

Teachers' Retirement System of the State of Illinois

Actuarial Valuation Report
June 30, 2014 Actuarial Valuation
of Pension Benefits

Revised January 22, 2015





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January 22, 2015

Board of Trustees
Teachers' Retirement System of the State of Illinois
Springfield, IL

Certification of Actuarial Valuation

Ladies and Gentlemen:

This report summarizes the actuarial valuation results of Teachers' Retirement System of the State of Illinois as of June 30, 2014 performed by Buck Consultants, LLC.

The actuarial valuation is based on unaudited financial and member data provided by the staff of the TRS and summarized in this report. The benefits considered were provided by staff and summarized in this report. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under TRS were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Buck Consultants, LLC is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of the Plan.

The Teachers' Retirement System of the State of Illinois is funded by Employer and Member Contributions in accordance with the funding policy specified under the Illinois Pension Code (40 ILCS 5/16). The funding objective under the Illinois Pension Code is to Achieve 90% funding by 2045. The 2045 objective was set in 1994 as a 50 year objective. While TRS members have always contributed their share, the State funding has been inadequate. This inadequate funding has resulted in TRS being among the worst funded public employee retirements systems (PERS) in the United States.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the Plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the Plan. The methods mandated by the Illinois Pension Code are inadequate to appropriately fund TRS. A summary of the actuarial assumptions and methods used in this actuarial valuation are shown in Section 6.

The assumptions and methods used to determine the Annual Required Contributions (ARC) of the Teachers' Retirement System of the State of Illinois as outlined in this report and all supporting schedules meet the parameters and requirements for disclosure of Governmental Accounting Standards Board (GASB) Statement No. 25, Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans. Based on member data and asset information provided by the staff of the Retirement System, we have prepared the Schedule of Funding Progress and Schedule of Employer Contributions that are included in the Financial Section of the Comprehensive Annual Financial Report.



Please note, GASB amended the reporting requirements of Statement 25 and 27 with Statement 67 and 68 for fiscal years beginning after June 15, 2013 and June 15, 2014, respectively. This report includes certain computations and financial statement disclosure information with respect to the plan reflecting the new accounting standards. We are still providing GASB 25/27 for comparison purposes and due to the fact that GASB 68 is not yet applicable.

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

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

Use of this report for any other purposes or by anyone other than the Board members and staff of the System may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the letter for that purpose. No one may make any representations or warranties based on any statements or conclusions contained in this report without Buck Consultants' written consent.

In our opinion the calculations also comply with Illinois law and where applicable, federal laws such as the Internal Revenue Code, and the Statements of the Governmental Accounting Standards Board. We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Plan as of June 30, 2014.

Respectfully submitted,

BUCK CONSULTANTS, LLC

A handwritten signature in blue ink, appearing to read "L Langer".

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

A handwritten signature in black ink, appearing to read "Paul R. Wilkinson".

Paul Wilkinson, ASA, EA, MAAA
Director and Consulting Actuary

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Executive Summary

Overview

The Teachers' Retirement System of the State of Illinois (TRS) was established by the State of Illinois on July 1, 1939, to provide retirement, disability, and death benefits to teachers employed by Illinois public elementary and secondary schools outside the city of Chicago. TRS is the administrator of a cost-sharing, multiple employer defined benefit public employee retirement system (PERS). Membership is mandatory for all full-time, part-time, and substitute public school personnel employed outside of Chicago in positions requiring certification. Persons employed at certain state agencies are also members. TRS is governed by the Illinois Pension Code (40 ILCS 5/16).

Members of TRS are employed by school districts, special districts, and certain state agencies. As of June 30, 2014 there were 1,013 employers, comprised of 859 local school districts, 136 special districts and 18 state agencies. The membership totaled over 390,000 members as of June 30, 2013. Of these 390,000 members, 109,000 are retirees to which TRS paid over \$5.2 billion during the year ending June 30, 2014. As of June 30, 2014, the assets of TRS amounted to almost \$46 billion.

Under TRS, the amount of the benefit paid to a member upon retirement, termination, disability or death is defined by the Illinois Pension Code (40 ILCS 5/16). The amount of contributions needed to fund these benefits cannot be known with certainty. In Illinois, like other states, these contributions are paid during a teacher's career so that upon retirement, termination, disability or death, there are funds available to pay these benefits. These amounts are determined through an actuarial valuation based on funding provisions of the Illinois Pension Code. This actuarial valuation report is our annual analysis of the financial health of TRS. This report, prepared as of June 30, 2014, presents the results of the seventy-sixth actuarial valuation of TRS.

Purpose of the Annual Actuarial Valuation

An actuarial valuation is performed on TRS annually as of June 30. Typically, the actuary determines the amount of contributions to be made to a PERS during each member's career that, when combined with investment return, will be sufficient to pay for retirement benefits when the member retires. Under the Illinois Pension Code, the actuary is required to calculate an annual contribution which funds below the level of this standard.

In addition, the annual actuarial valuation is performed to:

- Determine the funding progress of TRS under the Illinois Pension Code's inadequate funding standard,
- Determine the amount of contributions under more standard public sector actuarial practices,
- Explore why the results of the current valuation differ from the results of the previous year valuation, and
- Satisfy regulatory and accounting requirements.

A glossary of actuarial terms and a summary of the valuation process are provided in sections 6.5 and 6.6.

Key Observations

The actuarial valuation is done each year to replace the estimates the actuary assumed for the prior valuation with the actual events that happened. This past year, as expected, some of the assumptions used in the prior valuation were not realized. Key results of the June 30, 2014 valuation, as compared to the June 30, 2013 valuation, are:

- The contribution made by the State of Illinois to TRS under the Illinois Pension Code was insufficient to keep the unfunded actuarial accrued liability from growing; while this was expected in our projections, it is worthwhile to note that this practice continues.
- Market value returns of 17.19% compared to 8.00% assumed
- Payroll decreased 4.3%, which was less than the assumed increase
- No changes in benefit provisions, actuarial assumptions, or funding methodology from the prior year's valuation except as noted below:
 - At the June 24, 2014 Board meeting, the Board of Trustees adopted the following recommendations by Buck Consultants:
 - lower investment return from 8.00% to 7.50%
 - lower rate of inflation from 3.25% to 3.00%
 - lower all rates of salary increase by 0.25%
 - lower the Tier II pay cap increases from 1.625% to 1.50%
 - lower the Tier II COLA increases from 1.625% to 1.40%
 - The Federal Funds contribution rate was set at the same rate as the State's under Public Act 98-0674 (Senate Bill 220)
 - Note: Public Act 98-0599 (Senate Bill 1), a comprehensive plan to overhaul the Illinois Pension Code, was signed by Governor Pat Quinn on December 5, 2013. The goal of the new law is to stabilize TRS finances and eliminate the System's unfunded liability by 2044, primarily by reducing benefits for retired and active members and creating funding guarantees and contribution levels that will gradually, fully fund TRS by June 30, 2044. Lawsuits challenging the law as a violation of the Illinois Constitution's pension protection clause were filed in Chicago and Springfield during December of 2013 and January of 2014. These lawsuits have been consolidated and are now pending in Sangamon County Circuit Court. As part of this court challenge, on May 14, 2014, the court issued a temporary injunction that delays the implementation of the new law until the court rules on the consolidated lawsuit. The law did not take effect on June 1, 2014, as had been originally scheduled, and the state's current pension law will continue to govern all aspects of TRS, including retirement eligibility, all pension calculations and cost of living increases. Similarly, this valuation report does not reflect Public Act 98-0599.

When compared to the June 30, 2013 valuation results, the above resulted in:

- A lower funded ratio as of June 30, 2014 based on actuarial value of assets:
 - 42.6% was projected in the June 30, 2013 valuation
 - 40.6% is the actual amount determined in this actuarial valuation
- A higher state contribution under the Illinois Pension Code for fiscal year ending June 30, 2016
 - 33.02% of payroll (\$3.58 billion) was projected in the June 30, 2013 valuation
 - 36.06% of payroll (\$3.74 billion) is the actual amount determined in this actuarial valuation (Contribution amount is \$3.74 billion determined in this valuation)
- Lower projected benefit amounts being accrued by active members

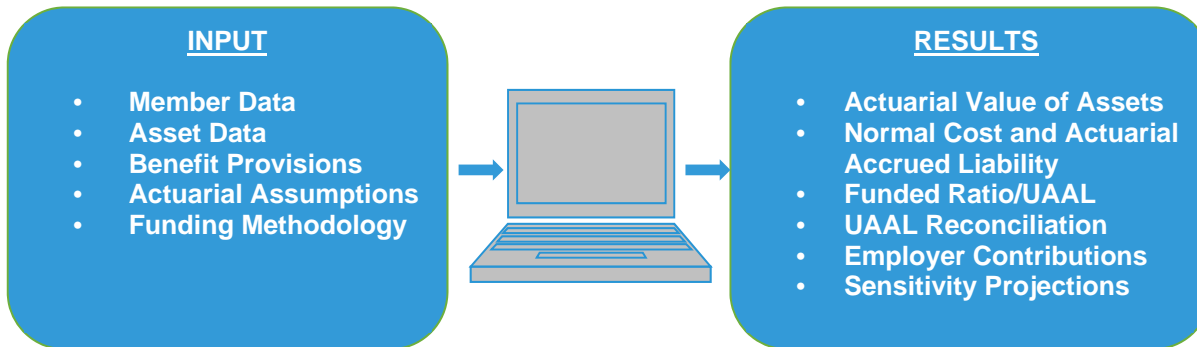
The funded ratio for TRS is among the worst in the United States. This is due to:

- A lack of commitment from policy makers to keep the Retirement System well-funded
- A history of appropriating and contributing amounts far below that which a prudent actuary would recommend
- A funding policy that systematically underfunds TRS
- Changes in benefits that were unfunded and granted when the funded ratio of TRS is quite low

Funding reform needs to occur for TRS or the benefits of its membership could be compromised.

The Valuation Process

The following diagram summarizes the inputs and results of the actuarial valuation process.



A more detailed description of the valuation process is provided in Section 6.6.

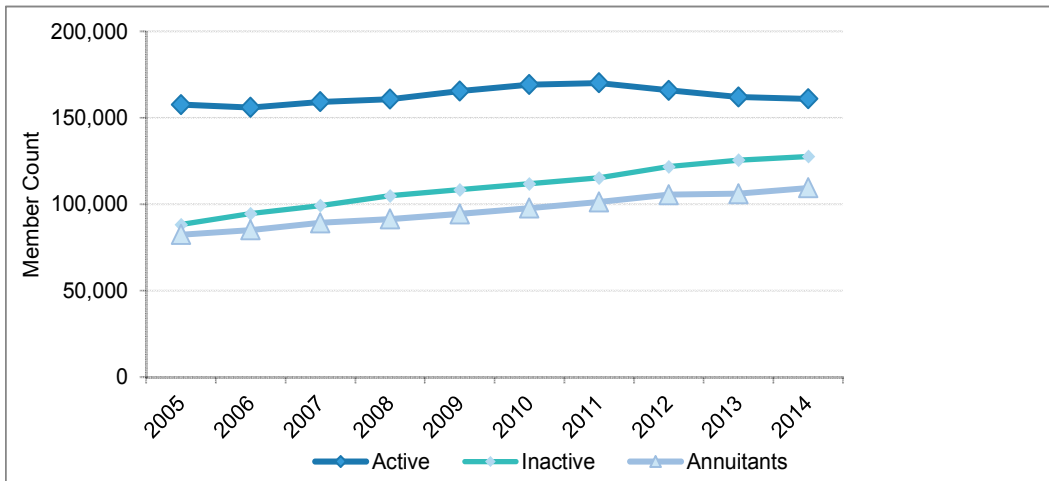
Valuation Input: Member Data

As with any estimate, the actuary collects information that we know now. Under the actuarial valuation process, current information about TRS members is collected annually by TRS Staff at the direction of the actuary. Membership data will assist the actuary in estimating benefits in the future. Information about benefit provisions and assets held in the trust as of the valuation date is also collected.

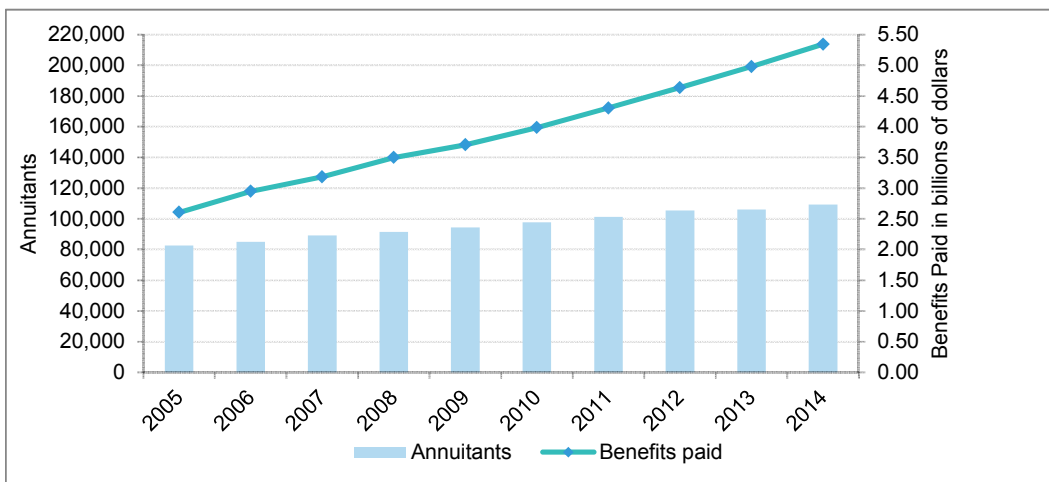
TRS Staff provided membership data as of one year before the valuation date for each member of TRS. The membership data will assist the actuary in estimating benefits that could be paid in the future. The member information the actuary collects includes data elements such as current service, salary and benefit group identifier for members that have not separated service, and actual benefit amounts and form of payment for members that have separated service. Data elements such as gender and date of birth are used to determine when a benefit might be paid and for how long.

Valuation Input: Member Data (continued)

The graph below provides a history of the number of members over the past ten years. The number of actives has stayed relatively level over time, with a slight peak five years ago. The number of annuitants has steadily increased over the period in line with the expectations.



The graph below provides a history of the number of annuitants as well as the benefits paid over the same period. The fact that they have increased dramatically was expected.



A detailed summary of the membership data used in this valuation is provided in Section 5 of this report.

Valuation Input: Member Data (continued)

The table below provides a summary of the membership data used in this valuation compared to the prior valuation. Because the census information is collected as of one year before the valuation date, the June 30, 2014 valuation counts are the number of members as of June 30, 2013; similarly, the June 30, 2013 valuation counts are the number of members as of June 30, 2012.

Data Item	Valuation June 30, 2014	Valuation June 30, 2013	Percentage Change
Active membership:			
• Full-time and regular part-time:			
➤ Number	132,886	132,956	(0.1)
➤ Annual Compensation	\$ 9,193,086,492	\$ 9,601,784,939	(4.3)
➤ Average Compensation	\$ 69,180	\$ 72,218	(4.2)
• Substitute, part-time, hourly paid (limited schedule)			
➤ Number	28,104	29,073	(3.3)
➤ Annual Compensation	\$ 142,822,013	\$ 154,239,957	(7.4)
➤ Average Compensation	\$ 5,082	\$ 5,305	(4.2)
• Total Number	160,990	162,029	(0.6)
Inactive Membership:			
• Eligible for deferred annuities	17,250	16,995	1.5
• Eligible for refunds or single sum benefits only	110,403	108,531	1.7
Annuitants (retirees, disabilitants and survivors):			
• Number	109,448	106,102	3.2
• Annual annuities	\$ 5,204,460,272	\$ 4,811,369,695	8.2
• Average annual annuities	\$ 47,552	\$ 45,347	4.9

Salary amounts decreased instead of increasing, which resulted in lower liability amounts. The amount of new retirement benefits paid during the year ended June 30, 2014 resulted in an unexpected increase in liabilities. Deaths resulted in less liability than expected.

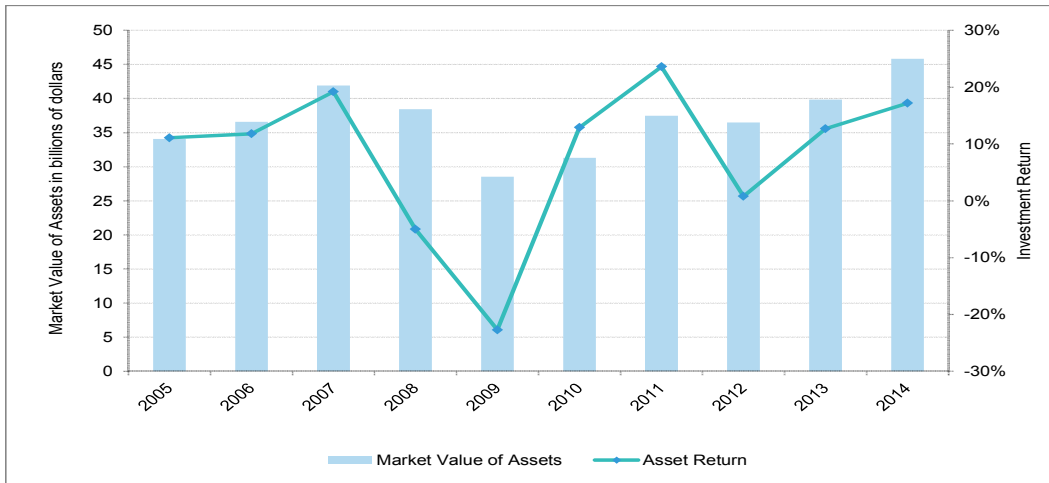
Valuation Input: Asset Data

TRS assets are held in trust and are invested for exclusive benefit of plan members. The market value of assets increased to \$45.8 billion during the year ended June 30, 2014. Last year's valuation anticipated the assets would grow to \$42.5 billion. Returns for year ended June 30, 2014 were 17.2% which was greater than the 8.00% return assumed for year ended June 30, 2014 in last year's actuarial valuation. That being said, the \$6.8 billion in returns TRS generated at an 17.2% return is less than the \$7.5 billion in returns that TRS would have generated with a return at the 8% assumption had TRS been fully funded on June 30, 2013. TRS will not invest itself out of its current financial shortfall. More funding is necessary.

Valuation Input: Asset Data (continued)

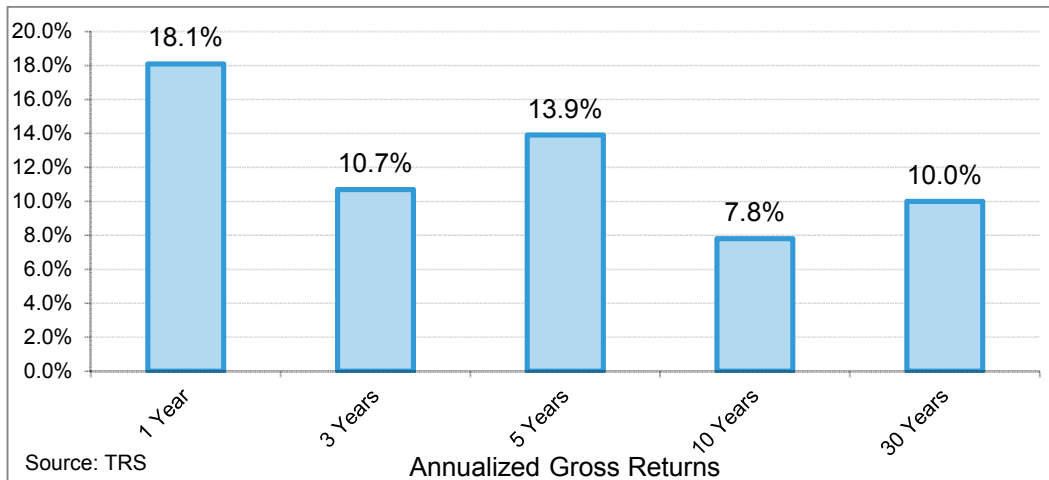
Market Value of Assets and Asset Returns

The graph below provides a history of the Retirement System's market value of assets and asset returns over the past ten years.



Annualized Gross Returns

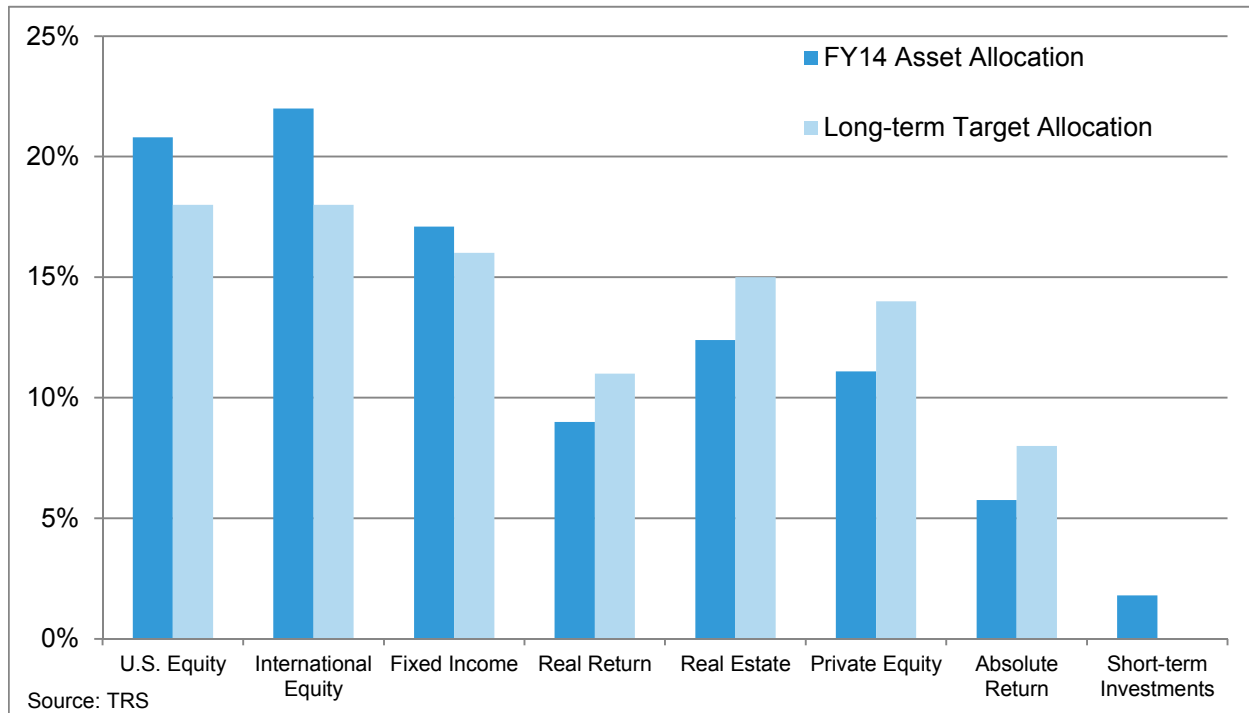
As seen below, annualized gross returns have generally been higher than the historical assumed rate of return of 8.00% (8.50% prior to 2012).



Valuation Input: Asset Data (continued)

Allocation of Investments

Asset allocation is the primary driver of returns over the long term. The allocation of assets as of June 30, 2014 and the long-term target allocation are as follows:



Based on historical market returns, the current asset allocation, the current investment policy, and the expectation of future asset returns, the 7.50% investment return assumption used in this valuation is reasonable and appropriate. The return assumption was last reviewed at the June 24, 2014 Board of Trustees meeting. The investment return assumption will be reviewed with the experience review before the June 30, 2015 annual actuarial valuation.

More details regarding the market value of assets are provided in Section 2 of this report.

Valuation Input: Benefit Provisions

Benefit provisions are described in Article 16 of the Illinois Pension Code. There were no changes in benefit provisions from the prior year's valuation.

Public Act 96-0889 added a new section to the Pension Code that applied different benefits to anyone who first contributed to TRS on or after Jan. 1, 2011 and does not have any previous service credit with a pension system that has reciprocal rights with TRS. These members are referred to as "Tier II" members. The benefits Tier II members received are generally lower than that of Tier I members, whose benefits were not changed under Public Act 96-0889. Highlights of the differences in benefit provisions are summarized below.

Tier I	Tier II
Benefit Formula	
2.2% multiplied by final average salary multiplied by years of creditable service	
Retirement Eligibility	
<ul style="list-style-type: none"> ◦ Age 55 with 35 years of service if member has elected the 2.2% formula ◦ Age 55 with 20 years of service for a benefit that is reduced by 6% for every year the member is under 60 ◦ Age 60 with 10 years of service ◦ Age 62 with 5 years of service 	<ul style="list-style-type: none"> ◦ Age 67 with 10 years of service ◦ Age 62 with 10 years of service for a benefit that is reduced by 6% for every year the member is under 67
Benefit Caps	
<ul style="list-style-type: none"> ◦ Maximum benefit is 75% of final average salary 	<ul style="list-style-type: none"> ◦ Maximum benefit is 75% of final average salary ◦ In determining final average salary, no member's salary can exceed the Tier II wage cap.
Final Average Salary	
Based on highest average salary during 4 out of the last 10 years of service	Based on highest average salary during 8 out of the last 10 years of service
Cost-of-living adjustments	
3 percent, compounded annually	Lesser of 3 percent or one-half of the Consumer Price Index, with the adjustment applied to the original benefit, i.e. not compounded
Member Contribution Rate	
9.4% of pay	

A detailed summary of the benefit provisions is provided in Section 6.1 of this report.

Despite having the same benefit formula and member contribution rate, the value of the Tier II benefit is lower than that of Tier I due to the difference in retirement eligibility, caps on average salary, and cost-of living adjustments. Later in this executive summary we will discuss the subsidy that Tier II members provide to the State due to the member contribution they make being more valuable than the benefit they receive. Here we will focus on the lower value of their benefit.

Valuation Input: Benefit Provisions (continued)

The delay in retirement eligibility under 96-0889 represents a reduction in the amount of benefit paid to Tier II members. The amount of reduction varies based on the age at hire of each individual. Projected improvements in life expectancy likely will partially offset these delays.

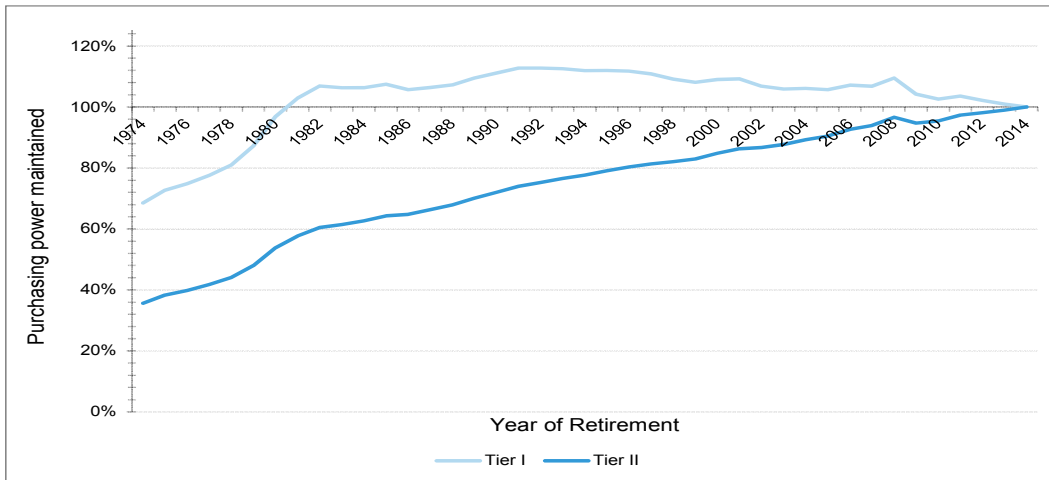
The increase in averaging period used for final average salary will generally decrease the benefits of Tier II members by five to ten percent, depending on the individual.

The Tier II wage cap is a limit on the salary amount for benefit and contribution purposes for Tier II members. Since the maximum benefit is 75 percent of final average *capped* salary, a member could receive much less than 75 percent of their actual final average *uncapped* pensionable salary after a full career. The original limit for 2011 was \$106,800. Each subsequent year the cap increases by the lesser of 3% or one-half the percentage increase in the CPI-U as of the preceding September. For 2014 the limit is \$110,631. In the future, we project that virtually all Tier II members that put in a full career will not receive a benefit of 75% of their final average *uncapped* pensionable salary.

Cost-of-living adjustments are critical to ensuring that members' pensions keep pace with inflation. To the extent that pensions do not increase after retirement, inflation erodes the purchasing power for the beneficiary. The graph following illustrates the effectiveness of the Tier I cost-of living adjustment in keeping pace with inflation. A value above 1 for a retiree indicates that the members' pension has stayed ahead of inflation; a value below 1 indicates that the members' pension stayed behind inflation. For example, the pension as of June 30, 2014 for a member retired in 2004 is about 7 percent higher than if the member had received increases equal to the Consumer Price Index; the pension as of June 30, 2014 for a member retired in 1978 is about 20% lower. Overall, the Tier I COLA has done a reasonable job of keeping pace with inflation for retirees over the past 35 years. For the hypothetical example in the chart on the next page, we have assumed that the COLA was 3% compounded.

Valuation Input: Benefit Provisions (continued)

We have also included the hypothetical values had the members received the Tier II cost-of-living adjustment. Given that the Tier II cost-of-living adjustment is half of the Consumer Price Index, it should not be surprising that the pension of retirees will not keep pace with inflation. This is exacerbated by the fact that Tier II cost-of-living adjustments are not compounded but simple. For the hypothetical Tier II member that retired in 2014, a full third of the lost purchasing power is due to the simple cost-of-living adjustment under Tier II.

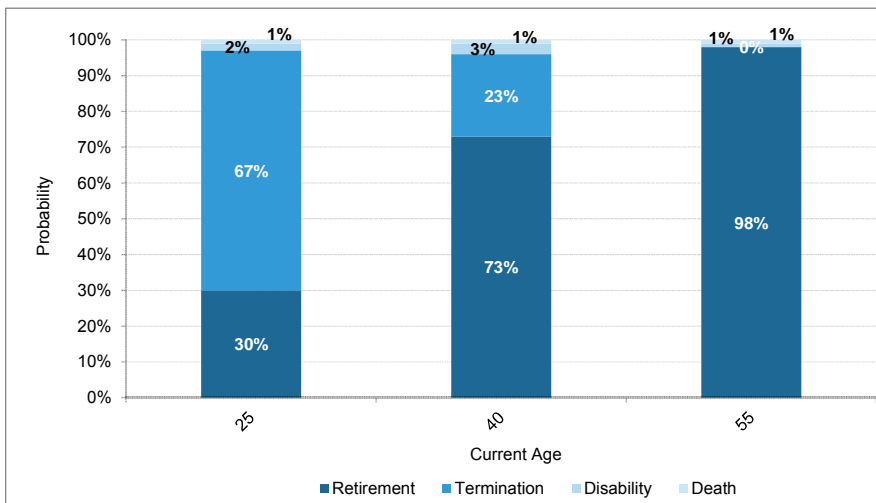


The net effect of these changes is a benefit that does not reward a full career. Later we will see that the 9.40% contribution made by Tier II members is greater than the value of the pension they receive.

Valuation Input: Actuarial Assumptions

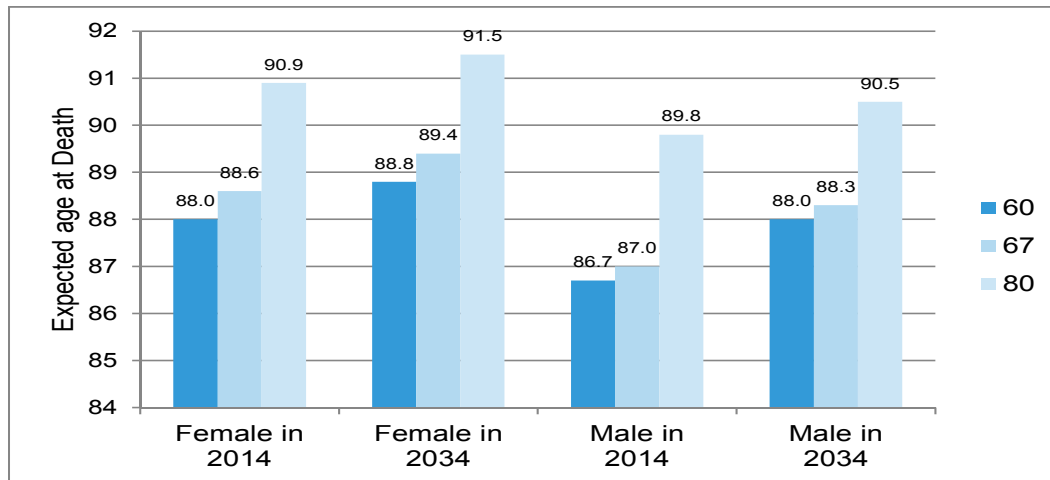
Actuarial assumptions bridge the gap between the information that we know with certainty as of the valuation date – age, gender, service, pay or benefits of the members – and what may happen in the future.

Demographic assumptions describe future events that relate to people such as retirement rates, termination rates, disability rates, and mortality rates. The rates are developed to model what we expect to occur within TRS. The probability of members retiring, terminating, becoming disabled or dying during their career at illustrative rates is below. Not surprising, as a member ages they are more likely to retire, but also become disabled or die.



Valuation Input: Actuarial Assumptions (continued)

Mortality is a large driver of costs. The longer a member is expected to live, the larger the expected costs. Below are the expected age at death based on the assumptions used for this valuation. Note that we show expected age at death in 2014 and 2034 as illustrative values. The valuation uses what is known as generational mortality. Each future generation is expected to live longer than the prior. Finally, females continue to live longer than males, although the gap is shrinking.



Economic assumptions describe future events that relate to the Retirement System's assets such as the interest rate, salary increases, the real return, and payroll growth. The investment return assumption is 7.50% annually. Salary increases vary by age. Members at age 25 are expected to receive a pay increase of 9.00%; members from age 50 and beyond are expected to receive a pay increase of 4.75%.

The actuarial assumptions of TRS are reviewed in a process known as an Experience Review. Based on this review, the actuary will make recommendations on the demographic and economic assumptions. The latest assumptions were adopted for use with the June 30, 2012 actuarial valuation, based on the experience study prepared as of June 30, 2012 and adopted by the Board of Trustees at their August 2012 Board meeting. The next experience study will be prepared after a three year period as of June 30, 2015 and presented to the Board in mid-2015. Assumptions and methods based on the next experience study, as adopted by the Board, will be used with the June 30, 2015 valuation. Reviewing assumptions every three years is a best practice.

In June 2014, Buck Consultants prepared an interim review of the assumed interest rate, underlying inflation assumption and other related economic assumptions. The review was as a result of a proposed change in investment portfolio by the Board. At the June 24, 2014 Board meeting, based on that review, the Board of Trustees adopted the following changes recommended by Buck Consultants for the June 30, 2014 valuation:

- lower investment return from 8.00% to 7.50%
- lower rate of inflation from 3.25% to 3.00%
- lower all rates of salary increase by 0.25%
- lower the Tier II pay cap increases from 1.625% to 1.50%
- lower the Tier II COLA increases from 1.625% to 1.40%

These changes increased the Actuarial Accrued Liability as of June 30, 2014 by \$6.4 billion.

A detailed summary of the actuarial assumptions is provided in Section 6.3 of this report.

Valuation Input: Funding Methodology

The Funding Methodology is the funding policy for a PERS. There are three broad goals when formulating a funding policy for a PERS.

- *Sufficiency* - the funding target should be the value of benefits allocated to the benefits accrued to date.
- *Intergenerational equity* – taxpayers should pay for workers' pensions while those workers are providing their services – fund for benefits over the worker's career.
- *Stability of contributions* – while stable contributions are easier to budget for, stability should not be achieved at the expense of the first two considerations.

Actuarial Methods describe the funding policy for the PERS. Actuarial Methods generally are comprised of the three components below:

- *Actuarial Cost Methods* allocate costs to the actuarial accrued liability (i.e. the amount of money that should be in the PERS fund) for past service and normal cost (i.e. the cost of benefits accruing during the year) for current service to allow for systematic payment of the costs over a member's career
- *Amortization Payment for UAAL Methods* determine the payment schedule for unfunded actuarial accrued liability (UAAL)
- *Asset Valuation Methods* smooth or average the market value returns over time to alleviate contribution volatility that results from market returns that differ from the investment return assumption used in the actuarial valuation

We have broadly referred to funding of a PERS outlined above as "Actuarial Math." We have shown two versions of Actuarial Math in the past few years:

- Contribution based on 30-year open level percent of pay amortization of UAAL (formerly called minimum generally accepted actuarial standards) – since the inception of GASB 25 and 27 in the mid-1990s, the minimum annual required contribution (ARC) contained in those standards has served as the de facto minimum funding standard for a PERS. The basis for this version of Actuarial Math is the projected unit credit cost method, with a 30-year open level percent of pay amortization.
- Based on keeping the UAAL from growing – recognizing that the contribution based on 30-year level percent of pay amortization is not sufficient to reduce the UAAL from year to year, we have shown this amount. This policy is an improvement over the above.

