

Rate of Termination:

Service[1]	Rate
0	20.00%
1	7.00%
2-3	4.00%
4-5	3.00%
6-9	2.00%
10-19	1.50%
20+	1.00%

[1]Based on service at beginning of valuation year.

Economic Assumptions

Investment Return Rate and Discount Rate: 7.25% per annum (net of investment expense). The 7.25% assumption contains a 2.25% inflation assumption and a 5.00% real rate of return assumption for pension.

Future Salary Increases: The assumed base rate of individual salary increase is 3.00% per year, plus a service-based increase in the first 9 years.

Completed Years of Service[1]	Additional Increase	Total Increase
1	12.00 %	15.00 %
2	9.50	12.50
3	7.00	10.00
4 – 6	2.00	5.00
7	3.00	6.00
8	1.00	4.00
9	0.20	3.20
10 – 30+	0.00	3.00

[1]Based on projected service at end of valuation year.

Asset Value: For funding purposes, the actuarial value of assets is smoothed by using a five-year phase-in of each year's unexpected investment gains and losses. For purposes of determining the total pension liability, the actuarial value of assets is equal to market value.

Expenses: Administrative expenses included in the normal cost are based on the previous years' administrative expenses increased by 2.25% and discounted to the beginning of the year. Future administrative expenses are assumed to increase at the assumed inflation assumption of 2.25%.

Miscellaneous and Technical Assumptions

Projection Assumptions

Population:	The active population is assumed to remain stable at the December 31, 2017, level.	
New Entrant Profile:	New entrants in the projection are assumed to have the following characteristics:	
	Before Pay Cap	After Pay Cap
Average Age:	34.46	34.46
Average Salary:	$ 50,714	$ 50,690
Minimum Salary:	$ 10,592	$ 10,592
Maximum Salary:	$130,494	$113,645

New entrant characteristics are based upon current members that have been hired in the last ten years. Approximately 77% of new entrants are assumed to be male.

Individual member new entrant uncapped pay at hire date is assumed to increase by 3.00% over the individual member new entrant pay during the prior period.

New entrant pay is calculated explicitly each year for each individual new entrant and is tested against the pensionable pay cap in the applicable year.

Individual new entrant pay once hired is assumed to increase in accordance with the salary increase assumptions used in the actuarial valuation until the pensionable pay cap is reached. Thereafter, pay increases at the same rate as the pay cap.

P.A. 96-0889 and P.A. 96-1490 Assumptions:

Capped (pensionable pay) was $113,644.91 for fiscal year 2018 and increases at ½ CPI thereafter.

Employee and employer contributions and benefits are based on capped pay.

The annual increase in the Consumer Price Index-U is assumed to be 2.25% for all years.

Disability Payments in Lieu are assumed to reduce the applicable members' contributions used in the determination of the City's contribution by 7.6%.

Other Assumptions

Marital Status:	It is assumed that 75% of active members have an eligible spouse. The male spouse is assumed to be three years older than the female spouse. No assumption is made about other dependents.
Disability:	Liability for disability benefits is recognized as a one-year term cost of 3.00% of pay added to the normal cost.
Reciprocal Service:	No assumption for reciprocal service.
Benefit Service:	Exact fractional years of service are used to determine the amount of benefit payable.
Decrement Timing:	All decrements are assumed to occur mid-year.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Turnover decrements do not operate after member reaches retirement eligibility for a minimum annuity formula benefit.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Pay Increase Timing:	Middle of (fiscal) year.
Loss in Tax Levy:	No loss on tax levy is assumed.

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 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 (which is published by the Federal Reserve) 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 7.25%; the municipal bond rate is 3.31%; and the resulting Single Discount Rate is 7.07%.

The sponsor finances benefits using a funding policy defined in state statutes. Sponsor contributions are equal to a fixed payment schedule for payment years 2018 through 2022 and a level percentage of pay contribution determined so that the Fund attains a 90% funded ratio by the end of 2058 on an open group basis for payment years on and after 2023. 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 members will be fully financed, and 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 in year 2071.

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 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, 2017, actuarial valuation.

Total administrative expenses are assumed to increase at the assumed rate of inflation, or 2.25%. Total administrative expenses are allocated between current and future hires by total payroll.

