

# State Universities Retirement System of Illinois



Actuarial Valuation Report as of  
June 30, 2018



November 9, 2018

Board of Trustees  
State Universities Retirement System of Illinois  
1901 Fox Drive  
Champaign, Illinois 61820

Dear Members of the Board:

At your request, we present the report of the actuarial valuation of the State Universities Retirement System of Illinois (“SURS”) as of June 30, 2018. GRS has prepared this report exclusively for the Trustees of the State Universities Retirement System; GRS is not responsible for reliance upon this report by any other party. This report may be provided to parties other than SURS only in its entirety and only with the permission of the Trustees.

This actuarial valuation provides information on the funding status and the contribution requirements of SURS. This actuarial valuation includes a determination of the statutory State contribution requirement (the “Statutory Contribution”) for the fiscal year ending June 30, 2020, and provides estimates of Statutory contributions for subsequent years under Section 15-155 of the SURS Article of the Illinois Pension Code as amended by the provisions of Public Act (“PA”) 100-0023 and 100-0587. SURS is currently not moving forward with the implementation of the Optional Hybrid Plan (OHP) created under PA 100-0023. Additional clarifying legislation is needed for SURS to be able to do so. Under the provisions of PA 100-0023, employers make contributions beginning in fiscal year 2018 for current members in excess of the Governor’s pay and under PA 100-0587, beginning in academic years on or after July 1, 2018, employers make contributions equal to the present value of the increase in benefit attributable to member pay increases in excess of 3% during the final average salary (FAS) period. Information required by Governmental Accounting Standards Board (“GASB”) Statement Nos. 67 and 68 is provided in a separate report. This report should not be relied on for any purpose other than the purpose described herein.

This actuarial valuation is based on the provisions of SURS in effect as of June 30, 2018, data on the SURS membership and information on the asset value of the trust fund as of that date. This actuarial valuation does not reflect the provisions of Public Act 98-0599 due to the court ruling that the changes in the Public Act were unconstitutional. The actuarial valuation was based upon the information furnished by SURS staff, concerning SURS benefits, financial transactions, plan provisions 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 SURS.

The benefit provisions for members hired on or after January 1, 2011, were changed under Public Act 96-0889, which created a second tier of benefits for new members. PA 100-0023, which was effective July 6, 2017, created a new plan option (Optional Hybrid Plan). Provisions related to the Optional Hybrid Plan are not reflected in this actuarial valuation. 30% of assumed new hires in the actuarial valuation projections are assumed to elect the Self-Managed Plan and 70% are assumed to elect Tier 2 under Public Act 96-0889.

The actuarial cost method (Projected Unit Credit, as required by statute) and the asset smoothing method (also as required by statute) used in this actuarial valuation are unchanged from the prior June 30, 2017, actuarial valuation recertification of SURS. Economic and demographic actuarial assumptions were changed from the prior actuarial valuation based on recommendations from the experience study report covering the period June 30, 2014 through June 30, 2017. The plan election assumptions were provided by SURS staff.

The actuarial assumptions were adopted by the Board pursuant to Sec. 15-155 of 40 ILCS 5 of the Illinois Pension Code. In our opinion, the actuarial assumptions are reasonable for the purpose of the measurement.

To the best of our knowledge, this actuarial statement is complete and accurate, fairly presents the actuarial position of SURS as of June 30, 2018, and has been prepared in accordance with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

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

Actuarial valuations do not affect the ultimate cost of the Plan, only the timing of contributions into the Plan. Plan funding occurs over time. Contribution shortfalls (the difference between the actual contributions and the annual required contributions) remain the responsibility of the Plan sponsor and can be made in later years. If the contribution levels over a period of years are lower or higher than necessary, it is normal and expected practice for adjustments to be made to future contribution levels to take account of this variance, with a view to funding the plan over time.

Although prior year 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 development and adherence to a funding policy that funds the normal cost of the plan as well as an amortization payment that would seek to pay off the total unfunded accrued liability over a closed period of no less than 15 years (to limit contribution volatility) and no more than the period of time in order to attain 100% funding by 2045 (26 years remaining in the actuarial valuation as of June 30, 2018).

The signing actuaries are independent of the plan sponsor.

Amy Williams, Lance J. Weiss and David T. Kausch are Members of the American Academy of Actuaries (“MAAA”) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein.

Respectfully submitted,

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## **SUMMARY OF THE ACTUARIAL VALUATION**



# Executive Summary

## (\$ in Millions)

Actuarial Valuation Date:	June 30, 2017		June 30, 2018	
Fiscal Year Ending:	June 30, 2019		June 30, 2020	
Estimated Statutory Contribution:		% of Projected Capped Payroll		% of Projected Capped Payroll
· Defined Benefit Plans Contribution Amount <sup>1</sup>	\$ 1,637.827	35.66%	\$ 1,828.293	40.17%
· Self Managed Plan Contribution Amount <sup>1</sup>	67.473	1.47%	71.618	1.57%
· Total Qualified Plan Contribution Amount	\$ 1,705.300	37.12%	\$ 1,899.911	41.75%
· Excess Benefit Arrangement (EBA) Contribution Amount <sup>2</sup>	-	0.00%	17.065	0.37%
· Combined State and Employer Contribution Amount	\$ 1,705.300	37.12%	\$ 1,916.976	42.12%
Estimated Statutory Contribution from Other Sources:				
· Federal/Trust Contribution Amount	\$ 46.000		\$ 52.000	
· Employer Contribution Amount Related to				
- Compensation in Excess of Governor's	\$ 4.146		\$ 5.124	
- Pay Increases in Excess of 3% During FAS Period	-		5.160	
- Total Employer Contribution Amount	\$ 4.146		\$ 10.284	
Net State Contribution:				
· Net Dollar Amount (Including EBA Contribution)	\$ 1,655.154	36.03%	\$ 1,854.692	40.75%
Actuarially Determined Contribution (ADC): <sup>3</sup>				
· Annual Amount	\$ 1,997.030	43.48%	\$ 2,390.156	52.52%
Membership				
· Number of				
- Active Members (full time and part time)	75,969		74,950	
- Members Receiving Payments <sup>3</sup>	64,545		66,169	
- Inactive Members	90,819		91,874	
- Total	231,333		232,993	
· Covered Payroll Provided as of Valuation Date	\$ 4,184.468		\$ 4,264.300	
· Projected Capped Payroll for Fiscal Year	4,593.492		4,550.976	
· Defined Benefit Plan Capped Payroll <sup>4</sup>	3,458.320		3,470.226	
· Annualized Benefit Payments <sup>3</sup>	2,341.249		2,446.058	
Assets <sup>2</sup>				
· Market Value of Assets (MVA)	\$ 18,484.820		\$ 19,321.076	
· Actuarial Value of Assets (AVA)	18,594.326		19,347.886	
· SURS Reported Market Value Rate of Return	12.20%		8.25%	
· Estimated Return on MVA	11.91%		8.26%	
· Estimated Return on AVA	8.07%		7.76%	
· Ratio – AVA to MVA	101%		100%	
Actuarial Information <sup>3</sup>				
· Total Normal Cost Rate	20.30%		21.03%	
· Employer Normal Cost Rate	12.29%		13.02%	
· Employer Normal Cost Amount	\$ 418.203		\$ 449.903	
· Actuarial Accrued Liability (AAL)	41,853.348		45,258.751	
· Unfunded Actuarial Accrued Liability (UAAL)	23,259.022		25,910.865	
· Funded Ratio based on AVA	44.43%		42.75%	
· UAAL as % of Defined Benefit Plan Capped Payroll	672.55%		746.66%	
· Funded Ratio based on MVA	44.17%		42.69%	
· Defined Benefit Plans Contribution Amount as % of ADC	82.01%		76.49%	

Amounts from the June 30, 2017 actuarial valuation assume 60% of new hires elect OHP, 20% elect SMP and 20% elect Tier 2. Amounts from the June 30, 2018 actuarial valuation assume 30% elect SMP and 70% elect Tier 2.

<sup>1</sup> SMP contributions are net of SMP forfeitures of \$8,080,000 for fiscal year 2019 and of \$7,941,000 for fiscal year 2020. Projected Self Managed Plan (SMP) contribution is updated based on the most recent actuarial valuation. Contribution amount for SURS defined benefit plans is the total qualified plan statutory contribution minus the SMP contribution.

<sup>2</sup> Amount provided by SURS. \$11,500,000 for fiscal year 2020 and \$5,565,156 for fiscal years 1998 through 2013.

<sup>3</sup> Excludes SMP.

<sup>4</sup> Defined benefit payroll from the current actuarial valuation increased with one year of wage inflation.

# Summary of the Valuation

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## Purposes of the Actuarial Valuation

At your request we have performed an actuarial valuation of the State Universities Retirement System of Illinois (“SURS”) as of June 30, 2018.

The purposes of this actuarial valuation are as follows:

- To determine the funding status of SURS as of the valuation date based on the market value of assets and the actuarial value of assets; and
- To develop the level of contributions required under Section 15-155 of the SURS Article of the Illinois Pension Code as amended by the provisions of PA 100-0023 and PA 100-0587, (1) for the fiscal year ending June 30, 2020, and (2) to estimate contributions required under that Section for subsequent years of the funding period ending in the year 2045.

Accounting information required under Governmental Accounting Standards Board (“GASB”) Statement Nos. 67 and 68 is presented in a separate report.

## Report Highlights

The Statutory contribution (including the employer contribution and federal and trust fund contributions) for FY 2020 is \$1.917 billion and includes the State’s projected normal cost of \$435.1 million, an unfunded liability contribution of \$1.393 billion, a contribution to fund benefits from the Excess Benefit Arrangement (“EBA”) of \$17.1 million and the Self Managed Plan (“SMP”) contribution of \$71.6 million. The 2017 actuarial valuation had projected the Statutory contribution would increase, from \$1.705 billion for FY 2019 to \$1.793 billion for FY 2020. The primary reason for the increase in the Statutory contribution over the projected amount from the prior actuarial valuation is due to the new actuarial assumptions that were recommended and adopted from an experience review for the period June 30, 2014 through June 30, 2017, first effective with this actuarial valuation as of June 30, 2018, which increased the actuarial accrued liability.

Over the past 10 years, SURS experienced investment gains on a market value basis (compared to the actuarial assumption) in fiscal years 2010, 2011, 2013, 2014, 2017 and 2018. However, SURS incurred investment losses (or shortfalls in return compared to the actuarial assumption) in fiscal years 2009, 2012, 2015 and 2016. The market return for the year ending June 30, 2018, was approximately 8.25% compared to a return of 12.20% in FY 2017. The average market value investment return over the most recent 10 years has been approximately 6.7%.

The funded ratio decreased from 44.2% as of June 30, 2017, to 42.7% as of June 30, 2018, based on the market value of assets, and decreased from 44.4% as of June 30, 2017, to 42.8% as of June 30, 2018, based on the actuarial value of assets. The net deferred asset losses will be recognized in the actuarial value of assets over the next four years.

The ratio of the market value of assets of the Defined Benefit Plan to the annual deductions (consisting of benefit payments, refunds of contributions and administrative expenses and sometimes referred to as the liquidation ratio) is about 7.5.

## Summary of the Valuation

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This means that approximately seven to eight years of retiree benefit payments can be paid from current assets. The ability to make such payments beyond that period is heavily dependent upon future State and employer contributions and future investment return.

### Actuarial Assumptions

The asset valuation method was changed from market value of assets to actuarial value of assets effective with the actuarial valuation as of June 30, 2009, as required by statute.

The plan election assumptions were updated for new hires from the prior actuarial valuation since SURS is currently not proceeding with the implementation of the Optional Hybrid Plan created under Public Act 100-0023 because additional clarifying legislation has not been provided by the General Assembly. Future new hires are assumed to elect to participate in the offered plans as follows: 0% would elect to participate in the Optional Hybrid Plan (“OHP”), 30% would elect to participate in the Self-Managed Plan (SMP) and 70% would elect to participate in the Tier 2 Plan (compared to the previous assumptions of 60% elect OHP, 20% elect SMP and 20% elect Tier 2).

All other actuarial assumptions were first adopted by the Board for use with the actuarial valuation as of June 30, 2018, and were based on the recommendations from the experience review performed for the period from June 30, 2014, through June 30, 2017. The changes in assumptions include:

- Decreasing the investment return assumption from 7.25% to 6.75%;
- Decreasing the price inflation assumption from 2.75% to 2.25%;
- Decreasing overall rates of salary increase;
- Decreasing Effective Rate of Interest (“ERI”) assumption from 7.00% to 6.75%;
- A net decrease in retirement rates;
- A net increase in service-based termination rates;
- Decrease disability rates;
- Increased life expectancy by updating mortality projection scales applied to the mortality tables.

The assumption for members electing the accelerated pension benefit payment options is 0%. The rationale for this assumption can be found in a separate letter issued to the Board.

The assumptions can be found in Appendix G of the report.

In addition, we have assumed that the Statutory contribution will be calculated as a level percentage of pensionable payroll. Pensionable payroll for members hired on or after January 1, 2011, is limited by the pay cap for Tier 2 members and by the pay cap for members in the Optional Hybrid Plan. The basis for this assumption comes from 40 ILCS 5/1-160 (b-5) for Tier 2 and 40 ILCS 5/1-161(e) for the Optional Hybrid Plan.

### SURS Benefits

Public Act 100-0587 created accelerated pension benefit payment options for eligible members beginning on the implementation date and until June 30, 2021. There are two accelerated pension benefit payment

## Summary of the Valuation

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options that will be offered: (1) for vested inactive members, a payment equal to 60% of the present value of the member's pension benefit in lieu of receiving any pension benefit, and (2) for active Tier 1 members eligible for retirement, a payment equal to 70% of the difference between: (i) the present value of the automatic annual increases (AAI) to a Tier 1 member's retirement annuity under the current AAI provisions and (ii) the present value of the automatic annual increases to the Tier 1 member's retirement annuity under revised AAI provisions. All other benefit provisions valued in this June 30, 2018, actuarial valuation are identical to those valued in the prior actuarial valuation as of June 30, 2017. Due to the court ruling recent pension reform unconstitutional, this actuarial valuation does not reflect the provisions of Public Act 98-0599.

### Experience During 2018

The System assets earned approximately 8.25% on a market value basis during FY 2018 which was greater than the investment return assumption of 7.25% for FY 2018. The System assets earned 7.76% on an actuarial value of assets basis during FY 2018, due to recognition of net deferred investment losses under the asset smoothing method. However, because 7.76% is greater than the assumed rate of investment return of 7.25% for FY 2018, there was an asset gain of \$92.7 million on the actuarial value of assets.

