STATE EMPLOYEES' RETIREMENT SYSTEM OF ILLINOIS

ANNUAL ACTUARIAL VALUATION AS OF JUNE 30, 2016

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October 21, 2016

Board of Trustees
State Employees' Retirement System of Illinois
Springfield, Illinois

Re: State Employees' Retirement System Actuarial Valuation as of June 30, 2016

Dear Board Members:

The results of the June 30, 2016, Annual Actuarial Valuation of the State Employees' Retirement System ("SERS" or "System") are presented in this report. The purposes of the actuarial valuation are to measure the System's funding status and to determine the State's contribution rate for the fiscal year beginning July 1, 2017, and ending June 30, 2018.

The actuarial valuation was based upon information furnished by SERS staff concerning System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data.

The State's contribution rate has been determined under Illinois statues, in particular under 40 ILCS Section 5/14-131. Information required by GASB Statements Nos. 67 and 68 is provided in a separate report. The System's current contribution rate determined under the statutory funding policy may not conform with the Actuarial Standards of Practice. Therefore, the Board adopted an actuarial funding policy to be used to calculate the Actuarially Determined Contribution ("ADC") under GASB Statements Nos. 67 and 68 for financial reporting purposes.

Although the statutory contribution requirements were met, the statutory funding method generates a contribution requirement that is less than a reasonable actuarially determined contribution. Meeting the statutory requirement does not mean that the undersigned agree that adequate actuarial funding has been achieved. We recommend the adherence to a funding policy, such as the Board policy used to calculate the ADC under GASB Statements Nos. 67 and 68, that funds the normal cost of the plan as well as an amortization payment that seeks to pay off any unfunded accrued liability over a closed period of 25 years.

To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of SERS as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Alex Rivera and Lance J. Weiss are Members of the American Academy of Actuaries and are independent of the plan sponsor and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

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Senior Consultant

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Senior Consultant and Team Leader

AR/LW:rg

Additional Disclosures Required by Actuarial Standards of Practice

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

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

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SECTION A

INTRODUCTION

Introduction

The law governing the State Employees' Retirement System ("SERS" or "System") requires the Actuary, as the technical advisor to the Board of Trustees to:

> "...make an annual valuation of the liabilities and reserves of the System, make an annual determination of the amount of contributions required from the State under this Article, and certify the results thereof to the board. (40 ILCS Section 5/14 - 138(c))."

Gabriel, Roeder, Smith & Company has been retained by the Board of Trustees to perform an actuarial valuation as of June 30, 2016. In this report, we present the results of the actuarial valuation and the appropriation requirements under Public Act 88-0593, Public Act 93-0002, Public Act 93-0839, Public Act 94-0004 and Public Act 96-0043 for fiscal year ending June 30, 2018. Effective with fiscal year ending June 30, 2014, GASB Statement No. 67 replaced GASB Statement No. 25 for pension plan financial reporting requirements. Effective with fiscal year ending June 30, 2015, GASB Statement No. 68 replaced GASB Statement No. 27 for employer financial reporting. Information required by GASB Statements Nos. 67 and 68 is provided in a separate report.

The actuarial valuation was completed based upon membership and financial data provided by the administrative staff of the System. The actuarial assumptions used for the June 30, 2016, actuarial valuation are based on a full experience review for the four-year period ending June 30, 2013, and a modified experience review for the three-year period ending June 30, 2015. The cost method used to determine the benefit liabilities for statutory funding is the Projected Unit Credit Cost Method. For actuarial valuation purposes, as well as projection purposes, the actuarial value of assets is based on a five-year smoothing method.

Changes Since Last Valuation

Legislative Changes

The following recently passed Public Act 99-0232 impacts SERS as follows:

Public Act 99-0232 was passed in fiscal year 2016 and became effective August 3, 2015. It provides that the five state retirement systems conduct an actuarial experience study at least once every three years, as opposed to the prior law which required such studies to occur at least once every five years.

A summary of the SERS plan provisions is included in Section F of this report.

Assumptions and Methods

Pursuant to Public Act 99-0232, effective August 3, 2015, the five state retirement systems shall conduct an actuarial experience study at least once every three years. An experience study was performed for SERS for the four-year period ending June 30, 2013, with the actuarial assumptions adopted for use commencing with the June 30, 2014, actuarial valuation. In order to be compliant with Public Act 99-0232, the next experience study should be completed for the three-year period ending June 30, 2016. However, at the Board's request, we have performed a modified experience review of a specific set of actuarial assumptions for the period from July 1, 2012, to June 30, 2015. The primary purpose of the study was to compare the demographic and economic experience against the following actuarial assumptions used in the actuarial valuations for the following assumptions:

- Investment Return;
- Price Inflation;
- General Wage Increases and Payroll Growth;
- Mortality;
- Withdrawal for Tier Two Members; and
- Service Increases Relating to Unused Sick Leave and Optional Service Purchases.

Other demographic assumptions remained unchanged from the 2014 Experience Review. Subsequent to the June 30, 2016, actuarial valuation, we recommend conducting an experience review of the remaining economic and demographic assumptions not reviewed during the modified experience study for the period July 1, 2012, to June 30, 2015.

Following is a summary of the key findings and recommendations, as approved by the Board, which became effective for the June 30, 2016, actuarial valuation.

- **Price inflation**: The rate of price inflation was decreased from 3.00 percent to 2.75 percent.
- **Investment return**: The investment return assumption, net of investment expenses, compounded annually, was decreased from 7.25 percent to 7.00 percent, which reflects an underlying price inflation assumption of 2.75 percent.
- **Payroll growth assumption**: The payroll growth assumption was decreased from 3.50 percent to 3.25 percent, which reflects an underlying general price inflation assumption of 2.75 percent.
- **Turnover rates for Tier Two members:** The current service-based only rate structure was maintained. Separate Tier Two turnover rates were implemented for members eligible for Regular Formula benefits and Alternate Formula benefits. The new rates increased the expected turnover.

- **Mortality rates:** The mortality tables used for the June 30, 2015, actuarial valuation were maintained; however, generational mortality improvement factors were added to reflect future mortality improvement. These new mortality tables are a move from a single dimensional age-based table to a two dimensional table, where the year a person was born also influences their mortality rate.
- **Service increases due to unused sick leave and optional service purchases:** We implemented an assumption to account for the increase in service of active members due to service credit granted at retirement for unused sick leave and optional service purchases. The result of this new actuarial assumption was an increase in service for all current and future active members of 4.5 months.

The net change in these actuarial assumptions increased the actuarial accrued liability as of June 30, 2016, by $3.824 billion.

On the following page is a summary of the key actuarial valuation results for the current and prior plan years.

Key Valuation Results

Valuation Date:	June 30, 2016	June 30, 2015
Fiscal Year Ending:	June 30, 2018	June 30, 2017
Estimated Statutory Contributions:		
• Annual Amount	$ 2,327,649,000	$ 2,014,461,000
• Percentage of Projected Capped Payroll for Fiscal Year	52.095%	42.805%
Actuarially Determined Contribution[a] (ADC):		
• Annual Amount	$ 2,759,110,028	$ 2,388,509,050
• Percentage of Projected Capped Payroll for Fiscal Year	61.752%	50.753%
Membership		
• Number of		
- Active Members	61,317	63,273
- Members Receiving Payments	70,031	67,954
- Members Eligible for Deferred Benefits	213	232
- Total	131,561	131,459
• Covered Payroll	$ 4,284,362,301	$ 4,453,683,664
• Annualized Benefit Payments	$ 2,220,115,396	$ 2,069,298,446
Assets		
• Market Value of Assets (MVA)	$ 15,038,528,150	$ 15,258,866,572
• Actuarial Value of Assets (AVA)	$ 15,632,604,174	$ 14,741,736,065
• Return on MVA	-0.82%	4.67%
• Return on AVA	6.71%	10.74%
• Ratio – AVA to MVA	103.95%	96.61%
Actuarial Information		
• Normal Cost Amount	$ 678,482,205	$ 654,616,726
• Actuarial Accrued Liability (AAL)	$ 45,515,370,479	$ 40,743,410,217
• Unfunded Actuarial Accrued Liability (UAAL)	$ 29,882,766,305	$ 26,001,674,152
• Funded Ratio based on AVA	34.35%	36.18%
• UAAL as % of Covered Payroll	697.48%	583.82%
• Funded Ratio based on MVA	33.04%	37.45%

[a] *For fiscal years ending on and after June 30, 2017, the Board adopted a recommended policy used to develop the Actuarially Determined Contribution (ADC) as defined in GASB Statements Nos. 67 and 68. The policy adopted by the Board calculates the ADC as the Normal Cost plus a 25-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability. As of June 30, 2016, the remaining amortization period is 24 years. The ADC is used for financial reporting purposes only.*

Appropriation Requirements Under P.A. 88-0593, P.A. 93-0002, P.A. 93-0839, P.A. 94-0004 and P.A. 96-0043

The law governing the System under P.A. 88-0593 provides that:

For fiscal years 2011 through 2045, the minimum contribution to the System for each fiscal year shall be an amount determined to be sufficient to cause the total assets of the System to equal 90 percent of the total actuarial liabilities of the System by the end of fiscal year 2045. In making these determinations, the required contribution shall be calculated each year as a level-percentage-of-payroll over the years remaining to and including fiscal year 2045 and shall be determined under the projected unit credit actuarial cost method. For fiscal years 1997 through 2010, the minimum contribution to the System, as a percentage of the payroll, shall be increased in equal annual increments so that by fiscal year 2010, the contribution rate is at the same level as the contribution rate for fiscal years 2011 through 2045.

The above calculation provides the basis for calculating the appropriation requirements under P.A. 93-0002. For fiscal years 2005 and later, the contributions under P.A. 93-0002 start with a calculation of the contribution based upon the hypothetical asset value which assumes no infusion from the proceeds of the GOB sale that were deposited July 1, 2003 (Table 4a). This contribution is then reduced by the debt service beginning in fiscal year 2005 to produce the maximum contribution. For fiscal years 2006 and 2007, the maximum contribution is equal to the contribution amounts stated in P.A. 94-0004 for each respective year. The contribution amounts stated in P.A. 94-0004 are $203,783,900 for fiscal year 2006 and $344,164,400 for fiscal year 2007. A second projection is performed to develop the P.A. 88-0593 formula rate, which includes the GOB deposit. The lower of this formula rate with the GOB assets included and the maximum contribution is the required state appropriation (Table 4b).

Pursuant to Public Act 96-0043, $723,703,100 of the total required State contribution for fiscal year 2010 will be paid from the proceeds of a GOB sale.

Pursuant to Public Act 96-0043, for the calculation of the fiscal year 2011 contribution and beyond, the value of the System's assets shall be equal to the actuarial value of the System's assets. As of June 30, 2008, the actuarial value of the System's assets shall be equal to the market value of the assets as of that date. In determining the actuarial value of the System's assets for fiscal years after June 30, 2008, any actuarial gains or losses from investment return incurred in a fiscal year shall be recognized in equal annual amounts over the five-year period following that fiscal year. Furthermore, for purposes of determining the required State contribution to the System for a particular year, the projected actuarial value of assets shall be assumed to earn a rate of return equal to the System's actuarially assumed rate of return.

The following tables outline the reconciliation of the market value of assets and the development of the hypothetical asset value as of June 30, 2016. Also, the tables show the development of the actuarial value of assets under both the market value and the hypothetical value of assets.

Market Value of Asset Reconciliation and the Development of the Actuarial Value of Assets based upon the Market Value of Assets

1. Market Value of Assets 6/30/2015	$ 15,258,866,572
2. Actual State Contribution Amount	1,882,243,268
3. Employee Contribution Amount	256,198,172
4. Benefit Payouts & Refunds	(2,217,209,933)
5. Administrative Expenses	(16,126,997)
6. Investment Income	(125,442,932)
7. Market Value of Assets 6/30/2016	15,038,528,150
8. Expected Investment Return at 7.25%	1,102,888,052
9. Investment Gain/(Loss) Current Year	(1,228,330,984)
10. Deferred Investment Gains and (Losses) All Years	(594,076,024)
11. Actuarial Value of Assets 6/30/2016 (7. - 10.)	15,632,604,174

Development of the Hypothetical Value of Assets and the Development of the Actuarial Value of Assets based upon the Hypothetical Value of Assets

The hypothetical asset value assumes no infusion from the proceeds of the GOB sale that were deposited July 1, 2003.

1. Hypothetical Value of Assets 6/30/2015	$ 13,729,335,502
2. State Contribution Amount[a]	1,980,010,088
3. Employee Contribution Amount	256,198,172
4. Benefit Payouts & Refunds	(2,217,209,933)
5. Administrative Expenses	(16,126,997)
6. Investment Income[b]	(112,592,348)
7. Hypothetical Value of Assets 6/30/2016	13,619,614,484
8. Expected Investment Return at 7.25%	995,479,088
9. Investment Gain/(Loss) Current Year	(1,108,071,436)
10. Deferred Investment Gains and (Losses) All Years	(544,139,204)
11. Hypothetical Actuarial Value of Assets 6/30/2016 (7. - 10.)	14,163,753,688

[a] *Represents 46.215 percent of payroll for the basic contribution. This rate was determined as part of the June 30, 2014, valuation and is based upon the hypothetical asset value which assumes no infusion from the proceeds of the GOB sale that were deposited July 1, 2003.*

[b] *Investment income assumes hypothetical value of assets earns the Fund's actual rate of return for fiscal year 2016 of (0.82) percent.*

The development of the actuarial smoothed value of assets with GOB proceeds and the hypothetical smoothed value of assets without GOB proceeds are provided in each respective historical valuation report since the GOB proceeds were deposited into the trust.

The fiscal year ending June 30, 2017, certified contribution and projected future year required State contribution rates and amounts, assuming deferred investments gains and losses are recognized in the assets, are as follow:

Fiscal Year Ending June 30,	Base Contribution	Debt Service Contribution	Total Contribution	Assumed Payroll (billions)	Total Required Contribution	Total Required Contribution Including Debt Service
2017	42.805%	1.763%	44.568%	$4.706	$2,014,461,000	$2,097,430,000
2018	52.095%	1.918%	54.013%	4.468	2,327,649,000	2,413,347,000
2019	52.069%	1.933%	54.002%	4.567	2,377,870,000	2,466,146,000
2020	52.131%	2.015%	54.146%	4.666	2,432,256,000	2,526,270,000
2021	52.518%	2.085%	54.603%	4.769	2,504,534,000	2,603,965,000
2022	52.790%	2.145%	54.935%	4.872	2,572,062,000	2,676,572,000
2023	52.723%	2.194%	54.917%	4.978	2,624,620,000	2,733,840,000
2024	52.577%	2.302%	54.879%	5.088	2,674,889,000	2,792,005,000
2025	52.455%	2.391%	54.846%	5.200	2,727,740,000	2,852,076,000
2026	52.446%	2.398%	54.844%	5.320	2,790,186,000	2,917,763,000
2027	52.449%	2.396%	54.845%	5.446	2,856,253,000	2,986,733,000

For fiscal years 2018 through 2033, the base contribution is limited by the maximum contribution determined under the assumption that the proceeds of the GOB sale were not deposited; therefore, the contribution rate is not level as a percent of pay.

Pursuant to Public Act 96-0043, the fiscal year 2018 contribution rate is calculated assuming the actuarial value of assets as of July 1, 2016, earns a rate of return equal to the System's actuarially assumed rate of return.

The contributions for fiscal years 2019 and beyond, as presented above, are developed in Tables 4c and 4d in this report. In those projections, the actuarial valuations as of June 30 for years 2017 through 2020 have been projected as though a valuation in each of those years was performed. At each projected valuation, an additional 20 percent of the investment gains and losses are recognized. The market value of assets at June 30, 2016, is assumed to have a rate of return equal to the valuation interest rate going forward. Therefore, the actuarial value of assets is calculated by adjusting the market value at each respective valuation date by the remaining percentage of the investment gains and losses. The actuarial value of assets converges to market value in 2020, when all remaining investment gains and losses have been recognized. Because the deferred asset gains and losses are incorporated into the projections, the projections found in Tables 4c and 4d do not show a stable contribution rate until the impact of the five-year asset smoothing has been fully realized.

Method of Calculation for Appropriation Requirements

The results are based on the projected unit credit actuarial cost method, the data provided and assumptions used for the June 30, 2016, actuarial valuation. In order to determine projected contribution rates and amounts, the following additional assumptions were used:

- Projected annualized payroll of $4,706,100,000 for fiscal year 2017. This amount was provided by the System.
- Total employer contributions of $2,014,461,000 (including no payments from the unclaimed property fund) for fiscal year 2017, as provided by the System.
- Administrative expenses of $18,217,681 for fiscal year 2017, as provided by the System.
- New entrants whose average age is 35.96 and average pay is $50,257 (2016 dollars). These values are based on the average age and average pay of new entrants over the last 15 years.
- The active member population is assumed to remain level at 61,317 for all years of the 29-year projection.
- Projected benefits for members hired on or after January 1, 2011, are based on the new provisions established in P.A. 96-0889.

The average increase in total uncapped payroll for the 29-year projection period is approximately 3.25 percent per year. It is important to note that benefits for new hires are based on capped payroll which is ultimately projected to grow at 1.5 percent per year. All results in this valuation assume that State contributions will be made on capped pay.

To determine the contribution rates, the expected 2017 appropriation was converted to a percentage of the expected 2017 payroll. An amortization schedule was then determined on the assumption that:

- The ratio of total assets to total actuarial liabilities will be 90 percent by June 30, 2045.
- The actuarial value of assets shall be assumed to earn a rate of return equal to the System's actuarially assumed rate of return.
- The contribution rates for fiscal years 2010 through 2033 will not be uniform, but the rate for any one of these years will be the minimum of: the difference between the "without-GOB" contribution and the debt service, and the underlying formula rate as determined by Public Act 88-0593.
- The contribution rate for fiscal year 2017 will be 42.805 percent based on the certification of the June 30, 2015, valuation results issued on October 28, 2015.
- The contribution rates for fiscal years 2034 through 2045 will be a uniform percentage of capped payroll.

Finally, the certified FY 2018 contribution rate will be applied to actual FY 2018 capped payroll.

GASB: Financial Accounting Information

In an effort to enhance the understandability and usefulness of the pension information that is included in the financial reports of pension plans for state and local governments, the Governmental Accounting Standards Board ("GASB") issued Statement No. 25—Financial Reporting for Defined Benefit Pension Plans and Statement No. 27—Accounting for Pensions by State and Local Governmental Employers. Effective with fiscal year ending June 30, 2014, Statement No. 67—Financial Reporting for Pension Plans replaced Statement No. 25 for pension plan financial reporting requirements. Statement No. 68—Accounting and Financial Reporting for Pensions replaced Statement No. 27 for employer financial reporting effective with fiscal year ending June 30, 2015.

Pension plan financial reporting under GASB Statements Nos. 67 and No. 68 is provided in a separate report.

The term Annual Required Contribution ("ARC") is no longer in the GASB Statements. However, under GASB Statements Nos. 67 and 68 the Actuarially Determined Contribution ("ADC") is defined as:

> *A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with the Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.*

The ADC is presented in the financial statements as Required Supplementary Information and is compared to actual contributions to the System that are calculated under the current statutory funding policy that provides a 90 percent funded ratio in 2045. The current funding policy may not conform to the Actuarial Standards of Practice; therefore, the Board has adopted a policy to calculate the ADC for financial reporting purposes. Under this policy, the ADC is calculated as the Normal Cost plus a 25-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability as of June 30, 2015. The remaining amortization period as of the June 30, 2016, actuarial valuation is 24 years.

The ADC for fiscal years 2017 and 2018, as well as the statutory contribution for fiscal years 2017 and 2018, are shown on the following page as a percentage of capped payroll. The ADC percentage and statutory contribution for 2017 are based on the results of the June 30, 2015, actuarial valuation. The dollar amount of the ADC for 2017 and 2018, and the statutory contribution for 2017 and 2018 will be the product of the actual payroll for 2017 and 2018 and the percentages shown.

	Fiscal Year 2018	Fiscal Year 2017
1. Employer normal cost	$ 678,482,205	$ 654,616,726
2. Amount to amortize the unfunded liability over a 25-year closed-period, beginning July 1, 2015, as a level percentage of capped payroll	$ 2,080,627,823	$ 1,733,892,324
3. ADC [(1) + (2)]	$ 2,759,110,028	$ 2,388,509,050
4. ADC as a percentage of projected capped payroll	61.752%	50.753%
5. Estimated statutory contribution	$ 2,327,649,000	$ 2,014,461,000
6. Estimated statutory contribution as a percentage of projected capped payroll	52.095%	42.805%
7. Estimated statutory contribution as a percentage of ADC [(5) ÷ (3)]	84.362%	84.340%

The significant provisions of GASB Statements Nos. 67 and 68 include:

1. Recognizing the entire Net Pension Liability (similar to the Unfunded Actuarial Liability) on the balance sheet. The Net Pension Liability is comparable to the Net Pension Obligation which was recognized under GASB Statement No. 27.