Neither of these Actuarial Math policies is optimal, primarily because they are not projected to fully fund the unfunded liability. That being said, since GASB 25 was enacted 20 years ago, the Illinois Math policy used has underfunded TRS by almost \$16 billion when compared to the first policy.

Valuation Input: Funding Methodology (continued)

The funding of TRS by the State of Illinois does not follow even the minimum Actuarial Math. The State has systematically underfunded TRS using Illinois Math, which has systematically underfunded TRS by:

- Initially selecting a 50 year period over which to pay down unfunded actuarial accrued liability
- Back loading the 50 year plan by using a 15 year period to ramp up contributions to the ultimate level
- Establishing 90% of the actuarial accrued liability as the funding target
- Using the projected unit credit cost method which understates the funding target compared to the more common entry age normal cost method
- Imposing a maximum contribution based on POB debt payments; while contributions are potentially reduced by the full value of the debt payments, not all of the POB proceeds were directly deposited
- Reducing contributions for fiscal year ended June 30, 2006 and 2007
- Reducing contributions in fiscal year ended June 30, 2011 by introducing an actuarial value of assets
- Reducing contributions to fully reflect the impact of Tier II provisions before the reduction in benefit accruals occurred

The de facto funding policy under GASB 25 and 27 was effectively eliminated with the introduction of GASB 67 and 68 two years ago. In the interim, public sector actuaries have reviewed funding of public sector pensions. While the framework remains the same, the parameters have been refined.

- Actuarial Cost Method based on the entry age normal cost method, which has a higher target than the projected unit credit method under Illinois Math
- Asset Valuation Method which smoothes returns over a five year period without a corridor, similar to that prescribed under the Illinois Pension Code
- Amortization Method which at a minimum pays down the unfunded liability each year. A closed level percent of pay amortization of 15 to 20 years or closed level dollar amortization of no more than 25 years achieves this.

When compared to other public sector retirement systems in the United States, the funding policy for TRS has resulted in TRS being regarded by its peers as among the worst funded in the United States.

There was a change in the funding methodology from the prior year's valuation:

- The Federal Funds contribution rate was set at the same rate as the State's under Public Act 98-0674 (Senate Bill 220)

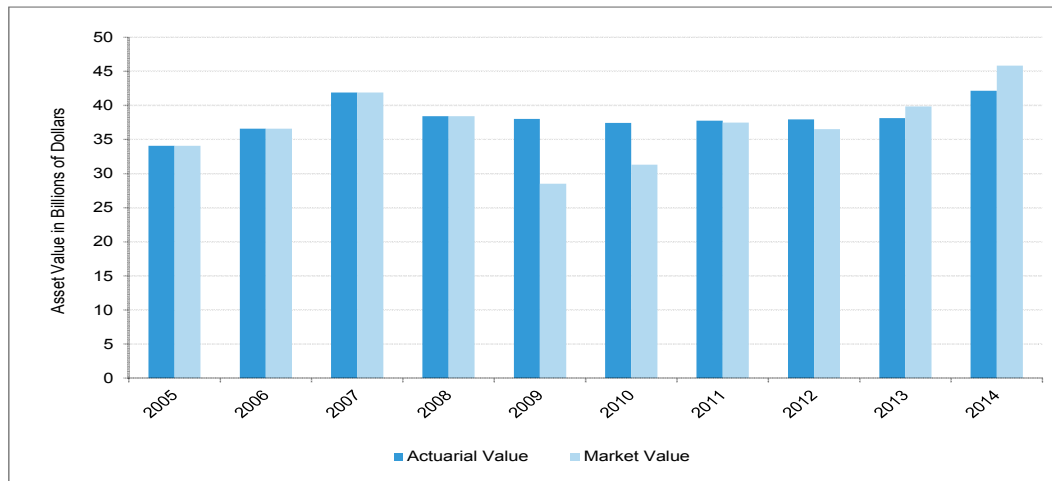
A detailed summary of the actuarial methods is provided in Section 6.2.

Valuation Output: Actuarial Value of Assets

The Illinois Pension Code specifies the method for determining the Actuarial Value of Assets for funding purposes. Effective with the 2009 valuation, the method was changed from the market value of assets to a market-related value that recognizes investment gains and losses over five years. The Actuarial Value of Assets is \$42.2 billion as of June 30, 2014 and \$38.2 billion as of June 30, 2013.

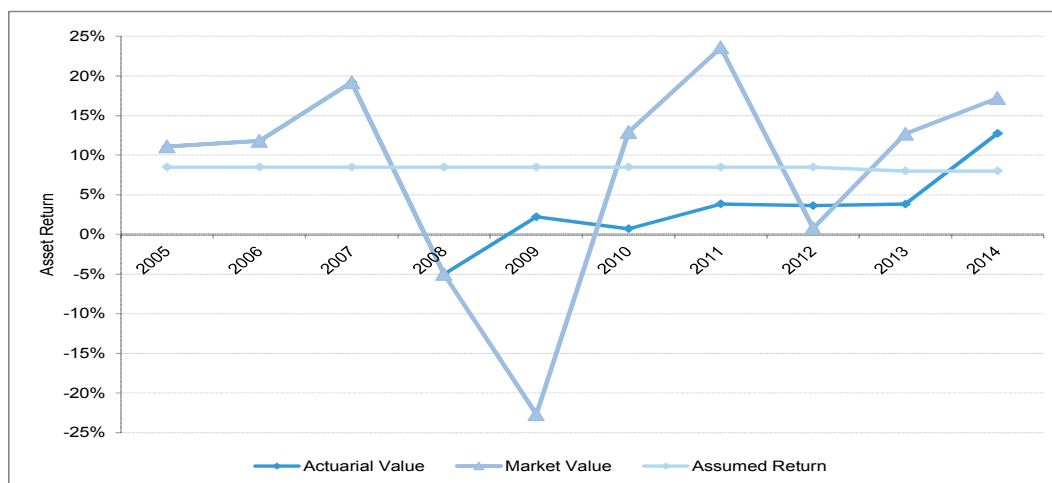
Actuarial Value and Market Value of Assets

The graph below provides a history of the market value and actuarial value of assets over the past ten years. The point of using an actuarial value of assets is to develop contributions that are more stable than if the contributions were based solely on market.



Asset Returns

The graph below provides history of the market value and actuarial value of asset returns over the past ten years.



The more stable returns under the actuarial value results in more stable contributions than if the market value of assets were used to determine the employer contributions.

A detailed summary of the Actuarial Value of Assets is provided in Section 2 of this report.

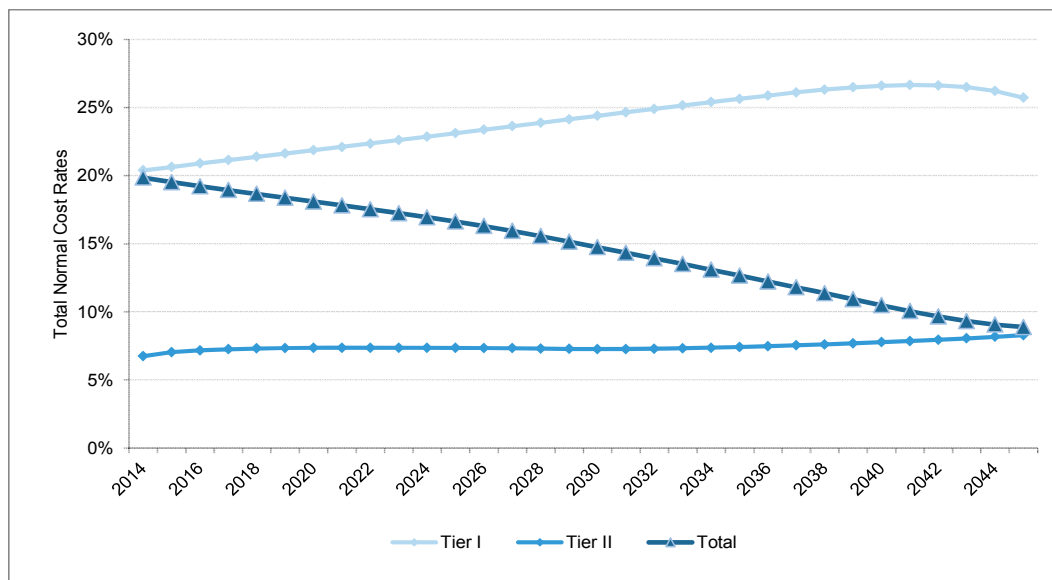
Valuation Output: Actuarial Accrued Liability

Using the provided membership data, benefit provisions, and actuarial assumptions, the Retirement System's future benefit payments are estimated. These projected future benefit payments are discounted into today's dollars using the assumed rate of investment return assumption to determine the Present Value of Future Benefits (PVFB) of the Retirement System. The PVFB is an estimate of the current value of the benefits promised to all members as of a valuation date.

Once the PVFB is developed, an actuarial cost method is used to allocate the PVFB. Under the actuarial cost method, the PVFB is allocated to past, current and future service, respectively known as the actuarial accrued liability (AAL), normal cost (NC) and present value of future normal costs (PVFNC). The AAL is also referred to as the amount of money a PERS should ideally have in the trust. The NC is also referred to as the cost of benefits accruing during the year.

Total Normal Cost

The total normal cost is the cost of benefits accruing during the year. It is often given as a percent of payroll. Below we project the total normal cost by Tier.



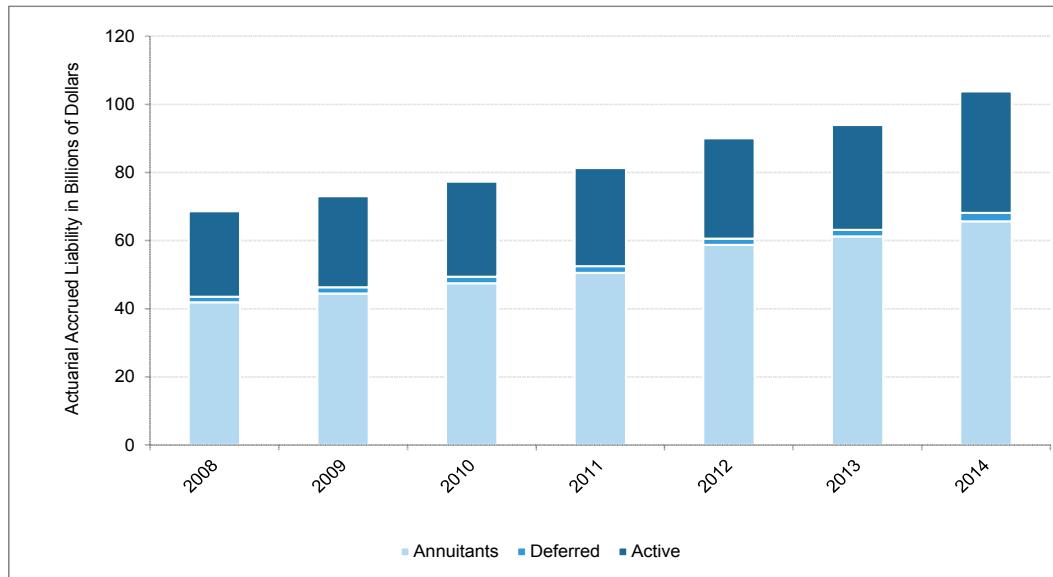
Some observations:

- The total normal cost rate for Tier I is over double that of Tier II;
- The Tier II total normal cost increases over time as mortality improvements are reflected;
- The Tier II total normal cost is less than the Tier II member contribution rate; that is, Tier II members pay for their own pensions and subsidize the State by paying down the UAAL;
- Note that the rates above are based on the projected unit credit cost method. Use of the more common entry age normal cost would result in lower total normal costs, and higher actuarial accrued liabilities.

Valuation Output: Actuarial Accrued Liability (continued)

Actuarial Accrued Liability

The graph below provides a history of the actuarial accrued liability over the past ten years.



The AAL increased from 2013 to 2014 by \$9.8 billion from \$93.9 billion to \$103.7 billion. We expected the AAL to grow to \$97.1 billion. The additional \$6.6 billion was primarily due to the changes in assumptions adopted by the Board at the recommendation of Buck Consultants.

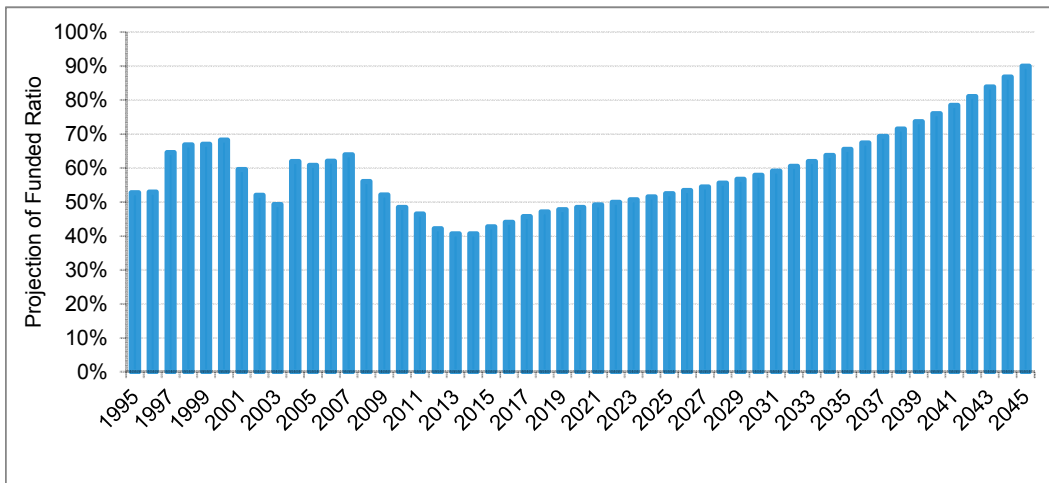
A detailed summary of the actuarial accrued liability is provided in Section 1 of this report.

Valuation Output: Funded Ratio

The funded ratio is a measure of the progress that has been made in funding the plan as of the valuation date. It is the ratio of how much money the Retirement System actually has in the fund to the amount the Retirement System should have in the fund. The funded ratio from 2013 to 2014 was unchanged at 40.6%.

Funded Ratios

The graph below provides a history and a projection of the funded ratio for TRS over the 50 year funding period under Illinois Math. The funded ratio is the actuarial value of assets divided by the actuarial accrued liability, or it is the ratio of how much money TRS has in the fund to how much it should have in the fund.



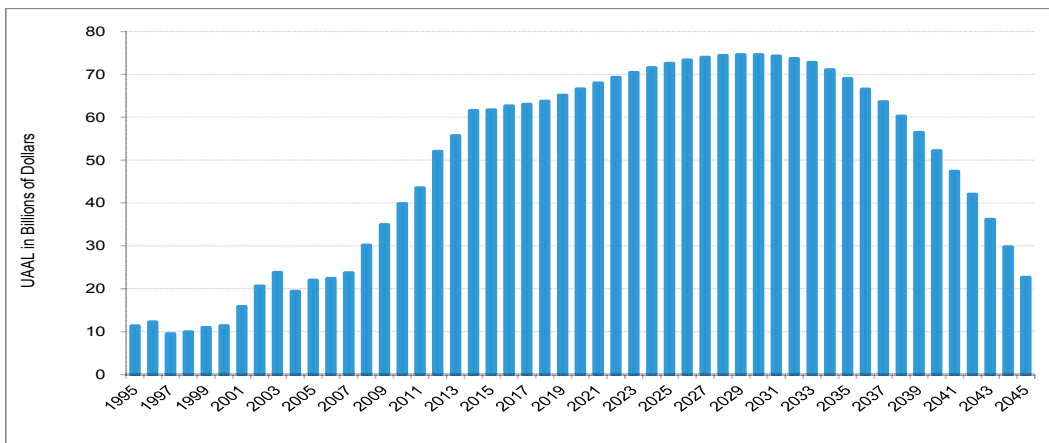
The funded ratio should trend to 100% over a reasonably short period of time – say 15 to 25 years. The 90% target and the 50 year period used by Illinois Math, while an improvement over funding before 1995, are inadequate. We recommend Illinois Math be replaced with Actuarial Math.

Valuation Output: Unfunded Actuarial Accrued Liability (UAAL)

The unfunded actuarial accrued liability is the difference between the actuarial accrued liability (AAL) and actuarial value of assets (AVA). The UAAL is sometimes referred to as “unfunded accrued liability.” The UAAL increased from 2013 to 2014 by \$5.9 billion from \$55.7 billion to \$61.6 billion.

Unfunded Actuarial Accrued Liability (UAAL)

The graph below provides a projection of the unfunded actuarial accrued liability.



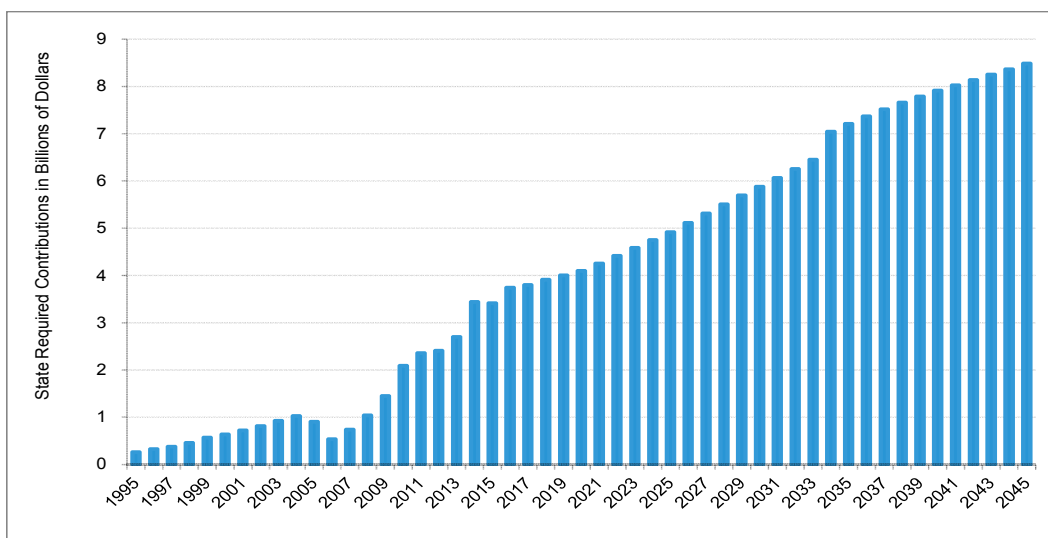
The UAAL before the current valuation date has generally increased. While System experience has resulted in some of the increases and decreases in unfunded liability, the State contributions mandated under the Illinois Pension Code were designed to allow the UAAL to grow for more than three decades when the 50 year plan was put in place in 1995. The first year the UAAL begins to decrease is for the year ending June 30, 2031.

Valuation Output: Employer Contributions

Employer Required Contribution Rates

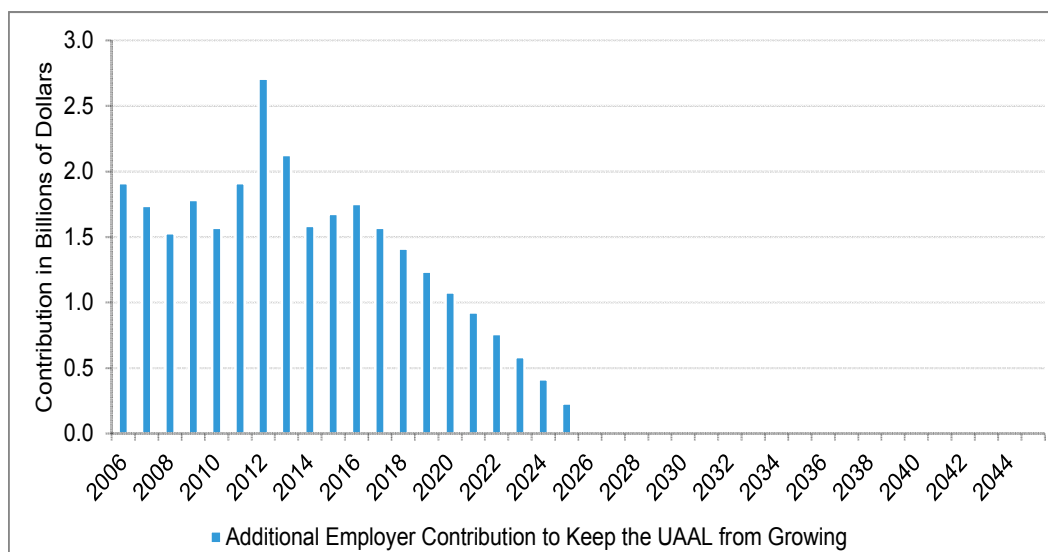
The total projected employer contribution for 2016, including State, Federal and School Districts, is \$3.88 billion. Of this amount, \$0.99 billion, or about 25%, is for the employer portion of normal cost and 75% is for the unfunded accrued liability. The required State contribution for 2016 is \$3.74 billion, an increase from \$3.41 billion for 2015.

The graph below provides a projection of the State required contributions as provided under the Illinois Pension Code. In the first several years of the 50 year plan, the State contributions were lower as the contribution ramped



up from 1995 through 2010. In the future, the increases will continue as payroll increases. A larger increase of almost 10% occurs in 2034 as the constraint of the POB maximum is lifted. The insufficiency of the contributions shown here is a primary driver of the increasing unfunded liability on the previous page.

The employer contributions to TRS, including the projected contributions for 2016, have consistently been less than that needed to keep the unfunded actuarial accrued liability from growing. To keep the unfunded from

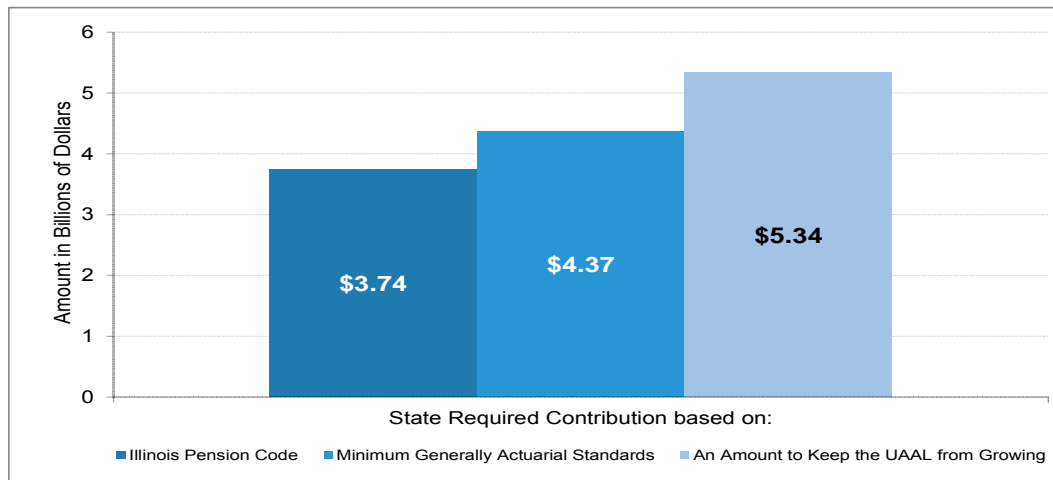


growing, the contribution must cover the employer portion of the normal cost plus at least the interest on the unfunded. The graph here illustrates a recent history and a projection of additional employer contributions, in excess of the amount required under the Illinois Pension Code, needed to keep the unfunded from growing.

Recognizing that the State contributions under the Illinois Pension Code are inadequate, the Board of trustees prepares a certification which includes State contributions under the Illinois Pension Code and two higher thresholds:

- i. 30-year open level percent of pay amortization of UAAL
- ii. An amount to keep the UAAL from growing

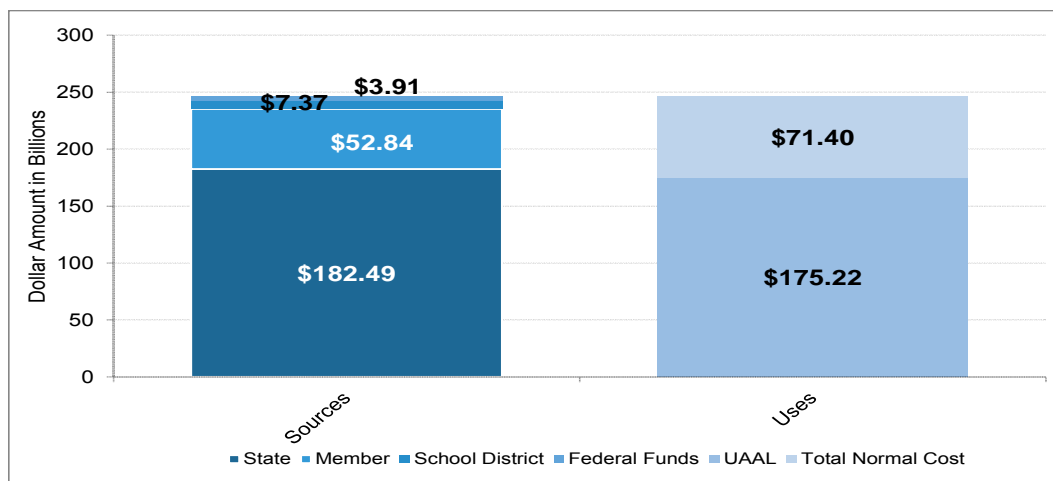
The graph below includes these three amounts.



As noted earlier, the amount to keep the unfunded from growing should be regarded as the minimum contribution requirement.

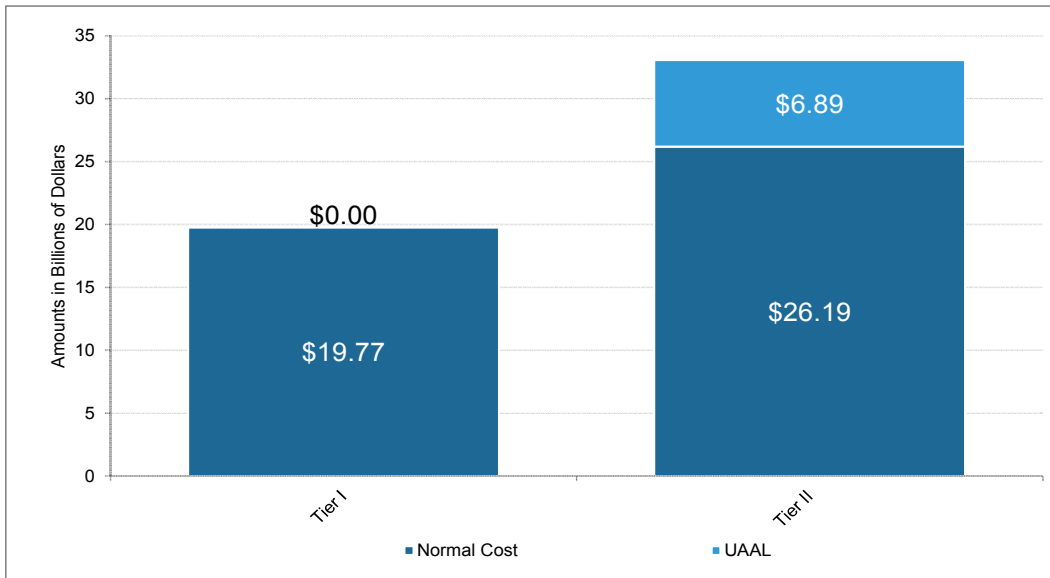
Sources and Uses of Funds

As seen below, much of the contributions over the next 30 years are used to pay down the UAAL.



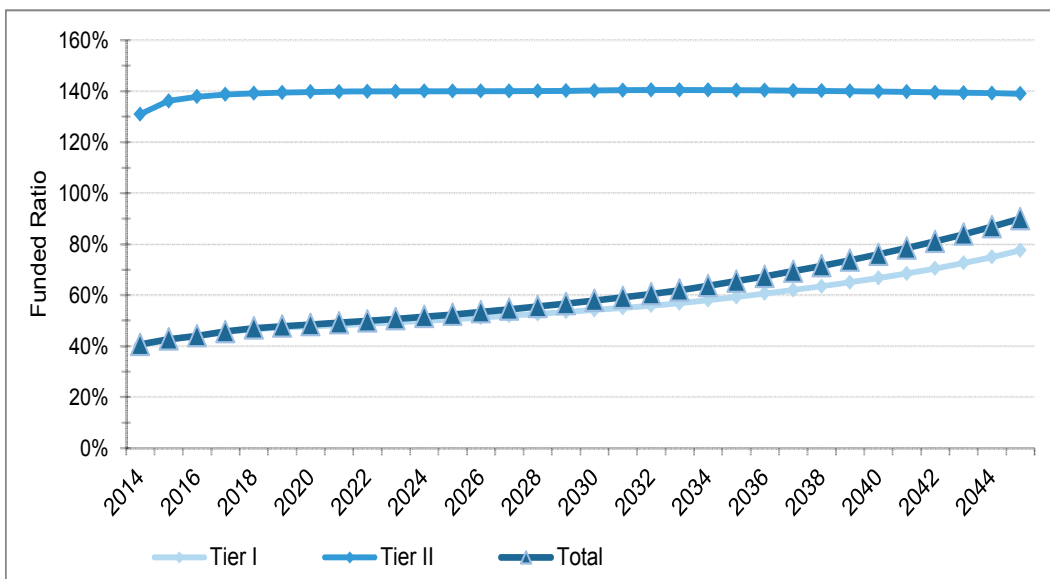
This graph provides a comparison of the Sources and Uses of the \$246.62 billion in contributions projected to be made from year ended June 30, 2016 through the end of the 50-year funding period of June 30, 2045. Over 70% of the projected total contributions are being provided by the state and over 20% is being provided by teachers. In aggregate, teachers pay for the cost of benefits accruing, and the State pays for the pension debt that has accrued as a result of following inadequate funding policies since the inception of TRS. Much of the contributions over the next 30 years are used to pay down pension debt.

The chart below provides a summary of the sources of funding by TRS members and the use of those funds.



As seen above, Tier II members are assisting the State by paying for part of the UAAL in addition to paying for all of their benefit. If the more commonly used entry age method is used, the amount allocated to normal cost would be lower, with more being allocated to the UAAL.

While Tier I and Tier II assets are comingled within TRS to determine the funding requirements and funded ratio, the chart below projects the funded ratio based on allocating Tier II member contributions with projected investment returns to the Tier II assets and the remaining contributions – Tier I member, all State, all School District and all Federal Funds – with projected investment returns to the Tier I assets.



As seen in the chart on the previous page, Tier II member contributions are more than sufficient to fund Tier II benefits, and the excess is used to increase the overall funded ratio of TRS. These Tier II excess contributions increase the June 30, 2045 TRS funded ratio from 80% to the 90% target under the Illinois Pension Code.

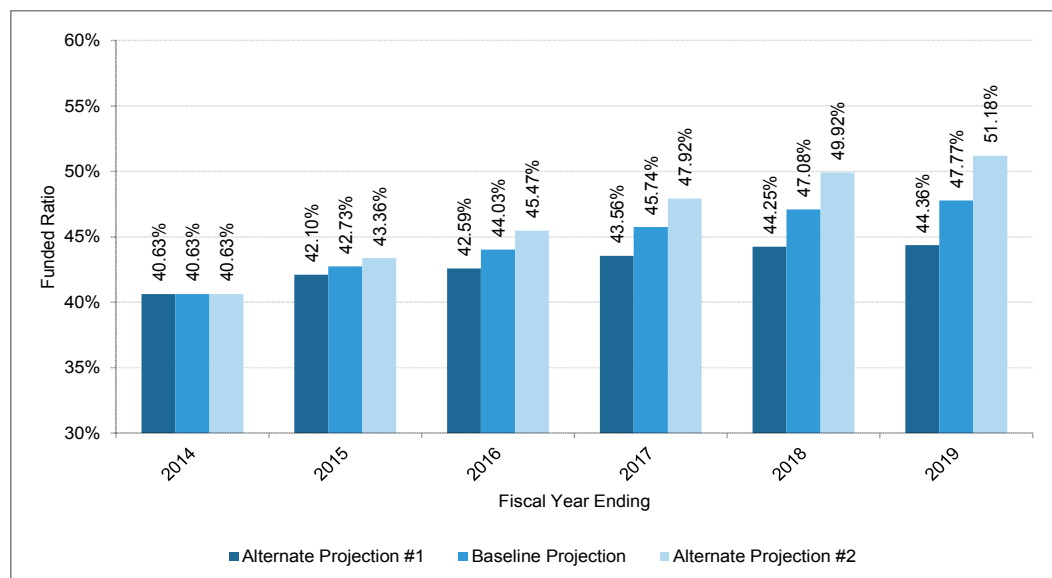
A detailed summary of the employer required contributions rates is provided in Section 1 of this report.

Sensitivity Projections

Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. We provide such projections in this valuation report. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future.

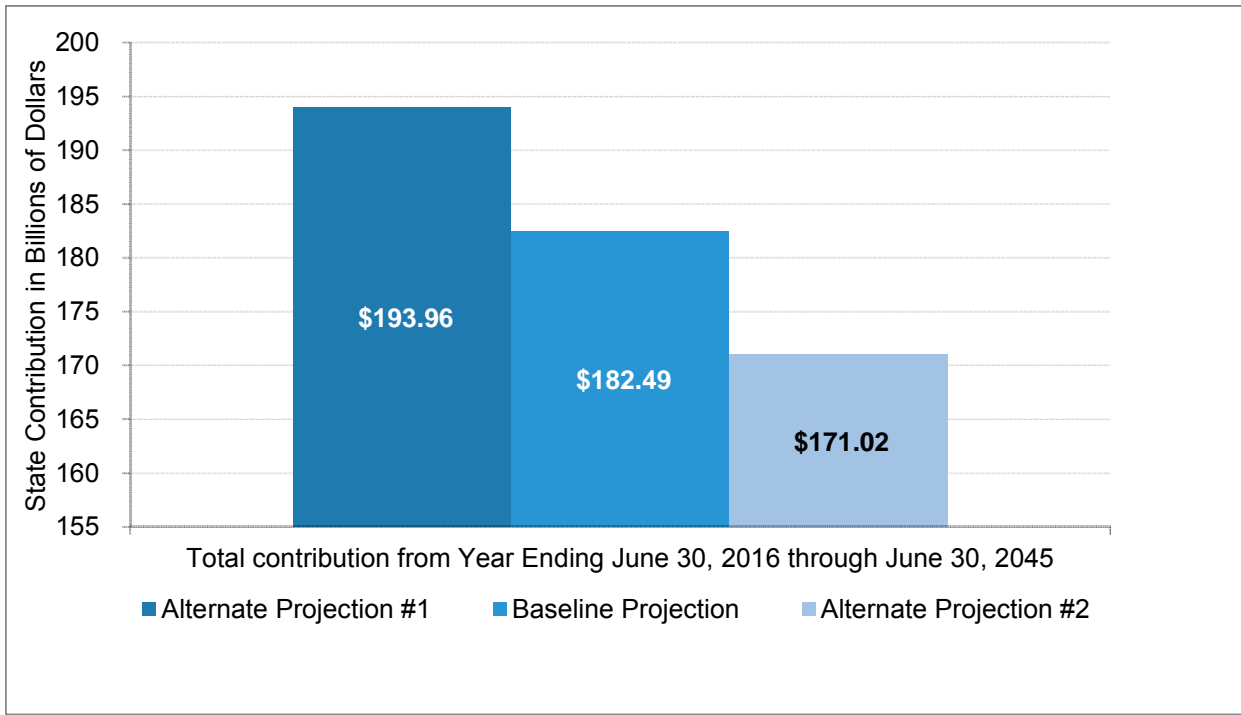
In addition, we have provided alternate deterministic projections. One is based on the same assumptions as the baseline deterministic projection except that it assumes a 0.0% asset return for year ending June 30, 2015. The second alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 15.00% asset return for year ending June 30, 2015.

This graph provides a projection of the funded ratio.



The impact of investment returns on the valuation results can be significant. The impact in the first year is rather modest because only 20% of the alternate returns are reflected in the actuarial value of assets each valuation. By the fifth year, the returns are fully reflected in the valuation. On the next page we see the impact that these alternate scenarios have on employer contributions.

This graph provides the total state required contributions from the year ending June 30, 2016 through June 30, 2045.



The total impact on contributions over the funding period is significant. The change in returns in alternative scenarios #1 and #2 is \$3.4 billion less or \$3.4 billion more than the baseline, respectively, yet the impact over time on contributions is over three times those amounts because of the long period of time that this change is funded under Illinois Math.

A detailed summary of the deterministic projections is provided in Section 4 of this report.

Accounting Information

The Governmental Account Standards Board (GASB) issues statements which establish financial reporting standards for defined benefit pension plans and accounting for pension expenditures and expenses for governmental employers. The required financial reporting information for TRS can be found in Section 3 of this report.