There was also a net loss of \$108.0 million from actuarial liabilities, which is comprised of a loss of approximately \$116.5 million from demographic experience, and a gain of \$8.5 million from lower than expected pay increases.

The SURS defined benefit programs experienced an overall actuarial loss of \$15.3 million.

The experience of the population determines the liability gain or loss for the year. There was a gain on salaries, due to lower salary increases than assumed and a small gain from active member mortality experience. From last year to this year, there were small losses from retirement, termination, disability, and retiree mortality experience. As always, there was a new entrant loss. The new entrant loss occurs each year, but is offset by additional contributions to the assets. The other assumptions not easily attributable to one of the other categories generated an actuarial gain.

See Table 10 (page 28), Appendix C, for detail of the gains and losses by source.

### Statutory Appropriations for the 2020 Fiscal Year and Beyond

Section 15-155, which governs the development of Employer/State contributions to SURS, provides that:

1. Employer/State contributions are determined under the following process:
  - a) The overall objective of the statute is to achieve a funding ratio of 90% by the end of fiscal year ("FY") 2045.
  - b) The Employer/State contribution for FY 2012 and each year thereafter to and including

## Summary of the Valuation

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FY 2045 is to be based on a (theoretically) constant percentage of the payroll<sup>1</sup> of active members of SURS based on the actuarial value of assets at the actuarial valuation date and assuming the actuarial value of assets earns the assumed investment return in the future.

<sup>1</sup> We have assumed the contribution would be based on pensionable payroll. Pensionable payroll for members hired on or after January 1, 2011, is limited by the pay cap.

- i. Requires any change in an actuarial assumption that increases or decreases the required State contribution to be implemented in equal annual amounts over a five-year period beginning in the State fiscal year in which the change first applies to the required State contribution.
  - o For changes that first applied in FY 2014, FY 2015, FY 2016 or FY 2017, the impact is calculated based on a five-year period and the applicable portion is recognized during the remaining fiscal years in that five-year period.
- ii. Requires the State to make additional contributions to SURS in FY 2018, FY 2019 and FY 2020 equal to 2% of the total payroll of each employee who participates in the Optional Hybrid Plan or who participates in the Tier 2 Plan in lieu of the Optional Hybrid Plan.
- iii. Requires employers to make contributions as follows:
  - o Requires employers to contribute the employer normal cost of the portion of an employee's earnings that exceeds the amount of salary set for the governor, for academic years beginning on or after July 1, 2017. (Applicable to Tier 1 and Tier 2 employees.)
  - o Requires employers to contribute for each employee of the employer who participates in the Optional Hybrid Plan or participates in the Tier 2 Plan in lieu of the Optional Hybrid Plan.
    - 1) The employer normal cost for Fiscal Years 2018, 2019 and 2020.
    - 2) The employer normal cost plus two percent of pay for Fiscal Years 2021 and thereafter.
    - 3) Beginning in FY 2018, the amount for that fiscal year to amortize any unfunded actuarial accrued liability attributable to the defined benefits of the employer's employees who first became participants on or after the implementation date of the Optional Hybrid Plan and the employer's employees who were previously Tier 2 participants but elected to participate in the Optional Hybrid Plan, determined as a level percentage of payroll over a 30-year rolling amortization period.
    - 4) For academic years beginning on or after July 1, 2018, and for earnings paid under a contract or collective bargaining agreement entered into, amended or renewed on or after the effective date of the amendatory Act, if a participant's earnings for any academic year with the same employer as the previous academic year used to determine the final average salary increased by more than 3.00%, then the participant's employer shall pay the System the present value of the increase in benefits resulting from the portion of the increase in earnings that is in excess of 3.00%. Prior to the effective date of Public Act 100-0587, the payment from employers was for pay increases in excess of 6.00%.

## Summary of the Valuation

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- c) After 2045, the Employer/State contribution rate is to be sufficient to maintain the funding level at 90%.
  - o Employers continue to make the required normal cost and unfunded liability contributions.
  - o The financial impact of changes in actuarial assumptions continue to be phased in over a five-year period.
2. During the period of amortization of the 2003 bond issue, the Employer/State contribution in any fiscal year may not exceed the difference between:
  - a) The contribution, as developed in the preceding number 1., assuming that the special contribution (from the bond proceeds) has not been made, and
  - b) The debt service on the bond issue for the fiscal year.
3. Pursuant to Public Act 97-0694, Section 15-165, the dollar amount of the proposed Employer/State contribution required for a fiscal year shall be certified to the Governor no later than November 1 for the fiscal year commencing on the following July 1. The required amounts are budgeted pursuant to the continuing appropriations process. The State Actuary is required to review the actuarial assumptions and actuarial valuation and issue a preliminary report. After the Board considers the State Actuary's report, the certification is finalized no later than January 15.

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan (OHP) created under PA 100-0023. Additional clarifying legislation is needed for SURS to be able to do so. Therefore, contributions related to the OHP are not included in the actuarial valuation, including contributions for employer normal cost, additional 2 percent of payroll contributions and unfunded liability contributions. Estimates of Statutory contributions through 2045, assuming that 0% of future new members elect the Optional Hybrid Plan, 70% of future new members elect the Tier 2 Plan, 30% of future new members elect SMP and all other actuarial assumptions are realized, are set out in Table 14 (page 35).

The Statutory contributions set out in this report represent the contribution amount determined consistent with the State Statute. The net State appropriation certified to the Governor is the total calculated in this report for the qualified plan, plus an estimated amount to fund the annual benefit payments payable from the Excess Benefit Arrangement (EBA), adjusted by contributions from federal and trust funds and employers. The estimated contributions from the federal and trust funds for FY 2020 is \$52,000,000, as estimated by SURS.

## Asset Information

Prior to the actuarial valuation as of June 30, 2009, the market value, without adjustment, was used for all actuarial purposes. Legislation in 2009 required that first effective for the actuarial valuation as of June 30, 2009, contribution projections would be calculated based on the actuarial value of assets. Funding status determinations and the contribution requirements were calculated based on the actuarial value of assets.

## Summary of the Valuation

The market value of the assets of the System that is available for benefits increased from \$18,484.8 million as of June 30, 2017, to \$19,321.1 million as of June 30, 2018. The actuarial value of assets as of June 30, 2018, is \$19,347.9 million, which is \$26.8 million higher than the market value of assets. This difference is due to the continuing recognition of deferred investment gains and losses. Twenty percent of these gains and losses are recognized each year. The \$26.8 million, which is the value of net deferred losses, will be smoothed into the actuarial value of assets over the next four years. The remaining unrecognized net asset gains from FY 2017 and FY 2018 will be smoothed in over the next three and four years, respectively, and the remaining asset losses from FY 2015 and FY 2016 will be smoothed in over the next one and two years, respectively.

The detailed determinations of asset values utilized in this valuation and asset growth in the last year are set out in Appendix A and Table 7 (page 25) of Appendix C.

### Funding Status

The funding status of SURS is measured by the Funding Ratio. The Funding Ratio is the ratio of the assets available for benefits compared to the actuarial accrued liability of the System. Thus, it reflects the portion of benefits earned to date by SURS members, which are covered by current System assets.

A funding ratio of 100% means that all of the benefits earned to date by SURS members are covered by assets. By monitoring changes in the funding ratio each year we can determine whether or not funding progress is being made.

As shown below, the SURS funding ratio decreased from 44.2% as of June 30, 2017, to 42.7% as of June 30, 2018, based on the market value of assets, and decreased from 44.4% as of June 30, 2017, to 42.8% as of June 30, 2018, based on the actuarial value of assets. There are net deferred losses that will be smoothed into the actuarial value of assets over the next four years. As a result of the net deferred losses and the funding policy, the funded ratio is projected to remain relatively flat over the next four years if all assumptions are realized and all employer contributions are made on a timely basis.

Fiscal Year	Funded Ratio	
	AVA	MVA
2014	42.3 %	46.5 %
2015	43.3	44.2
2016	43.3	41.6
2017	44.4	44.2
2018	42.8	42.7

### Short Condition Test

The following table shows a comparison, for fiscal years 2009 through 2018, of the percentage of benefits that are covered by the actuarial value of assets. The employer financed liabilities for current active and inactive members are 0% funded by the assets. Only a portion of the retiree liabilities are funded by current assets and the percentage covered decreased from 43.4% as of June 30, 2017, to 41.8% as of June 30, 2018.

## Summary of the Valuation

Fiscal Year	Percentage of Benefits Covered by Net Assets (in Millions)						
	Member Acc Contrib.	Members Receiving Benefits	Act/Inact Employer Portion	Net Actuarial Value of Assets	% of Benefits Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
2009	\$ 5,688.9	\$ 14,802.6	\$ 5,824.7	\$ 14,282.0	100.0%	58.1%	0.0%
2010	5,916.3	16,834.4	7,369.7	13,966.6	100.0%	47.8%	0.0%
2011	6,007.4	18,918.1	6,588.8	13,945.7	100.0%	42.0%	0.0%
2012	5,962.4	20,651.4	6,556.4	13,949.9	100.0%	38.7%	0.0%
2013	5,830.1	22,099.9	6,443.1	14,262.6	100.0%	38.2%	0.0%
2014	6,094.9	24,388.6	6,946.0	15,844.7	100.0%	40.0%	0.0%
2015	6,196.6	26,042.4	7,281.7	17,104.6	100.0%	41.9%	0.0%
2016	6,145.8	27,342.2	7,435.3	17,701.6	100.0%	42.3%	0.0%
2017	6,348.8	28,226.0	7,278.6	18,594.3	100.0%	43.4%	0.0%
2018	6,516.3	30,710.7	8,031.7	19,347.9	100.0%	41.8%	0.0%

## Actuarial Funding and Statutory Funding

Measuring the Statutory Contribution against a funding policy under which the sum of the normal cost and amortization of the unfunded accrued liability is contributed helps evaluate the funding adequacy of the current Statutory funding method. The reason for the accrual pattern of normal cost plus amortization of the unfunded liability is to have benefits accrued within the same generation that has earned them as well as to ensure that all benefit obligations will be met. Table 14 illustrates an “alternative policy contribution” which is the sum of the employer normal cost and a 30-year closed period from June 30, 2015 (26 years remaining as of June 30, 2019) level percentage of defined benefit plan capped payroll amortization payment. The alternative funding policy would require higher contributions in the near term compared to the Statutory funding policy. However, as shown in Graph 1 (page 31) and Graph 4 (page 36), the funded ratio would increase more quickly and require lower contributions than under the Statutory policy after approximately 13 years. The Statutory contributions are projected to continue to rise in order to meet the ultimate funding objective of a 90% funded ratio in 2045.

Based on projections assuming that the Statutory contributions are made every year (as shown in Table 12, page 30) and an investment return of 6.75% each year, the funded ratio is projected to begin to increase from about 43% funded to 90% funded at 2045. The funded ratio is not projected to exceed 50% until 2030, 70% until 2041 and is projected to increase to 90% during the four-year period from 2041 until 2045. If the Statutory contributions are not made or investment return is less than the assumption of 6.75%, the funded ratio will be lower and the cash flow strain will be higher. If another significant market downturn occurred while the System’s funded ratio is low, the System could be required to liquidate a large amount of assets in order to pay benefits which could have a further adverse effect on the funded status of the System.



## Summary of the Valuation

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The projected actuarial accrued liability of current retirees, current active and inactive members and future members is expected to increase from \$45.259 billion as of the end of FY 2018 to \$51.095 billion as of the end of FY 2045 (as shown in Graph 2, page 32, and Table 23, page 45). Total benefit payments are projected to increase from \$2.540 billion in fiscal year 2018 to \$4.312 billion in fiscal year 2045. Graph 3 (page 33, and Table 22, page 44) shows projected benefit payments separately for retirees as of June 30, 2018, active and inactive members as of June 30, 2018, and future members.

## Additional Projection Details

At the request of the State Actuary, we have included exhibits with additional projection details that can be found in Appendix E. The additional projections illustrate the impact on contributions and funded status if deferred asset gains and losses are not recognized.

## Recommendations

The calculations in this report were prepared based on the methods required by the Statutory funding policy including the asset smoothing method that was adopted for the first time in the June 30, 2009, actuarial valuation. GRS does not endorse this funding policy because the Statutory funding policy defers funding for these benefits into the future and places a higher burden on future generations of taxpayers.

We recommend the following changes:

1. Implementing a funding policy that contributes normal cost plus closed period amortization as a level percentage of defined benefit plan capped payroll of the unfunded liability. (Policy which recognizes unfunded liability at the valuation date and not projected liability in the year 2045.)
2. If the current Statutory funding policy is retained, we recommend:
  - a. Eliminating the maximum contribution cap
  - b. Calculating contributions as a level percentage of defined benefit plan payroll only instead of total payroll (including SMP payroll)
3. Implementing an asset corridor to constrain the actuarial value of assets within a certain percentage of the market value of assets (for example, 20 percent).
4. Changing the actuarial cost method for calculating liabilities from the Projected Unit Credit to the Entry Age Normal method.
5. Considering whether a decrease in total active membership is expected to continue, and if so, incorporating this into the projections used to calculate the Statutory contribution requirements.

### Change Funding Policy to a More Standard Actuarial Method

We recommend a funding policy that contributes normal cost plus closed period amortization as a level percentage of defined benefit plan capped payroll for paying off the current unfunded accrued liability (i.e., the amortization period declines by one year with each actuarial valuation) such that the funded ratio is projected to be 100 percent funded by 2045 or earlier. A 30-year closed amortization period (at the actuarial valuation as of June 30, 2014) methodology pays off the unfunded accrued liability in full by the end of the 30-year period in 2045. The Fiscal Year 2020 contribution would be \$2,461.774 (\$2,390.157 million for the SURS contribution and \$71.618 million for SMP) under this funding policy. The current Statutory contribution does not comply with this recommendation. Underfunding the System

## Summary of the Valuation

creates the risk that ultimately benefit obligations cannot be met from the trust, and will require a greater amount of funding from other State resources. In addition, continually underfunding the System also creates more of a funding need from contributions and less is available from investment return – thereby creating a more expensive plan. Projected contributions under the current Statutory policy and the recommended policy are shown in Graph 4 on page 36 and projected funded ratios are shown in Graph 1 on page 31.

