General Assembly Retirement System of Illinois

Annual Actuarial Valuation as of June 30, 2017

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October 19, 2017

Board of Trustees
General Assembly Retirement System of Illinois
Springfield, Illinois

Re: General Assembly Retirement System of Illinois Actuarial Valuation as of June 30, 2017

Dear Board Members:

The results of the June 30, 2017, Annual Actuarial Valuation of the General Assembly Retirement System of Illinois ("GARS" or "System") are presented in this report. The purposes of the valuation are to measure the System's funding status and to determine the State's contribution rate for the fiscal year beginning July 1, 2018, and ending June 30, 2019. Gabriel, Roeder, Smith & Company ("GRS") has prepared this report exclusively for the Trustees of the General Assembly Retirement System of Illinois; GRS in not responsible for reliance upon this report by any other party. This report may be provided to parties other than GARS only in its entirety and only with the permission of the Trustees.

The State's contribution rate has been determined under Illinois statues, in particular under 40 ILCS Section 5/2-124. 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 a 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 20 years.

The actuarial valuation was based on the provisions of GARS in effect as of June 30, 2017, data on the GARS membership and information on the asset value of the trust fund as of that date. The actuarial valuation was based upon information furnished by GARS 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. We are not responsible for the accuracy of completeness of the information provided by GARS.

The actuarial valuation results summarized in this report involve actuarial calculations that require assumptions about future events. The actuarial assumptions used for the June 30, 2017, actuarial valuation are based on an experience review for the three-year period from July 1, 2012, through June 30, 2015. Pursuant to Public Act 99-0232, GARS is required to conduct an actuarial experience review once every three years. Under this schedule, an experience review for the period from July 1, 2015, through June 30, 2018, will be performed after the June 30, 2018, actuarial valuation with expected implementation of the recommended assumptions beginning with the June 30, 2019, actuarial valuation.

Public Act 100-0023, effective July 6, 2017, modified the State's funding policy beginning with fiscal year 2018, by phasing in contribution rate variances due to changes in actuarial assumptions over a five-year period. The State's contribution requirements provided in this report are determined in accordance with Public Act 100-0023.

To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of GARS as of the actuarial 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.

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.

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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SECTION A

SUMMARY OF ACTUARIAL VALUATION RESULTS

Introduction

The law governing the General Assembly Retirement System of Illinois ("GARS" 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, an annual determination of the amount of the required State contributions and certify the results thereof to the board. (40 ILCS Section 5/2-146 (2))."

Gabriel, Roeder, Smith & Company ("GRS") has been retained by the Board of Trustees to perform an actuarial valuation as of June 30, 2017. 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, Public Act 96-0043 and Public Act 100-0023 for fiscal year ending June 30, 2019.

The actuarial valuation was completed based upon membership and financial data provided by the administrative staff of the System. The actuarial assumptions used were based on an experience review for the three-year period ending June 30, 2015, and were adopted for use commencing with the June 30, 2016, valuation. The actuarial cost method used to determine the benefit liabilities 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 Acts impact GARS as follows.

Public Act ("P.A.") 100-0023, effective July 6, 2017, modified the State's funding policy to include smoothing State contribution rate increases or decreases due to changes in actuarial assumptions, including investment return assumptions, over a five-year period in equal annual amounts beginning in fiscal year 2018. In addition, changes in actuarial or investment assumptions that increased or decreased the State contribution rate in fiscal years 2014 through 2017 are to be smoothed over a five-year period in equal annual amounts, applying only to the portion of the five-year phase-in that is applicable to fiscal years on and after 2018. The fiscal year 2018 State contribution was recertified, pursuant to P.A. 100-0023.

Public Act 99-0683, effective July 29, 2016, provides that each retirement system must implement a procedure to identify deceased annuitants. The procedure must include the requirement that the system check for deceased annuitants at least once per month and that the systems shall have access to the Illinois Department of Public Health vital records.

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

Summary of the Actuarial Valuation

Assumptions and Methods

The actuarial valuation results summarized in this report involve actuarial calculations that require assumptions about future events. The actuarial assumptions used for the June 30, 2017, actuarial valuation are based on an experience review for the three-year period from July 1, 2012, through June 30, 2015. Pursuant to Public Act 99-0232, GARS is required to conduct an actuarial experience review once every three years. Under this schedule, an experience review for the period from July 1, 2015, through June 30, 2018, will be performed after the June 30, 2018, actuarial valuation with expected implementation of the recommended assumptions beginning with the June 30, 2019, actuarial valuation. There were no changes to the assumptions or methods since the actuarial valuation as of June 30, 2016.

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

Key Valuation Results

Actuarial Valuation Date:		June 30, 2017		June 30, 2016
Fiscal Year Ending:		**June 30, 2019**		**June 30, 2018**
Estimated Statutory Contributions:				
· Annual Amount[a]	$	23,221,000	$	21,155,000
· Percentage of Projected Capped Payroll for Fiscal Year		227.669%		202.633%
Actuarially Determined Contribution[b] (ADC):				
· Annual Amount	$	32,650,450	$	32,082,644
· Percentage of Projected Capped Payroll for Fiscal Year		320.116%		307.298%
Membership				
· Number of				
- Active Members		135		141
- Members Receiving Payments		421		415
- Inactive Members		73		71
- Total		629		627
· Covered Payroll Provided by System	$	10,996,284	$	11,297,614
· Projected Capped Payroll For Fiscal Year	$	10,199,571	$	10,440,244
· Annualized Benefit Payments	$	22,632,859	$	21,805,977
Assets				
· Market Value of Assets (MVA)	$	54,348,908	$	49,052,073
· Actuarial Value of Assets (AVA)	$	55,063,012	$	50,823,211
· Return on MVA		10.46%		-1.04%
· Return on AVA		8.02%		6.47%
· Ratio – AVA to MVA		101.31%		103.61%
Actuarial Information				
· Employer Normal Cost Amount	$	2,628,512	$	2,874,672
· Actuarial Accrued Liability (AAL)	$	370,758,254	$	363,336,976
· Unfunded Actuarial Accrued Liability (UAAL)	$	315,695,242	$	312,513,765
· Funded Ratio based on AVA		14.85%		13.99%
· UAAL as % of Covered Payroll		2,870.93%		2,766.19%
· Funded Ratio based on MVA		14.66%		13.50%

[a] *Fiscal year 2018 estimated statutory contribution was recertified, pursuant to P.A. 100-0023.*

[b] *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 20-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability. As of June 30, 2017, the remaining amortization period is 18 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, P.A. 96-0043 and P.A. 100-0023

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 $4,157,000 for fiscal year 2006 and $5,220,300 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, 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.

Public Act ("P.A.") 100-0023, effective July 6, 2017, modified the State's funding policy to include smoothing State contribution rate increases or decreases due to changes in actuarial assumptions, including investment return assumptions, over a five-year period in equal annual amounts beginning in fiscal year 2018. In addition, changes in actuarial or investment assumptions that increased or decreased the State contribution rate in fiscal years 2014 through 2017 are to be smoothed over a five-year period in equal annual amounts, applying only to the portion of the five-year phase-in that is applicable to fiscal years on and after 2018. Provided on the following page is the development of the contribution rate phase-in schedule that applies to State contribution rates determined on and after fiscal year 2018.

Phase-in Schedule of Contribution Rate Variances Due to Change in Actuarial Assumptions

An experience review of the actuarial assumptions for the period from July 1, 2006, to June 30, 2012, was performed. As a result of this review the Board approved actuarial assumption changes for use beginning with the June 30, 2013, actuarial valuation. The actuarial assumption changes included:

- A reduction in the payroll growth assumption from 4.00 percent to 3.50 percent;
- The mortality table was updated from the UP-1994 Mortality table to RP-2000 Combined Healthy Mortality table projected to 2015 and setback three years for males and two years for females for post-retirement mortality;
- Eliminated the disability assumption; and
- Applied a load of 10 percent to the liability attributable to inactive members eligible for deferred vested pension benefits to reflect increases in inactive members' pay due to current participation in a reciprocal retirement system.

The above actuarial assumption changes increased the fiscal year 2015 State contribution rate as a percentage of projected capped payroll from 108.440 percent to 122.170 percent, or 13.730 percentage points. Based on the funding policy changes detailed in P.A. 100-0023, this increase in the State contribution rate would be phased-in over a five-year period beginning with fiscal year 2015. The State contribution rates for fiscal years 2015, 2016 and 2017 would remain unchanged. The State contribution rates for fiscal years on and after 2018 would be reduced by the portion of the five-year phase-in that is applicable to fiscal years on and after 2018. The increase in the State contribution rate would be phased-in according to the following schedule:

Fiscal Year	Portion Recognized	Portion to Subtract	Rate to Subtract from Statutory Contribution
2015	20%	80%	10.984%
2016	40%	60%	8.238%
2017	60%	40%	5.492%
2018	**80%**	**20%**	**2.746%**
2019	**100%**	**0%**	**0.000%**

At the request of the Board, a review of the opt-out percentage for future members of the System was performed. As a result of this review the Board approved the assumption that 50 percent of future members eligible for membership in the System opt out. This assumption became effective with the June 30, 2015, actuarial valuation and increased the fiscal year 2017 State contribution rate as a percentage of capped payroll from 140.241 percent to 194.949 percent, or 54.708 percentage points. Based on the funding policy changes detailed in P.A. 100-0023, this increase in the State contribution rate would be phased-in over a five-year period beginning with fiscal year 2017. The State contribution rates for fiscal year 2017 would remain unchanged. The State contribution rates for fiscal years on and after 2018 would be reduced by the portion of the five-year phase-in that is applicable to fiscal years on and after 2018. The increase in the State contribution rate would be phased-in according to the following schedule:

Phase-in Schedule of Contribution Rate Variances Due to Change in Actuarial Assumptions

Fiscal Year	Portion Recognized	Portion to Subtract	Rate to Subtract from Statutory Contribution
2017	20%	80%	43.766%
2018	**40%**	**60%**	**32.825%**
2019	**60%**	**40%**	**21.883%**
2020	**80%**	**20%**	**10.942%**
2021	**100%**	**0%**	**0.000%**

At the Board's request, an experience review for the period from July 1, 2012, to June 30, 2015, was performed. As a result of this review the Board approved actuarial assumption changes for use beginning with the June 30, 2016, actuarial valuation. These actuarial assumption changes included:

- A reduction in the investment return assumption from 7.00 percent to 6.75 percent;
- A reduction in the price inflation assumption from 3.00 percent to 2.75 percent;
- A reduction in the payroll growth assumption from 3.50 percent to 3.00 percent;
- Lowered the salary increase assumption;
- Increased normal retirement rates;
- Increased turnover rates; and
- The mortality table was updated from RP-2000 Combined Healthy Mortality table projected to 2015 to the RP-2014 White Collar Total Healthy Annuitant Mortality table with projected generational mortality improvement for post-retirement mortality.