Please note that GASB Statement No. 25 (Financial Reporting for Defined Benefit Pension Plans) is applicable for fiscal years ending prior to 2014 and has been replaced by GASB Statement No. 67 (Financial Reporting for Pension Plans) for fiscal years ending 2014 and later. Similarly, GASB Statement No. 27 (Accounting for Pensions by State and Local Governmental Employers) is applicable for fiscal years ending prior to 2015 and has been replaced by GASB Statement No. 68 (Accounting and Financial Reporting for Pensions) for fiscal years ending 2015 and later.

The actuarial valuations under Statement No. 25 and Statement No. 67 use different cost methods and assumptions. Statement No. 25 uses the system's cost method and assumptions used for the funding valuation. For TRS, the cost method for the funding valuation is the projected unit cost method and actuarial value of assets. Statement No. 67 uses the entry age normal cost method and assets at fair value. The assumptions are the same for both statements, except the interest rate used for Statement No. 67 is referred to as the discount rate and it may be a blended rate reflecting the interest rate and a municipal bond rate. For June 30, 2014, the discount rate for TRS is the interest rate of 7.5%. Similar to the funding valuation, Statement No. 67 requires the calculation of the funded status by comparing the assets, referred to as Fiduciary Net Position (FNP), to the actuarial accrued liability, referred to as Total Pension Liability (TPL). The difference between the TPL and FNP is the Net Pension Liability (NPL). As of June 30, 2014, TRS has TPL of \$106.7 billion and FNP of \$45.8 billion, for NPL of \$60.9 billion.

The valuation has been prepared in accordance with the parameters of Statement Nos. 25, 27 and 67 of the GASB and all applicable Actuarial Standards of Practice.

Funded Status and Funding Policy

TRS assets as of June 30, 2014 are \$45.8 billion. The actuarial value of assets is \$42.2 billion. Based on the results of this actuarial valuation, the actual amount of assets that Buck Consultants has determined should be in the TRS trust is \$103.7 billion. The funded ratio is 40.6% and the unfunded actuarial accrued liability is \$61.6 billion. The funded status of TRS is universally regarded by its peers as among of the worst in the country. This low funded status is the direct result of a consistent underfunding by the State of Illinois government. Indeed, since inception, the contributions received from the State of Illinois have been insufficient to even pay the interest payment on the unfunded actuarial accrued liability, let alone pay it down. The contributions made by the State are governed by the Illinois Pension Code. The Illinois General Assembly has the authority to amend the Illinois Pension Code such that, with the Governor's approval, it would fund according to current actuarial practice. The derogatory term given to the funding provisions the Illinois General Assembly follows is "Illinois Math." In contrast, the term we give for the prudent funding of TRS that we encourage stakeholders to adopt is "Actuarial Math." We will develop these concepts more, later in this report.

In 2012, the TRS Board of Trustees approved a resolution that not only recognized the threat to its members caused by the systematic underfunding under Illinois Math, but set forth a five-point foundation for any change to the pension code designed to secure the future. The five cornerstones of future security for TRS pensions are:

1. Require the use of standard actuarial practices and formulas instead of alternate calculations and practices required by state law that artificially lower state funding levels.
2. Require a legal guarantee that ensures state government fully funds TRS and the other public pension funds in the future.

3. Amend state law to fix a serious financial inequity in the benefits and funding for Tier II pensions that significantly penalizes those members over time and masks the true underfunded status of Tier I benefits.
4. Ensure that any changes in the pension code made by the General Assembly are uncomplicated and easy to administer fairly to all our members.
5. Require that any changes to the pension code adhere to Article 13, Section 5 of the Illinois Constitution – the pension protection clause.

Key Takeaways

Key takeaways of this valuation are:

- The annual cost of benefits earned by active teachers in TRS is \$2.0 billion, 19.19% of pay in FY 2016. This is the total normal cost.
- Teachers contribute about half of this through member contributions.
- Of the total employer contribution of \$3.9 billion for FY 2016 (\$3.7 billion of which is for the State), \$2.9 billion is for UAAL, and the other \$1.0 billion is for the employers' share of the normal cost and expenses.
- Because the employer contribution for UAAL will be less than the \$4.5 billion interest payment, the UAAL is projected to grow. The UAAL is expected to grow until 2031.
- While the 50 year plan was an improvement over the funding policy prior to 1995, it has increased the UAAL as of June 30, 2014 by over \$16 billion more than if a 30 year amortization was followed.
- New hires after January 1, 2011 will fully fund the cost of their benefit accruals, and excess contributions reduce the State's contributions toward the UAAL.
- Current funding problems are due to historic noncompliance with generally accepted actuarially principles for determining State contributions.
- The funded ratio for TRS is among the worst in the United States. This is due to:
 - A lack of commitment from policy makers to keep TRS well-funded
 - A history of appropriating and contributing amounts far below that which a prudent actuary would recommend
 - A funding policy that systematically underfunds TRS
 - Changes in benefits that were unfunded and granted when the funded ratio of TRS was quite low
- By funding based on Illinois Math instead of Actuarial Math, the State has put the retirement security for the 390,000 current and former educators in the State of Illinois at risk. Meaningful funding reform should be implemented now.

A quote from the 1954 valuation report:

“Although State contributions to the fund were increased substantially over the previous year, the rate of State contributions continues to be inadequate. A general revision of the contribution policy of the State is very desirable.”

Section 1: Actuarial Funding Results

1.1 Summary of Funding Results

The actuarial accrued liability and normal cost are projected to the valuation date based on census information and a measurement date as of one year prior to the valuation date. See Section 1.9 for the development of the current valuation accrued liability and normal cost.

Summary of Funding Valuation Results with Last Year's Results for Comparison	June 30, 2014 Valuation	June 30, 2013 Valuation
Results as of Valuation Date	June 30, 2014	June 30, 2013
Funded Status		
1. Actuarial Accrued Liability	\$ 103,740,377,267	\$ 93,886,988,785
2. Actuarial Value of Assets (AVA)	42,150,765,261	38,155,191,497
3. Unfunded Actuarial Accrued Liability (AVA basis) (1. - 2.)	\$ 61,589,612,006	\$ 55,731,797,288
4. Funded Ratio (AVA basis): (2. / 1.)	40.6%	40.6%
5. Market Value of Assets (MVA)	45,824,382,514	39,858,768,499
6. Unfunded Actuarial Accrued Liability (MVA basis) (1. - 5.)	\$ 57,915,994,753	\$ 54,028,220,286
7. Funded Ratio (MVA basis): (5. / 1.)	44.2%	42.5%
Actuarial Accrued Liability		
1. Active Members	\$ 35,622,053,592	\$ 30,748,827,886
2. Retired Members and Beneficiaries Receiving Benefits	65,614,627,003	61,254,334,295
3. Inactive Members with Deferred Benefits	2,503,696,672	1,883,826,604
4. Total Actuarial Accrued Liability (1. + 2. + 3.)	\$ 103,740,377,267	\$ 93,886,988,785
Present Value of Future Benefits		
1. Active Members	\$ 57,951,385,818	\$ 49,890,474,421
2. Retired Members and Beneficiaries Receiving Benefits	65,614,627,003	61,254,334,295
3. Inactive Members with Deferred Benefits	2,503,696,672	1,883,826,604
4. Present Value of Future Benefits (1. + 2. + 3.)	\$ 126,069,709,493	\$ 113,028,635,320
Results as of Fiscal Year Ending	June 30, 2016	June 30, 2015
Certified State Contribution under Illinois Pension Code (includes amount to Guaranteed Minimum Annuity Reserve)	\$ 3,742,702,194	\$ 3,412,877,953
Normal Cost		
1. Total Normal Cost	\$ 2,010,002,760	\$ 1,859,287,118
2. Administrative Expenses	24,294,066	22,519,334
3. Expected Member Contribution	1,041,807,455	1,045,996,125
4. Total Employer Normal Cost (1. + 2. - 3.)	\$ 992,489,371	\$ 835,810,327

1.2 Derivation of Employer Contributions

Summary of State Contributions under Illinois Pension Code, and Two Higher Thresholds	Fiscal Year 2016
1. Based on Statutory Funding Plan	
Total State Contribution for fiscal year 2016:	
a. Benefit Trust Reserve*:	
i. 36.64% of membership payroll	\$ 3,883,544,356
ii. minus School Districts Contribution (0.58% of membership payroll)	(61,478,785)
iii. minus Federal Funds Contribution	<u>(80,263,377)</u>
State Contribution	\$ 3,741,802,194
b. Guaranteed Minimum Annuity Reserve	<u>900,000</u>
c. Total State Contribution (current law)	\$ 3,742,702,194
2. Based on Contribution to Pay the Employer Normal Cost and 30-Year Open Level Percent of Pay Amortization of the UAAL (formerly called minimum generally accepted actuarial standards)	
Total State Contribution for fiscal year 2016:	
a. Benefit Trust Reserve*:	
i. normal cost plus amortization	\$ 4,519,453,503
ii. minus School Districts Contribution (0.58% of membership payroll)	(61,478,785)
iii. minus Federal Funds Contribution	<u>(93,617,469)</u>
State Contribution	\$ 4,364,357,249
b. Guaranteed Minimum Annuity Reserve	<u>900,000</u>
c. Total State Contribution	\$ 4,365,257,249
3. Based on Contribution to Pay the Employer Normal Cost and Keep the Projected Unfunded Actuarial Accrued Liability from Growing during the Fiscal Year, ignoring any Unrealized Asset Gains or Losses	
Total State Contribution for fiscal year 2016:	
a. Benefit Trust Reserve*:	
i. normal cost plus interest payment	\$ 5,513,348,321
ii. minus School Districts Contribution (0.58% of membership payroll)	(61,478,785)
iii. minus Federal Funds Contribution	<u>(114,489,260)</u>
State Contribution	\$ 5,337,380,276
b. Guaranteed Minimum Annuity Reserve	<u>900,000</u>
c. Total State Contribution	\$ 5,338,280,276
4. Total Normal Cost and Employer Normal Cost Rate for fiscal year 2016	
a. Total Normal Cost Rate (including administrative expenses)	19.19 %
b. Member Rate**	<u>(9.83)</u>
c. Employer Normal Cost Rate	9.36 %

* Expected fiscal year 2016 membership payroll is \$10,599,790,566

** The member contribution rate above is the projected rate for all member contributions, not just the base 9.40% contribution. Additional member contributions are assumed for optional service and Early Retirement Option.

1.2 Derivation of Employer Contributions (continued)

Employer Contribution under Illinois Pension Code	Year Ending June 30, 2016	As Percentage of Payroll (State, Federal, Total)	
1. Assumed Payroll			
a. Total Payroll	\$ 10,599,790,566		
b. Less Federal Funds Payroll	<u>(222,595,602)</u>		
c. State Payroll	\$ 10,377,194,964		
2. Employer contribution that would have been required without funds provided by sec. 7.2(d) of General Obligation Bond Act			
a. Employer's Cost	\$ 4,223,548,251	39.85 %	Total
b. Less School Districts under Sec. 16-158(e)	<u>(61,478,785)</u>	<u>(0.58)</u>	Total
c. State and Federal Funds Contribution	\$ 4,162,069,466	39.27 %	Total
d. Less State Debt Service for TRS portion of all funds provided under sec. 7.2 of General Obligation Bond Act	<u>(340,003,895)</u>	<u>(3.21)</u>	Total
e. Maximum State and Federal Funds Contribution under PA 94-0004	\$ 3,822,065,571	36.06 %	Total
3. Employer contribution recognizing all system assets, before limiting State and Federal Funds contribution			
a. Employer's Cost	\$ 3,948,438,126	37.25 %	Total
b. Less School Districts under Sec. 16-158(e)	<u>(61,478,785)</u>	<u>(0.58)</u>	Total
c. State and Federal Funds Contribution	\$ 3,886,959,341	36.67 %	Total
4. State and Federal Funds Contribution under PA 94-0004 Lesser of amounts under (2) and (3)	\$ 3,822,065,571	36.06 %	Total
5. Employer contribution under PA 94-0004			
a. State Portion of (4), based on State Payroll	\$ 3,741,802,194	36.06 %	State
b. Plus Federal Portion of (4), based on Federal Payroll	<u>80,263,377</u>	<u>36.06</u>	Federal
c. State and Federal Funds Contribution	\$ 3,822,065,571	36.06 %	Total
d. Plus School Districts under Sec. 16-158(e)	<u>61,478,785</u>	<u>0.58</u>	Total
e. Employer's Cost	\$ 3,883,544,356	36.64 %	Total

1.2 Derivation of Employer Contributions (continued)

Notes about employer contribution under PA 94-0004

(1) Assumed Payrolls

The administrative staff of the System estimated Federal Funds payroll for the fiscal year ending June 30, 2016 would be 2.10% of total payroll.

(2) Determination of Maximum State and Federal Funds Contribution under Public Act 94-0004

Under Section 7.2(d) of the General Obligation Bond Act (GOBA), TRS received \$4.33 billion on July 2, 2003. Commencing with the fiscal year 2005, the maximum State contribution under the Act equals the State contribution that would have been required if this \$4.33 billion contribution had not been made, reduced, but not below zero, by the State's debt service on the TRS portion of the full \$10 billion of Pension Obligation Bonds issued under Section 7.2 of the GOBA. Commencing with the fiscal year 2006 the Federal Funds contribute at the same rate as the State, and so a Combined State and Federal Funds contributions must be determined.

(3) Employer Contribution Recognizing \$4.33 Billion Received July 2, 2003

A gross employer contribution is determined that recognizes all system assets, and that meets the cost of maintaining and administering the System on a 90% funded basis by June 30, 2045, with level percentage of payroll contributions after a 15 year phase-in beginning in fiscal year 1996

(4) State and Federal Funds Contribution under Public Act 94-0004

The State and Federal Funds contribution is the lesser of the maximum contribution determined under (2) or the contribution determined under (3).

(5) Employer Contribution under Public Act 94-0004

The contribution determined under (4) is allocated to the State and to the Federal Funds in proportion to their respective payrolls (shown in (1)). The required employer contribution under PA 94-0004 equals the sum of these contributions, plus the expected 0.58% of payroll School District contributions for the 2.2% formula made under the provisions of Sec. 16-158(e).

(6) State Contribution Amount for FY 2006 and FY 2007 under PA 94-0004

PA 94-0004 specified actual contribution amounts for fiscal years 2006 and 2007 made by the State to the Benefit Trust Reserve.

Additional Information:

The following contributions made to the Benefit Trust Reserve are not shown above:

(a) From Members:

1. Sec. 16-128 payments for the purchase of optional service credit.
2. Sec. 16-133.2 ERO lump sum payments upon retirement with ERO benefits
3. Sec. 16-152 career contributions of 9.0% of salary, plus – commencing July 1, 2005 – an additional 0.4% toward the ERO program.

(b) From School Districts:

1. Sec. 16-128(d-10) payments for excessive sick leave service credit
2. Sec. 16-133.2 ERO lump sum payments when members retire with ERO benefits
3. Sec. 16-158(f) lump sum payments at retirement for the cost of pension benefits arising from salary increases over 6% used in the final average salary calculation.

Although these types of contributions are not shown in the exhibits, they are all – with the exception of Sec. 16-128(d-10) payments – taken into account in the actuarial projection of the assets and funded status of the system, and the calculation is performed only *after* the above contributions have been taken into account.

An assumption for optional service purchases has been included in the projections since the June 30, 1994 valuation, and payments under Sec. 16-158(f) have been included since the recertified June 30, 2004 valuation. The career ERO contributions and lump sum payments toward ERO benefits were first recognized in the June 30, 2005 actuarial valuation. Finally, there are no current assumptions for excessive sick leave service credit, and so the actuarial projections do not currently include projected payments under Sec. 16-128(d-10).

1.2 Derivation of Employer Contributions (continued)

Development of State and Federal Funds Statutory Contributions under §16-158 of the Illinois Pension Code	Year Ending June 30, 2016
1. Present value as of June 30, 2015 of future obligations to fund:	
a. 90% of June 30, 2045 Actuarial Accrued Liability	\$ 23,326,300,536
b. Benefit disbursements and administrative expenses from July 1, 2015 through June 30, 2045	110,836,310,619
c. Total present value of future obligations: a.+b.	\$ 134,162,611,155
2. Projected Actuarial Value of Assets as of June 30, 2015:	
a. With POB proceeds	44,381,424,221
b. Without POB proceeds	39,522,137,161
3. Present value as of June 30, 2015 of future member contributions from July 1, 2015 through June 30, 2045	18,522,777,546
4. Present value as of June 30, 2015 of future School District contributions from July 1, 2015 through June 30, 2045 for:	
a. FAS cap Increases under §16-158(f)	\$ 110,541,489
b. Modified Early Retirement Option under §16-133.2	1,406,362,462
c. 2.2% formula under §16-158(e)	1,085,903,564
d. Total present value of future School District contributions: a.+ b.+ c.	\$ 2,602,807,516
5. Present value as of June 30, 2015 of future State and Federal Funds contributions from July 1, 2015 through June 30, 2045 under §16-158:	
a. Based on including POB proceeds: 1.c.-2.a.-3.-4.d.	68,655,601,873
b. Based on not including POB proceeds: 1.c.-2.b.-3.-4.d.	73,514,888,932
6. Present value as of June 30, 2015 of future covered payroll from July 1, 2015 through June 30, 2045	187,224,752,632
7. Determination of preliminary contribution rates for State and Federal Funds for year ending June 30, 2016:	
a. Preliminary rate based on including POB proceeds: 5.a.+6.	36.67%
b. Preliminary rate based on not including POB proceeds: 5.b.+6.	39.27%
8. Determination of contribution for State and Federal Funds for year ending June 30, 2016:	
a. Projected payroll for year ending June 30, 2016:	
i. State projected payroll	\$ 10,377,194,964
ii. Federal Funds projected payroll	222,595,602
iii. Total projected payroll: i.+ ii.	\$ 10,599,790,566
b. State and Federal Funds contribution for year ending June 30, 2016 before maximum: 7.a.x 8.a.iii.	3,886,959,341
c. State and Federal Funds contribution maximum for year ending June 30, 2016:	
i. Gross Maximum State and Federal Funds contribution: 7.b.x 8.a.iii.	\$ 4,162,069,466
ii. State's Debt service	340,003,895
iii. Net Maximum State and Federal Funds contribution: i.- ii.	\$ 3,822,065,571
d. State and Federal Funds contribution after applying maximum for year ending June 30, 2016:	
i. Total contribution as dollar amount: minimum of 8.b and 8.c.iii	\$ 3,822,065,571
ii. Total contribution as rate of payroll: i.÷ 8.a.iii	36.06%
iii. State contribution: 8.a.i. x 8.d.ii	\$ 3,741,802,194
iv. Federal Funds contribution: 8.a.ii. x 8.d.ii	80,263,377

1.2 Derivation of Employer Contributions (continued)

Development of State and Federal Funds Contributions based on contribution to pay the Employer Normal Cost and 30-year open level percent of pay amortization of the UAAL	Year Ending June 30, 2016
1. Projected employer Normal Cost for year ending June 30, 2016:	
a. Projected total Normal Cost	\$ 2,010,002,760
b. Projected administrative expenses	24,294,066
c. Projected member contributions	1,041,807,455
d. Projected employer Normal Cost: a.+b.-c.	992,489,371
2. Projected Unfunded Actuarial Accrued Liability as of June 30, 2015:	
a. Projected Actuarial Accrued Liability	\$ 107,792,526,212
b. Projected Actuarial Value of Assets	44,381,424,221
c. Projected Unfunded Actuarial Accrued Liability: a.-b.	63,411,101,991
3. Projected Unfunded Actuarial Accrued Liability payment for year ending June 30, 2016:	
a. Unfunded Actuarial Accrued Liability amortization factor:	
i. Present value of future salary from July 1, 2015 through June 30, 2045	\$ 187,224,752,632
ii. Projected payroll for year ending June 30, 2016	10,599,790,566
iii. Unfunded Actuarial Accrued Liability amortization factor: i.÷ ii.	17.66
b. Unfunded Actuarial Accrued Liability payment: 2.c.÷ a.iii.	3,590,040,266
4. Total employer contribution for year ending June 30, 2016: 1.d.+3.b.	\$ 4,582,529,636
5. Projected School District contributions for year ending June 30, 2016:	
a. FAS cap Increases under §16-158(f)	\$ 5,027,434
b. Modified Early Retirement Option under §16-133.2	58,048,699
c. 2.2% formula under §16-158(e)	61,478,785
d. Total School District contributions for year ending June 30, 2016: a.+b.+c.	\$ 124,554,918
6. State and Federal contribution for year ending June 30, 2016: 4.- 5.d.	4,457,974,718
7. Portion of total payroll that is Federal Funds for year ending June 30, 2016	2.10%
8. Federal Funds contribution for year ending June 30, 2016: 6.x 7.	\$ 93,617,469
9. State contribution for year ending June 30, 2016: 6.- 8.	4,364,357,249

1.2 Derivation of Employer Contributions (continued)

Development of State and Federal Funds Contribution based on contribution to pay the Employer Normal Cost and keep the projected Unfunded Actuarial Accrued Liability from growing during the fiscal year, ignoring any unrecognized asset gains or losses	Year Ending June 30, 2016
1. Projected employer Normal Cost for year ending June 30, 2016:	
a. Projected total Normal Cost	\$ 2,010,002,760
b. Projected administrative expenses	24,294,066
c. Projected member contributions	1,041,807,455
d. Projected employer Normal Cost: a.+ b.- c.	992,489,371
2. Projected Unfunded Actuarial Accrued Liability as of June 30, 2015	
a. Projected Actuarial Accrued Liability	\$ 107,792,526,212
b. Projected Actuarial Value of Assets	44,381,424,221
c. Projected Unfunded Actuarial Accrued Liability: a.- b.	63,411,101,991
3. Interest payment on Unfunded Actuarial Accrued Liability: 2.c.x 7.50%, adjusted for mid-year payment	4,583,935,084
4. Total employer contribution for year ending June 30, 2016: 1.d.+ 3.	5,576,424,454
5. Projected School District Contributions for year ending June 30, 2016:	
a. FAS cap Increases under §16-158(f)	\$ 5,027,434
b. Modified Early Retirement Option under §16-133.2	58,048,699
c. 2.2% formula under §16-158(e)	61,478,785
d. Total Projected School District contributions for year ending June 30, 2016: a.+ b.+ c.	\$ 124,554,918
6. State and Federal contribution for year ending June 30, 2016: 4.- 5.d.	5,451,869,536
7. Portion of total payroll that is Federal Funds for year ending June 30, 2016	2.10%
8. Federal Funds contribution for year ending June 30, 2016: 6.x 7.	\$ 114,489,260
9. State contribution for year ending June 30, 2016: 6.- 8.	5,337,380,276

1.3 Actuarial (Gain)/Loss

Development of Actuarial (Gain) / Loss	Amount
1. Expected Actuarial Accrued Liability	
a. Actuarial Accrued Liability at June 30, 2013	\$ 93,886,988,785
b. Normal Cost at June 30, 2013	1,821,056,972
c. Interest at 8.00% on a. + b. to June 30, 2014	7,582,400,050
d. Benefit Payments and Administrative Expenses for June 30, 2013, with Interest at 8.00% to June 30, 2014	5,551,445,630
e. Expected Actuarial Accrued Liability before Changes	97,739,000,177
f. Change in Actuarial Accrued Liability at June 30, 2014, due to Change in Actuarial Assumptions	6,403,256,969
g. Change in Actuarial Accrued Liability at June 30, 2014, due to Change in Plan Provisions	0
h. Expected Actuarial Accrued Liability at June 30, 2014: (e. + f. + g.)	104,142,257,146
2. Actuarial Accrued Liability at June 30, 2014	103,740,377,267
3. Expected Actuarial Value of Assets	
a. Actuarial Value of Assets at June 30, 2013	38,155,191,497
b. Interest at 8.00% on a. to June 30, 2014	3,052,415,320
c. Contributions Made for June 30, 2013	4,525,463,343
d. Interest at 8.00% on c. to June 30, 2014	177,536,120
e. Benefit Payments and Administrative Expenses for June 30, 2013, with Interest at 8.00% to June 30, 2014	5,551,445,630
f. Change in Actuarial Value of Assets at June 30, 2014 due to Change in Method	0
g. Expected Actuarial Value of Assets at June 30, 2014: (a.+b.+c.+d.-e+f)	40,359,160,650
4. Actuarial Value of Assets as of June 30, 2014	42,150,765,261
5. Liability (Gain) / Loss: (2. – 1.h.)	(401,879,879)
6. Actuarial Asset (Gain) / Loss: (3.g. - 4.)	(1,791,604,611)
7. Total Actuarial (Gain) / Loss: (5. + 6.)	(2,193,484,491)

1.4 Reconciliation of Unfunded Accrued Liability

Reconciliation of Unfunded Actuarial Accrued Liability	Year Ended June 30	
	2014	2013
Unfunded Actuarial Accrued Liability at beginning of year	\$ 55,731,797,288	\$ 52,079,548,158
Additions (deductions)		
- Employer cost in excess of contributions	\$ 1,648,042,240	\$ 2,125,731,840
- Change in actuarial assumptions and methods	6,403,256,969	-
Net additions (deductions)	\$ 8,051,299,209	\$ 2,125,731,840
Actuarial losses (gains) compared to assumptions		
- Salary increases for continuing active members	\$ (474,190,195)	\$ (412,776,000)
- Asset loss (gain) on actuarial value of assets ¹	(1,791,604,611)	1,557,219,259
- New entrant gain	(315,731)	12,677,870
- Mortality other than expected	(74,308,199)	7,355,374
- Retirements other than expected	119,675,346	65,579,020
- Disabilities other than expected	(3,237,170)	(6,120,537)
- Terminations other than expected	(4,442,984)	22,925,587
- Rehires	37,754,909	-
- Repayments of refunded member contributions ²	-	25,733,387
- Delayed reporting of retirements (effect on assets) ³	-	2,302,527
- Other ⁴	(2,815,856)	251,620,803
Net actuarial loss (gain)	\$ (2,193,484,491)	\$ 1,526,517,290
Unfunded Actuarial Accrued Liability at end of year	\$ 61,589,612,006	\$ 55,731,797,288

¹ Assets are expected to earn 8.0%. This item is the difference between the expected and the actual return on an actuarial basis. For example, in fiscal year 2014, the expected actuarial return of \$3.020 billion was less than the \$4.812 billion actual return on the actuarial value of assets, resulting in an actuarial gain which reduced the unfunded actuarial accrued liability by \$1.792 billion.

² This includes the employer-paid portion of the benefit that was restored when members repaid previously refunded contributions.

³ 191 retirements that occurred prior to the 6/30/2012 valuation were not reported to the actuary until 6/30/2013.

⁴ Other includes items such as:

- (a) Retroactive benefit payments for individuals who delayed applying for retirement.
- (b) Differences between actual cost of benefits earned during the year and projected cost.
- (c) Retirements with reciprocal service credits.
- (d) Delayed reporting of retirements (effect on AAL).

1.5 Employer Cost in Excess of Contributions

Employer Cost in Excess of Contributions	Year Ended June 30	
	2014	2013
1. Employer cost		
a. Employer normal cost	\$ 890,299,621	\$ 817,433,027
b. Interest on Unfunded Actuarial Accrued Liability at mid-year	<u>4,290,235,756</u>	<u>4,166,363,853</u>
c. Total employer cost	\$ 5,180,535,377	\$ 4,983,796,880
2. Employer contributions toward normal cost and interest on Unfunded Actuarial Accrued Liability		
a. State (excluding Minimum Benefit)	\$ 3,437,478,000	\$ 2,702,278,000
b. School Districts for 2.2% and Salary Increase Cap and Modified ERO	82,743,883	86,918,959
c. Federal Funds	<u>74,484,109</u>	<u>68,867,939</u>
d. Total employer credits	\$ 3,594,705,992	\$ 2,858,064,898
3. Employer cost in excess of contributions		
a. Cost minus contribution: (1.c.-2.d.)	\$ 1,585,829,385	\$ 2,125,731,982
b. Interest on a. to year-end	<u>62,212,855</u>	<u>83,393,496</u>
c. Total excess with interest	\$ 1,648,042,240	\$ 2,209,125,478

Employer cost in excess of contributions is used in Section 1.4, the reconciliation of UAAL, to measure the increase in UAAL due to the excess. Employer normal cost (1.a.) for 2014 is the total normal cost based on the June 30, 2013 valuation minus 2014 member contributions.

1.6 10 Year History of Unfunded Actuarial Accrued Liability and Funded Ratio

Based on Actuarial Value of Assets

Year Ended June 30	Actuarial Accrued Liability	Actuarial Value of Assets*	Unfunded Actuarial Accrued Liability	Percentage Change in Unfunded	Funded Ratio
2005	\$ 56,075,029,384	\$ 34,085,218,478	\$ 21,989,810,906	13.33%	60.8%
2006	58,996,912,735	36,584,889,427	22,412,023,308	1.92	62.0
2007	65,648,394,666	41,909,317,753	23,739,076,913	5.92	63.8
2008	68,632,366,686	38,430,723,287	30,201,643,399	27.22	56.0
2009	73,027,198,172	38,026,043,512	35,001,154,660	15.89	52.1
2010	77,293,197,626	37,439,091,771	39,854,105,855	13.87	48.4
2011	81,299,745,296	37,769,752,972	43,529,992,324	9.22	46.5
2012	90,024,945,369	37,945,397,211	52,079,548,158	19.64	42.1
2013	93,886,988,785	38,155,191,497	55,731,797,288	7.01	40.6
2014	103,740,377,267	42,150,765,261	61,589,612,006	10.51	40.6
Average Annual Change				11.12%	

* For 2001 to 2008: Assets are at fair market value.
For 2009 and After: Assets are 5-year smoothed value.

Based on Market Value of Assets

Year Ended June 30	Actuarial Accrued Liability	Market Value of Assets	Unfunded Actuarial Accrued Liability	Percentage Change in Unfunded	Funded Ratio
2005	\$ 56,075,029,384	\$ 34,085,218,478	\$ 21,989,810,906	13.33%	60.8%
2006	58,996,912,735	36,584,889,427	22,412,023,308	1.92	62.0
2007	65,648,394,666	41,909,317,753	23,739,076,913	5.92	63.8
2008	68,632,366,686	38,430,723,287	30,201,643,399	27.22	56.0
2009	73,027,198,172	28,531,312,242	44,495,885,930	47.33	39.1
2010	77,293,197,626	31,323,784,214	45,969,413,412	3.31	40.5
2011	81,299,745,296	37,471,267,194	43,828,478,102	(4.66)	46.1
2012	90,024,945,369	36,516,825,339	53,508,120,030	22.09	40.6
2013	93,886,988,785	39,858,768,499	54,028,220,286	0.97	42.5
2014	103,740,377,267	45,824,382,514	57,915,994,753	7.20	44.2
Average Annual Change				11.13%	

1.7 10 Year History of Solvency Test

Solvency Test							
Year Ended June 30	Actuarial Accrued Liability for:			Actuarial Value of Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Active and Inactive Members Accumulated Contributions	Members Currently Receiving Benefits	Active and Inactive Members Employer Portion				
2005	\$5,925,696,000	\$32,861,473,286	\$17,287,860,098	\$34,085,218,478	100.0%	85.7%	0.0%
2006	6,303,750,000	35,315,528,699	17,377,634,036	36,584,889,427	100.0%	85.7%	0.0%
2007	6,500,318,000	39,785,368,134	19,362,708,532	41,909,317,753	100.0%	89.0%	0.0%
2008	6,931,518,000	41,849,963,527	19,850,885,159	38,430,723,287	100.0%	75.3%	0.0%
2009	7,320,600,000	44,495,917,095	21,210,681,077	38,026,043,512	100.0%	69.0%	0.0%
2010	7,715,984,000	47,475,905,587	22,101,308,039	37,439,091,771	100.0%	62.6%	0.0%
2011	8,048,689,000	50,567,880,069	22,683,176,227	37,769,752,972	100.0%	58.8%	0.0%
2012	8,270,073,000	58,734,635,863	23,020,236,506	37,945,397,211	100.0%	50.5%	0.0%
2013	8,569,939,000	61,254,334,295	24,062,715,490	38,155,191,497	100.0%	48.3%	0.0%
2014	8,890,558,488	65,614,627,003	29,235,191,776	42,150,765,261	100.0%	50.7%	0.0%

(1) members' contributions on deposits in the system.

(2) basic retirement benefit values attributable to present retired members and beneficiaries.

(3) basic retirement benefit values attributable to active and vested terminated members for service already rendered.

1.8 Department of Insurance Information

Actuarial Accrued Liabilities	June 30, 2014	June 30, 2013
Service Retirement	\$ 63,467,624,896	\$ 59,202,200,493
Disability Retirement	392,403,043	383,302,495
Survivor	<u>1,754,599,064</u>	<u>1,668,831,307</u>
	\$ 65,614,627,003	\$ 61,254,334,295
Inactive	2,503,696,672	1,883,826,604
Active	<u>35,622,053,592</u>	<u>30,748,827,886</u>
Total	\$ 103,740,377,267	\$ 93,886,988,785

Headcounts and Salaries for Active Members	June 30, 2014	June 30, 2013
Male		
Count	37,527	37,695
Salaries	\$ 2,465,461,569	\$ 2,564,451,539
Female		
Count	123,463	124,334
Salaries	\$ 6,870,446,936	\$ 7,191,573,357
Total		
Count	160,990	162,029
Salaries	\$ 9,335,908,505	\$ 9,756,024,896

1.9 Actuarial Liabilities and Normal Cost

Actuarial Accrued Liability Developed for June 30, 2014 Valuation	Amount
1. Actuarial Accrued Liability measured as of June 30, 2013	\$ 99,740,924,170
2. Normal Cost measured for fiscal year ended June 30, 2014	1,925,420,029
3. Expected benefit payments for fiscal year ended June 30, 2014	5,280,712,767
4. Interest on 1., 2. and 3. to June 30, 2014	7,354,745,835
5. Actuarial Accrued Liability as of June 30, 2014 (1.+2.-3.+4.)	\$ 103,740,377,267
6. Normal Cost measured for fiscal year ended June 30, 2015	1,964,793,101
7. Expected benefit payments for fiscal year ended June 30, 2015	5,558,411,752
8. Interest on 5., 6. and 7. to June 30, 2015	7,645,767,596
9. Actuarial Accrued Liability as of June 30, 2015 (5.+6.-7.+8.)	\$ 107,792,526,212
Based on member census as of June 30, 2013, assumptions and methods as of June 30, 2014.	