### Eliminate Maximum Contribution Cap

If the current statutory funding policy is not changed, we recommend that the provision that establishes a maximum contribution cap be eliminated. The contribution cap is based on the projected hypothetical contributions if the proceeds from the 2003 bond issue had not been received. The cap is projected to lower contributions during fiscal years 2024 through 2033 compared to if no maximum contribution methodology was in place.

### Calculate Defined Benefit Plan Contributions Based on Defined Benefit Payroll Only

Currently, the Statutory contributions to the SURS defined benefit plan are calculated based on a level percentage of total pensionable payroll, including SMP payroll. We recommend that the contributions be calculated as a level percentage of defined benefit plan pensionable payroll only.

### Implement an Asset Corridor

In addition, we recommend that an asset corridor on the actuarial value of assets be implemented, in the event that there is another significant market downturn similar to Fiscal Year 2009. The following table compares the ratio of the actuarial value of assets to the market value of assets since Fiscal Year 2009. Using an actuarial value of assets that is significantly higher than the market value of assets delays funding to the System by further deferring contributions into the future. The plan is already in serious funding jeopardy, and we cannot recommend an asset valuation method that does not include a corridor because it could add additional risk to the funding of the benefit obligations if another downturn occurred.

(\$ in Millions)			
Year	Actuarial Value of Assets	Market Value of Assets	Ratio of Actuarial Value
2009	\$ 14,281.998	\$ 11,032.973	129 %
2010	13,966.643	12,121.542	115
2011	13,945.680	14,274.003	98
2012	13,949.905	13,705.143	102
2013	14,262.621	15,037.102	95
2014	15,844.714	17,391.323	91
2015	17,104.607	17,462.968	98
2016	17,701.646	17,005.630	104
2017	18,594.326	18,484.820	101
2018	19,347.886	19,321.076	100

## Summary of the Valuation

### Change the Actuarial Cost Method to the Entry Age Normal Method

The current actuarial cost method is the Projected Unit Credit method, which is required by statute. The Projected Unit Credit method recognizes costs such that the normal cost for an individual member increases as a percentage of payroll throughout his/her career. The Entry Age Normal cost method is the most commonly used method in the public sector. It is also the method required to be used for financial reporting under GASB 67 and 68. The Entry Age Normal method recognizes costs as a level percentage of payroll over a member's career. We recommend a change to the Entry Age Normal method.

### Number of Projected Future Active Members

The statutory contribution is based on performing an open group projection through the year 2045. The projection is based on assuming that new active members are hired to replace the current members who leave active membership (through termination, retirement, death or disability). The number of active members has decreased by about 10 percent between 2009 and 2018, which is an average annualized decrease of about 1.2 percent.

Currently, the actuarial valuation assumes that the total number of active members in the future will be equal to the number active in the current actuarial valuation. Given the decrease in the number of active members over the past nine years, if SURS expects to continue to see a similar decline of the active population in the near-term the Board may want to consider an update to the population projection assumption to include a decreasing population in the near-term before reaching an equilibrium number of active members long-term.

Total Active Members (Full and Part Time)						
June 30	Traditional & Portable	SMP	Total	Annual Change in Membership	% Annual Change in Membership	Earnings (\$ in Millions)
2009	73,699	9,846	83,545			\$3,872.6
2010	72,996	9,746	82,742	(803)	-1.0%	3,904.6
2011	71,888	9,723	81,611	(1,131)	-1.4%	3,893.4
2012	71,056	10,100	81,156	(455)	-0.6%	3,956.6
2013	70,556	10,746	81,302	146	0.2%	4,078.1
2014	69,436	11,409	80,845	(457)	-0.6%	4,131.0
2015	69,381	11,928	81,309	464	0.6%	4,280.5
2016	66,245	11,880	78,125	(3,184)	-3.9%	4,218.4
2017	64,117	11,852	75,969	(2,156)	-2.8%	4,184.5
2018	62,844	12,106	74,950	(1,019)	-1.3%	4,264.3
Total Change				(8,595)	-1.2%	

**We recognize that the State Statute governs the funding policy of the System. The purpose of these comments is to highlight the difference between the Statutory appropriation methodology and the recommended actuarially sound funding policy and to highlight the risks and additional costs of continuing to underfund the System. We believe that the State Statute would allow the Board to change the assumption regarding the projected number of future active members.**

# Summary of the Valuation

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## GASB Disclosure

A separate actuarial valuation report with calculations completed in accordance with the provisions of GASB Statement Nos. 67 and 68 has been issued.

## Future Considerations

Changes (such as the phase-in of assumption changes, five-year asset smoothing and the addition of the two new benefit tiers) have had the effect of reducing the Statutory contribution amounts that would have otherwise been made. However, the change in the investment return assumption and other changes to more closely align the actuarial assumptions with current market expectations have increased the contribution amounts that would otherwise have been made. Assuming the statutory contributions are received (and the actuarial assumptions are met including a 6.75% investment rate of return, each year through 2045) SURS is currently projected to have contributions sufficient to increase the funded ratio from the current level of 42.8% to 90.0% by 2045.

**This is a severely underfunded plan and the ability of the plan to reach 90% funding by 2045 is heavily dependent on the plan sponsor contributing the statutory contributions each and every year until 2045. We are not able to assess the plan sponsor's ability to make contributions when due.**

## Actuarial Standards of Practice (ASOP) 4 Disclosures

### General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.75% on the actuarial value of assets), it is expected that:

1. The combined State and employer contribution rate will be level as a percentage of payroll through 2045 (after all assumption changes and deferred asset gains and losses are fully recognized),
2. The unfunded liability will increase in dollar amount through 2025 before it begins to decrease,
3. The unfunded actuarial accrued liabilities will never be fully amortized, and
4. The funded status of the plan will increase gradually towards a 90% funded ratio in 2045.

### Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1. The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words of transferring the obligations to a unrelated third party in an arm's length market value type transaction.
2. The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future

## Summary of the Valuation

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actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).

3. The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets.

**Limitation of Project Scope:** Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

## Summary of the Valuation

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### Risks Associated With Measuring the Accrued Liability and Contributions

The determination of the accrued liability and the statutory and actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the statutory and actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

## Summary of the Valuation

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The statutory contribution may be considered as a minimum contribution that complies with State statute. The timely receipt of contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made in accordance with the funding policy do not necessarily guarantee benefit security.

### Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	2017	2018
Ratio of the market value of assets to total payroll	4.42	4.53
Ratio of actuarial accrued liability to payroll	10.00	10.61
Ratio of actives to retirees and beneficiaries	1.18	1.13
Ratio of net cash flow to market value of assets	-2.8%	-3.4%

Payroll used in the above table includes SMP payroll.

### Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

### Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

### Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

## Summary of the Valuation

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### Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

### Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.



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## **APPENDICES**

## **APPENDIX A**

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### **ASSET INFORMATION**

# Table 1

## Statement of Plan Net Position

### as of June 30, 2018, and June 30, 2017

	Defined Benefit Plan	Self Managed Plan	Reporting Entity Totals	
			2018	2017
<b>Assets</b>				
Cash and short-term investments	\$ 672,523,980	-	\$ 672,523,980	\$ 557,956,107
<b>Receivables</b>				
Members	10,819,032	\$ 4,258,394	15,077,426	11,020,119
Non-employer contributing entity	74,687,334	2,116,448	76,803,782	307,758,128
Federal, trust funds, and other	6,529,410	56,800	6,586,210	1,609,973
Pending investment sales	290,212,669	-	290,212,669	420,174,075
Interest and dividends	47,303,282	-	47,303,282	45,835,923
Total receivables	429,551,727	6,431,642	435,983,369	786,398,218
Prepaid expenses	158,297	-	158,297	122,532
<b>Investments, at fair value</b>				
Equity investments	10,693,258,510	80,241,318	10,773,499,828	9,998,536,284
Fixed income investments	4,747,532,656	36,904,459	4,784,437,115	4,772,101,327
Real estate investments	1,008,813,053	3,276,425	1,012,089,478	1,043,148,653
Alternative investments	2,433,890,246	3,581,298	2,437,471,544	2,302,378,022
Mutual fund and variable annuities		2,370,017,322	2,370,017,322	2,052,773,940
Total investments	18,883,494,465	2,494,020,822	21,377,515,287	20,168,938,226
Securities lending collateral	780,639,420	-	780,639,420	705,137,291
Capital assets, at cost, net of accum deprec \$19,688,845 and \$19,170,764 respectively	6,109,409	-	6,109,409	6,312,533
Total assets	20,772,477,298	2,500,452,464	23,272,929,762	22,224,864,907
<b>Liabilities</b>				
Benefits payable	13,124,100	-	13,124,100	9,533,649
Refunds payable	4,946,571	-	4,946,571	5,513,152
Securities lending collateral	779,626,493	-	779,626,493	704,387,453
Payable to brokers for unsettled trades	603,464,724	-	603,464,724	806,727,942
Reverse repurchase agreements	34,476,500	-	34,476,500	28,484,875
Administrative expenses payable	15,763,409	-	15,763,409	15,147,160
Total liabilities	1,451,401,797	-	1,451,401,797	1,569,794,231
Plan Net Position	\$ 19,321,075,501	\$ 2,500,452,464	\$ 21,821,527,965	\$ 20,655,070,676

## Table 2

### Statement of Changes in Plan Net Position for Years Ended June 30, 2018, and June 30, 2017

	Defined Benefit	Self Managed	Reporting Entity Totals	
	Plan	Plan	2018	2017
<b>Additions</b>				
<b>Contributions</b>				
Employer	\$ 39,659,344	\$ 8,345,520	\$ 48,004,864	\$ 46,041,545
Non-employer contributing entity	1,568,220,976	61,086,631	1,629,307,607	1,671,426,000
Member	282,726,126	84,218,589	366,944,715	363,859,687
Total Contributions	1,890,606,446	153,650,740	2,044,257,186	2,081,327,232
<b>Investment Income</b>				
<b>Net appreciation</b>				
in fair value of investments	1,208,428,215	259,006,327	1,467,434,542	1,967,912,694
Interest	127,396,974	-	127,396,974	114,131,741
Dividends	232,971,148	-	232,971,148	236,551,585
Securities lending	4,741,875	-	4,741,875	5,885,222
Gross Investment Income	1,573,538,212	259,006,327	1,832,544,539	2,324,481,242
<b>Less investment expense</b>				
Asset management expense	73,281,987	-	73,281,987	63,291,609
Securities lending expense	426,769	-	426,769	529,670
Net investment income	1,499,829,456	259,006,327	1,758,835,783	2,260,659,963
Total additions	3,390,435,902	412,657,067	3,803,092,969	4,341,987,195
<b>Deductions</b>				
Benefits	2,446,291,238	51,653,726	2,497,944,964	2,383,819,393
Refunds of contributions	93,492,132	30,350,446	123,842,578	118,929,259
Administrative expense	14,396,609	451,529	14,848,138	15,303,608
Total deductions	2,554,179,979	82,455,701	2,636,635,680	2,518,052,260
Net increase	836,255,923	330,201,366	1,166,457,289	1,823,934,935
<b>Plan Net Position</b>				
Beginning of year	18,484,819,578	2,170,251,098	20,655,070,676	18,831,135,741
End of Year	\$ 19,321,075,501	\$ 2,500,452,464	\$ 21,821,527,965	20,655,070,676

## **APPENDIX B**

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### **MEMBERSHIP DATA**

## Table 3A

### Summary of Data Characteristics – Active, Inactive, Retired (\$ in Millions)

	June 30, 2017		June 30, 2018	
	Number	Earnings	Number	Earnings
<b>Active Members</b>				
Full time				
Traditional SURS	42,307	\$2,172.4	41,710	\$2,188.6
Portable SURS	17,599	1,129.8	17,270	1,144.5
SMP	11,382	846.8	11,656	898.9
Total Full Time <sup>1</sup>	71,288	\$4,149.1	70,636	\$4,232.0
Part time				
Traditional SURS	3,605	\$ 25.9	3,290	\$ 23.1
Portable SURS	606	5.1	574	4.9
SMP	470	4.3	450	4.4
Total Part Time	4,681	\$ 35.4	4,314	\$ 32.3
Total	75,969	\$4,184.5	74,950	\$4,264.3
<b>Inactive Members</b>				
Traditional SURS	69,245		69,618	
Portable SURS	12,071		12,497	
SMP	9,503		9,759	
Total	90,819		91,874	

<sup>1</sup> Includes 671 police officers and firefighters (including SMP) as of June 30, 2017, and 687 as of June 30, 2018.

	June 30, 2017		June 30, 2018	
	Number	Annual Benefits	Number	Annual Benefits
<b>Benefit Recipients</b>				
Retirement				
Traditional SURS	49,081	\$ 1,967.8	49,909	\$ 2,035.3
Portable SURS	5,821	191.5	6,384	216.0
Total Retirement	54,902	\$ 2,159.3	56,293	\$ 2,251.3
Survivor				
Traditional SURS	8,415	\$ 156.4	8,615	\$ 167.7
Portable SURS	199	3.5	229	4.1
Total Survivor	8,614	\$ 159.9	8,844	\$ 171.8
Disability				
Traditional SURS	835	\$ 17.0	832	\$ 17.6
Portable SURS	194	5.0	200	5.3
Total Disability	1,029	\$ 22.0	1,032	\$ 23.0
Total	64,545	\$ 2,341.2	66,169	\$ 2,446.1
<b>Total Participants</b>				
Total Traditional SURS	173,488		173,974	
Total Portable SURS	36,490		37,154	
Total SMP	21,355		21,865	
Total	231,333		232,993	

Values may not add due to rounding.