The preceding actuarial assumption changes increased the fiscal year 2018 State contribution rate as percentage of projected capped payroll from 221.533 percent to 255.539 percent, or 34.006 percentage points. Based on the funding policy changes detailed in P.A. 100-0023, this increase in the State contribution rate would be phased-in over a five-year period beginning with fiscal year 2018. The increase in the State contribution rate would be phased-in according to the following schedule:

Fiscal Year	Portion Recognized	Portion to Subtract	Rate to Subtract from Statutory Contribution
2018	20%	80%	27.205%
2019	40%	60%	20.404%
2020	60%	40%	13.602%
2021	80%	20%	6.801%
2022	100%	0%	0.000%

Phase-in Schedule of Contribution Rate Variances Due to Change in Actuarial Assumptions

The overall phase-in of State contribution rate increases due to actuarial assumption changes resulting from an experience review for the period from July 1, 2006, to June 30, 2012, an analysis regarding the opt-out percentage for future members of the System and an experience review for the period from July 1, 2012, to June 30, 2015, would be phased-in according to the following schedule:

Fiscal Year	Portion Recognized	Portion to Subtract	Rate to Subtract from Statutory Contribution
2018	20%	80%	62.776%
2019	40%	60%	42.287%
2020	60%	40%	24.544%
2021	80%	20%	6.801%
2022	100%	0%	0.000%

As a result, the fiscal year 2018 State contribution was recertified from 255.539 percent to 202.633 percent, as a level percentage of capped payroll, and from $26,679,000 to $21,155,000, as a dollar amount. Please note contribution rate phase-ins are applied prior to the phase-in of deferred investment gains and losses in the projected actuarial value of assets.

Development of the Actuarial Value of Assets Based Upon the Market Value of Assets

The following tables outline the reconciliation of the market value of assets and the development of the hypothetical asset value as of June 30, 2017. Also, the tables show the development of the actuarial value of assets under both the market value and the hypothetical value of assets.

1.	Market Value of Assets 6/30/2016	$ 49,052,073
2.	Actual State Contribution Amount	21,721,000
3.	Employee Contribution Amount	1,284,707
4.	Benefit Payouts & Refunds	(22,493,411)
5.	Administrative Expenses	(355,711)
6.	Investment Income	5,140,250
7.	Market Value of Assets 6/30/2017	54,348,908
8.	Expected Investment Return at 6.75%	3,316,213
9.	Investment Gain/(Loss) Current Year	1,824,037
10.	Deferred Investment Gains and (Losses) All Years	(714,104)
11.	Actuarial Value of Assets 6/30/2017 (7. - 10.)	$ 55,063,012

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 6/30/2016	$	3,897,570
2. State Contribution Amount[a]		25,087,494
3. Employee Contribution Amount		1,284,707
4. Benefit Payouts & Refunds		(22,493,411)
5. Administrative Expenses		(355,711)
6. Investment Income[b]		587,361
7. Hypothetical Value of Assets 6/30/2017		8,008,010
8. Expected Investment Return at 6.75%		380,048
9. Investment Gain/(Loss) Current Year		207,313
10. Deferred Investment Gains and (Losses) All Years		(1,806)
11. Hypothetical Actuarial Value of Assets 6/30/2017 (7. - 10.)	$	8,009,816

[a] *Represents FY 2017 no POB basic contribution. This amount was determined as part of the June 30, 2015, 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 2017 of 10.46 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 GRS has produced since the GOB proceeds were deposited into the trust.

State Contribution Requirement for Fiscal Year 2019

The fiscal year ending June 30, 2018, and June 30, 2019, certified contribution requirements 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	Assumed Capped Payroll	Total Required Contribution
2018	202.633%	$10,440,000	$21,155,000
2019	227.669%	10,200,000	23,221,000
2020	245.279%	10,026,000	24,592,000
2021	264.188%	9,827,000	25,962,000
2022	271.770%	9,700,000	26,362,000
2023	271.087%	9,548,000	25,883,000
2024	271.087%	9,463,000	25,653,000
2025	270.058%	9,370,000	25,304,000
2026	269.106%	9,361,000	25,191,000
2027	268.619%	9,445,000	25,371,000
2028	266.811%	9,416,000	25,123,000

For fiscal years 2019 through 2033, the base contribution may be 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 2019 contribution rate is calculated assuming the actuarial value of assets as of July 1, 2017, earns a rate of return equal to the System's actuarially assumed rate of return. Pursuant to Public Act 100-0023, contribution rates for fiscal years 2018 through 2021 include smoothing of contribution rate variances due to changes in actuarial assumptions.

The contributions for fiscal years 2020 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 2018 through 2021 have been projected as though an actuarial valuation in each of those years was performed. At each projected actuarial valuation, an additional 20 percent of the investment gains and losses are recognized. The market value of assets at June 30, 2017, 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 actuarial valuation date by the remaining percentage of the investment gains and losses. The actuarial value of assets converges to market value in 2021, 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 actuarial assumptions used for the June 30, 2017, actuarial valuation. In order to determine projected contribution rates and amounts, the following additional assumptions were used:

- Projected annualized payroll of $10,440,000 for fiscal year 2018.
- Total employer contributions of $21,155,000 for fiscal year 2018.
- Administrative expenses of $381,000 for fiscal year 2018, as provided by the System.
- New entrants whose average age is 41.61, average uncapped pay is $82,461 (2017 dollars) and average capped pay is $81,536 (2017 dollars). Based on the assumption that 50 percent of future members elect to opt out of the pension system, the population is projected to decrease from 135 members as of the valuation date, to 69 members in 2045 and ultimately reach 68 members in 2048.
- Projected benefits for members hired on or after January 1, 2011, are based on the plan provisions established in P.A. 96-0889.

The average increase in total uncapped payroll for the 28-year projection period is approximately 3.0 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 2.75 percent per year. All results in this actuarial valuation assume that State contributions will be made on capped pay.

To determine the contribution rates, the expected 2018 appropriation was converted to a percentage of the expected 2018 payroll. An amortization schedule was then determined based on the following assumptions:

- 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 2018 will be 202.633 percent based on expected total employer contributions of $21,155,000.
- The contribution rates for fiscal years 2034 through 2045 will be a uniform percentage of capped payroll.
- The contribution rates for fiscal years 2018 through 2022 are reduced according to the phase-in schedule provided on page 7.

Method of Calculation for Appropriation Requirements

The certified 2019 contribution rate of 227.669 percent is applied to expected FY 2019 capped payroll. The resulting amount of $23,221,000 is budgeted pursuant to the continuing appropriations process and deposited into the System in FY 2019.

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") previously 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 68 is provided in a separate report.

The term Annual Required Contribution ("ARC") is no longer in the GASB Statements. Instead, under GASB Statements Nos. 67 and 68 the Actuarial 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 with 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 20-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, 2017, actuarial valuation is 18 years.

The ADC for fiscal years 2018 and 2019, as well as the statutory contribution for fiscal years 2018 and 2019 are shown on the following page as a percentage of projected capped payroll. The ADC percentage and statutory contribution for 2018 are based on the results of the June 30, 2016, valuation. The dollar amount of the ADC for 2018 and 2019, and the statutory contribution for 2018 and 2019 will be the product of the actual payroll for 2018 and 2019 and the percentages shown.

GASB: Financial Accounting Information

Actuarial Valuation Date:	June 30, 2017	June 30, 2016
Actuarially Determined Contributions for Fiscal Year Ending:	**June 30, 2019**	**June 30, 2018**
1. Employer normal cost	$ 2,628,512	$ 2,874,672
2. Initial amount to amortize the unfunded liability over a 20-year closed-period, beginning July 1, 2015, as a level percentage of capped payroll	30,021,938	29,207,972
3. ADC [(1) + (2)]	$ 32,650,450	$ 32,082,644
4. Projected capped payroll for fiscal year	$ 10,199,571	$ 10,440,244
5. ADC as a percentage of projected capped payroll	320.116%	307.298%
6. Estimated statutory contribution[a]	$ 23,221,000	$ 21,155,000
7. Estimated statutory contribution as a percentage of projected capped payroll	227.669%	202.633%
8. Estimated statutory contribution as a percentage of ADC [(6) / (3)]	71.120%	65.939%

[a] *Fiscal year 2018 estimated statutory contribution was recertified, pursuant to P.A. 100-0023.*

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

1. Recognizing the entire Net Pension Liability (similar to the Unfunded 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) 6.75 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 2017 is 3.56 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.

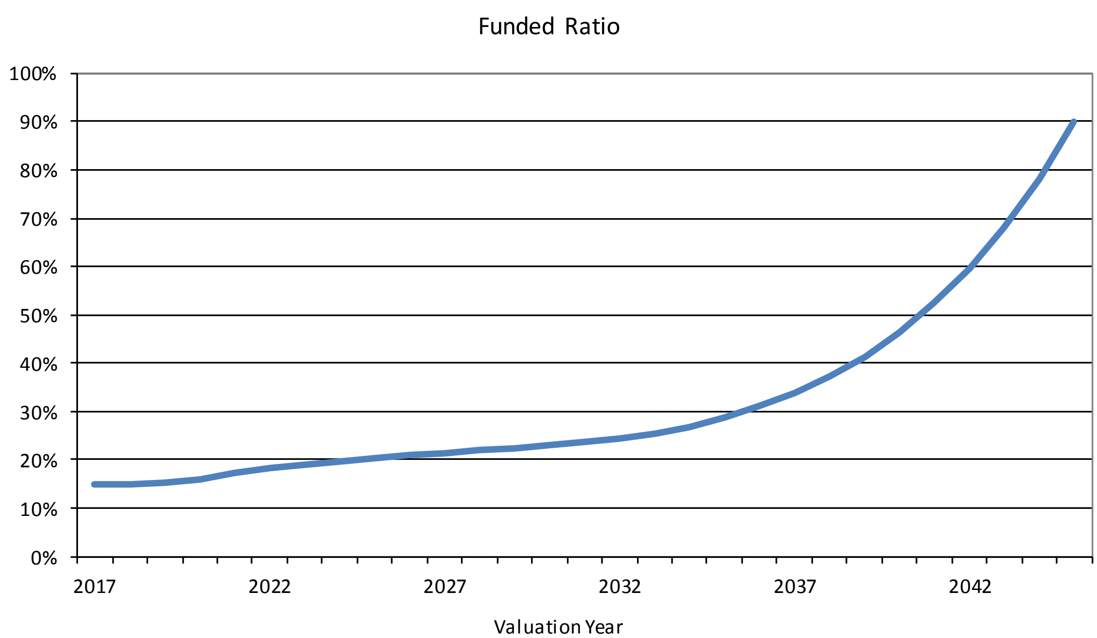
Due to the single equivalent discount rate and shorter amortization periods required under GASB Statements Nos. 67 and 68, the liabilities and pension expense will be higher and more volatile than under the prior standards. The measurements required under GASB Statements Nos. 67 and 68 are provided in 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 rules established by previous GASB Statements Nos. 25 and 27, this expense requirement is called the Annual Required Contribution ("ARC"). 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 Actuarial Determined Contribution ("ADC"). Under this funding policy, the ADC is calculated as the Normal Cost plus a 20-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability as of June 30, 2015.

