

# Public School Teachers' Pension and Retirement Fund of Chicago

Actuarial Valuation and Review as of  
June 30, 2014





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October 21, 2014

Board of Trustees  
Public School Teachers' Pension and Retirement Fund of Chicago  
203 North LaSalle Street, Suite 2600  
Chicago, Illinois 60601

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2014. It summarizes the actuarial data used in the valuation, establishes the net pension liability under Governmental Accounting Standards Board (GASB) Statement No. 67 and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Public School Teachers' Pension and Retirement Fund of Chicago. The census information and financial information on which our calculations were based was prepared by the Fund staff. That assistance is gratefully acknowledged. We have not subjected the census data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

Since the effective date of the last actuarial valuation, there have not been any changes in benefit provisions that have had an impact on the actuarial liabilities of the Fund.

The actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the Fund's actuary. The assumptions and methods used for the June 30, 2014, actuarial valuation were based on an experience analysis covering the five-year period ending June 30, 2012, and were adopted by the Board, effective for the June 30, 2013, valuation. These actuarial assumptions and methods comply with the parameters for disclosure of GASB 67. Further, in our opinion, the assumptions as approved by the Board appear to be reasonably related to the experience of the Fund.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic

assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

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

By:



*Kim Nicholl, FSA, MAAA, EA, FCA  
Senior Vice President and Actuary*



*Matthew A. Strom, FSA, MAAA, EA  
Vice President and Actuary*

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## SECTION 1: Valuation Summary for the Public School Teachers' Pension and Retirement Fund of Chicago

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### Purpose

This report has been prepared by Segal Consulting to present a valuation of the Public School Teachers' Pension and Retirement Fund of Chicago (CTPF) as of June 30, 2014. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contents of this report are based on:

- The benefit provisions of the Fund, as administered by the Board;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of June 30, 2014, provided by the CTPF staff;
- The assets of the Plan as of June 30, 2014, provided by the CTPF staff;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

### Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

1. The Government Accounting Standards Board (GASB) approved two new Statements affecting the reporting of pension liabilities for accounting purposes. Statement 67 replaces Statement 25 and is for plan reporting. Statement 68 replaces Statement 27 and is for employer reporting. Statement 67 is effective with the fiscal year ending June 30, 2014, for Plan reporting. Statement 68 is effective with the fiscal year ending June 30, 2015, for employer reporting. The information contained in this valuation is intended to be used (along with other information) in order to comply with both Statements 67 and 68.
2. When measuring pension liability, GASB uses a different actuarial cost method (Entry Age method) than the cost method used for funding purposes (Projected Unit Credit method). However, as of June 30, 2014, the GASB blended discount rate calculation results in the same discount rate (expected return on assets) as used for funding purposes (7.75%). The total pension liability (TPL) measure for financial reporting is \$20,316,899,952 as of June 30, 2014.
3. The net pension liability (NPL) is equal to the difference between the TPL and the Plan's fiduciary net position. The Plan's fiduciary net position is equal to the market value of assets. The NPL decreased from \$10,121,734,006 as of June 30, 2013, to \$9,501,205,338 as of June 30, 2014.

## SECTION 1: Valuation Summary for the Public School Teachers' Pension and Retirement Fund of Chicago

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4. As shown in Chart 13, for the fiscal year beginning July 1, 2014, the actuarially determined contribution (ADC) amount is \$728,488,520. Public Act 96-0889 specifies that the required Board of Education contribution for Fiscal Years 2014 through 2059 must be a level percentage of payroll sufficient to bring the funded percentage of the Fund up to 90% by the end of Fiscal Year 2059. The Fiscal Year 2015 required Board of Education contribution amount was determined to be \$683,574,000, as a part of the June 30, 2013, valuation. Given that \$65,000,000 is expected to be used to pay health insurance subsidies, the required Board of Education contribution for the pension plan is \$618,574,000. Also, Sections 17-127 and 17-127.2 of the Pension Code specify additional State contributions of 0.544% of payroll and additional Board of Education Contributions of 0.58% of payroll, which were determined as part of the June 30, 2013, valuation to be \$12,145,000 and \$12,948,000, respectively. Therefore, the total employer contributions for Fiscal 2015 are expected to be \$643,667,000. Compared to the actuarially determined contribution of \$728,488,520, the contribution deficiency is \$84,821,520 as of July 1, 2014. Each year there is a contribution deficiency leads to an increased deficiency in all future years.
5. Employer contributions for Fiscal Year 2014 were determined to be \$624,603,000, \$65,000,000 for the health insurance and \$559,603,000 for the pension plan. Actual employer contributions for Fiscal Year 2014 totaled \$650,416,141, \$65,000,000 for health insurance and \$585,416,141 for the pension plan.
6. For the year ended June 30, 2014, Segal has determined that the asset return on a market basis was 17.9%. After gradual recognition of investment gains and losses under the actuarial smoothing method, the actuarial rate of return was 12.8%. This represents an experience gain when compared to the assumed rate of 7.75%. As of June 30, 2014, the actuarial value of assets (\$10.05 billion) represents 92.9% of the market value (\$10.82 billion).
7. As indicated in Section 2, Subsection B of this report, the total unrecognized investment gain as of June 30, 2014, is \$770,152,039. This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of investment losses derived from future experience. This implies that earning the assumed rate of investment return of 7.75% per year (net of expenses) on a market value basis will result in investment gains on the actuarial value of assets in the next few years.
8. The funded ratio based on the actuarial value of assets over the actuarial accrued liability as of June 30, 2014, is 51.5%, compared to 49.5% as of June 30, 2013.
9. As mentioned above, the current method used to determine the actuarial value of assets yields an amount that is 92.9% of the market value of assets as of June 30, 2014. Guidelines in Actuarial Standards of Practice No. 44 (Selection and Use of Asset Valuation Methods for Pension Valuations) recommend that asset values fall within a reasonable range around the corresponding market value. We believe the actuarial asset method currently complies with these guidelines.

**SECTION 1: Valuation Summary for the Public School Teachers' Pension and Retirement Fund of Chicago**

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10. This actuarial valuation report as of June 30, 2014, is based on financial data as of that date. Changes in the value of assets subsequent to that date are not reflected.

**SECTION 1: Valuation Summary for the Public School Teachers' Pension and Retirement Fund of Chicago**

**Summary of Key Valuation Results**

	<b>2014</b>	<b>2013</b>
<b>Contributions for plan year beginning July 1:</b>		
Actuarially determined contribution requirement	\$728,488,520	\$719,781,746
Expected employer contributions	643,667,000	559,306,000
Actual	--	585,416,141
<b>Funding elements for plan year beginning July 1:</b>		
Employer normal cost, including administrative expenses	\$139,510,202	\$129,928,449
Market value of assets	10,815,694,614	9,674,188,563
Actuarial value of assets	10,045,542,575	9,422,519,190
Actuarial accrued liability	19,503,893,632	19,044,533,016
Unfunded/(overfunded) actuarial accrued liability	9,458,351,057	9,622,013,826
Funded ratio	51.51%	49.48%
<b>Demographic data for plan year beginning July 1:</b>		
Number of retired participants and beneficiaries	27,722	27,440
Number of vested former participants	4,818	4,502
Number of active participants	30,654	30,969
Total salary supplied by the Fund	\$2,149,841,688	\$2,146,811,972
Average salary	\$70,133	\$69,321
<b>GASB Information:</b>		
Discount rate	7.75%	7.75%
Total pension liability	\$20,316,899,952	\$19,795,922,569
Plan fiduciary net position	10,815,694,614	9,674,188,563
Net pension liability	9,501,205,338	10,121,734,006
Plan fiduciary net position as a percentage of total pension liability	53.23%	48.87%

**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

**A. MEMBER DATA**

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, vested terminated members, retirees and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A, B, and C.

*A historical perspective of how the participant population has changed over the past ten valuations can be seen in this chart.*

**CHART 1**  
**Participant Population: 2005 – 2014**

<b>Year Ended June 30</b>	<b>Active Participants</b>	<b>Vested Terminated Members</b>	<b>Retirees and Beneficiaries</b>	<b>Ratio of Non-Actives to Actives</b>
2005	37,521	2,059	20,954	0.61
2006	34,682	2,408	22,105	0.71
2007	32,968	2,752	23,623	0.80
2008	32,086	3,479	23,920	0.85
2009	31,905	3,056	24,218	0.85
2010	31,012	3,554	24,600	0.91
2011	30,133	4,253	25,199	0.98
2012	30,366	4,245	25,926	0.99
2013	30,969	4,502	27,440	1.03
2014	30,654	4,818	27,722	1.06

**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

**Active Participants**

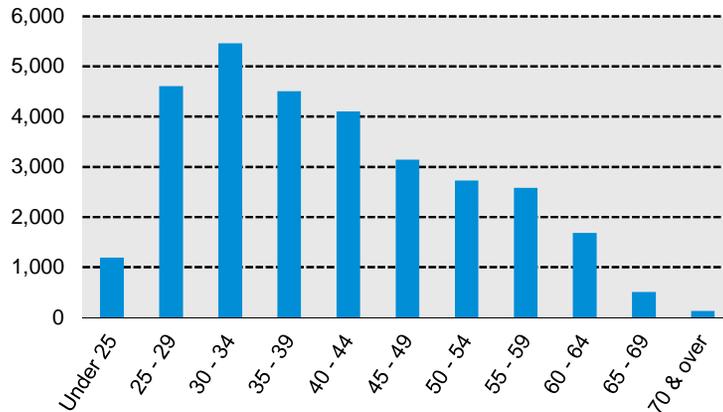
Plan costs are affected by the age, years of service and salary of active participants. In this year's valuation, there were 30,654 active participants with an average age of 41.3, average years of service of 10.3 and average salary of \$70,133. The 30,969 active participants in the prior valuation had an average age of 41.2, average years of service of 10.0 and average salary of \$69,321.

**Inactive Participants**

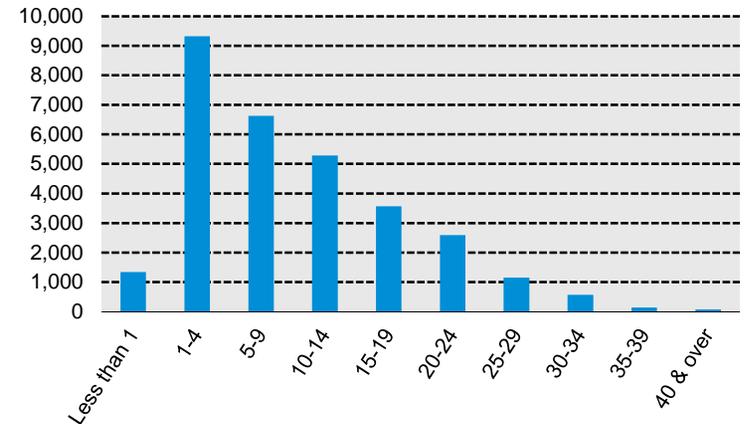
In this year's valuation, there were 4,818 participants with a vested right to a deferred or immediate vested benefit.

*These graphs show a distribution of active participants by age and by years of service.*

**CHART 2**  
**Distribution of Active Participants by Age as of June 30, 2014**



**CHART 3**  
**Distribution of Active Participants by Years of Service as of June 30, 2014**



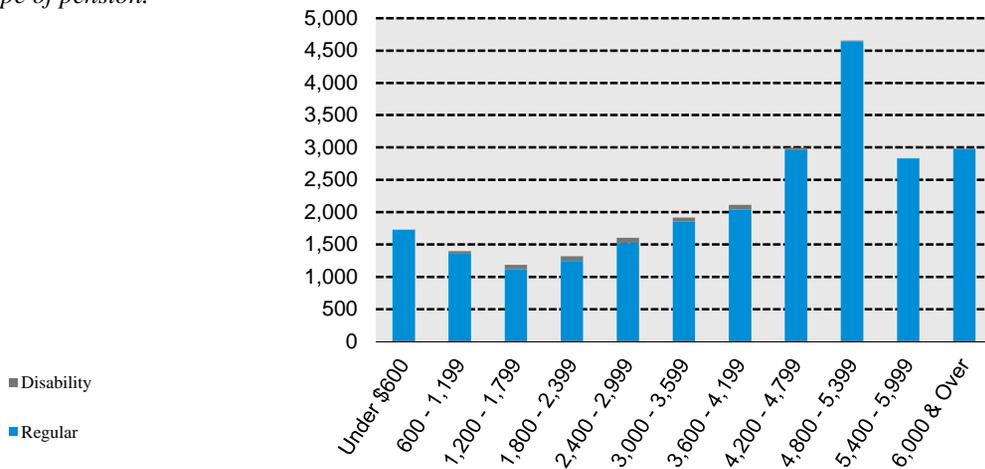
**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

**Retired Participants and Beneficiaries**

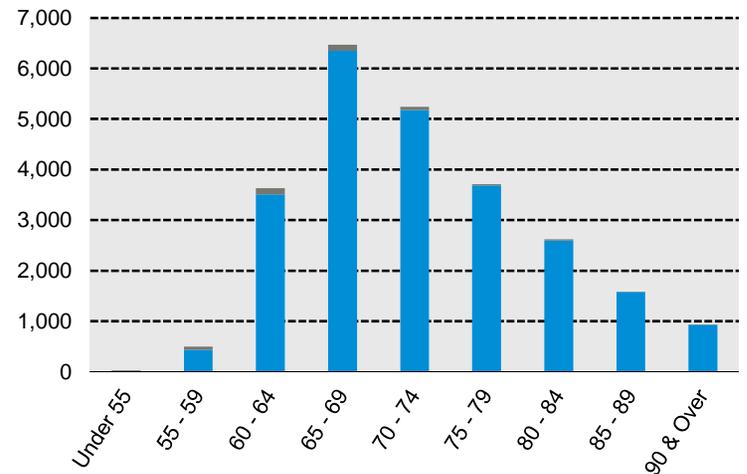
As of June 30, 2014, 24,251 retirees, 2,997 beneficiaries, and 474 disabled retirees were receiving total monthly benefits of \$105,788,010. For comparison, in the previous valuation, there were 24,042 retirees, 2,920 beneficiaries, and 478 disabled retirees receiving monthly benefits of \$102,072,460.

*These graphs show a distribution of the current retirees based on their monthly amount and age, by type of pension.*

**CHART 4**  
**Distribution of Retirees by Monthly Amount as of June 30, 2014**



**CHART 5**  
**Distribution of Retirees by Age as of June 30, 2014**



## SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago

### B. FINANCIAL INFORMATION

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

*The chart shows the determination of the actuarial value of assets as of the valuation date.*

### CHART 6

#### Determination of Actuarial Value of Assets for Years Ended June 30, 2014 and June 30, 2013

		2014		2013	
1.	Actuarial value of assets as of prior June 30		\$9,458,316,094		\$9,398,201,630
2.	Employer and employee contributions		846,262,206		404,362,941
3.	Benefits and expenses		1,389,710,589		1,340,401,281
4.	Expected investment income		686,757,247		714,414,597
5.	Total investment income, including income for securities lending		1,685,134,974		1,174,582,823
6.	Investment gain/(loss) for the year ended June 30: (5) – (4)		998,377,727		460,168,226
7.	Expected actuarial value of assets: (1) + (2) – (3) + (4)		9,601,624,958		9,176,577,887
8.	Calculation of recognized return				
		Original Amount*	% Recognized	% Recognized	
(a)	Year ended June 30, 2014	\$998,377,727	25%	25%	--
(b)	Year ended June 30, 2013	460,168,226	25%	25%	\$115,042,057
(c)	Year ended June 30, 2012	-815,951,719	25%	25%	-203,987,930
(d)	Year ended June 30, 2011	1,276,986,010	25%	25%	319,246,503
(e)	Year ended June 30, 2010	205,750,306		25%	<u>51,437,577</u>
(f)	Total recognized return		<u>479,895,061</u>		<u>281,738,207</u>
9.	Total actuarial value of assets as of June 30: (7) + (8f)		10,081,520,019		9,458,316,094
10.	Assets for retiree health insurance benefits		<u>35,977,444</u>		<u>35,796,904</u>
11.	Actuarial value of assets for pension benefits: (9) – (10)		<u>\$10,045,542,575</u>		<u>\$9,422,519,190</u>

\* Total return minus expected return on actuarial value

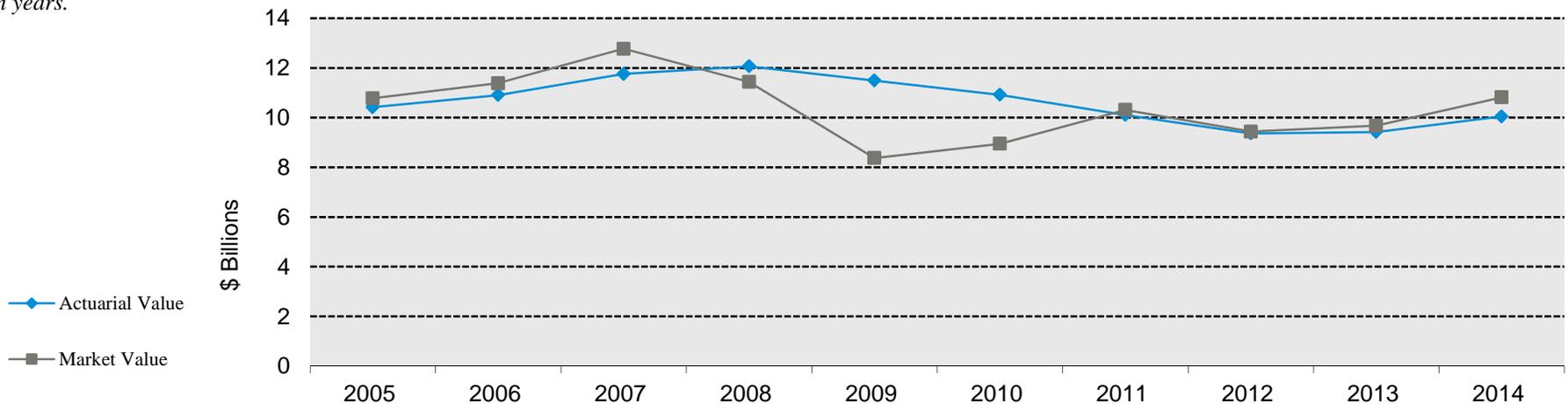
## SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago

Both the actuarial value and market value of assets are representations of the Fund's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Fund's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

*This chart shows the change in the actuarial value of assets versus the market value over the past ten years.*

**CHART 7**

**Actuarial Value of Assets vs. Market Value of Assets as of June 30, 2005 – 2014**



**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**C. ACTUARIAL EXPERIENCE**

To calculate the actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term

development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total gain is \$480,507,260, \$457,415,422 from investment gains and \$23,091,838 in gains from all other sources. The net experience variation from individual sources other than investments was approximately 0.1% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

*This chart provides a summary of the actuarial experience during the past year.*

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**CHART 8  
Actuarial Experience for Year Ended June 30, 2014**

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1. Net gain/(loss) from investments*	\$457,415,422
2. Net gain/(loss) from administrative expenses	2,157,407
3. Net gain/(loss) from other experience**	<u>20,934,431</u>
4. Net experience gain/(loss): (1) + (2) + (3)	\$480,507,260

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\* Details in Chart 9

\*\* Details in Chart 12

**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**Investment Rate of Return**

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the CTPF's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets for the year ending June 30, 2014, is 7.75%. The actual rate of return on an actuarial basis for the year ending June 30, 2014, was 12.75%.