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.

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)
2017	$2,578,745,051	$2,578,745,051	$ -	$ 1,267,554,561	$ -	$ 1,267,554,561	49.15%	0.00%
2018	2,635,432,164	2,635,432,164	-	1,253,044,308	-	1,253,044,308	47.55%	0.00%
2019	2,690,443,367	2,689,602,936	840,431	1,243,721,489	840,431	1,242,881,058	46.21%	100.00%
2020	2,743,740,637	2,741,040,985	2,699,652	1,240,063,183	2,699,652	1,237,363,531	45.14%	100.00%
2021	2,795,001,475	2,789,181,624	5,819,851	1,242,272,806	5,819,851	1,236,452,955	44.33%	100.00%
2022	2,844,256,280	2,833,932,068	10,324,212	1,271,697,652	10,324,212	1,261,373,440	44.51%	100.00%
2023	2,891,201,332	2,874,840,521	16,360,811	1,298,851,562	16,360,811	1,282,490,752	44.61%	100.00%
2024	2,935,151,754	2,911,064,109	24,087,645	1,323,681,087	24,087,645	1,299,593,442	44.64%	100.00%
2025	2,975,777,021	2,942,022,235	33,754,787	1,346,130,347	33,754,787	1,312,375,561	44.61%	100.00%
2026	3,012,696,975	2,967,163,719	45,533,256	1,365,904,158	45,533,256	1,320,370,902	44.50%	100.00%
2027	3,045,258,570	2,985,631,201	59,627,369	1,382,564,111	59,627,369	1,322,936,742	44.31%	100.00%
2028	3,074,061,968	2,997,671,690	76,390,277	1,396,928,029	76,390,277	1,320,537,752	44.05%	100.00%
2029	3,098,233,400	3,002,251,977	95,981,423	1,408,255,152	95,981,423	1,312,273,729	43.71%	100.00%
2030	3,117,506,828	2,998,928,846	118,577,982	1,416,451,211	118,577,982	1,297,873,229	43.28%	100.00%
2031	3,132,238,838	2,987,920,383	144,318,455	1,422,143,438	144,318,455	1,277,824,983	42.77%	100.00%
2032	3,142,593,227	2,969,307,012	173,286,215	1,425,497,603	173,286,215	1,252,211,388	42.17%	100.00%
2033	3,148,477,454	2,942,866,541	205,610,912	1,426,575,575	205,610,912	1,220,964,663	41.49%	100.00%
2034	3,150,405,435	2,909,013,306	241,392,129	1,426,082,531	241,392,129	1,184,690,402	40.72%	100.00%
2035	3,149,117,427	2,868,428,283	280,689,144	1,424,991,153	280,689,144	1,144,302,009	39.89%	100.00%
2036	3,145,120,723	2,821,562,990	323,557,733	1,423,939,573	323,557,733	1,100,381,840	39.00%	100.00%
2037	3,138,974,894	2,768,900,250	370,074,645	1,423,726,075	370,074,645	1,053,651,430	38.05%	100.00%
2038	3,130,983,227	2,710,704,403	420,278,824	1,424,763,515	420,278,824	1,004,484,691	37.06%	100.00%
2039	3,121,411,654	2,647,135,895	474,275,759	1,427,553,170	474,275,759	953,277,411	36.01%	100.00%
2040	3,111,158,516	2,579,031,369	532,127,147	1,433,277,663	532,127,147	901,150,516	34.94%	100.00%
2041	3,101,355,848	2,507,513,345	593,842,503	1,443,372,404	593,842,503	849,529,902	33.88%	100.00%
2042	3,092,703,612	2,433,262,943	659,440,669	1,458,751,960	659,440,669	799,311,291	32.85%	100.00%
2043	3,085,757,125	2,356,791,147	728,965,979	1,480,298,805	728,965,979	751,332,826	31.88%	100.00%