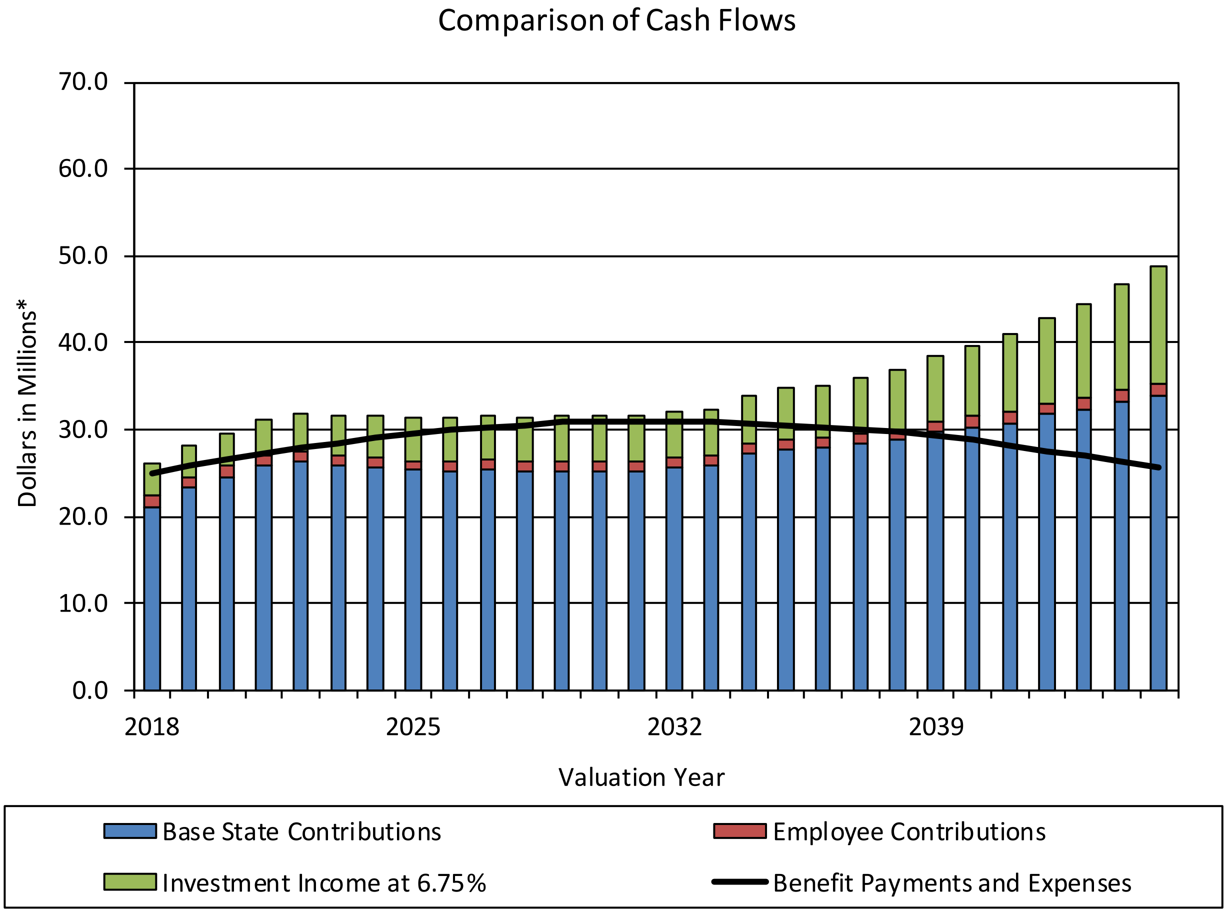
A key objective of the ADC is to accrue costs over the working lifetime of plan members to ensure that benefit obligations are satisfied and intergenerational equity is promoted. Although the ADC is solely an accounting provision, in certain circumstances it could represent a reasonable annual funding 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 to the future. Back-loading could result in an underfunding of the system.

The statutory funding policy adopted for GARS 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 2034. 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.



Observations on Actuarial Funding and Statutory Funding

The following graph compares the projected benefits and expenses against employer contributions, employee contributions and investment income. Beginning in 2018 continuing through 2037, benefits exceed State and employee contributions. From 2021 to 2031, the percentage of investment income needed to pay ongoing benefits increases from approximately 1.7 percent to 88.1 percent. This implies that a lower level of investment income is projected to be available for potential asset growth. After 2031, the percentage of investment income needed to pay ongoing benefits is projected to decrease from approximately 77.2 percent in 2032 to 7.3 percent in 2037, which is projected to cause assets to grow at a higher 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 the GARS funded ratio at June 30, 2017, is only 15 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. Examples of methods to strengthen the current funding policy include:

1. Increasing the 90 percent funding target;

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.

Also, the statutory contribution policy could 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 15, 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 financing of GARS' normal cost and amortizing the unfunded liability over 20 years as a level percent of capped payroll.

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

Section B

Funding Results

Table 1
Results of Actuarial Valuation as of June 30, 2017

1	Number of Members		
	a. Active		135
	b. Inactive:		
	i. Eligible for deferred vested pension benefits		58
	ii. Eligible for return of contributions only		15
	c. Current Benefit Recipients:		
	i. Retirement annuities		300
	ii. Survivor annuities		121
	iii. Reversionary annuities		-
	d. Total		629
2	Covered Payroll	$	10,996,284
3	Annualized Benefit Payments Currently Being Made		
	a. Retirement	$	18,542,398
	b. Survivor		4,090,461
	c. Reversionary		-
	d. Total	$	22,632,859
4	Actuarial Liability—Annuitants		
	a. Current Benefit Recipients:		
	i. Retirement annuities	$	245,409,773
	ii. Survivor annuities		39,337,117
	b. Total	$	284,746,890

Table 1 (continued)
Results of Actuarial Valuation as of June 30, 2017

		Normal Cost	Actuarial Liability
5	Actuarial Liability—Inactive Members		$ 30,220,019
6	Active Members		
	a. Pension Benefits	$ 2,120,586	$ 36,251,682
	b. Cost-of-Living Adjustments	864,653	14,661,120
	c. Death Benefits	93,536	700,532
	d. Disability	-	-
	e. Withdrawal	369,365	4,178,011
	f. Expenses	381,000	-
	g. Total	$ 3,829,140	$ 55,791,345
7	Total Actuarial Liability (4 + 5 + 6)		$ 370,758,254
8	Market Value of Assets (MVA)		$ 54,348,908
9	Unfunded Actuarial Liability Based on MVA (7 – 8)		$ 316,409,346
10	Funded Percentage Based on MVA (8 ÷ 7)		14.66%
11	Actuarial Value of Assets (AVA)		$ 55,063,012
12	Unfunded Actuarial Liability Based on AVA (7 – 11)		$ 315,695,242
13	Funded Percentage Based on AVA (11 ÷ 7) [a]		14.85%
14	Total Normal Cost	$ 3,829,140	
15	Employee Contributions	$ 1,200,628	
16	Annual Employer Normal Cost	$ 2,628,512	
	(% uncapped payroll)	23.90%	

[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*

Table 2
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 valuation results. The increase in the unfunded accrued actuarial liability ("UAAL") of $3,181,477 was due to the following:

1	UAAL at 06/30/2016		$	312,513,765
2	Contributions			
	a.	Contributions due (Normal Cost plus Interest on UAAL)		
		i interest on 1)	$	21,094,679
		ii members contributions		1,284,707
		iii employer normal cost		2,874,672
		iv interest on ii and iii		138,087
		v total due	$	25,392,145
	b.	Contributions paid (Actual)		
		i member contributions	$	1,284,707
		ii state agencies		21,721,000
		iii interest on i and ii		763,765
		iv total paid	$	23,769,472
	c.	Expected increase in UAAL	$	1,622,673
3	Expected UAAL at 06/30/2017		$	314,136,438
4	(Gains)/Losses			
	a. investment income		$	(647,450)
	b. demographic			2,206,254
	c. total		$	1,558,804
5	Plan Provision Changes		$	-
6	Assumption Changes		$	-
7	Total Change in UAAL		$	3,181,477
8	UAAL at 06/30/2017		$	315,695,242

Table 3
Analysis of Financial Gains and Losses in Unfunded Accrued Actuarial Liability for Fiscal Year Ended June 30, 2017

	Activity		(Gain)/Loss	% of 06/30/2016 AAL
1	Actuarial (Gain)/Loss			
	a. Retirements	$	(854,844)	-0.24%
	b. Incidence of Disability		-	0.00%
	c. In-Service Mortality		33,885	0.01%
	d. Retiree Mortality and Other		1,358,694	0.37%
	e. Salary Increases		125,546	0.03%
	f. Terminations		1,120,875	0.31%
	g. Investment		(647,450)	-0.18%
	h. New Entrant Liability		1,102,403	0.30%
	i. Other		(680,305)	-0.19%
	j. Total Actuarial (Gain)/Loss	$	1,558,804	0.41%
2	Plan Provision Changes	$	-	0.00%
3	Assumption Changes	$	-	0.00%
4	Contribution (Excess)/Shortfall[a]	$	1,622,673	0.45%
5	Total Financial (Gain)/Loss	$	3,181,477	0.86%

[a] *Represents the increase in the Unfunded Actuarial Accrued Liability due to actual contributions being less than the Normal Cost plus interest on the beginning of year Unfunded Actuarial Accrued Liability*.