Section 2: Plan Assets

2.1 Summary of Market Value of Assets

MARKET VALUE OF ASSETS				
Asset Category	June 30, 2014 Amount	%	June 30, 2013 Amount	%
1. Cash	\$ 60,859,067	0.11%	\$ 14,659,145	0.03%
2. Receivables and Prepaid Expenses				
a. Member Contributions	\$ 57,529,290	0.11%	\$ 61,631,048	0.15%
b. Employer Contributions	14,367,466	0.03%	13,595,958	0.03%
c. State of Illinois	372,984,303	0.69%	331,413,880	0.78%
d. Investment Income	106,358,243	0.20%	98,149,767	0.23%
e. Pending Investment Sales	4,876,016,116	9.08%	0	0.00%
f. Prepaid Expenses	2,958,078	0.01%	2,111,112	0.01%
g. Total Receivables and Prepaid Expenses	\$ 5,430,213,496	10.12%	\$ 506,901,765	1.20%
3. Investments at Market Value				
a. Fixed Income	\$ 8,413,584,938	15.66%	\$ 6,872,432,511	16.31%
b. Equities	19,151,133,896	35.62%	17,116,072,384	40.61%
c. Real Estate	5,638,680,343	10.49%	4,680,490,237	11.11%
d. Short Term Investments	1,432,002,394	2.67%	1,448,944,819	3.44%
e. Private Equity Investments	5,038,446,122	9.38%	4,687,146,815	11.12%
f. Real Return	3,055,818,516	5.69%	2,661,472,243	6.32%
g. Absolute Return	2,618,256,628	4.87%	2,110,246,003	5.01%
h. Foreign Currency	84,850,132	0.16%	114,363,611	0.27%
i. Derivatives	2,805,648	0.01%	(9,415,670)	-0.02%
j. Total Investments	\$ 45,435,578,617	84.55%	\$ 39,681,752,953	94.17%
4. Invested Securities Lending Collateral				
a. Short-Term Investments	\$ 2,718,126,389	5.06%	\$ 1,836,179,323	4.36%
b. Fixed Income	12,965,947	0.02%	0	0.00%
c. Securities Lending Collateral with the State Treasurer	67,457,000	0.13%	96,375,000	0.23%
d. Total Invested Securities Lending Collateral	\$ 2,798,549,336	5.21%	\$ 1,932,554,323	4.59%
5. Property and Equipment	\$ 4,114,038	0.01%	\$ 4,359,612	0.01%
6. Total Assets (1.+2.g.+3.j.+4.d.+ 5.)	\$ 53,729,314,554	100.00%	\$ 42,140,227,798	100.00%
7. Liabilities				
a. Benefit and Refunds Payable	\$ 8,324,286		\$ 6,052,691	
b. Administrative and Investment Expenses Payable	45,714,593		44,512,535	
c. Payable to Brokers for Unsettled Trades	0		298,339,750	
d. Pending Investment Purchases	5,052,429,964		0	
e. Securities Lending Collateral	2,798,463,197		1,932,554,323	
f. Total Liabilities	\$ 7,904,932,040		\$ 2,281,459,299	
8. Net Assets for Pension Benefits (6. - 7.f.)	\$ 45,824,382,514		\$ 39,858,768,499	

2.2 Changes in Market Value of Assets

CHANGE IN MARKET VALUE OF ASSETS		
Transactions	Year Ended June 30, 2014	Year Ended June 30, 2013
Additions		
1. Contributions		
a. Members	\$ 928,745,853	\$ 921,422,657
b. State of Illinois	3,438,382,892	2,703,312,213
c. Employers		
i. Early Retirement	23,392,170	26,233,220
ii. Federal Funds	74,484,109	68,867,939
iii. 2.2 Benefit Formula	55,181,100	55,182,660
iv. Excess Salary/Sick Leave	5,277,219	6,895,424
d. Total Contributions	\$ 4,525,463,343	\$ 3,781,914,113
2. Investment Income		
From Investment Activities		
a. Net Appreciation (Depreciation)	\$ 5,804,678,228	\$ 3,801,020,789
b. Interest	236,947,917	237,105,503
c. Real Estate Operating Income	311,383,726	224,838,678
d. Dividends	515,858,875	466,665,278
e. Private Equity Income	117,978,674	85,549,726
f. Other Investment Income	81,912,282	13,064,572
g. Investment Activity Income	\$ 7,068,759,702	\$ 4,828,244,546
h. Less Investment Expense	(300,257,270)	(280,372,727)
i. Net Investment Activity Income	\$ 6,768,502,432	\$ 4,547,871,819
From Securities Lending Activities		
j. Securities Lending Income	\$ 7,541,948	\$ 7,506,839
k. Securities Lending Management Fees	(863,807)	(1,254,991)
l. Securities Lending Borrower Rebates	6,851,147	7,644,716
m. Net Securities Lending Activity Income	\$ 13,529,288	\$ 13,896,564
n. Total Investment Income	\$ 6,782,031,720	\$ 4,561,768,383
3. Total Additions (1.d. + 2.n.)	\$ 11,307,495,063	\$ 8,343,682,496
Deductions		
4. Benefits and Expenses		
a. Retirement Benefits	\$ 4,986,155,845	\$ 4,670,384,710
b. Survivor Benefits	208,424,078	192,390,237
c. Disability Benefits	30,626,905	30,309,287
d. Refunds	95,456,151	88,397,549
e. Administrative Expenses	21,218,069	20,257,553
f. Total Deductions	\$ 5,341,881,048	\$ 5,001,739,336
5. Net Increase (Decrease)	\$ 5,965,614,015	\$ 3,341,943,160
6. Net Assets Held in Trust for Pension Benefits		
a. Beginning of Year	\$ 39,858,768,499	\$ 36,516,825,339
b. End of Year	\$ 45,824,382,514	\$ 39,858,768,499

2.3 Actuarial Value of Assets

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS				
as of June 30, 2014				
1. Market Value of Assets as of June 30, 2013				\$ 39,858,768,499
2. Contributions				4,525,463,343
3. Distributions				5,341,881,048
4. Expected return at 8.00% on				
a. Item 1				3,188,701,480
b. Item 2.				181,018,534
c. Item 3.				213,675,242
d. Total (a. + b. - c.)				3,156,044,772
5. Actual return on Market Value for fiscal year				6,782,031,720
6. Gain / (Loss) to be spread for fiscal year (5. - 4.d.)				3,625,986,948
7. Total Market Value of Assets as of June 30, 2014 (1. + 2. -3. + 5.)				\$ 45,824,382,514
8. Return to be spread:				
	Fiscal Year	Gain /	Unrecognized	Unrecognized
	Ending	(Loss)	Percent	Amount
	2014	\$ 3,625,986,948	80%	\$ 2,900,789,558
	2013	1,689,215,365	60%	1,013,529,219
	2012	(2,910,862,678)	40%	(1,164,345,071)
	2011	4,618,217,733	20%	<u>923,643,547</u>
				\$ 3,673,617,253
9. Actuarial Value of Assets at June 30, 2014 (7. – 8.)				\$ 42,150,765,261
10. Recognized rate of return for the year on Actuarial Value of Assets				12.75%
11. Rate of return for the year on Market Value of Assets				17.19%

2.4 10 Year History of System Revenue and Expenses

10-YEAR HISTORY OF SYSTEM REVENUE AND EXPENSES							
Year Ended June 30	Beginning of Year Market Value of Assets	Contributions		Market Value Income	Benefits and Expenses	End of Year Market Value of Assets	Investment Return
		Member	Employer				
2005	\$ 31,544,729,285	\$ 761,790,009	\$ 1,055,562,346	\$ 3,330,039,158	\$ 2,606,902,321	\$ 34,085,218,477	10.8%
2006	34,085,218,477	799,034,336	657,847,863	3,993,289,880	2,950,501,129	36,584,889,427	11.8%
2007	36,584,889,427	826,249,007	853,585,668	6,831,324,439	3,186,730,789	41,909,317,752	19.2%
2008	41,909,317,752	865,400,168	1,171,788,454	(2,014,413,780)	3,501,369,307	38,430,723,287	-5.0%
2009	38,430,723,287	876,182,122	1,603,920,569	(8,654,702,712)	3,724,811,024	28,531,312,242	-22.7%
2010	28,531,312,242	899,401,027	1,006,282,216	3,679,642,960	2,792,854,230	31,323,784,215	12.9%
2011	31,323,784,215	909,577,109	2,326,028,622	7,234,539,490	4,322,662,242	37,471,267,194	23.6%
2012	37,471,267,194	917,661,328	2,561,259,102	224,106,719	4,657,469,004	36,516,825,339	0.8%
2013	36,516,825,339	921,422,657	2,860,491,456	4,561,768,383	5,001,739,336	39,858,768,499	12.7%
2014	39,858,768,499	928,745,853	3,596,717,490	6,782,031,720	5,341,881,048	45,824,382,514	17.2%

Notes: Market Value Income represents the net appreciation/(depreciation) in the market value of assets after adjusting for contributions received and benefits and expenses paid.

2.5 Development of Projected Actuarial Values of Assets

For determining the certified employer contributions in Section 1.2, the Actuarial Value of Assets is projected one year from the valuation date to the beginning of the contribution fiscal year. The projection assumes no investment gains or losses on the Actuarial Value of Assets, meaning the return is the expected amount based on the assumed interest rate and current Actuarial Value of Assets, as illustrated below.

Projected Actuarial Value of Assets as of June 30, 2015 for Section 1.2 - Derivation of Employer Contributions	
1. Actuarial Value of Assets as of June 30, 2014	\$ 42,150,765,260
2. Assumed contributions	4,685,274,437
3. Assumed distributions	5,582,284,975
4. Expected return at 7.50% on 1., 2., and 3.	3,127,669,499
5. Projected Actuarial Value of Assets as of June 30, 2015 (1.+ 2. -3.+ 4.)	\$ 44,381,424,221

For projecting future years' valuation results in Section 4, the Market Value of Assets is projected from the current valuation date. The Actuarial Value of Assets is derived from the projected Market Value of Assets, reflecting gains and losses for the years prior to the projected valuation date. The following illustrates a projection of the assets for a valuation date one year after the current valuation date. Future years are similarly projected.

Projected Actuarial Value of Assets as of June 30, 2015 for Section 4 - Valuation Projections																									
1. Market Value of Assets as of June 30, 2014	\$ 45,824,382,514																								
2. Assumed contributions	4,685,274,437																								
3. Assumed distributions	5,582,284,975																								
4. Expected return at 7.50% on 1., 2., and 3.	3,403,190,793																								
5. Assumed actual return on Market Value for fiscal year (4.)	3,403,190,793																								
6. Gain / (Loss) to be spread for fiscal year (5. - 4.)	0																								
7. Assumed Market Value of Assets as of June 30, 2015 (1.+ 2. -3.+ 5.)	\$ 48,330,562,769																								
8. Return to be spread:																									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Fiscal Year Ending</th> <th style="text-align: center;">Gain / (Loss)</th> <th style="text-align: center;">Unrecognized Percent</th> <th style="text-align: center;">Unrecognized Amount</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2015</td> <td style="text-align: center;">\$ -</td> <td style="text-align: center;">80%</td> <td style="text-align: center;">\$ -</td> </tr> <tr> <td style="text-align: center;">2014</td> <td style="text-align: center;">3,625,986,948</td> <td style="text-align: center;">60%</td> <td style="text-align: center;">2,175,592,169</td> </tr> <tr> <td style="text-align: center;">2013</td> <td style="text-align: center;">1,689,215,365</td> <td style="text-align: center;">40%</td> <td style="text-align: center;">675,686,146</td> </tr> <tr> <td style="text-align: center;">2012</td> <td style="text-align: center;">(2,910,862,678)</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">(582,172,536)</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;">\$ 2,269,105,779</td> </tr> </tbody> </table>	Fiscal Year Ending	Gain / (Loss)	Unrecognized Percent	Unrecognized Amount	2015	\$ -	80%	\$ -	2014	3,625,986,948	60%	2,175,592,169	2013	1,689,215,365	40%	675,686,146	2012	(2,910,862,678)	20%	(582,172,536)				\$ 2,269,105,779
Fiscal Year Ending	Gain / (Loss)	Unrecognized Percent	Unrecognized Amount																						
2015	\$ -	80%	\$ -																						
2014	3,625,986,948	60%	2,175,592,169																						
2013	1,689,215,365	40%	675,686,146																						
2012	(2,910,862,678)	20%	(582,172,536)																						
			\$ 2,269,105,779																						
9. Projected Actuarial Value of Assets at June 30, 2015 (7. – 8.)	\$ 46,061,456,990																								
10. Recognized rate of return for the year on Actuarial Value of Assets	11.53%																								
11. Rate of return for the year on Market Value of Assets	7.50%																								

Section 3: Accounting Information

3.1 Schedule of Funding Progress

GASB 25 Schedule of Funding Progress						
Actuarial Valuation Date	Actuarial Value of Assets (a) *	Actuarial Accrued Liability (AAL) -- Projected Unit Credit (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a)/c)
6/30/2005	\$ 34,085,218,478	\$ 56,075,029,384	\$ 21,989,810,906	60.8%	\$ 7,550,510,000	291.2%
6/30/2006	36,584,889,427	58,996,912,735	22,412,024,000	62.0%	7,765,752,000	288.6%
6/30/2007**	41,909,317,753	65,648,394,666	23,739,077,000	63.8%	8,149,849,000	291.3%
6/30/2008	38,430,723,287	68,632,366,686	30,201,644,000	56.0%	8,521,717,000	354.4%
6/30/2009	38,026,043,512	73,027,198,172	35,001,154,000	52.1%	8,945,021,000	391.3%
6/30/2010	37,439,091,771	77,293,197,626	39,854,105,855	48.4%	9,251,139,345	430.8%
6/30/2011	37,769,752,972	81,299,745,296	43,529,992,324	46.5%	9,205,602,667	472.9%
6/30/2012**	37,945,397,211	90,024,945,369	52,079,548,158	42.1%	9,321,098,000	558.7%
6/30/2013	38,155,191,497	93,886,988,785	55,731,797,288	40.6%	9,394,741,000	593.2%
6/30/2014***	42,150,765,261	103,740,377,267	61,589,612,006	40.6%	9,512,809,680	647.4%

- * For 2005 to 2008: Assets are at fair market value.
 For 2009 and later: Assets are 5-year smoothed value.
 ** Revised economic and noneconomic assumptions due to experience review.
 *** Revised economic assumptions due to change in investment policy.

3.2 Schedule of Employer Contributions

GASB 25 Schedule of Employer Contributions (\$ in thousands)		
Total Employer Contributions		
Year Ended June 30	Annual Required Contribution	Percentage Contributed
2005	\$ 1,683,212	58.7%
2006	1,679,524	35.8%
2007	2,052,396	39.8%
2008	1,949,463	60.0%
2009	2,109,480	75.9%
2010	2,481,914	90.6%
2011	2,743,221	84.7%
2012	3,429,945	74.6%
2013	3,582,033	79.8%
2014	4,091,978	87.8%

3.3 GASB 27 Disclosure

GASB 27 Disclosure (\$ in thousands)		
Development of Net Pension Obligations		6/30/2014
Item		
1.	Net Pension Obligation at 6/30/2013	\$ 15,740,028
2.	Employer Normal Cost	787,230
3.	Amortization of Unfunded AAL *	3,304,748
4.	Annual Required Contribution (ARC) (2. + 3.)	4,091,978
5.	Interest on the NPO at 6/30/2013	1,259,203
6.	Adjustment to the ARC	928,457
7.	Pension Cost (4. + 5. - 6.)	4,422,724
8.	Total Employer Contribution	3,594,706
9.	Percent of Pension Cost Contributed (8. / 7.)	81.3%
10.	Change in NPO (7. - 8.)	828,018
11.	Net Pension Obligation at 6/30/2014 (1. + 10.)	\$ 16,568,046

* The unfunded AAL is amortized as a level percentage of pay over 30 years based on the salary increase assumption and new entrant profile found in Section 6.3 of this report.

The Government Accounting Standards Board (GASB) requires disclosure of the Annual Required Contribution (ARC) under a standard funding methodology. Amounts shown as the ARCs for each year are different from the contributions required by state statute. The information here was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date:	6/30/2014
Actuarial Cost Method:	Projected Unit Credit
Amortization Method (for GASB disclosure):	Level Percent Open
Remaining Amortization Period (for GASB disclosure):	30 years
Payroll Growth Assumption (for GASB disclosure):	Projected using the assumed decrements for the members in the system and the valuation new entrant profile
Asset Valuation Method:	5-Year Smoothing
Investment Rate of Return:	7.50%
Projected Salary Increases:	4.75% – 9.90% composite approximates 5.75%
Includes Inflation at:	3.00%
Post-retirement Increase:	Tier I: 3% compounded Tier II: 1.4% not compounded (lesser of 3% or 1/2 CPI increase, but not less than zero)

3.4 GASB 67 Net Pension Liability

Net Pension Liability (Asset)	June 30, 2014	June 30, 2013
Total Pension Liability	\$ 106,682,654,886	\$ 102,507,911,628
less Plan Fiduciary Net Position	<u>45,824,382,514</u>	<u>39,858,768,499</u>
Net Pension Liability (Asset)	\$ 60,858,272,372	\$ 62,649,143,129
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (Asset)	42.95%	38.88%

Schedule of Changes in Net Pension Liability as of June 30, 2014	
Total Pension Liability	
Service Cost	\$ 1,894,351,211
Interest	7,561,104,814
Changes of Benefit Terms	-
Difference between Expected and Actual Experience	39,950,212
Change of Assumptions	-
Benefit Payments, including Refund of Member Contributions	<u>(5,320,662,979)</u>
Net Change in Total Pension Liability	4,174,743,258
Total Pension Liability - Beginning of Year	\$ 102,507,911,628
Total Pension Liability - End of Year	\$ 106,682,654,886
Plan Fiduciary Net Position	
Employer Contributions	\$ 3,596,717,490
Member Contributions	928,745,853
Net Investment Income	6,782,031,720
Benefit Payments, including Refund of Member Contributions	(5,320,662,979)
Administrative Expenses	(21,218,069)
Other	-
Net Change in Plan Fiduciary Net Position	<u>5,965,614,015</u>
Plan Fiduciary Net Position - Beginning of Year	\$ 39,858,768,499
Plan Fiduciary Net Position - End of Year	\$ 45,824,382,514

Sensitivity of the Net Pension Liability to Changes in the Discount Rate	1% Decrease	Current	1% Increase
	Discount Rate	6.50%	7.50%
Net Pension Liability (Asset)	\$ 75,156,979,079	\$ 60,858,272,372	\$ 49,017,312,800

GASB 67 Assumptions and Methods:

The assumptions under GASB 67 are the same as under GASB 25 except for the development of the discount rate. The discount rate as of June 30, 2014 is a blend of the assumed long-term rate of return rate of 7.50% and a municipal bond rate of 3.66%, which is the S&P Municipal Bond 20 Year High Grade Rate Index as of June 30, 2014. The blended rate is 7.50%, as developed in Section 3.5 of this report. No value is shown for Change of Assumptions because both the Beginning of Year and End of Year Total Pension Liability are based on the actuarial assumptions adopted in the June 30, 2014 valuation.

The actuarial cost method required under GASB 67 is the entry age normal method. For this system, Total Pension Liability is developed and rolled forward to the fiscal year end based on a valuation date and member census one year prior. For example, TPL is projected to June 30, 2014 based on a valuation date of June 30, 2013. Assets, referred to as Fiduciary Net Position, are measured at fair market value.

3.5 Development of GASB 67 Discount Rate

Projection of Fiduciary Net Position (\$ in thousands)							
Year Ended June 30	Beginning Fiduciary Net Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Net Position
2015	\$ 45,824,383	\$ 1,028,579	\$ 3,639,278	\$ 5,540,932	\$ 23,873	\$ 3,403,193	\$ 48,330,628
2016	48,330,628	987,928	3,946,620	5,796,563	24,294	3,591,562	51,035,881
2017	51,035,881	992,244	4,012,387	6,058,630	25,237	3,787,218	53,743,863
2018	53,743,863	996,532	4,133,848	6,329,058	26,217	3,984,856	56,503,824
2019	56,503,824	1,001,605	4,228,124	6,608,215	27,231	4,185,072	59,283,179
2020	59,283,179	1,008,500	4,338,571	6,890,731	28,288	4,387,292	62,098,523
2021	62,098,523	1,016,571	4,503,392	7,179,119	29,392	4,594,068	65,004,043
2022	65,004,043	1,026,396	4,682,103	7,469,022	30,544	4,808,137	68,021,113
2023	68,021,113	1,037,262	4,872,031	7,765,048	31,741	5,030,803	71,164,420
2024	71,164,420	1,046,982	5,054,048	8,072,396	32,976	5,262,170	74,422,248
2025	74,422,248	1,057,556	5,244,494	8,389,755	34,245	5,502,096	77,802,394
2026	77,802,394	1,069,279	5,458,879	8,720,234	35,548	5,751,644	81,326,414
2027	81,326,414	1,077,599	5,676,258	9,066,930	36,881	6,011,358	84,987,818
2028	84,987,818	1,082,397	5,876,630	9,433,019	38,235	6,279,878	88,755,469
2029	88,755,469	1,088,268	6,087,427	9,814,172	39,607	6,556,231	92,633,616
2030	92,633,616	1,091,294	6,291,135	10,204,891	40,986	6,840,142	96,610,310
2031	96,610,310	1,092,355	6,498,427	10,610,837	42,339	7,130,933	100,678,849
2032	100,678,849	1,088,599	6,710,809	11,028,383	43,635	7,428,190	104,834,429
2033	104,834,429	1,074,294	6,921,075	11,464,034	44,857	7,730,825	109,051,732
2034	109,051,732	1,055,279	7,531,748	11,908,815	46,009	8,052,588	113,736,523
2035	113,736,523	1,029,328	7,704,221	12,362,323	47,099	8,392,395	118,453,045
2036	118,453,045	998,464	7,868,003	12,814,422	48,134	8,734,125	123,191,081
2037	123,191,081	966,849	8,027,164	13,262,770	49,117	9,077,411	127,950,618
2038	127,950,618	925,624	8,169,028	13,716,893	50,041	9,421,087	132,699,423
2039	132,699,423	877,581	8,292,710	14,168,406	50,897	9,763,119	137,413,530
2040	137,413,530	822,765	8,400,177	14,624,227	51,693	10,101,528	142,062,080
2041	142,062,080	762,373	8,488,292	15,054,341	52,446	10,435,051	146,641,009
2042	146,641,009	698,995	8,568,247	15,448,457	53,177	10,764,287	151,170,904
2043	151,170,904	635,507	8,645,916	15,789,448	53,911	11,091,744	155,700,712
2044	155,700,712	569,460	8,723,604	16,053,268	54,660	11,421,995	160,307,843
2045	160,307,843	515,034	8,824,964	16,257,308	55,438	11,761,609	165,096,704
2046	165,096,704	470,133	1,367,025	16,380,136	56,268	11,834,781	162,332,239
2047	162,332,239	429,919	1,380,685	16,442,819	57,140	11,624,067	159,266,951
2048	159,266,951	392,638	1,401,411	16,460,812	58,035	11,392,842	155,934,995
2049	155,934,995	355,683	1,427,303	16,444,016	58,951	11,143,125	152,358,139
2050	152,358,139	321,103	1,431,041	16,402,808	59,876	10,875,215	148,522,814
2051	148,522,814	291,507	1,438,698	16,355,978	60,817	10,588,465	144,424,689
2052	144,424,689	263,517	1,448,619	16,296,092	61,767	10,282,638	140,061,604
2053	140,061,604	237,602	1,458,956	16,209,791	62,732	9,958,022	135,443,661
2054	135,443,661	213,231	1,469,061	16,097,262	63,718	9,615,323	130,580,296
2055	130,580,296	193,004	1,487,102	15,968,092	64,712	9,255,296	125,482,894
2056	125,482,894	179,200	1,506,007	15,819,394	65,717	8,878,721	120,161,711
2057	120,161,711	168,093	1,524,683	15,646,626	66,739	8,486,356	114,627,478
2058	114,627,478	160,275	1,542,561	15,441,257	67,781	8,079,328	108,900,604
2059	108,900,604	154,373	1,558,440	15,199,219	68,844	7,659,224	103,004,578
2060	103,004,578	151,338	1,573,275	14,920,096	69,923	7,227,891	96,967,063
2061	96,967,063	151,830	1,585,716	14,601,540	71,023	6,787,466	90,819,512
2062	90,819,512	153,340	1,594,682	14,241,928	72,145	6,340,237	84,593,698
2063	84,593,698	156,112	1,600,706	13,841,979	73,288	5,888,587	78,323,836
2064	78,323,836	159,231	1,603,221	13,400,254	74,451	5,435,078	72,046,661

3.5 Development of GASB 67 Discount Rate (continued)

Projection of Fiduciary Net Position (\$ in thousands)								
Year Ended June 30	Beginning Fiduciary Net Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Net Position	
2065	\$ 72,046,661	\$ 162,752	\$ 1,602,085	\$ 12,916,613	\$ 75,636	\$ 4,982,472	\$	65,801,721
2066	65,801,721	166,647	1,597,222	12,391,399	76,843	4,533,715		59,631,063
2067	59,631,063	170,886	1,588,551	11,825,515	78,072	4,091,924		53,578,837
2068	53,578,837	175,389	1,576,401	11,221,202	79,323	3,660,334		47,690,436
2069	47,690,436	180,398	1,561,151	10,581,491	80,598	3,242,263		42,012,159
2070	42,012,159	185,833	1,542,904	9,910,792	81,896	2,841,013		36,589,221
2071	36,589,221	191,656	1,522,169	9,214,525	83,218	2,459,795		31,465,098
2072	31,465,098	197,907	1,499,324	8,499,076	84,564	2,101,643		26,680,332
2073	26,680,332	204,396	1,475,050	7,772,216	85,935	1,769,323		22,270,950
2074	22,270,950	211,272	1,450,182	7,042,509	87,331	1,465,258		18,267,822
2075	18,267,822	218,316	1,425,282	6,319,148	88,752	1,191,425		14,694,945
2076	14,694,945	225,449	1,401,202	5,611,540	90,200	949,305		11,569,161
2077	11,569,161	232,654	1,378,467	4,929,390	91,674	739,815		8,899,033
2078	8,899,033	239,616	1,357,703	4,281,686	93,175	563,269		6,684,760
2079	6,684,760	246,340	1,339,575	3,676,047	94,703	419,426		4,919,351
2080	4,919,351	239,542	1,296,495	3,078,600	96,260	307,496		3,588,024
2081	3,588,024	232,294	1,263,557	2,579,116	97,844	224,810		2,631,725
2082	2,631,725	224,574	1,236,349	2,133,379	99,458	168,433		2,028,244
2083	2,028,244	216,358	1,214,936	1,741,944	101,101	136,677		1,753,170
2084	1,753,170	207,637	1,199,213	1,403,631	102,774	127,755		1,781,370
2085	1,781,370	198,382	1,188,943	1,115,982	104,478	139,860		2,088,095
2086	2,088,095	188,583	1,183,791	875,503	106,213	171,256		2,650,009
2087	2,650,009	178,222	1,183,322	677,740	107,980	220,344		3,446,177
2088	3,446,177	167,272	1,187,046	517,697	109,779	285,720		4,458,739
2089	4,458,739	155,717	1,194,452	390,105	111,610	366,223		5,673,416
2090	5,673,416	143,520	1,205,043	289,894	113,476	460,952		7,079,561
2091	7,079,561	130,668	1,218,369	212,404	115,375	569,264		8,670,083
2092	8,670,083	117,151	1,234,022	153,412	117,309	690,773		10,441,308
2093	10,441,308	102,932	1,251,636	109,151	119,279	825,328		12,392,774
2094	12,392,774	87,981	1,270,907	76,453	121,286	973,001		14,526,924
2095	14,526,924	72,254	1,291,582	52,661	123,330	1,134,063		16,848,832
2096	16,848,832	55,729	1,313,466	35,610	125,411	1,308,969		19,365,975
2097	19,365,975	38,395	1,336,400	23,611	127,532	1,498,335		22,087,962
2098	22,087,962	20,209	1,360,264	15,304	129,693	1,702,928		25,026,366
2099	25,026,366	1,162	1,384,974	9,661	131,894	1,923,649		28,194,596
2100	28,194,596	0	1,410,475	5,918	134,136	2,162,236		31,627,253
2101	31,627,253	0	1,436,732	3,479	136,418	2,420,674		35,344,762
2102	35,344,762	0	1,463,722	1,936	138,742	2,700,472		39,368,278
2103	39,368,278	0	1,491,439	1,004	141,107	3,003,221		43,720,827
2104	43,720,827	0	1,519,884	475	143,514	3,330,657		48,427,379
2105	48,427,379	0	1,549,064	207	145,965	3,684,663		53,514,934
2106	53,514,934	0	1,578,994	83	148,458	4,067,261		59,012,648
2107	59,012,648	0	1,609,686	28	150,996	4,480,649		64,951,959
2108	64,951,959	0	1,641,157	8	153,579	4,927,181		71,366,710
2109	71,366,710	0	1,673,428	2	156,208	5,409,399		78,293,327
2110	78,293,327	0	1,706,523	0	158,885	5,930,035		85,771,000
2111	85,771,000	0	1,740,465	0	161,611	6,492,032		93,841,886
2112	93,841,886							

3.5 Development of GASB 67 Discount Rate (continued)

Present Values of Projected Benefits (\$ in thousands)								
Year Ended June 30	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Present Value of Benefit Payments			
					Funded Payments at 7.50%	Unfunded Payments at 3.66%	Using Single Discount Rate of 7.50%	
2015	\$ 45,824,383	\$ 5,540,932	\$ 5,540,932	\$ 0	\$ 5,344,149	\$ 0	\$ 5,344,149	
2016	48,330,628	5,796,563	5,796,563	0	5,200,653	0	5,200,653	
2017	51,035,881	6,058,630	6,058,630	0	5,056,538	0	5,056,538	
2018	53,743,863	6,329,058	6,329,058	0	4,913,709	0	4,913,709	
2019	56,503,824	6,608,215	6,608,215	0	4,772,502	0	4,772,502	
2020	59,283,179	6,890,731	6,890,731	0	4,629,336	0	4,629,336	
2021	62,098,523	7,179,119	7,179,119	0	4,486,587	0	4,486,587	
2022	65,004,043	7,469,022	7,469,022	0	4,342,104	0	4,342,104	
2023	68,021,113	7,765,048	7,765,048	0	4,199,255	0	4,199,255	
2024	71,164,420	8,072,396	8,072,396	0	4,060,898	0	4,060,898	
2025	74,422,248	8,389,755	8,389,755	0	3,926,091	0	3,926,091	
2026	77,802,394	8,720,234	8,720,234	0	3,796,040	0	3,796,040	
2027	81,326,414	9,066,930	9,066,930	0	3,671,592	0	3,671,592	
2028	84,987,818	9,433,019	9,433,019	0	3,553,337	0	3,553,337	
2029	88,755,469	9,814,172	9,814,172	0	3,438,990	0	3,438,990	
2030	92,633,616	10,204,891	10,204,891	0	3,326,421	0	3,326,421	
2031	96,610,310	10,610,837	10,610,837	0	3,217,436	0	3,217,436	
2032	100,678,849	11,028,383	11,028,383	0	3,110,740	0	3,110,740	
2033	104,834,429	11,464,034	11,464,034	0	3,008,021	0	3,008,021	
2034	109,051,732	11,908,815	11,908,815	0	2,906,722	0	2,906,722	
2035	113,736,523	12,362,323	12,362,323	0	2,806,898	0	2,806,898	
2036	118,453,045	12,814,422	12,814,422	0	2,706,556	0	2,706,556	
2037	123,191,081	13,262,770	13,262,770	0	2,605,816	0	2,605,816	
2038	127,950,618	13,716,893	13,716,893	0	2,507,014	0	2,507,014	
2039	132,699,423	14,168,406	14,168,406	0	2,408,871	0	2,408,871	
2040	137,413,530	14,624,227	14,624,227	0	2,312,901	0	2,312,901	
2041	142,062,080	15,054,341	15,054,341	0	2,214,815	0	2,214,815	
2042	146,641,009	15,448,457	15,448,457	0	2,114,231	0	2,114,231	
2043	151,170,904	15,789,448	15,789,448	0	2,010,137	0	2,010,137	
2044	155,700,712	16,053,268	16,053,268	0	1,901,139	0	1,901,139	
2045	160,307,843	16,257,308	16,257,308	0	1,790,979	0	1,790,979	
2046	165,096,704	16,380,136	16,380,136	0	1,678,614	0	1,678,614	
2047	162,332,239	16,442,819	16,442,819	0	1,567,477	0	1,567,477	
2048	159,266,951	16,460,812	16,460,812	0	1,459,714	0	1,459,714	
2049	155,934,995	16,444,016	16,444,016	0	1,356,488	0	1,356,488	
2050	152,358,139	16,402,808	16,402,808	0	1,258,687	0	1,258,687	
2051	148,522,814	16,355,978	16,355,978	0	1,167,529	0	1,167,529	
2052	144,424,689	16,296,092	16,296,092	0	1,082,097	0	1,082,097	
2053	140,061,604	16,209,791	16,209,791	0	1,001,271	0	1,001,271	
2054	135,443,661	16,097,262	16,097,262	0	924,949	0	924,949	
2055	130,580,296	15,968,092	15,968,092	0	853,513	0	853,513	
2056	125,482,894	15,819,394	15,819,394	0	786,572	0	786,572	
2057	120,161,711	15,646,626	15,646,626	0	723,704	0	723,704	
2058	114,627,478	15,441,257	15,441,257	0	664,377	0	664,377	
2059	108,900,604	15,199,219	15,199,219	0	608,338	0	608,338	
2060	103,004,578	14,920,096	14,920,096	0	555,503	0	555,503	
2061	96,967,063	14,601,540	14,601,540	0	505,714	0	505,714	
2062	90,819,512	14,241,928	14,241,928	0	458,846	0	458,846	
2063	84,593,698	13,841,979	13,841,979	0	414,847	0	414,847	
2064	78,323,836	13,400,254	13,400,254	0	373,589	0	373,589	

3.5 Development of GASB 67 Discount Rate (continued)

Present Values of Projected Benefits (\$ in thousands)								
Year Ended June 30	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Present Value of Benefit Payments			
					Funded Payments at 7.50%	Unfunded Payments at 3.66%	Using Single Discount Rate of 7.50%	
2065	\$ 72,046,661	\$ 12,916,613	\$ 12,916,613	\$ 0	\$ 334,982	\$ 0	\$ 334,982	
2066	65,801,721	12,391,399	12,391,399	0	298,940	0	298,940	
2067	59,631,063	11,825,515	11,825,515	0	265,385	0	265,385	
2068	53,578,837	11,221,202	11,221,202	0	234,254	0	234,254	
2069	47,690,436	10,581,491	10,581,491	0	205,488	0	205,488	
2070	42,012,159	9,910,792	9,910,792	0	179,035	0	179,035	
2071	36,589,221	9,214,525	9,214,525	0	154,844	0	154,844	
2072	31,465,098	8,499,076	8,499,076	0	132,857	0	132,857	
2073	26,680,332	7,772,216	7,772,216	0	113,019	0	113,019	
2074	22,270,950	7,042,509	7,042,509	0	95,263	0	95,263	
2075	18,267,822	6,319,148	6,319,148	0	79,515	0	79,515	
2076	14,694,945	5,611,540	5,611,540	0	65,684	0	65,684	
2077	11,569,161	4,929,390	4,929,390	0	53,674	0	53,674	
2078	8,899,033	4,281,686	4,281,686	0	43,369	0	43,369	
2079	6,684,760	3,676,047	3,676,047	0	34,637	0	34,637	
2080	4,919,351	3,078,600	3,078,600	0	26,984	0	26,984	
2081	3,588,024	2,579,116	2,579,116	0	21,028	0	21,028	
2082	2,631,725	2,133,379	2,133,379	0	16,181	0	16,181	
2083	2,028,244	1,741,944	1,741,944	0	12,290	0	12,290	
2084	1,753,170	1,403,631	1,403,631	0	9,212	0	9,212	
2085	1,781,370	1,115,982	1,115,982	0	6,813	0	6,813	
2086	2,088,095	875,503	875,503	0	4,972	0	4,972	
2087	2,650,009	677,740	677,740	0	3,581	0	3,581	
2088	3,446,177	517,697	517,697	0	2,544	0	2,544	
2089	4,458,739	390,105	390,105	0	1,783	0	1,783	
2090	5,673,416	289,894	289,894	0	1,233	0	1,233	
2091	7,079,561	212,404	212,404	0	840	0	840	
2092	8,670,083	153,412	153,412	0	565	0	565	
2093	10,441,308	109,151	109,151	0	374	0	374	
2094	12,392,774	76,453	76,453	0	243	0	243	
2095	14,526,924	52,661	52,661	0	156	0	156	
2096	16,848,832	35,610	35,610	0	98	0	98	
2097	19,365,975	23,611	23,611	0	61	0	61	
2098	22,087,962	15,304	15,304	0	36	0	36	
2099	25,026,366	9,661	9,661	0	21	0	21	
2100	28,194,596	5,918	5,918	0	12	0	12	
2101	31,627,253	3,479	3,479	0	7	0	7	
2102	35,344,762	1,936	1,936	0	3	0	3	
2103	39,368,278	1,004	1,004	0	2	0	2	
2104	43,720,827	475	475	0	1	0	1	
2105	48,427,379	207	207	0	0	0	0	
2106	53,514,934	83	83	0	0	0	0	
2107	59,012,648	28	28	0	0	0	0	
2108	64,951,959	8	8	0	0	0	0	
2109	71,366,710	2	2	0	0	0	0	
2110	78,293,327	0	0	0	0	0	0	
2111	85,771,000	0	0	0	0	0	0	
Total					\$ 126,182,293	\$ 0	\$ 126,182,293	

Section 4: Plan Projections

4.1 Projection Assumptions

Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides such projections. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on the June 30, 2014 valuation results and assumptions.

Key Projection Assumptions:

- Valuation interest rate of 7.50% for all years
- 7.50% investment return on market value of assets
- Actuarial assumptions and methods as described in Section 6.3. All future demographic experience is assumed to be exactly realized
- The projected annual contributions under the Illinois Pension Code are contributed each year
- 0% increase in the total active member population as of the June 30, 2013 measurement date
- Future pay increases based on long-term salary increase assumptions

The assets have been split by Tier for illustration purposes. Estimated Tier II assets are based on the June 30, 2013 accumulated member contributions of \$70,783,523.

4.2 Projection of Funded Ratio to 2046

Amounts above the line are based on prior valuations and amounts below the line are based on the current valuation.

