

# Judges' Retirement System of Illinois

Annual Actuarial Valuation as of June 30, 2017



October 19, 2017

Board of Trustees  
Judges' Retirement System of Illinois  
Springfield, IL

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

The State's contribution rate has been determined under Illinois statutes, in particular under 40 ILCS Section 5/18-131. Information required by GASB Statement 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 Statement 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 Statement Nos. 67 and 68, that finances the normal cost of the plan as well as an amortization payment that seeks to pay off any unfunded accrued liability over a closed period of 25 years.

The actuarial valuation was based on the provisions of JRS in effect as of June 30, 2017, data on the JRS membership and information on the asset value of the trust fund as of that date. The actuarial valuation was based upon information furnished by JRS 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 or completeness of the information provided by JRS.

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, JRS 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 JRS 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.

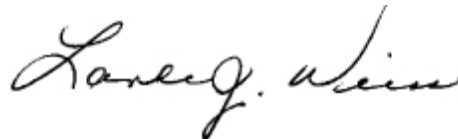
Respectfully submitted,

**Gabriel, Roeder, Smith & Company**



Alex Rivera, FSA, EA, MAAA, FCA  
Senior Consultant

AR/LW:rg



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

## Table of Contents

Page

### Certification Letter

#### Section A - Summary of Actuarial Valuation Results

Introduction	1
Changes Since Last Valuation	1
Key Valuation Results	3
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	4
Phase-in Schedule of Contribution Rate Variances Due to Change in Actuarial Assumptions	5
Development of the Actuarial Value of Assets Based Upon the Market Value of Assets	7
Development of the Actuarial Value of Assets Based Upon the Hypothetical Value of Assets	8
State Contribution Requirement for Fiscal Year 2019	9
Method of Calculation for Appropriation Requirements	10
GASB: Financial Accounting Information	11
Observations on Actuarial Funding and Statutory Funding	13

#### Section B - Funding Results

##### Tables

1	Results of Actuarial Valuation as of June 30, 2017	16
2	Analysis of Change in Unfunded Accrued Actuarial Liability	18
3	Analysis of Financial Gains and Losses in Unfunded Actuarial Liability for Fiscal Year Ended June 30, 2017	19
4a	28-year Projection under P.A. 88-0593, P.A. 94-0004, P.A. 96-0043 and P.A. 100-0023	20
4b	28-year Projection under P.A. 88-0593, P.A. 93-0002, P.A. 94-0004, P.A. 96-0043 and P.A. 100-0023	22
4c	28-year Projection under P.A. 88-0593, P.A. 94-0004, P.A. 96-0043 and P.A. 100-0023 with recognition of deferred gains and losses in the actuarial value of assets	24
4d	28-year Projection under P.A. 88-0593, P.A. 93-0002, P.A. 94-0004, P.A. 96-0043 and P.A. 100-0023 with recognition of deferred gains and losses in the actuarial value of assets	26

#### Section C - Fund Assets

5	Statement of Fiduciary Net Position	28
6	Statement of Changes in Fiduciary Net Position	29
7	Development of the Actuarial Value of Assets - Actual Assets	30
8	Development of the Actuarial Value of Assets - Hypothetical Assets	31

#### Section D - Participant Data

9	Active Age and Service Distribution	32
10	Retirees and Beneficiaries by Type of Benefit Being Paid	33

#### Section E - Actuarial Methods and Assumptions

34

#### Section F - Summary of Plan Provisions

42

#### Section G - Glossary of Terms

46

#### Section H - Additional Projection Details

11	28-year Projection of Actuarial Accrued Liabilities	49
12	28-year Projection of the Present Value of Future Benefits	50
13	28-year Projection of Benefit Payments Including Administrative Expenses	51
14	28-year Projection of Actives Population, Covered Payroll, Employee Contributions and Normal Costs	52

## SECTION A

---

### SUMMARY OF ACTUARIAL VALUATION RESULTS

# Summary of the Actuarial Valuation

---

## Introduction

The law governing the Judges' Retirement System of Illinois ("JRS" 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 5/18-152 (2))."

Gabriel, Roeder, Smith & Company 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, actuarial valuation. The 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 JRS 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 JRS 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, JRS 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
<b>Estimated Statutory Contributions:</b>		
· Annual Amount <sup>a</sup>	\$ 140,469,000	\$ 135,962,000
· Percentage of Projected Capped Payroll for Fiscal Year	88.128%	84.667%
<b>Actuarially Determined Contribution<sup>b</sup> (ADC):</b>		
· Annual Amount	\$ 169,632,403	\$ 168,056,916
· Percentage of Projected Capped Payroll for Fiscal Year	106.425%	104.653%
<b>Membership</b>		
· Number of		
- Active Members	953	947
- Members Receiving Payments	1,175	1,144
- Inactive Members	23	25
- Total	2,151	2,116
· Covered Uncapped Payroll Provided by System	\$ 182,235,791	\$ 177,991,075
· Projected Capped Payroll For Fiscal Year	\$ 159,391,536	\$ 160,584,366
· Annualized Benefit Payments	\$ 143,326,290	\$ 134,584,950
<b>Assets</b>		
· Market Value of Assets (MVA)	\$ 941,803,532	\$ 840,288,860
· Actuarial Value of Assets (AVA)	\$ 942,988,992	\$ 870,892,960
· Return on MVA	11.61%	-0.77%
· Return on AVA	7.83%	6.64%
· Ratio – AVA to MVA	100.13%	103.64%
<b>Actuarial Information</b>		
· Employer Normal Cost Amount	\$ 40,084,816	\$ 42,016,957
· Actuarial Accrued Liability (AAL)	\$ 2,649,258,572	\$ 2,546,449,654
· Unfunded Actuarial Accrued Liability (UAAL)	\$ 1,706,269,580	\$ 1,675,556,694
· Funded Ratio based on AVA	35.59%	34.20%
· UAAL as % of Covered Uncapped Payroll	936.30%	941.37%
· Funded Ratio based on MVA	35.55%	33.00%

<sup>a</sup> Fiscal year 2018 estimated statutory contribution was recertified, pursuant to P.A. 100-0023.

<sup>b</sup> For fiscal years ending on and after June 30, 2017, the Board adopted a recommended policy used to develop the Actuarially Determined Contribution (ADC) as defined in GASB Statements Nos. 67 and 68. The policy adopted by the Board calculates the ADC as the Normal Cost plus a 25-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability. As of June 30, 2017, the remaining amortization period is 23 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 \$29,189,400 for fiscal year 2006 and \$35,236,800 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 3.75 percent;
- The mortality table was updated from the UP-1994 Mortality table to RP-2000 Combined Healthy Mortality table projected to 2015 and setback 3 years for males and 2 years for females for post-retirement mortality;
- Lowered the salary increase assumption; and
- Eliminated the disability assumption.

The above actuarial assumption changes increased the fiscal year 2015 State contribution rate as percentage of projected capped payroll from 76.115 percent to 79.961 percent, or 3.846 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%	3.077%
2016	40%	60%	2.308%
2017	60%	40%	1.538%
<b>2018</b>	<b>80%</b>	<b>20%</b>	<b>0.769%</b>
<b>2019</b>	<b>100%</b>	<b>0%</b>	<b>0.000%</b>

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 3.75 percent to 3.00 percent;
- Lowered the salary increase assumption;
- Decreased 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.

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

---

The preceding actuarial assumption changes increased the fiscal year 2018 State contribution rate as a percentage of projected capped payroll from 82.414 percent to 91.395 percent, or 8.981 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%	7.185%
2019	40%	60%	5.389%
2020	60%	40%	3.592%
2021	80%	20%	1.796%
2022	100%	0%	0.000%

The overall phase-in of State contribution rate increases due to actuarial assumption changes resulting from experience reviews for the periods from July 1, 2006, to June 30, 2012, and 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%	7.954%
2019	40%	60%	5.389%
2020	60%	40%	3.592%
2021	80%	20%	1.796%
2022	100%	0%	0.000%

As a result, the fiscal year 2018 State contribution was recertified from 91.395 percent to 84.667 percent, as a level percentage of capped payroll, and from \$146,766,000 to \$135,962,000, 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	\$ 840,288,860
2. Actual State Contribution Amount	131,334,000
3. Employee Contribution Amount	14,770,467
4. Benefit Payouts & Refunds	(141,471,869)
5. Administrative Expenses	(914,405)
6. Investment Income	97,796,479
7. Market Value of Assets 6/30/2017	941,803,532
8. Expected Investment Return at 6.75%	56,842,938
9. Investment Gain/(Loss) Current Year	40,953,541
10. Deferred Investment Gains and (Losses) All Years	(1,185,460)
11. Actuarial Value of Assets 6/30/2017 (7. - 10.)	\$ 942,988,992

## 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 was deposited July 1, 2003.

1. Hypothetical Value of Assets 6/30/2016	\$ 604,871,953
2. State Contribution Amount <sup>a</sup>	148,164,195
3. Employee Contribution Amount	14,770,467
4. Benefit Payouts & Refunds	(141,471,869)
5. Administrative Expenses	(914,405)
6. Investment Income <sup>b</sup>	71,385,721
7. Hypothetical Value of Assets 6/30/2017	696,806,062
8. Expected Investment Return at 6.75%	41,511,041
9. Investment Gain/(Loss) Current Year	29,874,680
10. Deferred Investment Gains and (Losses) All Years	(644,919)
11. Hypothetical Actuarial Value of Assets 6/30/2017 (7. - 10.)	\$ 697,450,981

<sup>a</sup> Represents FY 2017 no POB basic contribution. This amount was determined as part of the June 30, 2015, actuarial 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.