## Table 3B

### Summary of Data Characteristics – Full Time Active

(\$ in Millions)

	June 30, 2017		June 30, 2018	
	Number	Earnings	Number	Earnings
<b>Active Members</b>				
Full time				
Continuing Actives - Tier 1				
Traditional SURS	29,614	\$1,710.9	27,555	\$1,660.0
Portable SURS	11,515	829.0	10,693	806.0
SMP	6,107	474.5	5,762	470.9
Total	47,236	\$3,014.4	44,010	\$2,936.8
Continuing Actives - Tier 2				
Traditional SURS	9,797	\$397.7	10,806	\$458.1
Portable SURS	4,993	262.9	5,445	299.9
SMP	4,368	328.6	4,812	376.8
Total	19,158	\$989.2	21,063	\$1,134.8
New Actives - Tier 1				
Traditional SURS	345	\$7.9	370	\$8.8
Portable SURS	81	2.7	87	2.5
SMP	61	2.1	67	2.5
Total	487	\$12.7	524	\$13.7
New Actives - Tier 2				
Traditional SURS	2,551	\$55.9	2,979	\$61.7
Portable SURS	1,010	35.3	1,045	36.1
SMP	846	41.6	1,015	48.8
Total	4,407	\$132.9	5,039	\$146.7
Total Actives - Tier 1				
Traditional SURS	29,959	\$1,718.8	27,925	\$1,668.8
Portable SURS	11,596	831.6	10,780	808.4
SMP	6,168	476.6	5,829	473.3
Total	47,723	\$3,027.0	44,534	\$2,950.5
Total Actives - Tier 2				
Traditional SURS	12,348	\$453.6	13,785	\$519.8
Portable SURS	6,003	298.2	6,490	336.0
SMP	5,214	370.2	5,827	425.6
Total	23,565	\$1,122.1	26,102	\$1,281.4
Total Actives - Tier 1 and Tier 2				
Traditional SURS	42,307	\$2,172.4	41,710	\$2,188.6
Portable SURS	17,599	1,129.8	17,270	1,144.5
SMP	11,382	846.8	11,656	898.9
Total	71,288	\$4,149.1	70,636	\$4,232.0

Values may not add due to rounding.

**Table 3C**  
**Summary of Data Characteristics – Part Time Active/Inactive**  
**(\$ in Millions)**

	June 30, 2017		June 30, 2018	
	Number	Earnings	Number	Earnings
<b>Active Members</b>				
Part time				
Total Actives - Tier 1				
Traditional SURS	1,115	\$7.2	997	\$6.6
Portable SURS	216	1.6	170	1.2
SMP	118	0.9	108	0.9
Total	1,449	\$9.7	1,275	\$8.7
Total Actives - Tier 2				
Traditional SURS	2,490	\$18.7	2,293	\$16.5
Portable SURS	390	3.5	404	3.6
SMP	352	3.4	342	3.5
Total	3,232	\$25.7	3,039	\$23.6
Total Actives - Tier 1 and Tier 2				
Traditional SURS	3,605	\$25.9	3,290	\$23.1
Portable SURS	606	5.1	574	4.9
SMP	470	4.3	450	4.4
Total	4,681	\$35.4	4,314	\$32.3
<b>Inactive Members</b>				
Total Inactives - Tier 1				
Traditional SURS	59,090	\$35.0	57,459	\$31.2
Portable SURS	9,514	18.8	9,395	16.1
SMP	7,361	63.0	7,219	58.9
Total	75,965	\$116.8	74,073	\$106.1
Total Inactives - Tier 2				
Traditional SURS	10,155	\$22.4	12,159	\$24.7
Portable SURS	2,557	13.2	3,102	15.3
SMP	2,142	21.8	2,540	21.1
Total	14,854	\$57.4	17,801	\$61.1
Total Inactives - Tier 1 and Tier 2				
Traditional SURS	69,245	\$57.4	69,618	\$55.9
Portable SURS	12,071	32.0	12,497	31.4
SMP	9,503	84.8	9,759	80.0
Total	90,819	\$174.2	91,874	\$167.3

Values may not add due to rounding.



**Table 4**  
**Distribution of Full-Time Active Members by Age and Years of Service**  
**as of June 30, 2018**

Age	Years of Service									Totals
	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30 & Over		
Under 20	20	7	-	-	-	-	-	-	-	27
	\$ 135,232	\$ 143,882	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 279,114
20-24	374	646	15	-	-	-	-	-	-	1,035
	\$ 3,587,220	\$ 17,798,421	\$ 402,945	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 21,788,586
25-29	654	3,102	542	11	-	-	-	-	-	4,309
	\$ 8,552,900	\$ 126,542,907	\$ 23,475,835	\$ 381,348	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 158,952,989
30-34	585	3,858	2,255	519	14	-	-	-	-	7,231
	\$ 9,485,494	\$ 195,830,202	\$ 117,577,078	\$ 28,369,296	\$ 678,637	\$ -	\$ -	\$ -	\$ -	\$ 351,940,708
35-39	440	3,011	2,911	1,725	454	11	-	-	-	8,552
	\$ 7,136,652	\$ 164,397,724	\$ 171,481,357	\$ 107,023,854	\$ 28,118,872	\$ 679,870	\$ -	\$ -	\$ -	\$ 478,838,329
40-44	326	2,151	2,338	2,171	1,388	313	5	-	-	8,692
	\$ 5,193,865	\$ 117,319,054	\$ 147,831,001	\$ 154,343,139	\$ 99,526,081	\$ 21,427,934	\$ 343,796	\$ -	\$ -	\$ 545,984,870
45-49	281	1,760	2,071	2,132	1,839	1,080	331	10	-	9,504
	\$ 4,828,436	\$ 88,917,095	\$ 122,372,735	\$ 153,786,286	\$ 146,916,782	\$ 83,935,675	\$ 23,914,866	\$ 706,720	\$ -	\$ 625,378,594
50-54	214	1,482	1,840	1,875	1,840	1,328	892	205	-	9,676
	\$ 3,689,578	\$ 72,448,741	\$ 97,254,164	\$ 123,589,479	\$ 142,366,590	\$ 111,678,996	\$ 71,799,193	\$ 15,418,672	\$ -	\$ 638,245,413
55-59	171	1,271	1,674	1,754	1,781	1,388	968	437	-	9,444
	\$ 2,683,892	\$ 61,546,983	\$ 86,207,186	\$ 107,838,033	\$ 128,041,898	\$ 113,466,086	\$ 92,846,331	\$ 41,369,163	\$ -	\$ 633,999,573
60-64	75	852	1,224	1,394	1,306	989	787	400	-	7,027
	\$ 958,677	\$ 39,826,599	\$ 59,957,394	\$ 80,432,617	\$ 90,822,465	\$ 74,829,508	\$ 71,729,107	\$ 46,959,036	\$ -	\$ 465,515,402
65 & Over	38	472	910	1,061	967	676	591	424	-	5,139
	\$ 649,603	\$ 17,199,850	\$ 33,247,941	\$ 52,722,568	\$ 62,063,306	\$ 47,546,420	\$ 44,623,162	\$ 52,975,197	\$ -	\$ 311,028,048
<b>Total Count</b>	<b>3,178</b>	<b>18,612</b>	<b>15,780</b>	<b>12,642</b>	<b>9,589</b>	<b>5,785</b>	<b>3,574</b>	<b>1,476</b>	<b>-</b>	<b>70,636</b>
<b>Total Payroll</b>	<b>\$ 46,901,549</b>	<b>\$ 901,971,458</b>	<b>\$ 859,807,637</b>	<b>\$ 808,486,621</b>	<b>\$ 698,534,632</b>	<b>\$ 453,564,489</b>	<b>\$ 305,256,454</b>	<b>\$ 157,428,788</b>	<b>\$ -</b>	<b>\$ 4,231,951,627</b>

*Includes the use of capped payroll for defined benefit plan members hired on or after January 1, 2011. Includes SMP.*

**Table 5**  
**Distribution of Benefit Recipients by Age**  
**as of June 30, 2018**

<u>Age</u>	<u>Number</u>	<u>Annual Benefit</u>
<b>Retirees and Survivors</b>		
Under 50	430	\$ 3,610,180
50-54	455	17,358,430
55-59	3,567	124,021,085
60-64	8,829	312,427,532
65-69	14,108	505,318,810
70-74	13,496	522,583,426
75-79	10,205	425,106,705
80-84	6,854	270,880,161
85-89	4,351	158,857,133
90 & Over	<u>2,842</u>	<u>82,919,387</u>
Total	65,137	\$ 2,423,082,849
<b>Disabilitants</b>		
Under 50	154	\$ 3,577,887
50-54	124	2,947,307
55-59	226	4,954,008
60-64	215	5,203,291
65-69	176	3,753,417
70-74	72	1,374,282
75-79	34	685,725
80-84	18	273,309
85-89	11	184,212
90 & Over	<u>2</u>	<u>21,265</u>
Total	1,032	\$ 22,974,703

Excludes SMP.

## **APPENDIX C**

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### **ACTUARIAL DETERMINATIONS**

**Table 6**  
**Summary of Actuarial Values**  
**as of June 30, 2018**  
(\$ in Millions)

	Actuarial Present Value of Projected Benefits (APV)	Projected Unit Credit Values		Gross NC % of Pay <sup>1</sup>
		Actuarial Accrued Liability (AAL)	Gross Normal Cost (NC) <sup>1</sup>	
<b>1. Active Members</b>				
a. Retirement	\$14,861.0	\$ 9,972.6	\$540.7	15.58%
b. Death	280.0	181.8	11.6	0.33%
c. Disability	255.2	158.2	15.1	0.44%
d. Termination	2,154.0	1,375.9	146.1	4.21%
Total - Active Members	\$17,550.1	\$ 11,688.5	\$713.5	20.55%
<b>2. Benefit Recipients</b>				
a. Retirement	\$28,797.2	\$28,797.2	\$ 0.0	
b. Survivor	1,633.9	1,633.9	0.0	
c. Disability	279.6	279.6	0.0	
Total - Benefit Recipients	\$30,710.7	\$30,710.7	\$ 0.0	
<b>3. Other Inactive</b>	\$ 2,859.5	\$ 2,859.5		
<b>4. Grand Total</b>	\$51,120.4	\$45,258.8	\$713.5	20.55%
<b>5. Operating Expense</b>			\$ 16.7	0.48%
<b>6. Total Normal Cost <sup>2</sup></b>			\$730.3	21.03%
<b>7. Expected Pay During Fiscal Year 2019 for Defined Benefit Plans <sup>1</sup></b>				\$ 3,471.7
<b>8. Present Value of Future Salaries (PVFS) <sup>1</sup></b>				\$ 26,861.9

<sup>1</sup> For members currently active as of June 30, 2018, in the Traditional and Portable defined benefit plans and includes the use of capped payroll for members hired on or after January 1, 2011.

<sup>2</sup> The normal cost as a percent of pay is 25.01% for Tier 1 members and 10.76% for Tier 2 members.

Excludes SMP.

Values may not add due to rounding.

**Table 7**  
**Defined Benefit Plan Development of the Actuarial Value of Assets**  
**for the Year Ending June 30, 2018**

	2017	2018	2019	2020	2021	2022
Beginning of Year:						
(1) Market Value of Assets	\$ 17,005,629,973	\$ 18,484,819,578				
(2) Actuarial Value of Assets	17,701,645,933	18,594,326,238				
End of Year:						
(3) Market Value of Assets	18,484,819,578	19,321,075,501				
(4) Net of Contributions and Disbursements	(515,120,443)	(663,573,533)				
(5) Total Investment Income						
=(3)-(1)-(4)	1,994,310,048	1,499,829,456				
(6) Projected Rate of Return	7.25%	7.25%				
(7) Projected Investment Income						
=(1)x(6)+([1+(6)] <sup>5</sup> -1)x(4)	1,214,561,768	1,316,515,744				
(8) Investment Income in Excess of Projected Income	779,748,280	183,313,712				
(9) Excess Investment Income Recognized						
This Year (5 year recognition)						
(9a) From This Year	155,949,656	36,662,742				
(9b) From One Year Ago	(246,425,206)	155,949,656	\$ 36,662,742			
(9c) From Two Years Ago	(148,460,161)	(246,425,206)	155,949,656	\$ 36,662,742		
(9d) From Three Years Ago	302,890,656	(148,460,161)	(246,425,206)	155,949,656	\$ 36,662,742	
(9e) From Four Years Ago	129,284,035	302,890,655	(148,460,159)	(246,425,207)	155,949,656	\$ 36,662,744
(9f) Total Recognized Investment Gain/(Loss)	193,238,980	100,617,686	(202,272,967)	(53,812,809)	192,612,398	36,662,744
(10) Change in Actuarial Value of Assets						
=(4)+(7)+(9f)	892,680,305	753,559,897				
End of Year:						
<b>(3) Market Value of Assets</b>	<b>18,484,819,578</b>	<b>19,321,075,501</b>				
<b>(11) Final Actuarial Value of Assets</b>	<b>18,594,326,238</b>	<b>19,347,886,135</b>				
(12) Difference Between Market & Actuarial Values	(109,506,660)	(26,810,634)				
(13) Actuarial Value Rate of Return	8.07 %	7.76 %				
(14) Estimated Market Value Rate of Return	11.91 %	8.26 %				
(15) Ratio of Actuarial Value to Market Value	101 %	100 %				
(16) SURS Reported Market Value Rate of Return	12.20 %	8.25 %				

Excludes SMP.