2. Use of a single equivalent discount rate based on (1) 7.00 percent for the projected benefits for all current members that can be paid from current assets and projected investment return, future employee contributions from current members, and future employer contributions attributable to current members, and (2) a municipal bond rate for the portion of the projected benefits after assets are depleted. The applicable municipal bond rate for fiscal year end 2016 is 2.85 percent.

3. Use of market value of assets to calculate the Net Pension Liability.

4. Use of the entry age normal cost method to calculate the Total Pension Liability.

5. Elimination of the Annual Pension Cost and replacing it with the Pension Expense, which is determined using a much shorter amortization period than 30 years.

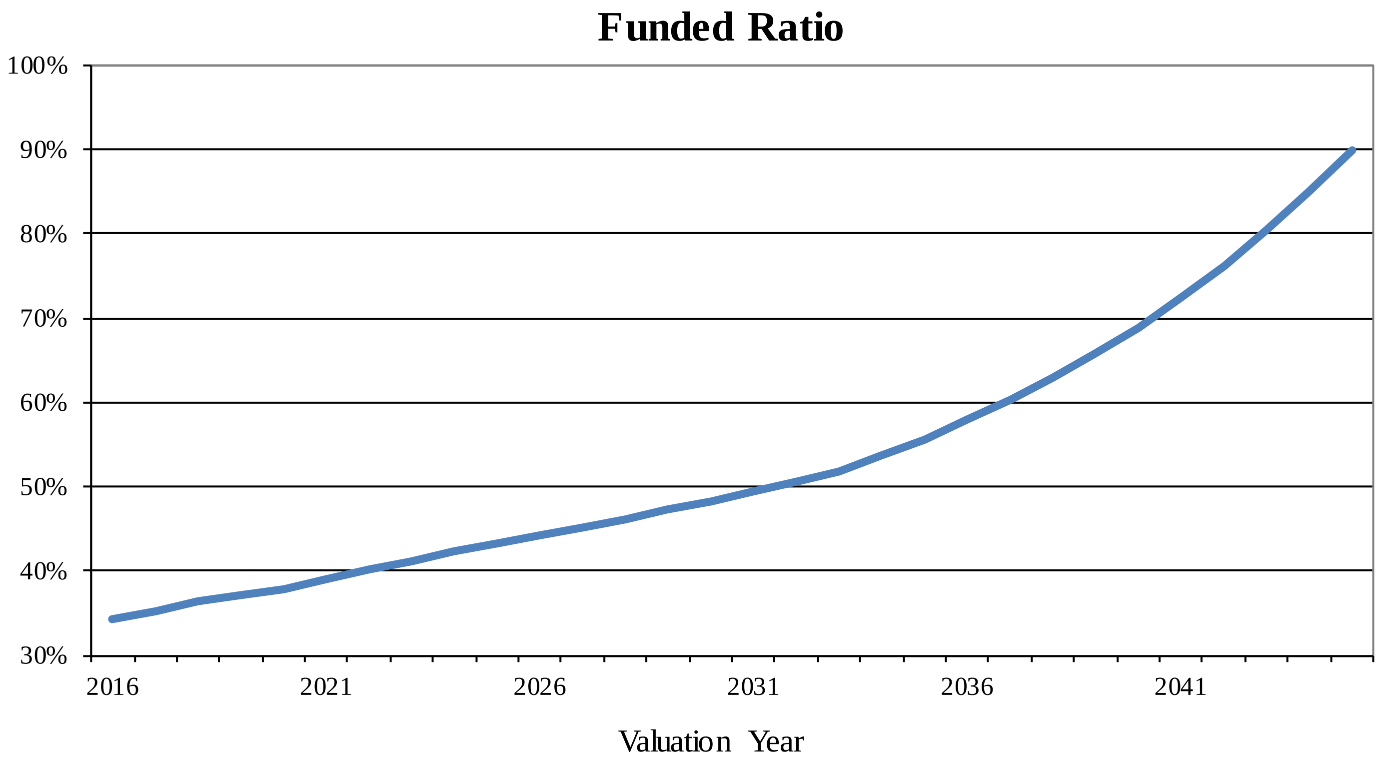
Due to the single equivalent discount rate and shorter amortization periods required under GASB Statements Nos. 67 and 68, the liabilities and pension expense will be higher and more volatile than under the prior standards. The measurements required under GASB Statements Nos. 67 and 68 are provided in a separate report.

Observations on Actuarial Funding and Statutory Funding

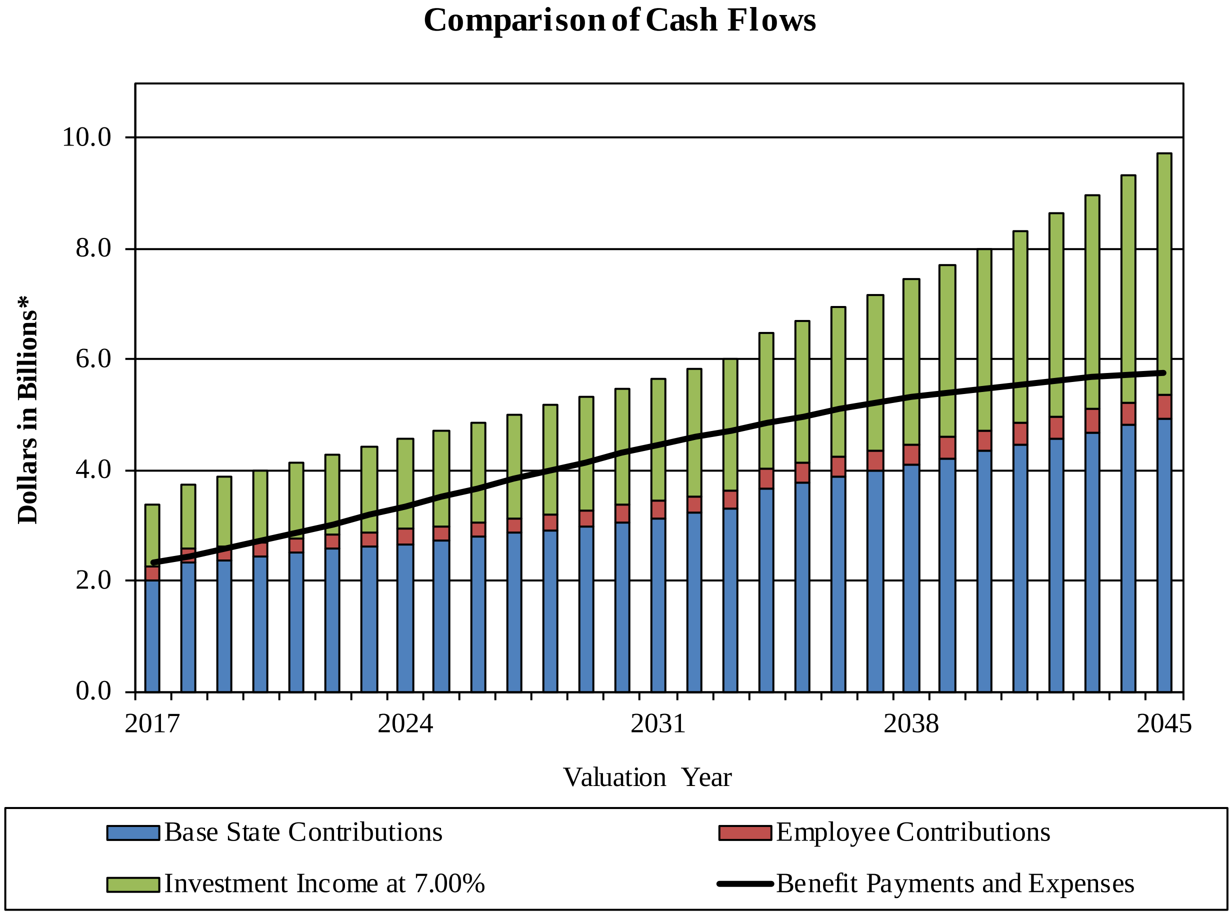
GASB Statements Nos. 25, 27, 67 and 68 provide guidance for retirement plans and plan sponsors on the development of an annual expense requirement to be reported in their annual financial statements. Under the prior rules established by GASB Statements Nos. 25 and 27, this expense requirement is based on the Annual Required Contribution. The ARC is the sum of the normal cost and amortization of the unfunded accrued liability and represents the annual employer contributions that are projected to finance benefits for current plan members over a period not to exceed 30 years. GASB Statements Nos. 67 and 68, which replaced GASB Statements Nos. 25 and 27, no longer use the ARC. However, measuring the Statutory Contribution against a policy such as the ARC helps evaluate the funding adequacy of the current statutory funding method. Thus, the Board adopted a policy to calculate the Actuarially Determined Contribution. Under this policy, the ADC is calculated as the Normal Cost plus a 25-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability as of June 30, 2015.

A key objective of the ADC is to accrue costs over the working lifetime of plan members to ensure that benefit obligations are satisfied and intergenerational equity is promoted. Although the ADC is solely an accounting provision, in certain circumstances it could represent a reasonable annual funding target and therefore is used by some plan sponsors as their "de facto" funding requirement. Given there is no requirement that the accounting provision for pension expense must equal the annual funding requirement, some plan sponsors adopt funding policies that differ from the ADC. However, a funding policy that differs significantly from the ADC approach could result in a potential "back-loading," meaning contributions are deferred into the future. Back-loading could result in an underfunding of the system.

The statutory funding policy adopted for SERS provides for level percent of pay funding that produces a funding target of 90 percent by 2045, assuming an open group projection. The following graph shows the projected funded ratio. A key observation is that the funded ratio does not grow markedly until after 2033. That is, a majority of the funding occurs between 2034 and 2045. This illustrates how significantly the current funding policy defers or back-loads contributions into the future.



The following graph compares the projected benefits and expenses against employer contributions, employee contributions and investment income. Beginning in 2020, benefits exceed State and employee contributions. From 2020 to 2033, the percentage of investment income needed to pay ongoing benefits increases from approximately 3.2 percent to 45.5 percent. This implies that a lower level of investment income is projected to be available for potential asset growth. After 2033, the percentage of investment income needed to pay ongoing benefits is projected to decrease from approximately 34.5 percent in 2034 to 9.3 percent in 2045, which is projected to cause assets to grow at a faster rate.



**Future dollar amounts are based on assumed inflationary increases.*

The provisions of P.A. 96-0043 develop a theoretical value of assets that does not recognize deferred investment gains and losses in the projection of assets used to develop the statutory contribution. This policy has a tendency to defer contributions when plan assets experience a loss.

Given that SERS funded ratio at June 30, 2016, is only 33 percent on a market value of assets basis, and because the current statutory policy tends to back-load and defer contributions, we advise strengthening the current statutory funding policy. The Board has taken steps to strengthen the current statutory funding policy by adopting a lower assumed rate of return and more conservative assumptions. Examples of other methods to strengthen the current funding policy include:

1. Increasing the 90 percent funding target to 100 percent;

2. Reducing the projection period needed to reach the funding target; and

3. Separating the financing of benefits for members hired before and after December 31, 2010.

The statutory contribution policy could also be strengthened by changing to an ADC based funding approach with an appropriate amortization policy for each respective tiered benefit structure.

In 2014, the Society of Actuaries Blue Ribbon Panel on Public Pension Plan Funding and the Conference of Consulting Actuaries Public Plans Community both issued reports on public plan funding. Some of the common elements in those reports are to:

1. Establish a Funding Policy using Actuarially Determined Contributions;

2. Target 100 percent funded; and

3. Shorten the amortization period to 15 to 20 years to avoid negative amortization of the unfunded actuarial accrued liability.

At the April 21, 2015, Board meeting, the Board adopted a policy, for purposes of financial reporting under GASB Statements Nos. 67 and 68, which provides for the annual payment of SERS' normal cost and amortizing the unfunded liability over a 25 year closed period, beginning July 1, 2015, as a level percent of capped payroll.

Finally, we strongly recommend that stress testing be performed and we will work with the System on developing specific stress testing scenarios.

SECTION B

FUNDING RESULTS

Table 1

Results of Actuarial Valuation as of June 30, 2016

1	Number of Members		
	a. Active		61,317
	b. Inactive:		
	i. Eligible for deferred vested pension benefits (3,750 based on SERS service alone. An additional 357 are eligible when reciprocal service is added to SERS service).		4,107
	ii. Eligible for return of contributions only		22,013
	c. Current Benefit Recipients:		
	i. Retirement annuities		56,825
	ii. Survivor annuities		11,043
	iii. Disability annuities		2,163
	d. Eligible for Deferred Benefits:		
	i. Retirement annuities		71
	ii. Survivor annuities		142
	e. Total		157,681
2	Covered Payroll as of Valuation Date	$	4,284,362,301
3	Annualized Benefit Payments Currently Being Made		
	a. Retirement (Includes those eligible for deferred benefits)	$	2,024,380,509
	b. Survivor (Includes those eligible for deferred benefits)		140,593,465
	c. Disability		55,141,422
	d. Total	$	2,220,115,396
4	Actuarial Liability—Annuitants		
	a. Current Benefit Recipients:		
	i. Retirement annuities	$	27,993,990,581
	ii. Survivor annuities		1,542,696,091
	iii. Disability annuities		538,547,112
	b. Eligible for Deferred Benefits:		
	i. Retirement annuities		7,341,429
	ii. Survivor annuities		9,863,589
	c. Total	$	30,092,438,802

		Normal Cost	Actuarial Liability
5	Actuarial Liability—Inactive Members		
	a. Eligible for Deferred Vested Pension Benefits		$ 650,648,573
	b. Eligible for Return of Contributions Only		38,987,588
	c. Total		$ 689,636,161
6	Active Members		
	a. Pension Benefits	$ 567,348,029	$ 10,023,522,286
	b. Cost-of-Living Adjustments	225,469,986	4,233,860,752
	c. Death Benefits		
	i. Occupational	$ 1,021,186	$ 11,199,224
	ii. Non-occupational	7,663,104	102,168,909
	iii. Refund	8,392,049	27,872,389
	iv. Total	$ 17,076,339	$ 141,240,522
	d. Disability		
	i. Occupational	$ 10,588,803	$ -
	ii. Non-occupational	60,003,219	-
	iii. Total	$ 70,592,022	$ -
	e. Withdrawal	34,376,606	334,671,956
	f. Expenses	18,217,681	-
	g. Total	$ 933,080,663	$ 14,733,295,516
7	Total Actuarial Liability (4 + 5 + 6)		$ 45,515,370,479
8	Market Value of Assets (MVA)		$ 15,038,528,150
9	Unfunded Actuarial Liability Based on MVA (7 – 8)		$ 30,476,842,329
10	Funded Percentage Based on MVA (8 ÷ 7)		33.04%
11	Actuarial Value of Assets (AVA)		$ 15,632,604,174
12	Unfunded Actuarial Liability Based on AVA (7 – 11)		$ 29,882,766,305
13	Funded Percentage Based on AVA (11 ÷ 7) [a]		34.35%
14	Total Normal Cost	$ 933,080,663	
15	Employee Contributions	$ 254,598,458	
16	Annual Employer Normal Cost	$ 678,482,205	
	(% payroll)	15.84%	

[a] *The funded status measure is appropriate for assessing the need for future contributions. The funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.*

Analysis of Change in Unfunded Accrued Actuarial Liability

In addition to the expected change in the unfunded accrued actuarial liability, changes in membership demographics and fund assets have affected the actuarial valuation results. The increase in the unfunded actuarial accrued liability (UAAL) of $3,881,092,153 was due to the following:

1	UAAL at 06/30/2015	$	26,001,674,152
2	Contributions		
	a. Contributions due		
	i interest on 1)	$	1,885,121,376
	ii members contributions		256,198,172
	iii employer normal cost		654,616,726
	iv interest on ii and iii		32,439,364
	v total due	$	2,828,375,638
	b. Contributions paid		
	i member contributions	$	256,198,172
	ii state agencies		1,882,243,268
	iii interest on i and ii		76,162,215
	iv total paid	$	2,214,603,655
	c. Expected increase in UAAL	$	613,771,983
3	Expected UAAL at 06/30/2016	$	26,615,446,135
4	(Gains)/Losses		
	a. investment income	$	79,632,491
	b. salary increases		(744,045,004)
	c. demographic		107,475,059
	d. total	$	(556,937,454)
5	Plan Provision Changes	$	-
6	Assumption Changes	$	3,824,257,624
7	Total Change in UAAL	$	3,881,092,153
8	UAAL at 06/30/2016	$	29,882,766,305

Table 3

Analysis of Financial Gains and Losses in Unfunded Accrued Actuarial Liability for Fiscal Year Ending June 30, 2016

	Activity		(Gain)/Loss	% of 06/30/2015 AAL
1	Actuarial (Gain)/Loss			
	a. Retirements	$	65,771,179	0.17%
	b. Incidence of Disability		-	0.00%
	c. In-Service Mortality		147,349	0.00%
	d. Retiree Mortality and Benefit Changes		(167,079,352)	-0.41%
	e. Salary Increases		(744,045,004)	-1.83%
	f. Terminations		92,344,578	0.23%
	g. Investment		79,632,491	0.20%
	h. New Entrant Liability		52,373,257	0.13%
	i. Other		63,918,048	0.16%
	j. Total Actuarial (Gain)/Loss	$	(556,937,454)	-1.35%
2	Plan Provision Changes	$	-	0.00%
3	Assumption Changes	$	3,824,257,624	9.39%
4	Contribution (Excess)/Shortfall	$	613,771,983	1.51%
5	Total Financial (Gain)/Loss	$	3,881,092,153	9.55%

29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 94-0004, Public Act 96-0043
Maximum Contribution Calculation: Without GOB Proceeds
Rate of Return on Assets = 7.00%
(All Dollar Amounts in Millions)

							Annual Normal Cost				State Contribution		
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Amount	Percent of Pay	Total Expenses
2017	61,317	$ 47,269	$ 15,221	$ 32,048	32.20%	$ 4,706	$ 933	$ 255	$ 678	14.41%	$ 2,127	45.20%	$ 2,318
2018	61,317	49,010	16,533	32,477	33.73%	4,468	930	241	689	15.42%	2,444	54.70%	2,446
2019	61,317	50,733	17,856	32,877	35.20%	4,567	933	245	688	15.06%	2,498	54.70%	2,583
2020	61,317	52,430	19,184	33,246	36.59%	4,666	934	249	685	14.68%	2,552	54.70%	2,727
2021	61,317	54,091	20,513	33,578	37.92%	4,769	933	254	679	14.24%	2,609	54.70%	2,875
2022	61,317	55,705	21,840	33,865	39.21%	4,872	929	258	671	13.77%	2,665	54.70%	3,029
2023	61,317	57,262	23,160	34,102	40.45%	4,978	923	262	661	13.28%	2,723	54.70%	3,187
2024	61,317	58,752	24,470	34,282	41.65%	5,088	916	267	649	12.76%	2,783	54.70%	3,351
2025	61,317	60,166	25,769	34,397	42.83%	5,200	907	271	636	12.23%	2,845	54.70%	3,516
2026	61,317	61,500	27,061	34,439	44.00%	5,320	899	276	623	11.71%	2,910	54.70%	3,680
2027	61,317	62,756	28,356	34,400	45.18%	5,446	891	281	610	11.20%	2,979	54.70%	3,839
2028	61,317	63,930	29,657	34,273	46.39%	5,577	886	286	600	10.76%	3,051	54.70%	3,998
2029	61,317	65,025	30,977	34,048	47.64%	5,719	884	292	592	10.35%	3,128	54.70%	4,151
2030	61,317	66,044	32,326	33,718	48.95%	5,868	884	298	586	9.99%	3,210	54.70%	4,300

Normal cost rate includes administrative expenses.
State contribution based on the requirements of Public Act 88-0593, as amended by Public Act 90-0065, Public Act 94-0004, and Public Act 96-0043.
Total expenses shown include benefit payments, refunds and administrative expenses.
Actuarial accrued liability and assets are measured at Plan Year End.
Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 94-0004, Public Act 96-0043
Maximum Contribution Calculation: Without GOB Proceeds
Rate of Return on Assets = 7.00%
(All Dollar Amounts in Millions)