Table 4a
Baseline Projections — State Contributions Determined Under Public Act 88-0593, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023 Maximum Contribution Calculation: Without GOP Proceeds Investment Return of 6.75% Each Year ($ in Millions)

Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Annual Normal Cost: Total	Annual Normal Cost: Employee Cont.	Annual Normal Cost: Employer Normal Cost	Annual Normal Cost: Percent of Pay	State Contribution: Amount	State Contribution: Percent of Pay	Total Expenses
2018	126	$373.97	$9.57	$364.40	2.56%	$10.44	$ 3.83	$1.20	$2.63	25.19%	$24.73	236.88%	$24.94
2019	120	376.37	12.51	363.86	3.32%	10.20	3.67	1.17	2.50	24.51%	26.82	262.94%	25.79
2020	114	377.92	16.20	361.72	4.29%	10.03	3.46	1.15	2.31	23.03%	28.15	280.66%	26.54
2021	109	378.72	20.70	358.02	5.47%	9.83	3.24	1.13	2.11	21.46%	29.33	298.37%	27.16
2022	104	378.65	25.05	353.60	6.62%	9.70	3.07	1.12	1.95	20.10%	29.61	305.27%	27.88
2023	100	377.82	28.61	349.21	7.57%	9.55	2.89	1.10	1.79	18.74%	29.15	305.27%	28.43
2024	96	376.10	31.48	344.62	8.37%	9.46	2.73	1.09	1.64	17.34%	28.89	305.27%	29.08
2025	93	373.65	33.73	339.92	9.03%	9.37	2.60	1.08	1.52	16.22%	28.60	305.27%	29.55
2026	91	370.56	35.72	334.84	9.64%	9.36	2.53	1.08	1.45	15.49%	28.58	305.27%	29.93
2027	88	366.84	37.79	329.05	10.30%	9.44	2.46	1.09	1.37	14.51%	28.83	305.27%	30.26
2028	86	362.51	39.60	322.91	10.92%	9.42	2.38	1.08	1.30	13.80%	28.74	305.27%	30.54
2029	84	357.55	41.50	316.05	11.61%	9.49	2.33	1.09	1.24	13.07%	28.98	305.27%	30.81
2030	82	352.12	43.66	308.46	12.40%	9.56	2.28	1.10	1.18	12.34%	29.18	305.27%	30.90
2031	81	346.25	46.12	300.13	13.32%	9.62	2.25	1.11	1.14	11.85%	29.36	305.27%	30.94
2032	79	340.03	49.39	290.64	14.53%	9.80	2.24	1.13	1.11	11.33%	29.91	305.27%	30.88

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, Public Act 96-0043 and Public Act 100-0023.
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 4a (continued)
Baseline Projections — State Contributions Determined under Public Act 88-0593, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023
Maximum Contribution Calculation: Without GOP Proceeds
Investment Return of 6.75% Each Year ($ 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.	Employer Normal Cost	Percent of Pay	Amount	Percent of Pay	Total Expenses
2033	78	$333.44	$53.14	$280.30	15.94%	$9.85	$2.22	$1.13	$1.09	11.07%	$30.08	305.27%	$30.81
2034	77	326.47	57.79	268.68	17.70%	10.03	2.22	1.15	1.07	10.67%	30.63	305.27%	30.76
2035	75	319.24	63.56	255.68	19.91%	10.21	2.22	1.17	1.05	10.28%	31.18	305.27%	30.54
2036	74	311.79	70.17	241.62	22.51%	10.26	2.21	1.18	1.03	10.04%	31.33	305.27%	30.27
2037	73	304.13	78.10	226.03	25.68%	10.45	2.21	1.20	1.01	9.67%	31.89	305.27%	29.99
2038	73	296.32	87.51	208.81	29.53%	10.63	2.23	1.22	1.01	9.50%	32.45	305.27%	29.66
2039	72	288.48	99.12	189.36	34.36%	10.97	2.27	1.26	1.01	9.21%	33.47	305.27%	29.22
2040	71	280.62	112.62	168.00	40.13%	11.15	2.29	1.28	1.01	9.06%	34.05	305.27%	28.74
2041	71	272.89	128.28	144.61	47.01%	11.34	2.32	1.30	1.02	8.99%	34.63	305.27%	28.14
2042	70	265.31	146.77	118.54	55.32%	11.70	2.37	1.35	1.02	8.72%	35.71	305.27%	27.54
2043	70	257.91	167.80	90.11	65.06%	11.89	2.41	1.37	1.04	8.75%	36.30	305.27%	26.91
2044	69	250.79	192.18	58.61	76.63%	12.26	2.47	1.41	1.06	8.65%	37.43	305.27%	26.21
2045	69	243.90	219.51	24.39	90.00%	12.46	2.51	1.43	1.08	8.67%	38.04	305.27%	25.57

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, Public Act 96-0043 and Public Act 100-0023.
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

Baseline Projections — State Contributions Determined under Public Act 88-0593, Public Act 94-0002, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023 Investment Return of 6.75% Each Year ($ 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	Unfunde Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Employer Normal Cost	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2018	126	$373.97	$56.11	$317.86	15.00%	$10.44	$3.83	$1.20	$2.63	25.19%	$24.73	$2.20	$22.53	$21.16	$21.16	202.63%	$24.94
2019	120	376.37	58.46	317.91	15.53%	10.20	3.67	1.17	2.50	24.51%	26.82	2.34	24.48	23.22	23.22	227.67%	25.79
2020	114	377.92	61.60	316.32	16.30%	10.03	3.46	1.15	2.31	23.03%	28.15	2.50	25.65	24.60	24.60	245.41%	26.54
2021	109	378.72	65.58	313.14	17.32%	9.83	3.24	1.13	2.11	21.46%	29.33	2.64	26.69	25.86	25.86	263.15%	27.16
2022	104	378.65	69.41	309.24	18.33%	9.70	3.07	1.12	1.95	20.10%	29.61	2.77	26.84	26.19	26.19	269.96%	27.88
2023	100	377.82	72.49	305.33	19.19%	9.55	2.89	1.10	1.79	18.74%	29.15	2.90	26.25	25.77	25.77	269.96%	28.43
2024	96	376.10	74.85	301.25	19.90%	9.46	2.73	1.09	1.64	17.34%	28.89	3.11	25.78	25.55	25.55	269.96%	29.08
2025	93	373.65	76.62	297.03	20.51%	9.37	2.60	1.08	1.52	16.22%	28.60	3.30	25.30	25.29	25.29	269.96%	29.55
2026	91	370.56	78.01	292.55	21.05%	9.36	2.53	1.08	1.45	15.49%	28.58	3.39	25.19	25.27	25.19	269.10%	29.93
2027	88	366.84	79.34	287.50	21.63%	9.44	2.46	1.09	1.37	14.51%	28.83	3.46	25.37	25.50	25.37	268.61%	30.26
2028	86	362.51	80.22	282.29	22.13%	9.42	2.38	1.08	1.30	13.80%	28.74	3.62	25.12	25.42	25.12	266.80%	30.54
2029	84	357.55	80.97	276.58	22.65%	9.49	2.33	1.09	1.24	13.07%	28.98	3.77	25.21	25.62	25.21	265.58%	30.81
2030	82	352.12	81.67	270.45	23.19%	9.56	2.28	1.10	1.18	12.34%	29.18	3.99	25.19	25.80	25.19	263.52%	30.90
2031	81	346.25	82.36	263.89	23.79%	9.62	2.25	1.11	1.14	11.85%	29.36	4.20	25.16	25.96	25.16	261.64%	30.94
2032	79	340.03	83.64	256.39	24.60%	9.80	2.24	1.13	1.11	11.33%	29.91	4.29	25.62	26.45	25.62	261.48%	30.88

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, Public Act 96-0043 and Public Act 100-0023.
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 (continued)
Baseline Projections — State Contributions Determined under Public Act 88-0593, Public Act 94-0002, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023
Investment Return of 6.75% Each Year ($ 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	Unfunde Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Employer Normal Cost	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2033	78	$333.44	$85.28	$248.16	25.58%	$9.85	$2.22	$1.13	$1.09	11.07%	$30.08	$4.28	$25.80	$26.60	$25.80	261.87%	$30.81
2034	77	326.47	88.44	238.03	27.09%	10.03	2.22	1.15	1.07	10.67%	30.63	0.00	N/A	27.08	27.08	269.96%	30.76
2035	75	319.24	92.55	226.69	28.99%	10.21	2.22	1.17	1.05	10.28%	31.18	0.00	N/A	27.57	27.57	269.96%	30.54
2036	74	311.79	97.37	214.42	31.23%	10.26	2.21	1.18	1.03	10.04%	31.33	0.00	N/A	27.71	27.71	269.96%	30.27
2037	73	304.13	103.32	200.81	33.97%	10.45	2.21	1.20	1.01	9.67%	31.89	0.00	N/A	28.20	28.20	269.96%	29.99
2038	73	296.32	110.56	185.76	37.31%	10.63	2.23	1.22	1.01	9.50%	32.45	0.00	N/A	28.69	28.69	269.96%	29.66
2039	72	288.48	119.72	168.76	41.50%	10.97	2.27	1.26	1.01	9.21%	33.47	0.00	N/A	29.60	29.60	269.96%	29.22
2040	71	280.62	130.54	150.08	46.52%	11.15	2.29	1.28	1.01	9.06%	34.05	0.00	N/A	30.11	30.11	269.96%	28.74
2041	71	272.89	143.27	129.62	52.50%	11.34	2.32	1.30	1.02	8.99%	34.63	0.00	N/A	30.62	30.62	269.96%	28.14
2042	70	265.31	158.50	106.81	59.74%	11.70	2.37	1.35	1.02	8.72%	35.71	0.00	N/A	31.58	31.58	269.96%	27.54
2043	70	257.91	175.98	81.93	68.23%	11.89	2.41	1.37	1.04	8.75%	36.30	0.00	N/A	32.10	32.10	269.96%	26.91
2044	69	250.79	196.44	54.35	78.33%	12.26	2.47	1.41	1.06	8.65%	37.43	0.00	N/A	33.10	33.10	269.96%	26.21
2045	69	243.90	219.51	24.39	90.00%	12.46	2.51	1.43	1.08	8.67%	38.04	0.00	N/A	33.64	33.64	269.96%	25.57

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, Public Act 96-0043 and Public Act 100-0023.
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 4c
Baseline Projections — State Contributions Determined under Public Act 88-0593, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023
Maximum Contribution Calculation: Without GOB Proceeds
Investment Return of 6.75% Each Year ($ 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.	Employer Normal Cost	Percent of Pay	Amount	Percent of Pay	Total Expenses
2018	126	$373.97	$9.66	$364.31	2.58%	$10.44	$3.83	$1.20	$2.63	25.19%	$24.73	236.88%	$24.94
2019	120	376.37	12.51	363.86	3.32%	10.20	3.67	1.17	2.50	24.51%	26.82	262.94%	25.79
2020	114	377.92	16.15	361.77	4.27%	10.03	3.46	1.15	2.31	23.03%	28.14	280.56%	26.54
2021	109	378.72	20.69	358.03	5.46%	9.83	3.24	1.13	2.11	21.46%	29.33	298.37%	27.16
2022	104	378.65	25.04	353.61	6.61%	9.70	3.07	1.12	1.95	20.10%	29.61	305.29%	27.88
2023	100	377.82	28.60	349.22	7.57%	9.55	2.89	1.10	1.79	18.74%	29.15	305.29%	28.43
2024	96	376.10	31.47	344.63	8.37%	9.46	2.73	1.09	1.64	17.34%	28.89	305.29%	29.08
2025	93	373.65	33.72	339.93	9.02%	9.37	2.60	1.08	1.52	16.22%	28.60	305.29%	29.55
2026	91	370.56	35.71	334.85	9.64%	9.36	2.53	1.08	1.45	15.49%	28.58	305.29%	29.93
2027	88	366.84	37.78	329.06	10.30%	9.44	2.46	1.09	1.37	14.51%	28.83	305.29%	30.26
2028	86	362.51	39.59	322.92	10.92%	9.42	2.38	1.08	1.30	13.80%	28.75	305.29%	30.54
2029	84	357.55	41.49	316.06	11.60%	9.49	2.33	1.09	1.24	13.07%	28.98	305.29%	30.81
2030	82	352.12	43.65	308.47	12.40%	9.56	2.28	1.10	1.18	12.34%	29.18	305.29%	30.90
2031	81	346.25	46.11	300.14	13.32%	9.62	2.25	1.11	1.14	11.85%	29.36	305.29%	30.94
2032	79	340.03	49.38	290.65	14.52%	9.80	2.24	1.13	1.11	11.33%	29.91	305.29%	30.88