Since the actual return for the year was greater than the assumed return, the CTPF experienced an actuarial gain during the year ended June 30, 2014, with regard to its investments.

*This chart shows the gain/(loss) due to investment experience.*

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**CHART 9**

**Actuarial Value Investment Experience for Year Ended June 30, 2014**

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1. Actual return	\$1,166,597,174
2. Average value of assets	9,150,732,295
3. Actual rate of return: (1) ÷ (2)	12.75%
4. Assumed rate of return	7.75%
5. Expected return: (2) x (4)	\$709,181,753
6. Actuarial gain/(loss): (1) – (5)	<u>\$457,415,422</u>

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**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. Chart 10 shows the rate of return on an actuarial basis compared to the market value investment return for the last twenty-five years, including ten-year and twenty-five-year averages.

**CHART 10  
Investment Return**

<b>Year Ended June 30</b>	<b>Market Value</b>	<b>Actuarial Value*</b>
1990	9.3%	n/a
1991	10.4%	n/a
1992	12.8%	n/a
1993	14.3%	n/a
1994	0.4%	n/a
1995	18.7%	n/a
1996	16.3%	n/a
1997	19.8%	n/a
1998	18.2%	n/a
1999	10.7%	n/a
2000	9.5%	n/a
2001	-1.5%	n/a
2002	-3.3%	n/a
2003	4.0%	2.3%
2004	15.0%	3.2%
2005	10.8%	6.0%
2006	10.7%	9.6%
2007	17.7%	13.3%
2008	-5.3%	7.9%
2009	-22.4%	0.2%
2010	13.6%	-0.4%
2011	24.8%	-0.5%
2012	-0.4%*	1.0%
2013	13.1%*	11.2%
2014	17.9%*	12.8%
<b>Average Returns</b>		
Last 10 years:	7.2%	6.0%
Last 25 years:	8.9%	n/a

\* As determined by Segal

**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

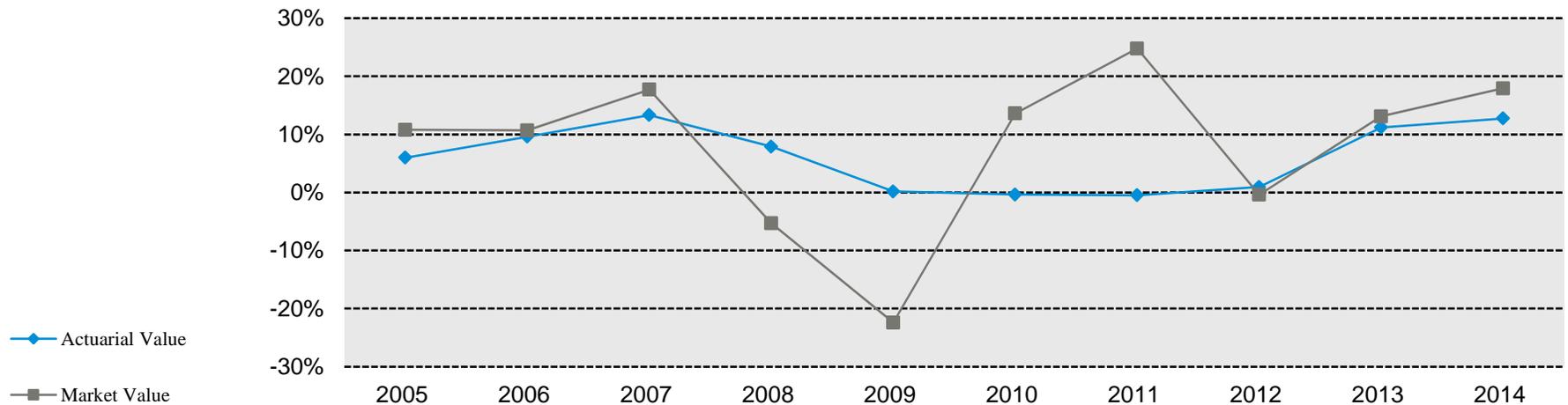
Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

**Administrative Expenses**

Administrative expenses for the year ended June 30, 2014, totaled \$10,494,139 compared to the assumption of \$12,114,263. This resulted in a gain of \$2,157,407 for the year, when adjusted for timing.

*This chart illustrates how this leveling effect has actually worked over the years 2005 - 2014.*

**CHART 11**  
**Market and Actuarial Rates of Return for Years Ended June 30, 2005 - 2014**



**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**Other Experience**

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),

- the number of disability retirements, and
- salary increases different than assumed.

The net gain from this other experience for the year ended June 30, 2014, amounted to \$20,934,431, which is approximately 0.1% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the CTPF for the year ended June 30, 2014, is shown in the chart below.

*The chart shows elements of the experience gain/(loss) for the most recent year.*

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**CHART 12**

**Experience Due to Changes in Demographics for Year Ended June 30, 2014**

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1. Termination	-\$81,255
2. Retirement	-54,224,028
3. Deaths among retired members and beneficiaries	-66,239,359
4. Salary/service increase for continuing actives	150,327,609
5. Miscellaneous	<u>-8,848,536</u>
6. Total	\$20,934,431

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**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

**D. DEVELOPMENT OF EMPLOYER COSTS**

The amount of actuarially determined contribution is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the projected payroll for active members to determine the actuarially determined contribution of 31.45% of payroll.

Effective July 1, 2013, the amortization period was set to 30 years, but will decline by one year in each subsequent valuation. As of July 1, 2014, there are 29 years remaining on this schedule.

*The chart compares this valuation's actuarially determined contribution with the prior valuation.*

**CHART 13**  
**Actuarially Determined Contribution**

	Year Beginning July 1			
	2014		2013	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	\$323,323,392*	13.96%	\$313,624,165	13.47%
2. Administrative expenses	11,018,846	0.47%	12,114,263	0.52%
3. Expected employee contributions	<u>-194,832,036</u>	<u>-8.41%</u>	<u>-195,809,979</u>	<u>-8.41%</u>
4. Employer normal cost: (1) + (2) + (3)	\$139,510,202	6.02%	\$129,928,449	5.58%
5. Employer normal cost, adjusted for timing	144,815,353**	6.25%	134,838,147***	5.79%
6. Actuarial accrued liability	19,503,893,632		19,044,533,016	
7. Actuarial value of assets	<u>10,045,542,575</u>		<u>9,422,519,190</u>	
8. Unfunded actuarial accrued liability: (6) - (7)	\$9,458,351,057		\$9,622,013,826	
9. Payment on unfunded actuarial accrued liability, adjusted for timing	583,673,167**	25.20%	584,943,599***	<u>25.13%</u>
10. Actuarially determined contribution, adjusted for timing	<u>\$728,488,520</u>	<u>31.45%</u>	<u>\$719,781,746</u>	<u>30.92%</u>
11. Projected payroll	\$2,316,336,417		\$2,327,963,064	

\* Reflects timing adjustment to the middle of the year

\*\* Employer contributions are assumed to be paid at the end of the year.

\*\*\* Employer contributions are assumed to be paid at the middle of every month.

**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

The contribution requirements as of June 30, 2014, are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

**Reconciliation of Actuarially Determined Contribution**

The chart below details the changes in the actuarially determined contribution from the prior valuation to the current year's valuation.

*The chart reconciles the contribution from the prior valuation to the amount determined in this valuation.*

**CHART 14**  
**Reconciliation of Actuarially Determined Contribution from July 1, 2013 to July 1, 2014**

<b>Actuarially Determined Contribution as of July 1, 2013</b>	\$719,781,746
Effect of plan changes	0
Effect of expected change in amortization payment due to payroll growth	20,473,025
Effect of change in administrative expense assumption	-1,180,311
Effect of contributions (more)/less than actuarially determined contribution	10,607,186
Effect of investment (gain)/loss	-27,186,691
Effect of other gains and losses on accrued liability	-1,372,474
Effect of change in timing of employer contribution	7,255,663
Effect of net other changes	<u>110,376</u>
<b>Total change</b>	<b><u>\$8,706,774</u></b>
<b>Actuarially Determined Contribution as of July 1, 2014</b>	<b>\$728,488,520</b>

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT A**

**Table of Plan Coverage**

<b>Category</b>	<b>Year Ended June 30</b>		<b>Change From Prior Year</b>
	<b>2014</b>	<b>2013</b>	
<b>Active participants in valuation:</b>			
Number	30,654	30,969	-1.0%
Average age	41.3	41.2	0.2%
Average years of service	10.3	10.0	3.0%
Total salary supplied by the Fund	\$2,149,841,688	\$2,146,811,972	0.1%
Average salary	\$70,133	\$69,321	1.2%
Total active vested participants	19,997	20,185	-0.9%
Male members	7,215	7,253	-0.5%
Female members	23,439	23,716	-1.2%
<b>Vested terminated participants</b>	<b>4,818</b>	<b>4,502</b>	<b>7.0%</b>
<b>Service retirees:</b>			
Number in pay status	24,251	24,042	0.9%
Average age	72.6	72.1	0.7%
Average monthly benefit	\$4,106	\$4,003	2.6%
Total annual benefit	\$1,194,862,326	\$1,154,757,533	3.5%
<b>Disabled retirees:</b>			
Number in pay status	474	478	-0.8%
Average age	66.2	65.8	0.6%
Average monthly benefit	\$2,812	\$2,714	3.6%
Total annual benefit	\$15,995,375	\$15,565,791	2.8%
<b>Beneficiaries (including children) in pay status:</b>			
Number in pay status	2,997	2,920	2.6%
Average age	75.1	74.7	0.5%
Average monthly benefit	\$1,629	\$1,557	4.6%
Total annual benefit	\$58,598,429	\$54,546,193	7.4%
<b>Total number of members</b>	<b>63,194</b>	<b>62,911</b>	<b>0.4%</b>

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT B**

**Participants in Active Service as of June 30, 2014  
By Age, Years of Service, and Average Salary**

Age	Years of Service										
	Total	< 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	1,190	233	956	1	--	--	--	--	--	--	--
	\$41,245	\$14,848	\$47,662	\$57,335	--	--	--	--	--	--	--
25-29	4,608	371	3,569	668	--	--	--	--	--	--	--
	50,332	15,405	51,192	65,132	--	--	--	--	--	--	--
30-34	5,463	225	2,197	2,430	611	--	--	--	--	--	--
	62,463	15,176	53,131	69,995	\$83,472	--	--	--	--	--	--
35-39	4,510	120	960	1,467	1,664	299	--	--	--	--	--
	73,484	13,778	53,667	72,010	86,548	\$95,605	--	--	--	--	--
40-44	4,101	129	632	760	1,162	1,165	252	1	--	--	--
	79,776	12,444	54,554	72,393	86,966	94,150	\$100,098	\$94,257	--	--	--
45-49	3,146	72	369	453	633	738	765	114	2	--	--
	81,629	10,665	53,242	69,682	83,667	90,401	96,356	98,580	\$98,682	--	--
50-54	2,726	59	235	337	469	537	589	377	122	1	--
	82,120	11,224	49,369	65,600	83,894	88,131	92,177	95,815	100,893	\$92,765	--
55-59	2,582	57	175	252	398	446	529	381	280	64	--
	82,742	12,007	45,660	60,662	82,212	87,216	91,887	92,699	98,563	102,122	--
60-64	1,684	43	137	177	250	293	346	206	131	64	37
	78,118	8,385	31,380	54,280	74,166	84,107	92,261	95,000	95,845	98,857	\$100,638
65-69	513	23	63	54	79	71	92	60	28	11	32
	70,522	3,772	18,252	47,324	67,879	80,018	92,858	93,153	93,705	104,373	107,433
70 & over	131	8	24	25	14	14	18	12	8	3	5
	53,363	3,890	14,296	23,782	60,835	70,033	79,869	101,538	102,944	74,364	97,389
Total	30,654	1,340	9,317	6,624	5,280	3,563	2,591	1,151	571	143	74
	\$70,133	\$13,762	\$51,092	\$68,845	\$84,442	\$90,518	\$94,072	\$94,831	\$98,261	\$100,187	\$103,357

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT C**

**Reconciliation of Participant Data**

	<b>Active Participants</b>	<b>Vested Former Participants</b>	<b>Retirees</b>	<b>Disabled Retirees</b>	<b>Beneficiaries</b>	<b>Total</b>
Number as of June 30, 2013	30,969	4,502	24,042	478	2,920	62,911
New participants	2,637	N/A	N/A	N/A	N/A	2,637
Terminations – with vested rights	-708	708	0	0	0	0
Terminations – without vested rights	-1,928	N/A	N/A	N/A	N/A	-1,928
Retirements	-563	-161	724	N/A	N/A	0
New disabilities	-13	-5	N/A	18	N/A	0
New beneficiary	0	0	0	0	228	228
Deaths	-30	-10	-551	-21	-151	-763
Refunds	-120	-88	0	0	0	-208
Rehire	410	-102	0	N/A	N/A	308
Certain period expired	N/A	N/A	0	0	0	0
Data adjustments	<u>0</u>	<u>-26</u>	<u>36</u>	<u>-1</u>	<u>0</u>	<u>9</u>
Number as of June 30, 2014	30,654	4,818	24,251	474	2,997	63,194

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT D**

**Schedule of Retirees and Beneficiaries Added to and Removed from Rolls**

<b>Fiscal Year</b>	<b>Added to Rolls</b>		<b>Removed from Rolls</b>		<b>Rolls – End of Year</b>		<b>Average Annual Allowances</b>	<b>% Increase in Avg. Annual Allowances</b>
	<b>Number</b>	<b>Annual Allowances</b>	<b>Number</b>	<b>Annual Allowances</b>	<b>Number</b>	<b>Annual Allowances</b>		
2004	1,336	\$63,484,844	635	\$13,595,626	19,266	\$594,371,147	\$30,851	5.2
2005	2,631	117,025,483	943	23,137,112	20,954	688,259,518	32,846	6.5
2006	1,788	91,991,917	637	15,910,849	22,105	764,340,586	34,578	5.3
2007	2,055	104,043,221	537	14,063,967	23,623	854,319,840	36,165	4.6
2008	881	67,060,461	584	16,543,468	23,920	904,836,833	37,828	4.6
2009	957	57,109,256	659	19,557,718	24,218	942,388,371	38,913	2.9
2010	1,080	67,630,266	698	21,855,794	24,600	988,162,843	40,169	3.2
2011	1,394	86,404,558	795	26,694,342	25,199	1,047,873,059	41,584	3.5
2012	1,579	96,719,811	852	28,511,983	25,926	1,116,080,887	43,049	3.5
2013	2,129	130,553,477	615	21,764,846	27,440	1,224,869,518	44,638	3.7
2014	1,006	70,963,133	724	26,376,522	27,722	1,269,456,130	45,792	2.6

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT E**

**Distribution of Current Annuitants by Benefit Type and Amount as of June 30, 2014**

<b>Monthly Pension Amount</b>	<b><u>Retirees</u></b>		<b><u>Disabled Retirees</u></b>		<b><u>Beneficiaries</u></b>		<b><u>Total</u></b>	
	<b><u>Male</u></b>	<b><u>Female</u></b>	<b><u>Male</u></b>	<b><u>Female</u></b>	<b><u>Male</u></b>	<b><u>Female</u></b>	<b><u>Male</u></b>	<b><u>Female</u></b>
\$0 - 499	422	988	2	2	174	249	598	1,239
\$500 - 999	394	859	9	19	225	408	628	1,286
\$1,000 - 1,499	323	661	14	40	178	231	515	932
\$1,500 - 1,999	242	689	12	43	185	266	439	998
\$2,000 - 2,499	256	840	15	50	196	286	467	1,176
\$2,500 - 2,999	286	1,000	11	54	113	227	410	1,281
\$3,000 - 3,499	303	1,216	16	34	19	91	338	1,341
\$3,500 - 3,999	350	1,326	15	46	11	55	376	1,427
\$4,000 - 4,499	474	1,483	9	47	7	43	490	1,573
\$4,500 - 4,999	835	2,497	6	14	2	16	843	2,527
\$5,000 - 5,499	1,001	2,847	2	6	1	9	1,004	2,862
\$5,500 - 5,999	508	1,477	1	1	1	0	510	1,478
\$6,000 - 6,499	271	581	1	1	0	2	272	584
\$6,500 - 6,999	220	305	1	1	0	0	221	306
\$7,000 - 7,499	119	234	0	1	0	0	119	235
\$7,500 - 7,999	110	208	1	0	1	0	112	208
\$8,000 - 8,499	95	165	0	0	0	0	95	165
\$8,500 - 8,999	64	123	0	0	0	0	64	123
\$9,000 & over	<u>177</u>	<u>302</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>177</u>	<u>303</u>
Total	6,450	17,801	115	359	1,113	1,884	7,678	20,044