							Annual Normal Cost				State Contribution		
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Amount	Percent of Pay	Total Expenses
2031	61,317	$ 66,984	$ 33,715	$ 33,269	50.33%	$ 6,025	$ 886	$ 305	$ 581	9.64%	$ 3,296	54.70%	$ 4,446
2032	61,317	67,845	35,153	32,692	51.81%	6,187	887	313	574	9.28%	3,384	54.70%	4,588
2033	61,317	68,628	36,654	31,974	53.41%	6,354	890	320	570	8.97%	3,475	54.70%	4,724
2034	61,317	69,339	38,234	31,105	55.14%	6,529	895	328	567	8.68%	3,571	54.70%	4,852
2035	61,317	69,976	39,909	30,067	57.03%	6,711	900	336	564	8.40%	3,671	54.70%	4,976
2036	61,317	70,541	41,691	28,850	59.10%	6,898	906	345	561	8.13%	3,773	54.70%	5,096
2037	61,317	71,039	43,601	27,438	61.38%	7,090	914	354	560	7.90%	3,878	54.70%	5,207
2038	61,317	71,478	45,661	25,817	63.88%	7,288	926	363	563	7.73%	3,986	54.70%	5,308
2039	61,317	71,867	47,894	23,973	66.64%	7,489	940	373	567	7.57%	4,097	54.70%	5,401
2040	61,317	72,215	50,324	21,891	69.69%	7,693	957	383	574	7.46%	4,208	54.70%	5,484
2041	61,317	72,534	52,974	19,560	73.03%	7,898	977	393	584	7.39%	4,320	54.70%	5,556
2042	61,317	72,833	55,874	16,959	76.72%	8,105	1,000	404	596	7.35%	4,433	54.70%	5,619
2043	61,317	73,125	59,051	14,074	80.75%	8,314	1,025	414	611	7.35%	4,548	54.70%	5,672
2044	61,317	73,418	62,533	10,885	85.17%	8,525	1,052	425	627	7.35%	4,663	54.70%	5,717
2045	61,317	73,721	66,350	7,371	90.00%	8,736	1,081	435	646	7.39%	4,779	54.70%	5,756

Normal cost rate includes administrative expenses.
State contribution based on the requirements of Public Act 88-0593, as amended by Public Act 90-0065, Public Act 94-0004, and Public Act 96-0043.
Total expenses shown include benefit payments, refunds and administrative expenses.
Actuarial accrued liability and assets are measured at Plan Year End.
Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

Table 4b

29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 93-0002, Public Act 94-0004, Public Act 96-0043
Rate of Return on Assets = 7.00%
(All Dollar Amounts in Millions)

							Annual Normal Cost				Required State Contribution						
											(a)	(b)	(c)=(a)-(b)	(d)	Minimum of (c) and (d)		
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2017	61,317	$47,269	$ 16,676	$ 30,593	35.28%	$ 4,706	$933	$ 255	$ 678	14.41%	$2,127	$ 113	$ 2,014	$ 2,014	$ 2,014	42.81%	$ 2,318
2018	61,317	49,010	17,970	31,040	36.67%	4,468	930	241	689	15.42%	2,444	116	2,328	2,465	2,328	52.09%	2,446
2019	61,317	50,733	19,269	31,464	37.98%	4,567	933	245	688	15.06%	2,498	120	2,378	2,519	2,378	52.07%	2,583
2020	61,317	52,430	20,563	31,867	39.22%	4,666	934	249	685	14.68%	2,552	128	2,424	2,574	2,424	51.96%	2,727
2021	61,317	54,091	21,850	32,241	40.39%	4,769	933	254	679	14.24%	2,609	136	2,473	2,631	2,473	51.87%	2,875
2022	61,317	55,705	23,123	32,582	41.51%	4,872	929	258	671	13.77%	2,665	142	2,523	2,688	2,523	51.79%	3,029
2023	61,317	57,262	24,380	32,882	42.58%	4,978	923	262	661	13.28%	2,723	148	2,575	2,746	2,575	51.72%	3,187
2024	61,317	58,752	25,610	33,142	43.59%	5,088	916	267	649	12.76%	2,783	159	2,624	2,806	2,624	51.57%	3,351
2025	61,317	60,166	26,814	33,352	44.57%	5,200	907	271	636	12.23%	2,845	169	2,676	2,868	2,676	51.45%	3,516
2026	61,317	61,500	28,000	33,500	45.53%	5,320	899	276	623	11.71%	2,910	173	2,737	2,935	2,737	51.44%	3,680
2027	61,317	62,756	29,177	33,579	46.49%	5,446	891	281	610	11.20%	2,979	177	2,802	3,004	2,802	51.44%	3,839
2028	61,317	63,930	30,344	33,586	47.46%	5,577	886	286	600	10.76%	3,051	186	2,865	3,076	2,865	51.38%	3,998
2029	61,317	65,025	31,512	33,513	48.46%	5,719	884	292	592	10.35%	3,128	193	2,935	3,155	2,935	51.33%	4,151
2030	61,317	66,044	32,688	33,356	49.49%	5,868	884	298	586	9.99%	3,210	205	3,005	3,237	3,005	51.22%	4,300

Normal cost rate includes administrative expenses.
State contribution based on the requirements of Public Act 88-0593, as amended by Public Act 90-0065, Public Act 93-0002, Public Act 94-0004, and Public Act 96-0043.
Total expenses shown include benefit payments, refunds and administrative expenses.
Actuarial accrued liability and assets are measured at Plan Year End.
Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 93-0002, Public Act 94-0004, Public Act 96-0043
Rate of Return on Assets = 7.00%
(All Dollar Amounts in Millions)

							Annual Normal Cost				Required State Contribution						
											(a)	(b)	(c)=(a)-(b)	(d)	Minimum of (c) and (d)		
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2031	61,317	$66,984	$33,880	$ 33,104	50.58%	$ 6,025	$ 886	$ 305	$ 581	9.64%	$3,296	$ 215	$ 3,081	$ 3,323	$ 3,081	51.13%	$ 4,446
2032	61,317	67,845	35,102	32,743	51.74%	6,187	887	313	574	9.28%	3,384	220	3,164	3,412	3,164	51.15%	4,588
2033	61,317	68,628	36,373	32,255	53.00%	6,354	890	320	570	8.97%	3,475	218	3,257	3,505	3,257	51.25%	4,724
2034	61,317	69,339	37,964	31,375	54.75%	6,529	895	328	567	8.68%	3,571	-	N/A	3,601	3,601	55.16%	4,852
2035	61,317	69,976	39,652	30,324	56.67%	6,711	900	336	564	8.40%	3,671	-	N/A	3,702	3,702	55.16%	4,976
2036	61,317	70,541	41,449	29,092	58.76%	6,898	906	345	561	8.13%	3,773	-	N/A	3,805	3,805	55.16%	5,096
2037	61,317	71,039	43,376	27,663	61.06%	7,090	914	354	560	7.90%	3,878	-	N/A	3,911	3,911	55.16%	5,207
2038	61,317	71,478	45,455	26,023	63.59%	7,288	926	363	563	7.73%	3,986	-	N/A	4,020	4,020	55.16%	5,308
2039	61,317	71,867	47,709	24,158	66.39%	7,489	940	373	567	7.57%	4,097	-	N/A	4,131	4,131	55.16%	5,401
2040	61,317	72,215	50,162	22,053	69.46%	7,693	957	383	574	7.46%	4,208	-	N/A	4,243	4,243	55.16%	5,484
2041	61,317	72,534	52,839	19,695	72.85%	7,898	977	393	584	7.39%	4,320	-	N/A	4,357	4,357	55.16%	5,556
2042	61,317	72,833	55,768	17,065	76.57%	8,105	1,000	404	596	7.35%	4,433	-	N/A	4,471	4,471	55.16%	5,619
2043	61,317	73,125	58,976	14,149	80.65%	8,314	1,025	414	611	7.35%	4,548	-	N/A	4,586	4,586	55.16%	5,672
2044	61,317	73,418	62,494	10,924	85.12%	8,525	1,052	425	627	7.35%	4,663	-	N/A	4,702	4,702	55.16%	5,717
2045	61,317	73,721	66,350	7,371	90.00%	8,736	1,081	435	646	7.39%	4,779	-	N/A	4,819	4,819	55.16%	5,756

Normal cost rate includes administrative expenses.
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29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 94-0004, Public Act 96-0043
Maximum Contribution Calculation: Without GOB Proceeds
Rate of Return on Assets = 7.00%
Phase-In of Deferred Asset Gains and Losses Recognized in the Projected Actuarial Value of Assets
(All Dollar Amounts in Millions)

							Annual Normal Cost				State Contribution		
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Amount	Percent of Pay	Total Expenses
2017	61,317	$ 47,269	$ 15,224	$ 32,045	32.21%	$ 4,706	$ 933	$ 255	$ 678	14.41%	$ 2,127	45.20%	$ 2,318
2018	61,317	49,010	16,421	32,589	33.51%	4,468	930	241	689	15.42%	2,444	54.70%	2,446
2019	61,317	50,733	17,411	33,322	34.32%	4,567	933	245	688	15.06%	2,498	54.70%	2,583
2020	61,317	52,430	18,478	33,952	35.24%	4,666	934	249	685	14.68%	2,560	54.86%	2,727
2021	61,317	54,091	19,791	34,300	36.59%	4,769	933	254	679	14.24%	2,640	55.36%	2,875
2022	61,317	55,705	21,118	34,587	37.91%	4,872	929	258	671	13.77%	2,714	55.71%	3,029
2023	61,317	57,262	22,439	34,823	39.19%	4,978	923	262	661	13.28%	2,773	55.71%	3,187
2024	61,317	58,752	23,751	35,001	40.43%	5,088	916	267	649	12.76%	2,834	55.71%	3,351
2025	61,317	60,166	25,053	35,113	41.64%	5,200	907	271	636	12.23%	2,897	55.71%	3,516
2026	61,317	61,500	26,351	35,149	42.85%	5,320	899	276	623	11.71%	2,964	55.71%	3,680
2027	61,317	62,756	27,653	35,103	44.06%	5,446	891	281	610	11.20%	3,034	55.71%	3,839
2028	61,317	63,930	28,962	34,968	45.30%	5,577	886	286	600	10.76%	3,107	55.71%	3,998
2029	61,317	65,025	30,293	34,732	46.59%	5,719	884	292	592	10.35%	3,186	55.71%	4,151
2030	61,317	66,044	31,655	34,389	47.93%	5,868	884	298	586	9.99%	3,269	55.71%	4,300

Normal cost rate includes administrative expenses.
State contribution based on the requirements of Public Act 88-0593, as amended by Public Act 90-0065, Public Act 94-0004, and Public Act 96-0043.
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Actuarial accrued liability and assets are measured at Plan Year End.
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29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 94-0004, Public Act 96-0043
Maximum Contribution Calculation: Without GOB Proceeds
Rate of Return on Assets = 7.00%
Phase-In of Deferred Asset Gains and Losses Recognized in the Projected Actuarial Value of Assets
(All Dollar Amounts in Millions)

							Annual Normal Cost				State Contribution		
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Amount	Percent of Pay	Total Expenses
2031	61,317	$ 66,984	$ 33,060	$ 33,924	49.36%	$ 6,025	$ 886	$ 305	$ 581	9.64%	$ 3,356	55.71%	$ 4,446
2032	61,317	67,845	34,517	33,328	50.88%	6,187	887	313	574	9.28%	3,446	55.71%	4,588
2033	61,317	68,628	36,039	32,589	52.51%	6,354	890	320	570	8.97%	3,539	55.71%	4,724
2034	61,317	69,339	37,644	31,695	54.29%	6,529	895	328	567	8.68%	3,637	55.71%	4,852
2035	61,317	69,976	39,346	30,630	56.23%	6,711	900	336	564	8.40%	3,739	55.71%	4,976
2036	61,317	70,541	41,161	29,380	58.35%	6,898	906	345	561	8.13%	3,842	55.71%	5,096
2037	61,317	71,039	43,108	27,931	60.68%	7,090	914	354	560	7.90%	3,949	55.71%	5,207
2038	61,317	71,478	45,210	26,268	63.25%	7,288	926	363	563	7.73%	4,060	55.71%	5,308
2039	61,317	71,867	47,489	24,378	66.08%	7,489	940	373	567	7.57%	4,172	55.71%	5,401
2040	61,317	72,215	49,969	22,246	69.19%	7,693	957	383	574	7.46%	4,285	55.71%	5,484
2041	61,317	72,534	52,678	19,856	72.63%	7,898	977	393	584	7.39%	4,400	55.71%	5,556
2042	61,317	72,833	55,641	17,192	76.40%	8,105	1,000	404	596	7.35%	4,515	55.71%	5,619
2043	61,317	73,125	58,887	14,238	80.53%	8,314	1,025	414	611	7.35%	4,631	55.71%	5,672
2044	61,317	73,418	62,447	10,971	85.06%	8,525	1,052	425	627	7.35%	4,749	55.71%	5,717
2045	61,317	73,721	66,348	7,373	90.00%	8,736	1,081	435	646	7.39%	4,867	55.71%	5,756

Normal cost rate includes administrative expenses.
State contribution based on the requirements of Public Act 88-0593, as amended by Public Act 90-0065, Public Act 94-0004, and Public Act 96-0043.
Total expenses shown include benefit payments, refunds and administrative expenses.
Actuarial accrued liability and assets are measured at Plan Year End.
Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 93-0002, Public Act 94-0004, Public Act 96-0043
Rate of Return on Assets = 7.00%
Phase-In of Deferred Asset Gains and Losses Recognized in the Projected Actuarial Value of Assets
(All Dollar Amounts in Millions)

							Annual Normal Cost				Required State Contribution						
											(a)	(b)	(c)=(a)-(b)	(d)	Minimum of (c) and (d)		
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2017	61,317	$47,269	$16,686	$ 30,583	35.30%	$ 4,706	$933	$ 255	$ 678	14.41%	$2,127	$ 113	$ 2,014	$ 2,014	$ 2,014	42.81%	$ 2,318
2018	61,317	49,010	17,856	31,154	36.43%	4,468	930	241	689	15.42%	2,444	116	2,328	2,465	2,328	52.09%	2,446
2019	61,317	50,733	18,787	31,946	37.03%	4,567	933	245	688	15.06%	2,498	120	2,378	2,517	2,378	52.07%	2,583
2020	61,317	52,430	19,792	32,638	37.75%	4,666	934	249	685	14.68%	2,560	128	2,432	2,582	2,432	52.13%	2,727
2021	61,317	54,091	21,057	33,034	38.93%	4,769	933	254	679	14.24%	2,640	135	2,505	2,669	2,505	52.52%	2,875
2022	61,317	55,705	22,326	33,379	40.08%	4,872	929	258	671	13.77%	2,714	142	2,572	2,749	2,572	52.79%	3,029
2023	61,317	57,262	23,578	33,684	41.18%	4,978	923	262	661	13.28%	2,773	148	2,625	2,809	2,625	52.72%	3,187
2024	61,317	58,752	24,805	33,947	42.22%	5,088	916	267	649	12.76%	2,834	159	2,675	2,871	2,675	52.58%	3,351
2025	61,317	60,166	26,007	34,159	43.23%	5,200	907	271	636	12.23%	2,897	169	2,728	2,934	2,728	52.46%	3,516
2026	61,317	61,500	27,192	34,308	44.21%	5,320	899	276	623	11.71%	2,964	174	2,790	3,002	2,790	52.45%	3,680
2027	61,317	62,756	28,369	34,387	45.21%	5,446	891	281	610	11.20%	3,034	178	2,856	3,073	2,856	52.45%	3,839
2028	61,317	63,930	29,537	34,393	46.20%	5,577	886	286	600	10.76%	3,107	186	2,921	3,147	2,921	52.38%	3,998
2029	61,317	65,025	30,708	34,317	47.22%	5,719	884	292	592	10.35%	3,186	193	2,993	3,227	2,993	52.33%	4,151
2030	61,317	66,044	31,888	34,156	48.28%	5,868	884	298	586	9.99%	3,269	205	3,064	3,311	3,064	52.22%	4,300

Normal cost rate includes administrative expenses.
State contribution based on the requirements of Public Act 88-0593, as amended by Public Act 90-0065, Public Act 93-0002, Public Act 94-0004, and Public Act 96-0043.
Total expenses shown include benefit payments, refunds and administrative expenses.
Actuarial accrued liability and assets are measured at Plan Year End.
Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

29-Year Projection of Costs and Liabilities
State Contribution Based on Public Act 88-0593, Public Act 93-0002, Public Act 94-0004, Public Act 96-0043
Rate of Return on Assets = 7.00%
Phase-In of Deferred Asset Gains and Losses Recognized in the Projected Actuarial Value of Assets
(All Dollar Amounts in Millions)

							Annual Normal Cost				Required State Contribution							
											(a)	(b)	(c)=(a)-(b)	(d)	Minimum of (c) and (d)			
Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Balance	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2031	61,317	$66,984	$33,087	$ 33,897	49.40%	$ 6,025	$ 886	$ 305	$ 581	9.64%	$3,356	$ 215	$ 3,141	$ 3,399	$ 3,141	52.14%	$ 4,446
2032	61,317	67,845	34,318	33,527	50.58%	6,187	887	313	574	9.28%	3,446	219	3,227	3,491	3,227	52.15%	4,588
2033	61,317	68,628	35,600	33,028	51.87%	6,354	890	320	570	8.97%	3,539	219	3,320	3,585	3,320	52.26%	4,724
2034	61,317	69,339	37,223	32,116	53.68%	6,529	895	328	567	8.68%	3,637	-	N/A	3,684	3,684	56.42%	4,852
2035	61,317	69,976	38,946	31,030	55.66%	6,711	900	336	564	8.40%	3,739	-	N/A	3,787	3,787	56.42%	4,976
2036	61,317	70,541	40,784	29,757	57.82%	6,898	906	345	561	8.13%	3,842	-	N/A	3,892	3,892	56.42%	5,096
2037	61,317	71,039	42,757	28,282	60.19%	7,090	914	354	560	7.90%	3,949	-	N/A	4,000	4,000	56.42%	5,207
2038	61,317	71,478	44,888	26,590	62.80%	7,288	926	363	563	7.73%	4,060	-	N/A	4,112	4,112	56.42%	5,308
2039	61,317	71,867	47,200	24,667	65.68%	7,489	940	373	567	7.57%	4,172	-	N/A	4,226	4,226	56.42%	5,401
2040	61,317	72,215	49,718	22,497	68.85%	7,693	957	383	574	7.46%	4,285	-	N/A	4,341	4,341	56.42%	5,484
2041	61,317	72,534	52,467	20,067	72.33%	7,898	977	393	584	7.39%	4,400	-	N/A	4,456	4,456	56.42%	5,556
2042	61,317	72,833	55,476	17,357	76.17%	8,105	1,000	404	596	7.35%	4,515	-	N/A	4,573	4,573	56.42%	5,619
2043	61,317	73,125	58,773	14,352	80.37%	8,314	1,025	414	611	7.35%	4,631	-	N/A	4,691	4,691	56.42%	5,672
2044	61,317	73,418	62,388	11,030	84.98%	8,525	1,052	425	627	7.35%	4,749	-	N/A	4,810	4,810	56.42%	5,717
2045	61,317	73,721	66,350	7,371	90.00%	8,736	1,081	435	646	7.39%	4,867	-	N/A	4,929	4,929	56.42%	5,756

Normal cost rate includes administrative expenses.
State contribution based on the requirements of Public Act 88-0593, as amended by Public Act 90-0065, Public Act 93-0002, Public Act 94-0004, and Public Act 96-0043.
Total expenses shown include benefit payments, refunds and administrative expenses.
Actuarial accrued liability and assets are measured at Plan Year End.
Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

SECTION C

FUND ASSETS

State Employees' Retirement System of Illinois

Statement of Fiduciary Net Position

Years ended June 30, 2016 and 2015

		2016		2015
Assets				
Cash	$	300,328,830	$	170,646,589
Receivables:				
Contributions:				
Participants	$	11,893,976	$	14,152,324
Employing state agencies		70,171,117		109,810,082
Other accounts		4,477,002		4,784,680
	$	86,542,095	$	128,747,086
Investments - held in the Illinois State Board of Investment Commingled Fund at fair value	$	14,741,054,632	$	14,967,254,053
Securities lending collateral with State Treasurer		64,256,000		64,779,000
Capital Assets, net of accumulated depreciation	$	6,938,949	$	5,272,553
Total Assets	$	15,199,120,506	$	15,336,699,281
Liabilities				
Benefits payable	$	6,441,515	$	5,847,397
Refunds payable		1,141,622		1,055,043
Administrative expenses payable		1,768,589		2,171,343
Participants' deferred service credit accounts		316,145		266,753
Due to State of Illinois		86,668,485		3,713,173
Securities lending collateral with State Treasurer		64,256,000		64,779,000
Total Liabilities	$	160,592,356	$	77,832,709
Net assets held in trust for pension benefits	$	15,038,528,150	$	15,258,866,572