Year Ended June 30	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Tier I Funded Ratio	Tier II Funded Ratio	Total Funded Ratio
1995	\$23,980,566,000	\$12,641,865,000	(\$11,338,701,000)			52.7%
1996	26,141,794,000	13,829,711,000	(12,312,083,000)			52.9%
1997	26,951,585,000	17,393,108,000	(9,558,477,000)			64.5%
1998	29,908,241,000	19,965,887,000	(9,942,354,000)			66.8%
1999	33,205,513,000	22,237,709,000	(10,967,804,000)			67.0%
2000	35,886,404,000	24,481,413,000	(11,404,991,000)			68.2%
2001	39,166,697,000	23,315,646,000	(15,851,051,000)			59.5%
2002	43,047,674,000	22,366,285,000	(20,681,389,000)			52.0%
2003	46,933,432,000	23,124,823,000	(23,808,609,000)			49.3%
2004	50,947,451,000	31,544,729,000	(19,402,722,000)			61.9%
2005	56,075,029,000	34,085,218,000	(21,989,811,000)			60.8%
2006	58,996,913,000	36,584,889,000	(22,412,024,000)			62.0%
2007	65,648,395,000	41,909,318,000	(23,739,077,000)			63.8%
2008	68,632,367,000	38,430,723,000	(30,201,644,000)			56.0%
2009	73,027,198,000	38,026,043,512	(35,001,154,488)			52.1%
2010	77,293,198,000	37,439,091,771	(39,854,106,229)			48.4%
2011	81,299,745,000	37,769,752,971	(43,529,992,029)			46.5%
2012	90,024,945,000	37,945,397,211	(52,079,547,789)			42.2%
2013	93,886,988,785	38,155,191,497	(55,731,797,288)			40.6%
2014	103,740,377,267	42,150,765,261	(61,589,612,006)	40.6%	131.0%	40.6%
2015	107,792,526,212	46,061,456,990	(61,731,069,222)	42.6%	136.1%	42.7%
2016	111,925,102,017	49,280,164,500	(62,644,937,518)	43.8%	137.8%	44.0%
2017	116,136,637,435	53,116,430,621	(63,020,206,814)	45.4%	138.7%	45.7%
2018	120,422,182,722	56,699,395,858	(63,722,786,864)	46.6%	139.1%	47.1%
2019	124,775,855,518	59,609,293,858	(65,166,561,660)	47.2%	139.5%	47.8%
2020	129,206,177,987	62,597,356,659	(66,608,821,328)	47.7%	139.7%	48.5%
2021	133,712,395,671	65,720,919,680	(67,991,475,991)	48.2%	139.8%	49.2%
2022	138,297,745,090	69,004,733,751	(69,293,011,339)	48.8%	139.9%	49.9%
2023	142,959,983,118	72,466,688,359	(70,493,294,758)	49.3%	139.9%	50.7%
2024	147,711,556,857	76,121,008,584	(71,590,548,273)	49.9%	140.0%	51.5%
2025	152,533,635,983	79,971,772,522	(72,561,863,460)	50.5%	140.0%	52.4%
2026	157,412,946,582	84,044,356,831	(73,368,589,751)	51.2%	140.0%	53.4%
2027	162,329,943,110	88,339,814,427	(73,990,128,683)	51.9%	140.0%	54.4%
2028	167,256,034,721	92,833,223,663	(74,422,811,058)	52.6%	140.1%	55.5%
2029	172,168,914,519	97,537,847,023	(74,631,067,496)	53.4%	140.1%	56.7%
2030	177,049,940,025	102,449,207,122	(74,600,732,903)	54.2%	140.2%	57.9%
2031	181,872,742,808	107,569,530,132	(74,303,212,676)	55.0%	140.3%	59.2%
2032	186,610,898,500	112,903,955,222	(73,706,943,279)	55.9%	140.4%	60.5%
2033	191,224,279,493	118,435,872,702	(72,788,406,790)	56.8%	140.4%	61.9%
2034	195,682,553,930	124,583,267,165	(71,099,286,766)	58.0%	140.4%	63.7%
2035	199,948,587,551	130,916,292,203	(69,032,295,348)	59.3%	140.4%	65.5%
2036	203,997,468,470	137,433,392,843	(66,564,075,628)	60.6%	140.3%	67.4%
2037	207,807,219,934	144,144,688,165	(63,662,531,769)	62.0%	140.2%	69.4%
2038	211,340,645,456	151,027,407,847	(60,313,237,609)	63.5%	140.1%	71.5%
2039	214,568,761,269	158,071,923,507	(56,496,837,762)	65.0%	140.0%	73.7%
2040	217,443,903,664	165,250,028,669	(52,193,874,995)	66.7%	139.8%	76.0%
2041	219,957,014,100	172,565,974,729	(47,391,039,371)	68.5%	139.7%	78.5%
2042	222,116,510,856	180,050,349,339	(42,066,161,517)	70.5%	139.5%	81.1%
2043	223,954,003,498	187,759,492,597	(36,194,510,900)	72.6%	139.3%	83.8%
2044	225,539,905,974	195,784,766,527	(29,755,139,448)	74.9%	139.2%	86.8%
2045	226,911,906,576	204,220,715,919	(22,691,190,658)	77.6%	139.0%	90.0%
2046	228,151,142,748	205,336,028,474	(22,815,114,275)	76.2%	138.8%	90.0%

4.3 Projection of Contributions to Trust to 2046 (Dollars)

Amounts above the line are based on prior valuations and amounts below the line are based on the current valuation.

Year Ended June 30	Contributions							
	Member	School District			Total	Federal Funds	State	Total
		§ 16-158(f) (Increases)	§ 133.2 (ERO)	§ 16-158(e) (2.2 Formula)				
1995	\$421,726,521	\$0	\$0	\$0	\$0	\$16,500,000	\$262,864,800	\$701,091,321
1996	422,238,847	0	0	0	0	17,000,000	324,276,242	763,515,089
1997	420,762,625	0	0	0	0	17,300,000	377,968,984	816,031,609
1998	440,967,595	0	0	0	0	18,000,000	460,439,267	919,406,862
1999	866,369,000	0	0	16,675,000	16,675,000	18,500,000	567,067,600	1,468,611,600
2000	619,622,000	0	0	34,145,066	34,145,066	18,200,000	634,038,560	1,306,005,626
2001	643,563,000	0	0	36,375,498	36,375,498	20,000,000	719,356,841	1,419,295,339
2002	681,151,770	0	0	38,664,380	38,664,380	23,000,000	810,618,724	1,553,434,874
2003	732,020,451	0	0	12,808,373	12,808,373	25,000,000	926,049,918	1,695,878,742
2004	768,661,300	0	0	42,604,912	42,604,912	29,400,000	1,027,258,994	1,867,925,206
2005	761,790,009	0	0	44,481,074	44,481,074	37,860,000	902,243,532	1,746,374,615
2006	799,034,336	14,974,781	See note (2)	45,656,648	60,631,429	24,070,387	531,827,700	1,415,563,852
2007	826,249,007	19,353,893	160,339,640	46,047,720	225,741,253	41,328,022	735,514,500	1,828,832,782
2008	865,400,168	0	83,137,070	48,102,405	131,239,475	47,829,058	1,039,194,988	2,083,663,689
2009	876,182,122	3,000,000	94,319,430	51,141,422	148,460,852	55,707,046	1,449,888,800	2,530,238,820
2010	909,642,774	3,000,000	89,212,140	53,666,271	145,878,411	75,718,545	2,087,668,469	3,218,908,199
2011	948,286,581	5,000,000	86,576,360	56,171,181	147,747,541	75,405,839	2,357,040,597	3,528,480,558
2012	976,364,866	5,000,000	84,768,690	57,976,440	147,745,130	84,654,093	2,405,172,175	3,613,936,264
2013	967,910,390	5,000,000	70,492,910	57,610,031	133,102,941	83,575,603	2,702,277,829	3,886,866,763
2014	1,004,368,089	5,000,000	61,550,660	57,896,194	124,446,854	97,203,752	3,437,478,152	4,663,496,847
2015	1,045,996,125	5,782,580	58,366,010	60,413,797	124,562,387	102,838,282	3,411,877,643	4,685,274,437
2016	1,041,807,455	5,027,434	58,048,699	61,478,785	124,554,918	80,263,377	3,741,802,194	4,988,427,944
2017	1,083,369,593	5,225,973	63,388,380	63,865,110	132,479,463	81,478,055	3,798,429,331	5,095,756,442
2018	1,125,515,470	5,415,093	66,318,657	66,344,335	138,078,085	83,911,165	3,911,858,608	5,259,363,328
2019	1,168,826,060	5,533,591	68,936,590	68,911,033	143,381,214	85,779,594	3,998,962,980	5,396,949,848
2020	1,214,812,813	5,730,853	73,948,467	71,585,474	151,264,794	87,933,431	4,099,372,803	5,553,383,841
2021	1,263,337,785	5,973,881	79,653,490	74,380,475	160,007,846	91,211,065	4,252,172,988	5,766,729,684
2022	1,315,108,877	6,293,932	89,955,892	77,294,591	173,544,415	94,679,724	4,413,878,586	5,997,211,602
2023	1,369,555,094	6,808,068	102,360,174	80,323,299	189,491,541	98,333,323	4,584,205,876	6,241,585,835
2024	1,425,013,599	7,320,484	113,851,751	83,449,354	204,621,589	101,837,964	4,747,588,897	6,479,062,050
2025	1,483,596,200	8,021,282	125,468,497	86,660,206	220,149,985	105,511,224	4,918,832,784	6,728,090,193
2026	1,542,673,725	8,977,734	138,029,999	89,958,358	236,966,091	109,660,176	5,112,252,979	7,001,552,971
2027	1,601,103,776	10,016,271	147,070,463	93,332,177	250,418,911	113,942,627	5,311,896,735	7,277,362,049
2028	1,658,131,479	10,546,395	149,535,247	96,757,679	256,839,321	118,015,612	5,501,775,440	7,534,761,852
2029	1,719,238,747	11,259,717	156,893,889	100,230,573	268,384,179	122,199,898	5,696,842,862	7,806,665,686
2030	1,780,093,207	11,958,986	168,585,525	103,720,740	284,265,251	126,144,265	5,880,725,521	8,071,228,244
2031	1,841,642,444	12,864,860	184,977,239	107,144,191	304,986,290	130,062,251	6,063,378,266	8,340,069,251
2032	1,901,404,660	13,796,859	197,986,031	110,423,703	322,206,593	134,160,645	6,254,441,523	8,612,213,422
2033	1,953,179,370	14,709,615	204,038,614	113,515,743	332,263,972	138,365,033	6,450,446,065	8,874,254,440
2034	2,003,685,509	15,478,026	207,809,333	116,430,097	339,717,456	151,032,651	7,040,998,332	9,535,433,947
2035	2,049,579,843	15,815,242	206,732,104	119,189,518	341,736,864	154,612,160	7,207,871,671	9,753,800,538
2036	2,092,181,625	16,120,093	205,834,479	121,808,161	343,762,733	158,009,054	7,366,231,599	9,960,185,010
2037	2,136,077,641	16,790,069	208,177,163	124,295,730	349,262,962	161,235,919	7,516,664,961	10,163,241,483
2038	2,172,160,753	17,541,884	202,550,970	126,633,402	346,726,256	164,268,337	7,658,033,424	10,341,188,769
2039	2,204,466,817	17,727,731	190,037,792	128,800,149	336,565,672	167,079,032	7,789,065,352	10,497,176,873
2040	2,231,570,963	17,353,711	171,371,593	130,815,517	319,540,821	169,693,360	7,910,942,812	10,631,747,956
2041	2,253,596,731	16,408,867	140,830,107	132,720,871	289,959,845	172,164,977	8,026,167,269	10,741,888,823
2042	2,273,303,595	15,160,488	105,977,522	134,569,743	255,707,753	174,563,326	8,137,976,020	10,841,550,694
2043	2,292,193,035	13,936,666	68,172,340	136,428,835	218,537,841	176,974,933	8,250,402,823	10,938,108,632
2044	2,308,925,002	12,175,136	28,639,519	138,324,336	179,138,991	179,433,769	8,365,031,419	11,032,529,181
2045	2,335,799,915	10,475,160	8,116,349	140,293,112	158,884,621	181,987,657	8,484,091,243	11,160,763,436
2046	2,369,326,464	9,191,168	1,345,735	142,392,708	152,929,611	25,496,007	1,188,599,578	3,736,351,659

4.3 Projection of Contributions to Trust to 2046 (Dollars) (continued)

Notes:

(1) The administrative staff of the System estimated the Federal Funds contribution for fiscal years prior to 2006. Commencing with the contribution for fiscal 2006, total payroll for the valuation is split into State and Federal Funds payrolls. Federal Funds payrolls for 2006 - 2009 were estimated to be 4.33%, 5.32%, 4.40%, and 3.70%, respectively, of total payrolls for those years. For 2015 the estimate was 3.00% of payroll. For 2016 the estimate is 2.10% of payroll. All payrolls are assumed to increase at the same rate for years subsequent to 2016.

(2) School District contributions under 16-158(e) for years subsequent to 2005 are expected to equal 0.58% of total payroll. Sec. 16-158(f) contributions for 2008 – 2014 were estimated by the administrative staff of the System. Commencing with the contribution for fiscal 2007, Sec. 16-133.2 contributions are estimated in this schedule.

(3) Federal Funds and State contributions for years 2005 through 2014 are equal to each group's respective payroll multiplied by the Combined State and Federal Funds Required Rate. For 2015, the method was changed to assume future Federal Funds contributions would be for normal cost only. SB 220 reinstated the prior method for 2016 and later years without changing the already certified 2015 State contribution.

(4) Schedule excludes State ERI contributions of \$1,000,000 for 2004, and \$1,684,000 for 2005 (under Public Act 92-0056, as amended).

4.4 Projection of Contributions to Trust to 2046 (Percent of Payroll)

Amounts above the line are based on prior valuations and amounts below the line are based on the current valuation.

Year Ended June 30	Assumed Payroll	Contributions							
		Member	School District			Federal Funds	State	Total	
			§ 16-158(f) (Increases)	§ 133.2 (ERO)	§ 16-158(e) (2.2 Formula)				Total
1995	\$4,633,650,000	9.10%	0.00%	0.00%	0.00%	0.00%	0.36%	5.67%	15.13%
1996	4,863,544,432	8.68%	0.00%	0.00%	0.00%	0.00%	0.35%	6.67%	15.70%
1997	4,903,151,093	8.58%	0.00%	0.00%	0.00%	0.00%	0.35%	7.71%	16.64%
1998	5,264,732,966	8.38%	0.00%	0.00%	0.00%	0.00%	0.34%	8.75%	17.46%
1999	5,558,349,721	15.59%	0.00%	0.00%	0.30%	0.30%	0.33%	10.20%	26.42%
2000	5,887,080,405	10.53%	0.00%	0.00%	0.58%	0.58%	0.31%	10.77%	22.18%
2001	6,271,637,672	10.26%	0.00%	0.00%	0.58%	0.58%	0.32%	11.47%	22.63%
2002	6,666,272,399	10.22%	0.00%	0.00%	0.58%	0.58%	0.35%	12.16%	23.30%
2003	7,115,762,553	10.29%	0.00%	0.00%	0.18%	0.18%	0.35%	13.01%	23.83%
2004	7,345,674,585	10.46%	0.00%	0.00%	0.58%	0.58%	0.40%	13.98%	25.43%
2005	7,669,150,690	9.93%	0.00%	0.00%	0.58%	0.58%	0.49%	11.76%	22.77%
2006	7,871,835,902	10.15%	0.19%	0.00%	0.58%	0.77%	0.31%	6.76%	17.98%
2007	7,939,262,146	10.41%	0.24%	2.02%	0.58%	2.84%	0.52%	9.26%	23.04%
2008	8,293,518,065	10.43%	0.00%	1.00%	0.58%	1.58%	0.58%	12.53%	25.12%
2009	8,817,486,572	9.94%	0.03%	1.07%	0.58%	1.68%	0.63%	16.44%	28.70%
2010	9,252,805,323	9.83%	0.03%	0.96%	0.58%	1.58%	0.82%	22.56%	34.79%
2011	9,684,686,327	9.79%	0.05%	0.89%	0.58%	1.53%	0.78%	24.34%	36.43%
2012	9,995,937,994	9.77%	0.05%	0.85%	0.58%	1.48%	0.85%	24.06%	36.15%
2013	9,932,764,038	9.74%	0.05%	0.71%	0.58%	1.34%	0.84%	27.21%	39.13%
2014	9,982,102,443	10.06%	0.05%	0.62%	0.58%	1.25%	0.97%	34.44%	46.72%
2015	10,416,171,908	10.04%	0.06%	0.56%	0.58%	1.20%	0.99%	32.76%	44.98%
2016	10,599,790,566	9.83%	0.05%	0.55%	0.58%	1.18%	0.76%	35.30%	47.06%
2017	11,011,225,847	9.84%	0.05%	0.58%	0.58%	1.20%	0.74%	34.50%	46.28%
2018	11,438,678,400	9.84%	0.05%	0.58%	0.58%	1.21%	0.73%	34.20%	45.98%
2019	11,881,212,547	9.84%	0.05%	0.58%	0.58%	1.21%	0.72%	33.66%	45.42%
2020	12,342,323,115	9.84%	0.05%	0.60%	0.58%	1.23%	0.71%	33.21%	44.99%
2021	12,824,219,869	9.85%	0.05%	0.62%	0.58%	1.25%	0.71%	33.16%	44.97%
2022	13,326,653,681	9.87%	0.05%	0.68%	0.58%	1.30%	0.71%	33.12%	45.00%
2023	13,848,844,679	9.89%	0.05%	0.74%	0.58%	1.37%	0.71%	33.10%	45.07%
2024	14,387,819,679	9.90%	0.05%	0.79%	0.58%	1.42%	0.71%	33.00%	45.03%
2025	14,941,414,825	9.93%	0.05%	0.84%	0.58%	1.47%	0.71%	32.92%	45.03%
2026	15,510,061,766	9.95%	0.06%	0.89%	0.58%	1.53%	0.71%	32.96%	45.14%
2027	16,091,754,632	9.95%	0.06%	0.91%	0.58%	1.56%	0.71%	33.01%	45.22%
2028	16,682,358,486	9.94%	0.06%	0.90%	0.58%	1.54%	0.71%	32.98%	45.17%
2029	17,281,133,272	9.95%	0.07%	0.91%	0.58%	1.55%	0.71%	32.97%	45.17%
2030	17,882,886,153	9.95%	0.07%	0.94%	0.58%	1.59%	0.71%	32.88%	45.13%
2031	18,473,136,381	9.97%	0.07%	1.00%	0.58%	1.65%	0.70%	32.82%	45.15%
2032	19,038,569,437	9.99%	0.07%	1.04%	0.58%	1.69%	0.70%	32.85%	45.24%
2033	19,571,679,827	9.98%	0.08%	1.04%	0.58%	1.70%	0.71%	32.96%	45.34%
2034	20,074,154,669	9.98%	0.08%	1.04%	0.58%	1.69%	0.75%	35.07%	47.50%
2035	20,549,916,920	9.97%	0.08%	1.01%	0.58%	1.66%	0.75%	35.07%	47.46%
2036	21,001,407,111	9.96%	0.08%	0.98%	0.58%	1.64%	0.75%	35.07%	47.43%
2037	21,430,298,362	9.97%	0.08%	0.97%	0.58%	1.63%	0.75%	35.07%	47.42%
2038	21,833,345,239	9.95%	0.08%	0.93%	0.58%	1.59%	0.75%	35.07%	47.36%
2039	22,206,922,263	9.93%	0.08%	0.86%	0.58%	1.52%	0.75%	35.07%	47.27%
2040	22,554,399,548	9.89%	0.08%	0.76%	0.58%	1.42%	0.75%	35.07%	47.14%
2041	22,882,908,867	9.85%	0.07%	0.62%	0.58%	1.27%	0.75%	35.07%	46.94%
2042	23,201,679,877	9.80%	0.07%	0.46%	0.58%	1.10%	0.75%	35.07%	46.73%
2043	23,522,212,979	9.74%	0.06%	0.29%	0.58%	0.93%	0.75%	35.07%	46.50%
2044	23,849,023,477	9.68%	0.05%	0.12%	0.58%	0.75%	0.75%	35.07%	46.26%
2045	24,188,467,574	9.66%	0.04%	0.03%	0.58%	0.66%	0.75%	35.07%	46.14%
2046	24,550,466,928	9.65%	0.04%	0.01%	0.58%	0.62%	0.10%	4.84%	15.22%

Notes:

Refer to the notes in Section 4.3.

4.5 Projection of Employer Normal Cost and Amortization Cost to 2046

Amounts above the line are based on prior valuations and amounts below the line are based on the current valuation.

Year Ended June 30	Amort. Year	Employer Rate			Amount of Employer Contribution		
		Total	Normal Cost	Amort.	Total	Normal Cost	Amort.
1995	0	6.03%	8.12%	-2.09%	\$279,364,800	\$376,122,700	(\$96,757,900)
1996	1	7.02%	8.23%	-1.21%	341,276,242	400,134,055	(58,857,812)
1997	2	8.06%	8.21%	-0.15%	395,268,984	402,771,457	(7,502,473)
1998	3	9.09%	8.38%	0.70%	478,439,267	441,403,004	37,036,263
1999	4	10.83%	7.84%	2.99%	602,242,600	435,910,961	166,331,639
2000	5	11.66%	8.15%	3.51%	686,383,626	479,928,856	206,454,770
2001	6	12.37%	8.65%	3.71%	775,732,339	542,794,806	232,937,533
2002	7	13.09%	8.84%	4.25%	872,283,104	588,971,933	283,311,171
2003	8	13.55%	8.83%	4.71%	963,858,291	628,536,783	335,321,507
2004	9	14.96%	8.15%	6.82%	1,099,263,906	598,462,925	500,800,982
2005	10	12.84%	8.32%	4.52%	984,584,606	637,971,250	346,613,356
2006	11	7.64%	8.20%	-0.56%	601,554,735	645,705,698	(44,150,963)
2007	12	10.36%	8.20%	2.17%	822,890,242	650,835,074	172,055,168
2008	13	13.69%	8.22%	5.47%	1,135,126,451	681,651,502	453,474,949
2009	14	17.66%	9.27%	8.39%	1,556,737,268	817,320,366	739,416,902
2010	15	23.96%	9.15%	14.81%	2,217,053,286	846,936,893	1,370,116,393
2011	16	25.70%	8.77%	16.92%	2,488,617,617	849,716,122	1,638,901,495
2012	17	25.49%	8.43%	17.06%	2,547,802,708	842,532,254	1,705,270,454
2013	18	28.63%	8.23%	20.40%	2,843,463,463	817,433,027	2,026,030,436
2014	19	35.99%	7.89%	28.10%	3,592,578,098	787,230,469	2,805,347,629
2015	20	33.58%	8.02%	25.55%	3,497,365,750	835,810,326	2,661,555,424
2016	21	36.64%	9.36%	27.27%	3,883,544,356	992,489,371	2,891,054,985
2017	22	35.82%	9.08%	26.74%	3,943,772,496	999,430,014	2,944,342,483
2018	23	35.51%	8.80%	26.71%	4,062,114,108	1,006,765,191	3,055,348,916
2019	24	34.96%	8.53%	26.43%	4,153,653,607	1,013,247,432	3,140,406,174
2020	25	34.51%	8.25%	26.26%	4,258,891,708	1,017,865,047	3,241,026,661
2021	26	34.45%	7.96%	26.49%	4,417,764,528	1,020,975,573	3,396,788,955
2022	27	34.41%	7.67%	26.75%	4,585,852,901	1,021,548,169	3,564,304,733
2023	28	34.39%	7.36%	27.03%	4,762,862,498	1,019,797,073	3,743,065,425
2024	29	34.29%	7.06%	27.23%	4,932,876,215	1,015,741,374	3,917,134,842
2025	30	34.21%	6.73%	27.48%	5,111,004,214	1,005,481,045	4,105,523,169
2026	31	34.25%	6.39%	27.86%	5,311,871,513	991,010,844	4,320,860,670
2027	32	34.30%	6.04%	28.26%	5,519,171,539	971,578,466	4,547,593,073
2028	33	34.27%	5.66%	28.60%	5,716,548,731	944,989,625	4,771,559,106
2029	34	34.25%	5.26%	29.00%	5,919,273,333	908,193,791	5,011,079,542
2030	35	34.17%	4.85%	29.32%	6,110,590,527	866,879,949	5,243,710,578
2031	36	34.11%	4.43%	29.67%	6,300,584,708	818,836,257	5,481,748,450
2032	37	34.14%	4.02%	30.12%	6,499,025,872	764,774,692	5,734,251,180
2033	38	34.25%	3.62%	30.63%	6,702,326,841	707,525,929	5,994,800,911
2034	39	36.41%	3.20%	33.21%	7,308,461,080	641,868,405	6,666,592,675
2035	40	36.41%	2.78%	33.62%	7,481,673,349	572,232,334	6,909,441,015
2036	41	36.41%	2.37%	34.03%	7,646,048,813	498,710,015	7,147,338,799
2037	42	36.41%	1.95%	34.45%	7,802,196,609	418,634,173	7,383,562,437
2038	43	36.41%	1.55%	34.86%	7,948,935,163	338,681,952	7,610,253,211
2039	44	36.41%	1.14%	35.26%	8,084,944,534	254,259,291	7,830,685,242
2040	45	36.41%	0.75%	35.66%	8,211,451,689	168,634,248	8,042,817,441
2041	46	36.41%	0.38%	36.03%	8,331,053,118	86,001,732	8,245,051,386
2042	47	36.41%	0.04%	36.36%	8,447,109,089	9,976,442	8,437,132,647
2043	48	36.41%	-0.23%	36.64%	8,563,806,591	(54,434,022)	8,618,240,613
2044	49	36.41%	-0.42%	36.82%	8,682,789,524	(99,489,574)	8,782,279,098
2045	50	36.41%	-0.56%	36.96%	8,806,372,012	(134,635,755)	8,941,007,768
2046	51	5.53%	-0.63%	6.15%	1,356,488,293	(153,857,390)	1,510,345,683

4.5 Projection of Employer Normal Cost and Amortization Cost to 2046 (continued)

Notes:

- (1) Contributions to the Benefit Trust Reserve represent the sum of State and Federal Funds Contributions, as well as School District Contributions for the 2.2% formula (commencing in 1999). Sec. 16-158 requires calculations of State contribution amounts.
- (2) The following employer contributions to the Benefit Trust Reserve were taken into account when determining the above schedule, but are not included in this schedule:
 - (a) State ERI contributions of \$1,000,000 for fiscal year 2004 and \$1,684,000 for fiscal year 2005, which were made under a separate funding plan. (Beginning in fiscal year 2007, the cost of ERI is part of the 50-year funding plan, and included in this schedule);
 - (b) School District Contributions to the Benefit Trust Reserve under Sec. 16-133.2 and 16-158(f), which are shown in Section 4.3; and
 - (c) for FY 1999, additional State funding due to PA 90-0582, and \$9,695,600 in additional State Pensions Fund appropriations. No School District contributions are anticipated under Sec. 16-128(d-10).
- (3) Amortization rate in fiscal years 1995-1997 and 2006 is negative on account of the fact that contributions do not cover normal cost. A negative employer normal cost after 2016 means member contributions are projected to exceed the cost of benefits accruing.
- (4) Employer Rates, Contribution Amounts, and Assumed Payroll shown for fiscal years 1995 - 2015 are based on the June 30, 1993 - June 30, 2013 actuarial valuations and are certified amounts. 2004 was recertified per PA 94-0004 and 2011 is based on the originally certified amounts. Items subsequent to 2015 are based on the June 30, 2014 valuation.
- (5) Modified ERO retirements are recognized commencing with the June 30, 2005 actuarial liability, while FY 2006 and FY 2007 Pipeline ERO retirements are first recognized in the June 30, 2006 and 2007 accrued liabilities.
- (6) For calculation purposes, Employer Rates include 15 decimal places. For ease of presentation, only 2 decimal places are shown.
- (7) Assumptions and methodology:
 - Payroll Growth based on valuation assumptions
 - Valuation Interest Rate = 8.00% prior to 1997, 8.50% for 1997-2011, 8.0% for 2012-2013 and 7.5% after 2013
 - Return on Investment equals Valuation Interest Rate
 - Assets at cost value prior to 1997, market value 1997-2008 and 5-year smoothing actuarial value after 2008

4.6 Projection of Funded Ratio to 2046 by Tier

Amounts above the line are based on prior valuations and amounts below the line are based on the current valuation.

Total Tier I and Tier II

Year Ended June 30	Contributions	Benefits and Expenses	Asset Return	Actuarial Value of Assets *	Market Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio
1995	\$701,091,321	\$1,108,283,000		\$12,641,865,000	\$12,641,865,000	\$23,980,566,000	\$11,338,701,000	52.7%
1996	763,515,089	1,148,919,000	\$1,573,249,911	13,829,711,000	13,829,711,000	26,141,794,000	12,312,083,000	52.9%
1997	816,031,609	1,186,203,042	3,933,568,433	17,393,108,000	17,393,108,000	26,951,585,000	9,558,477,000	64.5%
1998	919,406,862	1,237,762,773	2,891,134,911	19,965,887,000	19,965,887,000	29,908,241,000	9,942,354,000	66.8%
1999	1,468,611,600	1,314,929,000	2,118,139,400	22,237,709,000	22,237,709,000	33,205,513,000	10,967,804,000	67.0%
2000	1,306,005,626	1,437,474,000	2,375,172,374	24,481,413,000	24,481,413,000	35,886,404,000	11,404,991,000	68.2%
2001	1,419,295,339	1,611,050,000	(974,012,339)	23,315,646,000	23,315,646,000	39,166,697,000	15,851,051,000	59.5%
2002	1,553,434,874	1,809,763,000	(693,032,874)	22,366,285,000	22,366,285,000	43,047,674,000	20,681,389,000	52.0%
2003	1,695,878,742	2,051,953,000	1,114,612,258	23,124,823,000	23,124,823,000	46,933,432,000	23,808,609,000	49.3%
2004	1,867,925,206	2,320,690,844	8,872,671,638	31,544,729,000	31,544,729,000	50,947,451,000	19,402,722,000	61.9%
2005	1,746,374,615	2,604,081,011	3,398,195,396	34,085,218,000	34,085,218,000	56,075,029,000	21,989,811,000	60.8%
2006	1,415,563,852	2,948,023,574	4,032,130,722	36,584,889,000	36,584,889,000	58,996,913,000	22,412,024,000	62.0%
2007	1,828,832,782	3,184,574,659	6,680,170,878	41,909,318,000	41,909,318,000	65,648,395,000	23,739,077,000	63.8%
2008	2,083,663,689	3,498,960,895	(2,063,297,794)	38,430,723,000	38,430,723,000	68,632,367,000	30,201,644,000	56.0%
2009	2,530,238,820	3,723,108,308	(8,706,541,270)	38,026,043,512	28,531,312,242	73,027,198,000	35,001,154,488	52.1%
2010	3,218,908,199	4,003,538,821	3,577,102,594	37,439,091,771	31,323,784,214	77,293,198,000	39,854,106,229	48.4%
2011	3,528,480,558	4,329,807,307	6,948,809,729	37,769,752,971	37,471,267,194	81,299,745,000	43,529,992,029	46.5%
2012	3,613,936,264	4,641,424,675	73,046,556	37,945,397,211	36,516,825,339	90,024,945,000	52,079,547,789	42.1%
2013	3,886,866,763	4,969,794,354	4,424,870,751	38,155,191,417	39,858,768,499	93,886,988,785	55,731,797,288	40.6%
2014	4,524,563,343	5,340,981,048	6,782,031,720	42,150,765,261	45,824,382,514	103,740,377,267	61,589,612,006	40.6%
2015	4,685,274,437	5,582,284,975	3,403,190,793	46,061,456,990	48,330,562,769	107,792,526,212	61,731,069,222	42.7%
2016	4,988,427,944	5,843,322,040	3,592,733,679	49,280,164,500	51,068,402,352	111,925,102,017	62,644,937,518	44.0%
2017	5,095,756,442	6,114,459,591	3,791,928,808	53,116,430,621	53,841,628,011	116,136,637,435	63,020,206,814	45.7%
2018	5,259,363,328	6,397,054,175	3,995,458,694	56,699,395,858	56,699,395,858	120,422,182,722	63,722,786,864	47.1%
2019	5,396,949,848	6,690,980,392	4,203,928,544	59,609,293,858	59,609,293,858	124,775,855,518	65,166,561,660	47.8%
2020	5,553,383,841	6,982,428,890	4,417,107,850	62,597,356,659	62,597,356,659	129,206,177,987	66,608,821,328	48.4%
2021	5,766,729,684	7,281,176,651	4,638,009,988	65,720,919,680	65,720,919,680	133,712,395,671	67,991,475,991	49.2%
2022	5,997,211,602	7,582,999,462	4,869,601,931	69,004,733,751	69,004,733,751	138,297,745,090	69,293,011,339	49.9%
2023	6,241,585,835	7,893,056,122	5,113,424,896	72,466,688,359	72,466,688,359	142,959,983,118	70,493,294,758	50.7%
2024	6,479,062,050	8,195,381,474	5,370,639,649	76,121,008,584	76,121,008,584	147,711,556,857	71,590,548,273	51.5%
2025	6,728,090,193	8,519,234,005	5,641,907,751	79,971,772,522	79,971,772,522	152,533,635,983	72,561,863,460	52.4%
2026	7,001,552,971	8,857,262,494	5,928,293,832	84,044,356,831	84,044,356,831	157,412,946,582	73,368,589,751	53.4%
2027	7,277,362,049	9,212,657,631	6,230,753,178	88,339,814,427	88,339,814,427	162,329,943,110	73,990,128,683	54.4%
2028	7,534,761,852	9,589,775,680	6,548,423,063	92,833,223,663	92,833,223,663	167,256,034,721	74,422,811,058	55.5%
2029	7,806,665,686	9,982,924,399	6,880,882,073	97,537,847,023	97,537,847,023	172,168,914,519	74,631,067,496	56.7%
2030	8,071,228,244	10,388,315,886	7,228,447,740	102,449,207,122	102,449,207,122	177,049,940,025	74,600,732,903	57.9%
2031	8,340,069,251	10,810,784,936	7,591,038,696	107,569,530,132	107,569,530,132	181,872,742,808	74,303,212,676	59.1%
2032	8,612,213,422	11,246,709,489	7,968,921,157	112,903,955,222	112,903,955,222	186,610,898,500	73,706,943,279	60.5%
2033	8,874,254,440	11,704,017,487	8,361,680,527	118,435,872,702	118,435,872,702	191,224,279,493	72,788,406,790	61.9%
2034	9,535,433,947	12,171,863,817	8,783,824,333	124,583,267,165	124,583,267,165	195,682,553,930	71,099,286,766	63.7%
2035	9,753,800,538	12,655,699,332	9,234,923,833	130,916,292,203	130,916,292,203	199,948,587,551	69,032,295,348	65.5%
2036	9,960,185,010	13,142,470,577	9,699,386,206	137,433,392,843	137,433,392,843	203,997,468,470	66,564,075,628	67.4%
2037	10,163,241,483	13,629,467,160	10,177,521,000	144,144,688,165	144,144,688,165	207,807,219,934	63,662,531,769	69.4%
2038	10,341,188,769	14,127,340,028	10,668,870,940	151,027,407,847	151,027,407,847	211,340,645,456	60,313,237,609	71.5%
2039	10,497,176,873	14,624,926,202	11,172,264,989	158,071,923,507	158,071,923,507	214,568,761,269	56,496,837,762	73.7%
2040	10,631,747,956	15,139,978,415	11,686,335,621	165,250,028,669	165,250,028,669	217,443,903,664	52,193,874,995	76.0%
2041	10,741,888,823	15,636,159,753	12,210,216,990	172,565,974,729	172,565,974,729	219,957,014,100	47,391,039,371	78.5%
2042	10,841,550,694	16,102,344,424	12,745,168,340	180,050,349,339	180,050,349,339	222,116,510,856	42,066,161,517	81.1%
2043	10,938,108,632	16,523,297,009	13,294,331,636	187,759,492,597	187,759,492,597	223,954,003,498	36,194,510,900	83.8%
2044	11,032,529,181	16,870,300,762	13,863,045,511	195,784,766,527	195,784,766,527	225,539,905,974	29,755,139,448	86.8%
2045	11,160,763,436	17,182,843,530	14,458,029,486	204,220,715,919	204,220,715,919	226,911,906,576	22,691,190,658	90.0%
2046	3,736,351,659	17,424,294,926	14,803,255,821	205,336,028,474	205,336,028,474	228,151,142,748	22,815,114,275	90.0%

Notes:

The projection of assets is based upon the assumption that the Employer maintains the funding policy under Public Act 94-0004 that begins with fiscal year 2006.

Projected amounts may not add to the dollar due to rounding.

* For 2001 to 2008: Assets are at fair market value.

For 2009 and After: Assets are 5-year smoothed value.