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, Public Act 96-0043 and Public Act 100-0023.
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 4c (continued)
Baseline Projections — State Contributions Determined under Public Act 88-0593, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023
Maximum Contribution Calculation: Without GOB Proceeds
Investment Return of 6.75% Each Year ($ 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.	Employer Normal Cost	Percent of Pay	Amount	Percent of Pay	Total Expenses
2033	78	$333.44	$53.13	$280.31	15.93%	$9.85	$2.22	$1.13	$1.09	11.07%	$30.08	305.29%	$30.81
2034	77	326.47	57.77	268.70	17.70%	10.03	2.22	1.15	1.07	10.67%	30.63	305.29%	30.76
2035	75	319.24	63.55	255.69	19.91%	10.21	2.22	1.17	1.05	10.28%	31.18	305.29%	30.54
2036	74	311.79	70.15	241.64	22.50%	10.26	2.21	1.18	1.03	10.04%	31.33	305.29%	30.27
2037	73	304.13	78.09	226.04	25.68%	10.45	2.21	1.20	1.01	9.67%	31.89	305.29%	29.99
2038	73	296.32	87.50	208.82	29.53%	10.63	2.23	1.22	1.01	9.50%	32.45	305.29%	29.66
2039	72	288.48	99.11	189.37	34.36%	10.97	2.27	1.26	1.01	9.21%	33.48	305.29%	29.22
2040	71	280.62	112.61	168.01	40.13%	11.15	2.29	1.28	1.01	9.06%	34.05	305.29%	28.74
2041	71	272.89	128.27	144.62	47.00%	11.34	2.32	1.30	1.02	8.99%	34.63	305.29%	28.14
2042	70	265.31	146.76	118.55	55.32%	11.70	2.37	1.35	1.02	8.72%	35.71	305.29%	27.54
2043	70	257.91	167.79	90.12	65.06%	11.89	2.41	1.37	1.04	8.75%	36.30	305.29%	26.91
2044	69	250.79	192.17	58.62	76.63%	12.26	2.47	1.41	1.06	8.65%	37.43	305.29%	26.21
2045	69	243.90	219.50	24.40	90.00%	12.46	2.51	1.43	1.08	8.67%	38.04	305.29%	25.57

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, Public Act 96-0043 and Public Act 100-0023.
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 4d

Baseline Projections — State Contributions Determined under Public Act 88-0593, Public Act 94-0002, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023
Investment Return of 6.75% Each Year
Phase-In of Deferred Investment Gains and Losses Recognized in the Projected Actuarial Value of Assets ($ 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	Unfunde Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Employer Normal Cost	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2018	126	$373.97	$56.24	$317.73	15.04%	$10.44	$3.83	$1.20	$2.63	25.19%	$24.73	$2.20	$22.53	$21.16	$21.16	202.63%	$24.94
2019	120	376.37	57.76	318.61	15.35%	10.20	3.67	1.17	2.50	24.51%	26.82	2.34	24.48	23.22	23.22	227.67%	25.79
2020	114	377.92	60.35	317.57	15.97%	10.03	3.46	1.15	2.31	23.03%	28.14	2.50	25.64	24.59	24.59	245.28%	26.54
2021	109	378.72	64.74	313.98	17.09%	9.83	3.24	1.13	2.11	21.46%	29.33	2.64	26.69	25.96	25.96	264.19%	27.16
2022	104	378.65	68.70	309.95	18.14%	9.70	3.07	1.12	1.95	20.10%	29.61	2.77	26.84	26.36	26.36	271.77%	27.88
2023	100	377.82	71.84	305.98	19.01%	9.55	2.89	1.10	1.79	18.74%	29.15	2.90	26.25	25.88	25.88	271.09%	28.43
2024	96	376.10	74.27	301.83	19.75%	9.46	2.73	1.09	1.64	17.34%	28.89	3.11	25.78	25.65	25.65	271.09%	29.08
2025	93	373.65	76.01	297.64	20.34%	9.37	2.60	1.08	1.52	16.22%	28.60	3.30	25.30	25.40	25.30	270.06%	29.55
2026	91	370.56	77.35	293.21	20.87%	9.36	2.53	1.08	1.45	15.49%	28.58	3.39	25.19	25.38	25.19	269.11%	29.93
2027	88	366.84	78.65	288.19	21.44%	9.44	2.46	1.09	1.37	14.51%	28.83	3.46	25.37	25.60	25.37	268.62%	30.26
2028	86	362.51	79.48	283.03	21.92%	9.42	2.38	1.08	1.30	13.80%	28.75	3.63	25.12	25.52	25.12	266.81%	30.54
2029	84	357.55	80.18	277.37	22.42%	9.49	2.33	1.09	1.24	13.07%	28.98	3.77	25.21	25.73	25.21	265.59%	30.81
2030	82	352.12	80.83	271.29	22.96%	9.56	2.28	1.10	1.18	12.34%	29.18	3.99	25.19	25.91	25.19	263.52%	30.90
2031	81	346.25	81.46	264.79	23.53%	9.62	2.25	1.11	1.14	11.85%	29.36	4.20	25.16	26.07	25.16	261.65%	30.94
2032	79	340.03	82.68	257.35	24.32%	9.80	2.24	1.13	1.11	11.33%	29.91	4.29	25.62	26.56	25.62	261.49%	30.88

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, Public Act 96-0043 and Public Act 100-0023.
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 4d (continued)
Baseline Projections — State Contributions Determined under Public Act 88-0593, Public Act 94-0002, Public Act 94-0004, Public Act 96-0043 and Public Act 100-0023
Investment Return of 6.75% Each Year
Phase-In of Deferred Investment Gains and Losses Recognized in the Projected Actuarial Value of Assets ($ 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	Unfunde Liability	Funded Ratio	Total Payroll	Total	Employee Cont.	Employer Normal Cost	Percent of Pay	Without GOB Cont.	Debt Service	Maximum Cont.	Formula Rate With GOB	Required Cont.	Percent of Pay	Total Expenses
2033	78	$333.44	$84.26	$249.18	25.27%	$9.85	$2.22	$1.13	$1.09	11.07%	$30.08	$4.28	$25.80	$26.71	$25.80	261.87%	$30.81
2034	77	326.47	87.46	239.01	26.79%	10.03	2.22	1.15	1.07	10.67%	30.63	0.00	N/A	27.20	27.20	271.09%	30.76
2035	75	319.24	91.63	227.61	28.70%	10.21	2.22	1.17	1.05	10.28%	31.18	0.00	N/A	27.69	27.69	271.09%	30.54
2036	74	311.79	96.50	215.29	30.95%	10.26	2.21	1.18	1.03	10.04%	31.33	0.00	N/A	27.82	27.82	271.09%	30.27
2037	73	304.13	102.52	201.61	33.71%	10.45	2.21	1.20	1.01	9.67%	31.89	0.00	N/A	28.32	28.32	271.09%	29.99
2038	73	296.32	109.83	186.49	37.06%	10.63	2.23	1.22	1.01	9.50%	32.45	0.00	N/A	28.81	28.81	271.09%	29.66
2039	72	288.48	119.07	169.41	41.27%	10.97	2.27	1.26	1.01	9.21%	33.48	0.00	N/A	29.73	29.73	271.09%	29.22
2040	71	280.62	129.97	150.65	46.32%	11.15	2.29	1.28	1.01	9.06%	34.05	0.00	N/A	30.23	30.23	271.09%	28.74
2041	71	272.89	142.80	130.09	52.33%	11.34	2.32	1.30	1.02	8.99%	34.63	0.00	N/A	30.75	30.75	271.09%	28.14
2042	70	265.31	158.14	107.17	59.61%	11.70	2.37	1.35	1.02	8.72%	35.71	0.00	N/A	31.71	31.71	271.09%	27.54
2043	70	257.91	175.73	82.18	68.14%	11.89	2.41	1.37	1.04	8.75%	36.30	0.00	N/A	32.23	32.23	271.09%	26.91
2044	69	250.79	196.31	54.48	78.28%	12.26	2.47	1.41	1.06	8.65%	37.43	0.00	N/A	33.24	33.24	271.09%	26.21
2045	69	243.90	219.52	24.38	90.00%	12.46	2.51	1.43	1.08	8.67%	38.04	0.00	N/A	33.78	33.78	271.09%	25.57

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, Public Act 96-0043 and Public Act 100-0023.
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

Table 5
Statement of Fiduciary Net Position
for Years Ended June 30, 2017, and 2016

	2017		2016	
Assets				
Cash	$	4,535,006	$	5,542,851
Receivables:				
Contributions:				
Participants	$	25,814	$	312,728
Employer - GRF Fund		2,715,126		669,710
Other accounts		13,437		10,723
	$	2,754,377	$	993,161
Investments - held in the Illinois State Board of Investment Commingled Fund at fair value	$	47,148,105	$	42,604,441
Securities lending collateral with State Treasurer		1,965,000		1,359,000
Property and equipment, net of accumulated depreciation	$	18,281	$	15,773
Total Assets	$	56,420,769	$	50,515,226
Liabilities				
Benefits payable	$	1,631	$	600
Refunds payable		4,774		-
Administrative expenses payable		42,262		42,492
Participants' deferred service credit accounts		-		-
Due to Judges' Retirement System of Illinois		58,194		61,061
Securities lending collateral with State Treasurer		1,965,000		1,359,000
Total Liabilities	$	2,071,861	$	1,463,153
Net assets held in trust for pension benefits	$	54,348,908	$	49,052,073

Table 6
Statement of Changes in Fiduciary Net Position
for Years Ended June 30, 2017, and 2016