State Employees' Retirement System of Illinois

Statement of Changes in Fiduciary Net Position

Years ended June 30, 2016 and 2015

		2016		2015
Additions:				
Contributions:				
Participants	$	256,198,172	$	266,139,156
Employing state agencies and appropriations		1,882,243,268		1,804,319,356
Total Contributions revenue	$	2,138,441,440	$	2,070,458,512
Investments income:				
Net investments income	$	410,795,035	$	440,457,817
Interest earned on cash balances		756,489		622,012
Net appreciation in fair value of investments		(536,994,456)		240,297,223
Total Investments income	$	(125,442,932)	$	681,377,052
Total Additions	$	2,012,998,508	$	2,751,835,564
Deductions:				
Benefits:				
Retirement annuities	$	1,977,598,561	$	1,833,999,371
Survivors' annuities		128,689,627		121,930,337
Disability benefits		64,057,780		63,929,747
Lump-sum benefits		20,155,235		14,998,980
Total Benefits	$	2,190,501,203	$	2,034,858,435
Refunds		26,708,730		23,128,975
Administrative		16,126,997		16,547,823
Total Deductions	$	2,233,336,930	$	2,074,535,233
Net increase	$	(220,338,422)	$	677,300,331
Net assets held in trust for pension benefits:				
Beginning of year	$	15,258,866,572	$	14,581,566,241
End of year	$	15,038,528,150	$	15,258,866,572

State Employees' Retirement System of Illinois
DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS - ACTUAL ASSETS

Year Ending June 30	2016	2017	2018	2019	2020
Beginning of Year:					
(1) Market Value of Assets	$ 15,258,866,572				
(2) Actuarial Value of Assets	14,741,736,065				
End of Year:					
(3) Market Value of Assets	15,038,528,150				
(4) Contributions and Disbursements					
(4a) Actual State Contribution Amount	1,882,243,268				
(4b) Employee Contribution Amount	256,198,172				
(4c) Benefit Payouts & Refunds	(2,217,209,933)				
(4d) Administrative Expenses	(16,126,997)				
(4e) Net of Contributions and Disbursements	(94,895,490)				
(5) Total Investment Income =(3)-(1)-(4e)	(125,442,932)				
(6) Projected Rate of Return	7.25%				
(7) Projected Investment Income =(1)x(6)+([1+(6)]^.5-1)x(4e)	1,102,888,052				
(8) Investment Income in Excess of Projected Income	(1,228,330,984)				
(9) Excess Investment Income Recognized This Year (5-year recognition)					
(9a) From This Year	$ (245,666,197)				
(9b) From One Year Ago	(75,128,261)	$ (245,666,197)			
(9c) From Two Years Ago	241,573,942	(75,128,261)	$ (245,666,197)		
(9d) From Three Years Ago	130,825,664	241,573,942	(75,128,261)	$ (245,666,197)	
(9e) From Four Years Ago	(168,729,601)	130,825,666	241,573,940	(75,128,263)	$ (245,666,196)
(9f) Total Recognized Investment Gain	(117,124,453)	51,605,150	(79,220,518)	(320,794,460)	(245,666,196)
(10) Change in Actuarial Value of Assets =(4e)+(7)+(9f)	$ 890,868,109				
End of Year:					
(3) Market Value of Assets	**$ 15,038,528,150**				
(11) Actuarial Value of Assets =(2)+(10)	**$ 15,632,604,174**				

State Employees' Retirement System of Illinois
DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS - HYPOTHETICAL ASSETS

Year Ending June 30	2016	2017	2018	2019	2020
Beginning of Year:					
(1) Hypothetical Value of Assets	$ 13,729,335,502				
(2) Hypothetical Actuarial Value of Assets	13,271,451,655				
End of Year:					
(3) Hypothetical Value of Assets	13,619,614,484				
(4) Contributions and Disbursements					
(4a) State Contribution Amount[a]	1,980,010,088				
(4b) Employee Contribution Amount	256,198,172				
(4c) Benefit Payouts & Refunds	(2,217,209,933)				
(4d) Administrative Expenses	(16,126,997)				
(4e) Net of Contributions and Disbursements	2,871,330				
(5) Total Investment Income[b] =(3)-(1)-(4e)	(112,592,348)				
(6) Projected Rate of Return	7.25%				
(7) Projected Investment Income =(1)x(6)+([1+(6)]^.5-1)x(4e)	995,479,088				
(8) Investment Income in Excess of Projected Income	(1,108,071,436)				
(9) Excess Investment Income Recognized This Year (5-year recognition)					
(9a) From This Year	$ (221,614,287)				
(9b) From One Year Ago	(67,410,944)	$ (221,614,287)			
(9c) From Two Years Ago	214,666,481	(67,410,944)	$ (221,614,287)		
(9d) From Three Years Ago	115,217,817	214,666,481	(67,410,944)	$ (221,614,287)	
(9e) From Four Years Ago	(146,907,452)	115,217,817	214,666,481	(67,410,946)	$ (221,614,288)
(9f) Total Recognized Investment Gain	(106,048,385)	40,859,067	(74,358,750)	(289,025,233)	(221,614,288)
(10) Change in Hypothetical Actuarial Value of Assets =(4e)+(7)+(9f)	$ 892,302,033				
End of Year:					
(3) Hypothetical Market Value of Assets	**$ 13,619,614,484**				
(11) Hypothetical Actuarial Value of Assets =(2)+(10)	**$ 14,163,753,688**				

[a] *Represents 46.215 percent of payroll for the basic contribution. This rate was determined as part of the June 30, 2014, valuation and is based upon the hypothetical asset value which assumes no infusion from the proceeds of the GOB sale that were deposited July 1, 2003.*

[b] *Investment income assumes hypothetical value of assets earns the Fund's actual rate of return for fiscal year 2016 of (0.82) percent.*

SECTION D

PARTICIPANT DATA

Active Age and Service Distribution
June 30, 2016

Age Group	Years of Service 0-1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35&Up	Total	Percentage of Total
Under 20	96	9								105	
20-24	368	767	2							1,137	2%
25-29	411	2,975	776	6						4,168	7%
30-34	364	2,716	1,836	427	24					5,367	9%
35-39	299	1,921	1,464	1,372	1,063	20				6,139	10%
40-44	315	1,573	1,174	1,093	2,599	687	19			7,460	12%
45-49	446	1,417	1,109	1,117	2,316	2,063	1,190	76		9,734	16%
50-54	442	1,154	937	1,013	1,719	1,701	1,969	945	55	9,935	16%
55-59	333	926	824	885	1,593	1,178	1,378	878	574	8,569	14%
60-64	237	578	607	661	1,086	725	731	470	620	5,715	9%
65-69	167	166	282	306	445	205	216	131	232	2,150	4%
70 & Over	51	52	82	117	172	110	94	49	111	838	1%
Total	3,529	14,254	9,093	6,997	11,017	6,689	5,597	2,549	1,592	61,317	100%
Percentage of Total	6%	23%	15%	11%	18%	11%	9%	4%	3%	100%	

Retirees and Beneficiaries by Type of Benefit Being Paid
June 30, 2016

Type of Benefit Being Paid	Count	Monthly Payment	Annual Payment	Average Annual Payment
Retirement Annuity	56,825	$ 168,662,819.87	$ 2,023,953,838.44	$ 35,617.31
Survivors	10,188	10,665,350.38	127,984,204.56	12,562.25
Widows	54	54,137.88	649,654.56	12,030.64
Occupational Death	56	60,856.50	730,278.00	13,040.68
QILDRO	726	859,547.08	10,314,564.96	14,207.39
Reversionary Annuity	19	50,154.08	601,848.96	31,676.26
Non-Occupational Disability	1,100	2,372,718.25	28,472,619.00	25,884.20
Occupational Disability	615	1,654,421.29	19,853,055.48	32,281.39
Temporary Disability	336	293,018.87	3,516,226.44	10,464.96
Total Temporary Disability - Occupational	112	274,960.09	3,299,521.08	29,460.01
Eligible for Deferred Retirement Annuity	71	35,555.92	426,671.04	6,009.45
Eligible for Deferred Survivor Annuity	142	26,076.13	312,913.56	2,203.62
Total	**70,244**	**$ 185,009,616.34**	**$ 2,220,115,396.08**	**$ 31,605.77**

SECTION E

ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Methods and Assumptions

Actuarial Cost Method as Mandated by 40 ILCS 5/14-131, Adopted June 30, 1989

The projected unit credit normal cost method is used. Under this method, the projected pension at retirement age is first calculated and the present value at the individual member's current or attained age is determined. The normal cost for the member for the current year is equal to the actuarial present value divided by the member's projected service at retirement. The normal cost for the plan for the year is the sum of the individual normal costs.

The actuarial liability at any point in time is the present value of the projected pensions at that time less the present value of future normal costs.

For ancillary benefits for active members, in particular death and survivor benefits, termination benefits, and the postretirement increases, the same procedure as outlined above is followed.

Estimated annual administrative expenses are added to the normal cost.

For actuarial valuation purposes, as well as projection purposes, an actuarial value of assets is used.

Actuarial Assumptions Adopted June 30, 2016

Actuarial assumptions are set by the Board of Trustees. The actuarial assumptions used for the June 30, 2016, actuarial valuation are based on a full experience review for the four-year period ending June 30, 2013, and a modified experience review for the four-year period ending June 30, 2015. All actuarial assumptions are expectations of future experience, not market measures.

Mortality

Post-Retirement Mortality

105 percent of the RP-2014 Healthy Annuitant mortality tables, sex distinct, with generational mortality improvements using the MP-2014 two-dimensional mortality improvement scales recently released by the Society of Actuaries. This assumption provides a margin for future mortality improvements. No adjustment is made for post-disabled mortality.

Pre-Retirement Mortality, including terminated vested members prior to attaining age 50

Based on a percentage of 75 percent for males and 90 percent for females of the RP-2014 Total Employee mortality table with generational mortality improvements using the MP-2014 two-dimensional mortality improvement scales, to reflect that experience shows active members having lower mortality rates than retirees of the same age. Five percent of deaths among active employees are assumed to be in the performance of their duty.

Interest

7.00 percent per annum, compounded annually, net of investment expenses.

General Inflation

2.75 percent per annum, compounded annually.

This assumption serves as the basis for the determination of Tier Two annual increases that are equal to the lesser of 3.0 percent or one-half of the annual increase in the consumer price index-u during the preceding 12-month calendar year and are not compounded.

Marriage Assumption

85.0 percent of active male participants and 65.0 percent of active female participants are assumed to be married. Actual marital status at benefit commencement is used for retirees.

Social Security Offset for Survivor Benefits

No offset assumption for male surviving spouses because it is assumed their own PIA is as great as their spouses' PIA. Sixty percent of married male members are assumed to have a dual income household. For the dual income household, it is assumed the offset at age 60 is 45.0 percent of the original survivor benefit. It is assumed the offset at age 62 is 10.0 percent of the original survivor benefit. Furthermore, it is assumed that 50 percent of retirees on or after July 1, 2009, will elect to remove the offset provision. In exchange for the removal, the member's retirement annuity is reduced by 3.825 percent monthly as mandated by Statutes.

Termination

Illustrative rates of withdrawal from the plan are as follows for Tier One members:

Service Based Withdrawal				
	Regular Formula Employees		Alternate Formula Employees	
Service (Beginning of Year)	Males	Females	Males	Females
0	0.2300	0.2300	0.0325	0.0600
1	0.1200	0.1200	0.0325	0.0450
2	0.0950	0.0850	0.0325	0.0450
3	0.0700	0.0650	0.0200	0.0400
4	0.0625	0.0500	0.0175	0.0300
5	0.0425	0.0475	0.0175	0.0300
6	0.0425	0.0350	0.0175	0.0300
7	0.0350	0.0350	0.0175	0.0200
8	0.0300	0.0300	0.0150	0.0200
9	0.0250	0.0250	0.0150	0.0200
10	0.0250	0.0250	0.0150	0.0200
11	0.0200	0.0200	0.0125	0.0175
12	0.0200	0.0200	0.0125	0.0175
13	0.0200	0.0200	0.0100	0.0150
14	0.0150	0.0150	0.0100	0.0150
15	0.0150	0.0150	0.0100	0.0150
16	0.0150	0.0150	0.0100	0.0150
17	0.0150	0.0150	0.0100	0.0150
18	0.0150	0.0150	0.0100	0.0150
19	0.0150	0.0150	0.0100	0.0150
20	0.0150	0.0100	0.0100	0.0150
21	0.0150	0.0100	0.0100	0.0150
22	0.0150	0.0100	0.0100	0.0150
23	0.0150	0.0100	0.0100	0.0150
24	0.0150	0.0100	0.0100	0.0150
25	0.0150	0.0100	0.0100	0.0150
26	0.0150	0.0100	0.0100	0.0150
27	0.0150	0.0100	0.0100	0.0150
28	0.0150	0.0100	0.0100	0.0150
29	0.0150	0.0100	0.0100	0.0150
30+	0.0150	0.0100	0.0100	0.0150

It is assumed that terminated employees will not be rehired. The rates apply only to employees who have not fulfilled the service requirement necessary for retirement at any given age.

Salary Increases

Illustrative rates of increase per individual employee per annum, compounded annually:

Age	Annual Increase
25	7.67%
30	6.20%
35	5.30%
40	4.97%
45	4.58%
50	4.26%
55	4.05%
60	3.85%
65	3.47%
70	3.25%

The underlying salary increase assumption is based on a wage inflation assumption of 3.25 percent per annum, comprised of 2.75 percent for general inflation plus 0.50 percent for general merit and productivity increases.

Disability

Because members who receive disability benefits typically spend less than one year on disability, they are considered active members. Therefore a load of 1.50% percent of pay on the normal cost is applied to reflect the near-term cash flow. This assumption is based on 110 percent of the most recent disability benefit payment information as a percent of payroll and will be updated at each actuarial valuation date as experience emerges.

415(b) and 401(a)(17) Limits

No explicit assumption is made with respect to these items.

Population Projection

For purposes of determining annual appropriation as a percent of total covered payroll, the size of the active group is assumed to remain level at the number of actives as of the actuarial valuation date. New entrants are assumed to enter with an average age and an average pay as disclosed below. New entrants are assumed to have the same demographic profile as new entrants in the 15 years prior to the valuation date. The average increase in uncapped payroll for the projection period is 3.25 percent per annum.

	New Entrant Benefit Groups													
Age Group	New Entrants Eligible for Regular Formula Benefits who are Covered by Social Security		New Entrants Eligible for Regular Formula Benefits who are not Covered by Social Security		New Entrants in Positions Formerly Eligible for Alternate Formula Benefits who are Covered by Social Security and are now Eligible for Regular Formula Benefits		New Entrants Eligible for Alternate Formula Benefits who are Covered by Social Security		New Entrants in Positions Formerly Eligible for Alternate Formula Benefits who are not Covered by Social Security and are now Eligible for Regular Formula Benefits		New Entrants Eligible for Alternate Formula Benefits who are not Covered by Social Security		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
Under 20	127	3,872,874	1	26,799	44	1,975,105	25	1,137,764					197	7,012,542
20-24	2,358	89,038,889	11	429,561	1,094	50,125,614	666	30,958,960	221	14,978,514	94	5,995,884	4,444	191,527,422
25-29	3,837	168,212,418	27	1,432,871	1,257	59,986,803	736	36,511,392	328	23,223,940	107	7,224,519	6,292	296,591,943
30-34	3,384	162,906,051	16	903,512	727	37,518,624	559	30,241,315	133	9,823,513	59	4,262,116	4,878	245,655,131
35-39	2,862	146,796,295	7	334,481	536	28,881,538	423	24,070,993	58	4,198,434	22	1,531,771	3,908	205,813,512
40-44	2,840	149,591,599	7	380,083	461	26,045,645	316	18,932,247	31	2,183,460	3	199,778	3,658	197,332,812
45-49	2,395	126,831,531	7	401,206	349	19,757,322	232	14,739,023	9	565,822	2	130,034	2,994	162,424,938
50-54	1,986	108,077,735	4	241,720	219	12,956,378	120	7,771,706	10	718,243			2,339	129,765,782
55-59	1,248	64,941,673	5	347,444	145	8,688,965	59	3,598,009	11	821,323			1,468	78,397,414
60-64	432	22,688,711			40	2,433,614	13	1,022,423	2	162,406			487	26,307,154
65-69	36	2,066,101			2	136,680							38	2,202,781
70 & Over														
Total	21,505	$ 1,045,023,877	85	$ 4,497,677	4,874	$ 248,506,288	3,149	$ 168,983,832	803	$ 56,675,655	287	$ 19,344,102	30,703	$ 1,543,031,431
Avg. Salary		$ 48,594		$ 52,914		$ 50,986		$ 53,663		$ 70,580		$ 67,401		$ 50,257
Avg. Age		37.54		33.80		32.82		32.66		28.92		27.59		35.96
Percent Male		43%		88%		77%		74%		90%		86%		53%

Retirement

Employees are assumed to retire in accordance with the rates shown below. The rates apply only to employees who have fulfilled the service requirement necessary for retirement at any given age.

Retirement Rates for Regular Formula Employees		
	Males	Females
50	15.00%	25.00%
51	15.00%	25.00%
52	25.00%	30.00%
53	25.00%	25.00%
54	20.00%	20.00%
55	17.50%	16.00%
56	17.50%	16.00%
57	15.00%	16.00%
58	15.00%	16.00%
59	15.00%	16.00%
60	10.00%	16.00%
61	10.00%	12.50%
62	20.00%	20.00%
63	17.50%	17.50%
64	15.00%	17.50%
65	20.00%	25.00%
66	25.00%	20.00%
67	20.00%	20.00%
68	20.00%	20.00%
69	17.50%	20.00%
70	17.50%	20.00%
71	17.50%	15.00%
72	15.00%	20.00%
73	17.50%	20.00%
74	20.00%	20.00%
75	100.00%	100.00%

Early Retirement Rates for Regular Formula Employees		
Age	Males	Females
55	4.50%	4.50%
56	6.00%	4.00%
57	5.00%	7.00%
58	7.50%	9.50%
59	9.50%	12.00%

Retirement Rates for Alternate Formula Employees				
	Eligible for Alternate Formula Benefits Only		Eligible for Regular Formula Benefits Only	
Age	Males	Females	Males	Females
50	60.00%	40.00%	N/A	N/A
51	45.00%	40.00%	N/A	N/A
52	45.00%	35.00%	N/A	N/A
53	40.00%	30.00%	N/A	N/A
54	40.00%	25.00%	N/A	N/A
55	35.00%	30.00%	N/A	N/A
56	35.00%	25.00%	N/A	N/A
57	27.50%	20.00%	N/A	N/A
58	30.00%	20.00%	N/A	N/A
59	25.00%	25.00%	N/A	N/A
60	30.00%	30.00%	5.00%	8.00%
61	25.00%	20.00%	5.00%	8.00%
62	45.00%	45.00%	10.00%	8.00%
63	40.00%	35.00%	10.00%	12.50%
64	30.00%	40.00%	10.00%	12.50%
65	55.00%	40.00%	20.00%	17.50%
66	50.00%	60.00%	20.00%	15.00%
67	50.00%	50.00%	20.00%	40.00%
68	30.00%	15.00%	17.50%	30.00%
69	35.00%	35.00%	17.50%	20.00%
70	50.00%	60.00%	17.50%	25.00%
71	30.00%	50.00%	17.50%	30.00%
72	100.00%	100.00%	100.00%	100.00%

Assets

Assets available for benefits are determined as described on page 45. The asset valuation method is prescribed by statute, and does not appear to allow a corridor; therefore, a corridor has not been established.

Expenses

As estimated and advised by SERS staff, based on current expenses and are expected to increase in relation to the projected capped payroll.

Spouse's Age

The female spouse is assumed to be three years younger than the male spouse.

Children

It is assumed that married members have 2.2 children, one year apart in age.

The age of the youngest child of a deceased employee at his date of death is assumed to be as follows:

Age at Death of Employee	Age of Youngest Child	Age at Death of Employee	Age of Youngest Child
20	2	40	6
25	3	45	8
30	4	50	10
35	5	55	12
		60	14

Overtime and Shift Differentials

Reported earnings include base pay alone. It is assumed that overtime and shift differentials will increase total payroll by 3.5 percent over reported earnings.