2044	3,081,115,611	2,278,681,462	802,434,148	1,508,941,830	802,434,148	706,507,682	31.01%	100.00%
2045	3,078,880,104	2,199,014,878	879,865,226	1,545,051,997	879,865,226	665,186,771	30.25%	100.00%
2046	3,079,446,178	2,118,149,808	961,296,370	1,589,543,563	961,296,370	628,247,193	29.66%	100.00%
2047	3,083,320,568	2,036,640,786	1,046,679,783	1,643,310,977	1,046,679,783	596,631,194	29.29%	100.00%
2048	3,090,738,364	1,954,744,499	1,135,993,865	1,707,058,882	1,135,993,865	571,065,016	29.21%	100.00%
2049	3,101,992,849	1,872,813,673	1,229,179,176	1,781,589,633	1,229,179,176	552,410,456	29.50%	100.00%
2050	3,117,045,235	1,790,910,406	1,326,134,829	1,867,392,923	1,326,134,829	541,258,094	30.22%	100.00%
2051	3,135,334,401	1,708,591,621	1,426,742,780	1,964,420,663	1,426,742,780	537,677,883	31.47%	100.00%
2052	3,156,585,278	1,625,693,031	1,530,892,247	2,073,108,479	1,530,892,247	542,216,231	33.35%	100.00%
2053	3,180,757,506	1,542,417,076	1,638,340,430	2,194,048,024	1,638,340,430	555,707,595	36.03%	100.00%
2054	3,207,790,719	1,458,959,904	1,748,830,815	2,327,930,077	1,748,830,815	579,099,262	39.69%	100.00%
2055	3,237,558,809	1,375,551,199	1,862,007,610	2,475,448,572	1,862,007,610	613,440,962	44.60%	100.00%
2056	3,270,145,646	1,292,670,721	1,977,474,925	2,637,531,492	1,977,474,925	660,056,567	51.06%	100.00%
2057	3,306,067,269	1,211,288,130	2,094,779,139	2,815,645,075	2,094,779,139	720,865,936	59.51%	100.00%
2058	3,345,104,261	1,132,110,620	2,212,993,640	3,010,517,450	2,212,993,640	797,523,810	70.45%	100.00%
2059	3,386,743,271	1,055,438,576	2,331,304,694	3,048,068,913	2,331,304,694	716,764,219	67.91%	100.00%
2060	3,430,796,593	981,428,666	2,449,367,928	3,087,716,902	2,449,367,928	638,348,974	65.04%	100.00%
2061	3,477,097,444	910,186,593	2,566,910,851	3,129,387,665	2,566,910,851	562,476,814	61.80%	100.00%
2062	3,525,499,904	841,807,537	2,683,692,368	3,172,949,877	2,683,692,368	489,257,510	58.12%	100.00%
2063	3,575,817,304	776,378,361	2,799,438,943	3,218,235,535	2,799,438,943	418,796,592	53.94%	100.00%
2064	3,627,814,552	713,967,271	2,913,847,281	3,265,033,055	2,913,847,281	351,185,774	49.19%	100.00%
2065	3,681,309,787	654,612,008	3,026,697,779	3,313,178,763	3,026,697,779	286,480,984	43.76%	100.00%
2066	3,736,126,892	598,328,236	3,137,798,655	3,362,514,154	3,137,798,655	224,715,499	37.56%	100.00%
2067	3,792,112,889	545,122,245	3,246,990,644	3,412,901,548	3,246,990,644	165,910,905	30.44%	100.00%
2068	3,849,173,723	494,989,695	3,354,184,028	3,464,256,296	3,354,184,028	110,072,268	22.24%	100.00%
2069	3,907,226,928	447,914,798	3,459,312,130	3,516,504,177	3,459,312,130	57,192,047	12.77%	100.00%
2070	3,966,211,098	403,868,911	3,562,342,188	3,569,589,926	3,562,342,188	7,247,738	1.79%	100.00%
2071	4,026,107,658	362,809,306	3,663,298,353	3,623,496,825	3,623,496,825	-	0.00%	98.91%