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT F  
Schedule of Average Benefit Payments**

	Years of Credited Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
<b>Fiscal Year 2012</b>								
Average Monthly Pension	\$348	\$842	\$1,452	\$2,522	\$3,308	\$4,142	\$5,788	\$3,846
Average Final Salary	\$6,690	\$5,457	\$5,509	\$6,696	\$7,049	\$7,173	\$7,887	\$7,114
Number of Retired Members	72	114	84	134	221	157	538	1,320
Average Age								63.2
<b>Fiscal Year 2013</b>								
Average Monthly Pension	\$275	\$856	\$1,645	\$2,761	\$3,567	\$4,422	\$5,976	\$4,294
Average Final Salary	\$5,623	\$5,491	\$6,180	\$7,136	\$7,495	\$7,688	\$8,157	\$7,535
Number of Retired Members	56	114	91	186	380	256	824	1,907
Average Age								63.2
<b>Fiscal Year 2014</b>								
Average Monthly Pension	\$262	\$758	\$1,648	\$2,581	\$3,477	\$4,307	\$5,683	\$3,217
Average Final Salary	\$6,555	\$5,023	\$6,309	\$6,657	\$7,376	\$7,516	\$7,823	\$6,958
Number of Retired Members	46	89	74	102	184	120	145	760
Average Age								63.4

*Table does not include disabled members or surviving spouses.*

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT G**

**Summary Statement of Income and Expenses on a Market Value Basis**

	Year Ended June 30, 2014	Year Ended June 30, 2013
<b>Net assets at market value at the beginning of the year</b>	\$9,674,188,563	\$9,437,316,026
<b>Contribution income:</b>		
Employer contributions	\$585,416,141	\$142,654,000
Employee contributions	187,846,065	188,356,294
Administrative expenses	<u>-10,494,139</u>	<u>-11,537,394</u>
Net contribution income	762,768,067	319,472,900
<b>Investment income:</b>		
Interest, dividends and other income	\$237,084,694	\$251,028,034
Asset appreciation	1,486,073,269	961,784,065
Securities lending income	2,999,976	4,006,659
Less investment and administrative fees	<u>-41,078,099</u>	<u>-42,318,757</u>
Net investment income	<u>1,685,079,840</u>	<u>1,174,500,001</u>
<b>Total income available for benefits</b>	\$2,447,847,907	\$1,493,972,901
<b>Less benefit payments:</b>		
Annuity payments	-\$1,269,835,064	-\$1,228,318,993
Refund of contributions	-32,832,171	-24,787,063
Death benefits	<u>-3,674,621</u>	<u>-3,994,308</u>
Net benefit payments	-\$1,306,341,856	-\$1,257,100,364
<b>Change in reserve for future benefits</b>	\$1,141,506,051	\$236,872,537
<b>Net assets at market value at the end of the year</b>	\$10,815,694,614	\$9,674,188,563

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT H**

**Summary Statement of Plan Assets**

	<b>Year Ended June 30, 2014</b>	<b>Year Ended June 30, 2013</b>
<b>Cash equivalents</b>	\$11,782,210	\$15,666,922
<b>Accounts receivable</b>	169,404,046	203,140,399
<b>Investments, at fair value:</b>		
Equities	\$6,234,288,422	\$5,565,488,614
Fixed income	1,998,455,301	1,644,521,422
Commingled funds	1,230,947,404	1,099,569,739
Short-term investments	891,009,314	481,913,983
Real estate	299,147,976	297,996,967
Private equity	297,705,749	274,077,937
Infrastructure	141,571,217	182,573,109
Public REITs	52,778,941	175,023,120
Margin cash	<u>790,472</u>	<u>100,000</u>
Total investments at market value	11,146,694,796	9,721,264,891
<b>Invested securities lending collateral</b>	505,301,189	648,873,113
<b>Capital assets</b>	1,506,069	1,934,121
<b>Prepaid expenses</b>	<u>13,150</u>	<u>13,174</u>
<b>Total assets</b>	\$11,834,701,460	\$10,590,892,620
<b>Less accounts payable:</b>		
Benefits payable	-\$3,551,111	-\$3,576,691
Refunds payable	-12,537,535	-12,004,775
Accounts and administrative expenses payable	-13,109,072	-17,565,015
Securities lending collateral	-520,146,384	-667,849,650
Due to brokers for securities purchased	<u>-469,662,744</u>	<u>-215,707,926</u>
Total accounts payable	-\$1,019,006,846	-\$916,704,057
<b>Net assets at market value</b>	<u>\$10,815,694,614</u>	<u>\$9,674,188,563</u>
<b>Net assets at actuarial value</b>	<u>\$10,045,542,575</u>	<u>\$9,422,519,190</u>

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT I**

**Development of the Fund Through June 30, 2014**

<b>Year Ended June 30</b>	<b>Employer Contributions</b>	<b>Employee Contributions</b>	<b>Net Investment Return*</b>	<b>Miscellaneous</b>	<b>Administrative Expenses</b>	<b>Benefit Payments</b>	<b>Actuarial Value of Assets at End of Year</b>
2005	\$8,872,764	\$175,706,081	\$603,213,991	\$561,154	\$7,477,671	\$679,131,878	\$10,416,708,086
2006	52,789,706	163,419,386	1,033,995,851**	139,509	8,320,340	751,791,350	10,906,940,848
2007	103,761,750	179,017,663	1,415,420,214	1,923	8,434,688	837,008,647	11,759,699,063
2008	164,270,412	172,504,804	905,021,878	0	7,827,576	924,251,543	12,069,417,038
2009	198,069,327	176,176,975	21,935,841	0	8,751,945	963,591,482	11,493,255,754
2010	290,759,950	194,621,551	-39,885,503	0	8,800,848	1,012,533,911	10,917,416,993
2011	143,589,994	185,882,636	-50,121,733	55,307	9,527,938	1,077,980,337	10,109,314,922
2012	138,729,011	187,141,384	92,083,763	431,790	10,120,434	1,153,503,764	9,364,076,672
2013	142,654,000	188,356,294	996,069,982	0	11,537,394	1,257,100,364	9,422,519,190
2014	585,416,141	187,846,065	1,166,597,174	0	10,494,139	1,306,341,856	10,045,542,575

\* Net of investment fees

\*\* Includes \$59,496,735 transferred from health insurance assets

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT J**

**Development of Unfunded Actuarial Accrued Liability**

	Year Ending June 30	
	2014	2013
1. Unfunded actuarial accrued liability at beginning of year	\$9,622,013,826	\$8,011,583,697
2. Normal cost at beginning of year	325,738,428	299,633,862
3. Total contributions	773,262,206	331,010,294
4. Interest		
(a) Unfunded actuarial accrued liability and normal cost	\$770,950,800	\$664,897,405
(b) Total contributions	<u>6,582,531</u>	<u>11,968,408</u>
(c) Total interest: (4a) – (4b)	<u>764,368,269</u>	<u>652,928,997</u>
5. Expected unfunded actuarial accrued liability: (1) + (2) – (3) + (4c)	\$9,938,858,317	\$8,633,136,262
6. Changes due to (gain)/loss from:		
(a) Investments	-\$457,415,422	-\$284,448,947
(b) Demographics and other	<u>-23,091,838</u>	<u>251,389,004</u>
(c) Total changes due to (gain)/loss: (6a) + (6b)	-480,507,260	-33,059,943
7. Change to due plan changes	0	0
8. Change in actuarial assumptions	<u>0</u>	<u>1,021,937,507</u>
9. Unfunded accrued liability at end of year: (5) + (6c) + (7) + (8)	<u>\$9,458,351,057</u>	<u>\$9,622,013,826</u>

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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#### EXHIBIT K

#### Definitions of Pension Terms

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

**Actuarial Accrued Liability**

**For Actives:**

The equivalent of the accumulated normal costs allocated to the years before the valuation date.

**Actuarial Accrued Liability**

**For Pensioners:**

The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

**Actuarial Cost Method:**

A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the Annual Required Contribution.

**Actuarial Gain or Actuarial Loss:**

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., CTPF's assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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<b>Actuarially Equivalent:</b>	Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.
<b>Actuarial Present Value (APV):</b>	<p>The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is:</p> <ol style="list-style-type: none"><li>Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)</li><li>Multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and</li><li>Discounted according to an assumed rate (or rates) of return to reflect the time value of money.</li></ol>
<b>Actuarial Present Value of Future Plan Benefits:</b>	<p>The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.</p>
<b>Actuarial Valuation:</b>	<p>The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).</p>
<b>Actuarial Value of Assets:</b>	<p>The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.</p>

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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<b>Actuarially Determined:</b>	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
<b>Actuarially Determined Contribution (ADC):</b>	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
<b>Amortization Method:</b>	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
<b>Amortization Payment:</b>	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
<b>Assumptions or Actuarial Assumptions:</b>	<p>The estimates on which the cost of the Fund is calculated including:</p> <ul style="list-style-type: none"><li>(a) <u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future;</li><li>(b) <u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates;</li><li>(c) <u>Retirement rates</u> - the rate or probability of retirement at a given age;</li><li>(d) <u>Turnover rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;</li><li>(e) <u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.</li></ul>

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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<b>Closed Amortization Period:</b>	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.
<b>Decrements:</b>	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.
<b>Defined Benefit Plan:</b>	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
<b>Defined Contribution Plan:</b>	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
<b>Employer Normal Cost:</b>	The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.
<b>Experience Study:</b>	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
<b>Funded Ratio:</b>	The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA, although GASB 25 reporting requires the use of the AVA.
<b>GASB:</b>	Governmental Accounting Standards Board.

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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<b>GASB 25 and GASB 27:</b>	Governmental Accounting Standards Board Statements No. 25 and No. 27. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 25 sets the rules for the systems themselves.
<b>GASB 67 and GASB 68:</b>	Governmental Accounting Standards Board Statements No. 67 and No. 68 are the successor statements to GASB Statements No. 25 and No. 27.
<b>Investment Return:</b>	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
<b>Net Pension Liability (NPL):</b>	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
<b>Normal Cost:</b>	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
<b>Open Amortization Period:</b>	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount, or in relation to covered payroll, if the actuarial assumptions are realized.

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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<b>Plan Fiduciary Net Position:</b>	Market value of assets.
<b>Total Pension Liability (TPL):</b>	The actuarially accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
<b>Unfunded Actuarial Accrued Liability:</b>	The excess of the actuarial accrued liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
<b>Valuation Date or Actuarial Valuation Date:</b>	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT I**

**Summary of Actuarial Valuation Results**

The valuation was made with respect to the following data supplied to us:

1. Pensioners as of the valuation date (including 2,997 beneficiaries and 474 disabled retirees)		27,722
2. Participants inactive during year ended June 30, 2014 with vested rights		4,818
3. Participants active during the year ended June 30, 2014		30,654
Fully vested	19,997	
Not vested	10,657	

The actuarial factors as of the valuation date are as follows:

1. Actuarial accrued liability		\$19,503,893,632
Service retirees	\$13,609,596,553	
Disabled retirees	174,947,368	
Beneficiaries	514,294,186	
Inactive participants with vested rights	327,527,624	
Active participants:		
Retirement	4,231,572,134	
Turnover	451,476,004	
Mortality	102,730,050	
Disability	<u>91,749,713</u>	
Total	4,877,527,901	
2. Actuarial value of assets (\$10,815,694,614 at market value)		10,045,542,575
3. Unfunded actuarial accrued liability		\$9,458,351,057
4. Funded ratio: (2) ÷ (1)		51.5%

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT I (continued)**

**Summary of Actuarial Valuation Results**

Components of the normal cost:	% of Payroll	Amount
1. Retirement	10.77%	\$249,518,331
2. Turnover	2.04%	47,314,536
3. Mortality	0.33%	7,655,654
4. Disability	<u>0.30%</u>	<u>6,990,275</u>
5. Total normal cost: (1) + (2) + (3) + (4)	13.44%	\$311,478,796
6. Total normal cost, adjusted to the middle of the year	13.96%	323,323,392
7. Administrative expenses	<u>0.47%</u>	<u>11,018,846</u>
8. Total normal cost, including administrative expenses: (6) + (7)	14.43%	\$334,342,238
9. Expected employee contributions	<u>-8.41%</u>	<u>-194,832,036</u>
10. Employer normal cost: (8) + (9)	6.02%	\$139,510,202

The determination of the actuarially determined contribution is as follows:

1. Total normal cost, adjusted to the middle of the year	\$323,323,392
2. Administrative expenses	11,018,846
3. Expected employee contributions	<u>-194,832,036</u>
4. Employer normal cost: (1) + (2) + (3)	\$139,510,202
5. Employer normal cost projected, adjusted for timing*	144,815,353
6. Payment on projected unfunded/(overfunded) actuarial accrued liability, adjusted for timing*	583,673,167
7. Total actuarially determined contribution: (5) + (6)	<u>\$728,488,520</u>
8. Expected employer contributions	\$643,667,000
9. Projected payroll	\$2,316,336,417
10. Actuarially determined contribution as a percentage of projected payroll: (7) ÷ (9)	31.45%

\*Employer contributions are assumed to be paid at the end of the year.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT II**

**Comparison of Employer Contribution to Actuarially Determined Contribution**

<b>Plan Year Ended June 30</b>	<b>Actuarially Determined Contributions (ADC)*</b>	<b>Actual Contributions</b>	<b>Percentage Contributed</b>
2006	\$328,365,821	\$52,789,706	16.1%
2007	311,139,800	103,761,750	33.3%
2008	290,072,885	164,270,412	56.6%
2009	292,145,359	198,069,327	67.8%
2010	355,846,125	290,759,950	81.7%
2011	430,091,545	143,589,994	33.4%
2012	510,101,466	138,729,011	27.2%
2013	585,444,539	142,654,000	24.4%
2014	719,781,746	585,416,141	81.3%
2015	728,488,520	--	--

\*Prior to 2015, this amount was the Annual Required Contribution (ARC)

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT III**

**Schedule of Funding Progress**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)</b>	<b>Funded Ratio (a) / (b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percentage of Covered Payroll* [(b) - (a)] / (c)</b>
06/30/2005	\$10,506,471,213**	\$13,295,876,206	\$2,789,404,993	79.02%	\$1,968,612,235	141.7%
06/30/2006	10,947,998,433**	14,035,627,452	3,087,629,019	78.00%	1,944,358,215	158.8%
06/30/2007	11,759,699,063	14,677,184,345	2,917,485,282	80.12%	1,863,182,086	156.6%
06/30/2008	12,069,417,038	15,203,740,567	3,134,323,529	79.38%	1,914,558,916	163.7%
06/30/2009	11,493,255,754	15,683,241,527	4,189,985,773	73.28%	1,996,194,224	209.9%
06/30/2010	10,917,416,993	16,319,743,665	5,402,326,672	66.90%	2,107,934,080	256.3%
06/30/2011	10,109,314,922	16,940,626,445	6,831,311,523	59.67%	2,090,131,858	326.8%
06/30/2012	9,364,076,672	17,375,660,369	8,011,583,697	53.89%	2,224,903,121	360.1%
06/30/2013	9,422,519,190	19,044,533,016	9,622,013,826	49.48%	2,239,347,051	429.7%
06/30/2014	10,045,542,575	19,503,893,632	9,458,351,057	51.51%	2,233,280,995	423.5%

\* Not less than zero

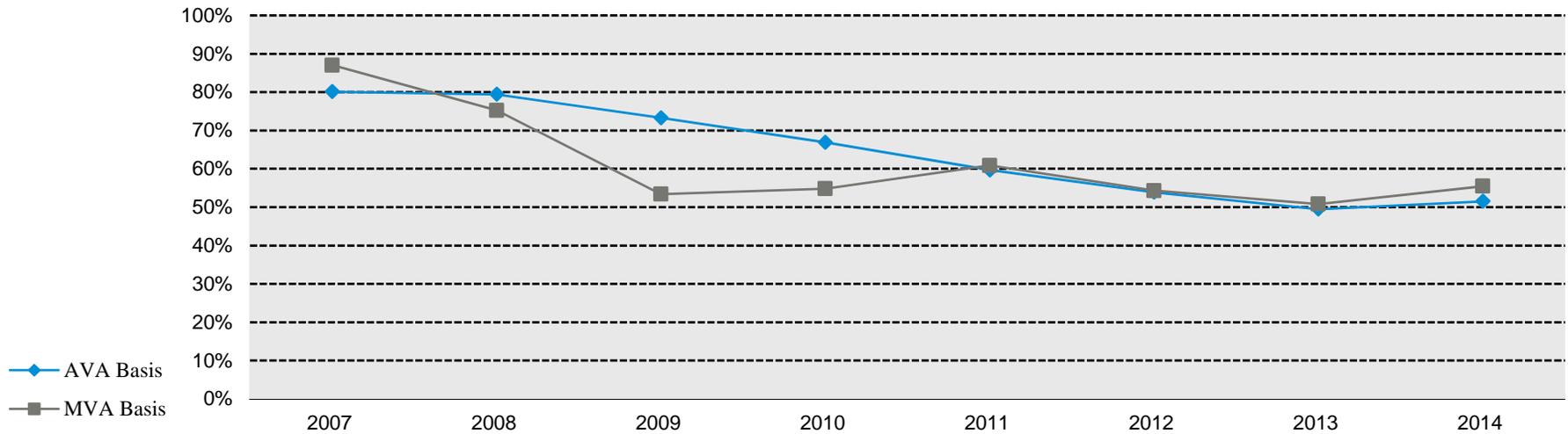
\*\* Includes Health Insurance Fund assets

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT IV  
Funded Ratio**

A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for this plan.