Load for Inactive Members Eligible for Deferred Vested Pension Benefits

Load of 15 percent to the liability attributable to inactive members eligible for deferred vested pension benefits for increase in final average salary due to participation in a reciprocal system after termination.

Unused Sick Leave and Optional Service Purchases

Current and future active member's service is increased 4.5 months to account for increases of service at retirement due to converting unused sick leave and vacation days and purchasing applicable optional service.

Missing Data

If year-to-date earnings were not available, then the monthly pay rate is used. If both year-to-date earnings and the monthly pay rate are not available, the annual rate of pay is assumed to be the rate of pay for the population as a whole on the actuarial valuation date. For members with less than a year of service, the annual rate of pay is based on the greater of year-to-date earnings or annualized pay rate. If a birth date was not available, the member was assumed to be age 35.

Decrement Timing

All decrements are assumed to occur mid-year.

Decrement Relativity

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Decrement Operation

Disability and turnover decrements do not operate after a member reaches retirement eligibility.

Eligibility Testing

Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.

Assumptions as a result of Public Act 96-0889 Adopted June 30, 2016

Members hired after December 31, 2010, are assumed to make contributions on salary up to the final average compensation cap in a given year until this plan provision or administrative procedure is clarified.

State contributions, expressed as a percentage of pay, are calculated based upon capped pay.

Members hired after December 31, 2010, eligible for the regular formula benefits will retire according to the following age-based retirement rates:

Retirement Rates for Regular Formula Employees			
Age	Employees Eligible For Normal Retirement	Age	Employees Eligible For Early Retirement
67	50.00%	62	30.00%
68	35.00%	63	15.00%
69	35.00%	64	15.00%
70	35.00%	65	15.00%
71	20.00%	66	15.00%
72	20.00%		
73	20.00%		
74	20.00%		
75	100.00%		

Members hired after December 31, 2010, eligible for the alternate formula benefits will retire according to the following age-based retirement rates:

Retirement Rates for Alternate Formula Employees		
Age	Males	Females
60	50.00%	50.00%
61	25.00%	20.00%
62	45.00%	45.00%
63	40.00%	35.00%
64	30.00%	40.00%
65	55.00%	40.00%
66	50.00%	60.00%
67	50.00%	50.00%
68	30.00%	15.00%
69	35.00%	35.00%
70	50.00%	60.00%
71	30.00%	50.00%
72	100.00%	100.00%

Illustrative rates of withdrawal from the plan are as follows for members hired after December 31, 2010:

Service Based Withdrawal				
	Regular Formula Employees		Alternate Formula Employees	
Service (Beginning of Year)	Males	Females	Males	Females
0	0.2700	0.2500	0.0500	0.0775
1	0.1400	0.1600	0.0350	0.0475
2	0.0800	0.1000	0.0350	0.0475
3	0.0800	0.0800	0.0225	0.0425
4	0.0625	0.0700	0.0200	0.0325
5	0.0500	0.0600	0.0200	0.0325
6	0.0450	0.0550	0.0200	0.0325
7	0.0400	0.0500	0.0200	0.0225
8	0.0350	0.0450	0.0175	0.0225
9	0.0300	0.0400	0.0175	0.0225
10	0.0250	0.0350	0.0175	0.0225
11	0.0200	0.0250	0.0150	0.0200
12	0.0200	0.0200	0.0150	0.0200
13	0.0200	0.0200	0.0125	0.0175
14	0.0150	0.0150	0.0125	0.0175
15	0.0150	0.0150	0.0100	0.0150
16	0.0150	0.0150	0.0100	0.0150
17	0.0150	0.0150	0.0100	0.0150
18	0.0150	0.0150	0.0100	0.0150
19	0.0150	0.0150	0.0100	0.0150
20	0.0150	0.0150	0.0100	0.0150
21	0.0150	0.0150	0.0100	0.0150
22	0.0150	0.0150	0.0100	0.0150
23	0.0150	0.0150	0.0100	0.0150
24	0.0150	0.0150	0.0100	0.0150
25	0.0150	0.0150	0.0100	0.0150
26	0.0150	0.0150	0.0100	0.0150
27	0.0150	0.0150	0.0100	0.0150
28	0.0150	0.0150	0.0100	0.0150
29	0.0150	0.0150	0.0100	0.0150
30+	0.0150	0.0150	0.0100	0.0150

Projection Methodology Adopted June 30, 2005, and Amended June 30, 2009

Appropriation Requirements Under P.A. 93-0002, P.A. 94-0004 and P.A. 96-0043

State Contributions under P.A. 93-0002

In general, for each year during the life of the GOB program, the state contributions to the System are to be calculated as follows:

1. Calculation of the contribution maximum
   a. A projection of contributions will be made from the valuation date to June 30, 2045. Such projection will be based on hypothetical asset values determined using the following assumptions:
      i) That the System had received no portion of the general obligation bond proceeds in excess of the scheduled contributions for the remainder of fiscal 2003 and for the entirety of 2004,
      ii) That hypothetical state contributions had been made each fiscal year from 2005 through the valuation date, based on the funding process in place prior to P.A. 93-0002 (without regard to prior state minimum requirements),
      iii) That the actual amounts of member contributions and the actual cash outflows (benefit payments, refunds and administrative expenses) for each year prior to the valuation date were realized, and
      iv) That the hypothetical fund earned returns in each prior fiscal year equal to the rate of total return actually earned by the retirement fund in that year.
   b. The hypothetical asset values developed in a., above, will not exceed the actual assets of the fund.
   c. A projection of maximum contributions for each year of the GOB program will be performed each year, by reducing the contributions produced in a., above, by the respective amount of debt service allocated to the System for each year.
2. Calculation of the contribution with GOB proceeds
   a. The basic projection of state contributions from the valuation date through June 30, 2045, will be made, taking into account all assets of the System, including the GOB proceeds.
   b. State contribution rates (expressed as a percentage of covered pay), in the pattern required by the funding sections of the statutes, are calculated.
   c. In those projections, the dollars of state contributions which are added to assets each year during the GOB program are limited by the contribution maximum. Because the bonds are to be liquidated by the end of fiscal 2033, there is no contribution maximum thereafter.

State Contributions under P.A. 94-0004

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/14-108.3 (f)-(g):

> (f) The System shall determine the amount of the increase in the present value of future benefits resulting from the granting of early retirement incentives under this Section and shall report that amount to the Governor and the Commission on Government Forecasting and Accountability on or after the effective date of this amendatory Act of the 93rd General Assembly and on or before November 15, 2004. Beginning with State fiscal year 2008, the increase reported under this subsection (f) shall be included in the calculation of the required State contribution under Section 14-131.
>
> (g) In addition to the contributions otherwise required under this Article, the State shall appropriate and pay to the System an amount equal to $70,000,000 in State fiscal years 2004 and 2005.

State Contributions under P.A. 96-0043

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/14-131:

> (g) For purposes of determining the required State contribution to the System, the value of the System's assets shall be equal to the actuarial value of the System's assets, which shall be calculated as follows:
>
> > As of June 30, 2008, the actuarial value of the System's assets shall be equal to the market value of the assets as of that date. In determining the actuarial value of the System's assets for fiscal years after June 30, 2008, any actuarial gains or losses from investment return incurred in a fiscal year shall be recognized in equal annual amounts over the five-year period following that fiscal year.
>
> (h) For purposes of determining the required State contribution to the System for a particular year, the actuarial value of assets shall be assumed to earn a rate of return equal to the System's actuarially assumed rate of return.

Following the above legislation we have calculated the required contribution and the results are shown in the summary section of this report.

SECTION F

PLAN PROVISIONS

Summary of Retirement System Plan Provisions (As of June 30, 2016)

Purpose

The State Employees' Retirement System of Illinois, a State Agency, provides an orderly means whereby aged or disabled employees may be retired from active service without prejudice or hardship and enables the employees to accumulate reserves for old age, disability, death and termination of employment.

Administration

Responsibility for the operation of the System and the direction of its policies is vested in a Board of Trustees of seven members. The administration of the detailed affairs of the System is the responsibility of the Executive Secretary who is appointed by the Board of Trustees. Administrative policies and procedures are designed to ensure an accurate accounting of funds of the System and prompt payment of claims for benefits within the applicable statute.

Membership

All persons entering State service on or after January 1, 1984, become members upon completion of six months of continuous service except that, beginning July 1, 1991, employees in police positions become members on their first day of employment. Persons entering State service from January 1, 1972, to January 1, 1984, became members on their first day of employment. Excluded from membership are: any employee whose position is subject to membership under another State-supported system, any person who becomes an employee after June 30, 1979, as a public service employment program participant under the federal CETA program, or any enrollee of the Young Adult Conservation Corps. Prior to January 1, 1984, emergency and temporary employees were excluded from membership. Persons appointed by the Governor with the advice and consent of the Senate may elect to become members of the System. Other exceptions are identified in State law.

Membership Service

Membership service includes all service rendered while a member of the System for which credit is allowable. Persons entering service on or after January 1, 1984, or after July 1, 1982, in the case of emergency or temporary employees, may also receive membership service credit for periods of employment prior to membership by making contributions for such periods.

Member Contributions

Members are required to contribute a percentage of salary as their share of meeting the cost of the various benefits. Contribution rates are as shown below:

- Members covered by Social Security – 4.0 percent of Salary.
- Members not covered by Social Security – 8.0 percent of Salary.
- Members covered by Social Security who are serving in a position in which service toward the Alternative Retirement Annuity may be earned – 8.5 percent of Salary.
- Members not covered by Social Security who are serving in a position in which service toward the Alternative Retirement Annuity may be earned – 12.5 percent of Salary.

Members covered by Social Security also pay the current Social Security tax rate.

Credit for regular interest each fiscal year on a member's individual contribution account is computed on the accumulated balance in the account at the beginning of each fiscal year.

Retirement Pension

Qualification of Member

Upon termination of State service, a member is eligible for a pension at age 60 with at least eight years of pension credit or at any age with 35 or more years of credit.

General formula members are eligible for a retirement annuity if the sum of the member's age plus years (and whole months) of pension credit equals or exceeds 85. General formula members between ages 55 and 60 with at least 25 years of pension credit are eligible for a retirement annuity reduced by one-half of 1 percent for each month the member is under age 60. Certain positions in the Department of Corrections were placed under the general formula effective July 1, 2005.

Members serving in a position in which service toward the Alternative Retirement Annuity may be earned are eligible to receive the alternative retirement annuity at age 50 with at least 25 years of pension credit or at age 55 with at least 20 years of pension credit in such a position. Security employees of the Department of Human Services were placed under the alternative formula effective January 1, 2001. Certain members of the Department of Transportation and the Toll Highway Authority were placed under the alternative formula effective August 1, 2001.

Amount of Pension

The pension is based on the member's final average compensation and the number of years of pension credit that has been established.

Final Average Compensation is the average of the highest 48 consecutive months in the last 10 years. All employees whose benefit is calculated under the alternative formula will have their benefit based on the greater of (i) the salary rate in effect on their last day of service, provided the last day salary does not exceed 115 percent of the average monthly compensation received by the member for the last 24 months of service, or (ii) the average monthly compensation for the last 48 months prior to retirement.

The general formula for members retiring on or after January 1, 1998, (regardless of termination date) is as follows:

- 1.67 percent of final average salary per year of credited service for members covered by Social Security.

- 2.20 percent of final average salary per year of credited service for members not covered by Social Security.

The alternative formula for members retiring on or after January 1, 2001 (regardless of termination date) is as follows:

- 2.50 percent of final average salary per year of credited service for members covered by Social Security.

- 3.00 percent of final average salary per year of credited service for members not covered by Social Security.

The maximum pension payable is 75 percent of final average compensation for general formula members and 80 percent of final average compensation for alternative formula members.

Optional Forms of Payment

<u>Reversionary Annuity</u>—A member may elect to receive a smaller pension during his lifetime in order to provide a spouse or a designated dependent with a lifetime income. That payment would be in addition to any other benefit payable by the System.

<u>Level Income</u>—A member who contributes to Social Security as a State employee may elect to have his pension payments increased before Social Security Normal Retirement Age and reduced thereafter. To be eligible for this election the member must have established eligibility for a Social Security pension.

Annual Increases in Pension

Postretirement increases of 3.0 percent of the current pension (i.e., increases are compounded) are granted to members effective each January 1 occurring on or after the first anniversary of the pension.

Survivors Annuity

Qualification of Survivor

If death occurs while in State employment, the member must have established at least 18 months of pension credit. If death occurs after termination of State service and the member was not receiving a retirement pension, the member must have established at least eight years of pension credit.

An eligible spouse qualifies at age 50 or at any age if there is, in the care of the spouse, any unmarried children of the member under age 18 (age 22 if full-time student); unmarried children under age 18 (age 22 if full-time student) qualify if no spouse survives; dependent parents at age 50 qualify if neither an eligible spouse nor children survive the member.

Amount of Payment

If the member's death occurs before retirement, the named beneficiary receives a lump sum refund of all of the member's pension contributions plus interest, excluding contributions for widows and survivors benefits. A single lump sum payment of $1,000 is also made immediately to the survivor beneficiary of the member.

An eligible spouse receives a monthly annuity equal to 30 percent of the member's final average compensation subject to a maximum of $400. If children of the member are under the care of the spouse, the annuity is increased for each child, subject to a monthly maximum of $600 or 80 percent of final average compensation. If only eligible children survive, the monthly annuity may not exceed the lesser of $600 or 80 percent of final average compensation. The maximum combined monthly payment to parents may not exceed $400. If the member's death occurs after retirement or after termination of State employment but before the member receives a pension, the monthly benefit is further limited to 80 percent of the pension received or earned by the member. Monthly benefits payable to survivors of a member who was covered by Social Security as a State employee are reduced by one-half of the Social Security benefits for which the survivors are eligible. For benefits granted on or after January 1, 1992, the reduction may not exceed 50 percent of the amount of survivors annuity otherwise payable. If death of the member occurs on or after January 1, 1984, the minimum total survivors annuity benefit payable (before any reduction for Social Security benefits) is equal to 50 percent of the member's earned pension without regard to the member's age at death. Any member who retires on or after July 1, 2009, will have the option at the time of retirement to remove the offset provision. In exchange for the removal, SERS will reduce the member’s retirement annuity by 3.825 percent.

Duration of Payment

The monthly annuity payable to a spouse continues for his/her lifetime without regard to remarriage. The monthly annuity to children terminates upon death, marriage or attainment of age 18 (age 22 if full-time student). However, the monthly annuity will continue for a child who, at age 18, is physically or mentally disabled and unable to accept gainful employment.

Annual Increases in Annuity

If the member's death occurs before retirement, increases of 3.0 percent of the current annuity are granted to survivors effective each January 1 occurring on or after the first anniversary of the annuity (i.e., increases are compounded). If the member's death occurs after retirement, the initial 3.0 percent increase applies on the January 1 on or after the survivor annuity begins.

Widow's Annuity Option

The widow of a male member who was a participant in the System prior to July 19, 1961, may have the option of taking a Widow's Annuity rather than the Survivor's Annuity.

Qualification of Widow

An eligible widow receives a Widow's Annuity if she is age 50 or over or has in her care any of the member's unmarried children under age 18. If she is not age 50 and has no such children in her care, she becomes eligible at age 50.

Amount of Payment

The Widow's Annuity consists of a lump sum payment of $500, plus a monthly annuity equal to 50 percent of the pension earned or received by the member at the date of death. If the widow has in her care eligible children of the member, the monthly annuity is increased because of each child, subject to a maximum payment equal to 66-2/3 percent of the earned pension. Monthly benefits payable to a widow of a member who was covered by Social Security as a State employee are reduced by one-half of the amount of benefits she is entitled to as a widow from Social Security (reduced by one-half of the amount of benefits she is entitled to based on her own Primary Insurance Amount). For benefits granted on or after January 1, 1992, the reduction may not exceed 50 percent of the amount of widow's annuity otherwise payable. Any member who retires on or after July 1, 2009, will have the option at the time of retirement to remove the offset provision. In exchange for the removal, SERS will reduce the member’s retirement annuity by 3.825 percent.

Duration of Payment

The monthly payment to the widow continues for her lifetime whether or not she remarries. If the amount of benefit was increased because of eligible children, it is adjusted downward as these children's benefits are terminated (death, marriage or attainment of age 18 or 22).

Annual Increases in Annuity

If the member's death occurs before retirement, increases of 3.0 percent of the current annuity are granted to widows effective each January 1 occurring on or after the first anniversary of the annuity (i.e., increases are compounded). If the member's death occurs after retirement, the initial 3.0 percent increase applies on the January 1 on or after the widow's annuity begins.

Occupational Death Benefit

Qualification of Survivors

If a member's death results from an injury on the job or a job related cause, the spouse may be eligible for an Occupational Death benefit. If only unmarried children under age 18 (age 22 if full-time student) survive, they would be eligible for the benefit. If neither a spouse nor eligible children survive, a dependent father or mother would be eligible.

Amount and Duration of Payment

The nominated beneficiary receives a lump sum payment consisting of all contributions made by the member plus interest credited to his account.

A surviving spouse is entitled to a monthly benefit equal to 50 percent of the member's final average compensation. The benefit is payable for the remaining lifetime of the spouse without regard to remarriage. If children under age 18 (age 22 if full-time student) also survive, the annuity is increased by 15 percent of such average because of each child, subject to a maximum of 75 percent. If there is no spouse, or if the spouse dies before all children have attained age 18 (age 22 if full-time student), each child receives a monthly allowance of 15 percent of final average compensation.

The combined payment to children may not exceed 50 percent of the member's final average compensation. Payments to or on account of children terminate upon their death, marriage or attainment of age 18 (age 22 if full-time student).

If there is no spouse or eligible children, a benefit of 25 percent of final average compensation is payable to each surviving dependent parent for life.

Annual Increases in Annuity

Increases of 3.0 percent of the current annuity are granted effective each January 1 occurring on or after the first anniversary of the annuity (i.e., increases are compounded).

Reductions

The monthly benefit is reduced by any payments awarded under the Workmen's Compensation or Occupational Diseases Acts.

Other Death Benefits

If the survivor beneficiaries of the member do not qualify for any of the previously described death benefits, one of the following benefits is payable to the nominated beneficiary on file with the System at the date of death.

Before Retirement

If the member's death occurred while in State service the benefit consists of: (1) a refund of all contributions plus interest credited to the member's account; and (2) a payment equal to one month's salary for each full year of pension credit not to exceed six month's salary. The minimum payment is equal to one month's salary.

If the member had terminated State service but not yet qualified for a pension, the benefit consists of a refund of all of the member's contributions to the System plus the interest credited to the member's account.

After Retirement

The benefit consists of a lump sum payment equal to the excess of contributions plus interest credited to the member's account over the total amount of pension payments made to the member. The minimum payment is $500.00.

Non-Occupational Disability Benefits

Qualification and Amount of Payment

Available to any member who has established at least one and one-half years of creditable service and who has been granted a disability leave of absence by his employing agency. The benefit is 50 percent of the member's final average compensation plus a credit to the member's account of service and contributions. It begins on the 31st day of absence from service on account of disability.

If the member has Social Security coverage as a State employee, the benefit payable by the System is reduced by the amount of any disability payment to which he is entitled under Social Security.

Duration of Payment

The member is eligible for the monthly benefit until the occurrence of any of the following events: (1) disability ceases; (2) resumption of gainful employment; (3) payments are made for a period of time equal to one-half of the service credit established as of the date disability began; or (4) attainment of age 65 if the benefit commences prior to age 60, or payment for 5 years if benefit commences after age 60.

If termination of the benefit is due to the member receiving benefits for a period of time equal to one-half of the service credit established at the date of disability, he shall be eligible for a retirement annuity if he has attained age 55 and has 15 years of service, or if he has attained age 50 and has 20 years of service.

Annual Increases in Annuity

A onetime increase of 7.0 percent of the original annuity is granted to members on the January 1 following the fourth anniversary of the annuity. Increases of 3.0 percent of the current annuity are then granted to members each January 1 following the 7.0 percent increase (i.e., the 3.0 percent increases are compounded).

Occupational Disability Benefit

Qualification and Amount of Payment

Provided for any member who becomes disabled as the direct result of injury or diseases arising out of and in the course of State employment.

The benefit is 75 percent of final average compensation plus a credit to the member's account of service and contributions. The cash benefit is reduced by any payment received under the Workmen's Compensation or Occupational Diseases Acts.

Duration of Payment

Monthly benefits are payable until the occurrence of any of the following events: (1) disability ceases; (2) resumption of gainful employment; or (3) attainment of age 65 if the benefit commences prior to age 60, or payment for 5 years if the benefit commences after age 60.