Current Member Projection of Assets and Assignment of Employer Contributions

PYE 12/31	Assets (boy)	Member Contributions	Administrative Expenses	Benefit Payments	Assigned Employer/City Contribution	Income on Cash Flow	Income on Assigned Contribution	Total Investment Income
2018	$ 1,267,554,561	$ 18,069,262	$ 4,074,608	$ 162,454,854	$ 45,711,707	$ 86,610,183	$ 1,628,057	$ 88,238,240
2019	1,253,044,308	17,584,516	3,991,640	167,768,395	56,640,347	85,354,634	2,017,289	87,371,923
2020	1,242,881,058	17,170,683	3,910,646	173,122,240	67,524,477	84,415,263	2,404,935	86,820,199
2021	1,237,363,531	16,630,317	3,802,569	178,664,452	78,333,756	83,802,456	2,789,916	86,592,372
2022	1,236,452,955	16,079,947	3,681,625	184,050,805	109,155,989	83,529,306	3,887,673	87,416,979
2023	1,261,373,440	15,529,636	3,555,814	189,571,245	109,683,951	85,124,307	3,906,477	89,030,785
2024	1,282,490,752	14,906,144	3,414,054	195,488,247	110,727,776	86,427,417	3,943,654	90,371,071
2025	1,299,593,442	14,222,647	3,258,235	201,561,571	111,959,494	87,432,262	3,987,522	91,419,784
2026	1,312,375,561	13,535,302	3,095,815	207,730,065	113,135,923	88,120,575	4,029,422	92,149,996
2027	1,320,370,902	12,775,909	2,918,595	214,217,591	114,403,120	88,448,444	4,074,554	92,522,998
2028	1,322,936,742	11,999,628	2,736,207	219,984,956	115,790,666	88,407,906	4,123,972	92,531,879
2029	1,320,537,752	11,226,428	2,553,299	226,289,021	117,189,639	87,988,432	4,173,798	92,162,230
2030	1,312,273,729	10,429,136	2,366,380	232,489,789	118,653,878	87,146,706	4,225,948	91,372,654
2031	1,297,873,229	9,645,093	2,183,418	238,017,887	120,337,674	85,884,375	4,285,918	90,170,292
2032	1,277,824,983	8,933,979	2,016,584	243,009,589	121,903,215	84,233,709	4,341,676	88,575,384
2033	1,252,211,388	8,196,453	1,848,047	247,689,073	123,505,409	82,189,795	4,398,739	86,588,533
2034	1,220,964,663	7,491,639	1,687,774	251,536,509	125,230,230	79,767,983	4,460,170	84,228,153
2035	1,184,690,401	6,869,874	1,546,832	254,387,948	127,129,289	77,019,418	4,527,806	81,547,225
2036	1,144,302,008	6,327,849	1,424,082	256,455,378	129,033,135	74,002,694	4,595,613	78,598,307
2037	1,100,381,839	5,808,323	1,307,444	257,720,007	131,061,763	70,759,092	4,667,864	75,426,956
2038	1,053,651,429	5,366,998	1,208,753	258,410,909	133,014,195	67,334,327	4,737,401	72,071,729
2039	1,004,484,689	4,905,679	1,106,392	258,573,591	135,007,470	63,751,160	4,808,393	68,559,553
2040	953,277,409	4,482,763	1,012,727	257,690,570	137,150,563	60,058,355	4,884,721	64,943,076