**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**EXHIBIT V**

**Actuarial Assumptions and Actuarial Cost Method**

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**Mortality Rates:**

*Healthy:*

The RP-2000 Combined Healthy Mortality Table, set back 2 years with generational improvement from 2004 using Scale AA. (adopted June 30, 2013).

*Disabled:*

The RP-2000 Disabled Mortality Table, set back 3 years (adopted June 30, 2013).

The mortality tables specified above without future generational improvement reasonably reflect the projected mortality experience of the Fund as of the measurement date. The healthy mortality table was then adjusted to future years using additional generational improvement using Scale AA to anticipate future mortality improvement.

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**Termination Rates:**

Select and ultimate termination rates are based on recent experience of the Fund were used (adopted June 30, 2013). Ultimate rates after the tenth year are shown for sample ages in the table on the next page. Select rates are as follows:

<u>Years of Service</u>	<u>Rate(%)</u>
Less than 1	25.0
1 - 1.99	15.0
2 - 2.99	10.0
3 - 3.99	9.0
4 - 4.99	8.0
5 - 5.99	7.0
6 - 6.99	6.0
7 - 7.99	5.0
8 - 8.99	4.5
9 - 9.99	4.0

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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Age	Rate (%)
	10+ Years of Service
30	2.5
35	2.5
40	2.3
45	2.0
50	2.0
55	2.0

**Retirement Rates:**

For employees first hired prior to January 1, 2011, rates of retirement for each age from 55 to 75 based on the recent experience of the Fund were used (adopted June 30, 2013). Sample rates are shown below.

Age	Rate (%)	
	<34 Years of Service	34+ Years of Service
55	5.0	20.0
60	9.0	22.5
65	15.0	25.0
70	20.0	30.0
75	100.0	100.0

For employees first hired on or after January 1, 2011, rates of retirement for each age from 62 to 75 were used (adopted June 30, 2011). Sample rates are shown below.

Age	Rate (%)
62	40.0
64	25.0
67	30.0
70	20.0
75	100.0

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**Disability Rates:**

Disability rates are based on the recent experience of the Fund were used (adopted June 30, 2013). All disabilities are assumed to be non-duty disabilities. Sample rates are shown below.

<b>Age</b>	<b>Rate (%)</b>
30	0.06
40	0.08
50	0.16
60	0.20

**Salary Increases:**

Assumed salary increases are based on the recent experience of the Fund were used (adopted June 30, 2013). Sample rates are shown below.

<b>Age</b>	<b>Rate (%)</b>
25	10.8
30	7.3
35	7.3
40	5.8
45	5.3
50	4.8
55	4.3

**Valuation of Inactive Vested Participants:**

The account balance is projected to retirement (age 62) with interest, converted to an annuity, and loaded by 35%.

**Unknown Data for Participants:**

Same as those exhibited by Participants with similar known characteristics. If not specified, Participants are assumed to be female.

**Spouses:**

80% of participants were assumed to be married and females are assumed to be 2 years younger than males.

**Net Investment Return:**

7.75% per year

**Inflation:**

2.75% per year

**Payroll Growth:**

3.50% per year

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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<b>Administrative Expenses:</b>	Equal to actual expenses for the prior year, increased by 5%.
<b>Total Service at Retirement:</b>	Total service at retirement is assumed to be 103.3% of the teacher's regular period of service at retirement.
<b>Actuarial Value of Assets:</b>	The actuarial value of assets was determined by smoothing unexpected gains and losses over a period of 4 years. The gain or loss for a year is calculated as the total investment income on the market value of assets, minus expected investment return on the prior actuarial value of assets. The final actuarial value is equal to the expected actuarial value plus (or minus) 25% of the calculated gain (or loss) in the prior 4 years.
<b>Actuarial Cost Method:</b>	Projected Unit Credit (adopted August 31, 1991). Under this method, the projected benefits of each individual included in the valuation are allocated by a consistent formula to valuation years. The actuarial present value of benefits allocated to a valuation year is called the normal cost. The actuarial present value of benefits allocated to all periods prior to a valuation year is called the accrued liability.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**EXHIBIT VI**

**Summary of Plan Provisions**

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This exhibit summarizes the major provisions of the CTPF included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

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<b>Membership:</b>	Any teacher and certain other employees of the Chicago Public Schools, approved charter schools, and the Chicago Teachers' Pension Fund are members of this pension plan.
<b>Employee Contributions:</b>	All members of the Fund are required to contribute 9% of salary to the Fund as follows: 7.5% for the retirement pension, 1% for the spouse's pension, and 0.5% for the automatic increases in the retirement pension. As of September 1981, the Board of Education has been paying 7% of the required teacher contributions for Chicago public school teachers. Charter school contributions may be contributed at various rates by the employers and teachers.
<b>Service Retirement Pension:</b>	<p>a. Eligibility – An employee may retire at age 55 with at least 20 years of service or at age 62 with 5 years of service. If retirement occurs before age 60, the service retirement pension is reduced ½ of 1% of each month that the age of the member is below 60. However, there is no reduction if the employee has at least 34 years of service.</p> <p>b. Amount – For service earned before July 1, 1998, the amount of the service retirement pension is 1.67% of highest average salary for the first 10 years, 1.90% for each of the next 10 years, 2.10% for each of the following 10 years, and 2.30% for each year above 30. For service earned after June 30, 1998, the amount of the service retirement pension is 2.2% of highest average salary for each year of service.</p> <p>Service earned before July 1, 1998 can be upgraded to the 2.2% formula through the payment of additional employee contributions of 1% of the teacher's highest salary</p>

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## SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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within the last four years for each year of prior service, up to a maximum of 20%, which upgrades all service years. The number of years for which contributions are required is reduced by one for each three full years of service after June 30, 1998. No contribution is required if the employee has at least 30 years of service.

The highest average salary is the average of the 4 highest consecutive years of salary within the last 10 years.

The maximum pension payable is 75% of the highest annual salary or \$1,500 per month, whichever is greater.

An employee who first becomes a participant on or after January 1, 2011 is subject to the following provisions:

1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.
2. For 2014, the salary is limited to \$110,631, as determined by the Illinois Department of Insurance. The limit for future years shall automatically be increased by the lesser of 3% or one-half the percentage change in the Consumer Price Index-U during the preceding calendar year.
3. A participant is eligible to retire with unreduced benefits after attainment of age 67 with at least 10 years of service credit. However, a participant may elect to retire at age 62 with at least 10 years of service credit and receive a retirement annuity reduced by  $\frac{1}{2}$  of 1% for each month that the age of the member is below 67.

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### **Post-Retirement Increase:**

An annuitant is entitled to automatic annual increases of 3% of the current pension starting the later of attainment of age 61 and receipt of one year's pension payments.

Automatic annual increases in the retirement annuity for employees who first become a participant on or after January 1, 2011 is equal to the lesser of 3% or one-half the annual change in the Consumer Price Index-U, whichever is less, based on the originally granted retirement annuity. This automatic annual increase starts the later of attainment of age 67 and receipt of one year's pension payments.

## SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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### **Survivor's Pension:**

A surviving spouse or unmarried minor child is entitled to a pension upon the death of an employee while in service or on retirement. The minimum survivor's pension is 50% of the deceased employee's or retired employee's pension at the date of death. If the spouse is under age 50 and no unmarried minor children under age 18 survive, payment of the survivor's pension is deferred until age 50.

Survivor's pensions are subject to annual increases of 3% per year based on the current amount of pension starting the later of when the member would have attained age 61 and receipt of one year's pension payments.

For employees who first become a participant on or after January 1, 2011, the initial survivor's pension is equal to 66 2/3% of the participant's earned retirement annuity at the date of death, subject to automatic annual increases of the lesser of 3% or one-half of the increase in the Consumer Price Index-U during the preceding calendar year, based on the originally granted survivor's annuity. This automatic annual increase starts the later of when the member would have attained age 67 and receipt of one year's pension payments.

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### **Single Sum Death Benefit:**

Upon the death of an employee in service, a refund equal to the total contributions less contributions for survivor's pensions is payable.

A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is the lesser of \$10,000 and salary earned for the most recent six months.

Upon the death of a retired member, the death benefit is the lesser of \$10,000 and the most recent salary earned for a 6 month period less 20% of the death benefit for each year that the member has been on pension, to a minimum of \$5,000.

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### **Non-Duty Disability Benefit:**

A non-duty disability pension is payable in the event of total or permanent disability with 10 or more years of service. The benefit is the unreduced service retirement pension. However, if the participant has 20 or more and less than 25 years of service and is under age 55, the benefit is reduced by 1/2 of 1% for each month that the age of the member is below 55 down to a minimum age of 50, but not less than the unreduced service retirement pension with 20 years of service.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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<b>Duty Disability Benefit:</b>	Upon disability resulting from an injury incurred while working, an employee is entitled to a disability benefit of 75% of final average salary until age 65. At age 65, the disabled employee shall receive a service retirement pension, which includes service earned while disabled.
<b>Refunds:</b>	<p>An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions, without interest.</p> <p>An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the survivor's pension, without interest.</p>
<b>Plan Year:</b>	July 1 through June 30
<b>Changes in Plan Provisions:</b>	There have been no changes in plan provisions since the last valuation.

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## SECTION 5: GASB Information for Public School Teachers' Pension and Retirement Fund of Chicago

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### EXHIBIT 1

#### Net Pension Liability

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The components of the net pension liability at June 30, 2014, were as follows:

Total pension liability	\$20,316,899,952
Plan fiduciary net position	10,815,694,614
Association's net pension liability	9,501,205,338
Plan fiduciary net position as a percentage of the total pension liability	53.23%

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*Actuarial assumptions.* The total pension liability was determined by an actuarial valuation as of June 30, 2014, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.75%
Salary increases	4.25% to 15.75%, varying by age
Investment rate of return	7.75%, net of investment expense
Cost of living adjustments	3% compound for Tier 1 members; the lesser of 3% or one-half of CPI, simple, for Tier 2 members

For healthy participants, mortality rates were based on the RP-2000 Healthy Mortality Table for Males or Females, as appropriate, set back 2 years and adjusted for mortality improvements generationally from 2004 based on Scale AA. For disabled participants, mortality rates were based on the RP-2000 Disabled Mortality Table, set back 3 years.

The actuarial assumptions used in the June 30, 2014, valuation were based on the results of an experience study for the period July 1, 2007, through June 30, 2012. They are the same as the assumptions used in the June 30, 2013, funding actuarial valuation.

*Discount rate:* The discount rate used to measure the total pension liability was 7.75%. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made as specified by Public Act 96-0889. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

**SECTION 5: GASB Information for Public School Teachers' Pension and Retirement Fund of Chicago**

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*Sensitivity of the net pension liability to changes in the discount rate.* The following presents the net pension liability as of June 30, 2014, calculated using the discount rate of 7.75%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75%) or 1-percentage-point higher (8.75%) than the current rate:

	<b>1% Decrease (6.75%)</b>	<b>Current Discount (7.75%)</b>	<b>1% Increase (8.75%)</b>
Net pension liability as of June 30, 2014	\$12,136,287,040	\$9,501,205,338	\$7,312,538,277

**SECTION 5: GASB Information for Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT 2**

**Schedules of Changes in Net Pension Liability**

	<b>2014</b>
<b>Total pension liability</b>	
Service cost	\$332,188,481
Interest	1,309,307,860
Change of benefit term	0
Differences between expected and actual experience	(14,177,102)
Changes of assumptions	0
Benefit payments, including refunds of employee contributions	<u>(1,306,341,856)</u>
<b>Net change in total pension liability</b>	<u>\$520,977,383</u>
<b>Total pension liability – beginning</b>	<u>19,795,922,569</u>
<b>Total pension liability – ending (a)</b>	<u>\$20,316,899,952</u>
<b>Plan fiduciary net position</b>	
Contributions – employer	\$585,416,141
Contributions – employee	187,846,065
Net investment income	1,685,079,840
Benefit payments, including refunds of employee contributions	(1,306,341,856)
Administrative expense	(10,494,139)
Other	0
<b>Net change in plan fiduciary net position</b>	<u>\$1,141,506,051</u>
<b>Plan fiduciary net position – beginning</b>	<u>9,674,188,563</u>
<b>Plan fiduciary net position – ending (b)</b>	<u>\$10,815,694,614</u>
<b>Fund’s net pension liability – ending (a) – (b)</b>	<u>\$9,501,205,338</u>
<b>Plan fiduciary net position as a percentage of the total pension liability</b>	53.23%
<b>Covered employee payroll</b>	\$2,233,280,995
<b>Fund’s net pension liability as percentage of covered employee payroll</b>	425.44%

**SECTION 5: GASB Information for Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT 3**

**Schedule of Employer Contribution – Last Ten Fiscal Years**

<b>Year Ended June 30</b>	<b>Actuarially Determined Contributions</b>	<b>Contributions in Relation to the Actuarially Determined Contributions</b>	<b>Contribution Deficiency (Excess)</b>	<b>Covered Actual Employee Payroll</b>	<b>Contributions as a Percentage of Covered Employee Payroll</b>
2005	\$258,883,211	\$8,872,764	\$250,010,447	\$1,968,612,235	0.45%
2006	328,365,821	52,789,706	275,576,115	1,944,358,215	2.72%
2007	311,139,800	103,761,750	207,378,050	1,863,182,086	5.57%
2008	290,072,885	164,270,412	125,802,473	1,914,558,916	8.58%
2009	292,145,359	198,069,327	94,076,032	1,996,194,224	9.92%
2010	355,846,125	290,759,950	65,086,175	2,107,934,080	13.79%
2011	430,091,545	143,589,994	286,501,551	2,090,131,858	6.87%
2012	510,101,466	138,729,011	371,372,455	2,224,903,121	6.24%
2013	585,444,539	142,654,000	442,790,539	2,239,347,051	6.37%
2014	719,781,746	585,416,141	134,365,605	2,233,280,995	26.21%

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# Public School Teachers' Pension and Retirement Fund of Chicago

Statutorily Required Funding  
Valuation as of June 30, 2014





101 North Wacker Drive Suite 500 Chicago, IL 60606-1724  
T 312.984.8500 www.segalco.com

October 21, 2014

Board of Trustees  
Public School Teachers' Pension  
and Retirement Fund of Chicago  
203 North LaSalle Street, Suite 2600  
Chicago, Illinois 60601

Dear Board Members:

We are pleased to submit this combined actuarial valuation as of June 30, 2014, of the pension and retiree health insurance benefits provided under the Fund. It summarizes the actuarial data used in the valuation, measures the overall funded status of the plan, and establishes the statutorily required contributions for the fiscal year ending June 30, 2016.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Public School Teachers' Pension and Retirement Fund of Chicago. The census and financial information on which our calculations were based was prepared by the Fund staff. That assistance is gratefully acknowledged. We have not subjected the census data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

Since the effective date of the last actuarial valuation, there have not been any changes in benefit provisions that have had an impact on the actuarial liabilities of the Fund.

The actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the Fund's actuary. The assumptions and methods used for the June 30, 2014, actuarial valuation were based on an experience analysis covering the five-year period ending June 30, 2012, and were adopted by the Board, effective for the June 30, 2013, valuation. In our opinion, the assumptions as approved by the Board are reasonably related to the experience of the Fund.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic

assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Fund.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

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

By:



*Kim Nicholl, FSA, MAAA, EA, FCA  
Senior Vice President and Actuary*



*Matthew A. Strom, FSA, MAAA, EA  
Vice President and Actuary*

## SECTION 1

### VALUATION SUMMARY

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## **SECTION 1: Valuation Summary for the Public School Teachers' Pension and Retirement Fund of Chicago**

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### **Purpose**

This report has been prepared by Segal Consulting to present a combined valuation of the pension and retiree health insurance benefits of the Public School Teachers' Pension and Retirement Fund of Chicago (CTPF) as of June 30, 2014. The valuation was performed to determine the overall funded status and contribution requirements of the Fund. The required contributions presented in this report are based on:

- The benefit provisions of the Fund, as administered by the Board;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of June 30, 2014, provided by CTPF staff;
- The assets of the Fund as of June 30, 2014, provided by CTPF staff;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions regarding employee terminations, retirement, death, etc.

### **Significant Issues in Valuation Year**

The following key findings were the result of this actuarial valuation:

1. Senate Bill 1946, which was signed into law on April 14, 2010, as Public Act 96-0889, revised the funding provisions that had previously been in effect. Public Act 96-0889 specifies that, for Fiscal Years 2014 through 2059, the Board of Education is to make annual contributions calculated as a level percent of payroll sufficient to bring the total assets of the fund up to 90% of the total actuarial liabilities of the fund by the end of Fiscal Year 2059. Based on our projection, we have determined that the Board of Education's required contribution for Fiscal Year 2016 is \$675,059,000. In conjunction with the additional State contributions and additional Board of Education contributions of \$12,105,000 and \$12,906,000, respectively, Fiscal Year 2016 contributions will total \$700,070,000.
2. Employer contributions for Fiscal Year 2014 were determined to be \$624,603,000, based on the June 30, 2012, valuation. Actual employer contributions for Fiscal Year 2014 totaled \$650,416,141.
3. The funded ratio based on the actuarial value of assets over the actuarial accrued liability as of June 30, 2014, is 51.7%, compared to 49.7% as of June 30, 2013.