If termination of the benefit is due to the member having attained age 65 or having received benefits for five years after age 60, the member is entitled to a retirement pension based upon service credit established as of that date.

Annual Increases in Annuity

A one-time increase of 7.0 percent of the original annuity is granted to members on the January 1 following the fourth anniversary of the annuity. Increases of 3.0 percent of the current annuity are then granted to members each January 1 following the 7.0 percent increase (i.e., the 3.0 percent increases are compounded).

Temporary Disability Benefit

A member who is initially denied Workers' Compensation benefits and is appealing the denial may receive payment at the non-occupational rate, 50 percent of pay, providing all eligibility requirements for the non-occupational benefit are met, until the determination is made.

Separation Benefits

Upon termination of State employment by resignation, discharge, dismissal, or layoff, a member may obtain a refund of the contributions made to the System. By accepting a refund, a member forfeits all accrued rights and benefits in the System for himself and his beneficiaries.

Provisions Applicable to Members Hired after December 31, 2010, as a result of Public Act 96-0889

Final Average Compensation

Based on last eight years of service and may not exceed $106,800, as automatically increased by the lesser of 3 percent or one-half of the annual increase in the consumer price index-u during the preceding 12-month calendar year.

Retirement Eligibility – All Members Except State policemen, fire fighters in the fire protection service of a department, or security employees of the Department of Corrections or the Department of Juvenile Justice

Normal retirement – 67 years old with 10 years of service.

Early Retirement – 62 years old with 10 years of service with a 6.0 percent per year reduction in benefit for each year age is under 67.

Retirement Eligibility – State policemen, fire fighters in the fire protection service of a department, or security employees of the Department of Corrections or the Department of Juvenile Justice

Normal retirement – 60 years old with 20 years of service.

Annual Increases in Annuity

Annual increases begin at the later of the first anniversary of retirement or age 67. The annual increases are equal to the lesser of 3.0 percent or one-half of the annual increase in the consumer price index-u during the preceding 12-month calendar year and are not compounded.

Survivor Benefits

Benefit equal to 66.67 percent of the earned retirement benefit at death. Survivor benefits are increased by the lesser of 3.0 percent or one-half of the annual increase in the consumer price index-u during the preceding 12-month calendar year and are not compounded.

Miscellaneous

State policeman, a fire fighter in the fire protection service of a department or a security employee of the Department of Corrections or the Department of Juvenile are still eligible for Alternate formula benefits as defined in section 14-110 of the Illinois Pension Code.

Salary and COLA Development for Members Hired on or After January 1, 2011

Year Ending	CPI-U	1/2 CPI-U	COLA	Maximum Annual Pensionable Earnings
2011			3.00%	$106,800.00
2012	3.90%	1.95%	1.95%	$108,882.60
2013	2.00%	1.00%	1.00%	$109,971.43
2014	1.20%	0.60%	0.60%	$110,631.26
2015	1.70%	0.85%	0.85%	$111,571.63
2016	0.00%	0.00%	0.00%	$111,571.63

SECTION G

GLOSSARY

Glossary

Actuarial Accrued Liability ("AAL")	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
Actuarial Assumptions	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement, and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
Actuarial Cost Method	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of future Normal Costs and the Actuarial Accrued Liability.
Actuarial Equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value ("APV")	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
Actuarial Present Value of Future Benefits ("APVFB")	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB No. 67, such as the Funded Ratio and the Actuarially Determined Contribution ("ADC").
Actuarial Value of Assets	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio, or contribution requirement.

Glossary (cont'd)

Actually Determined Contribution ("ADC") The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and Amortization Payment.

Amortization Method A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.

Amortization Payment That portion of the plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Amortization Period The period used in calculating the Amortization Payment.

Closed Amortization Period A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.

Employer Normal Cost The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.

Equivalent Single Amortization Period For plans that do not establish separate amortization bases (separate components of the UAAL), this is the same as the Amortization Period. For plans that do establish separate amortization bases, this is the period over which the UAAL would be amortized if all amortization bases were combined upon the current UAAL payment.

Experience Gain/Loss A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge which may be larger or smaller than projected. Gains are due to favorable experience; e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience; i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.

Glossary (cont'd)

Funded Ratio	The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability.
GASB	Governmental Accounting Standards Board.
GASB No. 67 and GASB No. 68	These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68, which replaced Statement No. 27 effective with the fiscal year ending June 30, 2015, sets the accounting rules for the employers that sponsor or contribute to public retirement systems. Statement No. 67, which replaced Statement No. 25 effective with fiscal year ending June 30, 2014, sets the rules for the systems themselves.
Normal Cost	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
Open Amortization Period	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.
Unfunded Actuarial Accrued Liability	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
Valuation Date	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.

SECTION H

Additional Projection Details

29-Year Projection of Actuarial Accrued Liability
(All Dollar Amounts in Millions)

Valuation Date June 30	Current Inactives: Retirees & Beneficiaries	Current Inactives: Deferreds	Actives: Tier 1	Actives: Current Tier 2	Actives: Future Tier 2	Grand Totals: Current Retirees, Beneficiaries, & Deferreds	Grand Totals: Actives	Grand Totals: Total
2016	$29,553.89	$689.64	$15,121.42	$150.42	$0.00	$30,243.53	$15,271.84	$45,515.37
2017	29,397.53	723.04	16,942.75	205.36	0.00	30,120.58	17,148.11	47,268.69
2018	29,198.19	754.86	18,777.43	264.71	14.55	29,953.06	19,056.69	49,009.75
2019	28,954.91	785.21	20,617.97	330.68	44.52	29,740.12	20,993.18	50,733.29
2020	28,666.72	813.30	22,453.43	404.09	92.30	29,480.02	22,949.82	52,429.85
2021	28,332.80	838.90	24,273.17	485.93	159.87	29,171.70	24,918.98	54,090.67
2022	27,952.47	861.73	26,063.95	576.71	250.08	28,814.20	26,890.74	55,704.93
2023	27,525.20	881.70	27,813.92	675.80	365.85	28,406.90	28,855.57	57,262.47
2024	27,050.75	899.12	29,509.43	782.00	510.25	27,949.87	30,801.68	58,751.55
2025	26,529.13	913.81	31,139.57	894.00	689.05	27,442.94	32,722.62	60,165.56
2026	25,960.61	925.82	32,696.17	1,011.86	905.67	26,886.43	34,613.71	61,500.14
2027	25,345.82	940.43	34,169.78	1,136.05	1,163.67	26,286.26	36,469.51	62,755.76
2028	24,685.77	952.78	35,558.01	1,267.16	1,466.13	25,638.55	38,291.30	63,929.85
2029	23,981.80	962.63	36,859.46	1,405.75	1,815.73	24,944.43	40,080.95	65,025.37
2030	23,235.62	969.86	38,069.99	1,552.18	2,215.97	24,205.48	41,838.14	66,043.62
2031	22,449.43	974.56	39,183.26	1,706.80	2,670.23	23,423.98	43,560.29	66,984.27
2032	21,625.90	976.75	40,189.91	1,869.66	3,182.57	22,602.65	45,242.15	67,844.80
2033	20,768.15	976.54	41,085.47	2,040.81	3,757.08	21,744.69	46,883.36	68,628.05
2034	19,879.74	973.95	41,866.95	2,220.34	4,397.76	20,853.69	48,485.05	69,338.74
2035	18,964.64	969.03	42,525.47	2,408.16	5,109.20	19,933.67	50,042.82	69,976.49
2036	18,027.26	961.63	43,052.07	2,603.79	5,896.37	18,988.89	51,552.23	70,541.13
2037	17,072.40	951.82	43,445.76	2,806.83	6,762.22	18,024.22	53,014.81	71,039.03
2038	16,105.19	939.74	43,707.83	3,017.27	7,708.22	17,044.93	54,433.31	71,478.24
2039	15,131.04	925.17	43,839.49	3,234.70	8,736.62	16,056.21	55,810.82	71,867.03
2040	14,155.58	908.14	43,843.48	3,458.54	9,849.57	15,063.71	57,151.59	72,215.30
2041	13,184.51	888.84	43,723.40	3,687.97	11,048.94	14,073.35	58,460.31	72,533.66
2042	12,223.59	867.31	43,484.27	3,921.52	12,336.49	13,090.90	59,742.28	72,833.18
2043	11,278.48	843.62	43,131.14	4,157.64	13,713.90	12,122.10	61,002.68	73,124.77
2044	10,354.66	817.89	42,668.68	4,394.34	15,182.40	11,172.55	62,245.42	73,417.98
2045	9,457.36	790.28	42,101.04	4,629.12	16,742.95	10,247.63	63,473.11	73,720.74

Table 6

29-Year Projection of the Present Value of Future Benefits

(All Dollar Amounts in Millions)

Valuation Date June 30	Current Inactives: Retirees & Beneficiaries	Current Inactives: Deferreds	Actives: Tier 1	Actives: Current Tier 2	Actives: Future Tier 2	Grand Totals: Current Retirees, Beneficiaries, & Deferreds	Grand Totals: Actives	Grand Totals: Total
2016	$29,553.89	$689.64	$22,430.73	$1,211.29	$0.00	$30,243.53	$23,642.03	$53,885.56
2017	29,397.53	723.04	23,869.31	1,269.71	290.91	30,120.58	25,429.94	55,550.51
2018	29,198.19	754.86	25,316.79	1,334.06	621.92	29,953.06	27,272.77	57,225.82
2019	28,954.91	785.21	26,762.48	1,404.31	997.80	29,740.12	29,164.59	58,904.71
2020	28,666.72	813.30	28,198.39	1,480.67	1,409.28	29,480.02	31,088.34	60,568.37
2021	28,332.80	838.90	29,616.92	1,563.80	1,864.83	29,171.70	33,045.55	62,217.25
2022	27,952.47	861.73	31,009.21	1,654.27	2,359.88	28,814.20	35,023.36	63,837.56
2023	27,525.20	881.70	32,366.89	1,751.65	2,895.58	28,406.90	37,014.12	65,421.02
2024	27,050.75	899.12	33,680.38	1,854.99	3,480.10	27,949.87	39,015.47	66,965.34
2025	26,529.13	913.81	34,941.86	1,963.22	4,102.47	27,442.94	41,007.54	68,450.49
2026	25,960.61	925.82	36,144.88	2,076.33	4,772.03	26,886.43	42,993.23	69,879.67
2027	25,345.82	940.43	37,282.42	2,194.46	5,485.55	26,286.26	44,962.43	71,248.69
2028	24,685.77	952.78	38,351.38	2,317.83	6,232.13	25,638.55	46,901.34	72,539.89
2029	23,981.80	962.63	39,348.90	2,446.63	7,028.04	24,944.43	48,823.57	73,768.00
2030	23,235.62	969.86	40,270.68	2,580.96	7,869.55	24,205.48	50,721.20	74,926.67
2031	22,449.43	974.56	41,111.07	2,720.92	8,767.64	23,423.98	52,599.62	76,023.60
2032	21,625.90	976.75	41,863.24	2,866.49	9,722.21	22,602.65	54,451.94	77,054.59
2033	20,768.15	976.54	42,523.30	3,017.68	10,729.73	21,744.69	56,270.71	78,015.40
2034	19,879.74	973.95	43,088.06	3,174.46	11,802.61	20,853.69	58,065.14	78,918.82
2035	18,964.64	969.03	43,551.21	3,336.69	12,951.85	19,933.67	59,839.75	79,773.41
2036	18,027.26	961.63	43,906.52	3,504.01	14,171.90	18,988.89	61,582.43	80,571.32
2037	17,072.40	951.82	44,152.13	3,676.09	15,462.48	18,024.22	63,290.70	81,314.92
2038	16,105.19	939.74	44,287.48	3,852.82	16,824.83	17,044.93	64,965.12	82,010.06
2039	15,131.04	925.17	44,312.32	4,033.74	18,255.32	16,056.21	66,601.39	82,657.60
2040	14,155.58	908.14	44,227.30	4,218.21	19,754.29	15,063.71	68,199.80	83,263.51
2041	13,184.51	888.84	44,033.91	4,405.46	21,324.26	14,073.35	69,763.64	83,836.99
2042	12,223.59	867.31	43,734.61	4,594.26	22,966.82	13,090.90	71,295.69	84,386.59
2043	11,278.48	843.62	43,332.06	4,783.25	24,685.94	12,122.10	72,801.26	84,923.35
2044	10,354.66	817.89	42,829.06	4,970.73	26,485.05	11,172.55	74,284.84	85,457.40
2045	9,457.36	790.28	42,228.24	5,154.58	28,365.93	10,247.63	75,748.75	85,996.38

29-Year Projection of the Benefit Payments Including Administrative Expenses and Disability Payments

(All Dollar Amounts in Millions)

	Current Inactives		Actives			Grand Totals		
Valuation Date June 30	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries, & Deferreds	Actives	Total
2016	$2,151.12	$14.37	$127.20	$25.50	$0.00	$2,165.49	$152.69	$2,318.18
2017	2,182.08	18.17	215.95	23.72	6.11	2,200.25	245.78	2,446.03
2018	2,211.08	21.75	315.62	22.36	12.34	2,232.83	350.32	2,583.15
2019	2,238.03	25.97	422.92	21.21	18.69	2,264.00	462.81	2,726.82
2020	2,262.74	30.29	536.88	19.83	25.42	2,293.03	582.13	2,875.16
2021	2,285.00	34.70	658.24	18.37	32.49	2,319.70	709.10	3,028.80
2022	2,304.64	39.01	785.93	17.80	39.89	2,343.65	843.63	3,187.28
2023	2,321.34	42.83	920.51	18.64	47.70	2,364.17	986.85	3,351.02
2024	2,334.84	46.64	1,059.69	20.90	53.86	2,381.48	1,134.45	3,515.93
2025	2,344.88	50.22	1,201.56	23.51	60.15	2,395.10	1,285.22	3,680.32
2026	2,351.13	48.53	1,346.27	26.30	66.79	2,399.66	1,439.37	3,839.03
2027	2,353.29	51.70	1,489.56	29.24	74.06	2,404.99	1,592.86	3,997.85
2028	2,351.08	54.96	1,630.96	32.34	81.89	2,406.04	1,745.18	4,151.22
2029	2,344.24	58.15	1,771.68	35.70	90.49	2,402.40	1,897.88	4,300.28
2030	2,332.43	61.09	1,912.75	39.36	99.98	2,393.52	2,052.08	4,445.61
2031	2,315.32	63.83	2,054.90	43.40	110.49	2,379.15	2,208.78	4,587.93
2032	2,292.67	66.30	2,194.85	47.81	122.19	2,358.97	2,364.86	4,723.83
2033	2,264.28	68.58	2,331.64	52.65	135.10	2,332.86	2,519.39	4,852.25
2034	2,229.95	70.67	2,468.09	57.99	149.44	2,300.62	2,675.53	4,976.15
2035	2,189.56	72.72	2,603.69	64.04	165.51	2,262.29	2,833.24	5,095.53
2036	2,143.03	74.56	2,733.78	70.76	184.46	2,217.59	2,989.01	5,206.60
2037	2,090.35	76.09	2,857.00	77.92	207.05	2,166.44	3,141.97	5,308.41
2038	2,031.61	77.68	2,972.98	85.82	232.97	2,109.29	3,291.78	5,401.07
2039	1,966.96	79.07	3,080.88	94.64	262.19	2,046.04	3,437.70	5,483.74
2040	1,896.70	80.11	3,179.89	104.43	295.03	1,976.81	3,579.35	5,556.15
2041	1,821.17	80.96	3,269.19	115.61	331.76	1,902.14	3,716.55	5,618.69
2042	1,740.86	81.59	3,348.74	128.20	372.59	1,822.46	3,849.53	5,671.98
2043	1,656.32	81.96	3,418.62	142.45	418.00	1,738.28	3,979.07	5,717.35
2044	1,568.17	82.05	3,479.15	158.64	468.44	1,650.22	4,106.23	5,756.45
2045	1,477.13	81.89	3,530.24	177.29	524.39	1,559.03	4,231.92	5,790.95

Table 8

29-Year Projection of Active Population, Payroll, Employee Contributions and Normal Costs

(All Dollar Amounts in Millions)

Valuation Date June 30	Tier 1 Active Members Population	Tier 1 Covered Payroll	Tier 1 Employee Contributions	Tier 1 Normal Cost	Current Tier 2 Active Members Population	Current Tier 2 Covered Payroll	Current Tier 2 Employee Contributions	Current Tier 2 Normal Cost	Future Tier 2 Active Members Population	Future Tier 2 Covered Payroll	Future Tier 2 Employee Contributions	Future Tier 2 Normal Cost
2016	45,942	$3,826.61	$217.82	$864.65	15,375	$879.52	$36.78	$68.43	0	$0.00	$0.00	$0.00
2017	42,535	3,432.73	195.98	843.06	13,811	779.16	32.65	67.20	4,971	256.20	12.10	20.17
2018	39,474	3,317.86	189.86	824.24	12,786	761.79	31.97	68.22	9,057	487.12	23.29	40.33
2019	36,498	3,193.07	182.97	802.07	11,990	752.81	31.62	69.80	12,829	719.79	34.79	61.86
2020	33,667	3,065.35	175.87	776.63	11,349	749.63	31.51	71.61	16,301	953.92	46.49	84.49
2021	30,910	2,926.91	167.93	746.85	10,789	748.55	31.49	73.24	19,618	1,196.80	58.80	108.88
2022	28,262	2,782.09	159.33	713.90	10,288	748.37	31.49	74.58	22,767	1,447.66	71.63	134.89
2023	25,740	2,632.82	150.36	677.41	9,828	748.83	31.53	75.57	25,749	1,705.92	84.92	162.54
2024	23,314	2,476.45	140.64	638.66	9,380	748.42	31.53	76.25	28,623	1,975.29	98.94	192.18
2025	21,064	2,322.99	131.11	599.13	8,959	748.32	31.53	76.95	31,293	2,248.80	113.16	222.93
2026	18,937	2,166.90	121.32	558.26	8,577	750.04	31.61	77.89	33,803	2,528.83	127.80	254.92
2027	16,952	2,011.62	111.58	519.29	8,243	753.30	31.74	79.11	36,123	2,812.20	142.63	287.71
2028	15,178	1,868.04	102.84	482.85	7,946	757.91	31.93	80.56	38,193	3,093.17	157.16	320.65
2029	13,534	1,727.13	94.34	447.61	7,672	762.81	32.13	82.14	40,111	3,378.02	171.91	354.54
2030	12,024	1,591.52	86.45	412.73	7,416	767.42	32.32	83.79	41,877	3,665.77	186.67	389.18
2031	10,609	1,455.25	78.38	376.47	7,169	771.08	32.47	85.35	43,539	3,960.24	201.85	425.09
2032	9,300	1,320.68	70.28	340.91	6,917	771.75	32.49	86.75	45,099	4,261.27	217.34	462.21
2033	8,116	1,192.94	62.79	306.81	6,673	770.78	32.45	88.10	46,528	4,565.13	232.84	500.23
2034	7,024	1,068.93	55.52	271.50	6,431	767.74	32.32	89.30	47,863	4,874.66	248.65	539.61
2035	5,990	942.45	47.90	235.00	6,189	762.60	32.10	90.21	49,138	5,192.59	265.01	580.76
2036	5,054	821.12	40.61	200.98	5,939	754.04	31.70	90.84	50,324	5,514.43	281.57	622.49
2037	4,241	711.80	34.33	170.31	5,697	744.09	31.27	91.42	51,380	5,831.64	297.70	663.97
2038	3,518	610.07	28.61	142.49	5,459	732.58	30.78	91.84	52,339	6,146.67	313.62	705.54
2039	2,897	519.07	23.70	118.04	5,224	719.24	30.21	92.13	53,196	6,454.64	329.09	746.90
2040	2,363	437.24	19.47	96.85	4,994	704.68	29.59	92.18	53,960	6,756.11	344.13	787.97
2041	1,916	366.09	15.95	79.19	4,757	687.04	28.86	91.82	54,645	7,051.80	358.76	828.78
2042	1,544	305.29	13.10	64.71	4,513	666.59	28.00	91.08	55,260	7,342.25	373.02	869.35
2043	1,239	253.51	10.76	52.79	4,271	644.51	27.05	89.92	55,807	7,627.06	386.97	909.62
2044	991	209.72	8.82	42.93	4,018	618.83	25.97	88.24	56,308	7,907.91	400.65	949.67
2045	786	172.37	7.20	34.71	3,763	591.02	24.78	85.91	56,767	8,184.75	414.10	989.43

Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

SECTION I

STRESS TESTING SCENARIOS

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December 1, 2016

Board of Trustees
State Employees' Retirement System of Illinois
2101 South Veterans Parkway
P.O. Box 19255
Springfield, IL 62794-9255

Re: Stress Testing Scenarios Based on Actuarial Valuation Results as of June 30, 2016

Dear Members of the Board:

At your request, we have performed stress testing of the required statutory contributions and funded ratio for the State Employees' Retirement System of Illinois ("SERS") based on the results of the June 30, 2016, actuarial valuation. This stress testing was performed to determine whether there will be sufficient assets to pay benefits if there is a significant market downturn or significant volatility in investment returns, volatility in future active population, or volatility in salary growth.