4.6 Projection of Funded Ratio to 2046 by Tier (Continued)

Tier I

Year Ended June 30	Contributions	Benefits and Expenses	Asset Return	Actuarial Value of Assets	Market Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio
2014				\$42,060,460,784	\$45,726,207,620	\$103,665,420,423	\$61,604,959,639	40.6%
2015	\$4,584,743,391	\$5,573,339,747	\$3,392,393,208	45,870,314,846	48,130,004,472	107,645,190,986	61,774,876,140	42.6%
2016	4,844,055,496	5,827,200,943	3,572,882,381	48,943,712,447	50,719,741,405	111,672,150,350	62,728,437,903	43.8%
2017	4,907,081,116	6,087,963,594	3,759,697,512	52,580,673,725	53,298,556,439	115,745,045,493	63,164,371,767	45.4%
2018	5,025,464,662	6,360,003,279	3,947,346,535	55,911,364,357	55,911,364,357	119,855,832,935	63,944,468,578	46.6%
2019	5,116,410,603	6,642,281,139	4,136,132,182	58,521,626,003	58,521,626,003	123,996,139,606	65,474,513,603	47.2%
2020	5,224,271,440	6,925,119,969	4,325,340,130	61,146,117,604	61,146,117,604	128,167,122,709	67,021,005,104	47.7%
2021	5,386,679,840	7,214,009,363	4,517,433,963	63,836,222,045	63,836,222,045	132,364,266,028	68,528,043,983	48.2%
2022	5,563,656,354	7,507,743,539	4,714,813,384	66,606,948,243	66,606,948,243	136,583,435,483	69,976,487,239	48.8%
2023	5,751,806,651	7,808,357,175	4,918,400,474	69,468,798,193	69,468,798,193	140,817,442,084	71,348,643,891	49.3%
2024	5,929,907,378	8,097,662,005	5,128,869,066	72,429,912,632	72,429,912,632	145,075,275,612	72,645,362,980	49.9%
2025	6,115,950,358	8,415,857,190	5,345,996,941	75,476,002,741	75,476,002,741	149,322,979,469	73,846,976,728	50.5%
2026	6,322,489,059	8,747,089,822	5,569,777,677	78,621,179,655	78,621,179,655	153,539,714,953	74,918,535,298	51.2%
2027	6,526,977,910	9,094,490,434	5,800,306,754	81,853,973,885	81,853,973,885	157,697,560,584	75,843,586,698	51.9%
2028	6,708,257,703	9,461,225,669	6,035,811,743	85,136,817,663	85,136,817,663	161,760,774,294	76,623,956,631	52.6%
2029	6,899,923,281	9,842,976,394	6,274,896,833	88,468,661,382	88,468,661,382	165,697,045,095	77,228,383,713	53.4%
2030	7,081,360,312	10,234,204,095	6,516,917,962	91,832,735,561	91,832,735,561	169,479,215,706	77,646,480,145	54.2%
2031	7,265,251,493	10,640,598,304	6,760,879,662	95,218,268,412	95,218,268,412	173,070,814,135	77,852,545,723	55.0%
2032	7,451,191,772	11,058,248,431	7,006,105,506	98,617,317,259	98,617,317,259	176,434,459,878	77,817,142,620	55.9%
2033	7,625,604,223	11,493,658,894	7,251,246,744	102,000,509,332	102,000,509,332	179,520,294,077	77,519,784,744	56.8%
2034	8,197,933,523	11,937,937,124	7,509,788,065	105,770,293,796	105,770,293,796	182,284,545,796	76,514,252,001	58.0%
2035	8,326,789,862	12,390,672,574	7,780,376,433	109,486,787,517	109,486,787,517	184,682,892,963	75,196,105,446	59.3%
2036	8,443,616,297	12,841,713,585	8,046,580,415	113,135,270,645	113,135,270,645	186,680,439,830	73,545,169,186	60.6%
2037	8,557,543,244	13,288,770,522	8,307,724,275	116,711,767,641	116,711,767,641	188,243,616,403	71,531,848,762	62.0%
2038	8,646,606,029	13,741,071,311	8,562,340,125	120,179,642,485	120,179,642,485	189,324,548,967	69,144,906,482	63.5%
2039	8,713,773,187	14,190,369,602	8,808,100,821	123,511,146,891	123,511,146,891	189,878,392,645	66,367,245,754	65.0%
2040	8,760,433,255	14,643,337,393	9,042,727,112	126,670,969,865	126,670,969,865	189,853,555,607	63,182,585,742	66.7%
2041	8,784,662,609	15,070,020,330	9,264,621,825	129,650,233,969	129,650,233,969	189,231,304,086	59,581,070,117	68.5%
2042	8,801,509,133	15,460,324,563	9,474,061,969	132,465,480,508	132,465,480,508	188,008,437,312	55,542,956,804	70.5%
2043	8,819,846,726	15,796,608,114	9,673,282,486	135,162,001,605	135,162,001,605	186,208,130,379	51,046,128,773	72.6%
2044	8,841,858,364	16,055,071,845	9,866,654,615	137,815,442,738	137,815,442,738	183,885,596,492	46,070,153,754	74.9%
2045	8,904,466,203	16,250,636,481	10,060,676,820	140,529,949,281	140,529,949,281	181,090,028,239	40,560,078,959	77.6%
2046	1,421,373,620	16,363,355,185	9,979,421,887	135,567,389,603	135,567,389,603	177,899,170,648	42,331,781,045	76.2%

4.6 Projection of Funded Ratio to 2046 by Tier (Continued)

Tier II

Year Ended June 30	Contributions	Benefits and Expenses	Asset Return	Actuarial Value of Assets	Market Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio
2014				\$90,304,477	\$98,174,894	\$74,956,844	(\$15,347,633)	120.5%
2015	\$100,531,046	\$8,945,228	\$10,797,585	191,142,144	200,558,297	147,335,226	(43,806,918)	129.7%
2016	144,372,448	16,121,097	19,851,298	336,452,053	348,660,947	252,951,667	(83,500,386)	133.0%
2017	188,675,326	26,495,997	32,231,296	535,756,896	543,071,572	391,591,942	(144,164,954)	136.8%
2018	233,898,666	37,050,896	48,112,159	788,031,501	788,031,501	566,349,787	(221,681,714)	139.1%
2019	280,539,245	48,699,253	67,796,362	1,087,667,855	1,087,667,855	779,715,912	(307,951,943)	139.5%
2020	329,112,400	57,308,921	91,767,720	1,451,239,054	1,451,239,054	1,039,055,278	(412,183,776)	139.7%
2021	380,049,844	67,167,288	120,576,025	1,884,697,635	1,884,697,635	1,348,129,643	(536,567,992)	139.8%
2022	433,555,248	75,255,923	154,788,547	2,397,785,508	2,397,785,508	1,714,309,607	(683,475,901)	139.9%
2023	489,779,184	84,698,947	195,024,422	2,997,890,166	2,997,890,166	2,142,541,034	(855,349,132)	139.9%
2024	549,154,672	97,719,469	241,770,583	3,691,095,952	3,691,095,952	2,636,281,245	(1,054,814,707)	140.0%
2025	612,139,835	103,376,815	295,910,810	4,495,769,781	4,495,769,781	3,210,656,514	(1,285,113,267)	140.0%
2026	679,063,912	110,172,672	358,516,155	5,423,177,176	5,423,177,176	3,873,231,629	(1,549,945,547)	140.0%
2027	750,384,139	118,167,197	430,446,424	6,485,840,542	6,485,840,542	4,632,382,526	(1,853,458,016)	140.0%
2028	826,504,149	128,550,011	512,611,321	7,696,406,000	7,696,406,000	5,495,260,427	(2,201,145,573)	140.1%
2029	906,742,406	139,948,005	605,985,240	9,069,185,641	9,069,185,641	6,471,869,424	(2,597,316,217)	140.1%
2030	989,867,933	154,111,791	711,529,778	10,616,471,561	10,616,471,561	7,570,724,319	(3,045,747,242)	140.2%
2031	1,074,817,757	170,186,632	830,159,034	12,351,261,721	12,351,261,721	8,801,928,673	(3,549,333,048)	140.3%
2032	1,161,021,649	188,461,058	962,815,651	14,286,637,963	14,286,637,963	10,176,438,622	(4,110,199,341)	140.4%
2033	1,248,650,217	210,358,593	1,110,433,783	16,435,363,370	16,435,363,370	11,703,985,416	(4,731,377,954)	140.4%
2034	1,337,500,424	233,926,693	1,274,036,268	18,812,973,369	18,812,973,369	13,398,008,134	(5,414,965,235)	140.4%
2035	1,427,010,676	265,026,758	1,454,547,400	21,429,504,686	21,429,504,686	15,265,694,588	(6,163,810,098)	140.4%
2036	1,516,568,713	300,756,992	1,652,805,791	24,298,122,198	24,298,122,198	17,317,028,640	(6,981,093,558)	140.3%
2037	1,605,698,239	340,696,638	1,869,796,725	27,432,920,524	27,432,920,524	19,563,603,531	(7,869,316,993)	140.2%
2038	1,694,582,740	386,268,717	2,106,530,815	30,847,765,362	30,847,765,362	22,016,096,489	(8,831,668,873)	140.1%
2039	1,783,403,686	434,556,600	2,364,164,168	34,560,776,616	34,560,776,616	24,690,368,624	(9,870,407,992)	140.0%
2040	1,871,314,701	496,641,022	2,643,608,509	38,579,058,804	38,579,058,804	27,590,348,057	(10,988,710,747)	139.8%
2041	1,957,226,214	566,139,423	2,945,595,165	42,915,740,760	42,915,740,760	30,725,710,014	(12,190,030,746)	139.7%
2042	2,040,041,561	642,019,861	3,271,106,371	47,584,868,831	47,584,868,831	34,108,073,544	(13,476,795,287)	139.5%
2043	2,118,261,906	726,688,895	3,621,049,150	52,597,490,992	52,597,490,992	37,745,873,119	(14,851,617,873)	139.3%
2044	2,190,670,817	815,228,917	3,996,390,896	57,969,323,788	57,969,323,788	41,654,309,482	(16,315,014,306)	139.2%
2045	2,256,297,233	932,207,049	4,397,352,666	63,690,766,638	63,690,766,638	45,821,878,337	(17,868,888,301)	139.0%
2046	2,314,978,039	1,060,939,741	4,823,833,934	69,768,638,871	69,768,638,871	50,251,972,100	(19,516,666,771)	138.8%

Notes:

The projection of assets is based upon the assumption that the Employer maintains the funding policy under Public Act 94-0004 that begins with fiscal year 2006.

Projected amounts may not add to the dollar due to rounding.

4.7 Projection of Actuarial Accrued Liability to 2046 by Member Group

Year Ended June 30	Tier I Current Active	Tier II Current Active	New Entrants	Inactive	Total Actuarial Accrued Liability
2014	\$35,547,096,748	\$74,956,844	\$0	\$68,118,323,675	\$103,740,377,267
2015	39,871,944,734	97,665,652	49,669,574	67,773,246,251	107,792,526,211
2016	44,361,443,402	119,148,796	133,802,871	67,310,706,948	111,925,102,017
2017	49,018,091,961	139,121,554	252,470,388	66,726,953,532	116,136,637,435
2018	53,840,481,516	160,701,492	405,648,295	66,015,351,420	120,422,182,723
2019	58,822,552,045	186,112,653	593,603,259	65,173,587,561	124,775,855,518
2020	63,965,820,525	213,115,794	825,939,484	64,201,302,186	129,206,177,989
2021	69,266,108,029	242,117,394	1,106,012,249	63,098,157,999	133,712,395,671
2022	74,720,024,670	276,865,694	1,437,443,913	61,863,410,812	138,297,745,089
2023	80,321,931,951	318,826,136	1,823,714,898	60,495,510,133	142,959,983,118
2024	86,059,569,289	364,954,752	2,271,326,493	59,015,706,323	147,711,556,857
2025	91,915,742,555	415,481,046	2,795,175,468	57,407,236,914	152,533,635,983
2026	97,866,857,337	470,716,187	3,402,515,442	55,672,857,617	157,412,946,583
2027	103,880,456,080	530,986,098	4,101,396,428	53,817,104,505	162,329,943,111
2028	109,913,945,951	596,705,881	4,898,554,546	51,846,828,344	167,256,034,722
2029	115,927,671,700	668,270,744	5,803,598,680	49,769,373,395	172,168,914,519
2030	121,884,481,361	746,094,949	6,824,629,370	47,594,734,345	177,049,940,025
2031	127,736,817,357	830,680,643	7,971,248,030	45,333,996,779	181,872,742,809
2032	133,433,045,686	922,299,234	9,254,139,388	43,001,414,193	186,610,898,501
2033	138,908,098,023	1,021,199,430	10,682,785,986	40,612,196,054	191,224,279,493
2034	144,098,373,105	1,127,728,379	12,270,279,755	38,186,172,691	195,682,553,930
2035	148,940,018,704	1,242,267,379	14,023,427,209	35,742,874,261	199,948,587,553
2036	153,376,198,536	1,365,196,087	15,951,832,553	33,304,241,295	203,997,468,471
2037	157,349,520,221	1,496,944,166	18,066,659,365	30,894,096,183	207,807,219,935
2038	160,788,364,830	1,637,631,931	20,378,464,558	28,536,184,140	211,340,645,459
2039	163,624,076,558	1,787,556,518	22,902,812,106	26,254,316,088	214,568,761,270
2040	165,784,089,577	1,946,733,292	25,643,614,765	24,069,466,033	217,443,903,667
2041	167,226,947,906	2,115,188,551	28,610,521,463	22,004,356,183	219,957,014,103
2042	167,932,288,841	2,293,092,038	31,814,981,506	20,076,148,474	222,116,510,859
2043	167,910,133,119	2,479,970,073	35,265,903,046	18,297,997,263	223,954,003,501
2044	167,204,812,850	2,675,382,361	38,978,927,121	16,680,783,647	225,539,905,979
2045	165,859,710,244	2,875,955,262	42,945,923,075	15,230,318,000	226,911,906,581
2046	163,948,177,591	3,079,512,310	47,172,459,790	13,950,993,063	228,151,142,754

4.8 Projection of Total Normal Cost to 2046 by Member Group

Year Ended June 30	Tier I Current Active	Tier II Current Active	New Entrants	Total Normal Cost
2014	\$1,885,678,789	\$39,741,240	\$0	\$1,925,420,029
2015	1,891,504,144	23,355,739	49,933,218	1,964,793,101
2016	1,902,733,424	22,556,405	84,712,932	2,010,002,761
2017	1,915,723,041	21,624,158	120,215,358	2,057,562,557
2018	1,928,879,576	20,920,685	156,263,656	2,106,063,917
2019	1,941,430,085	20,763,979	192,648,423	2,154,842,487
2020	1,953,480,448	21,010,546	229,899,023	2,204,390,017
2021	1,964,963,178	21,399,981	268,557,879	2,254,921,038
2022	1,975,367,867	21,973,346	308,771,965	2,306,113,178
2023	1,984,085,336	22,828,365	350,697,769	2,357,611,470
2024	1,989,047,815	23,848,793	394,882,370	2,407,778,978
2025	1,988,415,460	24,978,205	441,438,780	2,454,832,445
2026	1,981,432,826	26,198,140	490,505,498	2,498,136,464
2027	1,965,914,677	27,459,722	542,426,534	2,535,800,933
2028	1,939,517,639	28,823,878	596,544,651	2,564,886,168
2029	1,903,815,107	30,233,029	653,777,111	2,587,825,247
2030	1,860,583,627	31,707,585	713,695,472	2,605,986,684
2031	1,808,531,065	33,238,732	776,369,616	2,618,139,413
2032	1,745,538,201	34,821,338	842,184,587	2,622,544,126
2033	1,668,801,530	36,394,042	910,652,645	2,615,848,217
2034	1,578,896,751	37,962,350	982,686,090	2,599,545,191
2035	1,478,037,273	39,547,672	1,057,128,091	2,574,713,036
2036	1,368,355,457	41,152,398	1,133,249,856	2,542,757,711
2037	1,251,358,263	42,746,972	1,211,489,658	2,505,594,893
2038	1,124,921,075	44,288,726	1,291,592,225	2,460,802,026
2039	987,185,965	45,798,198	1,374,845,051	2,407,829,214
2040	841,555,924	47,229,469	1,459,726,526	2,348,511,919
2041	693,460,196	48,568,947	1,545,123,105	2,287,152,248
2042	549,109,595	49,782,432	1,631,211,192	2,230,103,219
2043	416,489,684	50,791,886	1,716,565,982	2,183,847,552
2044	300,995,776	51,441,637	1,802,337,525	2,154,774,938
2045	207,739,703	51,408,817	1,886,577,166	2,145,725,686
2046	140,716,228	50,645,271	1,967,839,420	2,159,200,919

4.9 Projection of Benefit Payments to 2046 by Member Group

Year Ended June 30	Tier I Current Active	Tier II Current Active	New Entrants	Inactive	Total Benefit Payments	Admin. Expenses	Total Benefits and Expenses
2014	\$127,696,607	\$4,883,198	\$0	\$5,148,132,962	\$5,280,712,767	\$21,218,069	\$5,301,930,836
2015	292,645,609	6,886,298	2,058,930	5,256,820,915	5,558,411,752	23,873,223	5,582,284,975
2016	457,815,050	8,909,928	7,211,169	5,345,091,828	5,819,027,975	24,294,066	5,843,322,041
2017	634,238,411	10,986,472	15,509,525	5,428,488,133	6,089,222,541	25,237,050	6,114,459,591
2018	824,269,785	10,177,724	26,873,172	5,509,516,749	6,370,837,430	26,216,745	6,397,054,175
2019	1,031,517,395	7,888,269	40,810,984	5,583,532,738	6,663,749,386	27,231,006	6,690,980,392
2020	1,248,345,917	8,437,349	48,871,572	5,648,486,210	6,954,141,048	28,287,843	6,982,428,891
2021	1,480,287,549	8,852,593	58,314,695	5,704,329,494	7,251,784,331	29,392,320	7,281,176,651
2022	1,725,769,275	5,983,471	69,272,452	5,751,430,397	7,552,455,595	30,543,868	7,582,999,463
2023	1,986,104,198	2,398,953	82,299,994	5,790,512,280	7,861,315,425	31,740,697	7,893,056,122
2024	2,265,199,679	2,435,149	95,284,320	5,799,486,332	8,162,405,480	32,975,995	8,195,381,475
2025	2,565,084,791	2,660,433	100,716,382	5,816,527,599	8,484,989,205	34,244,800	8,519,234,005
2026	2,889,930,089	2,994,224	107,178,448	5,821,611,629	8,821,714,390	35,548,104	8,857,262,494
2027	3,244,387,503	3,395,918	114,771,279	5,813,221,623	9,175,776,323	36,881,308	9,212,657,631
2028	3,633,536,275	3,864,046	124,685,965	5,789,454,456	9,551,540,742	38,234,936	9,589,775,678
2029	4,053,039,393	4,390,212	135,557,793	5,750,329,710	9,943,317,108	39,607,291	9,982,924,399
2030	4,499,393,956	5,005,031	149,106,760	5,693,823,667	10,347,329,414	40,986,471	10,388,315,885
2031	4,978,651,650	5,644,927	164,541,705	5,619,607,366	10,768,445,648	42,339,288	10,810,784,936
2032	5,489,184,440	6,563,465	181,897,593	5,525,428,765	11,203,074,263	43,635,226	11,246,709,489
2033	6,037,404,990	7,740,786	202,617,807	5,411,396,823	11,659,160,406	44,857,082	11,704,017,488
2034	6,617,771,228	9,105,490	224,821,203	5,274,157,173	12,125,855,094	46,008,723	12,171,863,817
2035	7,228,140,776	10,671,170	254,355,588	5,115,432,658	12,608,600,192	47,099,141	12,655,699,333
2036	7,859,267,815	12,469,357	288,287,635	4,934,311,842	13,094,336,649	48,133,929	13,142,470,578
2037	8,509,086,654	14,449,746	326,246,892	4,730,566,948	13,580,350,240	49,116,921	13,629,467,161
2038	9,185,036,167	16,898,893	369,369,824	4,505,994,464	14,077,299,348	50,040,679	14,127,340,027
2039	9,877,225,130	19,675,603	414,880,997	4,262,247,578	14,574,029,308	50,896,895	14,624,926,203
2040	10,587,862,163	23,027,026	473,613,996	4,003,781,939	15,088,285,124	51,693,291	15,139,978,415
2041	11,287,145,390	26,930,140	539,209,283	3,730,428,726	15,583,713,539	52,446,215	15,636,159,754
2042	11,957,957,940	31,214,388	610,805,473	3,449,189,805	16,049,167,606	53,176,818	16,102,344,424
2043	12,577,528,128	36,434,168	690,254,727	3,165,168,527	16,469,385,550	53,911,460	16,523,297,010
2044	13,118,904,454	42,367,389	772,861,528	2,881,506,902	16,815,640,273	54,660,490	16,870,300,763
2045	13,591,319,047	51,486,673	880,720,376	2,603,878,959	17,127,405,055	55,438,474	17,182,843,529
2046	13,973,015,911	62,346,088	998,593,653	2,334,071,121	17,368,026,773	56,268,155	17,424,294,928

4.10 Projection of Payroll to 2046 by Member Group

Year Ended June 30	Tier I Current Active	Tier II Current Active	New Entrants	Total Payroll
2014	\$9,246,129,509	\$374,817,346	\$214,643,417	\$9,835,590,272
2015	9,164,213,880	369,535,133	672,237,367	10,205,986,380
2016	9,103,703,020	363,029,787	1,133,057,759	10,599,790,566
2017	9,056,041,117	354,695,967	1,600,488,763	11,011,225,847
2018	9,014,858,029	347,700,801	2,076,119,570	11,438,678,400
2019	8,974,070,111	347,191,814	2,559,950,622	11,881,212,547
2020	8,931,831,922	351,095,504	3,059,395,689	12,342,323,115
2021	8,885,879,513	355,560,076	3,582,780,280	12,824,219,869
2022	8,833,853,184	360,686,011	4,132,114,486	13,326,653,681
2023	8,773,412,724	366,308,142	4,709,123,813	13,848,844,679
2024	8,697,097,689	372,460,295	5,318,261,695	14,387,819,679
2025	8,597,996,850	379,632,124	5,963,785,851	14,941,414,825
2026	8,473,130,039	388,015,729	6,648,915,998	15,510,061,766
2027	8,315,753,189	397,440,596	7,378,560,847	16,091,754,632
2028	8,117,548,654	407,874,379	8,156,935,453	16,682,358,486
2029	7,884,838,914	418,946,300	8,977,348,058	17,281,133,272
2030	7,625,187,369	428,489,736	9,829,209,048	17,882,886,153
2031	7,335,128,532	434,012,915	10,703,994,934	18,473,136,381
2032	7,007,257,008	435,844,848	11,595,467,581	19,038,569,437
2033	6,632,299,342	436,007,331	12,503,373,154	19,571,679,827
2034	6,214,046,644	435,580,417	13,424,527,608	20,074,154,669
2035	5,762,241,526	434,587,444	14,353,087,950	20,549,916,920
2036	5,285,669,155	433,095,173	15,282,642,783	21,001,407,111
2037	4,790,938,374	431,068,821	16,208,291,167	21,430,298,362
2038	4,272,902,334	428,238,584	17,132,204,321	21,833,345,239
2039	3,726,055,051	424,611,355	18,056,255,857	22,206,922,263
2040	3,162,537,363	420,228,009	18,971,634,176	22,554,399,548
2041	2,600,771,935	415,001,738	19,867,135,194	22,882,908,867
2042	2,061,352,820	408,796,484	20,731,530,573	23,201,679,877
2043	1,571,312,396	401,095,656	21,549,804,927	23,522,212,979
2044	1,147,771,484	390,964,195	22,310,287,798	23,849,023,477
2045	807,149,098	377,131,186	23,004,187,290	24,188,467,574
2046	561,057,194	359,832,560	23,629,577,174	24,550,466,928

4.11 Projection of Member Count to 2046 by Member Group

Year Ended June 30	Tier I			Tier II			Total		
	Number Active	Number Retired and Inactive	Sub-Total	Number Active	Number Retired and Inactive	Sub-Total	Number Active	Number Retired and Inactive	Grand Total
2014	144,987	237,101	382,088	16,003	0	16,003	160,990	237,101	398,091
2015	134,748	147,553	282,301	26,245	4	26,249	160,993	147,557	308,550
2016	125,870	165,370	291,240	35,120	15	35,135	160,990	165,385	326,375
2017	117,926	182,119	300,045	43,064	35	43,099	160,990	182,154	343,144
2018	110,765	197,731	308,496	50,226	57	50,283	160,991	197,788	358,779
2019	104,209	212,441	316,650	56,779	99	56,878	160,988	212,540	373,528
2020	98,150	225,678	323,828	62,840	158	62,998	160,990	225,836	386,826
2021	92,489	238,102	330,591	68,500	231	68,731	160,989	238,333	399,322
2022	87,182	249,515	336,697	73,808	327	74,135	160,990	249,842	410,832
2023	82,169	260,095	342,264	78,821	616	79,437	160,990	260,711	421,701
2024	77,396	270,065	347,461	83,591	1,106	84,697	160,987	271,171	432,158
2025	72,793	279,333	352,126	88,196	1,590	89,786	160,989	280,923	441,912
2026	68,325	288,153	356,478	92,666	2,636	95,302	160,991	290,789	451,780
2027	63,958	296,524	360,482	97,033	4,141	101,174	160,991	300,665	461,656
2028	59,638	304,493	364,131	101,352	6,070	107,422	160,990	310,563	471,553
2029	55,338	312,138	367,476	105,654	8,497	114,151	160,992	320,635	481,627
2030	51,174	319,136	370,310	109,817	11,312	121,129	160,991	330,448	491,439
2031	47,113	325,487	372,600	113,877	14,477	128,354	160,990	339,964	500,954
2032	43,171	331,207	374,378	117,820	17,960	135,780	160,991	349,167	510,158
2033	39,267	336,504	375,771	121,724	21,756	143,480	160,991	358,260	519,251
2034	35,407	341,384	376,791	125,584	25,918	151,502	160,991	367,302	528,293
2035	31,642	345,464	377,106	129,350	30,315	159,665	160,992	375,779	536,771
2036	28,009	348,621	376,630	132,982	35,029	168,011	160,991	383,650	544,641
2037	24,544	350,857	375,401	136,446	40,038	176,484	160,990	390,895	551,885
2038	21,253	352,060	373,313	139,737	45,330	185,067	160,990	397,390	558,380
2039	18,067	352,388	370,455	142,922	50,924	193,846	160,989	403,312	564,301
2040	15,001	351,927	366,928	145,990	56,725	202,715	160,991	408,652	569,643
2041	12,127	350,409	362,536	148,863	62,825	211,688	160,990	413,234	574,224
2042	9,494	347,684	357,178	151,495	69,209	220,704	160,989	416,893	577,882
2043	7,179	343,632	350,811	153,811	75,870	229,681	160,990	419,502	580,492
2044	5,248	338,081	343,329	155,742	82,881	238,623	160,990	420,962	581,952
2045	3,685	331,092	334,777	157,303	90,119	247,422	160,988	421,211	582,199
2046	2,550	322,573	325,123	158,441	97,595	256,036	160,991	420,168	581,159

4.12 Projection of Debt Service to 2033

Fiscal Year	Debt Service
2014	\$ 344,738,295
2015	342,400,685
2016	340,003,895
2017	352,224,565
2018	363,801,653
2019	374,735,158
2020	399,198,690
2021	422,197,518
2022	443,731,640
2023	463,801,058
2024	497,200,770
2025	528,003,960
2026	541,748,515
2027	553,983,980
2028	579,505,355
2029	602,763,095
2030	638,552,200
2031	671,323,125
2032	686,280,870
2033	684,179,980
2034	-
2035	-
2036	-
2037	-

Section 5: Member Data

5.1 Summary of Members Included

**ACTIVE AND INACTIVE MEMBERSHIP OF SYSTEM
AS OF JUNE 30, 2013
USED IN JUNE 30, 2014 VALUATION**

Group	Number	Annual Salaries
Active members:		
Reported full-time and regular part-time		
Tier 1	125,666	\$8,875,043,445
Tier 2	7,220	318,043,046
Total	132,886	\$9,193,086,492
Reported substitutes and hourly paid		
Tier 1	19,321	\$100,856,231
Tier 2	8,783	41,965,783
Total	28,104	\$142,822,013
Total active members		
Tier 1	144,987	\$8,975,899,676
Tier 2	16,003	360,008,829
Total	160,990	\$9,335,908,505
Inactives:	127,653	N/A

**ANNUITANTS, DISABILITY BENEFIT RECIPIENTS,
AND SURVIVOR ANNUITANTS OF THE SYSTEM
AS OF JUNE 30, 2013
USED IN JUNE 30, 2014 VALUATION
(Excluding Guaranteed Minimum Annuities)**

Class	Number	Annual Annuities at June 30
Retired on account of service:		
Regular	62,688	\$ 2,858,971,486
ERI	10,115	547,663,895
ERO	25,744	1,569,372,605
Total	98,547	\$ 4,976,007,986
Disability benefit recipients:		
Retirement allowance	784	\$ 20,859,484
Occupational	4	181,997
Temporary	346	8,341,643
Total	1,134	\$ 29,383,124
Survivor benefit recipients:		
Children	72	\$ 736,974
Survivor annuitants	9,505	191,848,185
Reversionary annuitants	190	6,484,003
Total	9,767	\$ 199,069,162
Grand Total	109,448	\$ 5,204,460,272

5.2 Reconciliation of Member Counts

Item	Active Members	Inactive Members
Number as of June 30, 2012 used as proxy for June 30, 2013 Valuation	162,029	125,526
New Participants	10,921	
Terminations	(11,066)	11,066
Retirements	(4,309)	(837)
Disabilities	(157)	
Return to Work	4,638	(4,598)
Deceased	(1)	(5)
Refund	(60)	(3,539)
Lump Sum	(1,005)	0
Data Corrections	<u>0</u>	<u>40</u>
Number as of June 30, 2013 used as proxy for June 30, 2014 Valuation	160,990	127,653

Item	Retirees & Beneficiaries
Number as of June 30, 2012 used as proxy for June 30, 2013 Valuation	106,102
New Retirees & Beneficiaries	5,152
Disabilities	157
Return to Work	(40)
Deceased w/o surv	(2,013)
Expiration or Transfer	0
Suspended	(2)
Data Corrections	<u>92</u>
Number as of June 30, 2013 used as proxy for June 30, 2014 Valuation	109,448

* The Member counts shown represent the data one year prior to the Valuation. For example, the Active Membership data used for the June 30, 2014 valuation is the snapshot as of June 30, 2013

5.3 Age and Service Distribution of Active Members

Age	Years of Service									Total	Substitutes	Grand Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+				
Under 25	2,169										2,169	2,334	4,503
	\$ 42,597										\$ 42,597	\$ 5,892	\$ 23,572
25-29	11,612	4,724									16,336	4,599	20,935
	\$ 48,177	\$ 57,113									\$ 50,761	\$ 5,925	\$ 40,911
30-34	4,686	14,646	3,670								23,002	2,756	25,758
	\$ 51,286	\$ 61,499	\$ 70,692								\$ 60,885	\$ 5,164	\$ 54,923
35-39	2,101	5,588	10,988	2,097							20,774	2,384	23,158
	\$ 52,957	\$ 63,637	\$ 74,273	\$ 82,089							\$ 70,045	\$ 5,249	\$ 63,375
40-44	1,602	3,443	4,987	7,661	1,539						19,232	3,603	22,835
	\$ 52,578	\$ 63,876	\$ 75,363	\$ 84,997	\$ 89,333						\$ 76,364	\$ 5,090	\$ 65,118
45-49	1,160	2,527	2,927	3,420	4,722	1,085					15,841	3,325	19,166
	\$ 52,678	\$ 61,665	\$ 74,396	\$ 85,620	\$ 92,057	\$ 95,909					\$ 79,936	\$ 5,342	\$ 66,995
50-54	775	2,034	2,526	2,386	2,402	3,798	961				14,882	3,026	17,908
	\$ 52,595	\$ 62,386	\$ 72,252	\$ 80,803	\$ 90,049	\$ 96,325	\$ 99,317				\$ 82,015	\$ 5,328	\$ 69,057
55-59	394	1,225	2,143	2,253	2,041	1,908	2,568	307			12,839	2,654	15,493
	\$ 55,920	\$ 64,506	\$ 73,265	\$ 81,650	\$ 88,548	\$ 95,704	\$ 101,720	\$ 103,760			\$ 85,553	\$ 5,526	\$ 71,844
60-64	185	542	1,041	1,338	1,326	940	633	398	62		6,465	2,039	8,504
	\$ 55,282	\$ 66,677	\$ 73,530	\$ 81,848	\$ 91,548	\$ 96,508	\$ 104,167	\$ 107,452	\$ 105,483		\$ 86,586	\$ 5,311	\$ 67,099
Over 64	42	141	227	254	261	185	108	54	74		1,346	1,384	2,730
	\$ 61,906	\$ 72,245	\$ 81,511	\$ 84,897	\$ 90,033	\$ 98,113	\$ 100,587	\$ 106,062	\$ 112,865		\$ 88,741	\$ 4,900	\$ 46,237
Total	24,726	34,870	28,509	19,409	12,291	7,916	4,270	759	136		132,886	28,104	160,990
	\$ 49,518	\$ 61,775	\$ 73,791	\$ 83,670	\$ 90,643	\$ 96,182	\$ 101,513	\$ 105,860	\$ 109,500		\$ 71,567	\$ 5,417	\$ 60,020

5.4 10 Year History of Active Membership Data

Full-Time and Regular Part-Time

Census Date June 30	Number of Active Members	Percentage Change in Membership	Average Annual Salary	Percentage Change in Salary
2004	127,405	(0.57)%	\$ 56,871	2.53%
2005	126,798	(0.48)	58,715	3.24
2006	130,867	3.21	59,948	2.10
2007	132,287	1.09	61,713	2.94
2008	136,328	3.05	63,986	3.68
2009	138,180	1.36	66,199	3.46
2010	137,711	(0.34)	68,352	3.25
2011	133,752	(2.87)	69,969	2.37
2012	132,956	(0.60)	72,218	3.21
2013	132,886	(0.05)	69,180	(4.21)

Substitutes, Part-Time and Hourly-Paid

Census Date June 30	Number of Active Members	Percentage Change in Membership	Average Annual Salary	Percentage Change in Salary
2004	30,238	2.00%	\$ 4,294	(6.39)%
2005	29,148	(3.60)	4,636	7.96
2006	28,355	(2.72)	4,784	3.19
2007	28,514	0.56	4,890	2.22
2008	29,146	2.22	5,128	4.87
2009	30,993	6.34	4,973	(3.02)
2010	32,479	4.79	4,971	(0.04)
2011	32,120	(1.11)	4,772	(4.00)
2012	29,073	(9.49)	5,305	11.17
2013	28,104	(3.33)	5,082	(4.20)

5.5 10 Year History of Annuitant and Survivor Annuitant Membership

Census Date June 30	Number on Roll	Percentage Change in Membership
2005	82,491	6.90%
2006	85,153	3.23
2007	89,269	4.83
2008	91,497	2.50
2009	94,419	3.19
2010	97,796	3.58
2011	101,352	3.64
2012	105,499	4.09
2013	106,102	0.57
2014	109,448	3.15

5.6 Benefit Stream for Guaranteed Minimum Annuity Reserve

Benefit Payment Stream	
Fiscal Year	Guaranteed Minimum
2015	\$ 786,794
2016	687,742
2017	598,714
2018	519,273
2019	448,827
2020	386,697
2021	332,252
2022	284,827
2023	243,666
2024	208,037
2025	177,275
2026	150,746
2027	127,899
2028	108,260
2029	91,420
2030	77,008
2031	64,703
2032	54,212
2033	45,277
2034	37,668
2035	31,201
2036	25,721
2037	21,086
2038	17,188

Benefit Payment Stream	
Fiscal Year	Guaranteed Minimum
2039	\$ 13,925
2040	11,205
2041	8,957
2042	7,103
2043	5,581
2044	4,346
2045	3,350
2046	2,555
2047	1,929
2048	1,441
2049	1,067
2050	781
2051	564
2052	402
2053	282
2054	195
2055	133
2056	89
2057	58
2058	37
2059	24
2060	15
2061	9
2062	-

Notes:

(1) Above benefit payment amounts were projected based on the mortality assumptions for the general pensioner population.

(2) As separate mortality studies have not been performed for this special group, the fiscal 2016 State Contribution shown on the Summary of Principal Results has been adjusted to ensure payment of all required benefit amounts, as required by Statute.