## SECTION 1: Valuation Summary for the Public School Teachers' Pension and Retirement Fund of Chicago

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4. For the year ended June 30, 2014, Segal has determined that the asset return on a market value basis was 17.9%. After gradual recognition of investment gains and losses under the actuarial smoothing method, the actuarial rate of return was 12.7%. This represents an experience gain when compared to the assumed rate of 7.75%. As of June 30, 2014, the actuarial value of assets (\$10.08 billion) represented 92.9% of the market value (\$10.85 billion).
5. The portion of deferred investment gains and losses recognized in the calculation of the June 30, 2014, actuarial value of assets resulted in a gain of \$454,691,436. Additionally, the demographic and liability experience resulted in a \$28,259,604 gain.
6. As mentioned above, the current method used to determine the actuarial value of assets yields an amount that is 92.9% of the market value of assets as of June 30, 2014. Guidelines in Actuarial Standard of Practice No. 44 (Selection and Use of Asset Valuation Methods for Pension Valuations) recommend that asset values fall within a reasonable range around the corresponding market value. We believe the actuarial asset method currently complies with these guidelines.
7. This actuarial valuation report as of June 30, 2014, is based on financial data as of that date. Changes in the value of assets subsequent to that date are not reflected.

**SECTION 1: Valuation Summary for the Public School Teachers' Pension and Retirement Fund of Chicago**

**Summary of Key Valuation Results**

	<b>July 1, 2015</b>	<b>July 1, 2014</b>	<b>July 1, 2013</b>
<b>Contributions for fiscal year beginning July 1:</b>			
Required Board of Education contributions	\$675,059,000	\$683,574,000	\$600,009,000
Additional Board of Education contributions	12,906,000	12,948,000	12,691,000
Additional State contributions	<u>12,105,000</u>	<u>12,145,000</u>	<u>11,903,000</u>
Total employer contributions	700,070,000	708,667,000	624,603,000
Actual employer contributions	--	--	650,416,141
<b>Funding elements for fiscal year beginning July 1:</b>			
Normal cost, including administrative expenses		\$204,510,202	\$194,928,449
Market value of assets		10,851,672,058	9,709,985,467
Actuarial value of assets		10,081,520,019	9,458,316,094
Actuarial accrued liability		19,503,893,632	19,044,533,016
Unfunded/(overfunded) actuarial accrued liability		9,422,373,613	9,586,216,922
Funded ratio		51.69%	49.66%
<b>Demographic data for plan year beginning July 1:</b>			
Number of retirees and beneficiaries		27,722	27,440
Number of vested former participants		4,818	4,502
Number of active members		30,654	30,969
Total salary supplied by the Fund		\$2,149,841,688	\$2,146,811,972
Average salary		\$70,133	\$69,321

## SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago

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### A. MEMBER DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, vested terminated members, retirees, and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A, B, and C.

*A historical perspective of how the participant population has changed over the past ten valuations can be seen in this chart.*

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**CHART 1**  
**Member Population: 2005 – 2014**

<b>Year Ended June 30</b>	<b>Active Members</b>	<b>Vested Terminated Members</b>	<b>Retirees and Beneficiaries</b>	<b>Ratio of Non-Actives to Actives</b>
2005	37,521	2,059	20,954	0.61
2006	34,682	2,408	22,105	0.71
2007	32,968	2,752	23,623	0.80
2008	32,086	3,479	23,920	0.85
2009	31,905	3,056	24,218	0.85
2010	31,012	3,554	24,600	0.91
2011	30,133	4,253	25,199	0.98
2012	30,366	4,245	25,926	0.99
2013	30,969	4,502	27,440	1.03
2014	30,654	4,818	27,722	1.06

---

## SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago

### B. FINANCIAL INFORMATION

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

*The chart shows the determination of the actuarial value of assets as of the valuation date.*

### CHART 2

#### Determination of Actuarial Value of Assets for Years Ended June 30, 2014 and June 30, 2013

			2014	2013
1.	Actuarial value of assets as of prior June 30		\$9,458,316,094	\$9,398,201,630
2.	Employer and employee contributions and miscellaneous income		846,262,206	404,362,941
3.	Benefits and expenses		1,389,710,589	1,340,401,281
4.	Expected investment income		686,757,247	714,414,597
5.	Total investment income, including income for securities lending		1,685,134,974	1,174,582,823
6.	Investment gain/(loss) for the year ended June 30: (5) – (4)		998,377,727	460,168,226
7.	Expected actuarial value of assets: (1) + (2) – (3) + (4)		9,601,624,958	9,176,577,887
8.	Calculation of recognized return			
		Original Amount*	% Recognized	% Recognized
(a)	Year ended June 30, 2014	\$998,377,727	25% \$249,594,432	--
(b)	Year ended June 30, 2013	460,168,226	25% 115,042,057	25% \$115,042,057
(c)	Year ended June 30, 2012	-815,951,719	25% -203,987,930	25% -203,987,930
(d)	Year ended June 30, 2011	1,276,986,010	25% <u>319,246,503</u>	25% 319,246,503
(e)	Year ended June 30, 2010	205,750,306		25% <u>51,437,577</u>
(f)	Total recognized return		<u>479,895,061</u>	<u>281,738,207</u>
9.	Total actuarial value of assets as of June 30: (7) + (8f)		\$10,081,520,019	\$9,458,316,094

\* Total return minus expected return on actuarial value

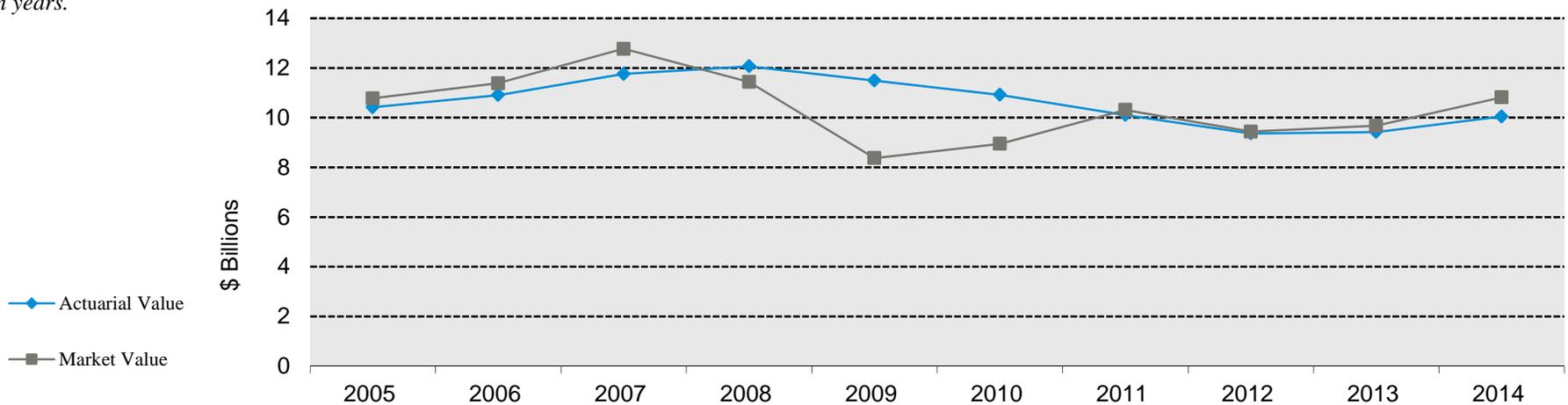
**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

Both the actuarial value and market value of assets are representations of the Fund's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Fund's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

*This chart shows the change in the actuarial value of assets versus the market value over the past ten years.*

**CHART 3**

**Actuarial Value of Assets vs. Market Value of Assets as of June 30, 2005 – 2014**



**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**C. ACTUARIAL EXPERIENCE**

To calculate the actuarially required contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term

development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total gain is \$482,951,040; \$454,691,436 from investment gains and \$28,259,604 in gains from all other sources. The net experience variation from individual sources other than investments was approximately 0.1% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

*This chart provides a summary of the actuarial experience during the past year.*

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**CHART 4  
Actuarial Experience for Year Ended June 30, 2014**

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1. Net gain/(loss) from investments*	\$454,691,436
2. Net gain/(loss) from administrative expenses	2,157,407
3. Net gain/(loss) from retiree health insurance cash flows	5,167,766
4. Net gain/(loss) from other experience**	<u>20,934,431</u>
5. Net experience gain/(loss): (1) + (2) + (3)	\$482,951,040

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\* Details in Chart 5

\*\* Details in Chart 8

**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**Investment Rate of Return**

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the CTPF's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets for the year ending June 30, 2014, is 7.75%. The actual rate of return on an actuarial basis for the year ending June 30, 2014, was 12.70%.

Since the actual return for the year was greater than the assumed return, the CTPF experienced an actuarial gain during the year ended June 30, 2014, with regard to its investments.

*This chart shows the gain/(loss) due to investment experience.*

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**CHART 5**

**Actuarial Value Investment Experience for Year Ended June 30, 2014**

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1. Actual return	\$1,166,652,308
2. Average value of actuarial assets	9,186,591,902
3. Actual rate of return: (1) ÷ (2)	12.70%
4. Assumed rate of return	7.75%
5. Expected return: (2) x (4)	\$711,960,872
6. Actuarial gain/(loss): (1) – (5)	<u>\$454,691,436</u>

---

**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. Chart 6 shows the rate of return on an actuarial basis compared to the market value investment return for the last twenty-five years, including ten-year and twenty-five-year averages.

**CHART 6  
Investment Return**

<b>Year Ended June 30</b>	<b>Market Value</b>	<b>Actuarial Value*</b>
1990	9.3%	n/a
1991	10.4%	n/a
1992	12.8%	n/a
1993	14.3%	n/a
1994	0.4%	n/a
1995	18.7%	n/a
1996	16.3%	n/a
1997	19.8%	n/a
1998	18.2%	n/a
1999	10.7%	n/a
2000	9.5%	n/a
2001	-1.5%	n/a
2002	-3.3%	n/a
2003	4.0%	2.3%
2004	15.0%	3.2%
2005	10.8%	6.0%
2006	10.7%	9.6%
2007	17.7%	13.3%
2008	-5.3%	7.9%
2009	-22.4%	0.2%
2010	13.6%	-0.4%
2011	24.8%	-0.5%
2012	-0.4%*	1.0%
2013	13.1%*	11.2%
2014	17.9%*	12.7%
<b>Average Returns</b>		
Last 10 years:	7.2%	6.0%
Last 25 years:	8.9%	n/a

\* As determined by Segal

## SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

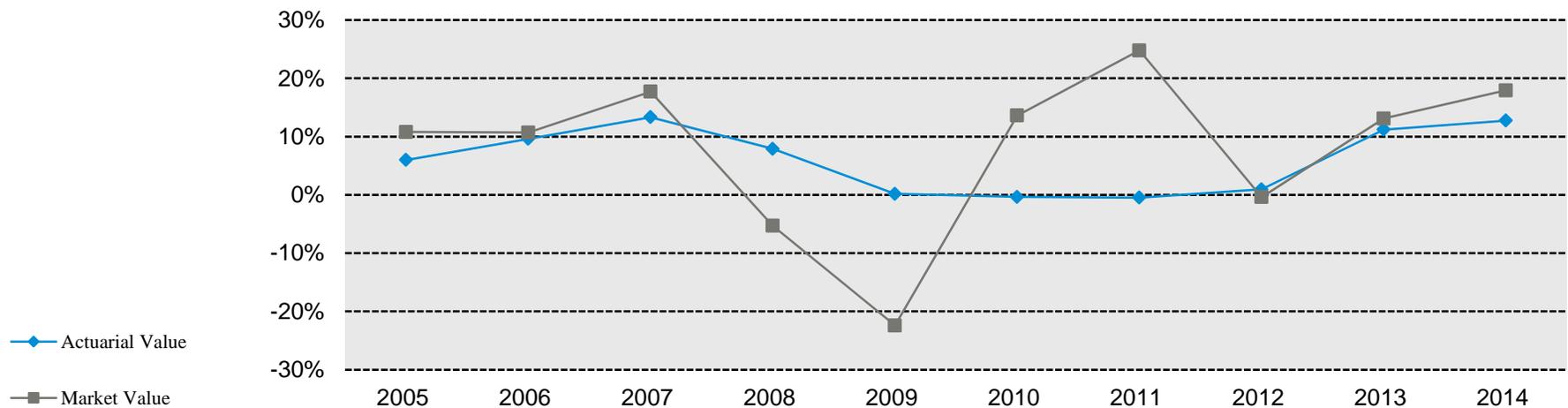
### Administrative Expenses

Administrative expenses for the year ended June 30, 2014, totaled \$10,494,139 compared to the assumption of \$12,114,263. This resulted in a gain of \$2,157,407 for the year, when adjusted for timing.

*This chart illustrates how this leveling effect has actually worked over the years 2005-2014.*

**CHART 7**

**Market and Actuarial Rates of Return for Years Ended June 30, 2005 - 2014**



**SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**Other Experience**

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),

- the number of disability retirements, and
- salary/service increases different than assumed.

The net gain from this other experience for the year ended June 30, 2014, amounted to \$20,934,431, which is approximately 0.1% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the CTPF for the year ended June 30, 2014, is shown in the chart below.

*The chart shows elements of the experience gain/(loss) for the most recent year.*

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**CHART 8**

**Experience Due to Changes in Demographics for Year Ended June 30, 2014**

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1. Termination	-\$81,255
2. Retirement	-54,224,028
3. Deaths among retired members and beneficiaries	-66,239,359
4. Salary/service increase for continuing actives	150,327,609
5. Miscellaneous	<u>-8,848,536</u>
6. Total	\$20,934,431

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## SECTION 2: Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago

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### D. DEVELOPMENT OF EMPLOYER COSTS

#### **Additional State Contributions**

According to Section 17-127 of the Pension Code, the State shall make additional contributions of .544% of payroll to the Fund to offset a portion of the cost of benefit increases enacted under Public Act 90-582, except that no additional contributions are required if for the previous fiscal year the ratio of the fund's assets to total actuarial liabilities was at least 90%.

Based on the June 30, 2014, actuarial valuation, the ratio of the actuarial value of assets to total actuarial liabilities, or funded ratio, amounts to 51.7%. Therefore, additional State contributions will be required for Fiscal Year 2016. The total payroll for FY 2016 is projected to be \$2,381,019,770. This total payroll includes employee contributions of 7% of salary paid by the Board of Education. Excluding these employee contributions from payroll results in an adjusted projected payroll of \$2,225,252,121. Based on this adjusted projected payroll for Fiscal Year 2016, we have determined the additional State contributions under Section 17-127 of the Pension Code to be \$12,105,000.

#### **Additional Board of Education Contributions**

According to Section 17-127.2 of the Pension Code, the Board of Education shall make additional contributions of .58% of each teacher's salary to the Fund to offset a portion of the cost of benefit increases enacted under Public Act 90-582, except that no additional contributions are required if for the previous fiscal year the ratio of the fund's assets to total actuarial liabilities was at least 90%. As the funded ratio as of June 30, 2014, is 51.7%, additional Board of Education contributions will be required for Fiscal Year 2016. Based on adjusted projected payroll of \$2,225,252,121 for Fiscal Year 2016, we have determined the additional Board of Education contribution under Section 17-127.2 of the Pension Code to be \$12,906,000.

#### **Board of Education Required Contribution**

Senate Bill 1946, which was signed into law on April 14, 2010, as Public Act 96-0889, revised the funding provisions that had previously been in effect. Public Act 96-0889 specifies that, for Fiscal Years 2014 through 2059, the Board of Education is to make annual contributions calculated as a level percent of payroll sufficient to bring the total assets of the fund up to 90% of the total actuarial liabilities of the fund by the end of Fiscal Year 2059. Based on our projection, we have determined that the Board of Education's required contribution for Fiscal Year 2016 is \$675,059,000.

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT A**

**Table of Plan Coverage**

<b>Category</b>	<b>Year Ended June 30</b>		<b>Change From Prior Year</b>
	<b>2014</b>	<b>2013</b>	
<b>Active members in valuation:</b>			
Number	30,654	30,969	-1.0%
Average age	41.3	41.2	0.2%
Average years of service	10.3	10.0	3.0%
Total salary supplied by the Fund	\$2,149,841,688	\$2,146,811,972	0.1%
Average salary	\$70,133	\$69,321	1.2%
Total active vested participants	19,997	20,185	-0.9%
Male members	7,215	7,253	-0.5%
Female members	23,439	23,716	-1.2%
<b>Vested terminated members</b>	<b>4,818</b>	<b>4,502</b>	<b>7.0%</b>
<b>Service retirees:</b>			
Number in pay status	24,251	24,042	0.9%
Average age	72.6	72.1	0.7%
Average monthly benefit	\$4,106	\$4,003	2.6%
Total annual benefit	\$1,194,862,326	\$1,154,757,533	3.5%
<b>Disabled retirees:</b>			
Number in pay status	474	478	-0.8%
Average age	66.2	65.8	0.6%
Average monthly benefit	\$2,812	\$2,714	3.6%
Total annual benefit	\$15,995,375	\$15,565,791	2.8%
<b>Beneficiaries (including children) in pay status:</b>			
Number in pay status	2,997	2,920	2.6%
Average age	75.1	74.7	0.5%
Average monthly benefit	\$1,629	\$1,557	4.6%
Total annual benefit	\$58,598,429	\$54,546,193	7.4%
<b>Total number of members*</b>	<b>63,194</b>	<b>62,911</b>	<b>0.4%</b>

\*There were 18,171 retirees and beneficiaries receiving health insurance subsidies as of June 30, 2014 and 18,140 as of June 30, 2013.