**Table 8**  
**Analysis of Change in**  
**Actuarial Accrued Liability and Actuarial Value of Assets**  
**for the Year Ending June 30, 2018**  
**(\$ in Millions)**

1. Actuarial (Gain)/Loss on Actuarial Accrued Liability ("AAL")		
(a) AAL 6/30/2017		\$ 41,853.3
(b) Normal Cost FY 2018	\$ 701.9	
(c) Benefits and Admin Expenses Paid FY 2018	(2,554.2)	
(d) Interest on (a), (b), and (c) at 7.25%	2,968.4	
(e) Expected AAL 6/30/2018 (a+b+c+d)		42,969.4
(f) Actual AAL 6/30/2018 Before Assumption and Method Changes		<u>43,077.5</u>
(g) Actuarial (Gain)/Loss on AAL (f-e)		\$ 108.0
(h) Impact of Benefit Changes		0.0
(i) Impact of Change in Actuarial Assumptions and Methods		<u>2,181.3</u>
(j) Actual AAL After Changes (f+h+i)		\$ 45,258.8
2. Actuarial (Gain)/Loss on Assets		
(a) Actuarial Value of Assets 6/30/2017		\$ 18,594.3
(b) Contributions FY 2018	1,890.6	
(c) Benefits and Administrative Expenses	(2,554.2)	
(d) Interest on (a), (b), and (c) at 7.25%	1,324.5	
(e) Expected Assets 6/30/2018 (a+b+c+d)		\$ 19,255.2
(f) Actual Actuarial Value of Assets 6/30/2018		<u>19,347.9</u>
(g) Actuarial (Gain)/Loss on Assets (e-f)		\$ (92.7)
3. Total Actuarial (Gain)/Loss		
(a) (Gain)/Loss on AAL		\$ 108.0
(b) (Gain)/Loss on Assets		<u>(92.7)</u>
(c) Net (Gain)/Loss (a+b)		\$ 15.3

*Excludes SMP.*

*Values may not add due to rounding.*

**Table 9**  
**Analysis of Change in**  
**Unfunded Actuarial Accrued Liability**  
**for the Year Ending June 30, 2018**  
**(\$ in Millions)**

1. Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2017	\$	23,259.0
2. Contributions		
a. Contributions equal to normal cost plus interest on UAAL		
i Interest on 1)	\$	1,686.3
ii Member contributions		282.7
iii Employer/State normal cost		419.1
iv Interest on ii and iii		25.0
v Total due	\$	2,413.1
b. Contributions paid based on funding policy		
i Member contributions	\$	282.7
ii Employer/State contributions		1,607.9
iii Interest on i and ii		67.3
iv Total paid	\$	1,957.9
c. Expected increase in UAAL (2a.v-2b.iv)		
		455.2
3. Expected UAAL at 06/30/2018 (1+2c)		23,714.2
4. (Gains)/Losses		
a. Investment income	\$	(92.7)
b. Salary increases		(8.5)
c. Demographic and other		116.5
d. Total	\$	15.3
5. Plan Provision Changes		-
6. Assumption Changes		2,181.3
7. Total Change in UAAL (2c + 4d + 5 + 6)		2,651.9
8. UAAL at 06/30/2018 (1 + 7)	\$	25,910.9

*Excludes SMP.*

*Values may not add due to rounding.*

**Table 10**  
**Analysis of Actuarial (Gains) and Losses**  
(\$ in Millions)

	Amount of (Gain) or Loss			
	FY 2015	FY 2016	FY 2017	FY 2018
Investment Return <sup>1</sup>	\$ (558.1)	\$ 151.8	\$ (142.8)	\$ (92.7)
Salary Increase	(45.3)	(135.0)	(144.7)	(8.5)
Age and Service Retirement	(17.0)	59.3	(26.0)	16.1
General Employment Termination	8.0	5.7	10.7	15.3
Disability Incidence	(3.4)	3.0	0.3	5.4
In Service Mortality	1.4	(3.7)	(7.3)	(3.4)
Benefit Recipient <sup>2</sup>	(2.0)	68.2	14.2	20.1
New Entrants <sup>3</sup>	82.9	63.2	84.1	76.6
Data Refinements <sup>4</sup>	NA	NA	(152.9)	0.0
Other <sup>5</sup>	(68.8)	129.5	(28.8)	(13.6)
<b>Total Actuarial (Gain)/Loss</b>	<b>\$ (602.3)</b>	<b>\$ 342.0</b>	<b>\$ (393.2)</b>	<b>\$ 15.3</b>
BOY Actuarial Accrued Liability (AAL)	\$ 37,429.5	\$ 39,520.7	\$ 40,923.3	\$ 41,853.3
(Gain)/Loss as a % of BOY AAL	(1.6)%	0.9%	(1.0)%	0.0%
<b>Total Non-Investment (Gain)/Loss</b>	<b>\$ (44.2)</b>	<b>\$ 190.2</b>	<b>\$ (250.4)</b>	<b>\$ 108.0</b>
(Gain)/Loss as a % of BOY AAL	(0.1)%	0.5%	(0.6)%	0.3%

Excludes SMP.

<sup>1</sup>Gain/Loss is based on actuarial value of assets.

<sup>2</sup>Benefit recipient (gain)/loss includes mortality gains and losses as well as gains and losses due to unexpected changes in benefit amounts from year to year. Unexpected changes may occur when benefits that are initially paid as preliminary estimates are finalized. Mortality gains and losses include deviations in the assumed demographics of future beneficiaries compared to the actual demographics of new beneficiaries.

Beginning with the actuarial valuation as of June 30, 2011, there is an additional load of 10% on the liabilities of those retirees who are currently receiving benefits as a preliminary estimate. Beginning with the actuarial valuation as of June 30, 2015, the load of 10% was reduced to 5% for retirees who are currently receiving benefits as a preliminary estimate for whom Staff provided a best formula benefit.

<sup>3</sup>Only includes liability for new entrants. Does not include the impact of new entrant contributions.

<sup>4</sup>In the actuarial valuation as of June 30, 2017, a new data field was used to estimate money purchase benefit amounts, which reflects the Effective Rate of Interest (ERI) declared by the State Comptroller (which differs from the ERI declared by the SURS Board).

<sup>5</sup>Includes other experience such as deviations between actual and expected benefit payments and refunds that were not easily attributable to one of the categories above.



**Table 11**  
**Funded Ratio and Illustrative Contributions under Funding Policy of Net Normal Cost Plus**  
**Level Percentage of Payroll Amortization of Unfunded Liability**  
**(\$ in Millions)**

Fiscal Year	DB Payroll <sup>1</sup>	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Total Normal Cost	Member Contributions <sup>2</sup>	Amortization of UAAL (30-year open) <sup>3</sup>	Net State Contribution (30-year open) <sup>3</sup>	Amortization of UAAL (30-year closed) <sup>4</sup>	Net State Contribution (30-year closed) <sup>4</sup>	Net State 30-year closed with 1 year Interest Adjustment <sup>4</sup>
2015	\$3,606.537	\$17,104.607	\$39,520.687	\$22,416.080	43.28 %	\$730.020	\$267.682	\$1,160.318	\$1,622.656			
2016	3,513.108	17,701.646	40,923.301	23,221.655	43.26	739.549	278.884	1,205.004	1,665.669	\$1,350.394	\$1,811.060	\$1,942.361
2017	3,458.320	18,594.326	41,853.348	23,259.022	44.43	719.225	278.643	1,248.309	1,688.891	1,424.261	1,864.843	2,000.044
2018	3,470.226	19,347.886	45,258.751	25,910.865	42.75	701.871	282.726	1,250.317	1,669.462	1,442.888	1,862.033	1,997.030
2019						730.265	280.362	1,392.034	1,841.937	1,789.119	2,239.022	2,390.156

<sup>1</sup> Defined Benefit Plan payroll is rolled forward with one year of salary scale at 3.25% (3.75% prior to fiscal year 2018) and uses capped payroll for members hired on and after January 1, 2011.

<sup>2</sup> Projected for Fiscal Year 2019 and actual for years prior to Fiscal Year 2019.

<sup>3</sup> A 30-year open period amortization policy is not a funding policy recommended by GRS. This illustrative contribution was included at the request of the Governor's Office. The amortization payment was calculated as a level percentage of total uncapped payroll (assumed to increase by 3.25% each year, 3.75% for years prior to Fiscal Year 2019).

<sup>4</sup> GRS recommends a 30-year (or shorter) closed amortization period beginning with Fiscal Year 2015, 26 years remaining at Fiscal Year 2019. (The statutory contribution would apply to Fiscal Year 2020; therefore a one year interest adjustment was applied). The amortization payment was calculated as a level percentage of defined benefit plan pensionable (capped) payroll.

## **APPENDIX D**

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### **ACTUARIAL PROJECTIONS**

**Table 12**  
**Baseline Projections – Actuarial Valuation June 30, 2018**  
**Assumes Contributions Based on Table 14 & Investment Return of 6.75% Each Year**  
**(\$ in Millions)**

Fiscal Year Ending	Total Payroll <sup>1</sup>	SMP Payroll	DB Payroll <sup>1</sup>	SURS Contributions <sup>2</sup>	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	Maximum Contribution <sup>3</sup>	SURS Contribution % of Total Payroll
2018	\$ 4,264.300	\$ 903.306	\$ 3,360.994	\$ 1,607.880	\$ 282.726	\$ 2,539.783	\$ 14.397	\$ 19,347.886	\$ 45,258.751	42.75 %	\$ 25,910.865	\$ 120.304	\$ 1,628.989	37.71 %
2019	4,486.634	986.482	3,500.152	1,637.827	280.362	2,716.848	16.749	19,607.306	46,243.877	42.40	26,636.570	123.920	1,657.859	36.50
2020	4,550.976	1,038.933	3,512.042	1,828.293	281.315	2,784.001	17.293	20,174.181	47,211.212	42.73	27,037.031	132.009	1,847.924	40.17
2021	4,632.660	1,094.022	3,538.638	1,920.125	283.445	2,880.032	17.855	21,026.658	48,131.622	43.69	27,104.965	139.615	1,929.559	41.45
2022	4,724.820	1,149.570	3,575.250	1,993.626	286.378	2,979.865	18.436	21,742.950	49,000.332	44.37	27,257.382	146.736	1,996.364	42.19
2023	4,822.600	1,205.560	3,617.040	2,049.390	289.725	3,084.560	19.035	22,420.740	49,809.472	45.01	27,388.732	153.373	2,051.548	42.50
2024	4,923.359	1,261.963	3,661.396	2,115.978	293.278	3,193.724	19.653	23,103.322	50,551.125	45.70	27,447.803	164.417	2,115.978	42.98
2025	5,027.049	1,318.569	3,708.480	2,153.819	297.049	3,305.571	20.292	23,758.753	51,218.694	46.39	27,459.941	174.604	2,153.819	42.84
2026	5,136.860	1,375.616	3,761.244	2,200.136	301.276	3,412.363	20.952	24,399.628	51,813.512	47.09	27,413.884	179.149	2,200.136	42.83
2027	5,251.480	1,433.478	3,818.001	2,249.180	305.822	3,520.034	21.633	25,027.181	52,330.761	47.82	27,303.580	183.195	2,249.180	42.83
2028	5,371.048	1,492.062	3,878.986	2,296.122	310.707	3,626.566	22.336	25,639.847	52,767.627	48.59	27,127.780	191.634	2,296.122	42.75
2029	5,494.102	1,551.136	3,942.967	2,345.427	315.832	3,726.258	23.062	26,246.353	53,126.547	49.40	26,880.193	199.325	2,345.427	42.69
2030	5,620.713	1,611.171	4,009.542	2,392.235	321.164	3,824.948	23.811	26,844.931	53,403.400	50.27	26,558.470	211.160	2,392.235	42.56
2031	5,750.825	1,673.200	4,077.625	2,441.664	326.618	3,921.960	24.585	27,439.582	53,594.200	51.20	26,154.618	221.997	2,441.664	42.46
2032	5,886.813	1,737.960	4,148.853	2,499.704	332.323	4,008.209	25.384	28,050.297	53,704.630	52.23	25,654.332	226.944	2,499.704	42.46
2033	6,029.720	1,805.178	4,224.542	2,566.590	338.386	4,086.074	26.209	28,696.304	53,739.151	53.40	25,042.846	226.249	2,566.590	42.57
2034	6,178.389	1,874.621	4,303.768	2,663.258	344.732	4,096.196	27.061	29,481.012	53,763.878	54.83	24,282.866	NA	2,861.699	43.11
2035	6,331.061	1,945.673	4,385.388	2,729.069	351.270	4,157.927	27.940	30,328.749	53,725.458	56.45	23,396.709	NA	2,932.413	43.11
2036	6,487.427	2,018.083	4,469.345	2,796.472	357.995	4,212.868	28.848	31,252.595	53,627.179	58.28	22,374.584	NA	3,004.839	43.11
2037	6,647.863	2,092.647	4,555.215	2,865.630	364.873	4,261.371	29.786	32,266.277	53,472.131	60.34	21,205.853	NA	3,079.150	43.11
2038	6,813.379	2,169.696	4,643.683	2,936.977	371.959	4,304.703	30.754	33,383.651	53,262.525	62.68	19,878.874	NA	3,155.813	43.11
2039	6,983.631	2,248.406	4,735.225	3,010.366	379.292	4,337.276	31.753	34,625.162	53,007.026	65.32	18,381.864	NA	3,234.670	43.11
2040	7,158.258	2,329.176	4,829.083	3,085.641	386.810	4,361.386	32.785	36,010.039	52,712.878	68.31	16,702.839	NA	3,315.554	43.11
2041	7,339.105	2,412.261	4,926.844	3,163.597	394.640	4,374.385	33.851	37,562.499	52,391.219	71.70	14,828.720	NA	3,399.318	43.11
2042	7,524.448	2,497.632	5,026.817	3,243.491	402.648	4,373.628	34.951	39,310.216	52,056.879	75.51	12,746.663	NA	3,485.166	43.11
2043	7,713.945	2,584.999	5,128.946	3,325.175	410.829	4,361.966	36.087	41,279.627	51,722.284	79.81	10,442.657	NA	3,572.936	43.11
2044	7,905.943	2,674.375	5,231.568	3,407.938	419.049	4,342.053	37.260	43,495.339	51,397.510	84.63	7,902.170	NA	3,661.866	43.11
2045	8,099.930	2,766.074	5,333.856	3,491.558	427.242	4,312.098	38.471	45,985.172	51,094.635	90.00	5,109.464	NA	3,751.716	43.11

Projections are based on 70% of new hires electing Tier 2 and 30% electing SMP and 74,950 total active members in each future year.

<sup>1</sup> Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

<sup>2</sup> Excludes SMP contributions. Includes employer contributions.