<sup>b</sup> Investment income assumes hypothetical value of assets earns the Fund's actual rate of return for fiscal year 2017 of 11.61 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 follows:

Fiscal Year Ending June 30,	Base Contribution Rate	Assumed Capped Payroll	Total Required Contribution
2018	84.667%	\$160,584,000	\$135,962,000
2019	88.128%	159,392,000	140,469,000
2020	89.709%	159,778,000	143,335,000
2021	91.995%	160,007,000	147,198,000
2022	94.102%	160,385,000	150,925,000
2023	93.556%	161,166,000	150,780,000
2024	93.556%	162,008,000	151,568,000
2025	93.556%	163,019,000	152,514,000
2026	93.514%	164,138,000	153,492,000
2027	93.363%	165,535,000	154,548,000
2028	92.967%	167,129,000	155,375,000

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 on and after 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 a valuation in each of those years was performed. At each projected valuation, an additional 20 percent of the investment gains and losses are recognized. The market value of assets at June 30, 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 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 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 \$160,584,000 for fiscal year 2018.
- Total employer contributions of \$135,962,000 for fiscal year 2018.
- Administrative expenses of \$966,100 for fiscal year 2018, as provided by the System.
- New entrants whose average age is 47.29 and average uncapped pay is \$191,223 (2017 dollars) and average capped pay is \$117,213 (2017 dollars). The active member population is assumed to remain level at 953 for all years of the 28-Year projection.
- Projected benefits for members hired on or after January 1, 2011, are based on the new provisions established in P.A. 96-0889.

The average increase in total uncapped payroll for the 28-year projection period is approximately 3.00 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 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 on the assumption that:

- The ratio of total assets to total actuarial liabilities will be 90 percent by June 30, 2045.
- The actuarial value of assets shall be assumed to earn a rate of return equal to the System's actuarially assumed rate of return.
- The contribution rates for fiscal years 2010 through 2033 will not be uniform, but the rate for any one of these years will be the minimum of: the difference between the "without-GOB" contribution and the debt service, and the underlying formula rate as determined by Public Act 88-0593.
- The contribution rate for fiscal year 2018 will be 84.667 percent based on expected total employer contributions of \$135,962,000.
- 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 6.

The certified FY 2019 contribution rate of 88.128 percent is applied to expected FY 2019 capped payroll. The resulting amount of \$140,469,000 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) 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. However, 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 25-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability as of June 30, 2015. The remaining amortization period as of the June 30, 2017, actuarial valuation is 23 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, actuarial 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	\$ 40,084,816	\$ 42,016,957
2. Initial amount to amortize the unfunded liability over a 25-year closed-period, beginning July 1, 2015, as a level percentage of capped payroll	<u>129,547,587</u>	<u>126,039,959</u>
3. ADC [(1) + (2)]	\$ 169,632,403	\$ 168,056,916
4. Projected capped payroll for fiscal year	\$ 159,391,536	\$ 160,584,366
5. ADC as a percentage of projected capped payroll	106.425%	104.653%
6. Estimated statutory contribution <sup>a</sup>	\$ 140,469,000	\$ 135,962,000
7. Estimated statutory contribution as a percentage of projected capped payroll	88.128%	84.667%
8. Estimated statutory contribution as a percentage of ADC [(6) / (3)]	82.808%	80.902%

<sup>a</sup>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.

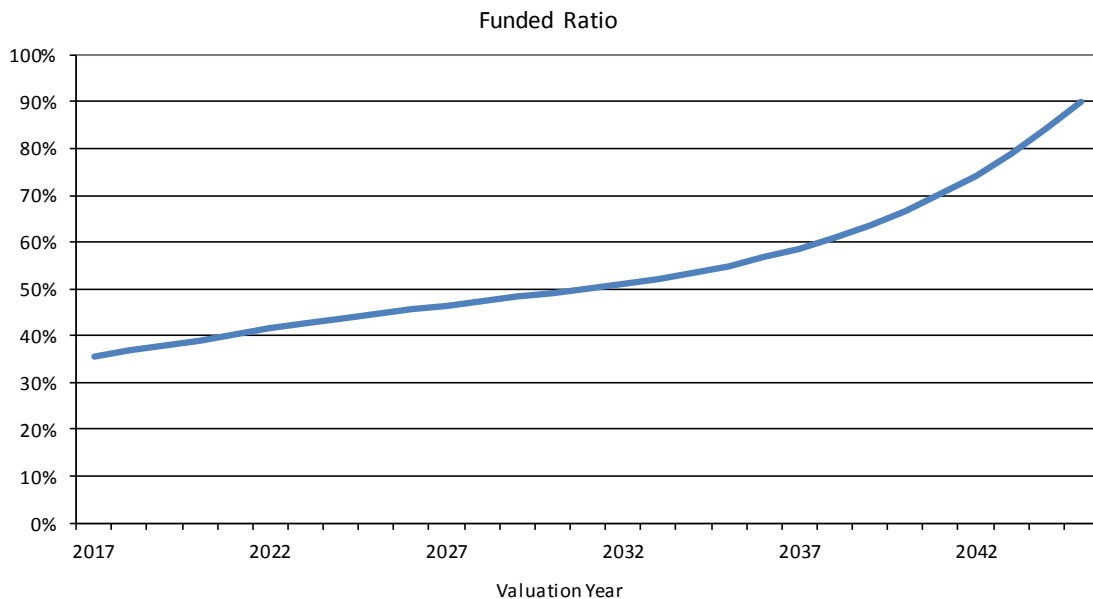
Due to the single equivalent discount rate and shorter amortization periods required under GASB Statements Nos. 67 and 68, the liabilities and pension expense will be higher and more volatile than under the prior standards. The measurements required under GASB Statements Nos. 67 and 68 are provided in 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 prior rules established by GASB Statements Nos. 25 and 27, this expense requirement is called the Annual Required Contribution. The ARC is the sum of the normal cost and amortization of the unfunded accrued liability and represents the annual employer contributions that are projected to finance benefits for current plan members over a period not to exceed 30 years. GASB Statements Nos. 67 and 68, which replace GASB Statements Nos. 25 and 27, no longer use the ARC. However, measuring the Statutory Contribution against a policy such as the ARC helps evaluate the funding adequacy of the current statutory funding method. Thus, the Board adopted a policy to calculate the Actuarially Determined Contribution. Under this funding policy, the ADC is calculated as the Normal Cost plus a 25-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability as of June 30, 2015.

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

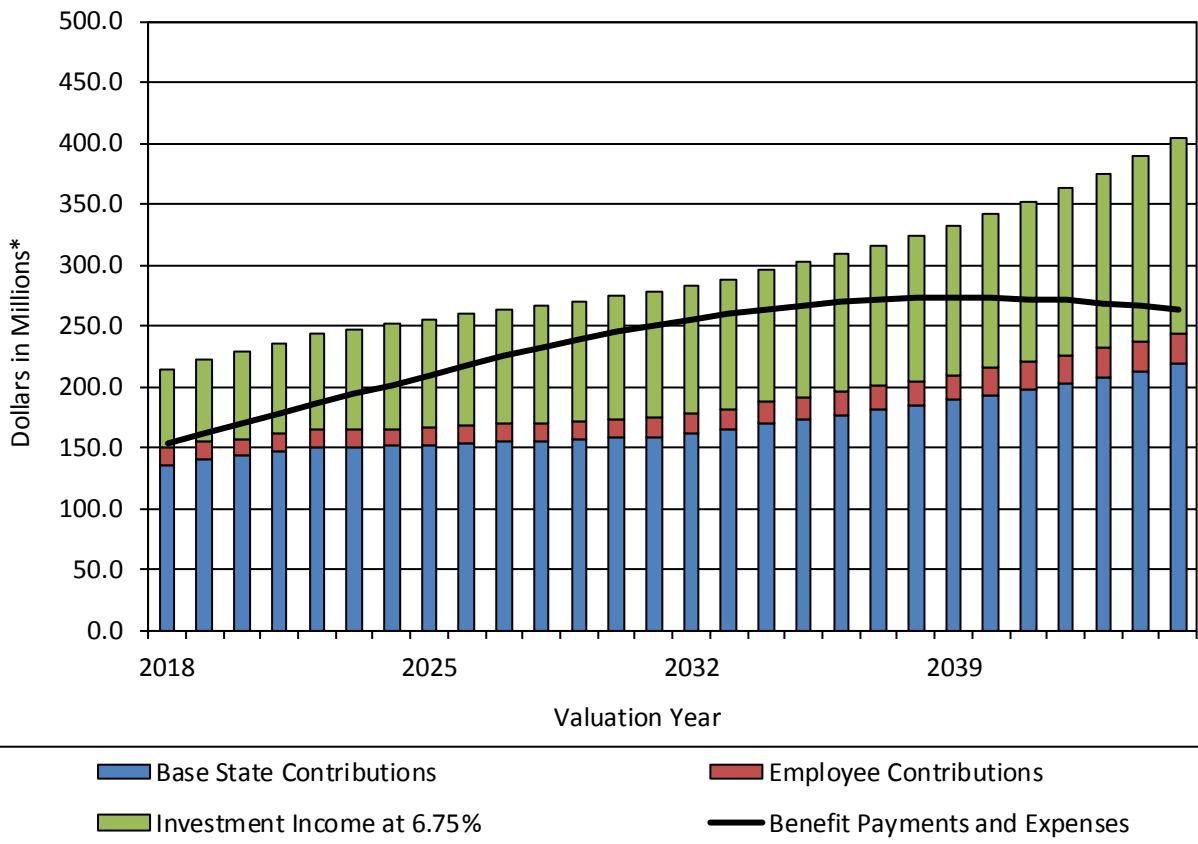
The statutory funding policy adopted for JRS provides for level percent of pay funding that produces a funding target of 90 percent by 2045, assuming an open group projection. The following graph shows the projected funded ratio. A key observation is that the funded ratio does not grow markedly until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



# 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, benefits exceed State and employee contributions. From 2018 to 2032, the percentage of investment income needed to pay ongoing benefits increases from approximately 6.0 percent to 74.60 percent. This implies that a lower level of investment income is projected to be available for potential asset growth. After 2032, the percentage of investment income needed to pay ongoing benefits is projected to decrease from approximately 74.2 percent in 2033 to 12.2 percent in 2045, which is projected to cause assets to grow at a higher rate.