GRS has prepared this analysis exclusively for the Trustees of the State Employees' Retirement System; GRS is not responsible for reliance upon this report by any other party. This report may be provided to parties other than the SERS only in its entirety and only with the permission of the Board.

Exhibit A-1 contains the rates of return used for the investment return stress test. The investment return stress test analysis projects the actuarial valuation results assuming that the plan assets earn 7.00 percent, the 5^{th} percentile return of 2.36 percent, and the 25^{th} percentile return of 4.85 percent. In order to demonstrate the risk and volatility of the returns, we are providing results assuming both static returns of 7.00 percent, 2.36 percent, or 4.85 percent and volatile returns that produce 29-year geometric average returns of 7.00 percent, 2.36 percent, or 4.85 percent. In the baseline scenario and Scenarios 1 through 5, the discount rate used to determine liabilities remains at 7.00 percent, average future uncapped salary growth or wage inflation remains at 3.25 percent per year and the future active population remains constant at 61,317 members. Please note that each volatility scenario represents one possible trial that generates the targeted average geometric return, and that another equally likely trial that produces the same targeted average geometric return could produce significantly different contribution and funded ratio patterns. The 5^{th} and 25^{th} percentile returns used in Scenarios 2 through 5 were determined based on the expected investment return and the current target asset allocation of the System as of the most recent experience study.

In addition to the investment return stress test scenarios, we have provided scenarios that stress test the required statutory contributions and funded ratio based on fluctuations in future active population and salary growth. In order to demonstrate the risk and volatility associated with changes to the future active population and uncapped salary growth, we are providing results under the following scenarios: Scenario 6 – future active population increases 1,000 members per year for five years and then remains static; Scenario 7 – future active population decreases 1,000 members per year for five years and then remains static; Scenario 8 – wage inflation increases by one percentage point from the assumed rate of 3.25 percent per year to 4.25 percent per year; and Scenario 9 – wage inflation decreases by one percentage point from the assumed rate of 3.25 percent per year to 2.25 percent per year. In Scenarios 6 through 9, the investment return assumption and discount rate used to determine the liabilities remain at 7.00 percent.

GRS believes that these scenarios provide a reasonable illustration of potential future volatility of investment returns, population, salary growth and the resulting actuarial valuation results. These scenarios are not intended to represent the full range of all possible outcomes. Annual returns will likely be significantly different from the returns shown in Exhibit A-1 and the 29-year geometric average of actual returns may be either higher or lower than the assumption of 7.00 percent.

Exhibits B-1 through B-8 contains the numerical results of the stress testing.

Analysis of Stress Testing Scenario Results

Baseline – Static 7.00 Percent

Under the projected results from the actuarial valuation as of June 30, 2016, in which all future actuarial assumptions are realized, the statutory contribution increases by a steady rate of approximately 2.68 percent per year beginning in year 2034, once the deferred asset gains and losses are fully recognized in the actuarial value of assets and the statutory contributions are no longer limited by the maximum contribution. The funded ratio does not grow markedly until after 2033, when it increases from 51.9 percent to 90.0 percent in 2045.

Scenario 1 – Volatile 7.00 Percent

In Scenario 1, which is based on the assumption that the 29-year geometric average of the returns is equal to 7.00 percent but with volatility in the year-to-year rate of return, the annual contribution is not as stable as the baseline scenario. Relative to the baseline, the contribution requirement is higher in 2019 and 2020, then lower through 2027, then higher through 2042, then lower until 2045. The contributions are projected to decline to $0 in 2044 and 2045 because of very favorable investment returns in the tail end of the projection period. The system is projected to be over 100 percent funded beginning in 2044.

Scenario 2 – Static 2.36 Percent

In Scenario 2, which is based on the assumption that the annual rate of return is equal to 2.36 percent, the annual contribution requirement steadily increases at an increasing rate. Relative to the baseline, the contribution requirement is higher in all years.

Scenario 3 – Volatile 2.36 Percent

In Scenario 3, which is based on the assumption that the 29-year geometric average of the returns is equal to 2.36 percent but with volatility in the year-to-year rate of return, the annual contribution requirement relative to the baseline is lower in 2019 and higher in later years. In this Scenario, the unfunded liability increases through 2028, decreases slightly from 2029 through 2041, then decreases significantly through 2045. This Scenario demonstrates that while the long term geometric average may be the same as Scenario 2, the pattern of contributions can be significantly different.

Scenario 4 – Static 4.85 Percent

In Scenario 4, which is based on the assumption that the annual rate of return is equal to 4.85 percent, the annual contribution requirement steadily increases at an increasing rate. Relative to the baseline, the contribution requirement is higher in all years. Relative to Scenario 2, the rate of increase is lower because more investment income is used to fund benefits.

Scenario 5 – Volatile 4.85 Percent

In Scenario 5, which is based on the assumption that the 29-year geometric average of the returns is equal to 4.85 percent but with volatility in the year-to-year rate of return, the annual contribution requirement decreases through 2024, then increases through 2040, then decreases through 2045. Relative to the baseline, the contribution requirement is lower through 2027 due to high investment returns in early years, and then higher for all remaining years until 2044. Again, this Scenario demonstrates that while the long term geometric average may be the same as Scenario 4, the pattern of contributions can be drastically different.

Scenario 6 – Increases in Active Population

Scenario 6 is based on the assumption that the active population will increase by 1,000 members each year for five years from 61,317 members in 2017 to 66,317 in 2022 and then remain constant for years on and after 2022. Under this scenario the statutory contribution increases by a steady rate of approximately 2.72 percent per year beginning in year 2034 once the deferred asset gains and losses are fully recognized in the actuarial value of assets and the statutory contributions are no longer limited by the maximum contribution. Relative to the baseline, the contribution requirement is lower in 2019 through 2021 as the payroll base increases with incremental increases in population. Beginning in 2022, the annual contribution requirement is slightly higher through 2045 with increases relative to the baseline at an average rate of 1.45 percent per year beginning in year 2022, as the population stabilizes at 5,000 members greater than the baseline.

Scenario 7 – Decreases in Active Population

Scenario 7 is based on the assumption that the active population will decrease by 1,000 members each year for five years from 61,317 members in 2017 to 56,317 in 2022 and then remain constant for years on and after 2022. Under this scenario the statutory contribution increases by a steady rate of approximately 2.64 percent per year beginning in year 2034 once the deferred asset gains and losses are fully recognized in the actuarial value of assets and the statutory contributions are no longer limited by the maximum contribution. Relative to the baseline, the contribution requirement is higher in years 2019 through 2021 as the payroll base decreases with incremental decreases in population. Beginning in 2022, the annual contribution requirement is slightly lower through 2045 with decreases relative to the baseline at an average rate of 1.55 percent per year beginning in year 2022, as the population stabilizes at 5,000 members less than the baseline.

Scenario 8 – Increased Salary Growth

Scenario 8 is based on the assumption that uncapped salary growth for active members will increase from the baseline assumption of 3.25 percent per year to 4.25 percent per year, limited by the statutory cap. Under this scenario the statutory contribution increases by a steady rate of approximately 2.36 percent per year beginning in year 2034 once the deferred asset gains and losses are fully recognized in the actuarial value of assets and the statutory contributions are no longer limited by the maximum contribution. Relative to the baseline, the contribution requirement is higher for all years through 2045.

Scenario 9 – Decreased Salary Growth

Scenario 9 is based on the assumption that uncapped salary growth for active members will decrease from the baseline assumption of 3.25 percent per year to 2.25 percent per year, limited by the statutory cap. Under this scenario the statutory contribution increases by a steady rate of approximately 2.17 percent per year beginning in year 2034 once the deferred asset gains and losses are fully recognized in the actuarial value of assets and the statutory contributions are no longer limited by the maximum contribution. Relative to the baseline, the contribution requirement is higher in years 2019 through 2023 and then lower through 2045.

In all Scenarios, it is apparent that based on the funding policy of attaining 90 percent funding in 2045, market volatility will have a larger impact on the statutory contribution as the number of years until 2045 becomes shorter.

In Scenario 1, the funded ratio is greater than 90 percent in year 2045 due to significant favorable investment returns in the tail end of the projection period. In Scenarios 2 through 5, the funded ratio is not 90 percent in the year 2045 because of deferred asset gains and losses that have not been fully recognized in the actuarial value of assets. This is a result of the fact that the assumed investment return in each of these Scenarios is not equal to the valuation assumption of 7.00 percent.

In each projection Scenario, the actuarial valuations in each year have been projected as though an actuarial valuation in each of those years was performed. The market value of assets at each projected actuarial valuation is assumed to have a rate of return according to the Scenario being modeled for that one year and the valuation interest rate going forward. At each projected actuarial valuation, an additional 20 percent of the investment gains and losses are recognized. This iterative process is followed for each projection year through 2045.

It is important to note that the Scenarios presented in this letter represent an extremely small sample of possibilities.

In each scenario, we have assumed that the plan sponsor will make the statutory contribution when due. However, some scenarios result in very high contributions rates for extended periods of time and may jeopardize the sustainability of the System. We are not qualified to opine on the sponsor's ability to pay the statutory contribution when due.

To the best of our knowledge, this actuarial statement is complete and accurate, fairly presents the actuarial position of SERS as of June 30, 2016, based on the stress testing scenarios and has been prepared in accordance with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with applicable statutes.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions, contribution amounts or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements in this report.

This letter is part of the actuarial valuation as of June 30, 2016, and is subject to the same actuarial assumptions and disclosures as used in the presentation and annual actuarial valuation report. The investment return stress testing scenarios used future investment returns as shown in Exhibit A-1 and the population and salary growth stress testing scenarios used future populations and wage inflation assumptions as shown in exhibits A-2 and A-3. All other assumptions and methods were the same as the actuarial valuation.

The statutory funding method generates a contribution requirement that is less than a reasonable actuarially determined contribution. Meeting the statutory requirement does not mean that the undersigned agree that adequate actuarial funding has been achieved. We recommend adherence to a funding policy, such as the Board policy used to the calculate the ADC under GASB Statements Nos. 67 and 68, that funds the normal cost of the plan as well as an amortization payment that seeks to pay off any unfunded accrued liability over a closed period of 25 years beginning July 1, 2015.

The signing actuaries are independent of the plan sponsor.

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

Respectfully submitted,

Gabriel, Roeder, Smith & Company

Alex Rivera

Lance J. Weiss

Alex Rivera, FSA, EA, MAAA
Senior Consultant

Lance J. Weiss, EA, MAAA, FCA
Senior Consultant

cc: Mr. Ryan Gundersen, Gabriel, Roeder, Smith & Company

Exhibit A-1

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Assumed Rates of Investment Return
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS						
Scenario	Baseline	1	2	3	4	5
Investment Return Assumption	7.00% per year	Varying Rates for the first 29 years, 7.00% per year thereafter	2.36% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter	4.85% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter
29 Year Geometric Return	7.00%	7.00%	2.36%	2.36%	4.85%	4.85%
Summary of Investment Returns Included in the Scenario	N/A	Investment returns during the first 29 years **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with** volatility, based on the System's asset allocation policy
Fiscal Year	Rates of Investment Returns					
2017	7.00%	3.36%	2.36%	9.65%	4.85%	27.34%
2018	7.00%	13.53%	2.36%	1.09%	4.85%	35.53%
2019	7.00%	19.42%	2.36%	2.22%	4.85%	9.41%
2020	7.00%	8.70%	2.36%	-6.01%	4.85%	7.60%
2021	7.00%	14.14%	2.36%	18.54%	4.85%	10.16%
2022	7.00%	-2.94%	2.36%	8.64%	4.85%	-8.15%
2023	7.00%	-6.31%	2.36%	-16.88%	4.85%	-3.48%
2024	7.00%	17.34%	2.36%	-5.16%	4.85%	0.08%
2025	7.00%	-8.96%	2.36%	-14.54%	4.85%	-15.32%
2026	7.00%	-1.73%	2.36%	6.59%	4.85%	-4.82%
2027	7.00%	-10.81%	2.36%	26.09%	4.85%	4.28%
2028	7.00%	-4.03%	2.36%	5.98%	4.85%	8.09%
2029	7.00%	14.80%	2.36%	33.73%	4.85%	8.40%
2030	7.00%	-3.92%	2.36%	-15.31%	4.85%	16.22%
2031	7.00%	10.24%	2.36%	5.24%	4.85%	-11.86%
2032	7.00%	8.16%	2.36%	25.88%	4.85%	3.86%
2033	7.00%	11.07%	2.36%	18.92%	4.85%	-10.34%
2034	7.00%	10.59%	2.36%	-13.83%	4.85%	0.99%
2035	7.00%	-9.38%	2.36%	25.96%	4.85%	9.78%
2036	7.00%	35.39%	2.36%	-2.04%	4.85%	7.17%
2037	7.00%	-2.50%	2.36%	-14.38%	4.85%	9.57%
2038	7.00%	8.97%	2.36%	8.19%	4.85%	1.55%
2039	7.00%	7.60%	2.36%	2.31%	4.85%	23.68%
2040	7.00%	25.66%	2.36%	-1.90%	4.85%	15.75%
2041	7.00%	10.73%	2.36%	5.50%	4.85%	8.93%
2042	7.00%	15.81%	2.36%	-5.35%	4.85%	4.62%
2043	7.00%	17.41%	2.36%	-5.83%	4.85%	14.24%
2044	7.00%	16.28%	2.36%	6.93%	4.85%	-4.37%
2045	7.00%	0.49%	2.36%	-15.78%	4.85%	-10.28%

Gabriel Roeder Smith & Company

Exhibit A-2

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Population
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS					
Scenario	Baseline; 1-5	6	7	8	9
Investment Return Assumption	7.00% per year	7.00% per year	7.00% per year	7.00% per year	7.00% per year
Wage Inflation Assumption	3.25%	3.25%	3.25%	4.25%	2.25%
Population Growth Assumption	Active population remains constant at 61,317 members through the projection period	Active population increases 1,000 members each year for 5 years and then remains constant at 66,317 members for fiscal years on and after fiscal year 2022	Active population decreases 1,000 members each year for 5 years and then remains constant at 56,317 members for fiscal years on and after fiscal year 2022	Active population remains constant at 61,317 members through the projection period	Active population remains constant at 61,317 members through the projection period
Fiscal Year	Population				
2017	61,317	61,317	61,317	61,317	61,317
2018	61,317	62,317	60,317	61,317	61,317
2019	61,317	63,317	59,317	61,317	61,317
2020	61,317	64,317	58,317	61,317	61,317
2021	61,317	65,317	57,317	61,317	61,317
2022	61,317	66,317	56,317	61,317	61,317
2023	61,317	66,317	56,317	61,317	61,317
2024	61,317	66,317	56,317	61,317	61,317
2025	61,317	66,317	56,317	61,317	61,317
2026	61,317	66,317	56,317	61,317	61,317
2027	61,317	66,317	56,317	61,317	61,317
2028	61,317	66,317	56,317	61,317	61,317
2029	61,317	66,317	56,317	61,317	61,317
2030	61,317	66,317	56,317	61,317	61,317
2031	61,317	66,317	56,317	61,317	61,317
2032	61,317	66,317	56,317	61,317	61,317
2033	61,317	66,317	56,317	61,317	61,317
2034	61,317	66,317	56,317	61,317	61,317
2035	61,317	66,317	56,317	61,317	61,317
2036	61,317	66,317	56,317	61,317	61,317
2037	61,317	66,317	56,317	61,317	61,317
2038	61,317	66,317	56,317	61,317	61,317
2039	61,317	66,317	56,317	61,317	61,317
2040	61,317	66,317	56,317	61,317	61,317
2041	61,317	66,317	56,317	61,317	61,317
2042	61,317	66,317	56,317	61,317	61,317
2043	61,317	66,317	56,317	61,317	61,317
2044	61,317	66,317	56,317	61,317	61,317
2045	61,317	66,317	56,317	61,317	61,317

Gabriel Roeder Smith & Company

Exhibit A-3

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Capped Payroll
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS					
Scenario	Baseline; 1-5	6	7	8	9
Investment Return Assumption	7.00% per year	7.00% per year	7.00% per year	7.00% per year	7.00% per year
Wage Inflation Assumption	3.25%	3.25%	3.25%	4.25%	2.25%
Population Growth Assumption	Active population remains constant at 61,317 members through the projection period	Active population increases 1,000 members each year for 5 years and then remains constant at 66,317 members for fiscal years on and after fiscal year 2022	Active population decreases 1,000 members each year for 5 years and then remains constant at 56,317 members for fiscal years on and after fiscal year 2022	Active population remains constant at 61,317 members through the projection period	Active population remains constant at 61,317 members through the projection period
Fiscal Year	Capped Payroll ($ in millions)				
2017	$4,706	$4,706	$4,706	$4,706	$4,706
2018	4,468	4,520	4,416	4,511	4,425
2019	4,567	4,675	4,459	4,654	4,480
2020	4,666	4,835	4,497	4,798	4,533
2021	4,769	5,004	4,534	4,946	4,589
2022	4,872	5,178	4,567	5,094	4,644
2023	4,978	5,298	4,658	5,242	4,701
2024	5,088	5,423	4,752	5,393	4,759
2025	5,200	5,551	4,849	5,545	4,819
2026	5,320	5,687	4,953	5,701	4,884
2027	5,446	5,830	5,062	5,861	4,953
2028	5,577	5,978	5,177	6,024	5,027
2029	5,719	6,137	5,301	6,195	5,108
2030	5,868	6,303	5,433	6,369	5,195
2031	6,025	6,477	5,572	6,545	5,287
2032	6,187	6,657	5,716	6,722	5,383
2033	6,354	6,843	5,865	6,899	5,482
2034	6,529	7,037	6,021	7,080	5,588
2035	6,711	7,238	6,185	7,264	5,699
2036	6,898	7,444	6,351	7,445	5,812
2037	7,090	7,656	6,524	7,627	5,930
2038	7,288	7,873	6,702	7,814	6,055
2039	7,489	8,094	6,884	8,003	6,184
2040	7,693	8,317	7,069	8,192	6,320
2041	7,898	8,540	7,256	8,381	6,461
2042	8,105	8,765	7,445	8,571	6,607
2043	8,314	8,992	7,636	8,763	6,758
2044	8,525	9,220	7,830	8,956	6,914
2045	8,736	9,449	8,024	9,149	7,074

Gabriel Roeder Smith & Company

Exhibit B-1

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Statutory Contribution Dollars
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS						
Scenario	**Baseline**	**1**	**2**	**3**	**4**	**5**
Investment Return Assumption	7.00% per year	Varying Rates for the first 29 years, 7.00% per year thereafter	2.36% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter	4.85% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter
29 Year Geometric Return	7.00%	7.00%	2.36%	2.36%	4.85%	4.85%
Summary of Investment Returns Included in the Scenario	N/A	Investment returns during the first 29 years **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with** volatility, based on the System's asset allocation policy
Fiscal Year	**Contribution Dollar Amount ($ in millions)**					
2017	$2,014	$2,014	$2,014	$2,014	$2,014	$2,014
2018	2,328	2,328	2,328	2,328	2,328	2,328
2019	2,378	2,385	2,387	2,373	2,382	2,340
2020	2,432	2,435	2,462	2,433	2,446	2,274
2021	2,505	2,470	2,567	2,526	2,534	2,196
2022	2,572	2,486	2,681	2,648	2,624	2,110
2023	2,625	2,463	2,793	2,738	2,705	1,998
2024	2,675	2,461	2,908	2,818	2,787	1,993
2025	2,728	2,537	3,030	2,957	2,875	2,139
2026	2,790	2,637	3,167	3,148	2,976	2,345
2027	2,856	2,798	3,313	3,374	3,085	2,657
2028	2,921	3,040	3,465	3,649	3,196	3,053
2029	2,993	3,324	3,631	3,891	3,319	3,398
2030	3,064	3,612	3,805	4,036	3,447	3,691
2031	3,141	3,940	3,993	4,056	3,586	3,952
2032	3,227	4,233	4,200	4,096	3,739	4,070
2033	3,320	4,500	4,426	4,190	3,909	4,232
2034	3,684	4,982	5,036	4,640	4,413	4,677
2035	3,787	5,098	5,299	4,599	4,610	4,998
2036	3,892	5,221	5,582	4,828	4,821	5,405
2037	4,000	5,407	5,889	4,824	5,048	5,883
2038	4,112	5,438	6,227	4,847	5,295	6,231
2039	4,226	5,502	6,604	5,307	5,566	6,550
2040	4,341	5,613	7,031	6,019	5,867	6,782
2041	4,456	5,739	7,530	6,555	6,207	6,744
2042	4,573	5,135	8,135	7,670	6,611	6,398
2043	4,691	4,543	8,921	8,900	7,114	5,759
2044	4,810	2,616	10,065	10,262	7,819	4,972
2045	4,929	0	12,289	14,118	9,107	2,226
Total Cont. Through 2045	**$98,070**	**$104,957**	**$141,778**	**$135,844**	**$122,430**	**$113,415**
Present Value of Total Cont.	**$37,483**	**$40,000**	**$47,463**	**$45,888**	**$42,950**	**$40,282**