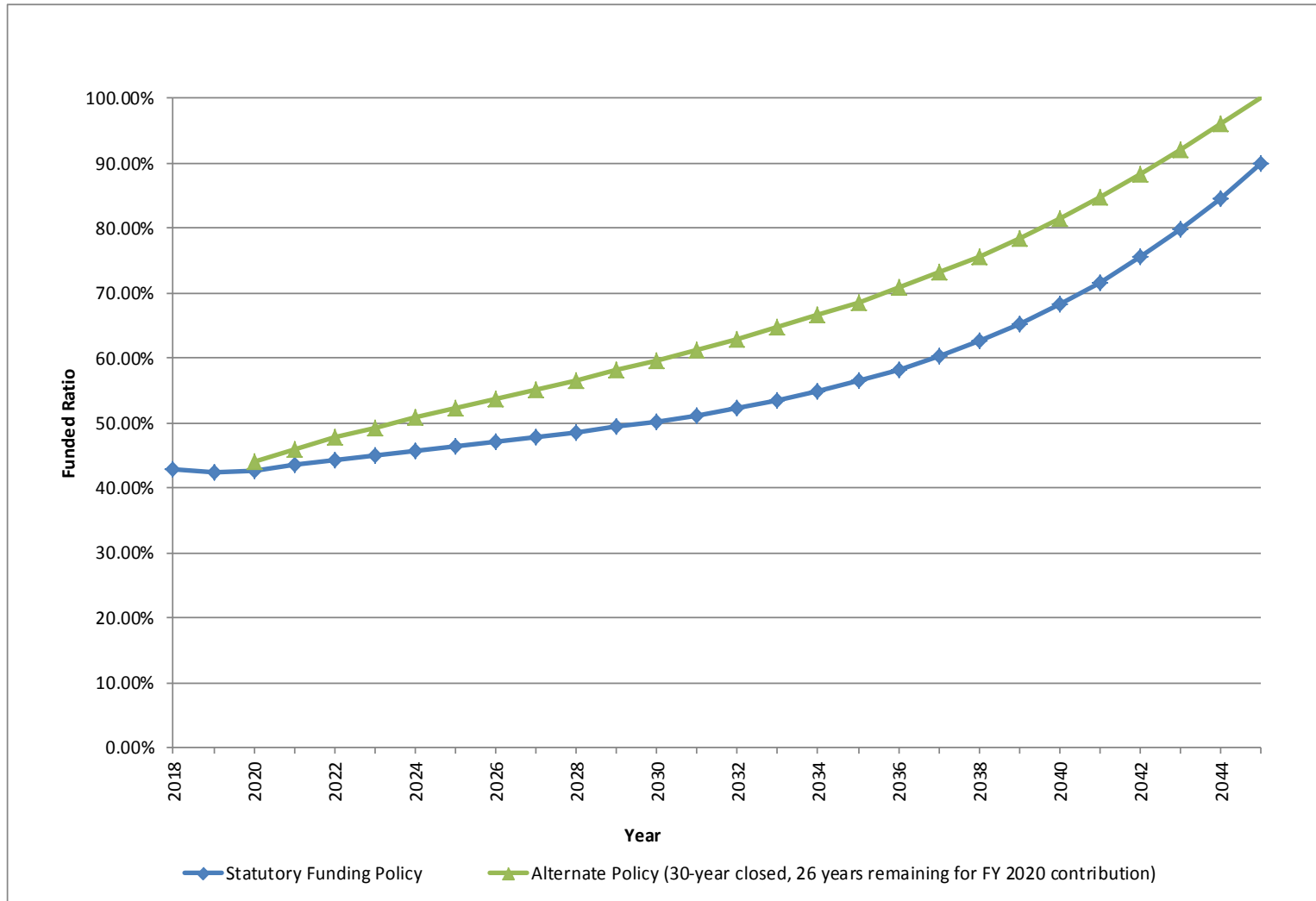
<sup>3</sup> Maximum contribution after impact of debt service.

# Graph 1

## Projected Funded Ratio Based on Statutory Contributions

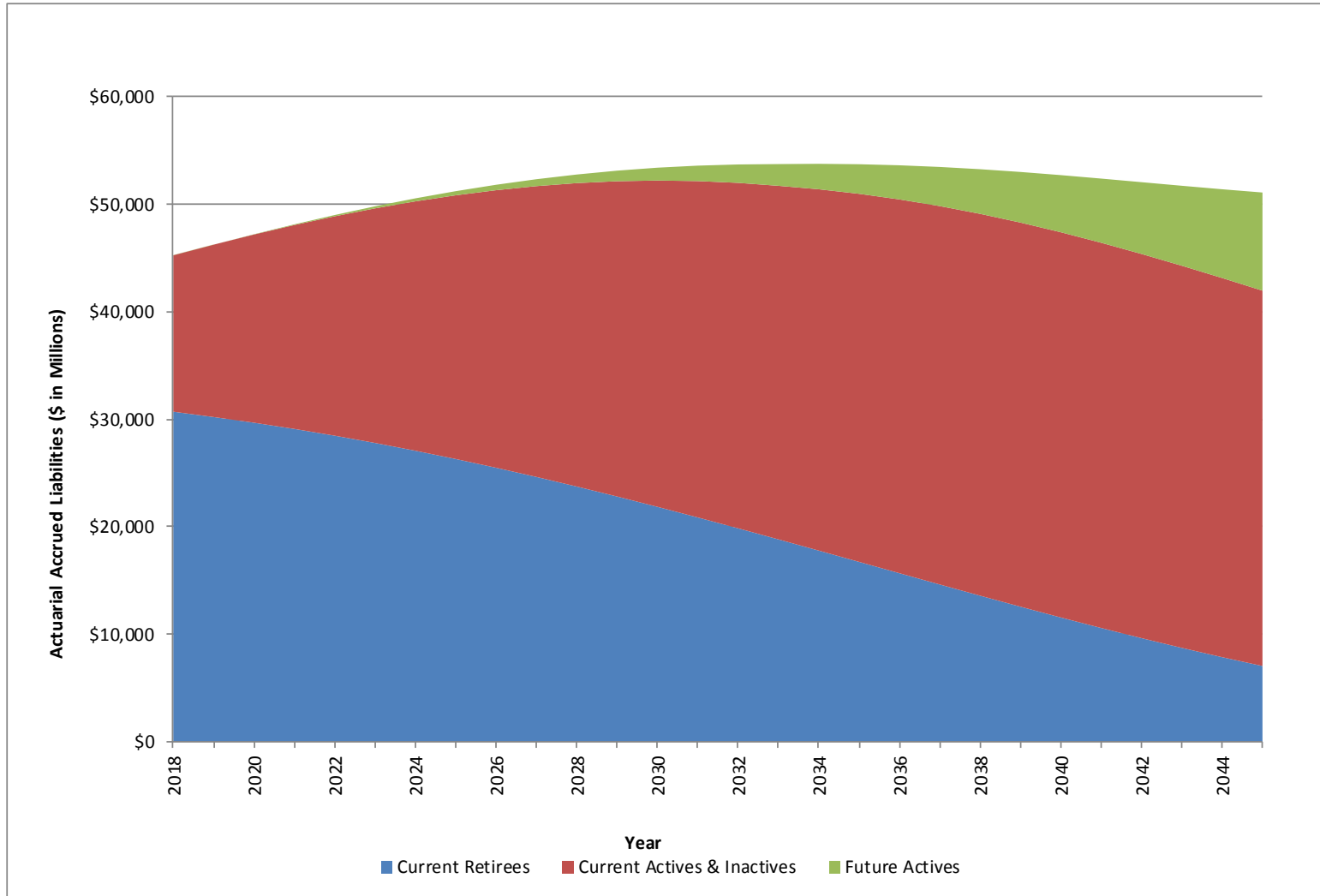
### Actuarial Valuation as of June 30, 2018

(\$ in Millions)

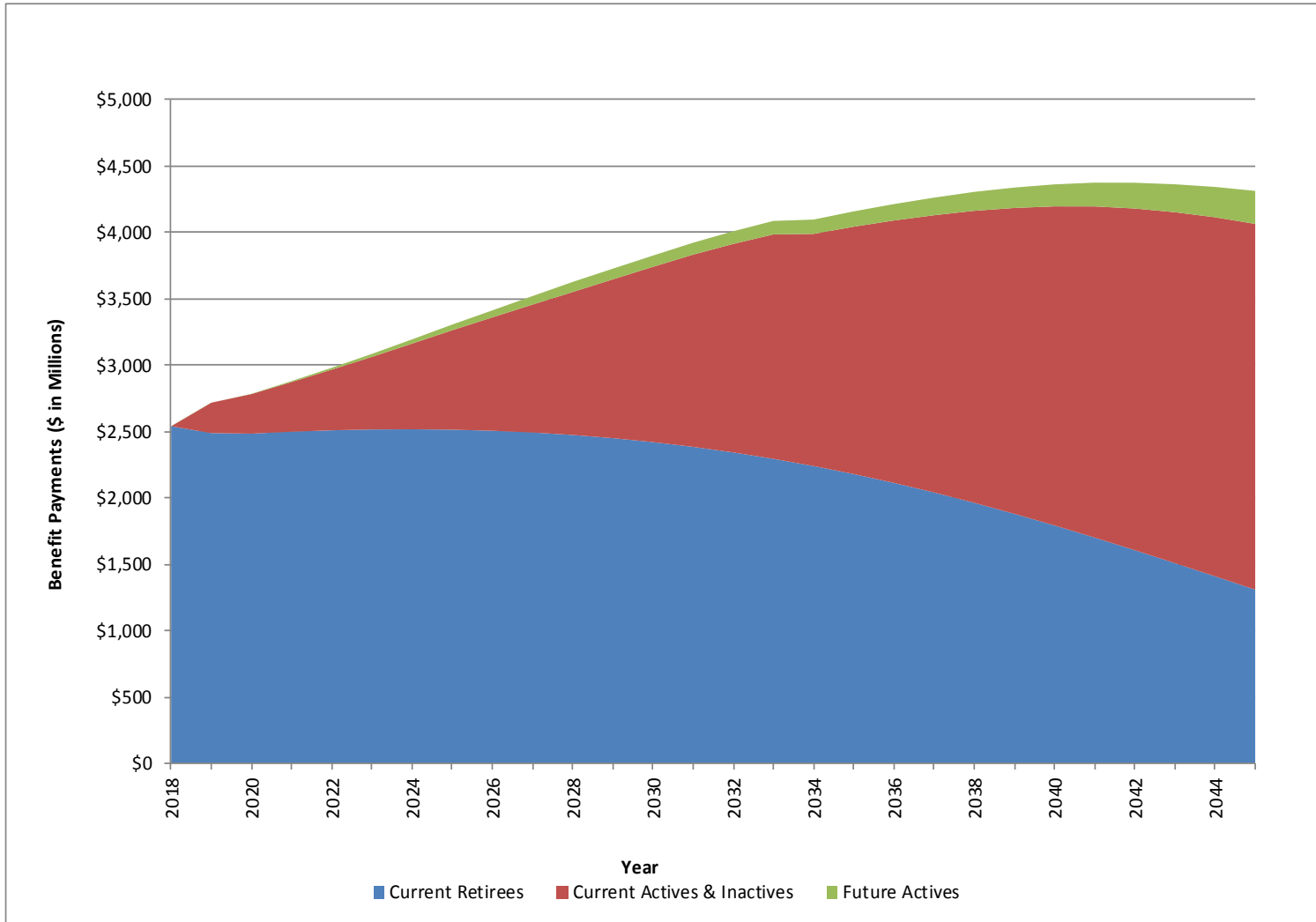


## Graph 2

### Projected Actuarial Accrued Liabilities Actuarial Valuation as of June 30, 2018 (\$ in Millions)



### Graph 3 Projected Benefit Payments Actuarial Valuation as of June 30, 2018 (\$ in Millions)



**Table 13**  
**Projected Statutory Contributions for the Actuarial Valuation as of June 30, 2018**  
**Before Impact of Bonds Issued in 2004**  
**(\$ in Millions)**

0% of New Members to OHP, 70% to Tier 2, 30% to SMP				
Combined State and Employer Contribution				
FYE	SURS Cont.	SMP Cont.	\$	% of Pay <sup>1</sup>
2019	\$ 1,781.779	\$ 67.473	\$ 1,849.252	41.22 %
2020	1,979.934	71.618	2,051.552	45.08
2021	2,069.174	77.482	2,146.656	46.34
2022	2,143.099	81.406	2,224.505	47.08
2023	2,204.921	85.361	2,290.282	47.49
2024	2,280.396	89.346	2,369.742	48.13
2025	2,328.423	93.346	2,421.769	48.17
2026	2,379.285	97.377	2,476.662	48.21
2027	2,432.374	101.467	2,533.841	48.25
2028	2,487.756	105.608	2,593.364	48.28
2029	2,544.752	109.784	2,654.536	48.32
2030	2,603.396	114.029	2,717.425	48.35
2031	2,663.661	118.414	2,782.075	48.38
2032	2,726.647	122.992	2,849.639	48.41
2033	2,792.839	127.744	2,920.583	48.44
2034	2,861.699	132.653	2,994.352	48.46
2035	2,932.413	137.676	3,070.089	48.49
2036	3,004.839	142.796	3,147.635	48.52
2037	3,079.150	148.068	3,227.218	48.55
2038	3,155.813	153.516	3,309.329	48.57
2039	3,234.670	159.081	3,393.751	48.60
2040	3,315.554	164.792	3,480.346	48.62
2041	3,399.318	170.667	3,569.985	48.64
2042	3,485.166	176.704	3,661.870	48.67
2043	3,572.936	182.882	3,755.818	48.69
2044	3,661.866	189.203	3,851.069	48.71
2045	3,751.716	195.688	3,947.404	48.73
Total	\$74,873.576	\$3,417.173	\$78,290.749	

<sup>1</sup> Percent of pay amounts are calculated based on pensionable pay. Pensionable pay does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

**Table 14**  
**Projected Statutory Contributions for the Actuarial Valuation as of June 30, 2018**  
**Including Impact of Bonds Issued in 2004**  
(\$ in Millions)