Comparison of Cash Flows



*\*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 JRS funded ratio at June 30, 2017, is only 36 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;

## Observations on Actuarial Funding and Statutory Funding

---

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 March 27, 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 JRS' normal cost and amortizing the unfunded liability over a 25-year closed-period, beginning July 1, 2015, as a level percent of capped payroll.

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

## **SECTION B**

---

### **FUNDING RESULTS**

## Table 1

### Results of Actuarial Valuation as of June 30, 2017

---

1	Number of Members		
	a. Active		953
	b. Inactive:		
	i. Eligible for deferred vested pension benefits		11
	ii. Eligible for return of contributions only		12
	c. Current Benefit Recipients:		
	i. Retirement annuities		852
	ii. Disability annuities		1
	iii. Survivor annuities		322
	d. Total		2,151
2	Covered Uncapped Payroll as of Valuation Date	\$	182,235,791
3	Annualized Benefit Payments Currently Being Made		
	a. Retirement	\$	119,003,897
	b. Disability		97,001
	c. Survivor		24,225,392
	d. Total	\$	143,326,290
4	Actuarial Liability—Annuitants		
	a. Current Benefit Recipients:		
	i. Retirement annuities	\$	1,653,201,161
	ii. Disability annuities		1,852,208
	iii. Survivor annuities		243,761,952
	b. Total	\$	1,898,815,321

## Table 1 (continued)

### Results of Actuarial Valuation as of June 30, 2017

5	Actuarial Liability—Inactive Members		\$ 9,268,759
		Normal Cost	Actuarial Liability
6	Active Members		
	a. Pension Benefits	\$ 38,135,031	\$ 536,708,122
	b. Cost-of-Living Adjustments	13,244,682	184,712,550
	c. Death Benefits	1,302,977	16,171,405
	d. Disability	-	-
	e. Withdrawal	423,897	3,582,415
	f. Expenses	966,100	-
	g. Total	\$ 54,072,687	\$ 741,174,492
7	Total Actuarial Liability (4 + 5 + 6)		\$ 2,649,258,572
8	Market Value of Assets (MVA)		\$ 941,803,532
9	Unfunded Actuarial Liability Based on MVA (7 – 8)		\$ 1,707,455,040
10	Funded Percentage Based on MVA (8 ÷ 7)		35.55%
11	Actuarial Value of Assets (AVA)		\$ 942,988,992
12	Unfunded Actuarial Liability Based on AVA (7 – 11)		\$ 1,706,269,580
13	Funded Percentage Based on AVA (11 ÷ 7) <sup>a</sup>		35.59%
14	Total Normal Cost	\$ 54,072,687	
15	Employee Contributions	\$ 13,987,871	
16	Annual Employer Normal Cost (% uncapped payroll)	\$ 40,084,816 22.00%	

<sup>a</sup> 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 \$30,712,886 was due to the following:

1	UAAL at 06/30/2016	\$ 1,675,556,694
2	Contributions	
	a. Contributions due (Normal Cost plus Interest on UAAL)	
	i interest on 1)	\$ 113,100,077
	ii members contributions	14,770,467
	iii employer normal cost	42,016,957
	iv interest on ii and iii	1,885,281
	v total due	\$ 171,772,782
	b. Contributions paid (Actual)	
	i member contributions	\$ 14,770,467
	ii state agencies	131,334,000
	iii interest on i and ii	4,850,510
	iv total paid	\$ 150,954,977
	c. Expected increase in UAAL	\$ 20,817,805
3	Expected UAAL at 06/30/2017	\$ 1,696,374,499
4	(Gains)/Losses	
	a. investment income	\$ (9,469,124)
	b. demographic	19,364,205
	c. total	\$ 9,895,081
5	Plan Provision Changes	\$ -
6	Assumption Changes	\$ -
7	Total Change in UAAL	\$ 30,712,886
8	UAAL at 06/30/2017	\$ 1,706,269,580



### 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	\$ 16,045,368	0.63%
b. Incidence of Disability	582,268	0.02%
c. In-Service Mortality	(26,539)	0.00%
d. Retiree Mortality and Other	5,500,066	0.22%
e. Salary Increases	(8,300,358)	-0.33%
f. Terminations	(165,944)	-0.01%
g. Investment	(9,469,124)	-0.37%
h. New Entrant Liability	2,589,600	0.10%
i. Other	3,139,744	0.12%
j. Total Actuarial (Gain)/Loss	\$ 9,895,081	0.38%
2 Plan Provision Changes	\$ -	0.00%
3 Assumption Changes	\$ -	0.00%
4 Contribution (Excess)/Shortfall <sup>a</sup>	\$ 20,817,805	0.82%
5 Total Financial (Gain)/Loss	\$ 30,712,886	1.20%

<sup>a</sup>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				State Contribution		Total Expenses
							Total	Employee Cont.	Employer Normal Cost	Percent of Pay	Amount	Percent of Pay	
2018	953	\$2,725.10	\$757.95	\$1,967.15	27.81%	\$160.58	\$54.07	\$13.99	\$40.08	24.96%	\$152.75	95.12%	\$153.74
2019	953	2,797.16	819.94	1,977.22	29.31%	159.39	52.88	13.96	38.92	24.42%	157.69	98.93%	161.17
2020	953	2,863.68	880.75	1,982.93	30.76%	159.78	51.14	13.84	37.30	23.34%	160.94	100.73%	169.49
2021	953	2,924.11	940.42	1,983.69	32.16%	160.01	49.16	13.93	35.23	22.02%	164.05	102.52%	177.76
2022	953	2,979.11	999.28	1,979.83	33.54%	160.38	47.88	13.89	33.99	21.19%	167.32	104.32%	185.68
2023	953	3,027.69	1,054.53	1,973.16	34.83%	161.17	46.24	13.91	32.33	20.06%	168.13	104.32%	193.85
2024	953	3,070.00	1,106.33	1,963.67	36.04%	162.01	45.04	14.12	30.92	19.09%	169.01	104.32%	201.88
2025	953	3,105.22	1,154.44	1,950.78	37.18%	163.02	43.59	14.29	29.30	17.97%	170.06	104.32%	210.07
2026	953	3,133.91	1,199.40	1,934.51	38.27%	164.14	42.61	14.57	28.04	17.08%	171.23	104.32%	217.71
2027	953	3,155.78	1,241.29	1,914.49	39.33%	165.53	41.61	14.68	26.93	16.27%	172.69	104.32%	225.18
2028	953	3,171.13	1,280.46	1,890.67	40.38%	167.13	40.85	14.63	26.22	15.69%	174.35	104.32%	232.17
2029	953	3,180.09	1,317.74	1,862.35	41.44%	169.06	40.29	14.86	25.43	15.04%	176.37	104.32%	238.80
2030	953	3,182.76	1,353.79	1,828.97	42.54%	171.19	39.86	15.25	24.61	14.38%	178.59	104.32%	245.03
2031	953	3,179.98	1,389.50	1,790.48	43.70%	173.54	39.79	15.49	24.30	14.00%	181.04	104.32%	250.41
2032	953	3,171.36	1,425.74	1,745.62	44.96%	176.29	39.64	16.13	23.51	13.34%	183.91	104.32%	255.74

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)**

Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Annual Normal Cost				State Contribution		Total Expenses
							Total	Employee Cont.	Normal Cost	Percent of Pay	Amount	Percent of Pay	
2033	953	\$3,157.62	\$1,463.47	\$1,694.15	46.35%	\$179.09	\$39.79	\$16.81	\$22.98	12.83%	\$186.83	104.32%	\$260.27
2034	953	3,139.16	1,503.81	1,635.35	47.90%	182.23	40.01	17.50	22.51	12.35%	190.10	104.32%	264.17
2035	953	3,116.83	1,548.16	1,568.67	49.67%	185.63	40.50	18.24	22.26	11.99%	193.65	104.32%	267.20
2036	953	3,090.99	1,597.70	1,493.29	51.69%	189.39	41.06	18.92	22.14	11.69%	197.57	104.32%	269.70
2037	953	3,062.08	1,653.58	1,408.50	54.00%	193.33	41.69	19.63	22.06	11.41%	201.68	104.32%	271.61
2038	953	3,030.78	1,717.25	1,313.53	56.66%	197.48	42.44	20.35	22.09	11.19%	206.02	104.32%	272.78
2039	953	2,997.70	1,790.26	1,207.44	59.72%	201.95	43.24	21.06	22.18	10.98%	210.67	104.32%	273.26
2040	953	2,963.35	1,874.10	1,089.25	63.24%	206.68	44.10	21.76	22.34	10.81%	215.62	104.32%	273.20
2041	953	2,928.63	1,970.55	958.08	67.29%	211.58	45.09	22.48	22.61	10.69%	220.72	104.32%	272.28
2042	953	2,894.00	2,081.30	812.70	71.92%	216.81	46.07	23.19	22.88	10.55%	226.18	104.32%	270.92
2043	953	2,860.19	2,208.14	652.05	77.20%	222.20	47.13	23.91	23.22	10.45%	231.80	104.32%	268.91
2044	953	2,827.83	2,352.99	474.84	83.21%	227.86	48.23	24.63	23.60	10.36%	237.71	104.32%	266.41
2045	953	2,797.39	2,517.67	279.72	90.00%	233.74	49.33	25.37	23.96	10.25%	243.84	104.32%	263.55