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT B**

**Participants in Active Service as of June 30, 2014  
By Age, Years of Service, and Average Salary**

Age	Years of Service										
	Total	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	1,190	233	956	1	--	--	--	--	--	--	--
	\$41,245	\$14,848	\$47,662	\$57,335	--	--	--	--	--	--	--
25-29	4,608	371	3,569	668	--	--	--	--	--	--	--
	50,332	15,405	51,192	65,132	--	--	--	--	--	--	--
30-34	5,463	225	2,197	2,430	611	--	--	--	--	--	--
	62,463	15,176	53,131	69,995	\$83,472	--	--	--	--	--	--
35-39	4,510	120	960	1,467	1,664	299	--	--	--	--	--
	73,484	13,778	53,667	72,010	86,548	\$95,605	--	--	--	--	--
40-44	4,101	129	632	760	1,162	1,165	252	1	--	--	--
	79,776	12,444	54,554	72,393	86,966	94,150	\$100,098	\$94,257	--	--	--
45-49	3,146	72	369	453	633	738	765	114	2	--	--
	81,629	10,665	53,242	69,682	83,667	90,401	96,356	98,580	\$98,682	--	--
50-54	2,726	59	235	337	469	537	589	377	122	1	--
	82,120	11,224	49,369	65,600	83,894	88,131	92,177	95,815	100,893	\$92,765	--
55-59	2,582	57	175	252	398	446	529	381	280	64	--
	82,742	12,007	45,660	60,662	82,212	87,216	91,887	92,699	98,563	102,122	--
60-64	1,684	43	137	177	250	293	346	206	131	64	37
	78,118	8,385	31,380	54,280	74,166	84,107	92,261	95,000	95,845	98,857	\$100,638
65-69	513	23	63	54	79	71	92	60	28	11	32
	70,522	3,772	18,252	47,324	67,879	80,018	92,858	93,153	93,705	104,373	107,433
70 & over	131	8	24	25	14	14	18	12	8	3	5
	53,363	3,890	14,296	23,782	60,835	70,033	79,869	101,538	102,944	74,364	97,389
Total	30,654	1,340	9,317	6,624	5,280	3,563	2,591	1,151	571	143	74
	\$70,133	\$13,762	\$51,092	\$68,845	\$84,442	\$90,518	\$94,072	\$94,831	\$98,261	\$100,187	\$103,357

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT C**

**Reconciliation of Participant Data**

	<b>Active Members</b>	<b>Vested Terminated Members</b>	<b>Retirees</b>	<b>Disabled Retirees</b>	<b>Beneficiaries</b>	<b>Total</b>
Number as of June 30, 2013	30,969	4,502	24,042	478	2,920	62,911
New participants	2,637	N/A	N/A	N/A	N/A	2,637
Terminations – with vested rights	-708	708	N/A	N/A	N/A	0
Terminations – without vested rights	-1,928	N/A	N/A	N/A	N/A	-1,928
Retirements	-563	-161	724	N/A	N/A	0
New disabilities	-13	-5	N/A	18	N/A	0
New beneficiary	0	0	0	0	228	228
Deaths	-30	-10	-551	-21	-151	-763
Refunds	-120	-88	0	0	0	-208
Rehire	410	-102	0	N/A	N/A	308
Certain period expired	N/A	N/A	0	0	0	0
Data adjustments	<u>0</u>	<u>-26</u>	<u>36</u>	<u>-1</u>	<u>0</u>	<u>9</u>
Number as of June 30, 2014	30,654	4,818	24,251	474	2,997	63,194

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT D**

**Summary Statement of Income and Expenses on a Market Value Basis**

	Year Ended June 30, 2014	Year Ended June 30, 2013
<b>Net assets at market value at the beginning of the year</b>	\$9,709,985,467	\$9,471,440,984
<b>Contribution income:</b>		
Employer contributions	\$650,416,141	\$207,654,000
Employee contributions	187,846,065	188,356,294
Administrative expenses	<u>-10,494,139</u>	<u>-11,537,394</u>
Net contribution income	827,768,067	384,472,900
<b>Federal insurance reimbursement</b>	0	432,997
<b>Insurance company reimbursement</b>	8,000,000	7,919,650
<b>Investment income:</b>		
Interest, dividends and other income	\$237,139,828	\$251,110,856
Asset appreciation	1,486,073,269	961,784,065
Securities lending income	2,999,976	4,006,659
Less investment and administrative fees	<u>-41,078,099</u>	<u>-42,318,757</u>
Net investment income	<u>1,685,134,974</u>	<u>1,174,582,823</u>
<b>Total income available for benefits</b>	\$2,520,903,041	\$1,567,408,370
<b>Less benefit payments:</b>		
Annuity payments	-\$1,269,835,064	-\$1,228,318,993
Refund of insurance premiums	-72,874,594	-71,763,523
Refund of contributions	-32,832,171	-24,787,063
Death	<u>-3,674,621</u>	<u>-3,994,308</u>
Net benefit payments	-\$1,379,216,450	-\$1,328,863,887
<b>Change in reserve for future benefits</b>	\$1,141,686,591	\$238,544,483
<b>Net assets at market value at the end of the year</b>	\$10,851,672,058	\$9,709,985,467

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT E**

**Summary Statement of Plan Assets**

	<b>Year Ended June 30, 2014</b>	<b>Year Ended June 30, 2013</b>
<b>Cash</b>	\$11,782,210	\$15,666,922
<b>Accounts receivable</b>	169,404,046	203,140,399
<b>Investments, at fair value:</b>		
Equities	\$6,234,288,422	\$5,565,488,614
Fixed income	1,998,455,301	1,644,521,422
Commingled funds	1,230,947,404	1,099,569,739
Short-term investments	929,886,758	521,564,746
Real estate	299,147,976	297,996,967
Private equity	297,705,749	274,077,937
Infrastructure	141,571,217	182,573,109
Public REITs	52,778,941	175,023,120
Margin cash	<u>790,472</u>	<u>100,000</u>
Total investments at market value	<u>11,185,572,240</u>	9,760,915,654
<b>Invested securities lending collateral</b>	505,301,189	648,873,113
<b>Capital assets</b>	1,506,069	1,934,121
<b>Prepaid expenses</b>	<u>13,150</u>	<u>13,174</u>
<b>Total assets</b>	\$11,873,578,904	\$10,630,543,383
<b>Less accounts payable:</b>		
Benefits payable	-\$3,551,111	-\$3,576,691
Refunds payable	-12,537,535	-12,004,775
Accounts and administrative expenses payable	-16,009,072	-21,418,874
Securities lending collateral	-520,146,384	-667,849,650
Due to broker for securities purchased	<u>-469,662,744</u>	<u>-215,707,926</u>
Total accounts payable	-\$1,021,906,846	-\$920,557,916
<b>Net assets at market value</b>	<u>\$10,851,672,058</u>	<u>\$9,709,985,467</u>
<b>Net assets at actuarial value</b>	<u>\$10,081,520,019</u>	<u>\$9,458,316,094</u>

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT F**

**Development of Unfunded Actuarial Accrued Liability**

	Year Ending June 30	
	2014	2013
1. Unfunded actuarial accrued liability at beginning of year	\$9,586,216,922	\$7,977,458,739
2. Normal cost at beginning of year	390,738,428	364,633,862
3. Total contributions	838,262,206	396,010,294
4. Interest		
(a) Unfunded actuarial accrued liability and normal cost	\$773,214,040	\$667,367,408
(b) Total contributions	<u>6,582,531</u>	<u>14,318,626</u>
(c) Total interest: (4a) – (4b)	<u>766,631,509</u>	<u>653,048,782</u>
5. Expected unfunded actuarial accrued liability: (1) + (2) – (3) + (4c)	\$9,905,324,653	\$8,599,131,089
6. Changes due to (gain)/loss from:		
(a) Investments	-\$454,691,436	-\$281,738,207
(b) Demographics and other	<u>-28,259,604</u>	<u>246,886,533</u>
(c) Total changes due to (gain)/loss: (6a) + (6b)	-482,951,040	-34,851,674
7. Change to due plan changes	0	0
8. Change in actuarial assumptions	<u>0</u>	<u>1,021,937,507</u>
9. Unfunded accrued liability at end of year: (5) + (6c) + (7) + (8)	<u>\$9,422,373,613</u>	<u>\$9,586,216,922</u>

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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#### EXHIBIT G

#### Definitions of Pension Terms

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

**Actuarial Accrued Liability**

**For Actives:**

The equivalent of the accumulated normal costs allocated to the years before the valuation date.

**Actuarial Accrued Liability**

**For Pensioners:**

The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

**Actuarial Cost Method:**

A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the Annual Required Contribution.

**Actuarial Gain or Actuarial Loss:**

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., CTPF's assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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**Actuarially Equivalent:** Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

**Actuarial Present Value (APV):** The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is:

- a. Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)
- b. Multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
- c. Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

**Actuarial Present Value of Future Plan Benefits:** The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

**Actuarial Valuation:** The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).

**Actuarial Value of Assets:** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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<b>Actuarially Determined:</b>	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
<b>Actuarially Determined Contribution (ADC):</b>	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
<b>Amortization Method:</b>	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
<b>Amortization Payment:</b>	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
<b>Assumptions or Actuarial Assumptions:</b>	<p>The estimates on which the cost of the Fund is calculated including:</p> <ul style="list-style-type: none"><li>(a) <u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future;</li><li>(b) <u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates;</li><li>(c) <u>Retirement rates</u> - the rate or probability of retirement at a given age;</li><li>(d) <u>Turnover rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;</li><li>(e) <u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.</li></ul>

### SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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<b>Closed Amortization Period:</b>	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.
<b>Decrements:</b>	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.
<b>Defined Benefit Plan:</b>	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
<b>Defined Contribution Plan:</b>	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
<b>Employer Normal Cost:</b>	The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.
<b>Experience Study:</b>	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
<b>Funded Ratio:</b>	The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA, although GASB 25 reporting requires the use of the AVA.
<b>Investment Return:</b>	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

**SECTION 3: Supplemental Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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<b>Normal Cost:</b>	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
<b>Open Amortization Period:</b>	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount, or in relation to covered payroll, if the actuarial assumptions are realized.
<b>Unfunded Actuarial Accrued Liability:</b>	The excess of the actuarial accrued liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
<b>Valuation Date or Actuarial Valuation Date:</b>	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT I**

**Summary of Actuarial Valuation Results**

The valuation was made with respect to the following data supplied to us:

1. Pensioners as of the valuation date (including 2,997 beneficiaries and 474 disabled retirees)		27,722
2. Pensioners receiving health insurance subsidies as of the valuation date		18,171
3. Members inactive during year ended June 30, 2014 with vested rights		4,818
4. Members active during the year ended June 30, 2014		30,654
	Fully vested	19,997
	Not vested	10,657

The actuarial factors as of the valuation date are as follows:

1. Actuarial accrued liability		\$19,503,893,632
Service retirees	\$13,609,596,553	
Disabled retirees	174,947,368	
Beneficiaries	514,294,186	
Inactive participants with vested rights	327,527,624	
Active participants:		
Retirement	4,231,572,134	
Turnover	451,476,004	
Mortality	102,730,050	
Disability	<u>91,749,713</u>	
Total	4,877,527,901	
2. Actuarial value of assets (\$10,851,672,058 at market value)		10,081,520,019
3. Unfunded actuarial accrued liability: (1) – (2)		\$9,422,373,613
4. Funded ratio: (2) ÷ (3)		51.7%

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**EXHIBIT I (continued)**

**Summary of Actuarial Valuation Results**

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	<b>% of Payroll*</b>	<b>Amount</b>
Components of the normal cost:		
1. Retirement	10.77%	\$249,518,331
2. Turnover	2.04%	47,314,536
3. Mortality	0.33%	7,655,654
4. Disability	<u>0.30%</u>	<u>6,990,275</u>
5. Total normal cost: (1) + (2) + (3) + (4)	13.44%	\$311,478,796
6. Total normal cost, adjusted to the middle of the year	13.96%	323,323,392
7. Health insurance reimbursement	2.81%	65,000,000
8. Administrative expenses	<u>0.47%</u>	<u>11,018,846</u>
9. Total normal cost, including administrative expenses: (6) + (7) + (8)	17.24%	\$399,342,238
10. Expected employee contributions	<u>8.41%</u>	<u>-194,832,036</u>
11. Employer normal cost: (8) + (9)	8.83%	\$204,510,202

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*\*Based on projected payroll of \$2,316,336,417.*

## **SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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### **EXHIBIT II**

#### **Projection of Contributions, Liabilities, and Assets**

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Based on the results of the June 30, 2014, actuarial valuation, we have projected valuation results for a 45-year period commencing with Fiscal Year 2015. We have based Board of Education contributions on the contribution requirements on the funding provision of Public Act 96-0889.

For purposes of the projections, all assets, contributions, and benefit payments, including amounts attributable to the retiree health insurance program, have been included. Our projections of contributions, liabilities, and assets are based on the actuarial assumptions, membership data and benefit provisions that were used for the regular actuarial valuation.

In order to determine projected contributions, liabilities, and assets, certain calculations needed to be made that are not normally required in a regular actuarial valuation. Benefit payout requirements, actuarial liabilities, and payroll were estimated over the 45-year period from 2015 through 2059 by projecting the membership of the Fund over the 45-year period, taking into account the impact of new entrants into the Fund over the 45-year period.

To make the required projections, assumptions needed to be made regarding the age and salary distribution of new entrants as well as the size of the active membership of the Fund. The assumptions regarding the profile of new entrants to the Fund were based on the recent experience of the Fund with regard to new entrants. The size of the active membership of the Fund was assumed to remain constant over the 45-year projection period. The results of our projections are shown on the following pages.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT II (continued)**

**Projection of Contributions, Liabilities, and Assets**

(Board of Education contributions are based on Public Act 96-0889)  
 (All dollar amounts are in millions. Actuarial Liability and asset figures as of end of year.)

<u>Fiscal Year</u>	<u>Employee Contributions</u>	<u>Required Employer Contributions</u>	<u>Additional State Contributions</u>	<u>Additional BOE Contributions</u>	<u>Required Board of Education Contributions</u> <sup>1</sup>	<u>Total Actuarial Liability</u>	<u>Actuarial Value of Assets</u>	<u>Unfunded Actuarial Liability</u>	<u>Funded Ratio</u>
2015	194.8	708.7	12.1	12.9	683.6	19,992.3	10,504.7	9,487.6	52.5%
2016	200.3	700.1	12.1	12.9	675.1	20,495.9	11,150.2	9,345.7	54.4%
2017	206.2	720.7	12.5	13.3	694.9	21,017.1	11,730.8	9,286.3	55.8%
2018	212.2	741.7	12.8	13.7	715.2	21,556.8	12,101.9	9,454.9	56.1%
2019	218.4	763.5	13.2	14.1	736.2	22,115.3	12,480.6	9,634.6	56.4%
2020	224.8	785.9	13.6	14.5	757.8	22,693.0	12,869.9	9,823.1	56.7%
2021	231.4	808.8	14.0	14.9	779.9	23,291.0	13,276.9	10,014.1	57.0%
2022	238.0	832.0	14.4	15.3	802.2	23,910.9	13,708.4	10,202.4	57.3%
2023	244.7	855.3	14.8	15.8	824.7	24,555.1	14,167.7	10,387.4	57.7%
2024	251.4	878.8	15.2	16.2	847.4	25,223.9	14,655.8	10,568.2	58.1%
2025	257.9	901.6	15.6	16.6	869.4	25,915.9	15,171.5	10,744.4	58.5%
2026	264.2	923.5	16.0	17.0	890.5	26,631.3	15,715.0	10,916.4	59.0%
2027	270.3	944.8	16.3	17.4	911.0	27,369.6	16,285.7	11,083.8	59.5%
2028	276.2	965.6	16.7	17.8	931.1	28,130.7	16,884.3	11,246.4	60.0%
2029	282.2	986.3	17.1	18.2	951.1	28,912.8	17,510.0	11,402.9	60.6%
2030	287.9	1,006.5	17.4	18.6	970.5	29,714.2	18,162.1	11,552.1	61.1%
2031	293.6	1,026.3	17.7	18.9	989.6	30,533.0	18,840.0	11,693.0	61.7%
2032	299.2	1,045.8	18.1	19.3	1,008.4	31,367.3	19,543.0	11,824.3	62.3%
2033	304.7	1,065.0	18.4	19.6	1,027.0	32,214.3	20,270.0	11,944.3	62.9%
2034	310.0	1,083.6	18.7	20.0	1,044.9	33,070.7	21,018.9	12,051.8	63.6%
2035	315.1	1,101.4	19.0	20.3	1,062.0	33,931.4	21,786.3	12,145.1	64.2%
2036	319.9	1,118.3	19.3	20.6	1,078.3	34,790.2	22,567.8	12,222.4	64.9%

<sup>1</sup>Any contributions by the State of Illinois (other than the Additional State Contributions shown above) are to be credited against the Required Board of Education Contributions.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

**EXHIBIT II (continued)**

**Projection of Contributions, Liabilities, and Assets**

(Board of Education contributions are based on Public Act 96-0889)  
 (All dollar amounts are in millions. Actuarial Liability and asset figures as of end of year.)