FYE	0% of New Members to OHP, 70% to Tier 2, 30% to SMP		Combined State and Employer Contribution		Debt Service		SURS Alternate Policy Contribution <sup>2</sup>		Projected % of Alternate Policy Contributed <sup>3</sup>	Employer Contributions	Federal/Trust Fund Contributions	Qualified Plan State Contribution
	SURS Cont.	SMP Cont.	\$	% of Pay <sup>1</sup>	\$	% of Pay <sup>1</sup>	SURS Cont.	Total (w/SMP)				
2019	\$ 1,637.827	\$ 67.473	\$ 1,705.300	38.01 %	\$ 123.920	2.76 %	\$ 1,637.827	\$ 1,705.300		\$ 4.146	\$ 46.000	\$ 1,655.154
2020	1,828.293	71.618	1,899.911	41.75	132.009	2.90	2,390.156	2,461.774	77.18 %	10.284	52.000	1,837.627
2021	1,920.125	77.482	1,997.607	43.12	139.615	3.01	2,410.879	2,488.361	80.28	13.540	NA	1,984.067
2022	1,993.626	81.406	2,075.032	43.92	146.736	3.11	2,416.312	2,497.718	83.08	12.478	NA	2,062.554
2023	2,049.390	85.361	2,134.751	44.27	153.373	3.18	2,402.872	2,488.233	85.79	12.018	NA	2,122.733
2024	2,115.978	89.346	2,205.324	44.79	164.417	3.34	2,403.561	2,492.907	88.46	11.650	NA	2,193.674
2025	2,153.819	93.346	2,247.165	44.70	174.604	3.47	2,408.391	2,501.737	89.82	11.091	NA	2,236.074
2026	2,200.136	97.377	2,297.513	44.73	179.149	3.49	2,414.032	2,511.409	91.48	10.461	NA	2,287.052
2027	2,249.180	101.467	2,350.647	44.76	183.195	3.49	2,424.646	2,526.113	93.05	9.969	NA	2,340.678
2028	2,296.122	105.608	2,401.730	44.72	191.634	3.57	2,436.041	2,541.649	94.49	9.370	NA	2,392.360
2029	2,345.427	109.784	2,455.211	44.69	199.325	3.63	2,448.390	2,558.174	95.98	8.960	NA	2,446.251
2030	2,392.235	114.029	2,506.264	44.59	211.160	3.76	2,461.298	2,575.327	97.32	8.607	NA	2,497.657
2031	2,441.664	118.414	2,560.078	44.52	221.997	3.86	2,474.040	2,592.454	98.75	8.283	NA	2,551.795
2032	2,499.704	122.992	2,622.696	44.55	226.944	3.86	2,488.521	2,611.513	100.43	7.876	NA	2,614.820
2033	2,566.590	127.744	2,694.334	44.68	226.249	3.75	2,502.750	2,630.494	102.43	7.301	NA	2,687.033
2034	2,663.258	132.653	2,795.911	45.25			2,517.345	2,649.998	105.51	6.920	NA	2,788.991
2035	2,729.069	137.676	2,866.745	45.28			2,532.237	2,669.913	107.37	6.622	NA	2,860.123
2036	2,796.472	142.796	2,939.268	45.31			2,546.654	2,689.450	109.29	6.299	NA	2,932.969
2037	2,865.630	148.068	3,013.698	45.33			2,562.475	2,710.543	111.18	6.019	NA	3,007.679
2038	2,936.977	153.516	3,090.493	45.36			2,576.626	2,730.142	113.20	5.637	NA	3,084.856
2039	3,010.366	159.081	3,169.447	45.38			2,588.513	2,747.594	115.35	5.216	NA	3,164.231
2040	3,085.641	164.792	3,250.433	45.41			2,597.560	2,762.352	117.67	4.662	NA	3,245.771
2041	3,163.597	170.667	3,334.264	45.43			2,602.493	2,773.160	120.23	3.899	NA	3,330.365
2042	3,243.491	176.704	3,420.195	45.45			2,600.902	2,777.606	123.13	3.271	NA	3,416.924
2043	3,325.175	182.882	3,508.057	45.48			2,587.311	2,770.193	126.64	2.712	NA	3,505.345
2044	3,407.938	189.203	3,597.141	45.50			2,546.887	2,736.090	131.47	2.264	NA	3,594.877
2045	3,491.558	195.688	3,687.246	45.52			2,422.800	2,618.488	140.82	1.880	NA	3,685.366
Total	\$ 69,409.288	\$ 3,417.173	\$ 72,826.461		\$ 2,674.326		\$ 66,401.515	\$ 69,818.688		\$ 201.437	\$ 98.000	\$ 72,527.024

<sup>1</sup> Percent of pay amounts are calculated based on pensionable pay. Pensionable pay does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

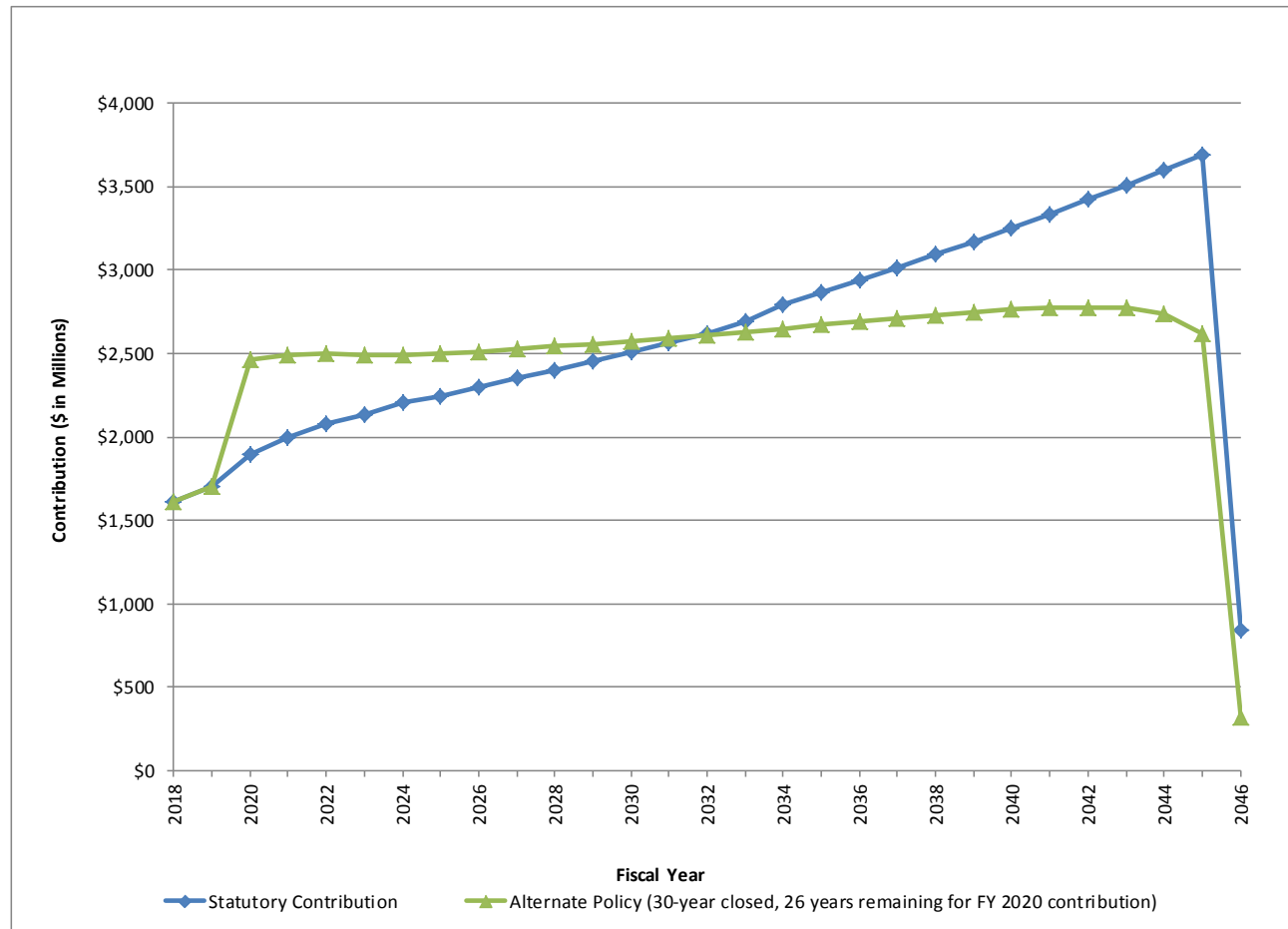
<sup>2</sup> Alternate funding policy of normal cost plus 30-year closed period amortization of the unfunded liability as a level percentage of defined benefit plan capped payroll beginning in FY 2016 with 26 years remaining as of FY 2020. Statutory Contribution is shown for FY 2019 for the Alternate funding policy contribution.

<sup>3</sup> Compares the SURS Statutory contribution (targets a funded ratio of 90% in 2045) against an alternate funding policy (targets a funded ratio of 100% in 2045).



## Graph 4

### Projected Statutory Contributions vs. Contributions under Alternate Policy (Normal Cost Plus 30-year Closed Period Level Percent of Pay Amortization) (26 years remaining in Amortization Period for FY 2020 Contribution) (\$ in Millions)



*Alternate funding policy of normal cost plus 30-year closed period amortization of the unfunded liability as a level percentage of defined benefit plan capped payroll beginning in FY 2016 and 26 years remaining in FY 2020. Alternate funding policy contributions based on actual assets as of the current valuation date, the certified statutory contribution in the year following the current valuation date and the alternate policy contribution being made thereafter.*

## APPENDIX E

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### ADDITIONAL PROJECTION DETAILS

**Table 15**

**Projections – Does Not Reflect Recognition of Deferred Asset Gains and Losses in Projected Actuarial Value of Assets (Impact of Bonds Issued in 2004 Included)  
Assumes Investment Return of 6.75% Each Year on Actuarial Value of Assets  
(\$ in Millions)**

Fiscal Year Ending	Total Payroll <sup>1</sup>	SMP Payroll	DB Payroll <sup>1</sup>	SURS Contributions <sup>2</sup>	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	Maximum Contribution <sup>3</sup>	SURS Contribution % of Total Payroll
2018	\$ 4,264.300	\$ 903.306	\$ 3,360.994	\$ 1,607.880	\$ 282.726	\$ 2,539.783	\$ 14.397	\$ 19,347.886	\$ 45,258.751	42.75 %	\$ 25,910.865	\$ 120.304	\$ 1,628.989	37.71 %
2019	4,486.634	986.482	3,500.152	1,637.827	280.362	2,716.848	16.749	19,811.389	46,243.877	42.84	26,432.488	123.920	1,657.859	36.50
2020	4,550.976	1,038.933	3,512.042	1,828.128	281.315	2,784.001	17.293	20,433.837	47,211.212	43.28	26,777.375	132.009	1,847.865	40.17
2021	4,632.660	1,094.022	3,538.638	1,903.844	283.445	2,880.032	17.855	21,078.931	48,131.622	43.79	27,052.691	139.615	1,917.282	41.10
2022	4,724.820	1,149.570	3,575.250	1,973.535	286.378	2,979.865	18.436	21,738.857	49,000.332	44.36	27,261.475	146.736	1,981.453	41.77
2023	4,822.600	1,205.560	3,617.040	2,046.854	289.725	3,084.560	19.035	22,413.750	49,809.472	45.00	27,395.722	153.373	2,049.860	42.44
2024	4,923.359	1,261.963	3,661.396	2,116.496	293.278	3,193.724	19.653	23,096.395	50,551.125	45.69	27,454.730	164.417	2,116.496	42.99
2025	5,027.049	1,318.569	3,708.480	2,154.347	297.049	3,305.571	20.292	23,751.904	51,218.694	46.37	27,466.790	174.604	2,154.347	42.86
2026	5,136.860	1,375.616	3,761.244	2,200.676	301.276	3,412.363	20.952	24,392.874	51,813.512	47.08	27,420.638	179.149	2,200.676	42.84
2027	5,251.480	1,433.478	3,818.001	2,249.731	305.822	3,520.034	21.633	25,020.542	52,330.761	47.81	27,310.220	183.195	2,249.731	42.84
2028	5,371.048	1,492.062	3,878.986	2,296.686	310.707	3,626.566	22.336	25,633.342	52,767.627	48.58	27,134.285	191.634	2,296.686	42.76
2029	5,494.102	1,551.136	3,942.967	2,346.004	315.832	3,726.258	23.062	26,240.006	53,126.547	49.39	26,886.541	199.325	2,346.004	42.70
2030	5,620.713	1,611.171	4,009.542	2,392.826	321.164	3,824.948	23.811	26,838.765	53,403.400	50.26	26,564.636	211.160	2,392.826	42.57
2031	5,750.825	1,673.200	4,077.625	2,442.268	326.618	3,921.960	24.585	27,433.624	53,594.200	51.19	26,160.576	221.997	2,442.268	42.47
2032	5,886.813	1,737.960	4,148.853	2,500.322	332.323	4,008.209	25.384	28,044.576	53,704.630	52.22	25,660.053	226.944	2,500.322	42.47
2033	6,029.720	1,805.178	4,224.542	2,567.224	338.386	4,086.074	26.209	28,690.851	53,739.151	53.39	25,048.299	226.249	2,567.224	42.58
2034	6,178.389	1,874.621	4,303.768	2,663.896	344.732	4,096.196	27.061	29,475.850	53,763.878	54.82	24,288.028	NA	2,862.348	43.12
2035	6,331.061	1,945.673	4,385.388	2,729.722	351.270	4,157.927	27.940	30,323.915	53,725.458	56.44	23,401.544	NA	2,933.079	43.12
2036	6,487.427	2,018.083	4,469.345	2,797.142	357.995	4,212.868	28.848	31,248.126	53,627.179	58.27	22,379.053	NA	3,005.521	43.12
2037	6,647.863	2,092.647	4,555.215	2,866.316	364.873	4,261.371	29.786	32,262.216	53,472.131	60.33	21,209.915	NA	3,079.848	43.12
2038	6,813.379	2,169.696	4,643.683	2,937.681	371.959	4,304.703	30.754	33,380.042	53,262.525	62.67	19,882.483	NA	3,156.529	43.12
2039	6,983.631	2,248.406	4,735.225	3,011.087	379.292	4,337.276	31.753	34,622.054	53,007.026	65.32	18,384.971	NA	3,235.404	43.12
2040	7,158.258	2,329.176	4,829.083	3,086.380	386.810	4,361.386	32.785	36,007.485	52,712.878	68.31	16,705.393	NA	3,316.306	43.12
2041	7,339.105	2,412.261	4,926.844	3,164.354	394.640	4,374.385	33.851	37,560.556	52,391.219	71.69	14,830.663	NA	3,400.089	43.12
2042	7,524.448	2,497.632	5,026.817	3,244.268	402.648	4,373.628	34.951	39,308.944	52,056.879	75.51	12,747.935	NA	3,485.956	43.12
2043	7,713.945	2,584.999	5,128.946	3,325.972	410.829	4,361.966	36.087	41,279.093	51,722.284	79.81	10,443.191	NA	3,573.747	43.12
2044	7,905.943	2,674.375	5,231.568	3,408.754	419.049	4,342.053	37.260	43,495.612	51,397.510	84.63	7,901.898	NA	3,662.696	43.12
2045	8,099.930	2,766.074	5,333.856	3,492.394	427.242	4,312.098	38.471	45,986.327	51,094.635	90.00	5,108.308	NA	3,752.567	43.12

<sup>1</sup> Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

<sup>2</sup> Excludes SMP contributions. Includes employer contributions.

<sup>3</sup> Maximum contribution after impact of debt service.