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)**

Plan Year End 6/30	Actuarial Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Annual Normal Cost					Required State Contribution					
							Employer			(a) Without GOB Cont.	(b) Debt Service	(c)=(a)-(b) Maximum Cont.	(d) Formula Rate With GOB	Minimum of (c) and (d)			
							Total Employee Cont.	Normal Cost	Percent of Pay					Required Cont.	Percent of Pay	Total Expenses	
2018	953	\$2,725.10	\$1,002.72	\$1,722.38	36.80%	\$160.58	\$54.07	\$13.99	\$40.08	24.96%	\$152.75	\$11.93	\$140.82	\$135.96	\$135.96	84.67%	\$153.74
2019	953	2,797.16	1,063.44	1,733.72	38.02%	159.39	52.88	13.96	38.92	24.42%	157.69	12.28	145.41	140.47	140.47	88.13%	161.17
2020	953	2,863.68	1,122.85	1,740.83	39.21%	159.78	51.14	13.84	37.30	23.34%	160.94	13.08	147.86	143.68	143.68	89.92%	169.49
2021	953	2,924.11	1,181.00	1,743.11	40.39%	160.01	49.16	13.93	35.23	22.02%	164.05	13.84	150.21	146.76	146.76	91.72%	177.76
2022	953	2,979.11	1,238.19	1,740.92	41.56%	160.38	47.88	13.89	33.99	21.19%	167.32	14.55	152.77	149.99	149.99	93.52%	185.68
2023	953	3,027.69	1,291.58	1,736.11	42.66%	161.17	46.24	13.91	32.33	20.06%	168.13	15.20	152.93	150.72	150.72	93.52%	193.85
2024	953	3,070.00	1,341.29	1,728.71	43.69%	162.01	45.04	14.12	30.92	19.09%	169.01	16.30	152.71	151.50	151.50	93.52%	201.88
2025	953	3,105.22	1,387.06	1,718.16	44.67%	163.02	43.59	14.29	29.30	17.97%	170.06	17.30	152.76	152.45	152.45	93.52%	210.07
2026	953	3,133.91	1,429.37	1,704.54	45.61%	164.14	42.61	14.57	28.04	17.08%	171.23	17.76	153.47	153.50	153.47	93.50%	217.71
2027	953	3,155.78	1,468.03	1,687.75	46.52%	165.53	41.61	14.68	26.93	16.27%	172.69	18.16	154.53	154.80	154.53	93.35%	225.18
2028	953	3,171.13	1,502.87	1,668.26	47.39%	167.13	40.85	14.63	26.22	15.69%	174.35	18.99	155.36	156.29	155.36	92.96%	232.17
2029	953	3,180.09	1,534.75	1,645.34	48.26%	169.06	40.29	14.86	25.43	15.04%	176.37	19.76	156.61	158.10	156.61	92.63%	238.80
2030	953	3,182.76	1,563.82	1,618.94	49.13%	171.19	39.86	15.25	24.61	14.38%	178.59	20.94	157.65	160.09	157.65	92.09%	245.03
2031	953	3,179.98	1,590.97	1,589.01	50.03%	173.54	39.79	15.49	24.30	14.00%	181.04	22.01	159.03	162.29	159.03	91.64%	250.41
2032	953	3,171.36	1,617.56	1,553.80	51.01%	176.29	39.64	16.13	23.51	13.34%	183.91	22.49	161.42	164.87	161.42	91.56%	255.74

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)**

Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Annual Normal Cost				Required State Contribution						
							Total	Employee Cont.	Normal Cost	Percent of Pay	(a) Without GOB Cont.	(b) Debt Service	(c)=(a)-(b) Maximum Cont.	(d) Formula Rate With GOB	Minimum of (c) and (d)		
															Required Cont.	Percent of Pay	Total Expenses
2033	953	\$3,157.62	\$1,645.07	\$1,512.55	52.10%	\$179.09	\$39.79	\$16.81	\$22.98	12.83%	\$186.83	\$22.43	\$164.40	\$167.48	\$164.40	91.80%	\$260.27
2034	953	3,139.16	1,677.32	1,461.84	53.43%	182.23	40.01	17.50	22.51	12.35%	190.10	0.00	N/A	170.41	170.41	93.52%	264.17
2035	953	3,116.83	1,712.67	1,404.16	54.95%	185.63	40.50	18.24	22.26	11.99%	193.65	0.00	N/A	173.59	173.59	93.52%	267.20
2036	953	3,090.99	1,752.16	1,338.83	56.69%	189.39	41.06	18.92	22.14	11.69%	197.57	0.00	N/A	177.11	177.11	93.52%	269.70
2037	953	3,062.08	1,796.88	1,265.20	58.68%	193.33	41.69	19.63	22.06	11.41%	201.68	0.00	N/A	180.80	180.80	93.52%	271.61
2038	953	3,030.78	1,848.18	1,182.60	60.98%	197.48	42.44	20.35	22.09	11.19%	206.02	0.00	N/A	184.68	184.68	93.52%	272.78
2039	953	2,997.70	1,907.49	1,090.21	63.63%	201.95	43.24	21.06	22.18	10.98%	210.67	0.00	N/A	188.85	188.85	93.52%	273.26
2040	953	2,963.35	1,976.16	987.19	66.69%	206.68	44.10	21.76	22.34	10.81%	215.62	0.00	N/A	193.29	193.29	93.52%	273.20
2041	953	2,928.63	2,055.89	872.74	70.20%	211.58	45.09	22.48	22.61	10.69%	220.72	0.00	N/A	197.86	197.86	93.52%	272.28
2042	953	2,894.00	2,148.19	745.81	74.23%	216.81	46.07	23.19	22.88	10.55%	226.18	0.00	N/A	202.75	202.75	93.52%	270.92
2043	953	2,860.19	2,254.74	605.45	78.83%	222.20	47.13	23.91	23.22	10.45%	231.80	0.00	N/A	207.79	207.79	93.52%	268.91
2044	953	2,827.83	2,377.30	450.53	84.07%	227.86	48.23	24.63	23.60	10.36%	237.71	0.00	N/A	213.09	213.09	93.52%	266.41
2045	953	2,797.39	2,517.52	279.87	90.00%	233.74	49.33	25.37	23.96	10.25%	243.84	0.00	N/A	218.59	218.59	93.52%	263.55

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)**

Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Annual Normal Cost				State Contribution		Total Expenses
							Total	Employee Cont.	Employer Normal Cost	Percent of Pay	Amount	Percent of Pay	
2018	953	\$2,725.10	\$760.43	\$1,964.67	27.90%	\$160.58	\$54.07	\$13.99	\$40.08	24.96%	\$152.75	95.12%	\$153.74
2019	953	2,797.16	816.50	1,980.66	29.19%	159.39	52.88	13.96	38.92	24.42%	157.69	98.93%	161.17
2020	953	2,863.68	873.79	1,989.89	30.51%	159.78	51.14	13.84	37.30	23.34%	160.75	100.61%	169.49
2021	953	2,924.11	939.66	1,984.45	32.13%	160.01	49.16	13.93	35.23	22.02%	164.33	102.70%	177.76
2022	953	2,979.11	999.02	1,980.09	33.53%	160.38	47.88	13.89	33.99	21.19%	167.85	104.66%	185.68
2023	953	3,027.69	1,054.27	1,973.42	34.82%	161.17	46.24	13.91	32.33	20.06%	168.15	104.33%	193.85
2024	953	3,070.00	1,106.08	1,963.92	36.03%	162.01	45.04	14.12	30.92	19.09%	169.03	104.33%	201.88
2025	953	3,105.22	1,154.19	1,951.03	37.17%	163.02	43.59	14.29	29.30	17.97%	170.08	104.33%	210.07
2026	953	3,133.91	1,199.15	1,934.76	38.26%	164.14	42.61	14.57	28.04	17.08%	171.25	104.33%	217.71
2027	953	3,155.78	1,241.04	1,914.74	39.33%	165.53	41.61	14.68	26.93	16.27%	172.71	104.33%	225.18
2028	953	3,171.13	1,280.22	1,890.91	40.37%	167.13	40.85	14.63	26.22	15.69%	174.37	104.33%	232.17
2029	953	3,180.09	1,317.50	1,862.59	41.43%	169.06	40.29	14.86	25.43	15.04%	176.39	104.33%	238.80
2030	953	3,182.76	1,353.56	1,829.20	42.53%	171.19	39.86	15.25	24.61	14.38%	178.60	104.33%	245.03
2031	953	3,179.98	1,389.27	1,790.71	43.69%	173.54	39.79	15.49	24.30	14.00%	181.06	104.33%	250.41
2032	953	3,171.36	1,425.52	1,745.84	44.95%	176.29	39.64	16.13	23.51	13.34%	183.93	104.33%	255.74

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)**

Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Annual Normal Cost				State Contribution		Total Expenses
							Total	Employee Cont.	Normal Cost	Percent of Pay	Amount	Percent of Pay	
2033	953	\$3,157.62	\$1,463.25	\$1,694.37	46.34%	\$179.09	\$39.79	\$16.81	\$22.98	12.83%	\$186.85	104.33%	\$260.27
2034	953	3,139.16	1,503.60	1,635.56	47.90%	182.23	40.01	17.50	22.51	12.35%	190.12	104.33%	264.17
2035	953	3,116.83	1,547.96	1,568.87	49.66%	185.63	40.50	18.24	22.26	11.99%	193.67	104.33%	267.20
2036	953	3,090.99	1,597.50	1,493.49	51.68%	189.39	41.06	18.92	22.14	11.69%	197.60	104.33%	269.70
2037	953	3,062.08	1,653.39	1,408.69	54.00%	193.33	41.69	19.63	22.06	11.41%	201.71	104.33%	271.61
2038	953	3,030.78	1,717.07	1,313.71	56.65%	197.48	42.44	20.35	22.09	11.19%	206.04	104.33%	272.78
2039	953	2,997.70	1,790.10	1,207.60	59.72%	201.95	43.24	21.06	22.18	10.98%	210.70	104.33%	273.26
2040	953	2,963.35	1,873.95	1,089.40	63.24%	206.68	44.10	21.76	22.34	10.81%	215.64	104.33%	273.20
2041	953	2,928.63	1,970.42	958.21	67.28%	211.58	45.09	22.48	22.61	10.69%	220.75	104.33%	272.28
2042	953	2,894.00	2,081.18	812.82	71.91%	216.81	46.07	23.19	22.88	10.55%	226.20	104.33%	270.92
2043	953	2,860.19	2,208.04	652.15	77.20%	222.20	47.13	23.91	23.22	10.45%	231.83	104.33%	268.91
2044	953	2,827.83	2,352.91	474.92	83.21%	227.86	48.23	24.63	23.60	10.36%	237.73	104.33%	266.41
2045	953	2,797.39	2,517.61	279.78	90.00%	233.74	49.33	25.37	23.96	10.25%	243.87	104.33%	263.55