2041	901,150,514	4,145,376	938,173	255,587,549	139,448,473	56,344,695	4,966,563	61,311,258
2042	849,529,900	3,874,361	878,587	252,693,234	141,733,161	52,697,753	5,047,934	57,745,687
2043	799,311,289	3,608,337	820,426	249,162,630	144,089,164	49,175,246	5,131,845	54,307,091
2044	751,332,824	3,374,311	769,531	244,972,376	146,485,728	45,839,524	5,217,200	51,056,724
2045	706,507,680	3,151,037	721,101	240,571,574	148,781,547	42,740,212	5,298,968	48,039,179
2046	665,186,769	2,879,824	661,621	235,722,730	151,267,831	39,909,600	5,387,519	45,297,118
2047	628,247,191	2,673,979	616,680	230,339,632	153,772,149	37,417,473	5,476,712	42,894,185
2048	596,631,191	2,447,628	567,049	224,663,018	156,327,349	35,321,196	5,567,717	40,888,913
2049	571,065,013	2,221,910	517,577	218,639,325	158,943,625	33,675,909	5,660,898	39,336,807
2050	552,410,453	1,999,168	468,314	212,551,003	161,578,916	32,534,115	5,754,756	38,288,871
2051	541,258,091	1,733,716	408,320	206,829,589	164,155,438	31,922,024	5,846,520	37,768,544
2052	537,677,880	1,378,337	326,211	201,197,184	166,886,295	31,853,328	5,943,782	37,797,110
2053	542,216,227	1,078,244	256,006	195,378,495	169,624,894	32,381,408	6,041,319	38,422,727
2054	555,707,590	763,693	181,714	189,362,303	172,464,298	33,565,246	6,142,447	39,707,693
2055	579,099,257	496,323	118,252	183,159,331	175,401,113	35,474,803	6,247,044	41,721,847
2056	613,440,956	252,559	59,565	176,545,145	178,419,651	38,193,554	6,354,551	44,548,105
2057	660,056,560	77,243	17,513	169,135,172	181,585,167	41,832,350	6,467,294	48,299,644
2058	720,865,928	10,055	1,846	161,258,143	184,806,058	46,519,741	6,582,008	53,101,749
2059	797,523,801	-	-	153,290,507	19,476,333	52,360,918	693,664	53,054,582
2060	716,764,210	-	-	145,352,372	19,455,630	46,788,570	692,927	47,481,497
2061	638,348,965	-	-	137,498,536	19,547,009	41,383,185	696,182	42,079,367
2062	562,476,804	-	-	129,746,562	19,668,213	36,158,546	700,498	36,859,044
2063	489,257,499	-	-	122,111,141	19,822,154	31,122,088	705,981	31,828,069
2064	418,796,580	-	-	114,616,373	20,012,201	26,280,603	712,750	26,993,353
2065	351,185,761	-	-	107,296,446	20,231,570	21,639,523	720,563	22,360,086
2066	286,480,970	-	-	100,175,322	20,478,431	17,202,050	729,355	17,931,405
2067	224,715,484	-	-	93,263,151	20,749,318	12,970,235	739,003	13,709,237
2068	165,910,888	-	-	86,570,634	21,037,470	8,945,261	749,265	9,694,526
2069	110,072,250	-	-	80,108,524	21,341,110	5,127,112	760,080	5,887,192
2070	57,192,028	-	-	73,888,129	21,657,626	1,514,840	771,353	2,286,193
2071	7,247,718	-	-	67,921,041	60,415,169	(1,893,600)	2,151,732	258,132