Fiscal Year	Employee Contributions	Required Employer Contributions	Additional State Contributions	Additional BOE Contributions	Required Board of Education Contributions <sup>1</sup>	Total Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability	Funded Ratio
2037	324.4	1,134.1	19.6	20.9	1,093.6	35,641.9	23,360.0	12,281.9	65.5%
2038	328.7	1,148.9	19.9	21.2	1,107.9	36,479.7	24,158.2	12,321.5	66.2%
2039	332.6	1,162.7	20.1	21.4	1,121.1	37,295.5	24,956.2	12,339.3	66.9%
2040	336.2	1,175.2	20.3	21.7	1,133.2	38,081.8	25,747.9	12,333.9	67.6%
2041	339.5	1,186.8	20.5	21.9	1,144.4	38,830.5	26,527.8	12,302.8	68.3%
2042	342.5	1,197.3	20.7	22.1	1,154.5	39,532.3	27,288.5	12,243.8	69.0%
2043	345.2	1,206.6	20.9	22.2	1,163.5	40,182.0	28,026.4	12,155.6	69.7%
2044	347.8	1,215.7	21.0	22.4	1,172.2	40,778.1	28,741.1	12,037.0	70.5%
2045	350.6	1,225.5	21.2	22.6	1,181.7	41,317.7	29,432.3	11,885.4	71.2%
2046	353.6	1,236.0	21.4	22.8	1,191.9	41,803.3	30,103.8	11,699.4	72.0%
2047	357.1	1,248.2	21.6	23.0	1,203.6	42,240.1	30,762.7	11,477.4	72.8%
2048	361.2	1,262.7	21.8	23.3	1,217.6	42,637.2	31,420.4	11,216.8	73.7%
2049	366.2	1,280.1	22.1	23.6	1,234.3	43,001.9	32,087.1	10,914.8	74.6%
2050	372.0	1,300.3	22.5	24.0	1,253.9	43,341.5	32,774.1	10,567.4	75.6%
2051	378.5	1,323.0	22.9	24.4	1,275.8	43,652.1	33,484.3	10,167.8	76.7%
2052	385.1	1,346.0	23.3	24.8	1,297.9	43,936.5	34,223.8	9,712.7	77.9%
2053	391.9	1,370.1	23.7	25.3	1,321.1	44,196.7	34,998.9	9,197.9	79.2%
2054	399.3	1,395.7	24.1	25.7	1,345.8	44,429.8	35,811.3	8,618.4	80.6%
2055	407.1	1,423.0	24.6	26.2	1,372.2	44,640.9	36,671.9	7,969.0	82.1%
2056	415.4	1,452.2	25.1	26.8	1,400.3	44,830.7	37,588.7	7,242.0	83.8%
2057	423.8	1,481.5	25.6	27.3	1,428.6	45,006.1	38,574.5	6,431.7	85.7%
2058	432.5	1,511.8	26.1	27.9	1,457.7	45,174.2	39,642.9	5,531.3	87.8%
2059	441.3	1,542.6	26.7	28.4	1,487.5	45,334.2	40,800.8	4,533.4	90.0%

<sup>1</sup>Any contributions by the State of Illinois (other than the Additional State Contributions shown above) are to be credited against the Required Board of Education Contributions.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**EXHIBIT III**  
**Actuarial Assumptions and Actuarial Cost Method**

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**Mortality Rates:**

*Healthy:* The RP-2000 Combined Healthy Mortality Table, set back 2 years with generational improvement from 2004 using Scale AA. (adopted June 30, 2013).

*Disabled:* The RP-2000 Disabled Mortality Table, set back 3 years (adopted June 30, 2013).  
The mortality tables specified above without future generational improvement reasonably reflect the projected mortality experience of the Fund as of the measurement date. The healthy mortality table was then adjusted to future years using additional generational improvement using Scale AA to anticipate future mortality improvement.

---

**Termination Rates:**

Select and ultimate termination rates are based on recent experience of the Fund were used (adopted June 30, 2013). Ultimate rates after the tenth year are shown for sample ages in the table on the next page. Select rates are as follows:

<u>Years of Service</u>	<u>Rate(%)</u>
Less than 1	25.0
1 - 1.99	15.0
2 - 2.99	10.0
3 - 3.99	9.0
4 - 4.99	8.0
5 - 5.99	7.0
6 - 6.99	6.0
7 - 7.99	5.0
8 - 8.99	4.5
9 - 9.99	4.0

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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Age	Rate (%)
	10+ Years of Service
30	2.5
35	2.5
40	2.3
45	2.0
50	2.0
55	2.0

**Retirement Rates:**

For employees first hired prior to January 1, 2011, rates of retirement for each age from 55 to 75 based on the recent experience of the Fund were used (adopted June 30, 2013). Sample rates are shown below.

Age	Rate (%)	
	<34 Years of Service	34+ Years of Service
55	5.0	20.0
60	9.0	22.5
65	15.0	25.0
70	20.0	30.0
75	100.0	100.0

For employees first hired on or after January 1, 2011, rates of retirement for each age from 62 to 75 were used (adopted June 30, 2011). Sample rates are shown below.

Age	Rate (%)
62	40.0
64	25.0
67	30.0
70	20.0
75	100.0

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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**Disability Rates:**

Disability rates are based on the recent experience of the Fund were used (adopted June 30, 2013). All disabilities are assumed to be non-duty disabilities. Sample rates are shown below.

<b>Age</b>	<b>Rate (%)</b>
30	0.06
40	0.08
50	0.16
60	0.20

---

**Salary Increases:**

Assumed salary increases are based on the recent experience of the Fund were used (adopted June 30, 2013). Sample rates are shown below.

<b>Age</b>	<b>Rate (%)</b>
25	10.8
30	7.3
35	7.3
40	5.8
45	5.3
50	4.8
55	4.3

---

**Valuation of Inactive Vested Participants:**

The account balance is projected to retirement (age 62) with interest, converted to an annuity, and loaded by 35%.

---

**Unknown Data for Participants:**

Same as those exhibited by Participants with similar known characteristics. If not specified, Participants are assumed to be male.

**Spouses:**

80% of participants were assumed to be married and females are assumed to be 2 years younger than males.

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**Net Investment Return:**

7.75% per year

**Inflation:**

2.75% per year

**Payroll Growth:**

3.50% per year

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**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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<b>Administrative Expenses:</b>	Equal to actual expenses for the prior year, increased by 5%. Future expenses are assumed to grow at 5% per year.
<b>Total Service at Retirement:</b>	Total service at retirement is assumed to be 103.3% of the teacher's regular period of service at retirement.
<b>Actuarial Value of Assets:</b>	The actuarial value of assets was determined by smoothing unexpected gains and losses over a period of 4 years. The gain or loss for a year is calculated as the total investment income on the market value of assets, minus expected investment return on the prior actuarial value of assets. The final actuarial value is equal to the expected actuarial value plus (or minus) 25% of the calculated gain (or loss) in the prior 4 years.
<b>Actuarial Cost Method:</b>	Projected Unit Credit (adopted August 31, 1991). Under this method, the projected benefits of each individual included in the valuation are allocated by a consistent formula to valuation years. The actuarial present value of benefits allocated to a valuation year is called the normal cost. The actuarial present value of benefits allocated to all periods prior to a valuation year is called the accrued liability.

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## SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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### EXHIBIT IV

#### Summary of Plan Provisions

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This exhibit summarizes the major provisions of the CTPF included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

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<b>Membership:</b>	Any teacher and certain other employees of the Chicago Public Schools, approved charter schools, and the Chicago Teachers' Pension Fund are members of this pension plan.
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<b>Employee Contributions:</b>	All members of the Fund are required to contribute 9% of salary to the Fund as follows: 7.5% for the retirement pension, 1% for the spouse's pension, and 0.5% for the automatic increases in the retirement pension. As of September 1981, the Board of Education has been paying 7% of the required teacher contributions for Chicago public school teachers. Charter school contributions may be contributed at various rates by the employers and teachers.
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<b>Service Retirement Pension:</b>	a. Eligibility – An employee may retire at age 55 with at least 20 years of service or at age 62 with 5 years of service. If retirement occurs before age 60, the service retirement pension is reduced ½ of 1% of each month that the age of the member is below 60. However, there is no reduction if the employee has at least 34 years of service.
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b. Amount – For service earned before July 1, 1998, the amount of the service retirement pension is 1.67% of highest average salary for the first 10 years, 1.90% for each of the next 10 years, 2.10% for each of the following 10 years, and 2.30% for each year above 30. For service earned after June 30, 1998, the amount of the service retirement pension is 2.2% of highest average salary for each year of service.

Service earned before July 1, 1998 can be upgraded to the 2.2% formula through the payment of additional employee contributions of 1% of the teacher's highest salary

## SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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within the last four years for each year of prior service, up to a maximum of 20%, which upgrades all service years. The number of years for which contributions are required is reduced by one for each three full years of service after June 30, 1998. No contribution is required if the employee has at least 30 years of service.

The highest average salary is the average of the 4 highest consecutive years of salary within the last 10 years.

The maximum pension payable is 75% of the highest annual salary or \$1,500 per month, whichever is greater.

An employee who first becomes a participant on or after January 1, 2011 is subject to the following provisions:

1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.
2. For 2014, the salary is limited to \$110,631, as determined by the Illinois Department of Insurance. The limit for future years shall automatically be increased by the lesser of 3% or one-half the percentage change in the Consumer Price Index-U during the preceding calendar year.
3. A participant is eligible to retire with unreduced benefits after attainment of age 67 with at least 10 years of service credit. However, a participant may elect to retire at age 62 with at least 10 years of service credit and receive a retirement annuity reduced by  $\frac{1}{2}$  of 1% for each month that the age of the member is below 67.

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### **Post-Retirement Increase:**

An annuitant is entitled to automatic annual increases of 3% of the current pension starting the later of attainment of age 61 and receipt of one year's pension payments.

Automatic annual increases in the retirement annuity for employees who first become a participant on or after January 1, 2011 is equal to the lesser of 3% or one-half the annual change in the Consumer Price Index-U, whichever is less, based on the originally granted retirement annuity. This automatic annual increase starts the later of attainment of age 67 and receipt of one year's pension payments.

## SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago

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### **Survivor's Pension:**

A surviving spouse or unmarried minor child is entitled to a pension upon the death of an employee while in service or on retirement. The minimum survivor's pension is 50% of the deceased employee's or retired employee's pension at the date of death. If the spouse is under age 50 and no unmarried minor children under age 18 survive, payment of the survivor's pension is deferred until age 50.

Survivor's pensions are subject to annual increases of 3% per year based on the current amount of pension starting the later of when the member would have attained age 61 and receipt of one year's pension payments.

For employees who first become a participant on or after January 1, 2011, the initial survivor's pension is equal to 66 2/3% of the participant's earned retirement annuity at the date of death, subject to automatic annual increases of the lesser of 3% or one-half of the increase in the Consumer Price Index-U during the preceding calendar year, based on the originally granted survivor's annuity. This automatic annual increase starts the later of when the member would have attained age 67 and receipt of one year's pension payments.

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### **Single Sum Death Benefit:**

Upon the death of an employee in service, a refund equal to the total contributions less contributions for survivor's pensions is payable.

A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is the lesser of \$10,000 and salary earned for the most recent six months.

Upon the death of a retired member, the death benefit is the lesser of \$10,000 and the most recent salary earned for a 6 month period less 20% of the death benefit for each year that the member has been on pension, to a minimum of \$5,000.

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### **Non-Duty Disability Benefit:**

A non-duty disability pension is payable in the event of total or permanent disability with 10 or more years of service. The benefit is the unreduced service retirement pension. However, if the participant has 20 or more and less than 25 years of service and is under age 55, the benefit is reduced by 1/2 of 1% for each month that the age of the member is below 55 down to a minimum age of 50, but not less than the unreduced service retirement pension with 20 years of service.

**SECTION 4: Reporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago**

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<b>Duty Disability Benefit:</b>	Upon disability resulting from an injury incurred while working, an employee is entitled to a disability benefit of 75% of final average salary until age 65. At age 65, the disabled employee shall receive a service retirement pension, which includes service earned while disabled.
<b>Refunds:</b>	<p>An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions, without interest.</p> <p>An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the survivor's pension, without interest.</p>
<b>Retiree Health Insurance:</b>	<p>Partial reimbursement of the cost of health insurance coverage, which may be in the form of an annual direct payment or a reduction in the amount deducted from the monthly annuity. Effective January 1, 2011, the Board provides reimbursement of 60%, decreasing to 50% effective January 1, 2015, of the cost of pensioners' health insurance coverage. Beginning in 2015, the maximum reimbursement for non-Chicago Teachers' Pension Fund plans will be limited to an amount based on the most economical Chicago Teachers' Pension Fund plan option.</p> <p>The total amount of payments in any year may not exceed 75% of the total cost of health insurance coverage in that year for all recipients who receive payments in that year. Total payments may not exceed \$65,000,000 plus any amount that was authorized to be paid in the preceding year but was not actually paid (including any interest earned).</p>
<b>Plan Year:</b>	July 1 through June 30
<b>Changes in Plan Provisions:</b>	Effective January 1, 2015 the Retiree Health Reinsurance reimbursement will decrease from 60% to 50% and the reimbursement for non-Chicago Teachers' Pension Fund plans will be limited to a maximum reimbursement amount based of the most economical Chicago Teachers' Pension Fund plan option.

# Public School Teachers' Pension and Retirement Fund of Chicago

Actuarial Valuation and Review of Other  
Postemployment Benefits (OPEB) as of June 30,  
2014 In Accordance with GASB Statement No. 43



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

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*October 21, 2014*

*Board of Trustees  
Public School Teachers' Pension  
and Retirement Fund of Chicago  
203 North LaSalle Street, Suite 2600  
Chicago, Illinois 60601*

*Dear Board Members:*

*We are pleased to submit this report on our actuarial valuation of postemployment welfare benefits as of June 30, 2014 under GASB Statement Number 43. It establishes the liabilities of the other postemployment benefits in accordance with GASB Statement Number 43 and summarizes the actuarial data.*

*This report is based on information received from Fund Staff. The actuarial projections were based on the assumptions and methods described in Exhibit I and on the plan of benefits as summarized in Exhibit II.*

*We look forward to discussing this material with you at your convenience.*

*Sincerely,*

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

By:

*Kim Nicholl, FSA, MAAA, EA, FCA  
Senior Vice President and Actuary*

*Matthew A. Strom, FSA, MAAA, EA  
Vice President and Actuary*

## SECTION 1

### EXECUTIVE SUMMARY

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## SECTION 2

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**SECTION 1: Introduction for the Public School Teachers' Pension and Retirement Fund of Chicago  
June 30, 2014 Measurement under GASB 43**

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**PURPOSE**

This report presents the results of our actuarial valuation of the Public School Teachers' Pension and Retirement Fund of Chicago as of June 30, 2014 to be used for the fiscal year ending June 30, 2015. The results are in accordance with Governmental Accounting Standards, which prescribe an accrual methodology for accumulating the value of other postemployment benefits (OPEB) over participants' active working lifetimes.

The plan complies with the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) as of the valuation date. This valuation includes the estimated effect of the excise tax beginning in 2018. The effect on the obligation of any other future aspects of the Acts is assumed to be *de minimis*.

**HIGHLIGHTS OF THE VALUATION**

- Effective January 1, 2015, pensioners' health insurance coverage will be reduced from a 60% reimbursement to a 50% reimbursement.
- The valuation-year per capita health costs and trend rates were updated.
- The Unfunded Actuarial Accrued Liability (UAAL) is \$1.90 billion as of June 30, 2014, compared to \$2.35 billion the prior year.
- The Annual Required Contribution (ARC) is \$135.7 million as of July 1, 2014; the ARC was \$165.1 million as of July 1, 2013.
- \$65 million was contributed towards postretirement medical benefits in the year ending June 30, 2014.

**SECTION 1: Introduction for the Public School Teachers' Pension and Retirement Fund of Chicago  
June 30, 2014 Measurement under GASB 43**

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October 21, 2014

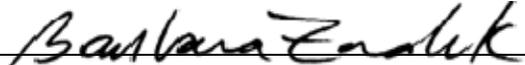
**ACTUARIAL CERTIFICATION**

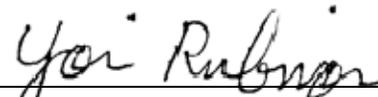
This is to certify that Segal Consulting, a Member of The Segal Group, Inc. ("Segal"), has conducted an actuarial valuation of certain benefit obligations of the Public School Teachers' Pension and Retirement Fund of Chicago's other postemployment benefit programs as of June 30, 2014, in accordance with generally accepted actuarial principles and practices. The actuarial calculations presented in this report have been made on a basis consistent with our understanding of GASB requirements for the determination of the liability for postemployment benefits other than pensions.

The actuarial valuation is based on the plan of benefits and reliance on participant data and premiums provided by the Fund. Segal does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency. Based on our review of the data, we have no reason to doubt the substantial accuracy of the information on which we have based this report and we have no reason to believe there are facts or circumstances that would affect the validity of these results.

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

To the best of our knowledge, this report is complete and accurate and in our opinion presents the information necessary to comply with GASB Statements 43 with respect to the benefit obligations addressed. The signing actuaries are members of the Society of Actuaries, the American Academy of Actuaries, and other professional actuarial organizations and collectively meet their "General Qualification Standards for Statements of Actuarial Opinions" to render the actuarial opinion contained herein.