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)**

Plan Year End 6/30	Number Active	Actuarial Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Annual Normal Cost				Required State Contribution					Total Expenses	
							Employee Cont.	Employer Normal Cost	Percent of Pay	Total	(a) Without GOB Cont.	(b) Debt Service	(c)=(a)-(b) Maximum Cont.	(d) Formula Rate With GOB	Minimum of (c) and (d) Required Cont.		Percent of Pay
2018	953	\$2,725.10	\$1,006.81	\$1,718.29	36.95%	\$160.58	\$54.07	\$13.99	\$40.08	24.96%	\$152.75	\$11.93	\$140.82	\$135.96	\$135.96	84.67%	\$153.74
2019	953	2,797.16	1,058.76	1,738.40	37.85%	159.39	52.88	13.96	38.92	24.42%	157.69	12.28	145.41	140.47	140.47	88.13%	161.17
2020	953	2,863.68	1,112.86	1,750.82	38.86%	159.78	51.14	13.84	37.30	23.34%	160.75	13.09	147.66	143.34	143.34	89.71%	169.49
2021	953	2,924.11	1,179.53	1,744.58	40.34%	160.01	49.16	13.93	35.23	22.02%	164.33	13.84	150.49	147.20	147.20	92.00%	177.76
2022	953	2,979.11	1,237.60	1,741.51	41.54%	160.38	47.88	13.89	33.99	21.19%	167.85	14.55	153.30	150.93	150.93	94.10%	185.68
2023	953	3,027.69	1,291.00	1,736.69	42.64%	161.17	46.24	13.91	32.33	20.06%	168.15	15.20	152.95	150.78	150.78	93.56%	193.85
2024	953	3,070.00	1,340.75	1,729.25	43.67%	162.01	45.04	14.12	30.92	19.09%	169.03	16.30	152.73	151.57	151.57	93.56%	201.88
2025	953	3,105.22	1,386.55	1,718.67	44.65%	163.02	43.59	14.29	29.30	17.97%	170.08	17.30	152.78	152.51	152.51	93.56%	210.07
2026	953	3,133.91	1,428.84	1,705.07	45.59%	164.14	42.61	14.57	28.04	17.08%	171.25	17.76	153.49	153.56	153.49	93.51%	217.71
2027	953	3,155.78	1,467.48	1,688.30	46.50%	165.53	41.61	14.68	26.93	16.27%	172.71	18.16	154.55	154.87	154.55	93.36%	225.18
2028	953	3,171.13	1,502.31	1,668.82	47.37%	167.13	40.85	14.63	26.22	15.69%	174.37	19.00	155.37	156.36	155.37	92.97%	232.17
2029	953	3,180.09	1,534.17	1,645.92	48.24%	169.06	40.29	14.86	25.43	15.04%	176.39	19.76	156.63	158.17	156.63	92.65%	238.80
2030	953	3,182.76	1,563.22	1,619.54	49.12%	171.19	39.86	15.25	24.61	14.38%	178.60	20.93	157.67	160.16	157.67	92.11%	245.03
2031	953	3,179.98	1,590.35	1,589.63	50.01%	173.54	39.79	15.49	24.30	14.00%	181.06	22.01	159.05	162.36	159.05	91.65%	250.41
2032	953	3,171.36	1,616.92	1,554.44	50.99%	176.29	39.64	16.13	23.51	13.34%	183.93	22.49	161.44	164.93	161.44	91.57%	255.74

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)**

Plan Year End 6/30	Number Active	Actuarial					Annual Normal Cost					Required State Contribution					Total Expenses
		Accrued Liability	Assets	Unfunded Liability	Funded Ratio	Total Payroll	Employer			(a) Without GOB Cont.	(b) Debt Service	(c)=(a)-(b) Maximum Cont.	(d) Formula Rate With GOB	Minimum of (c) and (d)			
							Employee Cont.	Normal Cost	Percent of Pay					Required Cont.	Percent of Pay		
2033	953	\$3,157.62	\$1,644.41	\$1,513.21	52.08%	\$179.09	\$39.79	\$16.81	\$22.98	12.83%	\$186.85	\$22.43	\$164.42	\$167.55	\$164.42	91.81%	\$260.27
2034	953	3,139.16	1,676.69	1,462.47	53.41%	182.23	40.01	17.50	22.51	12.35%	190.12	0.00	N/A	170.48	170.48	93.56%	264.17
2035	953	3,116.83	1,712.06	1,404.77	54.93%	185.63	40.50	18.24	22.26	11.99%	193.67	0.00	N/A	173.67	173.67	93.56%	267.20
2036	953	3,090.99	1,751.59	1,339.40	56.67%	189.39	41.06	18.92	22.14	11.69%	197.60	0.00	N/A	177.18	177.18	93.56%	269.70
2037	953	3,062.08	1,796.36	1,265.72	58.66%	193.33	41.69	19.63	22.06	11.41%	201.71	0.00	N/A	180.87	180.87	93.56%	271.61
2038	953	3,030.78	1,847.70	1,183.08	60.96%	197.48	42.44	20.35	22.09	11.19%	206.04	0.00	N/A	184.76	184.76	93.56%	272.78
2039	953	2,997.70	1,907.06	1,090.64	63.62%	201.95	43.24	21.06	22.18	10.98%	210.70	0.00	N/A	188.93	188.93	93.56%	273.26
2040	953	2,963.35	1,975.78	987.57	66.67%	206.68	44.10	21.76	22.34	10.81%	215.64	0.00	N/A	193.37	193.37	93.56%	273.20
2041	953	2,928.63	2,055.57	873.06	70.19%	211.58	45.09	22.48	22.61	10.69%	220.75	0.00	N/A	197.95	197.95	93.56%	272.28
2042	953	2,894.00	2,147.94	746.06	74.22%	216.81	46.07	23.19	22.88	10.55%	226.20	0.00	N/A	202.84	202.84	93.56%	270.92
2043	953	2,860.19	2,254.56	605.63	78.83%	222.20	47.13	23.91	23.22	10.45%	231.83	0.00	N/A	207.88	207.88	93.56%	268.91
2044	953	2,827.83	2,377.20	450.63	84.06%	227.86	48.23	24.63	23.60	10.36%	237.73	0.00	N/A	213.18	213.18	93.56%	266.41
2045	953	2,797.39	2,517.51	279.88	90.00%	233.74	49.33	25.37	23.96	10.25%	243.87	0.00	N/A	218.68	218.68	93.56%	263.55

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	\$ 25,657,962	\$ 49,540,595
Receivables:		
Contributions:		
Participants	\$ 25,234	\$ 197
Employer - GRF Fund	16,416,750	5,502,500
Other accounts	181,355	201,284
	<u>\$ 16,623,339</u>	<u>\$ 5,703,981</u>
Investments - held in the Illinois State Board of Investment Commingled Fund at fair value	\$ 899,652,118	\$ 785,176,162
Securities lending collateral with State Treasurer	<u>9,643,000</u>	<u>11,503,000</u>
Property and equipment, net of accumulated depreciation	<u>\$ 55,839</u>	<u>\$ 47,968</u>
Total Assets	\$ 951,632,258	\$ 851,971,706
Liabilities		
Benefits payable	\$ -	\$ -
Refunds payable	47,002	45,945
Administrative expenses payable	138,724	133,901
Participants' deferred service credit accounts	-	-
Due to the State of Illinois	-	-
Securities lending collateral with State Treasurer	<u>9,643,000</u>	<u>11,503,000</u>
Total Liabilities	<u>\$ 9,828,726</u>	<u>\$ 11,682,846</u>
Net assets held in trust for pension benefits	<u>\$ 941,803,532</u>	<u>\$ 840,288,860</u>

## Table 6

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

	2017	2016
Additions:		
Contributions:		
Participants	\$ 14,770,467	\$ 14,962,055
Employing state agencies and appropriations	131,334,000	132,060,000
Total Contributions revenue	<u>\$ 146,104,467</u>	<u>\$ 147,022,055</u>
Investments income:		
Net investments income	\$ 19,881,567	\$ 21,875,864
Interest earned on cash balances	320,522	150,116
Net appreciation in fair value of investments	77,594,390	(28,496,533)
Total Investments income	<u>\$ 97,796,479</u>	<u>\$ (6,470,553)</u>
Other:		
Miscellaneous	\$ -	\$ -
Total Investments income	<u>\$ -</u>	<u>\$ -</u>
Total Additions	\$ 243,900,946	\$ 140,551,502
Deductions:		
Benefits:		
Retirement annuities	\$ 116,611,033	\$ 109,011,315
Survivors' annuities	23,845,754	23,560,481
Disability benefits	40,417	-
Lump-sum benefits	-	-
Total Benefits	<u>\$ 140,497,204</u>	<u>\$ 132,571,796</u>
Refunds	974,665	658,051
Administrative	<u>914,405</u>	<u>942,950</u>
Total Deductions	<u>\$ 142,386,274</u>	<u>\$ 134,172,797</u>
Net increase	<u>\$ 101,514,672</u>	<u>\$ 6,378,705</u>
Net assets held in trust for pension benefits:		
Beginning of year	<u>\$ 840,288,860</u>	<u>\$ 833,910,155</u>
End of year	<u>\$ 941,803,532</u>	<u>\$ 840,288,860</u>