Development of Single Discount Rate

PYE 12/31	Benefit Payments	Discount Rate	Discounted Benefit Payment	Single Discount Rate	Discounted Benefit Payment
2018	$ 162,454,854	7.25%	$ 156,867,885	7.07%	$ 157,002,738
2019	167,768,395	7.25%	151,047,729	7.07%	151,437,611
2020	173,122,240	7.25%	145,331,451	7.07%	145,957,201
2021	178,664,452	7.25%	139,845,211	7.07%	140,688,915
2022	184,050,805	7.25%	134,322,841	7.07%	135,365,664
2023	189,571,245	7.25%	128,999,286	7.07%	130,224,387
2024	195,488,247	7.25%	124,033,271	7.07%	125,426,580
2025	201,561,571	7.25%	119,241,650	7.07%	120,788,539
2026	207,730,065	7.25%	114,583,557	7.07%	116,269,663
2027	214,217,591	7.25%	110,174,420	7.07%	111,987,940
2028	219,984,956	7.25%	105,492,436	7.07%	107,413,328
2029	226,289,021	7.25%	101,179,965	7.07%	103,199,535
2030	232,489,789	7.25%	96,925,405	7.07%	99,030,097
2031	238,017,887	7.25%	92,522,218	7.07%	94,693,895
2032	243,009,589	7.25%	88,077,007	7.07%	90,299,400
2033	247,689,073	7.25%	83,704,477	7.07%	85,964,149
2034	251,536,509	7.25%	79,258,448	7.07%	81,538,105
2035	254,387,948	7.25%	74,738,395	7.07%	77,020,296
2036	256,455,378	7.25%	70,252,494	7.07%	72,521,959
2037	257,720,007	7.25%	65,826,501	7.07%	68,069,869
2038	258,410,909	7.25%	61,541,231	7.07%	63,748,019
2039	258,573,591	7.25%	57,417,225	7.07%	59,578,434
2040	257,690,570	7.25%	53,353,051	7.07%	55,456,506
2041	255,587,549	7.25%	49,340,452	7.07%	51,373,924
2042	252,693,234	7.25%	45,484,114	7.07%	47,440,114
2043	249,162,630	7.25%	41,816,890	7.07%	43,690,205
2044	244,972,376	7.25%	38,334,397	7.07%	40,120,594
2045	240,571,574	7.25%	35,100,923	7.07%	36,799,644
2046	235,722,730	7.25%	32,068,481	7.07%	33,678,275
2047	230,339,632	7.25%	29,217,853	7.07%	30,737,328
2048	224,663,018	7.25%	26,571,368	7.07%	28,001,294
2049	218,639,325	7.25%	24,110,893	7.07%	25,452,113
2050	212,551,003	7.25%	21,855,004	7.07%	23,110,418
2051	206,829,589	7.25%	19,829,104	7.07%	21,004,211
2052	201,197,184	7.25%	17,985,190	7.07%	19,083,792
2053	195,378,495	7.25%	16,284,431	7.07%	17,308,865
2054	189,362,303	7.25%	14,716,077	7.07%	15,668,753
2055	183,159,331	7.25%	13,271,813	7.07%	14,155,298
2056	176,545,145	7.25%	11,927,782	7.07%	12,743,679
2057	169,135,172	7.25%	10,654,683	7.07%	11,403,076
2058	161,258,143	7.25%	9,471,766	7.07%	10,154,506
2059	153,290,507	7.25%	8,395,127	7.07%	9,015,742
2060	145,352,372	7.25%	7,422,272	7.07%	7,984,678
2061	137,498,536	7.25%	6,546,595	7.07%	7,054,763
2062	129,746,562	7.25%	5,759,914	7.07%	6,217,693
2063	122,111,141	7.25%	5,054,499	7.07%	5,465,599
2064	114,616,373	7.25%	4,423,563	7.07%	4,791,574
2065	107,296,446	7.25%	3,861,122	7.07%	4,189,536
2066	100,175,322	7.25%	3,361,179	7.07%	3,653,343
2067	93,263,151	7.25%	2,917,721	7.07%	3,176,792
2068	86,570,634	7.25%	2,525,265	7.07%	2,754,219
2069	80,108,524	7.25%	2,178,802	7.07%	2,380,431
2070	73,888,129	7.25%	1,873,770	7.07%	2,050,693
2071	67,921,041	7.25%	1,606,012	7.07%	1,760,676
2072	62,218,263	3.31%	10,547,734	7.07%	1,506,406
2081	23,678,459	3.31%	2,994,425	7.07%	310,112
2091	4,835,921	3.31%	441,586	7.07%	31,999
2101	323,524	3.31%	21,331	7.07%	1,082
2116	125	3.31%	5	7.07%	0
Total Present Value			**$ 2,945,272,763**		**$ 2,945,272,763**

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability ("AAL")	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."
Actuarial Assumptions	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.
Actuarial Cost Method	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.
Actuarial Equivalent	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.
Actuarial Gain/(Loss)	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.
Actuarial Present Value ("APV")	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.
Actuarial Valuation	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.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution ("ADC") or Annual Required Contribution ("ARC")	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.

Glossary of Terms

Amortization Method	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.
Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	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.
Covered-Employee Payroll	The payroll of employees that are provided with pensions through the pension plan.
Deferred Inflows and Outflows	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.
Deferred Retirement Option Program ("DROP")	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.
Discount Rate	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: 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.

Glossary of Terms

Entry Age Actuarial Cost Method ("EAN")	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.
Fiduciary Net Position	The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
Long-Term Expected Rate of Return	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.
Money-Weighted Rate of Return	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.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	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.
Net Pension Liability ("NPL")	The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	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.
Normal Cost	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.

Glossary of Terms

Other Postemployment Benefits ("OPEB")	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 postemployment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
Total Pension Expense	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: 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
Total Pension Liability ("TPL")	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
Unfunded Actuarial Accrued Liability ("UAAL")	The UAAL is the difference between actuarial accrued liability and valuation assets.
Valuation Assets	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.