Gabriel Roeder Smith & Company

Exhibit B-2

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Statutory Contribution as a Percent of Pay
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS						
Scenario	**Baseline**	**1**	**2**	**3**	**4**	**5**
Investment Return Assumption	7.00% per year	Varying Rates for the first 29 years, 7.00% per year thereafter	2.36% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter	4.85% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter
29 Year Geometric Return	7.00%	7.00%	2.36%	2.36%	4.85%	4.85%
Summary of Investment Returns Included in the Scenario	N/A	Investment returns during the first 29 years **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with** volatility, based on the System's asset allocation policy
Fiscal Year	**Contribution as a Percent of Payroll**					
2017	42.81%	42.81%	42.81%	42.81%	42.81%	42.81%
2018	52.10%	52.10%	52.10%	52.10%	52.10%	52.10%
2019	52.07%	52.22%	52.26%	51.96%	52.16%	51.24%
2020	52.13%	52.19%	52.76%	52.15%	52.42%	48.74%
2021	52.52%	51.80%	53.83%	52.97%	53.13%	46.05%
2022	52.79%	51.03%	55.02%	54.34%	53.85%	43.31%
2023	52.72%	49.49%	56.10%	55.00%	54.34%	40.14%
2024	52.58%	48.37%	57.15%	55.39%	54.79%	39.18%
2025	52.46%	48.79%	58.26%	56.86%	55.29%	41.13%
2026	52.45%	49.56%	59.53%	59.18%	55.94%	44.07%
2027	52.45%	51.38%	60.84%	61.96%	56.65%	48.78%
2028	52.38%	54.51%	62.14%	65.42%	57.31%	54.75%
2029	52.33%	58.12%	63.50%	68.04%	58.03%	59.42%
2030	52.22%	61.56%	64.84%	68.78%	58.74%	62.91%
2031	52.14%	65.39%	66.28%	67.32%	59.51%	65.59%
2032	52.16%	68.42%	67.89%	66.20%	60.44%	65.79%
2033	52.26%	70.83%	69.66%	65.95%	61.52%	66.60%
2034	56.42%	76.30%	77.13%	71.07%	67.59%	71.64%
2035	56.42%	75.96%	78.96%	68.53%	68.70%	74.48%
2036	56.42%	75.69%	80.92%	70.00%	69.89%	78.36%
2037	56.42%	76.26%	83.06%	68.04%	71.20%	82.97%
2038	56.42%	74.62%	85.45%	66.51%	72.66%	85.50%
2039	56.42%	73.47%	88.18%	70.86%	74.31%	87.45%
2040	56.42%	72.97%	91.40%	78.24%	76.26%	88.15%
2041	56.42%	72.67%	95.34%	82.99%	78.60%	85.39%
2042	56.42%	63.36%	100.37%	94.63%	81.57%	78.94%
2043	56.42%	54.64%	107.30%	107.04%	85.57%	69.27%
2044	56.42%	30.68%	118.07%	120.37%	91.72%	58.32%
2045	56.42%	0.00%	140.66%	161.60%	104.25%	25.48%

Gabriel Roeder Smith & Company

Exhibit B-3

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Funded Ratio
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS						
Scenario	**Baseline**	**1**	**2**	**3**	**4**	**5**
Investment Return Assumption	7.00% per year	Varying Rates for the first 29 years, 7.00% per year thereafter	2.36% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter	4.85% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter
29 Year Geometric Return	7.00%	7.00%	2.36%	2.36%	4.85%	4.85%
Summary of Investment Returns Included in the Scenario	N/A	Investment returns during the first 29 years **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with** volatility, based on the System's asset allocation policy
Fiscal Year	**Funded Ratio**					
2017	35.30%	35.07%	35.01%	35.47%	35.16%	36.59%
2018	36.43%	36.32%	35.47%	36.42%	35.99%	41.59%
2019	37.03%	38.05%	35.07%	36.39%	36.11%	46.75%
2020	37.75%	40.26%	34.50%	35.57%	36.21%	51.72%
2021	38.93%	43.44%	34.13%	35.72%	36.63%	57.05%
2022	40.08%	45.88%	33.76%	36.18%	37.02%	59.14%
2023	41.18%	46.27%	33.37%	35.36%	37.36%	57.30%
2024	42.22%	46.22%	32.97%	33.63%	37.65%	54.25%
2025	43.23%	44.98%	32.57%	31.48%	37.90%	49.26%
2026	44.21%	42.21%	32.19%	28.62%	38.14%	42.93%
2027	45.21%	39.09%	31.87%	26.82%	38.39%	38.37%
2028	46.20%	36.32%	31.60%	27.17%	38.66%	35.43%
2029	47.23%	33.45%	31.41%	29.90%	38.97%	33.72%
2030	48.28%	31.77%	31.32%	32.61%	39.33%	34.84%
2031	49.40%	31.12%	31.36%	34.62%	39.78%	35.84%
2032	50.58%	32.15%	31.56%	37.00%	40.33%	36.46%
2033	51.87%	34.43%	31.95%	40.85%	41.03%	36.04%
2034	53.68%	37.34%	33.12%	42.32%	42.39%	35.48%
2035	55.66%	39.87%	34.59%	46.19%	43.98%	34.90%
2036	57.82%	44.08%	36.38%	50.14%	45.84%	36.36%
2037	60.19%	48.31%	38.55%	50.66%	48.01%	38.98%
2038	62.80%	52.36%	41.16%	49.85%	50.54%	42.94%
2039	65.68%	56.54%	44.27%	51.27%	53.49%	49.15%
2040	68.85%	64.49%	47.99%	51.48%	56.92%	57.21%
2041	72.33%	72.11%	52.44%	53.13%	60.94%	66.08%
2042	76.17%	81.69%	57.79%	57.34%	65.65%	74.35%
2043	80.37%	92.93%	64.33%	61.81%	71.23%	83.50%
2044	84.98%	104.26%	72.59%	68.64%	78.01%	88.84%
2045	90.00%	109.10%	84.13%	79.22%	86.85%	86.18%

Gabriel Roeder Smith & Company

Exhibit B-4

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Unfunded Actuarial Accrued Liability
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS						
Scenario	**Baseline**	**1**	**2**	**3**	**4**	**5**
Investment Return Assumption	7.00% per year	Varying Rates for the first 29 years, 7.00% per year thereafter	2.36% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter	4.85% per year for the first 29 years, 7.00% per year thereafter	Varying Rates for the first 29 years, 7.00% per year thereafter
29 Year Geometric Return	7.00%	7.00%	2.36%	2.36%	4.85%	4.85%
Summary of Investment Returns Included in the Scenario	N/A	Investment returns during the first 29 years **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 5th percentile return **with** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with no** volatility, based on the System's asset allocation policy	Investment returns during the first 29 years represent the 25th percentile return **with** volatility, based on the System's asset allocation policy
Fiscal Year	**Unfunded Accrued Liability ($ in millions)**					
2017	$30,583	$30,692	$30,722	$30,503	$30,647	$29,972
2018	31,154	31,208	31,624	31,162	31,373	28,626
2019	31,946	31,428	32,939	32,273	32,413	27,017
2020	32,638	31,323	34,341	33,783	33,446	25,314
2021	33,034	30,595	35,629	34,768	34,275	23,231
2022	33,379	30,149	36,900	35,552	35,081	22,762
2023	33,684	30,765	38,154	37,016	35,868	24,451
2024	33,947	31,595	39,382	38,996	36,632	26,881
2025	34,159	33,106	40,571	41,226	37,363	30,529
2026	34,308	35,539	41,701	43,901	38,044	35,095
2027	34,387	38,227	42,758	45,922	38,664	38,677
2028	34,393	40,712	43,731	46,562	39,217	41,277
2029	34,317	43,275	44,602	45,582	39,687	43,097
2030	34,156	45,064	45,360	44,506	40,068	43,036
2031	33,897	46,140	45,979	43,793	40,340	42,980
2032	33,527	46,033	46,436	42,741	40,481	43,110
2033	33,028	45,002	46,701	40,595	40,467	43,896
2034	32,116	43,445	46,371	39,992	39,945	44,740
2035	31,030	42,077	45,772	37,652	39,198	45,555
2036	29,757	39,450	44,876	35,175	38,204	44,892
2037	28,282	36,717	43,652	35,049	36,934	43,347
2038	26,590	34,052	42,059	35,849	35,354	40,784
2039	24,667	31,234	40,050	35,018	33,429	36,543
2040	22,497	25,645	37,559	35,040	31,108	30,902
2041	20,067	20,228	34,500	33,997	28,335	24,607
2042	17,357	13,333	30,744	31,072	25,021	18,679
2043	14,352	5,173	26,086	27,928	21,039	12,065
2044	11,030	(3,129)	20,123	23,023	16,146	8,194
2045	7,371	(6,708)	11,700	15,319	9,693	10,185

Gabriel Roeder Smith & Company

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Statutory Contribution Dollars
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS					
Scenario	Baseline	6	7	8	9
Investment Return Assumption	7.00% per year	7.00% per year	7.00% per year	7.00% per year	7.00% per year
Wage Inflation Assumption	3.25%	3.25%	3.25%	4.25%	2.25%
Population Growth Assumption	Active population remains constant at 61,317 members through the projection period	Active population increases 1,000 members each year for 5 years and then remains constant at 66,317 members for fiscal years on and after fiscal year 2022	Active population decreases 1,000 members each year for 5 years and then remains constant at 56,317 members for fiscal years on and after fiscal year 2022	Active population remains constant at 61,317 members through the projection period	Active population remains constant at 61,317 members through the projection period
Fiscal Year	Contribution Dollar Amount ($ in millions)				
2017	$2,014	$2,014	$2,014	$2,014	$2,014
2018	2,328	2,328	2,328	2,328	2,328
2019	2,378	2,289	2,481	2,394	2,479
2020	2,432	2,372	2,503	2,473	2,509
2021	2,505	2,476	2,539	2,570	2,557
2022	2,572	2,578	2,568	2,661	2,599
2023	2,625	2,635	2,615	2,737	2,626
2024	2,675	2,690	2,661	2,809	2,649
2025	2,728	2,747	2,708	2,883	2,675
2026	2,790	2,814	2,765	2,964	2,709
2027	2,856	2,885	2,826	3,049	2,746
2028	2,921	2,955	2,886	3,130	2,781
2029	2,993	3,031	2,953	3,217	2,822
2030	3,064	3,107	3,019	3,301	2,861
2031	3,141	3,188	3,091	3,387	2,905
2032	3,227	3,277	3,172	3,480	2,957
2033	3,320	3,376	3,261	3,578	3,016
2034	3,684	3,743	3,620	3,944	3,346
2035	3,787	3,851	3,718	4,047	3,412
2036	3,892	3,960	3,818	4,147	3,480
2037	4,000	4,073	3,922	4,249	3,551
2038	4,112	4,188	4,029	4,353	3,625
2039	4,226	4,306	4,138	4,458	3,703
2040	4,341	4,424	4,250	4,563	3,784
2041	4,456	4,543	4,362	4,669	3,869
2042	4,573	4,663	4,475	4,774	3,956
2043	4,691	4,784	4,591	4,881	4,047
2044	4,810	4,905	4,707	4,989	4,140
2045	4,929	5,027	4,823	5,097	4,236
Total Cont. Through 2045	$98,070	$99,229	$96,843	$103,146	$90,382
Present Value of Total Cont.	$37,483	$37,701	$37,267	$39,214	$35,735

Gabriel Roeder Smith & Company

Exhibit B-6

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Statutory Contribution as a Percent of Pay
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS					
Scenario	Baseline	6	7	8	9
Investment Return Assumption	7.00% per year	7.00% per year	7.00% per year	7.00% per year	7.00% per year
Wage Inflation Assumption	3.25%	3.25%	3.25%	4.25%	2.25%
Population Growth Assumption	Active population remains constant at 61,317 members through the projection period	Active population increases 1,000 members each year for 5 years and then remains constant at 66,317 members for fiscal years on and after fiscal year 2022	Active population decreases 1,000 members each year for 5 years and then remains constant at 56,317 members for fiscal years on and after fiscal year 2022	Active population remains constant at 61,317 members through the projection period	Active population remains constant at 61,317 members through the projection period
Fiscal Year	Contribution as a Percent of Payroll				
2017	42.81%	42.81%	42.81%	42.81%	42.81%
2018	52.10%	51.50%	52.71%	51.60%	52.60%
2019	52.07%	48.96%	55.64%	51.45%	55.33%
2020	52.13%	49.05%	55.66%	51.54%	55.36%
2021	52.52%	49.48%	56.00%	51.95%	55.72%
2022	52.79%	49.79%	56.23%	52.25%	55.96%
2023	52.72%	49.73%	56.15%	52.20%	55.86%
2024	52.58%	49.60%	55.99%	52.09%	55.67%
2025	52.46%	49.49%	55.85%	51.99%	55.51%
2026	52.45%	49.48%	55.84%	52.00%	55.46%
2027	52.45%	49.49%	55.83%	52.01%	55.43%
2028	52.38%	49.43%	55.75%	51.96%	55.32%
2029	52.33%	49.39%	55.70%	51.92%	55.24%
2030	52.22%	49.29%	55.57%	51.83%	55.08%
2031	52.14%	49.21%	55.48%	51.75%	54.95%
2032	52.16%	49.23%	55.49%	51.77%	54.93%
2033	52.26%	49.33%	55.60%	51.86%	55.02%
2034	56.42%	53.20%	60.11%	55.71%	59.88%
2035	56.42%	53.20%	60.11%	55.71%	59.88%
2036	56.42%	53.20%	60.11%	55.71%	59.88%
2037	56.42%	53.20%	60.11%	55.71%	59.88%
2038	56.42%	53.20%	60.11%	55.71%	59.88%
2039	56.42%	53.20%	60.11%	55.71%	59.88%
2040	56.42%	53.20%	60.11%	55.71%	59.88%
2041	56.42%	53.20%	60.11%	55.71%	59.88%
2042	56.42%	53.20%	60.11%	55.71%	59.88%
2043	56.42%	53.20%	60.11%	55.71%	59.88%
2044	56.42%	53.20%	60.11%	55.71%	59.88%
2045	56.42%	53.20%	60.11%	55.71%	59.88%

Gabriel Roeder Smith & Company

Exhibit B-7

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Projection of Funded Ratio
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS					
Scenario	**Baseline**	**6**	**7**	**8**	**9**
Investment Return Assumption	7.00% per year	7.00% per year	7.00% per year	7.00% per year	7.00% per year
Wage Inflation Assumption	3.25%	3.25%	3.25%	4.25%	2.25%
Population Growth Assumption	Active population remains constant at 61,317 members through the projection period	Active population increases 1,000 members each year for 5 years and then remains constant at 66,317 members for fiscal years on and after fiscal year 2022	Active population decreases 1,000 members each year for 5 years and then remains constant at 56,317 members for fiscal years on and after fiscal year 2022	Active population remains constant at 61,317 members through the projection period	Active population remains constant at 61,317 members through the projection period
Fiscal Year	**Funded Ratio**				
2017	35.30%	35.30%	35.30%	34.57%	35.99%
2018	36.43%	36.43%	36.43%	35.61%	37.21%
2019	37.03%	36.85%	37.24%	36.15%	38.11%
2020	37.75%	37.44%	38.11%	36.85%	39.09%
2021	38.93%	38.56%	39.36%	38.03%	40.51%
2022	40.08%	39.70%	40.53%	39.21%	41.87%
2023	41.18%	40.79%	41.63%	40.37%	43.15%
2024	42.22%	41.84%	42.67%	41.50%	44.35%
2025	43.23%	42.86%	43.67%	42.61%	45.48%
2026	44.21%	43.86%	44.65%	43.72%	46.58%
2027	45.21%	44.87%	45.62%	44.86%	47.64%
2028	46.20%	45.89%	46.60%	46.01%	48.69%
2029	47.23%	46.94%	47.59%	47.19%	49.74%
2030	48.28%	48.04%	48.62%	48.42%	50.80%
2031	49.40%	49.19%	49.69%	49.71%	51.88%
2032	50.58%	50.42%	50.84%	51.07%	53.01%
2033	51.87%	51.75%	52.08%	52.53%	54.21%
2034	53.68%	53.60%	53.84%	54.47%	55.93%
2035	55.66%	55.62%	55.77%	56.55%	57.79%
2036	57.82%	57.82%	57.88%	58.80%	59.81%
2037	60.19%	60.24%	60.21%	61.23%	62.01%
2038	62.80%	62.88%	62.77%	63.86%	64.43%
2039	65.68%	65.79%	65.61%	66.72%	67.09%
2040	68.85%	68.99%	68.75%	69.84%	70.03%
2041	72.33%	72.48%	72.22%	73.23%	73.28%
2042	76.17%	76.31%	76.05%	76.91%	76.86%
2043	80.37%	80.49%	80.27%	80.92%	80.82%
2044	84.98%	85.05%	84.91%	85.28%	85.19%
2045	90.00%	90.00%	90.00%	90.00%	90.00%

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Exhibit B-8

State Employees' Retirement System of Illinois
Comparison of Actuarial Valuation Results and Stress Testing Scenarios
Unfunded Actuarial Accrued Liability
Based on Actuarial Valuation as of June 30, 2016

Illinois SERS					
Scenario	Baseline	6	7	8	9
Investment Return Assumption	7.00% per year	7.00% per year	7.00% per year	7.00% per year	7.00% per year
Wage Inflation Assumption	3.25%	3.25%	3.25%	4.25%	2.25%
Population Growth Assumption	Active population remains constant at 61,317 members through the projection period	Active population increases 1,000 members each year for 5 years and then remains constant at 66,317 members for fiscal years on and after fiscal year 2022	Active population decreases 1,000 members each year for 5 years and then remains constant at 56,317 members for fiscal years on and after fiscal year 2022	Active population remains constant at 61,317 members through the projection period	Active population remains constant at 61,317 members through the projection period
Fiscal Year	Unfunded Accrued Liability ($ in millions)				
2017	$30,583	$30,583	$30,583	$31,580	$29,677
2018	31,154	31,155	31,152	32,290	30,122
2019	31,946	32,044	31,834	33,220	30,670
2020	32,638	32,811	32,439	34,036	31,120
2021	33,034	33,259	32,775	34,544	31,281
2022	33,379	33,627	33,094	34,987	31,397
2023	33,684	33,953	33,375	35,375	31,482
2024	33,947	34,236	33,614	35,706	31,531
2025	34,159	34,466	33,805	35,972	31,543
2026	34,308	34,633	33,935	36,159	31,504
2027	34,387	34,726	33,996	36,259	31,410
2028	34,393	34,745	33,988	36,271	31,259
2029	34,317	34,680	33,899	36,185	31,047
2030	34,156	34,527	33,729	35,999	30,770
2031	33,897	34,276	33,463	35,704	30,420
2032	33,527	33,910	33,088	35,283	29,984
2033	33,028	33,413	32,588	34,724	29,451
2034	32,116	32,502	31,677	33,741	28,534
2035	31,030	31,414	30,595	32,578	27,480
2036	29,757	30,135	29,329	31,220	26,278
2037	28,282	28,652	27,864	29,658	24,916
2038	26,590	26,949	26,187	27,876	23,381
2039	24,667	25,012	24,281	25,861	21,661
2040	22,497	22,827	22,133	23,600	19,740
2041	20,067	20,378	19,726	21,078	17,606
2042	17,357	17,647	17,044	18,279	15,240
2043	14,352	14,618	14,069	15,186	12,627
2044	11,030	11,270	10,781	11,780	9,747
2045	7,371	7,583	7,158	8,039	6,581

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