**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	\$ 840,288,860				
(2) Actuarial Value of Assets	870,892,960				
End of Year:					
(3) Market Value of Assets	941,803,532				
(4) Contributions and Disbursements					
(4a) Actual State Contribution Amount	131,334,000				
(4b) Employee Contribution Amount	14,770,467				
(4c) Benefit Payouts & Refunds	(141,471,869)				
(4d) Administrative Expenses	(914,405)				
(4e) Net of Contributions and Disbursements	3,718,193				
(5) Total Investment Income					
=(3)-(1)-(4e)	97,796,479				
(6) Projected Rate of Return		6.75%			
(7) Projected Investment Income					
=(1)x(6)+([1+(6)] <sup>5</sup> -1)x(4e)	56,842,938				
(8) Investment Income in Excess of Projected Income	40,953,541				
(9) Excess Investment Income Recognized					
This Year (5-year recognition)					
(9a) From This Year	\$ 8,190,708				
(9b) From One Year Ago	(13,057,276)	\$ 8,190,708			
(9c) From Two Years Ago	(3,812,977)	(13,057,276)	\$ 8,190,708		
(9d) From Three Years Ago	12,849,488	(3,812,977)	(13,057,276)	\$ 8,190,708	
(9e) From Four Years Ago	7,364,961	12,849,487	(3,812,976)	(13,057,278)	\$ 8,190,709
(9f) Total Recognized Investment Gain	11,534,904	4,169,942	(8,679,544)	(4,866,570)	8,190,709
(10) Change in Actuarial Value of Assets					
=(4e)+(7)+(9f)	\$ 72,096,035				
End of Year:					
<b>(3) Market Value of Assets</b>	<b>\$ 941,803,532</b>				
<b>(11) Actuarial Value of Assets</b>					
= <b>(2)+(10)</b>	<b>\$ 942,988,995</b>				

**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	\$ 604,871,953				
(2) Hypothetical Actuarial Value of Assets	628,212,131				
End of Year:					
(3) Hypothetical Value of Assets	696,806,062				
(4) Contributions and Disbursements					
(4a) State Contribution Amount <sup>a</sup>	148,164,195				
(4b) Employee Contribution Amount	14,770,467				
(4c) Benefit Payouts & Refunds	(141,471,869)				
(4d) Administrative Expenses	(914,405)				
(4e) Net of Contributions and Disbursements	20,548,388				
(5) Total Investment Income <sup>b</sup>					
=(3)-(1)-(4e)	71,385,721				
(6) Projected Rate of Return	6.75%				
(7) Projected Investment Income					
=(1)x(6)+[(1+(6)) <sup>5</sup> -1]x(4e)	41,511,041				
(8) Investment Income in Excess of Projected Income	29,874,680				
(9) Excess Investment Income Recognized <sup>c</sup>					
This Year (5-year recognition)					
(9a) From This Year	\$ 5,974,936				
(9b) From One Year Ago	(9,246,311)	\$ 5,974,936			
(9c) From Two Years Ago	(2,602,384)	(9,246,311)	\$ 5,974,936		
(9d) From Three Years Ago	8,399,036	(2,602,384)	(9,246,311)	\$ 5,974,936	
(9e) From Four Years Ago	4,654,144	8,399,036	(2,602,384)	(9,246,309)	\$ 5,974,936
(9f) Total Recognized Investment Gain	7,179,421	2,525,277	(5,873,759)	(3,271,373)	5,974,936
(10) Change in Hypothetical Actuarial Value of Assets					
=(4e)+(7)+(9f)	\$ 69,238,850				
End of Year:					
<b>(3) Hypothetical Market Value of Assets</b>	<b>\$ 696,806,062</b>				
<b>(11) Hypothetical Actuarial Value of Assets</b>					
= <b>(2)+(10)</b>	<b>\$ 697,450,981</b>				

<sup>a</sup> 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.

<sup>b</sup> Investment income assumes hypothetical value of assets earns the Fund's actual rate of return for fiscal year 2017 of 11.61 percent.

## SECTION D

---

### **PARTICIPANT DATA**

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

Age Group	Years of Service									Total	Percentage of Total	
	0-1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35&Up			
Under 20												
20-24												
25-29												
30-34		1								1	1%	
35-39		10	1							11	1%	
40-44	3	20	6							29	3%	
45-49	5	40	37	9	2					93	10%	
50-54	2	47	57	44	12	1				163	17%	
55-59	5	48	59	52	33	11	1			209	22%	
60-64	1	24	38	43	48	23	15	1		193	20%	
65-69	1	12	31	29	31	12	18	10	2	146	15%	
70 & Over	1	3	19	17	19	12	14	7	16	108	11%	
<b>Total</b>	<b>18</b>	<b>205</b>	<b>248</b>	<b>194</b>	<b>145</b>	<b>59</b>	<b>48</b>	<b>18</b>	<b>18</b>	<b>953</b>	<b>100%</b>	
<b>Percentage of Total</b>	<b>2%</b>	<b>22%</b>	<b>26%</b>	<b>20%</b>	<b>15%</b>	<b>6%</b>	<b>5%</b>	<b>2%</b>	<b>2%</b>	<b>100%</b>		

*Based on data received from the System, of the 953 active members, 191 were classified as "Single," 712 classified as "Married" and 50 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**

---

<u>Type of Benefit Being Paid</u>	<u>Count</u>	<u>Monthly Payment</u>	<u>Annual Payment</u>	<u>Average Annual Payment</u>
Retirement Annuity	852	\$ 9,916,991.42	\$ 119,003,897.04	\$ 139,675.94
Disability Annuity	1	8,083.38	97,000.56	97,000.56
Survivor's Annuity	322	2,018,782.69	24,225,392.28	75,234.14
<b>Total</b>	<b>1,175</b>	<b>\$ 11,943,857.49</b>	<b>\$ 143,326,289.88</b>	<b>\$ 121,979.82</b>

## 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 5/18-131, Adopted June 30, 1989

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

The actuarial liability at any point in time is the present value of the projected pensions at that time less the 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 Judges' 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, net of investment expenses.

## General Inflation

2.75 percent per annum, compounded annually.

This assumption serves as the basis for the determination of Tier Two 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 during the preceding 12-month calendar year.

## Marriage Assumption

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

## Termination

Illustrative rates of withdrawal from the plan are as follows:

Age Based Withdrawal		
Age	Male	Female
30	0.0175	0.0175
35	0.0170	0.0160
40	0.0154	0.0144
45	0.0136	0.0126
50	0.0118	0.0108
55	0.0102	0.0092
60	0.0084	0.0074
65	0.0067	0.0057

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/merit/promotion component of 0.25 percent.

## Disability

No assumption for disability.

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

---

## Employee Contribution Election

For purposes of the actuarial valuation, it is assumed that all judges elect to contribute only on increases in salary when they become eligible for this provision.

## Population Projection

For purposes of determining annual appropriation as a percent of total covered payroll, the size of the active group is assumed to remain level at the number of actives as of the actuarial valuation date. New entrants are assumed to enter with an average age and average pay as disclosed below. The new entrant profile is based on the averages for all current active members. The average increase in uncapped payroll for the projection period is 3.00 percent per annum.

New Entrant Profile			
Age Group	No.	Uncapped Salary	Capped Salary
<b>Under 20</b>			
<b>20-24</b>			
<b>25-29</b>	1	\$ 194,001	\$ 117,213
<b>30-34</b>	28	5,609,232	3,281,967
<b>35-39</b>	105	20,324,665	12,307,375
<b>40-44</b>	205	39,155,931	24,028,686
<b>45-49</b>	202	38,626,741	23,677,046
<b>50-54</b>	166	31,473,949	19,457,375
<b>55-59</b>	110	20,875,766	12,893,441
<b>60-64</b>	51	9,729,910	5,977,869
<b>65-69</b>	4	756,604	468,852
<b>70 &amp; Over</b>			
<b>Total</b>	<b>872</b>	<b>\$ 166,746,799</b>	<b>\$ 102,209,824</b>
<b>Avg. Salary</b>		<b>\$ 191,223</b>	<b>\$ 117,213</b>
<b>Avg. Age</b>			<b>47.29</b>
<b>Percent Male</b>			<b>67.89%</b>

## Retirement

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

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

---

Retirement Rates	
Age	Males & Females
60	15.00%
61-65	10.00%
66-70	11.00%
71	11.00%
72	12.00%
73	13.00%
74	14.00%
75-79	15.00%
80+	100.00%

Early Retirement Rates		
Age	Male	Female
55	6.50%	7.50%
56	6.50%	7.50%
57	6.50%	7.50%
58	6.50%	7.50%
59	6.50%	7.50%

## Assets

Assets available for benefits are determined as described on page 41. 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 JRS 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.

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

---

## 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.

## 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	30.00%
68-70	13.00%
71	11.00%
72	12.00%
73	13.00%
74	14.00%
75-79	15.00%
80	100.00%

Early Retirement Rates for Tier Two Members	
Age	Males and Females
62	11.00%
63	12.00%
64	13.00%
65	14.00%
66	15.00%

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

---

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

Age Based Withdrawal for Tier Two Members		
Age	Male	Female
30	0.0175	0.0175
35	0.0170	0.0160
40	0.0154	0.0144
45	0.0136	0.0126
50	0.0118	0.0108
55	0.0102	0.0092
60	0.0084	0.0074
65	0.0067	0.0057

The preceding withdrawal rates for Tier Two members are the same as the rates for Tier One members.

For Tier Two members with less than five years of service, withdrawal rate is flat at 1.75 percent.



# Projection Methodology and 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.

# Projection Methodology and 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. 94-0004

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/18-131:

(c) Notwithstanding any other provision of this Article, the total required State contribution for fiscal year 2006 is \$29,189,400.