		2017		2016
Additions:				
Contributions:				
Participants	$	1,284,707	$	1,309,697
Employing state agencies and appropriations		21,721,000		16,073,000
Total Contributions revenue	$	23,005,707	$	17,382,697
Investments income:				
Net investment income	$	1,045,862	$	1,250,546
Interest earned on cash balances		46,586		21,741
Net appreciation in fair value of investments		4,047,802		(1,811,781)
Total Investments income	$	5,140,250	$	(539,494)
Other:				
Miscellaneous	$	-	$	-
Total Investments income	$	-	$	-
Total Additions	$	28,145,957	$	16,843,203
Deductions:				
Benefits:				
Retirement annuities	$	18,354,695	$	18,104,674
Survivors' annuities		4,007,831		3,736,563
Disability benefits		-		-
Lump-sum benefits		-		-
Total Benefits	$	22,362,526	$	21,841,237
Refunds		130,885		141,817
Administrative		355,711		382,340
Total Deductions	$	22,849,122	$	22,365,394
Net increase	$	5,296,835	$	(5,522,191)
Net assets held in trust for pension benefits:				
Beginning of year	$	49,052,073	$	54,574,264
End of year	$	54,348,908	$	49,052,073

Table 7
Development of the Actuarial Value of Assets – Actual Assets

Year Ending June 30		2017		2018		2019		2020		2021
Beginning of Year:										
(1) Market Value of Assets	$	49,052,073								
(2) Actuarial Value of Assets		50,823,211								
End of Year:										
(3) Market Value of Assets		54,348,908								
(4) Contributions and Disbursements										
(4a) Actual State Contribution Amount		21,721,000								
(4b) Employee Contribution Amount		1,284,707								
(4c) Benefit Payouts & Refunds		(22,493,411)								
(4d) Administrative Expenses		(355,711)								
(4e) Net of Contributions and Disbursements		156,585								
(5) Total Investment Income										
=(3)-(1)-(4e)		5,140,250								
(6) Projected Rate of Return		6.75%								
(7) Projected Investment Income										
=(1)x(6)+([1+(6)]^.5-1)x(4e)		3,316,213								
(8) Investment Income in										
Excess of Projected Income		1,824,037								
(9) Excess Investment Income Recognized										
This Year (5-year recognition)										
(9a) From This Year	$	364,807								
(9b) From One Year Ago		(837,650)	$	364,807						
(9c) From Two Years Ago		(306,481)		(837,650)	$	364,807				
(9d) From Three Years Ago		952,573		(306,481)		(837,650)	$	364,807		
(9e) From Four Years Ago		593,754		952,574		(306,479)		(837,648)	$	364,809
(9f) Total Recognized Investment Gain		767,003		173,250		(779,322)		(472,841)		364,809
(10) Change in Actuarial Value of Assets										
=(4e)+(7)+(9f)	$	4,239,801								
End of Year:										
(3) Market Value of Assets	**$**	**54,348,908**								
(11) Actuarial Value of Assets										
=(2)+(10)	**$**	**55,063,012**								

Table 8
Development of the Actuarial Value of Assets – Hypothetical Assets

Year Ending June 30		2017		2018		2019		2020		2021
Beginning of Year:										
(1) Hypothetical Value of Assets	$	3,897,570								
(2) Hypothetical Actuarial Value of Assets		3,892,237								
End of Year:										
(3) Hypothetical Value of Assets		8,008,010								
(4) Contributions and Disbursements										
(4a) State Contribution Amount[a]		25,087,494								
(4b) Employee Contribution Amount		1,284,707								
(4c) Benefit Payouts & Refunds		(22,493,411)								
(4d) Administrative Expenses		(355,711)								
(4e) Net of Contributions and Disbursements		3,523,079								
(5) Total Investment Income[b]										
=(3)-(1)-(4e)		587,361								
(6) Projected Rate of Return		6.75%								
(7) Projected Investment Income										
=(1)x(6)+([1+(6)]^.5-1)x(4e)		380,048								
(8) Investment Income in										
Excess of Projected Income		207,313								
(9) Excess Investment Income Recognized										
This Year (5-year recognition)										
(9a) From This Year	$	41,463								
(9b) From One Year Ago		(84,873)	$	41,463						
(9c) From Two Years Ago		(41,944)		(84,873)	$	41,463				
(9d) From Three Years Ago		170,852		(41,944)		(84,873)	$	41,463		
(9e) From Four Years Ago		128,954		170,851		(41,946)		(84,871)	$	41,461
(9f) Total Recognized Investment Gain		214,452		85,497		(85,356)		(43,408)		41,461
(10) Change in Hypothetical Actuarial Value of Assets										
=(4e)+(7)+(9f)	$	4,117,579								
End of Year:										
(3) Hypothetical Market Value of Assets	**$**	**8,008,010**								
(11) Hypothetical Actuarial Value of Assets										
=(2)+(10)	**$**	**8,009,816**								

[a] *Represents FY 2017 no POB basic contribution. This amount was determined as part of the June 30, 2015, 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 2017 of 10.46 percent.*

SECTION D

PARTICIPANT DATA

Table 9
Active Age and Service Distribution as of June 30, 2017

Age	Years of Service										Percentage
Group	0-1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35&Up	Total	of Total
Under 20											
20-24											
25-29		1								1	1%
30-34		2	3							5	3%
35-39		5	7	1						13	10%
40-44		3	6	1	1					11	8%
45-49	1	4	13	2	4					24	17%
50-54		2	7	2	6	3				20	15%
55-59		1	10	5	4	3				23	17%
60-64		2	4	5	3	2	1			17	13%
65-69			4	1	1	1	3	1	1	12	9%
70 & Over			1	1	4	1			2	9	7%
Total	1	20	55	18	23	10	4	1	3	135	100%
Percentage of Total	1%	15%	42%	13%	17%	6%	3%	1%	2%	100%	

Based on data received from the System, of the 135 active members, 41 were classified as "Single," 80 classified as "Married" and 14 were classified as "Unknown." We assume 75 percent are married and elect survivor benefits when they retire.

Table 10
Retirees and Beneficiaries by Type of Benefit Being Paid as of June 30, 2017

Type of Benefit Being Paid	Count	Monthly Payment	Annual Payment	Average Annual Payment
Retirement Annuity	300	$ 1,545,199.83	$ 18,542,397.96	$ 61,807.99
Survivor's Annuity	121	340,871.73	4,090,460.76	33,805.46
Total	**421**	**$ 1,886,071.56**	**$ 22,632,858.72**	**$ 53,759.76**

SECTION E

ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Methods and Assumptions (Adopted Effective with the June 30, 2016, Actuarial Valuation)

Actuarial Cost Method as Mandated by 40 ILCS 5/2-124, 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 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 accrued liability at any point in time is the present value of the projected pensions at that time less the 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. Additional information regarding the rationale for the assumptions may be found in the experience review of the General Assembly Retirement System for the three-year period ending June 30, 2015. All actuarial assumptions are expectations of future experience, not market measures.

Mortality

Post-Retirement Mortality

RP-2014 White Collar Total Healthy Annuitant mortality table, sex distinct, with rates set forward one year for males and set back one year for females and generational mortality improvement using MP-2014 two-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements.

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

RP-2014 White Collar Total Employee mortality table, sex distinct and generational mortality improvement using MP-2014 two-dimensional mortality improvement scales recently released by the SOA, to reflect that experience shows active members having lower mortality rates than retirees of the same age.

Actuarial Methods and Assumptions (Adopted Effective with the June 30, 2016, Actuarial Valuation)

Interest

6.75 percent per annum, compounded annually.

General Inflation

2.75 percent per annum, compounded annually.

This assumption serves as the basis for the determination of Tier Two pay cap growth and annual increases that are equal to the lesser of 3.0 percent or the annual change in the consumer price index-u during the preceding 12-month calendar year.

Marriage Assumption

75.0 percent of active and retired participants are assumed to be married.

Termination

Rates of withdrawal are assumed to be equal to five percent for all ages 20 through 65.

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

A salary increase assumption of 3.00 percent per annum, compounded annually, was used. This 3.00 percent salary increase assumption includes an inflation component of 2.75 percent per annum, and a productivity component of 0.25 percent per annum. Furthermore, salaries were assumed to remain at their current rate for fiscal year 2018.

Actuarial Methods and Assumptions
(Adopted Effective with the June 30, 2016, Actuarial Valuation)

Load for Inactive Members Eligible for Deferred Vested Pension Benefits

Deferred vested liability is increased by 10 percent to account for increases in final average salary due to participation in a reciprocal system. This assumption was developed based on the average increase in actuarial liability due to reciprocal salary increases of inactive members over the period July 1, 2005, to June 30, 2011, and will be reviewed during the next experience study. Below is the analysis used to develop this assumption:

Impact of Reciprocal Salary Increases of Inactive Members

Valuation Date	Inactives Actuarial Liability	Increase in UAL Due to Inactive Member Salary Increases	Increase in UAL as a Percent of Inactives Actuarial Liability
6/30/2006	$ 23,772,867	$ 2,008,594	8.4%
6/30/2007	25,637,149	1,567,266	6.1%
6/30/2008	20,963,068	1,025,565	4.9%
6/30/2009	24,982,545	977,739	3.9%
6/30/2010	22,566,036	2,139,529	9.5%
6/30/2011	26,829,958	6,514,624	24.3%
Total	$ 144,751,623	$ 14,233,317	
Average			9.3%

Disability

No assumption for disability was assumed.

Actuarial Methods and Assumptions (Adopted Effective with the June 30, 2016, Actuarial Valuation)

Population Projection

For purposes of determining the annual appropriation as a percent of total covered payroll, the size of the active group is projected to decrease from 145 members as of the valuation date, to 69 members in 2045, and ultimately reach 68 members in 2048, due to the assumption that 50 percent of future members will elect to opt out of the pension system. New entrants are assumed to enter with an average age and average pay as disclosed below. The new entrant profile is based on the averages for all current active members. New entrant pay is assumed to increase by the salary scale assumption, and is limited by the projected statutory salary cap.

New Entrant Profile			
Age Group	No.	Uncapped Salary	Capped Salary
Under 20			
20-24			
25-29	11	$ 881,228	$ 881,228
30-34	21	1,880,341	1,804,102
35-39	25	2,083,038	2,083,038
40-44	21	1,653,393	1,653,393
45-49	19	1,588,359	1,549,031
50-54	15	1,207,710	1,207,710
55-59	13	1,013,527	1,013,527
60-64			
65-69			
70 & Over			
Total	125	$ 10,307,596	$ 10,192,029
Avg. Salary		$ 82,461	$ 81,536
Avg. Age			41.61
Percent Male			66.40%

Actuarial Methods and Assumptions (Adopted Effective with the June 30, 2016, Actuarial Valuation)

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	
Age	Males & Females
55	5.00%
56-59	15.00%
60-74	20.00%
75	100.00%

Assets

Assets available for benefits are determined as described on page 43. 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 GARS staff, based on current expenses and are expected to increase in relation to the projected capped payroll. Expenses are included in the service cost.

Spouse's Age

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

Decrement Timing

All decrements are assumed to occur beginning of year.

Decrement Relativity

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

Decrement Operation

Turnover decrements do not operate after member reaches retirement eligibility.

Eligibility Testing

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

Actuarial Methods and Assumptions
(Adopted Effective with the June 30, 2016, Actuarial Valuation)

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

No explicit assumption is made with respect to these items.