  
Barbara Zaveduk, EA, MAAA  
Vice President and Actuary

  
Yoni Rubinson, FSA, MAAA  
Retiree Health Actuary

**SECTION 2: Valuation Results for Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago June 30, 2014 Measurement under GASB 43**

---

**EXHIBIT A**

**Summary of Participant Data**

	<b>June 30, 2014</b>	<b>June 30, 2013</b>
<b>Retirees and Beneficiaries</b>		
Number currently receiving health benefits	18,171	18,140
Average age	73.3	73.1
Number entitled to health benefits but not currently receiving them	9,501	9,300
<b>Terminated employees who may be entitled to future benefits</b>		
Number	4,818	4,502
Average age	47.8	48.0
<b>Active Participants</b>		
Number	30,653	30,969
Average age	41.3	41.2
Average years of service	10.3	10.0

**SECTION 2: Valuation Results for Valuation Results for the Public School Teachers' Pension and Retirement Fund of Chicago June 30, 2014 Measurement under GASB 43**

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**EXHIBIT B**

**Actuarial Accrued Liability (AAL) and Unfunded AAL (UAAL)**

<b>Participant Category</b>	<b>June 30, 2014</b>	<b>June 30, 2013</b>
Current retirees and beneficiaries	\$1,067,009,286	\$1,350,519,247
Terminated employees who may be entitled to future benefits	25,936,642	29,155,744
Current active members	<u>845,909,967</u>	<u>1,006,430,936</u>
Total actuarial accrued liability (AAL)	\$1,938,855,895	\$2,386,105,927
<b>Effect of Assets</b>		
Employer actuarial accrued liability (AAL)	\$1,938,855,895	\$2,386,105,927
Actuarial value of assets	<u>35,977,444</u>	<u>35,796,904</u>
Unfunded actuarial accrued liability (UAAL)	\$1,902,878,451	\$2,350,309,023

**SECTION 3: Required Supplementary Information the Public School Teachers' Pension and Retirement Fund of Chicago June 30, 2014 Measurement under GASB 43**

---

**CHART 1**

**Summary of Required Supplementary Information**

<b>Valuation date</b>	June 30, 2014
<b>Actuarial cost method</b>	Projected Unit Credit
<b>Amortization method</b>	Level percent of payroll
<b>Amortization period</b>	29 years (closed period)
<b>Asset valuation method</b>	Market
<b>Actuarial assumptions:</b>	
Discount rate	4.50%
Inflation	2.75%
Health care cost trend rate:	8.0% graded to 5% over 6 years
<b>Plan membership:</b>	
Current retirees and beneficiaries currently receiving health benefits	18,171
Retirees and beneficiaries entitled to health benefits but not currently receiving them	9,501
Terminated employees who may be entitled to future benefits	4,818
Current active members	<u>30,653</u>
Total	63,143

**SECTION 3: Required Supplementary Information the Public School Teachers' Pension and Retirement Fund of Chicago June 30, 2014 Measurement under GASB 43**

**CHART 2**

**Determination of Annual Required Contribution (ARC)**

Cost Element	July 1, 2014		July 1, 2013	
	Amount	% of Payroll	Amount	% of Payroll
1. Normal cost	\$60,899,465	2.63%	\$75,361,817	3.24%
2. Amortization of the unfunded actuarial accrued liability (29 years)	<u>74,829,312</u>	<u>3.23%</u>	<u>89,753,586</u>	<u>3.85%</u>
3. Total Annual Required Contribution (ARC)	<u>\$135,728,777</u>	<u>5.86%</u>	<u>\$165,115,403</u>	<u>7.09%</u>
4. Projected Payroll	\$2,316,336,417		\$2,327,963,064	

**SECTION 3: Required Supplementary Information the Public School Teachers' Pension and Retirement Fund of Chicago June 30, 2014 Measurement under GASB 43**

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**CHART 3**

**Required Supplementary Information – Schedule of Employer Contributions**

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<b>Fiscal Year Ending</b>	<b>Annual Required Contributions (ARC)</b>	<b>Actual Contributions</b>	<b>Percentage Contributed</b>
June 30, 2007	\$209,446,107	\$65,000,000	31.03%
June 30, 2008	150,033,070	65,000,000	43.32%
June 30, 2009	171,880,428	65,000,000	37.82%
June 30, 2010	186,231,574	65,000,000	34.90%
June 30, 2011	215,797,617	65,000,000	30.12%
June 30, 2012	218,842,221	65,000,000	29.70%
June 30, 2013	216,163,148	65,000,000	30.07%
June 30, 2014	165,115,403	65,000,000	39.37%

**SECTION 3: Required Supplementary Information the Public School Teachers' Pension and Retirement Fund of Chicago June 30, 2014 Measurement under GASB 43**

**CHART 4**

**Required Supplementary Information – Schedule of Funding Progress**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Liability (AAL) (b)</b>	<b>[Assets as a % of Actuarial Liability] Funded Ratio (c) = (a) / (b)</b>	<b>Unfunded AAL (UAAL) (d) = (b) - (a)</b>	<b>Active Member Payroll (e)</b>	<b>UUAL as a % of Active Member Payroll (f) = (d)/(e)</b>
June 30, 2006	\$41,057,585	\$2,373,773,770	1.73%	\$2,332,716,185	\$1,944,358,215	119.97%
June 30, 2007	47,401,758	2,022,007,643	2.34%	1,974,605,885	1,863,182,086	105.98%
June 30, 2008	44,989,385	2,407,122,492	1.87%	2,362,133,107	1,914,558,916	123.38%
June 30, 2009	49,691,750	2,670,282,662	1.86%	2,620,590,912	1,996,194,224	131.28%
June 30, 2010	34,857,732	2,864,877,305	1.22%	2,830,019,573	2,107,934,080	134.26%
June 30, 2011	31,324,572	3,071,516,739	1.02%	3,040,192,167	2,090,131,858	145.45%
June 30, 2012	34,124,958	3,110,316,263	1.10%	3,076,191,305	2,224,903,121	138.26%
June 30, 2013	35,796,904	2,386,105,927	1.50%	2,350,309,023	2,239,347,051	104.96%
June 30, 2014	35,977,444	1,938,855,895	1.86%	1,902,878,451	2,233,280,995	85.21%

**SECTION 3: Required Supplementary Information the Public School Teachers' Pension and Retirement Fund of Chicago June 30, 2014 Measurement under GASB 43**

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**Chart 5  
Solvency Test**

	<b>June 30, 2014</b>	<b>June 30, 2013</b>
1. Actuarial accrued liability (AAL)		
a. Active member contributions	\$0	\$0
b. Retirees and beneficiaries	1,067,009,286	1,350,519,247
c. Active and inactive members (employer financed)	<u>871,846,609</u>	<u>1,035,586,680</u>
d. Total	\$1,938,855,895	\$2,386,105,927
2. Actuarial value of assets	35,977,444	35,796,904
3. Cumulative portion of AAL covered		
a. Active member contribution	100.0%	100.0%
b. Retirees and beneficiaries	3.37%	2.65%
c. Active and inactive members (employer financed)	0.00%	0.00%

**SECTION 4: Supporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago  
June 30, 2014 Measurement under GASB 43**

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**EXHIBIT I**

**Actuarial Assumptions and Actuarial Cost Method**

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**Measurement Date:** June 30, 2014

**Discount Rate:** 4.50%

**Payroll Growth:** 3.50% per year (adopted June 30, 2013)

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**Actuarial Cost Method:** Projected Unit Credit

**Asset Valuation Method:** Market value

**Data:** Detailed census data and financial data for postemployment benefits were provided by the Fund staff.

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**Mortality Rates:**

*Healthy:* The RP-2000 Combined Healthy Mortality Table, set back 2 years with generational improvement from 2004 using Scale AA (adopted June 30, 2013).

*Disabled:* The RP-2000 Disabled Mortality Table, set back 3 years (adopted June 30, 2013).

The mortality tables specified above without future generational improvement reasonably reflect the projected mortality experience of the Fund as of the measurement date. The healthy mortality table was then adjusted to future years using additional generational improvement using Scale AA to anticipate future mortality improvement.

**SECTION 4: Supporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago  
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**Termination Rates:**

Select and ultimate termination rates are based on recent experience of the Fund were used (adopted June 30, 2013). Select rates are as follows:

<b>Years of Service</b>	<b>Rate (%)</b>
Less than 1	25.00
1 - 1.99	15.00
2 - 2.99	10.00
3 - 3.99	9.00
4 - 4.99	8.00
5 - 5.99	7.00
6 - 6.99	6.00
7 - 7.99	5.00
8 - 8.99	4.50
9 - 9.99	4.00

Ultimate rates after the tenth year for sample ages are as follows:

<b>10+ Years of Service</b>	
<b>Age</b>	<b>Rate (%)</b>
30	2.50
35	2.50
40	2.25
45	2.00
50	2.00
55	2.00

**Disability Rates:**

Disability rates are based on the recent experience of the Fund were used (adopted June 30, 2013). Sample rates are shown below.

<b>Age</b>	<b>Rate (%)</b>
30	0.06
40	0.08
50	0.16
60	0.20

**SECTION 4: Supporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago  
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**Retirement Rates:**

For employees first hired prior to January 1, 2011, rates of retirement for each age from 55 to 75 based on the recent experience of the Fund were used (adopted June 30, 2013). Sample rates are shown below.

Age	Rate (%)	
	<34 Years of Service	34+ Years of Service
55	5.0	20.0
60	9.0	22.5
65	15.0	25.0
70	20.0	30.0
75	100.0	100.0

For employees first hired on or after January 1, 2011, rates of retirement for each age from 62 to 75 were used (adopted June 30, 2011). Sample rates are shown below.

Age	Rate (%)
62	40.0
64	25.0
67	30.0
70	20.0
75	100.0

**Terminated Employees:**

Of current and future terminated participants with 10 or more years of service, 15% were assumed to meet eligibility requirements and elect coverage (adopted June 30, 2013). Terminated participants with less than 10 years of service were assumed not to participate. Terminated employees first hired prior to January 1, 2011 were assumed to retire at age 60 with 20 or more years of service, or at age 62. Terminated employees first hired on or after January 1, 2011 were assumed to retire at age 65 (adopted June 30, 2012).

**SECTION 4: Supporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago  
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**Participation and Coverage Election:** 75% of future female retirees under age 65 and 60% of future male retirees under age 65 were assumed to participate. 80% of future female retirees age 65 and greater and 65% of future male retirees age 65 and greater were assumed to participate. This participation assumption was also applied to retirees currently receiving COBRA reimbursement. Of current retirees under age 65 who are not currently participating, 20% of females and 12.5% of males were assumed to participate at age 65 (adopted June 30, 2013).

**Missing Participant Data:** A missing census item for a given participant was assumed to equal the average value of that item over all other participants of the same status for whom the item is known.

**Dependents:** Demographic data was available for spouses of current retirees. For future retirees, 80% of participants are assumed to be married, with husbands two years older than their wives. Upon the death of the retiree, 20% of surviving spouses are assumed to elect coverage (adopted June 30, 2013).

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**Per Capita Cost Development:** Per capita claims costs were based on the average retiree premiums and Part A and B reimbursements as of January 1, 2014, and average rebates paid in year ended June 30, 2014 (assumed to have been incurred relatively evenly between calendar year 2012 and calendar year 2013). Averages were calculated separately for retirees under and over age 65. The averages were trended to the midpoint of the valuation year at assumed trend rates. Actuarial factors were then applied to the average cost to estimate individual retiree and spouse costs by age and by gender.

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**Per Capita Health Costs:**

Average claims for the plan year beginning July 1, 2014 are shown in the table below for retirees at selected ages. Costs shown are total costs; plan pays 60% in 2014 and 50% (with limitations) in 2015 and later.

Age	Retiree		Spouse	
	Male	Female	Male	Female
55	\$11,350	\$11,719	\$8,933	\$10,118
60	13,480	12,631	11,959	11,735
64	15,465	13,400	15,096	13,207
65	5,247	4,460	5,247	4,460
70	6,081	4,806	6,081	4,806
75	6,554	5,174	6,554	5,174

**Health Care Cost Trend Rates:**

Health care trend measures the anticipated overall rate at which health plan costs are expected to increase in future years.

Year Ending June 30	Rate (%)
2015	8.0
2016	7.5
2017	7.0
2018	6.5
2019	6.0
2020	5.5
2021 & Later	5.0

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**Plan Design:**

Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit II and on the established pattern or practice with regard to sharing of benefit costs between the employer and plan members. In particular, this valuation under GASB 43 does not take into account the current \$65 million maximum of annual payments that may be paid from the Fund, as there has been a history of increases in the annual dollar maximum.

The valuation includes recognition of the excise tax. The applicable annual limitation used to determine the estimated amount of excise tax is assumed to increase 3.5% per year beginning in 2019.

The effect on the obligation of other future aspects of the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 are assumed to be *de minimis*.

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**Assumption Changes  
since Prior Valuation:**

Valuation-year per capita health costs and trend rates were updated.

**SECTION 4: Supporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago  
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**EXHIBIT II**

**Summary of Plan**

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

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**Retiree Eligibility:**

Recipient of a service retirement, disability, or survivor's pension from the Public School Teachers' Pension and Retirement Fund of Chicago. Pension eligibility is generally as follows:

**Service Retirement Pension:**

An employee first hired before January 1, 2011 is eligible to retire at age 55 with at least 20 years of service or at age 62 with 5 years of service. An employee first hired on or after January 1, 2011 is eligible to retire at age 62 with at least 10 years of service credit.

**Survivor's Pension:**

A surviving spouse or unmarried minor child is entitled to a pension upon the death of an employee while in service or on retirement. If the spouse is under age 50 and no unmarried minor children under age 18 survive, payment of the survivor's pension is deferred until age 50.

**Non-Duty Disability Benefit:**

A non-duty disability pension is payable in the event of total or permanent disability with 10 or more years of service.

**Duty Disability Benefit:**

Upon disability resulting from an injury incurred while working, an employee is entitled to a disability benefit.

Additional requirements apply to those who terminate prior to retirement.

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**Benefits:**

Partial reimbursement of the cost of health insurance coverage, which may be in the form of an annual direct payment or a reduction in the amount deducted from the monthly annuity. Effective January 1, 2011, the Board provides reimbursement of 60%, decreasing to 50% effective January 1, 2015, of the cost of pensioners' health insurance coverage. Beginning in 2015, the maximum reimbursement for non-Chicago Teachers' Pension Fund plans will be limited to an amount based on the most economical Chicago Teachers' Pension Fund plan option.

The total amount of payments in any year may not exceed 75% of the total cost of health insurance coverage in that year for all recipients who receive payments in that year. Total payments may not exceed \$65,000,000 plus any amount that was authorized to be paid in the preceding year but was not actually paid (including any interest earned).

**SECTION 4: Supporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago  
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**EXHIBIT III**

**Definitions of Terms**

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The following list defines certain technical terms used in GASB Statements:

**Assumptions or Actuarial**

**Assumptions:**

The estimates on which the cost of the Plan is calculated including:

- (a) Investment return — the rate of investment yield which the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age;
- (d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

**Actuarial Present Value of Total  
Projected Benefits (APB):**

Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.

**Normal Cost:**

The amount of contributions required to fund the benefit allocated to the current year of service.

**Actuarial Accrued Liability  
For Actives:**

The equivalent of the accumulated normal costs allocated to the years before the valuation date.

**Actuarial Accrued Liability  
For Pensioners:**

The single sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and of the interest which the sum is expected to earn before it is entirely paid out in benefits.

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<b>Actuarial Value of Assets (AVA):</b>	The value of assets used by the actuary in the valuation. These may be at market value or some other method used to smooth variations in market value from one valuation to the next.
<b>Funded Ratio:</b>	The ratio AVA/AAL.
<b>Unfunded Actuarial Accrued Liability(UAAL):</b>	The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There is a wide range of approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.
<b>Amortization of the Unfunded Actuarial Accrued Liability:</b>	Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.
<b>Investment Return (discount rate):</b>	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next. If the plan is funded on a pay-as-you-go basis, the discount rate is tied to the expected rate of return on day-to-day employer funds.
<b>Covered Payroll:</b>	Annual reported salaries for all active participants on the valuation date.
<b>ARC as a Percentage of Covered Payroll:</b>	The ratio of the annual required contribution to covered payroll.
<b>Health Care Cost Trend Rates:</b>	The annual rate of increase in net claims costs per individual benefiting from the Plan.
<b>Annual Required Contribution (ARC):</b>	The ARC is equal to the sum of the normal cost and the amortization of the unfunded actuarial accrued liability.

**SECTION 4: Supporting Information for the Public School Teachers' Pension and Retirement Fund of Chicago  
June 30, 2013 Measurement under GASB 43**

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**EXHIBIT IV**

**Accounting Requirements**

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The Governmental Accounting Standards Board (GASB) issued Statement Number 43 -- Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans. Under this statement, all state and local government entities that provide other post employment benefits (OPEB) are required to report the cost of these benefits on their financial statements. The accounting standards supplement cash accounting, under which the expense for postemployment benefits is equal to benefit and administrative costs paid on behalf of retirees and their dependents (i.e., a pay-as-you-go basis).

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

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

The total cost of providing postemployment benefits is projected, taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions. These assumptions are summarized in Exhibit I of Section 4. This amount is then discounted to determine the actuarial present value of the projected cost of these benefits (APB). The actuarial accrued liability (AAL) is the portion of the present value of the total projected benefits allocated to years of employment prior to the measurement date. The unfunded actuarial accrued liability (UAAL) is the difference between the AAL and the actuarial value of assets in the Plan.

Once the UAAL is determined, the Annual Required Contribution (ARC) is determined as the normal cost (the APB allocated to the current year of service) and the amortization of the UAAL. This ARC is compared to actual contributions made. In addition, Required Supplementary Information (RSI) must be reported, including historical information about the UAAL and the progress in funding the Plan. Exhibit III of Section 4 contain a definition of terms.

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

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

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