Notwithstanding any other provision of this Article, the total required State contribution for fiscal year 2007 is \$35,236,800.

For each State fiscal year 2008 through 2010, the State contribution to the System, as a percentage of the applicable employee 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 5/18-131:

(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. Participation in the system is mandatory when a person first becomes a judge, unless an "Election Not to Participate" is filed by the judge within 30 days of the date of notification of this option.
2. Member Contributions. All members of the system are required to contribute to the system the following percentage of their salaries:

Retirement Annuity	7.5 percent
Automatic Annuity Increase	1.0
Survivor's Annuity	2.5
Total	11.0 percent

All judges who become participants after December 31, 1992, are required to make contributions toward the survivor's annuity unless they file an election not to participate in the survivor's annuity benefit, in which case the total participant contribution rate is 8.5 percent of salary.

3. Discontinuance of Contributions. A participant who becomes eligible to receive the maximum rate of annuity may elect to discontinue contributions and have his or her benefits "fixed" based upon the final rate of salary immediately prior to the effective date of such election. This election, once made, is irrevocable.
4. Election to Contribute Only on Increases in Salary. A participant who has attained age 60 and continues to serve as a judge after becoming eligible to receive the maximum rate of annuity and has not elected to discontinue contributing to the system may elect to make contributions based only on the amount of the increases in salary received by the judge on or after the date of the election.
5. Retirement Annuity – Eligibility. A judge who has at least 10 years of service may retire with an unreduced retirement annuity upon attainment of age 60. A judge with at least six years of service may retire with an unreduced retirement annuity upon attainment of age 62.

A judge with at least 10 years of service may retire upon attainment of age 55, with the amount of the retirement annuity reduced 1/2 of 1 percent for each month that the judge is under age 60 if the judge has less than 28 years of service. This penalty for retirement before age 60 is reduced by 5/12 of 1 percent for every month of service in the System in excess of 20 years.

6. Retirement Annuity – Amount. The retirement annuity is determined according to the following formula based upon the final rate of salary:
  - 3 ½ percent for each of the first 10 years of service; plus
  - 5 percent for each year of service in excess of 10

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

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

---

7. Automatic Increase In Retirement Annuity. Annual automatic increases of 3 percent of the current amount of retirement annuity are provided. The initial increase is effective in the month of January of the year next following the year in which the first anniversary of retirement occurs.
8. Temporary Total Disability. A member with at least two years of service who becomes totally disabled and unable to perform his or her duties as a judge is entitled to a temporary disability benefit equal to 50 percent of salary payable during the period of disability but not beyond the end of the term of office.
9. Total and Permanent Disability. A member with at least 10 years of service who becomes totally and permanently disabled while serving as a judge is eligible to commence receiving his or her retirement annuity without reduction regardless of age.
10. Survivor's Annuity – Participation and Eligibility. A married judge, an unmarried judge who becomes a participant after December 31, 1992, or a judge who marries after becoming a participant is subject to the provisions relating to the survivor's annuity unless he or she files a written notice of election not to participate in the survivor's annuity.

An active judge who is not contributing for the survivor's annuity and later marries or remarries may receive partial credit for the survivor's annuity thereby providing a prorated benefit for his or her spouse by contributing to the survivor's annuity benefit prospectively from the date of marriage.

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 1 year immediately prior to the member's death.

A surviving spouse with unmarried eligible children of the member 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 full-time student, the spouse's benefit is suspended if the spouse is under age 50 until the attainment of such age.

Children of the member who are under age 18 or under age 22 and a full-time student or who are over age 18 and dependent because of a physical or mental disability are eligible for survivor benefits. Legally adopted children are eligible for survivor benefits on the same basis as other children.

If the member dies in service as a judge, the member must have at least 1 1/2 years of service credit for survivor's annuity eligibility. If death occurs after termination of service, the deceased member must have at least 10 years of service credit for survivor's annuity eligibility.

11. Survivor's Annuity – Amount. (a) Upon the death of an annuitant, his or her surviving spouse shall be entitled to a survivor's annuity of 66-2/3 percent of the annuity the annuitant was receiving immediately prior to his or her death.

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

---

(b) Upon the death of a judge while in service, the surviving spouse shall receive a survivor's annuity of 66-2/3 percent of the annuity earned by the judge as of the date of death, or 7 ½ percent of the judge's last salary, whichever is greater.

(c) Upon the death of a former judge who had terminated service with at least 10 years of service, his or her surviving spouse shall be entitled to a survivor's annuity of 66-2/3 percent of the annuity earned by the deceased member as of the date of death.

(d) Upon the death of an annuitant, a judge in service, or a former judge who had terminated service with at least 10 years of service, each surviving child unmarried and under the age of 18, or age 22 in the case of a full-time student, or disabled shall be entitled to a child's annuity in an amount equal to 5 percent of the decedent's final salary, not to exceed in total for all such children the greater of 20 percent of final salary or 66-2/3 percent of the earned retirement annuity.

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

12. Refund of Contributions. A participant who ceases to be a judge may apply for and receive a refund of his or her total contributions to the system, provided he or she is not then eligible to receive a retirement annuity.

A participant who becomes unmarried, either before or after retirement, is entitled to a refund of contributions made for the survivor's annuity.

### Judges Who First Become Participants On or After January 1, 2011

The following changes to the above provisions apply to judges 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. The 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

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

---

at least eight years of service credit and receive a retirement annuity reduced by one-half of 1 percent for each month that his or her age is under 67.

5. The annual retirement annuity provided is equal to 3 percent of the participant's final average salary for each year of service. The maximum retirement annuity payable shall be 60 percent of the participant's final average salary.
6. Automatic annual increases are provided in the retirement annuity then being paid equal to 3 percent or the annual change in the Consumer Price Index for all Urban Consumers, whichever is less. Such increases are payable in the January next following attainment of age 67 and in January of each year thereafter.
7. Automatic annual increases are provided in the survivor annuity then being paid equal to 3 percent or the annual change in the Consumer Price Index for all Urban Consumers, whichever is less. Such increases are payable on each January 1 occurring on or after attainment of age 67.
8. The retirement annuity being paid is suspended when an annuitant accepts full time employment in a position covered under the Judges' 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

---

<b><i>Actuarial Accrued Liability (“AAL”)</i></b>	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
<b><i>Actuarial Assumptions</i></b>	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.
<b><i>Actuarial Cost Method</i></b>	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.
<b><i>Actuarial Equivalent</i></b>	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
<b><i>Actuarial Present Value (“APV”)</i></b>	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.
<b><i>Actuarial Present Value of Future Benefits (“APVFB”)</i></b>	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.
<b><i>Actuarial Valuation</i></b>	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”).
<b><i>Actuarial Value of Assets</i></b>	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

---

<b><i>Actuarially Determined Contribution (“ADC”)</i></b>	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.
<b><i>Amortization Method</i></b>	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.
<b><i>Amortization Payment</i></b>	That portion of the plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
<b><i>Amortization Period</i></b>	The period used in calculating the Amortization Payment.
<b><i>Closed Amortization Period</i></b>	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.
<b><i>Employer Normal Cost</i></b>	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
<b><i>Equivalent Single Amortization Period</i></b>	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.
<b><i>Experience Gain/Loss</i></b>	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

## Glossary of Terms

---

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	Current Inactives		Current Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries & Deferreds	Actives	Total
2017	\$1,898.82	\$9.27	\$717.76	\$23.42	\$0.00	\$1,908.08	\$741.17	\$2,649.26
2018	1,877.46	9.43	805.47	32.74	0.00	1,886.90	838.21	2,725.10
2019	1,853.20	9.96	889.51	43.10	1.38	1,863.16	933.99	2,797.16
2020	1,826.01	10.52	968.68	54.31	4.15	1,836.53	1,027.15	2,863.68
2021	1,795.88	10.96	1,042.74	65.95	8.58	1,806.83	1,117.27	2,924.11
2022	1,762.80	11.42	1,111.74	78.21	14.95	1,774.22	1,204.90	2,979.11
2023	1,726.79	11.86	1,174.98	90.74	23.32	1,738.65	1,289.04	3,027.69
2024	1,687.87	12.26	1,232.18	103.65	34.04	1,700.13	1,369.87	3,070.00
2025	1,646.08	12.54	1,282.78	116.49	47.34	1,658.62	1,446.60	3,105.22
2026	1,601.45	12.82	1,326.66	129.35	63.62	1,614.27	1,519.64	3,133.91
2027	1,554.06	13.03	1,363.66	142.32	82.71	1,567.09	1,588.69	3,155.78
2028	1,504.00	13.19	1,393.88	155.21	104.85	1,517.19	1,653.94	3,171.13
2029	1,451.37	13.36	1,417.34	167.87	130.16	1,464.72	1,715.36	3,180.09
2030	1,396.30	13.51	1,434.01	180.15	158.79	1,409.81	1,772.95	3,182.76
2031	1,338.97	13.65	1,444.43	191.99	190.94	1,352.62	1,827.36	3,179.98
2032	1,279.56	13.70	1,448.21	203.24	226.64	1,293.26	1,878.09	3,171.36
2033	1,218.31	13.70	1,445.77	213.77	266.07	1,232.01	1,925.62	3,157.62
2034	1,155.47	13.67	1,437.42	223.37	309.24	1,169.14	1,970.02	3,139.16
2035	1,091.35	13.62	1,423.70	231.93	356.23	1,104.97	2,011.86	3,116.83
2036	1,026.27	13.54	1,404.69	239.45	407.03	1,039.81	2,051.17	3,090.99
2037	960.60	13.43	1,380.58	245.86	461.61	974.03	2,088.04	3,062.08
2038	894.71	13.30	1,351.79	251.06	519.92	908.01	2,122.77	3,030.78
2039	829.01	13.14	1,318.73	255.00	581.84	842.14	2,155.56	2,997.70
2040	763.92	12.94	1,281.47	257.76	647.26	776.86	2,186.49	2,963.35
2041	699.86	12.71	1,240.62	259.40	716.04	712.58	2,216.06	2,928.63
2042	637.26	12.46	1,196.34	259.96	787.98	649.72	2,244.28	2,894.00
2043	576.54	12.16	1,149.12	259.46	862.92	588.70	2,271.50	2,860.19
2044	518.07	11.84	1,099.32	257.93	940.68	529.91	2,297.92	2,827.83
2045	462.24	11.48	1,047.23	255.36	1,021.07	473.72	2,323.67	2,797.39