Assumptions as a Result of Public Act 96-0889

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.

Retirement rates for tier two members to account for the change in retirement age, as follows:

Retirement Rates for Tier Two Members	
Age	**Male & Female**
67	40.00%
68-70	30.00%
71-74	20.00%
75	100.00%
Early Retirement Rates for Tier Two Members	
Age	**Males and Females**
62	25.00%
63	12.00%
64	14.00%
65	16.00%
66	18.00%

Rates of withdrawal for Tier Two members are assumed to be equal to five percent for all ages 20 through 65. For Tier Two members with less than five years of service, rates of withdrawal are assumed to be equal to ten percent for all ages 20 to 65.

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

Appropriation Requirements Under P.A. 93-0002, P.A. 94-0004 P.A. 96-0043 and P.A. 100-0023

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 5/2-124:

(c) Notwithstanding any other provision of this Article, the total State contribution for fiscal year 2006 is $4,157,000.

Notwithstanding any other provision of this Article, the total State contribution for fiscal year 2007 is $5,220,300.

For each State fiscal years 2008 through 2010, the State contribution to the System, as a percentage of the applicable payroll, shall be increased in equal annual increments from the required State contribution for State fiscal year 2007, so that by State fiscal year 2011, the State is contributing at a rate otherwise required under this Section.

State Contributions under P.A. 96-0043

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/2-124:

(d) 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 5-year period following that fiscal year.

(e) 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.

State Contributions under P.A. 100-0023

Public Act ("P.A.") 100-0023, effective July 6, 2017, modified the State's funding policy to include smoothing State contribution rate increases or decreases due to changes in actuarial assumptions, including investment return assumptions, over a five-year period in equal annual amounts beginning in fiscal year 2018. In addition, changes in actuarial or investment assumptions that increased or decreased the State contribution rate in fiscal years 2014 through 2017 are to be smoothed over a five-year period in equal annual amounts, applying only to the portion of the five-year phase-in that is applicable to fiscal years on and after 2018.

SECTION F

SUMMARY OF PLAN PROVISIONS

Summary of Plan Provisions
(as of June 30, 2017)

1. Participation. A person eligible for membership must participate in the system as a condition of employment unless an "Election Not to Participate" is filed within 24 months from the date of assuming office.

2. Member Contributions. All members of the system are required to contribute to the system the following percentage of their salaries:

Retirement Annuity	8.5%
Automatic Annuity Increase	1.0
Survivor's Annuity	2.0
Total	11.5%

3. Retirement Annuity – Eligibility. A member who has at least eight years of creditable service is entitled to a retirement annuity upon attainment of age 55. A member with at least four years of service but less than eight years of service is entitled to a retirement annuity upon attainment of age 62.

   A member with at least eight years of service who becomes disabled while in service is entitled to a retirement annuity regardless of age.

4. Retirement Annuity – Amount. The retirement annuity is determined according to the following formula based upon the member's final rate of salary:

   - 3.0% for each of the first 4 years of service, plus
   - 3.5% for each of the next 2 years of service, plus
   - 4.0% for each of the next 2 years of service, plus
   - 4.5% for each of the next 4 years of service, plus
   - 5.0% for each year of service in excess of 12

The maximum retirement annuity is 85% of the final rate of salary.

5. Automatic Increase In Retirement Annuity. (a) Annual automatic increases of 3% of the current amount of retirement annuity are provided. The initial increase is effective in the month of January or July of the year next following the year in which the first anniversary of retirement occurs, but in no event prior to attainment of age 60.

   (b) Beginning January 1, 1990, for persons who become participants prior to August 8, 2003, and who remain in service after attaining 20 years of creditable service, 3% annual automatic increases begin to accrue on January 1 next following the date the participant attains age 55 or completes 20 years of creditable service, whichever occurs later. For any person who has service credit for the entire period from January 15, 1969, through December 31, 1992, the increases shall accrue from age 50 instead of age 55. However, such increases shall not become payable until the January 1 or July 1 next following the first anniversary of retirement, or the first of the month following attainment of age 60, whichever occurs later.

6. Survivor's Annuity – Eligibility. A surviving spouse without children is eligible for survivor benefits at age 50 or over provided marriage to the member had been in effect for at least one year immediately prior to the member's death.

   A surviving spouse with unmarried eligible children is eligible for a survivor's annuity benefit at any age provided the above marriage requirements have been met. When all children are disqualified because of death, marriage or attainment of age 18 or age 22 in the case of a fulltime student, the spouse's benefit is suspended if the spouse is under age 50 until the attainment of such age.

   An unmarried eligible child under age 18 or under age 22 and a full-time student or over age 18 and disabled may qualify for the survivor's annuity if there is no surviving spouse or if the spouse dies. Legally adopted children are eligible for survivor benefits on the same basis as other children.

   If the member dies in service as a member, the member must have at least two years of service credit for survivor's annuity eligibility. If death occurs after termination of service but before retirement, the deceased member must have at least four years of service credit for survivor's annuity eligibility.

7. Survivor's Annuity – Amount. (a) A surviving spouse is entitled to a survivor's annuity of 66 2/3% of the amount of retirement annuity to which the member was entitled on the date of death, without regard to whether the member had attained age 55 as of the time of death, subject to a minimum payment of 10% of salary.

   (b) If a surviving spouse has in his or her care eligible children, the survivor's annuity shall be the greater of the following:

   (1) 66 2/3% of the amount of retirement annuity to which the member was entitled on the date of death, or (2) 30% of the member's salary increased by 10% of salary on account of each eligible child, subject to a total payment for the surviving spouse and children of 50% of salary. If only unmarried children survive, each such child shall be entitled to an annuity of 20% of salary, subject to a maximum total payment for all children of 50% of salary.

   (c) Upon the death of a member after termination of service, or upon the death of an annuitant, the maximum total payment to a surviving spouse and eligible children, or eligible children alone if there is no surviving spouse, shall be 75% of the retirement annuity to which the member or annuitant was entitled.

   (d) Survivor's annuities are subject to annual automatic increases of 3% of the current amount of annuity.

   (e) The minimum survivor's annuity provided by the system is $300 per month.

   (f) In the case of a proportional survivor's annuity under the Retirement Systems Reciprocal Act, if the amount payable by the system on January 1, 1993, is less than $300 per month, the amount shall be increased as of that date by $2 per month for each full year elapsed since the annuity began.

8. Refund of Contributions. Upon termination of service, a member is entitled to a refund of his total contributions without interest.

   A member who has no eligible survivor's annuity beneficiaries, or is unmarried at the time of retirement, is entitled to a refund of his or her contributions for the survivor's annuity.

9. Retirement System Reciprocal Act. According to the provisions of the Retirement System Reciprocal Act provided in Illinois Compiled statutes 40 ILCS 5/20, a member who has pension credit in two or more participating systems may be entitled to a proportional retirement annuity if his or her combined pension credit satisfies the longest minimum retirement eligibility requirement of any such system.

   In calculating the proportional retirement annuity, the earnings credits under all participating systems shall be considered in determining final average salary.

<u>Persons Who First Become Participants On or After January 1, 2011</u>

The following changes to the above provisions apply to persons who first become participants on or after January 1, 2011:

1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.

2. Required contributions shall not exceed the contributions that would be due on the highest salary for annuity purposes.

3. For 2011, the final average salary is limited to the Social Security wage base of $106,800. Limitations for future years shall automatically be increased or decreased, as applicable, by a percentage change in the Consumer Price Index-U during the preceding 12 month calendar year.

4. A participant is eligible to retire with unreduced benefits after attainment of age 67 with at least eight years of service credit. However, a participant may elect to retire at age 62 with at least eight years of service credit and receive a retirement annuity reduced by one-half of 1% for each month that his or her age is under 67.

5. The annual retirement annuity provided is equal to 3% of the participant's final average salary for each year of service. The maximum retirement annuity payable shall be 60% of the participant's final average salary.

6. Automatic annual increases are provided in the retirement annuity then being paid equal to 3% or the annual change in the Consumer Price Index for all Urban Consumers, whichever is less. Such increases are payable in the January or July next following the first anniversary of retirement, and in the same month of each year thereafter.

7. Automatic annual increases are provided in the survivor annuity then being paid equal to 3% or the annual change in the Consumer Price Index for all Urban Consumers, whichever is less. Such increases are payable (1) on each January 1 occurring on or after the commencement of the annuity if the deceased member died while receiving a retirement annuity, or (2) in other cases, on each January 1 occurring on or after the first anniversary of the commencement of the annuity.

8. The retirement annuity being paid is suspended when an annuitant accepts full-time employment in a position covered under the General Assembly Retirement System or any other Article of the Illinois Pension Code. Upon termination of the employment, the retirement annuity shall resume and, if appropriate, be recalculated.

9. Salary and COLA development for members hired on or after January 1, 2011, are shown in the table below:

Year Ending	CPI-U	COLA	Maximum Annual Pensionable Earnings
2011		3.00%	$106,800.00
2012	3.90%	3.00%	$110,004.00
2013	2.00%	2.00%	$112,204.08
2014	1.20%	1.20%	$113,550.53
2015	1.70%	1.70%	$115,480.89
2016	0.00%	0.00%	$115,480.89
2017	1.50%	1.50%	$117,213.10

SECTION G

GLOSSARY OF TERMS

Glossary of Terms

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 of Terms

Actuarially 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.