5.7 Members in Active Service Distributed by Age

Full-Time and Regular Part-Time

Age	Men		Women		Totals	
	Number	Compensation	Number	Compensation	Number	Compensation
21			1	\$ 41,979	1	\$ 41,979
22	8	\$ 333,376	22	871,908	30	1,205,284
23	101	4,292,256	544	22,397,841	645	26,690,098
24	272	12,094,119	1,221	52,362,467	1,493	64,456,586
25	445	21,012,108	1,798	81,343,643	2,243	102,355,750
26	600	29,009,049	2,182	101,988,234	2,782	130,997,283
27	691	35,170,214	2,667	132,177,811	3,358	167,348,025
28	769	42,389,422	2,968	155,327,108	3,737	197,716,530
29	928	52,899,813	3,288	177,917,592	4,216	230,817,405
30	992	58,760,788	3,445	192,184,046	4,437	250,944,834
31	1,153	72,638,225	3,661	211,574,538	4,814	284,212,763
32	1,049	68,733,971	3,465	205,899,551	4,514	274,633,522
33	1,119	77,005,984	3,471	212,384,659	4,590	289,390,643
34	1,135	81,044,822	3,512	220,249,042	4,647	301,293,863
35	1,084	78,803,165	3,214	205,978,975	4,298	284,782,139
36	1,167	90,862,514	3,251	214,444,904	4,418	305,307,418
37	1,125	88,917,654	2,962	198,631,494	4,087	287,549,148
38	1,059	86,604,030	2,925	199,637,688	3,984	286,241,718
39	1,086	89,538,650	2,901	201,696,164	3,987	291,234,814
40	1,046	90,110,711	2,691	188,799,326	3,737	278,910,038
41	1,052	91,591,912	2,746	195,579,566	3,798	287,171,479
42	1,020	90,710,793	2,857	204,551,536	3,877	295,262,330
43	1,072	95,738,168	2,989	217,907,743	4,061	313,645,911
44	998	92,901,408	2,761	200,742,104	3,759	293,643,512
45	912	85,923,512	2,595	192,013,588	3,507	277,937,100
46	840	77,804,966	2,460	183,807,682	3,300	261,612,648
47	790	74,753,017	2,333	174,644,198	3,123	249,397,215
48	777	72,950,376	2,187	166,246,251	2,964	239,196,627
49	697	66,508,383	2,250	171,613,620	2,947	238,122,003
50	710	67,419,375	2,269	174,057,124	2,979	241,476,499
51	707	67,508,746	2,286	176,199,388	2,993	243,708,133
52	654	64,514,526	2,370	182,896,250	3,024	247,410,777
53	634	62,505,439	2,313	181,732,518	2,947	244,237,957
54	608	59,704,931	2,331	184,002,576	2,939	243,707,507
55	589	59,479,883	2,321	188,292,575	2,910	247,772,458
56	492	48,528,760	2,278	184,244,657	2,770	232,773,417
57	471	46,703,603	2,070	172,226,367	2,541	218,929,970
58	442	42,276,287	1,929	162,693,517	2,371	204,969,804
59	379	37,047,469	1,868	156,926,311	2,247	193,973,780
60	333	31,255,141	1,562	132,088,474	1,895	163,343,615

**5.7 Members in Active Service Distributed by Age
Full-Time and Regular Part-Time
(continued)**

Age	Men		Women		Totals	
	Number	Compensation	Number	Compensation	Number	Compensation
61	243	\$ 22,963,242	1,266	\$ 106,384,285	1,509	\$ 129,347,527
62	229	20,660,010	1,060	91,247,620	1,289	111,907,630
63	179	16,635,117	845	73,702,885	1,024	90,338,001
64	128	11,455,894	620	53,385,369	748	64,841,264
65	99	9,990,053	395	34,644,826	494	44,634,879
66	70	6,496,141	264	22,652,853	334	29,148,994
67	42	3,533,534	153	13,639,137	195	17,172,671
68	35	3,487,821	73	6,470,981	108	9,958,802
69	19	1,867,320	52	4,266,693	71	6,134,013
70	18	1,712,093	36	3,124,421	54	4,836,513
71	8	572,267	30	2,594,924	38	3,167,191
72	1	42,062	14	1,164,269	15	1,206,331
73	3	254,904	10	840,931	13	1,095,835
74	2	125,543	6	569,467	8	695,010
75			4	389,668	4	389,668
76	4	281,687	2	242,491	6	524,179
77	1	117,263	3	218,617	4	335,880
78						
79			1	63,673	1	63,673
80						
81			1	81,894	1	81,894
Total	31,087	\$2,516,242,519	101,799	\$ 6,994,060,021	132,886	\$9,510,302,539

Amounts may not add due to rounding.

In addition, there are the following active members:

**SUBSTITUTES, PART-TIME, AND HOURLY-PAID
TEACHERS WHO ARE ON A FLEXIBLE OR
LIMITED WORK SCHEDULE**

Number	28,104
Annual Salaries	152,241,262
Average Age	42.37
Average Service	2.13

5.8 Members in Active Service Distributed by Service Full-Time and Regular Part-Time

Service	Men		Women		Totals	
	Number	Compensation	Number	Compensation	Number	Compensation
0	287	\$ 11,261,946	886	\$ 33,378,000	1,173	\$ 44,639,946
1	1,556	77,612,935	5,029	230,136,132	6,585	307,749,067
2	1,462	76,331,647	4,786	229,759,972	6,248	306,091,618
3	1,109	62,635,350	3,902	196,935,786	5,011	259,571,136
4	1,254	71,693,346	4,455	234,627,044	5,709	306,320,390
5	1,372	83,977,734	5,358	297,297,697	6,730	381,275,432
6	1,745	112,472,250	5,668	326,845,621	7,413	439,317,871
7	1,545	106,254,408	5,543	333,432,882	7,088	439,687,290
8	1,640	118,535,707	5,697	355,842,330	7,337	474,378,036
9	1,407	104,853,122	4,895	314,597,039	6,302	419,450,162
10	1,305	104,332,142	4,500	300,160,047	5,805	404,492,189
11	1,381	111,550,561	4,527	312,853,637	5,908	424,404,198
12	1,328	111,784,054	4,500	318,250,328	5,828	430,034,382
13	1,346	116,778,698	4,347	317,082,956	5,693	433,861,654
14	1,304	114,831,183	3,971	296,081,294	5,275	410,912,478
15	1,113	101,908,949	3,470	263,567,382	4,583	365,476,330
16	984	91,356,952	2,943	228,898,922	3,927	320,255,874
17	911	86,320,047	2,539	202,536,966	3,450	288,857,013
18	850	82,536,460	2,549	210,185,673	3,399	292,722,133
19	1,120	113,331,802	2,930	243,308,379	4,050	356,640,181
20	771	78,497,050	2,251	188,118,343	3,022	266,615,393
21	580	60,705,192	1,975	169,649,368	2,555	230,354,560
22	624	65,968,986	1,911	165,058,537	2,535	231,027,523
23	522	55,018,883	1,784	156,803,770	2,306	211,822,653
24	454	48,342,230	1,419	125,928,549	1,873	174,270,779
25	374	39,406,628	1,387	126,343,511	1,761	165,750,140
26	392	42,819,721	1,287	117,297,739	1,679	160,117,460
27	372	41,677,471	1,181	108,232,582	1,553	149,910,053
28	350	37,960,716	1,219	114,087,591	1,569	152,048,307
29	362	39,805,395	992	93,741,726	1,354	133,547,121
30	263	29,240,057	800	76,261,382	1,063	105,501,440
31	223	25,978,805	726	71,071,283	949	97,050,088
32	266	31,349,435	728	71,578,490	994	102,927,926
33	163	18,484,166	638	62,274,653	801	80,758,820
34	102	11,112,840	361	36,110,682	463	47,223,521
35	63	7,211,589	186	18,854,346	249	26,065,935
36	63	7,357,825	137	13,724,285	200	21,082,109
37	41	4,901,875	99	10,220,444	140	15,122,319
38	29	3,514,940	66	6,818,472	95	10,333,411
39	17	2,005,403	58	5,738,191	75	7,743,594

5.8 Members in Active Service Distributed by Service Full-Time and Regular Part-Time (continued)

Service	Men		Women		Totals	
	Number	Compensation	Number	Compensation	Number	Compensation
40	8	\$ 906,660	26	\$ 2,929,592	34	\$ 3,836,253
41	9	1,063,849	16	1,573,755	25	2,637,604
42	7	779,624	23	2,270,439	30	3,050,064
43	3	551,417	14	1,526,433	17	2,077,850
44	4	433,997	10	994,724	14	1,428,721
45	2	242,779	1	123,418	3	366,197
46	2	327,324	1	135,496	3	462,820
47			2	222,641	2	222,641
48	2	218,368	1	105,414	3	323,782
49			1	99,865	1	99,865
50			2	201,518	2	201,518
51						
52						
53						
54						
55			1	102,800	1	102,800
56						
57						
58						
59			1	81,894	1	81,894
Total	31,087	\$2,516,242,519	101,799	\$6,994,060,021	132,886	\$9,510,302,539

Amounts may not add due to rounding.

In addition, there are the following active members:

**SUBSTITUTES, PART-TIME, AND HOURLY-PAID
TEACHERS WHO ARE ON A FLEXIBLE OR
LIMITED WORK SCHEDULE**

Number	28,104
Annual Salaries	152,241,262
Average Age	42.37
Average Service	2.13

5.9 Retired Annuitants Distributed by Age

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
50	1	\$ 36,156			1	\$ 36,156
51						
52						
53	1	66,782	1	\$ 7,786	2	74,568
54			2	103,462	2	103,462
55	51	3,821,757	141	8,026,350	192	11,848,106
56	186	12,393,824	441	23,332,163	627	35,725,987
57	274	19,648,762	744	42,316,056	1,018	61,964,818
58	389	27,330,384	1,004	56,980,402	1,393	84,310,786
59	435	30,864,478	1,266	72,382,573	1,701	103,247,051
60	736	48,487,297	2,053	107,904,963	2,789	156,392,260
61	898	56,417,967	3,078	152,091,677	3,976	208,509,644
62	1,179	82,530,198	3,774	196,986,057	4,953	279,516,255
63	1,368	94,246,076	3,973	201,360,824	5,341	295,606,900
64	1,533	103,723,821	3,984	196,049,205	5,517	299,773,026
65	1,637	112,261,602	4,105	202,048,892	5,742	314,310,493
66	2,008	139,214,970	4,481	221,366,433	6,489	360,581,402
67	1,916	131,274,998	3,842	188,429,349	5,758	319,704,347
68	1,557	104,347,802	2,932	139,893,473	4,489	244,241,275
69	1,505	97,893,166	2,803	129,755,957	4,308	227,649,122
70	1,534	97,920,500	2,838	125,922,316	4,372	223,842,816
71	1,432	87,577,697	2,766	123,784,664	4,198	211,362,361
72	1,221	74,969,235	2,160	94,269,209	3,381	169,238,444
73	1,023	62,225,525	1,928	81,899,258	2,951	144,124,783
74	964	58,395,857	1,724	73,443,667	2,688	131,839,525
75	955	58,256,138	1,623	68,840,108	2,578	127,096,246
76	840	49,144,899	1,468	59,945,482	2,308	109,090,381
77	850	48,166,163	1,327	52,516,834	2,177	100,682,996
78	814	46,756,863	1,207	48,679,564	2,021	95,436,427
79	701	39,750,950	1,142	43,354,929	1,843	83,105,879
80	664	37,468,172	987	37,040,482	1,651	74,508,654
81	632	33,702,504	981	35,065,758	1,613	68,768,263
82	623	31,834,375	914	33,269,863	1,537	65,104,238
83	552	27,581,905	895	30,090,799	1,447	57,672,703
84	451	22,976,402	887	29,026,655	1,338	52,003,057
85	452	21,696,598	832	25,778,603	1,284	47,475,201
86	381	17,921,988	769	23,339,738	1,150	41,261,726
87	334	15,554,032	643	18,763,207	977	34,317,239
88	259	12,329,780	517	14,510,031	776	26,839,811
89	241	10,816,938	485	13,933,742	726	24,750,680
90	166	6,985,733	470	11,969,004	636	18,954,737

5.9 Retired Annuitants Distributed by Age (continued)

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
91	129	\$ 4,908,501	402	\$ 9,819,086	531	\$ 14,727,587
92	85	3,136,082	399	9,582,234	484	12,718,315
93	66	2,182,224	334	7,991,929	400	10,174,153
94	48	1,519,920	240	5,391,831	288	6,911,750
95	37	1,125,185	230	4,989,514	267	6,114,699
96	24	645,828	143	3,148,408	167	3,794,237
97	18	700,906	108	2,321,587	126	3,022,493
98	8	332,608	77	1,586,413	85	1,919,021
99	10	350,162	84	1,682,460	94	2,032,622
100	8	447,229	58	1,103,711	66	1,550,941
101	5	175,170	27	527,406	32	702,576
102	1	36,885	23	448,986	24	485,871
103	1	70,538	10	215,086	11	285,624
104			9	209,754	9	209,754
105			6	115,987	6	115,987
106			5	123,833	5	123,833
107			1	14,660	1	14,660
108						
109						
110			1	32,037	1	32,037
Total	31,203	\$1,942,223,531	67,344	\$3,033,784,455	98,547	\$4,976,007,986

Amounts may not add due to rounding.

5.10 Survivor Annuitants Distributed by Age

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
4	1	\$ 2,509			1	\$ 2,509
5						
6						
7	3	11,025			3	11,025
8	1	2,509			1	2,509
9	1	34,913			1	34,913
10	1	10,439			1	10,439
11			2	\$ 46,588	2	46,588
12	6	33,496			6	33,496
13			1	40,733	1	40,733
14	4	17,442	5	31,182	9	48,624
15	4	42,289			4	42,289
16	4	28,413	2	45,548	6	73,961
17	5	34,832	4	27,378	9	62,210
18	4	19,705	2	28,935	6	48,640
19	2	34,189	3	52,099	5	86,288
20	5	24,290	3	57,705	8	81,996
21	4	37,545	1	42,857	5	80,402
22	2	9,306	2	21,045	4	30,351
23						
24			1	9,063	1	9,063
25			3	63,872	3	63,872
26						
27	2	81,422			2	81,422
28	1	5,083			1	5,083
29						
30						
31	1	7,308			1	7,308
32			1	7,753	1	7,753
33	1	6,578	1	7,308	2	13,886
34	2	14,616	1	7,308	3	21,924
35			3	30,980	3	30,980
36						
37	2	12,044	3	29,263	5	41,307
38			4	32,268	4	32,268
39	3	25,316	3	24,230	6	49,546
40	4	34,827	1	8,988	5	43,815
41	4	62,236	2	20,147	6	82,382
42	4	33,696	1	8,988	5	42,684

5.10 Survivor Annuitants Distributed by Age (continued)

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
43	2	\$ 24,896	1	\$ 28,835	3	\$ 53,732
44	4	89,150	5	115,013	9	204,163
45	3	52,388	3	56,935	6	109,323
46	5	51,742	2	30,305	7	82,046
47	2	15,506	5	83,559	7	99,065
48	6	62,378	4	43,912	10	106,290
49	5	52,019	4	48,421	9	100,440
50			7	103,111	7	103,111
51	9	115,145	11	301,892	20	417,037
52	10	158,854	12	250,945	22	409,799
53	15	185,213	18	403,944	33	589,156
54	11	174,553	18	408,547	29	583,100
55	23	382,010	14	195,813	37	577,823
56	25	339,634	19	448,512	44	788,146
57	27	469,430	20	518,190	47	987,620
58	18	274,409	36	766,493	54	1,040,902
59	25	475,258	39	871,601	64	1,346,858
60	34	721,624	45	1,373,088	79	2,094,712
61	49	1,039,216	73	2,012,471	122	3,051,688
62	51	1,050,927	71	1,830,995	122	2,881,922
63	61	1,286,207	74	1,997,921	135	3,284,128
64	56	1,069,322	111	3,249,632	167	4,318,955
65	94	1,984,551	119	3,409,870	213	5,394,421
66	88	2,089,349	135	3,549,275	223	5,638,624
67	79	1,510,316	133	3,734,705	212	5,245,021
68	68	1,354,964	133	3,577,851	201	4,932,815
69	78	1,522,111	165	4,222,544	243	5,744,655
70	83	1,774,911	161	4,617,505	244	6,392,415
71	115	2,407,586	201	5,044,098	316	7,451,683
72	96	1,876,980	180	4,733,398	276	6,610,378
73	81	1,638,050	171	4,442,564	252	6,080,614
74	89	1,612,305	178	4,668,325	267	6,280,630
75	100	1,990,281	209	5,348,750	309	7,339,031
76	76	1,322,012	235	5,848,037	311	7,170,049
77	93	1,571,934	199	4,841,275	292	6,413,209
78	93	1,608,188	230	5,339,309	323	6,947,496
79	85	1,596,115	212	4,785,447	297	6,381,562
80	103	1,849,184	211	4,701,323	314	6,550,507
81	109	1,659,317	252	5,399,341	361	7,058,658
82	129	2,059,661	264	5,734,870	393	7,794,531

5.10 Survivor Annuitants Distributed by Age (continued)

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
83	113	\$ 1,704,975	264	\$ 5,682,286	377	\$ 7,387,261
84	100	1,455,057	271	5,666,783	371	7,121,840
85	95	1,473,259	247	5,076,836	342	6,550,095
86	103	1,464,360	224	4,474,553	327	5,938,913
87	98	1,451,314	230	4,459,057	328	5,910,372
88	86	1,122,095	197	3,403,213	283	4,525,308
89	89	1,100,704	168	3,152,573	257	4,253,277
90	98	1,261,940	155	2,447,316	253	3,709,257
91	74	881,040	131	2,287,533	205	3,168,573
92	63	659,558	125	2,012,027	188	2,671,585
93	56	522,954	110	1,688,232	166	2,211,186
94	41	428,031	86	1,239,309	127	1,667,340
95	31	314,816	66	919,302	97	1,234,118
96	25	205,862	55	664,659	80	870,521
97	20	151,661	37	476,108	57	627,769
98	15	118,417	26	339,066	41	457,483
99	6	53,163	23	291,748	29	344,911
100	5	54,048	11	138,303	16	192,350
101	2	26,865	1	23,930	3	50,795
102	4	26,906	5	60,875	9	87,782
103	1	12,060	3	28,331	4	40,392
104						
105	1	7,697	3	70,269	4	77,966
106			3	43,487	3	43,487
Total	3,297	\$ 54,640,505	6,470	\$ 144,428,657	9,767	\$ 199,069,162

Amounts may not add due to rounding.

5.11 Disability Annuitants Distributed by Age

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
28			3	\$ 56,874	3	\$ 56,874
29			2	34,163	2	34,163
30			1	17,154	1	17,154
31			5	85,213	5	85,213
32			4	69,629	4	69,629
33			1	18,412	1	18,412
34	1	\$ 15,867	7	138,037	8	153,904
35			5	97,301	5	97,301
36			5	94,031	5	94,031
37			6	109,404	6	109,404
38			10	185,103	10	185,103
39			5	101,710	5	101,710
40	1	23,720	8	158,262	9	181,982
41	2	59,403	13	270,553	15	329,956
42	2	38,668	5	100,934	7	139,602
43	1	27,571	15	320,653	16	348,224
44	1	23,938	12	223,960	13	247,898
45	3	78,584	23	478,156	26	556,740
46	1	29,767	14	286,330	15	316,097
47	3	77,891	11	223,486	14	301,378
48	5	113,830	14	318,550	19	432,380
49	3	80,001	12	227,515	15	307,516
50	8	201,893	23	590,859	31	792,752
51	5	107,999	16	397,412	21	505,411
52	7	170,338	20	447,657	27	617,996
53	10	259,208	20	490,628	30	749,836
54	2	60,348	34	758,070	36	818,418
55	6	138,550	29	775,646	35	914,195
56	9	253,519	36	1,006,010	45	1,259,529
57	10	419,529	48	1,511,803	58	1,931,332
58	9	282,213	31	989,529	40	1,271,742
59	4	89,615	46	1,315,775	50	1,405,390
60	7	162,434	48	1,382,945	55	1,545,379
61	10	356,589	43	1,430,235	53	1,786,825
62	10	304,578	44	1,293,006	54	1,597,584
63	6	169,922	37	1,020,162	43	1,190,084
64	10	229,054	32	884,917	42	1,113,972
65	6	182,202	26	768,704	32	950,905
66	5	125,455	30	794,979	35	920,434
67	9	395,760	25	778,056	34	1,173,816

5.11 Disability Annuitants Distributed by Age (continued)

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
68			13	\$ 344,811	13	\$ 344,811
69	8	\$ 202,089	14	290,508	22	492,597
70	6	175,307	12	285,484	18	460,791
71	3	49,503	16	420,444	19	469,947
72	3	144,830	10	224,349	13	369,179
73	2	25,452	6	117,397	8	142,849
74			6	142,704	6	142,704
75	1	7,473	11	255,121	12	262,594
76			5	67,620	5	67,620
77	4	121,123	8	147,072	12	268,194
78	2	107,272	10	236,507	12	343,779
79	3	122,636	9	223,083	12	345,719
80	1	30,513	7	137,627	8	168,140
81	1	10,099	6	129,001	7	139,100
82	1	19,328	4	73,803	5	93,131
83	1	21,478	6	84,644	7	106,122
84	1	12,869	3	37,702	4	50,571
85	2	26,810	3	44,811	5	71,621
86	1	23,951	1	28,859	2	52,810
87			1	8,446	1	8,446
88	1	17,823	3	39,747	4	57,570
89			5	84,925	5	84,925
90			1	12,193	1	12,193
91			3	41,227	3	41,227
92			2	23,175	2	23,175
93						
94			1	9,289	1	9,289
95						
96						
97			1	11,756	1	11,756
98			1	11,993	1	11,993
Total	197	\$ 5,597,001	937	\$ 23,786,123	1,134	\$ 29,383,124

Amounts may not add due to rounding.

5.12 Guaranteed Minimum Annuity Reserve of Retired Annuitants

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
62			2	\$ 161	2	\$ 161
63			1	1,095	1	1,095
64			1	751	1	751
65			6	3,463	6	3,463
66	1	\$ 167	8	2,896	9	3,063
67			3	1,990	3	1,990
68	1	247	5	4,267	6	4,515
69	1	6	5	1,462	6	1,468
70	3	181	8	2,370	11	2,551
71	1	75	11	5,472	12	5,547
72	2	575	10	4,499	12	5,074
73			7	7,976	7	7,976
74			15	9,042	15	9,042
75	2	1,231	25	13,112	27	14,342
76	1	584	30	15,519	31	16,103
77	4	3,920	24	13,324	28	17,244
78	1	347	26	13,793	27	14,140
79	1	801	25	11,181	26	11,982
80	3	542	15	11,866	18	12,408
81	1	435	20	14,949	21	15,384
82	5	2,811	30	19,544	35	22,355
83	4	925	44	30,407	48	31,332
84	6	5,915	41	29,567	47	35,482
85	6	5,094	51	30,846	57	35,940
86	10	4,616	49	44,587	59	49,203
87	9	7,869	51	42,165	60	50,034
88	3	2,946	43	35,260	46	38,206
89	3	3,282	35	34,047	38	37,328
90	8	6,627	61	61,062	69	67,689
91	5	3,323	49	52,352	54	55,675
92	5	6,324	45	49,013	50	55,337
93	3	4,605	46	57,786	49	62,391
94	3	2,146	39	37,469	42	39,615
95	3	2,625	32	42,493	35	45,118
96	4	6,778	20	36,635	24	43,413
97	1	2,628	15	15,747	16	18,375
98	1	747	22	25,821	23	26,568
99	1	1,546	18	25,401	19	26,947
100			14	18,368	14	18,368

5.12 Guaranteed Minimum Annuity Reserve of Retired Annuitants (continued)

Age	Males		Females		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
101	2	\$ 1,491	5	\$ 11,513	7	\$ 13,004
102			6	9,440	6	9,440
103			2	6,361	2	6,361
104			2	3,893	2	3,893
105			1	2,485	1	2,485
106			3	5,887	3	5,887
Total	104	\$ 81,409	971	\$ 867,338	1,075	\$ 948,746

Amounts may not add due to rounding.

Section 6 – Basis of the Actuarial Valuation

6.1 Summary of Benefit and Contribution Provisions

MEMBERSHIP

Employers of the System include:

- (a) the Illinois public common school districts outside of Chicago,
- (b) certain state agencies employing certificated teachers, and
- (c) the State Board of Education, Illinois School Board Association, statewide and national teacher organizations, educational cooperatives and the retirement system.

Employees covered under the System include:

- Any educational, administrative, professional or other staff employed in the public common schools outside the City of Chicago in a position requiring certification under the teacher certification law, including substitute teachers, part-time teachers, and hourly paid teachers who are on a flexible work schedule;
- Any position requiring teacher certification in certain state agencies;
- Any regional superintendent of schools, assistant regional superintendent of schools, State Superintendent of Education; any person employed by the State Board of Education as an executive; any executive of the boards engaged in the service of public common school education in school districts covered under this system of which the State Superintendent of Education is an ex-officio member;
- Any employee of a school board association who is certificated under the teacher certification law;
- Any person employed by the retirement system who was an employee of and a member in the system on August 17, 2001 or becomes an employee of the system on or after August 17, 2001;
- Any educational, administrative, professional or other staff employed by and under the supervision and control of a regional superintendent of schools, provided such employment position requires the person to be certificated under the teacher certification law;
- Any educational, administrative, professional or other staff in a certificated position employed by a program serving two or more school districts in accordance with a joint agreement authorized by the School Code or by federal legislation;
- Any officer or employee of a statewide teacher organization or officer of a national teacher organization who is certified under the teacher certification law, provided the member had previously established creditable service under TRS and files an irrevocable election for TRS membership before January 5, 2012, and does not receive credit under any other article of the pension code; and
- Any educational, administrative, professional, or other staff employed in a charter school that is certificated under the teacher certification law.

6.1 Summary of Benefit and Contribution Provisions (continued)

Employment on a full-time basis covers only teachers whose normal employment schedule consists of working at least four clock hours daily, five days per week. Employment on a part-time basis covers teachers who are employed less than four clock hours daily or less than five days per week. A substitute teacher is employed on a temporary basis to replace another teacher.

Creditable service rendered as an employee for a regular school year in any district, in accordance with the provisions of the Pension Code, is equal to one year of service, and time less than a legal year is counted as such portion of a year as the number of days taught bears to 170 days. Additionally, members may purchase various types of optional service credit.

“Tier II” means a member, or a benefit provision that applies to a member, who first contributed to TRS on or after January 1, 2011 and has no preexisting creditable service with a reciprocal pension system prior to January 1, 2011. “Tier I” means all other members and applicable benefit provisions.

For determining both member benefits and contribution amounts, salary for Tier II is capped at a limit that is tied to the Consumer Price Index. The initial limit is \$106,800 as of January 1, 2011. Each subsequent year the limit will increase by an amount equal to the then current limit times the lesser of 3% or one-half the percentage increase in cpi-u as of the preceding September.

“Final average salary” means for Tier I the average salary for the highest 4 consecutive years within the last 10 years of creditable service as determined under the rules of the Board. For Tier II, the average is for the highest 8 consecutive years within the last 10 years.

BENEFITS

Normal Retirement

Eligibility	For Tier I, age 60 with 10 years of service, or age 62 with 5 years of service. For Tier II, age 67 with 10 years of service.
Amount	For a Tier I person who first became a teacher before July 1, 2005, the annual benefit amount is the greatest of (i), (ii) and (iii) below. For a Tier I person who first became a teacher on or after July 1, 2005, the annual benefit amount is the greater of (i) and (ii) below. For Tier II, the annual benefit is the amount under (i) below.

- (i) For service earned before July 1, 1998, 1.67% of final average salary for each of the first 10 years of creditable service, plus 1.90% of final average salary for each year in excess of 10 but not exceeding 20, plus 2.10% of final average salary for each year in excess of 20 but not exceeding 30, and 2.30% of final average salary for each year in excess of 30. For all other service, 2.2% of final average salary.*

* Service earned before July 1, 1998 can be upgraded to 2.2% through additional member contributions or 1% of the member’s highest salary within the last four years for each year of prior service. Maximum payment is 20% of salary, but all years are upgraded. The number of years to be upgraded is reduced by one for each three full years worked under the 2.2% formula. The 2.2% formula upgrade cost is reduced on a sliding scale for members who have more than 34 years of service credit.

- (ii) 1½% of final average salary for each year of creditable service, plus \$7.50 per year for each of the first 20 years of creditable service.

6.1 Summary of Benefit and Contribution Provisions (continued)

- (iii) An actuarially equivalent life annuity, resulting from the member's contributions and State-matching contributions (1.4 times member contributions) plus compound interest on both.

Maximum amount under (i) and (ii) above - 75% of final average salary.

Early Retirement

Eligibility For Tier I, age 55 with 20 years of service. For Tier II, age 62 with 10 years of service.

Amount For Tier I, equal to the amount computed under normal retirement, reduced by 6% for each year the member is under age 60. There is no reduction for a member who retires prior to age 60 with 35 years of credited service. For Tier II, the reduction is 6% for each year the member is under age 67.

Early Retirement Option

A member retiring after June 1, 1980 and within six months of the last day of teaching for which retirement contributions were required, may elect to make a one time employee contribution to avoid the early retirement reduction described in the foregoing paragraph. Such employee and employer contributions will be a multiple of the member's last full time annual salary rate as a teacher, the full time equivalent if less than full time, or the highest year's salary used for determining final average salary.

The member lump sum ERO contribution rate for members is 14.4%, and the employer lump sum ERO contribution rate for such persons is 29.3%. The multiple of salary to be contributed by the member equals the member rate times the lesser of the following two periods: (a) the number of years (including fractional years) that the member is less than age 60; or (b) the number of years (including fractional years) that the member's creditable service is less than 35 years.

The multiple of salary to be contributed by the member's employer equals the employer rate times the number of years (including fractional years) that the member is less than age 60.

Rule of 85 for State Employees

A Tier I employee of a state agency retiring on or after January 1, 2001 is entitled to a nondiscounted annuity if his or her attained age at retirement and total creditable service equal at least 85, provided he or she has (i) earned during the period immediately preceding the last day of service at least one year of contributing creditable service as a state employee and (ii) has earned at least 5 years of contributing creditable service as a state employee.

Single Sum Benefit

Eligibility Age 65 with fewer than 5 years of creditable service after July 1, 1947.

Amount Lump sum payment actuarially equivalent to a life annuity consisting of 1.67% of final average salary for each year of service.

6.1 Summary of Benefit and Contribution Provisions (continued)

Temporary Disability Benefit

Eligibility	3 years of credited service.
Amount	Equal to 40% of the member's most recent annual contract salary at time of disablement. The benefit is payable beginning with the 31st day after disablement and ending at the earlier of (1) cessation of disability, (2) when the member requests termination of the benefit, (3) when the period for which payments have been made equals one-fourth the period of creditable service, or (4) the member is gainfully employed or able to be gainfully employed.

Disability Retirement Annuity

Eligibility	Termination of temporary disability benefit, provided member remains disabled.
Amount	The larger of (a) 35% of the member's most recent annual contract salary or (b) the benefit payable as for normal retirement, but reduced by ½% for each month by which the member is less than age 60, or age 55 if the member has 20 years of service. Other formulas may be applicable if disability retirement occurred prior to July 1, 1971.

Occupational Disability

Eligibility	Totally and immediately incapacitated for the performance of duty.
Amount	Equal to 60% of salary, if disability is duty-connected or occupational adjudicated by the Illinois Industrial Commission as compensable under either the Workers' Compensation or Occupational Diseases Act. Any amounts payable under these Acts shall be applied as an offset to any occupational disability benefits payable by the Teachers' Retirement System. In general, benefits are payable throughout the period of disability.

Deferred Vested Benefits

Eligibility	For Tier I, 5 years of service. For Tier II, 10 years of service.
Amount	For Tier I, equal to the amount computed under normal retirement deferred to age 62 if member has less than 10 years of service. With 10 or more years of service the annuity is payable at age 60. For Tier II, equal to the amount computed under normal retirement, payable at age 67 or in a reduced amount as early as age 62. The reduction is 6% for each year the member is under age 67.

Reversionary Retirement Annuity

Any member entitled to a retirement annuity for age may elect to receive a reduced annuity with the remainder determined on an actuarial basis to become, upon the member's death, an annuity for life to any designated person dependent upon the member at the time of the member's retirement, provided such payment shall not be less than \$10 nor more than the amount of reduced age retirement monthly annuity to which the member is entitled.

6.1 Summary of Benefit and Contribution Provisions (continued)

Refund of Contributions	<p>A member who ceases to be a member for any reason other than death or retirement, shall be entitled to a refund of all retirement contributions and payments made into the fund by him which have not previously been refunded, without interest thereon.</p> <p>A member who retires on ERO shall not receive a refund of the 0.4% career ERO contributions; otherwise, the 0.4% career ERO contributions are refunded, without interest, to the member, or the member's beneficiary or Estate (if applicable) if any of the following occur: (1) the ERO program is discontinued under Section 16-176; or (2) the member either retires without ERO, terminates employment and withdraws the member account balance, or dies before retirement.</p>
Death Benefit	<p>Refunds of the deceased member's accumulated contributions are paid to survivors or to the member's estate. Additional lump sum death benefits are also payable.</p>

Survivor Benefit	Types of Beneficiaries	
<u>Time of Death</u>	<u>Dependents</u>	Non-dependents
While employed	Lump sum up to last salary or \$1,000 and a monthly benefit generally not less than \$400* or \$600 with minor children**	Lump sum up to last salary
Inactive within 12 months of last day of credit	Lump sum up to last salary or \$1,000 and a monthly benefit generally not less than \$400* or \$600 with minor children**	Lump sum up to last salary
Inactive with 20 or more years of service	Lump sum of \$3,000 or 1/6 of last salary*** or \$1,000 and a monthly benefit generally 1/2 for Tier I and 2/3 for Tier II of member's earned benefit at time of death	Lump sum of \$3,000 or 1/6 of last salary***
Annuitant	Lump sum of \$3,000 or 1/6 of last salary*** or \$1,000 and a monthly benefit generally 1/2 for Tier I and 2/3 for Tier II of annuitant's earned benefit at time of death	Lump sum of \$3,000 or 1/6 of last salary***

- * Certain circumstances might provide a monthly annuity less than \$400 per month for an active member.
- ** TRS will pay 50 percent of the member's earned retirement annuity at death if it is greater than the above amounts.
- *** Certain lump sums may be greater if the annuitant or inactive member has been in retirement or out of service for less than five years.

6.1 Summary of Benefit and Contribution Provisions (continued)

Automatic Postretirement Benefit Cost-of-Living Adjustment

Eligibility Member contributed for at least an equivalent period of one full year of creditable service after July 1, 1969.

Amount For Tier I, initial increase of 1½% of base annuity for periods prior to January 1, 1972, 2% for periods from and after January 1, 1972 and prior to January 1, 1978, and 3% for periods thereafter (such periods to exclude any period of retirement that precedes attainment of age 55). Initial increase payable effective with the later of: January 1 following first anniversary of retirement; or January 1 following attainment of age 61.

Following the initial increase, automatic annual increases payable on each January 1 thereafter. Prior to January 1, 1990, annual increases were determined as a percentage of the original retirement annuity. Effective on and after January 1, 1990, automatic annual increases granted to eligible annuitants equal 3% of the total annuity being received, including previous increases granted.

For Tier II retirement and deferred vested benefits, the annual increase is equal to the original granted annuity benefit times the lesser of 3% or one-half the increase in the cpi-u as of the preceding September. The initial increase is effective Jan. 1 after the later of attaining age 67 or the first anniversary of the annuity starting date.

For Tier I and Tier II disability benefits, the initial increase is generally 7% effective Jan. 1 following the fourth anniversary of the initial payment and 3% annually thereafter of the then current benefit amount.

For Tier I and Tier II survivor benefits, the initial increase is effective Jan. 1 following the first anniversary of the initial survivor payment, or after the survivor benefit has been granted benefits for survivors of annuitants, and annually thereafter. The Tier I increase is 3% of the then current benefit. The increase for Tier II is the lesser of 3% or one-half the percentage increase in cpi-u as of the preceding September of the original benefit amount.

Member Contributions

Beginning July 1, 2005, each member contributes an additional 0.4% of pay "career ERO contribution," bringing the total contribution to 9.4%. This contribution requirement shall cease if the Early Retirement Option program ends.

Beginning July 1, 1998, contributions for creditable service are made at the rate of 8% (exclusive of the 1% Survivor Benefit Contribution) of salary which is comprised of a rate of 7½% of salary towards the cost of the retirement annuity plus ½% of salary toward the cost of the automatic annual increase in retirement annuity.

6.1 Summary of Benefit and Contribution Provisions (continued)

Beginning July 24, 1959, each member contributes an additional 1% of salary toward Survivor's Benefits. These contributions are subject to refund if there is no dependent beneficiary at retirement, provided the member elects such refund.

Beginning July 1, 1995, each member not employed by a State agency contributes to the Teachers' Health Insurance Security Fund, administered by the Department of Central Management Services. These contributions are not refundable and do not become part of the System's assets.

Additional contributions as are necessary to receive credit for service during which contributions were not made, such as military service or service outside the System.