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

Valuation Date June 30	Current Inactives		Current Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries & Deferreds	Actives	Total
2017	\$1,898.82	\$9.27	\$1,005.27	\$109.06	\$0.00	\$1,908.08	\$1,114.33	\$3,022.42
2018	1,877.46	9.43	1,064.74	115.94	20.45	1,886.90	1,201.14	3,088.03
2019	1,853.20	9.96	1,121.76	123.25	40.18	1,863.16	1,285.19	3,148.35
2020	1,826.01	10.52	1,175.52	130.91	62.89	1,836.53	1,369.33	3,205.86
2021	1,795.88	10.96	1,225.98	138.84	88.63	1,806.83	1,453.45	3,260.28
2022	1,762.80	11.42	1,272.93	147.06	114.03	1,774.22	1,534.02	3,308.23
2023	1,726.79	11.86	1,315.79	155.51	143.02	1,738.65	1,614.32	3,352.98
2024	1,687.87	12.26	1,354.31	164.16	172.87	1,700.13	1,691.34	3,391.47
2025	1,646.08	12.54	1,388.00	172.90	206.67	1,658.62	1,767.56	3,426.18
2026	1,601.45	12.82	1,416.76	181.68	240.93	1,614.27	1,839.37	3,453.64
2027	1,554.06	13.03	1,440.37	190.51	278.02	1,567.09	1,908.90	3,475.99
2028	1,504.00	13.19	1,458.81	199.26	317.18	1,517.19	1,975.25	3,492.44
2029	1,451.37	13.36	1,471.95	207.84	359.14	1,464.72	2,038.93	3,503.65
2030	1,396.30	13.51	1,479.69	216.15	404.08	1,409.81	2,099.91	3,509.72
2031	1,338.97	13.65	1,482.34	224.13	450.86	1,352.62	2,157.34	3,509.96
2032	1,279.56	13.70	1,479.56	231.69	501.37	1,293.26	2,212.62	3,505.88
2033	1,218.31	13.70	1,471.59	238.71	554.57	1,232.01	2,264.88	3,496.88
2034	1,155.47	13.67	1,458.58	245.07	611.45	1,169.14	2,315.10	3,484.25
2035	1,091.35	13.62	1,440.90	250.68	671.12	1,104.97	2,362.70	3,467.67
2036	1,026.27	13.54	1,418.56	255.52	734.19	1,039.81	2,408.28	3,448.10
2037	960.60	13.43	1,391.70	259.51	800.89	974.03	2,452.10	3,426.13
2038	894.71	13.30	1,360.62	262.60	870.85	908.01	2,494.07	3,402.08
2039	829.01	13.14	1,325.65	264.70	944.28	842.14	2,534.63	3,376.77
2040	763.92	12.94	1,286.87	265.87	1,021.07	776.86	2,573.80	3,350.66
2041	699.86	12.71	1,244.75	266.13	1,100.91	712.58	2,611.79	3,324.37
2042	637.26	12.46	1,199.47	265.49	1,184.20	649.72	2,649.16	3,298.88
2043	576.54	12.16	1,151.44	263.96	1,270.57	588.70	2,685.97	3,274.67
2044	518.07	11.84	1,100.99	261.55	1,359.98	529.91	2,722.52	3,252.43
2045	462.24	11.48	1,048.41	258.26	1,452.65	473.72	2,759.33	3,233.04

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

Valuation Date June 30	Current Inactives		Current Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries & Deferreds	Actives	Total
2017	\$144.72	\$0.45	\$8.11	\$0.47	\$0.00	\$145.16	\$8.58	\$153.74
2018	146.14	0.10	14.38	0.50	0.05	146.24	14.93	161.17
2019	147.39	0.11	21.25	0.63	0.11	147.50	22.00	169.49
2020	148.46	0.27	27.96	0.88	0.19	148.73	29.04	177.76
2021	149.34	0.27	34.66	1.11	0.30	149.61	36.07	185.68
2022	150.02	0.32	41.67	1.43	0.41	150.33	43.52	193.85
2023	150.48	0.38	48.69	1.78	0.55	150.87	51.02	201.88
2024	150.72	0.53	55.87	2.27	0.67	151.26	58.81	210.07
2025	150.73	0.55	62.84	2.79	0.80	151.28	66.43	217.71
2026	150.49	0.64	69.71	3.33	1.02	151.13	74.05	225.18
2027	149.98	0.69	76.25	3.98	1.27	150.67	81.50	232.17
2028	149.20	0.71	82.59	4.71	1.59	149.91	88.89	238.80
2029	148.12	0.72	88.68	5.54	1.98	148.84	96.19	245.03
2030	146.71	0.74	94.10	6.39	2.47	147.46	102.96	250.41
2031	144.97	0.84	99.54	7.33	3.06	145.82	109.93	255.74
2032	142.88	0.90	104.38	8.34	3.78	143.78	116.49	260.27
2033	140.41	0.92	108.73	9.44	4.66	141.33	122.84	264.17
2034	137.55	0.94	112.40	10.58	5.73	138.49	128.71	267.20
2035	134.29	0.97	115.75	11.69	7.00	135.25	134.44	269.70
2036	130.61	0.99	118.68	12.83	8.50	131.60	140.01	271.61
2037	126.53	1.01	120.99	13.97	10.27	127.54	145.24	272.78
2038	122.04	1.03	122.74	15.12	12.33	123.07	150.19	273.26
2039	117.16	1.05	124.14	16.16	14.69	118.21	154.99	273.20
2040	111.91	1.06	124.83	17.11	17.36	112.97	159.31	272.28
2041	106.31	1.08	125.15	18.01	20.37	107.39	163.53	270.92
2042	100.41	1.10	124.85	18.82	23.73	101.51	167.41	268.91
2043	94.25	1.11	124.05	19.57	27.42	95.36	171.05	266.41
2044	87.89	1.12	122.81	20.28	31.45	89.00	174.54	263.55
2045	81.37	1.13	121.04	20.90	35.83	82.50	177.76	260.26

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

Valuation Date	Tier 1 Active Members				Tier 2 Active Members				Future Tier 2 Active Members			
	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost
2017	640	\$123.67	\$9.93	\$46.12	313	\$36.91	\$4.06	\$7.96	0	\$0.00	\$0.00	\$0.00
2018	577	114.14	8.98	43.09	307	36.98	4.07	8.40	69	8.27	0.91	1.39
2019	524	106.69	8.00	39.77	302	37.33	4.11	8.67	127	15.75	1.73	2.71
2020	471	98.70	7.18	36.36	294	37.33	4.11	8.59	189	23.98	2.64	4.21
2021	421	90.89	6.25	33.31	280	36.60	4.03	8.67	252	32.89	3.62	5.89
2022	377	83.90	5.41	30.25	270	36.21	3.98	8.45	306	41.06	4.52	7.54
2023	336	76.86	4.75	27.29	254	35.07	3.86	8.34	363	50.08	5.51	9.41
2024	297	70.10	4.07	24.34	241	34.16	3.76	7.93	415	58.76	6.46	11.31
2025	261	63.40	3.49	21.50	222	32.35	3.56	7.63	470	68.38	7.52	13.47
2026	229	57.16	2.76	18.84	207	30.94	3.40	7.43	518	77.44	8.52	15.33
2027	199	51.18	1.88	16.42	194	29.79	3.28	7.15	560	86.16	9.48	17.29
2028	173	45.82	1.30	14.23	180	28.45	3.13	6.83	600	94.78	10.43	19.23
2029	149	40.72	0.90	12.22	166	27.02	2.97	6.45	637	103.45	11.38	21.19
2030	128	35.92	0.35	10.50	153	25.48	2.80	6.09	672	112.14	12.34	23.21
2031	110	31.83	0.24	8.82	140	24.01	2.64	5.68	703	120.45	13.25	25.14
2032	93	27.59	0.15	7.41	128	22.51	2.48	5.25	733	128.99	14.19	27.13
2033	78	23.90	0.09	6.19	116	20.99	2.31	4.76	759	137.34	15.11	29.06
2034	65	20.57	0.08	5.22	104	19.30	2.12	4.28	784	145.75	16.03	31.01
2035	55	17.82	0.05	4.35	92	17.65	1.94	3.82	806	153.92	16.93	32.89
2036	45	15.20	0.04	3.57	82	16.09	1.77	3.38	826	162.04	17.82	34.74
2037	37	12.76	0.03	2.94	72	14.53	1.60	2.95	844	170.19	18.72	36.55
2038	30	10.75	0.03	2.42	63	13.02	1.43	2.53	860	178.18	19.60	38.29
2039	25	9.06	0.02	1.93	54	11.51	1.27	2.18	874	186.11	20.47	40.00
2040	20	7.39	0.02	1.57	47	10.19	1.12	1.87	887	194.00	21.34	41.64
2041	16	6.16	0.02	1.24	40	8.96	0.99	1.60	897	201.68	22.19	43.23
2042	12	4.96	0.01	0.99	34	7.84	0.86	1.36	907	209.40	23.03	44.78
2043	10	4.02	0.01	0.78	29	6.82	0.75	1.14	915	217.02	23.87	46.31
2044	8	3.21	0.01	0.58	24	5.90	0.65	0.94	921	224.63	24.71	47.81
2045	6	2.43	0.01	0.42	20	5.00	0.55	0.77	928	232.37	25.56	49.32