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 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

Table 11
Additional Projection Details — Actuarial Accrued Liability
($ in Millions)

Valuation Date June 30	Current Inactives: Retirees & Beneficiaries	Current Inactives: Deferreds	Current Actives: Tier 1	Current Actives: Current Tier 2	Current Actives: Future Tier 2	Grand Totals: Current Retirees, Beneficiaries & Deferreds	Grand Totals: Actives	Grand Totals: Total
2017	$ 284.75	$ 30.22	$ 53.29	$ 2.50	$ -	$ 314.97	$ 55.79	$ 370.76
2018	280.50	31.24	59.09	3.14	0.00	311.74	62.23	373.97
2019	275.82	32.15	64.43	3.87	0.09	307.97	68.39	376.37
2020	270.70	32.97	69.37	4.65	0.24	303.66	74.26	377.92
2021	265.13	33.69	73.94	5.50	0.46	298.82	79.90	378.72
2022	259.13	34.34	78.03	6.39	0.75	293.47	85.18	378.65
2023	252.69	34.93	81.75	7.33	1.12	287.62	90.21	377.82
2024	245.84	35.38	85.04	8.29	1.55	281.22	94.88	376.10
2025	238.59	35.76	87.94	9.27	2.09	274.35	99.30	373.65
2026	230.96	36.09	90.49	10.29	2.73	267.04	103.51	370.56
2027	222.96	36.33	92.72	11.34	3.49	259.29	107.56	366.84
2028	214.63	36.52	94.58	12.41	4.37	251.15	111.36	362.51
2029	206.00	36.66	96.03	13.50	5.37	242.65	114.90	357.55
2030	197.08	36.76	97.17	14.60	6.51	233.84	118.28	352.12
2031	187.93	36.77	98.04	15.72	7.78	224.71	121.54	346.25
2032	178.59	36.75	98.65	16.85	9.20	215.33	124.70	340.03
2033	169.09	36.62	99.02	17.96	10.76	205.71	127.74	333.44
2034	159.48	36.43	99.03	19.04	12.48	195.92	130.55	326.47
2035	149.82	36.19	98.79	20.07	14.35	186.02	133.22	319.24
2036	140.16	35.88	98.32	21.04	16.38	176.05	135.74	311.79
2037	130.56	35.52	97.56	21.93	18.56	166.08	138.06	304.13
2038	121.07	35.09	96.53	22.72	20.91	156.15	140.17	296.32
2039	111.74	34.57	95.27	23.46	23.44	146.31	142.17	288.48
2040	102.63	34.00	93.77	24.09	26.13	136.63	143.99	280.62
2041	93.80	33.35	92.07	24.68	28.99	127.15	145.74	272.89
2042	85.28	32.65	90.17	25.18	32.03	117.93	147.38	265.31
2043	77.13	31.87	88.08	25.60	35.23	109.00	148.91	257.91
2044	69.38	31.03	85.81	25.97	38.60	100.41	150.38	250.79
2045	62.06	30.13	83.38	26.19	42.14	92.19	151.71	243.90

Table 12
Additional Projection Details — Present Value of Future Benefits
($ in Millions)

	Current Inactives		Current Actives			Grand Totals		
Valuation Date June 30	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries & Deferreds	Actives	Total
2017	$ 284.75	$ 30.22	$ 70.66	$ 9.70	$ -	$ 314.97	$ 80.36	$ 395.32
2018	280.50	31.24	74.44	10.06	1.14	311.74	85.64	397.38
2019	275.82	32.15	77.91	10.50	2.05	307.97	90.46	398.43
2020	270.70	32.97	81.14	10.96	3.08	303.66	95.18	398.84
2021	265.13	33.69	84.18	11.50	4.29	298.82	99.97	398.79
2022	259.13	34.34	86.92	12.07	5.44	293.47	104.43	397.90
2023	252.69	34.93	89.44	12.69	6.70	287.62	108.82	396.44
2024	245.84	35.38	91.67	13.33	8.04	281.22	113.04	394.26
2025	238.59	35.76	93.65	14.01	9.45	274.35	117.11	391.45
2026	230.96	36.09	95.38	14.72	10.95	267.04	121.06	388.10
2027	222.96	36.33	96.89	15.46	12.39	259.29	124.75	384.03
2028	214.63	36.52	98.13	16.22	14.04	251.15	128.39	379.54
2029	206.00	36.66	99.03	17.00	15.75	242.65	131.79	374.44
2030	197.08	36.76	99.71	17.80	17.54	233.84	135.05	368.89
2031	187.93	36.77	100.18	18.62	19.58	224.71	138.38	363.09
2032	178.59	36.75	100.45	19.44	21.56	215.33	141.45	356.79
2033	169.09	36.62	100.51	20.27	23.83	205.71	144.62	350.33
2034	159.48	36.43	100.27	21.09	26.22	195.92	147.57	343.49
2035	149.82	36.19	99.81	21.88	28.58	186.02	150.26	336.28
2036	140.16	35.88	99.14	22.62	31.21	176.05	152.98	329.03
2037	130.56	35.52	98.23	23.31	34.01	166.08	155.54	321.62
2038	121.07	35.09	97.06	23.92	37.16	156.15	158.14	314.29
2039	111.74	34.57	95.68	24.49	40.23	146.31	160.39	306.71
2040	102.63	34.00	94.10	24.97	43.49	136.63	162.55	299.18
2041	93.80	33.35	92.33	25.43	47.07	127.15	164.82	291.97
2042	85.28	32.65	90.37	25.82	50.60	117.93	166.79	284.72
2043	77.13	31.87	88.23	26.13	54.55	109.00	168.91	277.91
2044	69.38	31.03	85.93	26.41	58.38	100.41	170.71	271.12
2045	62.06	30.13	83.47	26.55	62.63	92.19	172.65	264.84

Table 13
Additional Projection Details — Benefit Payments Including Administrative Expenses
($ in Millions)

Valuation Date June 30	Current Inactives: Retirees & Beneficiaries	Current Inactives: Deferreds	Current Actives: Tier 1	Current Actives: Current Tier 2	Current Actives: Future Tier 2	Grand Totals: Current Retirees, Beneficiaries & Deferreds	Grand Totals: Actives	Grand Totals: Total
2017	$ 22.71	$ 0.99	$ 0.96	$ 0.29	$ -	$ 23.70	$ 1.24	$ 24.94
2018	22.86	1.16	1.51	0.23	0.03	24.02	1.77	25.79
2019	22.98	1.31	1.96	0.24	0.05	24.29	2.25	26.54
2020	23.07	1.45	2.36	0.19	0.09	24.52	2.64	27.16
2021	23.13	1.57	2.85	0.20	0.13	24.70	3.17	27.88
2022	23.16	1.68	3.24	0.19	0.16	24.84	3.59	28.43
2023	23.14	1.84	3.68	0.21	0.21	24.98	4.10	29.08
2024	23.08	1.95	4.08	0.21	0.24	25.03	4.53	29.55
2025	22.98	2.02	4.44	0.23	0.27	24.99	4.94	29.93
2026	22.83	2.12	4.77	0.25	0.29	24.95	5.31	30.26
2027	22.63	2.19	5.14	0.28	0.31	24.82	5.73	30.54
2028	22.38	2.25	5.53	0.30	0.34	24.63	6.18	30.81
2029	22.08	2.30	5.81	0.34	0.36	24.38	6.52	30.90
2030	21.73	2.38	6.06	0.37	0.39	24.11	6.83	30.94
2031	21.32	2.43	6.29	0.41	0.43	23.76	7.13	30.88
2032	20.86	2.53	6.50	0.47	0.46	23.39	7.42	30.81
2033	20.34	2.57	6.81	0.53	0.50	22.91	7.84	30.76
2034	19.77	2.61	7.00	0.62	0.55	22.38	8.16	30.54
2035	19.14	2.66	7.16	0.71	0.60	21.80	8.47	30.27
2036	18.45	2.70	7.36	0.82	0.66	21.15	8.84	29.99
2037	17.72	2.74	7.55	0.93	0.73	20.46	9.21	29.66
2038	16.94	2.79	7.68	1.01	0.81	19.72	9.50	29.22
2039	16.11	2.82	7.78	1.13	0.89	18.93	9.81	28.74
2040	15.26	2.84	7.86	1.19	0.99	18.10	10.04	28.14
2041	14.37	2.87	7.93	1.28	1.10	17.23	10.31	27.54
2042	13.46	2.88	7.97	1.38	1.21	16.34	10.56	26.91
2043	12.54	2.90	7.99	1.44	1.34	15.44	10.77	26.21
2044	11.62	2.90	8.00	1.58	1.47	14.52	11.05	25.57
2045	10.70	2.90	7.98	1.67	1.63	13.60	11.27	24.87

Table 14
Additional Projection Details — Active Population, Covered Payroll, Employee Contributions and Normal Costs
($ in Millions)

Valuation Date June 30	Tier 1 Active Members Population	Tier 1 Covered Payroll	Tier 1 Employee Contributions	Tier 1 Normal Cost	Tier 2 Active Members Population	Tier 2 Covered Payroll	Tier 2 Employee Contributions	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
2017	80	$ 6.53	$ 0.75	$ 3.09	55	$ 3.91	$ 0.45	$ 0.74	0	$ -	$ -	$ 0.00
2018	67	5.69	0.65	2.82	50	3.75	0.43	0.74	9	0.76	0.09	0.11
2019	59	5.15	0.59	2.53	47	3.60	0.41	0.74	15	1.27	0.15	0.20
2020	51	4.59	0.53	2.25	43	3.44	0.40	0.71	20	1.80	0.21	0.28
2021	43	4.06	0.47	1.98	40	3.25	0.37	0.70	26	2.39	0.27	0.38
2022	37	3.57	0.41	1.74	37	3.11	0.36	0.68	30	2.86	0.33	0.47
2023	32	3.15	0.36	1.52	34	2.97	0.34	0.65	34	3.35	0.39	0.56
2024	27	2.74	0.32	1.33	31	2.80	0.32	0.62	38	3.83	0.44	0.66
2025	23	2.40	0.28	1.16	29	2.66	0.31	0.61	42	4.30	0.49	0.76
2026	19	2.11	0.24	1.01	27	2.56	0.29	0.59	45	4.78	0.55	0.85
2027	16	1.84	0.21	0.88	25	2.45	0.28	0.57	47	5.12	0.59	0.93
2028	14	1.61	0.19	0.76	23	2.33	0.27	0.55	49	5.55	0.64	1.03
2029	12	1.40	0.16	0.65	21	2.22	0.25	0.53	51	5.94	0.68	1.11
2030	10	1.21	0.14	0.55	20	2.11	0.24	0.50	53	6.31	0.73	1.20
2031	8	1.05	0.12	0.47	18	1.99	0.23	0.47	55	6.76	0.78	1.29
2032	7	0.90	0.10	0.41	16	1.87	0.21	0.44	56	7.08	0.81	1.37
2033	6	0.79	0.09	0.35	15	1.73	0.20	0.41	57	7.51	0.86	1.46
2034	5	0.68	0.08	0.30	13	1.61	0.19	0.37	59	7.92	0.91	1.55
2035	4	0.58	0.07	0.25	12	1.47	0.17	0.34	59	8.21	0.94	1.62
2036	3	0.50	0.06	0.21	11	1.35	0.15	0.30	60	8.60	0.99	1.70
2037	3	0.42	0.05	0.18	9	1.22	0.14	0.27	61	8.99	1.03	1.79
2038	2	0.35	0.04	0.14	8	1.09	0.13	0.24	63	9.52	1.10	1.89
2039	2	0.29	0.03	0.11	7	1.00	0.11	0.21	63	9.87	1.13	1.97
2040	1	0.23	0.03	0.09	6	0.87	0.10	0.19	64	10.24	1.18	2.05
2041	1	0.19	0.02	0.07	5	0.79	0.09	0.16	65	10.72	1.23	2.14
2042	1	0.15	0.02	0.06	5	0.69	0.08	0.14	65	11.05	1.27	2.21
2043	1	0.12	0.01	0.04	4	0.60	0.07	0.12	66	11.54	1.33	2.31
2044	1	0.10	0.01	0.04	3	0.53	0.06	0.10	65	11.84	1.36	2.37
2045	0	0.08	0.01	0.03	3	0.45	0.05	0.09	66	12.32	1.42	2.47