New Benefit Increases:

The term "new benefit increase" means an increase in the amount of any benefit provided by the statute, or an expansion of the eligibility requirements for any benefit provided by the statute, resulting from an amendment that takes effect on or after June 1, 2005.

Every new benefit increase must have an identified funding source whose adequacy is verified and periodically confirmed by the Commission on Government Forecasting and Accountability (CGFA).

Every new benefit increase will automatically expire at the earlier of (i) five years after its effective date ; (ii) at an earlier time specified in the amendment creating the benefit; or (iii) at the end of the fiscal year in which CGFA certifies that the identified funding source is inadequate; except that any new benefit increase will continue to apply to persons who applied for and qualified for the increase while it was in effect, and except that any new benefit increase may be extended or recreated by the General Assembly (subject to the adequacy of the funding source).

Sick Leave Service Accruals:

Any unused and uncompensated accumulated sick leave is counted as creditable service provided that each former employer certifies to the System the number of unused and uncompensated accumulated sick leave days upon termination of the member. The service granted is the ratio of the number of unused and uncompensated accumulated sick leave days to 170 days, subject to a maximum of 2 years of service credit. The period of sick leave shall not be considered in determining the effective date of retirement.

6.2 Summary of Actuarial Methods

The methods below used for the funding valuation are prescribed by the Illinois Pension Code. They do not necessarily represent the recommendations of the actuary.

VALUATION COST METHOD: The projected unit credit cost method, effective June 30, 1989, applies for funding and GASB 25. The entry age normal cost method applies for GASB 67. Gains and losses are reflected in the unfunded actuarial accrued liability (net pension liability for GASB 67).

ASSET VALUATION METHOD: For the funding valuation, beginning with the June 30, 2009 valuation, the method for determining the actuarial value of assets was changed from the market value to a smoothed value. The smoothed value recognizes the actuarial investment gains or losses for each fiscal year in equal amounts over the ensuing five-year period. The same method is used for GASB 25. For GASB 67, the fair market value is used.

AMORTIZATION OF UNFUNDED ACCRUED LIABILITY: For GASB 25, the unfunded accrued liability is amortized as a level percentage of pay over 30 years based on the salary increase assumption and new entrant profile found elsewhere in the report. The determination of the Annual Required Contribution (ARC) can be found in Schedule II of this report. For funding purposes under the Illinois Pension Code, the unfunded liability is not explicitly amortized. The employer contribution is the amount which, as a level percentage of member payroll, will result in the System being 90% funded by June 30, 2045.

LIABILITY ADJUSTMENT: The current actuarial valuation was based on the latest membership data available, which was submitted by the System for active, inactive and retired members as of the prior valuation date. In projecting results to account for the one-year difference in the census date and the valuation date, we made use of the valuation assumptions. To the extent that changes have occurred in the census from the date the census information is determined and the valuation date, we will work with TRS staff to determine if additional adjustments need to be made. Otherwise, any change in liability due to changes in census between the collection date of the census information and the valuation date will be captured in the next actuarial valuation.

6.3 Summary of Actuarial Assumptions

Assumptions adopted by the TRS Board effective June 30, 2012, except as otherwise noted.

INTEREST RATE: 7.50% per annum, compounded annually, effective with the June 30, 2014 valuation. The interest rate assumption includes the following components: inflation 3.00%, and real rate of return 4.50%.

SEPARATIONS FROM ACTIVE SERVICE (OTHER THAN SERVICE RETIREMENT) AND SALARY INCREASES: Representative values of the assumed rates of separation, annual rates of salary increase, are shown in the following table:

Age	Annual Rates* of					
	Termination		Death**	Disability***	Salary Increase	Merit or Seniority Component
	< 5 years	>= 5 years				
<u>Males</u>						
20	12.0	8.0	.023	.029	9.90%	6.15%
25	7.0	6.0	.029	.029	9.00%	5.25%
30	8.6	3.7	.035	.026	7.20%	3.45%
40	11.1	1.5	.061	.051	6.00%	2.25%
50	12.0	1.4	.122	.094	4.75%	1.00%
55	16.0	4.0	.183	.111	4.75%	1.00%
60	21.0	4.0	.303	.170	4.75%	1.00%
65	21.0	4.0	.531	.510	4.75%	1.00%
70	—	—	—	—	—	—
<u>Females</u>						
20	18.0	10.0	.011	.045	9.90%	6.15%
25	7.8	9.0	.011	.045	9.00%	5.25%
30	10.6	6.0	.013	.117	7.20%	3.45%
40	10.0	2.2	.031	.162	6.00%	2.25%
50	10.0	1.4	.069	.172	4.75%	1.00%
55	15.0	3.1	.116	.197	4.75%	1.00%
60	14.0	4.0	.219	.144	4.75%	1.00%
65	40.0	4.0	.395	.287	4.75%	1.00%
70	—	—	—	—	—	—

* Rates of separation are rates per 100 members. For example, 7% of all 25 year-old actively employed non-vested male members (i.e., 7.0 per 100) are assumed to terminate employment each year for reasons other than death, disability, or service retirement.

** Representative values. Refer to "Mortality Tables" later in the section for a more detailed description.

*** A 2% load was placed on disability benefits to account for Occupational Disability benefits being greater than standard disability.

The basic salary increase assumption averages 5.50% per annum plus an additional 0.25% per annum to cover employment type and status changes, for a composite increase that averages approximately 5.75% per annum. The 5.75% salary increase assumption includes the following components:

- Inflation of 3.00% and real wage growth (productivity) of 0.75%
- Merit or seniority (includes employment type and status changes): ranges from 6.15 % at age 20 to 1.00% at age 50 and above and averages 2.00%.

6.3 Summary of Actuarial Assumptions (continued)

SERVICE RETIREMENT FROM ACTIVE SERVICE AND UTILIZATION OF ERO FOR MEMBERS HIRED BEFORE JANUARY 1, 2011: The assumed rates of retirement and utilization of ERO are shown in the following tables:

Annual Service Retirement Rates per 100 Eligible Members					
Age**	Service*				
	5-18	19-30	31	32-33	34+
54	-	6	12	38	40
55	-	10	20	38	40
56	-	7	16	38	32
57	-	7	16	38	32
58	-	7	13	38	32
59	-	25	34	45	31
60	14	27	45	45	31
61	14	24	30	45	31
62	14	26	36	45	31
63	14	26	36	45	31
64	20	33	36	45	31
65	23	33	45	45	31
66	23	33	45	45	31
67	23	33	45	45	31
68	27	33	45	45	31
69	27	33	45	45	31
70	100	100	100	100	100

Utilization of ERO among All Active Service Retirees***						
Service*	Age**					
	54	55	56	57	58	59
19 – 30	68%	75%	66%	63%	64%	23%
31	90%	79%	75%	71%	69%	27%
32	49%	53%	45%	48%	46%	28%
33	22%	25%	17%	15%	14%	13%

Notes:

* Active member service rounded to nearest year on June 30 prior to retirement

** Age rounded to nearest year on June 30 prior to retirement

***ERO Utilization Rates are applied only to members who have less than 35 years of total service at the assumed retirement date (including assumed sick leave and optional service purchased at retirement). Based on the sick leave and optional service assumptions, the majority of members with 33 years of service at the beginning of the year of retirement will not be assumed to retire on ERO because they will be assumed to have at least 35 years of service at retirement.

In addition, ERO Utilization Rates are not applied to members whose pension under the ERO program would be less than their money purchase benefit.

6.3 Summary of Actuarial Assumptions (continued)

SERVICE RETIREMENT FROM ACTIVE SERVICE FOR MEMBERS HIRED ON OR AFTER JANUARY 1, 2011: The assumed rates of retirement for members hired January 1, 2011 and later are shown in the following tables:

Annual Service Retirement Rates per 100 Eligible Members					
Age**	Service*				
	9-18	19-30	31	32-33	34+
61 and younger	-	-	-	-	-
62	13	15	20	25	25
63	8	10	15	20	20
64	8	10	15	20	20
65	8	10	15	20	20
66	20	10	15	20	20
67	20	40	70	70	70
68	20	40	40	40	40
69	20	40	40	40	40
70	100	100	100	100	100

Notes:

* Active member service rounded to nearest year on June 30 prior to retirement

** Age rounded to nearest year on June 30 prior to retirement

MORTALITY: For annuitants, the RP-2000 White Collar Table projected nine years using scale AA, with a two-year age setback for men and no age setback for women. Rates for women are further adjusted for ages 63-77 by 65% and ages 78-87 by 85%.

For beneficiaries, the RP-2000 blended table, projected nine years using scale AA, with a one-year age setback for both men and women.

For the period after disability retirement, the RP-2000 Disabled Table, projected nine years using scale AA, with a one-year age setback for both men and women.

Future generational rates are projected from 2009 based on scale AA.

MARITAL DATA: It is assumed that 85% of members are married and that the female spouse is three years younger than the male spouse. (Adopted effective June 30, 1993.)

GROWTH IN ACTIVE MEMBERSHIP: For purposes of the projection required by State funding law, it is assumed that the active membership of the System will remain constant in number, with no change in the size of either the full-time/part-time group or the hourly/substitute group. (Adopted effective June 30, 1994.)

6.3 Summary of Actuarial Assumptions (continued)

SEVERANCE PAY: For members hired before January 1, 2011, the percent of retirees from active service assumed to receive severance payments, and the amount of such severance payments, are assumed to be as follows:

Percent of Retirees Who Receive Severance Pay	Severance Pay as a Percent of Other Pensionable Earnings in the Last Year of Employment
20%	6%

OPTIONAL SERVICE PURCHASES: The pension benefit obligation for retirement benefits for active members who have not previously purchased optional service is increased to cover the employer cost of out-of-system service purchased in the last two years prior to retirement. The amount purchased varies by the amount of regular service at retirement. Representative amounts purchased at retirement, and other assumptions used, are as follows:

Regular Service at Retirement	Maximum Service Purchased
10 years	0.473 years
20 years	0.835 years
25 years	1.360 years
30 years	1.040 years
34 or more	None

- (a) Actual optional service credit for each current member is provided by TRS; and
- (b) No additional service purchases will be assumed for members who currently have optional service credit; and
- (c) Members will not purchase service if it does not improve their pension benefit; and
- (d) When optional service is purchased within the last two years prior to retirement, 25% of the cost is covered by member payments and the remaining cost is the responsibility of the employer.

The PBO covered by future member payments is not included in the liability on the valuation date, but is brought into projected liabilities as those payments are brought into the assets.

6.3 Summary of Actuarial Assumptions (continued)

UNUSED AND UNCOMPENSATED SICK LEAVE SERVICE AT RETIREMENT: Such credit varies by the amount of regular service at retirement. Representative assumed amounts of unused and uncompensated sick leave service are as follows:

Regular Service at Retirement	Sick Leave Service Credit
20 years	1.035 years
25 years	1.847 years
30 years	1.454 years
34 years	1.000 years
35 or more	None

ADMINISTRATIVE EXPENSES: The administrative staff of the System estimates the expected administrative expenses for the fiscal year following the valuation. Total payroll for the same year is projected based on valuation assumptions and the expected administrative expenses are then expressed as a percent of total payroll. Administrative expenses in future years are then assumed to remain constant as a percent of total payroll. The rate changes annually. This year's rate can be found on exhibit 1.1. (Adopted effective June 30, 1994.)

2.2 UPGRADE ASSUMPTION: For those active members who have already made a payment to upgrade past service prior to June 30, 1998, their benefits are based on their upgrading at the valuation date. For all other active members, they are assumed to upgrade at retirement. (Adopted effective June 30, 1999.)

TIER II PAY CAP INCREASE: 1.50% per annum

TIER II COLA INCREASE: 1.40% per annum

The current assumptions for inflation, the Tier II pay cap increase rate and the Tier II COLA increase rate, are based on stochastic projections that developed the rate of return. Buck applied the specifics of the pay cap and COLA increase to the projection of inflation from the model and elected amounts in the middle range for each assumption and then rounded the number to the nearest tenth of a percent.

FUTURE PAYROLL ASSUMPTION: Future payroll is projected using the assumed decrements for the members in the system and the new entrant profile as described below.

415 AND 401(a)(17) LIMITS: Benefits are limited by these Internal Revenue Code limits and are assumed to increase 3.00% annually.

6.3 Summary of Actuarial Assumptions (continued)

NEW MEMBER PROFILE

Distribution of New Entrants is as follows (based on 6/30/2009-6/30/2011 new hire counts):

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20 – 24	5.4%	26.2%	31.6%	6.9%	18.1%	25.0%
25 – 29	7.7%	24.6%	32.3%	8.2%	15.1%	23.3%
30 – 34	3.6%	10.3%	13.9%	2.7%	6.0%	8.7%
35 – 39	1.8%	5.6%	7.4%	2.0%	6.6%	8.6%
40 – 44	1.4%	3.9%	5.3%	2.7%	9.4%	12.1%
45 – 49	0.8%	3.3%	4.1%	1.8%	6.2%	8.0%
50 – 54	0.6%	2.0%	2.6%	1.6%	3.9%	5.5%
55 – 59	0.6%	1.3%	1.9%	1.7%	2.7%	4.4%
60 – 64	0.3%	0.4%	0.7%	1.4%	1.6%	3.0%
65 – 69	0.1%	0.1%	0.2%	0.6%	0.5%	1.1%
70	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.2%</u>	<u>0.1%</u>	<u>0.3%</u>
Total	22.3%	77.7%	100.0%	29.8%	70.2%	100.0%

Service Credit Earned in Each Future Year (Full Time/Part Time based on 6/30/2009-6/30/2011 new hire service credits and Hourly/Substitutes based on 6/30/2011 new hire service credits):

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20 – 24	0.917	0.923	0.922	0.311	0.336	0.335
25 – 29	0.947	0.934	0.937	0.309	0.298	0.298
30 – 34	0.909	0.915	0.913	0.340	0.276	0.297
35 – 39	0.930	0.916	0.920	0.288	0.301	0.300
40 – 44	0.931	0.901	0.908	0.252	0.308	0.298
45 – 49	0.900	0.905	0.904	0.304	0.317	0.312
50 – 54	0.888	0.928	0.919	0.321	0.338	0.334
55 – 59	0.972	0.903	0.926	0.353	0.345	0.346
60 – 64	0.893	1.113	1.010	0.328	0.330	0.327
65 – 69	-	-	-	0.315	0.304	0.308
70	-	-	-	0.285	0.255	0.268
Average	0.928	0.924	0.924	0.313	0.315	0.314

6.3 Summary of Actuarial Assumptions (continued)

NEW MEMBER PROFILE (continued)

Projected Annual Rate of Pay at 6/30/2012*

(for one year of service credit – Full Time/Part Time based on 6/30/2009-6/30/2011 new hire pay normalized to 6/30/2012 and Hourly/Substitutes based on 6/30/2011 new hire pay)

Age Group	Full Time/Part Time			Hourly/Substitute		
	Males	Females	Total	Males	Females	Total
20 – 24	\$ 46,349	\$ 45,029	\$ 45,254	\$ 17,475	\$ 18,053	\$ 17,893
25 – 29	\$ 47,771	\$ 48,290	\$ 48,167	\$ 17,467	\$ 17,374	\$ 17,407
30 – 34	\$ 55,110	\$ 52,482	\$ 53,163	\$ 17,704	\$ 16,908	\$ 17,155
35 – 39	\$ 57,001	\$ 54,980	\$ 55,472	\$ 16,839	\$ 16,595	\$ 16,652
40 – 44	\$ 64,467	\$ 55,424	\$ 57,812	\$ 16,616	\$ 15,919	\$ 16,075
45 – 49	\$ 68,190	\$ 55,885	\$ 58,286	\$ 16,348	\$ 16,192	\$ 16,227
50 – 54	\$ 74,055	\$ 56,203	\$ 60,323	\$ 16,806	\$ 16,281	\$ 16,434
55 – 59	\$ 68,428	\$ 68,443	\$ 68,438	\$ 16,095	\$ 16,233	\$ 16,180
60 – 64	\$ 77,237	\$ 58,749	\$ 66,672	\$ 15,935	\$ 16,183	\$ 16,067
65 – 69	\$ -	\$ 52,933	\$ 26,466	\$ 15,841	\$ 15,565	\$ 15,716
70	-	47,386	-	15,783	14,993	\$ 15,520
Total	\$ 52,582	\$ 49,509	\$ 50,195	\$ 17,074	\$ 16,989	\$ 17,014

* The rate of pay profile will increase by the inflation and real wage growth assumptions.

6.4 History of Legislative Changes

The actuarial cost method utilized is the projected unit credit cost method, which became effective with the June 30, 1989 valuation. Administrative expenses have been a component of the normal cost rate since the June 30, 1994 valuation. The financing objective under Article 16 of the Illinois Pension Code is to meet the cost of maintaining and administering the system on a 90% funded basis by June 30, 2045. Following is a brief summary of the changes in funding requirements.

- Public Act 88-0593, enacted in 1994, established a fifty-year funding plan for fiscal years 1996 through 2045. It required a fifteen-year ramp period of gradually increasing State contributions followed by a 35-year period of State contributions at a level percent of pay.
- Public Act 90-0448, enacted in 1997, required the System's assets to be valued at fair market value instead of book value.
- Public Act 90-0582, enacted in 1998, changed the defined benefit formula and added minimum state contribution rates in fiscal year 1999 that remained in effect through fiscal year 2004.
- Public Act 93-0002, enacted in 2003, provided pension obligation bond proceeds and placed upper limits on State contributions beginning with the State contribution due for fiscal year 2005.
- Public Act 94-0004, enacted in 2005, removed the money purchase formula for new hires, added new employer contributions for excess salary increases and sick leave, specified the level of state contributions for fiscal years 2006 and 2007, and required a return to the statutory funding plan in fiscal year 2008.
- Public Act 94-1057, enacted in 2006, contained exemptions from some of the new employer contribution requirements enacted in 2005.
- Public Act 96-0043, enacted in 2009, required the use of a smoothed actuarial value of assets beginning with the June 30, 2009 valuation.
- Public Act 96-0889, enacted in 2010, established Tier II provisions.
- Public Act 96-1511, enacted in 2011, required the state retirement systems to recertify their fiscal year 2011 state funding requirements and assume the Tier II benefits of Public Act 96-0889 were in effect on June 30, 2009.
- Public Act 97-0694, enacted in 2012, required the auditor general to hire an actuary to serve as the State Actuary.

A more complete history of legislative changes can be found at the following link:
<http://trs.illinois.gov/pubs/history.pdf>

6.5 Glossary of Actuarial Terms

Note that the first definitions given are the “official” definitions of the term. For some terms there is a second definition, in italics.

Actuarial Accrued Liability (AAL). The portion of the Present Value of Future Benefits (PVFB) allocated to past service. Also difference between (i) the actuarial present value of future benefits, and (ii) the present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.” *The amount of money that should be in the Fund. The funding target.*

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, retirement, investment income and salary increases. Demographic (“people”) assumptions (rates of mortality, separation, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic (“money”) assumptions (salary increases and investment income) consist of an underlying rate appropriate in an inflation-free environment plus a provision for a long-term average rate of inflation. *Estimates of future events used to project what we know now- current member data, assets, and benefit provisions – into an estimate of future benefits.*

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the Present Value of Projected Benefits (PVFB) between the normal costs to be paid in the future and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Math. The term given to a funding policy which is designed to systematically fully fund a public employee retirement system over a reasonable amount of time. Refer to the executive summary for more details.

Actuarial Methods. The collective term for the Actuarial Cost Method, the Amortization Payment for UAAL Method, and the Asset Valuation Method used to develop the contribution requirements for the Retirement System. *The Funding Policy.*

Actuarial Equivalent. Benefits whose actuarial present values are equal.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuarial Value of Assets (AVA). The value of assets used to determine the contribution requirement and funded ratio. The AVA can be thought of as the average value of assets over a period of years. This smoothed value of assets is used to limit contribution volatility. Also known as the funding value of assets. *Smoothed value of assets.*

6.5 Glossary of Actuarial Terms (continued)

Amortization Payment for UAAL. Payment of the unfunded actuarial accrued liability by means of periodic contributions of interest and principal, as opposed to a lump sum payment. The components of the amortization payment for UAAL includes:

- Amortization Period Length – Generally amortization periods up to 30 years are allowed, although more recent white papers regarding public sector actuarial practice favor reducing the period to 15 to 20 years. Similar to a mortgage, the shorter the amortization period, the higher the payment and the faster the UAAL is paid off.
- Amortization payment increases – Future payments can be level dollar, like a mortgage, or as a level percent of pay. Most PERS amortize UAAL as a level percent of pay which when combined with the employer normal cost that is developed as a level percent of pay can result in contributions that are easier to budget.
- Amortization schedule can be closed or open. A closed amortization schedule is similar to a mortgage – at the end of the amortization period the UAAL is designed to be paid off. An open amortization period is similar to refinancing the UAAL year after year.
- Amortization schedule UAAL can be amortized over a single amortization period, or it can be amortized over a schedule, also known as layered amortization.

The amortization payment for UAAL can be thought of as the UAAL mortgage payment.

Asset Valuation Method. The components of how the actuarial value of assets is to be developed. Typical components are the averaging period and the corridor. The averaging period tends to be 3 to 5 years but can be longer. The corridor limits the actuarial value of assets to within a percent, say 20%, of the actual market value. Corridors are more common with longer averaging periods; white papers on the subject suggest that no corridor is needed for averaging periods of five years or less because the period is short enough to recognize asset gains and losses over a sufficiently small period and because corridors provide for excessive contribution volatility.

Experience Gain Loss. A measure of the difference between actual experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used. *The experience Gain (Loss) represents how much the actuary missed the mark in a given year.*

Fiduciary Net Position (FNP). Used for GASB 67, it represents the assets, measured at fair value, held in trust to provide benefits.

Funded Ratio. The percent of the actuarial accrued liabilities covered by the actuarial value of assets. Also known as the funded status. *The ratio of how much money you actually have in the fund to the amount you should have in the fund.*

Illinois Math. The term given to the various schemes in the Illinois Pension Code designed to systematically underfund public employee retirement systems in the state of Illinois. Refer to the executive summary for more details.

Net Pension Liability (NPL). Used for GASB 67, it is the difference between the total pension liability (TPL) and fiduciary net position (FNP). It is similar to the UAAL. It represents the liability of employers and nonemployer contributing entities to plan members for benefits provided through a defined benefit pension plan.

6.5 Glossary of Actuarial Terms (continued)

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” An amortization payment toward the unfunded actuarial accrued liability is paid in addition to the normal cost to arrive at the total contribution in a given year. *The cost of benefits accruing during the year.*

PERS. A generic term given to a Public Employees Retirement System

Present Value of Future Normal Cost (PVFNC). The portion of the Present Value of Projected Benefits (PVFB) allocated to future service. *The value in today’s dollars of the amount of contribution to be made in the future for benefits accruing for members in the Retirement System as of the valuation date. Note that in practice, this number is rarely discussed.*

Present Value of Future Benefits (PVFB). The projected future benefit payments of the plan are discounted into today’s dollars using an assumed rate of investment return assumption to determine the Present Value of Future Benefits (PVFB) of the Retirement System. The PVFB is the discounted value of the projected benefits promised to all members as of a valuation date, including future pay and service for members which has not yet been earned. *If the Retirement System held assets equal to the PVFB and all the assumptions were realized, there would be sufficient funds to pay off all the benefits to be paid in the future for members in the Retirement System as of the valuation date.*

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Service Cost. Used for GASB 67, it is the annual cost assigned, using the cost method (entry age normal) and assumptions under GASB 67, to current and subsequent plan years. It is similar to normal cost.

Total Pension Liability (TPL). Used for GASB 67, it is the portion of the Present Value of Future Benefits (PVFB) allocated to past service using the cost method (entry age normal) and assumptions under GASB 67. It is similar to the actuarial accrued liability.

Unfunded Actuarial Accrued Liability (UAAL). The difference between the actuarial accrued liability (AAL) and actuarial value of assets (AVA). The UAAL is sometimes referred to as “unfunded accrued liability.” *Funding shortfall, pension debt or prefunded amount if negative.*

Valuation Date. The date that the actuarial valuation calculations are performed as of. *Also known as the “snapshot date”.*

6.6 The Actuarial Valuation Process

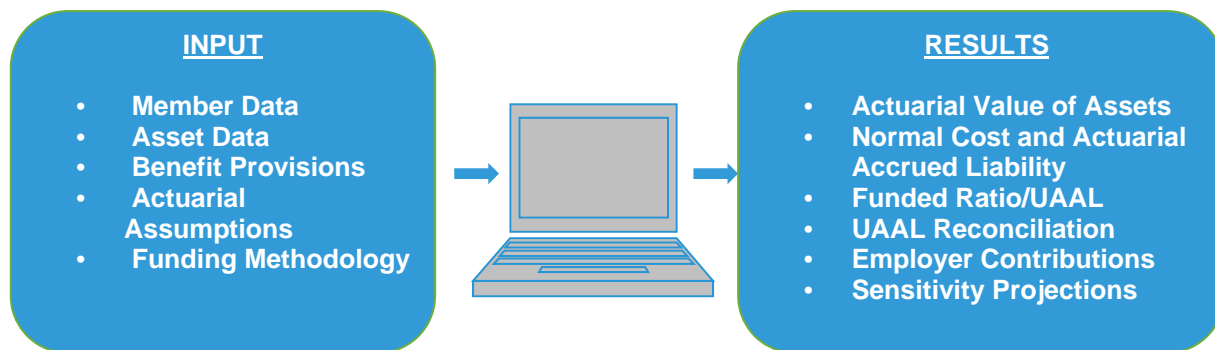
Purpose of an Actuarial Valuation

The Teachers' Retirement System of the State of Illinois is a defined benefit (DB) retirement systems. Under a DB Retirement System, the amount of benefits payable to a member upon retirement, termination, death or disability is defined in various contracts and legal instruments and is based, in part, on the member's years of credited service and final compensation. The amount of contribution needed to fund these benefits cannot be known with certainty. A primary responsibility of the Board of Trustees of a Retirement System is to establish and monitor a funding policy for the contributions made to the Retirement System.

While somewhat uncommon, in some jurisdictions, contributions are made by the plan sponsor as benefits come due. This is known as pay-as-you-go financing. More commonly, contributions for benefits are made in advance during the course of active employment of the members. This is known as actuarial pre-funding. The Illinois Pension Code (40 ILCS 5/16), for example, provides for State contributions designed to fund for 90% of a teacher's pension based on the results of the annual actuarial valuation. The more common (and recommended) practice is to fund for 100% of a members pension.

The Actuarial Valuation Process

The following diagram summarizes the inputs and results of the actuarial valuation process. A narrative of the process follows the diagram. The reader may find it worthwhile to refer to the diagram from time to time.



Under the actuarial valuation process, current information about Retirement System members is collected annually by staff at the direction of the actuary, namely member data, asset data and information on benefit provisions. Member data is collected for each member of the Retirement System. The member data will assist the actuary in estimating benefits that could be paid in the future. The member information the actuary collects to estimate the amount of benefit includes elements such as current service, salary and benefit group identifier for members that have not separated service; for those that have, the actual benefit amounts are collected. The actuary collects information such as gender and date of birth to determine when a benefit might be paid and for how long. The actuary collects summary information about assets as of the valuation date and information on cash flows for the year ending on the valuation date. Information about benefit provisions as of the valuation date is also collected. To bridge the gap between the information collected and potential benefits to be paid in the future, the actuary must make assumptions about future activities. These assumptions are recommended by the actuary to the Boards based on the results of an experience review. An experience review is a review of the Retirement System over a period of time, typically five years, where the actuary analyzes the demographic and economic assumptions of the Retirement System. Based on this review, the actuary will make recommendations on the demographic assumptions, such as when members will be projected to retire, terminate, become disabled and/or die in the future, as well as the economic assumptions, such as what rate of return is projected to be earned by the fund based on the Retirement System investment policy and what level of future salary increases is

6.6 The Actuarial Valuation Process (continued)

expected for members. To maintain the assumptions, the Board should adopt a prudent policy of having an experience review being performed at least every five years. (The next experience review for TRS will be based on the three-year period ending on June 30, 2015 and will be presented during 2015.) Using these assumptions, the actuary is able to use the member data, asset data and benefit provision information collected to project the benefits that will be paid from the Retirement System to current members. These projected future benefit payments are based not only on service and pay through the valuation date but includes future pay and service, which has not yet been earned by the members but is expected to be earned.

These projected future benefit payments are discounted into today's dollars using the assumed rate of investment return assumption to determine the Present Value of Future Benefits (PVFB) of the Retirement System. The PVFB is an estimate of the value of the benefits promised to all members as of a valuation date. If the Retirement System held assets equal to the PVFB and all the assumptions were realized, there would be sufficient funds to pay off all the benefits to be paid in the future for members in the Retirement System as of the valuation date.

The PVFB is a large sum of money, typically much larger than the amount of Retirement System assets held in the trust. The next step is for the actuary to apply the Funding Policy as adopted by the Board to determine the employer contributions to be made to the Retirement System so that the gap between the PVFB and assets is systematically paid off over time. The Funding Policy is adopted by the Board based on discussions with the actuary. When the Board develops a funding policy, a balance between contributions which are responsive to the needs of the Retirement System yet stable should be struck. There are many different funding policies for the Board to consider, and the actuary is responsible for discussing the various features of the funding policies under consideration. Funding Policies are generally reviewed during an experience review, but it is not uncommon to review a funding policy in between, particularly during period where large increases or decreases in contributions are expected. The Funding Policy is composed of three components: the actuarial cost method, the asset valuation method, and the amortization method.

Once the PVFB is developed, an actuarial cost method is used to allocate the PVFB. Under the actuarial cost method, the PVFB is allocated to past, current and future service, respectively known as the actuarial accrued liability (AAL), normal cost (NC) and present value of future normal costs (PVFNC). The actuary computes the liability components (PVFB, NC, AAL, and PVFNC) for each member in the Retirement System at the valuation date. These liability components are then totaled for the Retirement System. There are many actuarial cost methods. Different actuarial methods will produce different contribution patterns, but do not change the ultimate cost of the benefits. The entry age normal cost method is the most prevalent method used for public sector plans in the United States, because the expected normal cost is calculated in such a way that it will tend to stay level as a percent of pay over a member's career. Most public employee retirement systems use the entry age normal cost method.

The actuarial accrued liability (AAL) is also referred to as the amount of money the Retirement System should ideally have in the trust. The unfunded actuarial accrued liability (UAAL) is the portion of actuarial accrued liability that is not covered by the assets of the Retirement System. The UAAL can be a negative number, which means that the Retirement System has more assets than actuarial accrued liability. We refer to this condition as overfunded liability in this summary. Having UAAL does not indicate that the Retirement System is in failing actuarial health. UAAL is a common occurrence. Currently, many Retirement Systems in the United States have UAAL as a result of the Great Recession of 2008. Another related statistic of the Retirement System is the funded ratio. The funded ratio is the percent of the actuarial accrued liabilities covered by the actuarial value of assets. The assets used for these purposes are an actuarial value of assets (AVA), not market. The actuarial value of assets is based on the asset valuation method as recommended by the actuary and adopted by the Board. An actuarial value of assets is a smoothed, or averaged, value of assets, which is used to limit employer contribution volatility. Typically, assets are smoothed, or averaged, over a period of 3 to 5 years, although longer periods are becoming more common. By averaging returns, the UAAL is not as volatile, which we will see later results in contributions that are not as volatile as well.

6.6 The Actuarial Valuation Process (continued)

While having UAAL is common, it is acceptable only if it is systematically being paid off. The method by which the UAAL is paid off is known as the amortization method. The concept is similar to that of a mortgage payment. The Board adopts the amortization method used to pay off the UAAL over a period of time. The amortization method is composed of the amortization period, the amount of payment increase, whether the period is open or closed and by the amount of amortization schedules. The amortization period is the amount of time over which the UAAL will be paid off. This is generally a period of thirty years or less, but actuaries are beginning to recommend shorter periods of around 15 to 20 years. The payments can be developed to stay constant from year to year like a mortgage, but often they are developed to increase each year at the same level payroll increases. Amortization type can be closed or open. Under a closed period, the UAAL is expected to be paid off over the amortization period. This is similar to a typical mortgage. Under an open period, the amortization period remains unchanged year after year. The concept is similar to re-mortgaging annually. In many instances, an amortization schedule is developed, whereby the UAAL is amortized over a closed period from the point the UAAL is incurred. Finally, some amortization methods are defined by a schedule of payments, where a new schedule of payments is added with each valuation. This is referred to as amortization layers. Regardless of the amortization type or period, the funding policy should generate a contribution that pays off the UAAL, which results in the funded ratio trending to 100% over time. Caution should be used when an open method is used, because typically an open amortization policy does not result in the UAAL being paid off.

To satisfy the requirements of the Illinois Pension Code, the actuary calculates a projection of actuarial accrued liabilities and benefit payments through the year 2045. The contribution is developed as a level percent of pay to fund 90% of the 2045 actuarial accrued liability. The contribution is typically further reduced to coordinate with the pension obligation bonds debt service through the year 2033. The contribution requirements under the Illinois Pension Code are inadequate and have resulted in TRS being among the worst funded public employee retirement systems. The recommended practice is to develop the total annual contribution to the Retirement System as the normal cost plus a contribution towards UAAL. Said another way, this contribution is sufficient to pay for the cost of benefits accruing during the year (normal cost) plus the mortgage payment (UAAL payment). The total contribution is reduced by the amount of member contributions, if any, to arrive at the employer contribution.

An actuarial valuation report is produced annually, which contains the contribution for the fiscal year as well as the funded ratio of the Retirement System. The primary purpose of performing an actuarial valuation annually is to replace the estimated activities from the previous valuation, which were based on assumptions, with the actual experience of the Retirement System for the prior year. The experience gain (loss) is the difference between the expected and the actual UAAL of the Retirement System. An experience loss can be thought of as the amount of additional UAAL over and above the amount that was expected from the prior year due to deviation of actual experience from the assumption. Similarly, an experience gain can be thought of as having less UAAL than that which was expected from the prior year assumptions. As an example, if the Retirement System achieves an asset return of 15% when the assumption was a 7.50% return, an actuarial gain is said to have happened, which typically results in lower contributions and higher funded ratio, all else being equal. Alternatively, a return of 2% under the same circumstances would result in an actuarial loss, requiring an increase in contributions and a funded ratio that is lower than anticipated. Experience gains and losses are common within the valuation process. Typically gains and losses offset each other over time. To the extent that does not occur, the reasons for the gains and losses should be understood, and appropriate recommendations should be made by the actuary after an experience review to adjust the assumptions.

The actuarial valuation report will contain histories of key statistics from prior actuarial valuation reports. In particular, a history of the funded ratio of the Retirement System is an important exhibit. Trustees should understand the reason for the trend of the funded ratio of the Retirement System over time. The actuary will discuss the reasons for changes in the funded ratio of the Retirement System with each valuation report. To the extent that there are unexplained changes in funded ratio corrective action should be explored and the actuary

6.6 The Actuarial Valuation Process (continued)

will make recommendations as to whether there should be changes in the assumptions, funding policy, or some other portion of the actuarial valuation process.

In addition to historical information, projections of contributions and funded ratio based on current assumptions can sometimes be found in an actuarial valuation report. Projections of contributions can allow the employer to plan their budget accordingly. Surprises in Retirement System contributions to be paid by the employer serve no one. A one-year projection based on “bad” asset returns can provide ample time for the employer to plan, or allow for a discussion of changing the funding policy to occur. Contribution surprises are a primary contributor to employers considering pension reform. It is important to keep the employer apprised of future contribution requirements. A projection of funded ratio can serve the Trustees by illustrating the trend of the funded ratio over time. The funded ratio, under a prudent funding policy, should trend to 100% over a period of less than 30 years. It is worthwhile to note that while 30 years has served as an industry standard for the longest period over which 100% funding should be achieved, that period is coming under scrutiny by the actuarial community and has been shortened to 15 to 20 years. If a projection of funded ratio does not trend to 100% over time, consideration should be given to fixing the funding policy to achieve this goal. For TRS, projections are performed to determine the contribution requirements under the Illinois Pension Code. The projection shows the funded ratio trend to 90% over a period longer than old industry standard of 30 years, and certainly much longer than the new standard of 15 to 20 years.

The actuarial report will contain schedules of information about the census, plan and asset information submitted by Retirement System staff upon which the actuarial valuation is based. It is important that the Board of Trustees review that information and determine if the information is consistent with their understanding of the Retirement System. If after questioning staff, the Board of Trustees is not comfortable that the information provided is correct, the actuary should be notified to determine if the actuarial valuation report should be corrected.

Finally, the valuation report and/or presentation should contain sufficient information in an understandable fashion to allow the Board to take action and adopt the contribution rate for the upcoming year. It should also allow stakeholders to understand key observations over the past year that resulted in contributions increasing (or decreasing) and where contributions are headed. The actuary is always open to making the results understandable. Buck works with the TRS staff to make your reports and presentations understandable and actionable. If something doesn't make sense – speak up!!