**Table 16**  
**Development of Market and Actuarial Value of Assets as of June 30, 2018**  
**after Bonds (Valuation Basis) and before Bonds (Hypothetical Basis)**

		After Bonds (Valuation Basis)	Before Bonds (Hypothetical)
1	Market Value at 6/30/2017	\$18,484,819,578	\$16,165,375,396
2a	Employer and Non-Employer Contributing Entity Contributions	1,607,880,320	1,749,292,849
2b	Member Contributions	282,726,126	282,726,126
2c	Benefits and Expenses	2,554,179,979	2,554,179,979
2d	Net Non-Investment Cash Flow	(663,573,533)	(522,161,004)
3	Investment Return (Based on Estimated Rate of 8.26%)	1,499,829,456	1,314,463,569
4	Expected Return (Based on Estimated Rate of 7.25%)	1,316,515,744	1,153,392,556
5	Market Value at 6/30/2018 (1+2d+3)	19,321,075,501	16,957,677,961
6	Expected Market Value at 6/30/2018 (1+2d+4)	19,137,761,789	16,796,606,948
7a	Actuarial Gain/(Loss) Current Year	183,313,712	161,071,013
7b	Actuarial Gain/(Loss) 1 Year Prior	779,748,280	680,927,833
7c	Actuarial Gain/(Loss) 2 Years Prior	(1,232,126,031)	(1,069,638,132)
7d	Actuarial Gain/(Loss) 3 Years Prior	(742,300,803)	(641,546,753)
7e	Actuarial Gain/(Loss) 4 Years Prior	1,514,453,279	1,303,474,812
8	Actuarial Value at 6/30/2017	18,594,326,238	16,258,339,727
9	Actuarial Value at 6/30/2018 (8+2d+4+.2*(7a+7b+7c+7d+7e))	19,347,886,135	16,976,429,034

Table 17

Hypothetical Assets to Determine Maximum Contribution

Projections – Reflects Recognition of Deferred Asset Gains and Losses in Projected Actuarial Value of Assets (Before Impact of Bonds Issued in 2004)  
(\$ in Millions)

Fiscal Year Ending	Total Payroll <sup>1</sup>	SMP Payroll	DB Payroll <sup>1</sup>	SURS Contributions <sup>2</sup>	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	SURS Contribution % of Total Payroll
2018	\$ 4,264.300	\$ 903.306	\$ 3,360.994	\$ 1,749.293	\$ 282.726	\$ 2,539.783	\$ 14.397	\$ 16,976.429	\$ 45,258.751	37.51 %	\$ 28,282.322	NA	41.02 %
2019	4,486.634	986.482	3,500.152	1,781.779	280.362	2,716.848	16.749	17,253.487	46,243.877	37.31	28,990.390	NA	39.71
2020	4,550.976	1,038.933	3,512.042	1,979.934	281.315	2,784.001	17.293	17,825.063	47,211.212	37.76	29,386.150	NA	43.51
2021	4,632.660	1,094.022	3,538.638	2,069.174	283.445	2,880.032	17.855	18,646.824	48,131.622	38.74	29,484.798	NA	44.66
2022	4,724.820	1,149.570	3,575.250	2,143.099	286.378	2,979.865	18.436	19,352.165	49,000.332	39.49	29,648.167	NA	45.36
2023	4,822.600	1,205.560	3,617.040	2,204.921	289.725	3,084.560	19.035	20,029.271	49,809.472	40.21	29,780.200	NA	45.72
2024	4,923.359	1,261.963	3,661.396	2,280.396	293.278	3,193.724	19.653	20,720.305	50,551.125	40.99	29,830.820	NA	46.32
2025	5,027.049	1,318.569	3,708.480	2,328.423	297.049	3,305.571	20.292	21,395.283	51,218.694	41.77	29,823.411	NA	46.32
2026	5,136.860	1,375.616	3,761.244	2,379.285	301.276	3,412.363	20.952	22,061.720	51,813.512	42.58	29,751.792	NA	46.32
2027	5,251.480	1,433.478	3,818.001	2,432.374	305.822	3,520.034	21.633	22,720.741	52,330.761	43.42	29,610.021	NA	46.32
2028	5,371.048	1,492.062	3,878.986	2,487.756	310.707	3,626.566	22.336	23,375.718	52,767.627	44.30	29,391.909	NA	46.32
2029	5,494.102	1,551.136	3,942.967	2,544.752	315.832	3,726.258	23.062	24,035.339	53,126.547	45.24	29,091.208	NA	46.32
2030	5,620.713	1,611.171	4,009.542	2,603.396	321.164	3,824.948	23.811	24,702.843	53,403.400	46.26	28,700.558	NA	46.32
2031	5,750.825	1,673.200	4,077.625	2,663.661	326.618	3,921.960	24.585	25,382.271	53,594.200	47.36	28,211.930	NA	46.32
2032	5,886.813	1,737.960	4,148.853	2,726.647	332.323	4,008.209	25.384	26,088.595	53,704.630	48.58	27,616.035	NA	46.32
2033	6,029.720	1,805.178	4,224.542	2,792.839	338.386	4,086.074	26.209	26,835.947	53,739.151	49.94	26,903.203	NA	46.32
2034	6,178.389	1,874.621	4,303.768	2,861.699	344.732	4,096.196	27.061	27,700.110	53,763.878	51.52	26,063.768	NA	46.32
2035	6,331.061	1,945.673	4,385.388	2,932.413	351.270	4,157.927	27.940	28,637.732	53,725.458	53.30	25,087.726	NA	46.32
2036	6,487.427	2,018.083	4,469.345	3,004.839	357.995	4,212.868	28.848	29,662.718	53,627.179	55.31	23,964.460	NA	46.32
2037	6,647.863	2,092.647	4,555.215	3,079.150	364.873	4,261.371	29.786	30,789.693	53,472.131	57.58	22,682.438	NA	46.32
2038	6,813.379	2,169.696	4,643.683	3,155.813	371.959	4,304.703	30.754	32,033.499	53,262.525	60.14	21,229.026	NA	46.32
2039	6,983.631	2,248.406	4,735.225	3,234.670	379.292	4,337.276	31.753	33,415.625	53,007.026	63.04	19,591.401	NA	46.32
2040	7,158.258	2,329.176	4,829.083	3,315.554	386.810	4,361.386	32.785	34,956.405	52,712.878	66.31	17,756.473	NA	46.32
2041	7,339.105	2,412.261	4,926.844	3,399.318	394.640	4,374.385	33.851	36,681.292	52,391.219	70.01	15,709.927	NA	46.32
2042	7,524.448	2,497.632	5,026.817	3,485.166	402.648	4,373.628	34.951	38,619.225	52,056.879	74.19	13,437.654	NA	46.32
2043	7,713.945	2,584.999	5,128.946	3,572.936	410.829	4,361.966	36.087	40,797.981	51,722.284	78.88	10,924.302	NA	46.32
2044	7,905.943	2,674.375	5,231.568	3,661.866	419.049	4,342.053	37.260	43,243.540	51,397.510	84.14	8,153.969	NA	46.32
2045	8,099.930	2,766.074	5,333.856	3,751.716	427.242	4,312.098	38.471	45,985.172	51,094.635	90.00	5,109.464	NA	46.32

<sup>1</sup> Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

<sup>2</sup> Excludes SMP contributions. Includes employer contributions.

**Table 18**

**Hypothetical Assets to Determine Maximum Contribution**

**Projections – Does Not Reflect Recognition of Deferred Asset Gains and Losses in Projected Actuarial Value of Assets  
(Before Impact of Bonds Issued in 2004)**

**Assumes Investment Return of 6.75% Each Year on Actuarial Value of Assets  
( \$ in Millions)**

Fiscal Year Ending	Total Payroll <sup>1</sup>	SMP Payroll	DB Payroll <sup>1</sup>	SURS Contributions <sup>2</sup>	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	SURS Contribution % of Total Payroll
2018	\$ 4,264.300	\$ 903.306	\$ 3,360.994	\$ 1,749.293	\$ 282.726	\$ 2,539.783	\$ 14.397	\$ 16,976.429	\$ 45,258.751	37.51 %	\$ 28,282.322	NA	41.02 %
2019	4,486.634	986.482	3,500.152	1,781.779	280.362	2,716.848	16.749	17,428.590	46,243.877	37.69	28,815.287	NA	39.71
2020	4,550.976	1,038.933	3,512.042	1,979.874	281.315	2,784.001	17.293	18,046.983	47,211.212	38.23	29,164.229	NA	43.50
2021	4,632.660	1,094.022	3,538.638	2,056.897	283.445	2,880.032	17.855	18,689.099	48,131.622	38.83	29,442.524	NA	44.40
2022	4,724.820	1,149.570	3,575.250	2,128.188	286.378	2,979.865	18.436	19,347.498	49,000.332	39.48	29,652.834	NA	45.04
2023	4,822.600	1,205.560	3,617.040	2,203.232	289.725	3,084.560	19.035	20,022.544	49,809.472	40.20	29,786.927	NA	45.69
2024	4,923.359	1,261.963	3,661.396	2,280.913	293.278	3,193.724	19.653	20,713.659	50,551.125	40.98	29,837.466	NA	46.33
2025	5,027.049	1,318.569	3,708.480	2,328.951	297.049	3,305.571	20.292	21,388.733	51,218.694	41.76	29,829.961	NA	46.33
2026	5,136.860	1,375.616	3,761.244	2,379.824	301.276	3,412.363	20.952	22,055.286	51,813.512	42.57	29,758.226	NA	46.33
2027	5,251.480	1,433.478	3,818.001	2,432.926	305.822	3,520.034	21.633	22,714.442	52,330.761	43.41	29,616.319	NA	46.33
2028	5,371.048	1,492.062	3,878.986	2,488.320	310.707	3,626.566	22.336	23,369.578	52,767.627	44.29	29,398.050	NA	46.33
2029	5,494.102	1,551.136	3,942.967	2,545.329	315.832	3,726.258	23.062	24,029.380	53,126.547	45.23	29,097.167	NA	46.33
2030	5,620.713	1,611.171	4,009.542	2,603.986	321.164	3,824.948	23.811	24,697.092	53,403.400	46.25	28,706.308	NA	46.33
2031	5,750.825	1,673.200	4,077.625	2,664.265	326.618	3,921.960	24.585	25,376.756	53,594.200	47.35	28,217.444	NA	46.33
2032	5,886.813	1,737.960	4,148.853	2,727.266	332.323	4,008.209	25.384	26,083.347	53,704.630	48.57	27,621.282	NA	46.33
2033	6,029.720	1,805.178	4,224.542	2,793.472	338.386	4,086.074	26.209	26,831.000	53,739.151	49.93	26,908.151	NA	46.33
2034	6,178.389	1,874.621	4,303.768	2,862.348	344.732	4,096.196	27.061	27,695.499	53,763.878	51.51	26,068.379	NA	46.33
2035	6,331.061	1,945.673	4,385.388	2,933.079	351.270	4,157.927	27.940	28,633.497	53,725.458	53.30	25,091.961	NA	46.33
2036	6,487.427	2,018.083	4,469.345	3,005.521	357.995	4,212.868	28.848	29,658.902	53,627.179	55.31	23,968.277	NA	46.33
2037	6,647.863	2,092.647	4,555.215	3,079.848	364.873	4,261.371	29.786	30,786.340	53,472.131	57.57	22,685.790	NA	46.33
2038	6,813.379	2,169.696	4,643.683	3,156.529	371.959	4,304.703	30.754	32,030.659	53,262.525	60.14	21,231.866	NA	46.33
2039	6,983.631	2,248.406	4,735.225	3,235.404	379.292	4,337.276	31.753	33,413.352	53,007.026	63.04	19,593.674	NA	46.33
2040	7,158.258	2,329.176	4,829.083	3,316.306	386.810	4,361.386	32.785	34,954.755	52,712.878	66.31	17,758.123	NA	46.33
2041	7,339.105	2,412.261	4,926.844	3,400.089	394.640	4,374.385	33.851	36,680.328	52,391.219	70.01	15,710.891	NA	46.33
2042	7,524.448	2,497.632	5,026.817	3,485.956	402.648	4,373.628	34.951	38,619.013	52,056.879	74.19	13,437.866	NA	46.33
2043	7,713.945	2,584.999	5,128.946	3,573.747	410.829	4,361.966	36.087	40,798.592	51,722.284	78.88	10,923.692	NA	46.33
2044	7,905.943	2,674.375	5,231.568	3,662.696	419.049	4,342.053	37.260	43,245.050	51,397.510	84.14	8,152.460	NA	46.33
2045	8,099.930	2,766.074	5,333.856	3,752.567	427.242	4,312.098	38.471	45,987.662	51,094.635	90.00	5,106.973	NA	46.33

<sup>1</sup> Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

<sup>2</sup> Excludes SMP contributions. Includes employer contributions.

**Table 19**  
**Additional Details – Total Normal Cost Dollars**  
**(\$ in Millions)**

Fiscal Year Ending	Total Normal Cost <sup>1</sup>					Admin Expense During Following Fiscal Year					Normal Cost with Admin Expense				
	Tier 2		Optional Hybrid			Tier 2		Optional Hybrid			Tier 2		Optional Hybrid		
	Tier 1	Current	Future	Plan Future	Total	Tier 1	Current	Future	Plan Future	Total	Tier 1	Current	Future	Plan Future	Total
2019	\$ 614.042	\$ 99.475	\$ 0.000	\$ 0.000	\$ 713.517	\$ 12.080	\$ 4.669	\$ 0.000	\$ 0.000	\$ 16.749	\$ 626.122	\$ 104.143	\$ 0.000	\$ 0.000	\$ 730.265
2020	582.333	93.725	23.033	0.000	699.091	11.720	4.390	1.184	0.000	17.293	594.053	98.115	24.217	0.000	716.385
2021	552.995	88.866	44.648	0.000	686.509	11.342	4.132	2.381	0.000	17.855	564.337	92.998	47.029	0.000	704.364
2022	525.478	85.088	65.605	0.000	676.171	10.927	3.924	3.585	0.000	18.436	536.405	89.012	69.189	0.000	694.606
2023	498.644	82.288	85.523	0.000	666.455	10.504	3.782	4.748	0.000	19.035	509.148	86.070	90.272	0.000	685.490
2024	472.114	80.156	105.170	0.000	657.440	10.069	3.681	5.903	0.000	19.653	482.183	83.837	111.073	0.000	677.093
2025	445.772	78.501	124.857	0.000	649.130	9.618	3.603	7.071	0.000	20.292	455.389	82.104	131.928	0.000	669.421
2026	419.941	77.222	144.733	0.000	641.896	9.148	3.538	8.265	0.000	20.952	429.089	80.760	152.998	0.000	662.847
2027	394.765	76.236	164.630	0.000	635.631	8.673	3.484	9.475	0.000	21.633	403.438	79.720	174.105	0.000	657.263
2028	370.288	75.465	184.817	0.000	630.570	8.194	3.438	10.704	0.000	22.336	378.481	78.903	195.522	0.000	652.906
2029	346.180	74.917	205.181	0.000	626.278	7.710	3.398	11.954	0.000	23.062	353.890	78.315	217.134	0.000	649.339
2030	321.757	74.525	225.809	0.000	622.091	7.212	3.362	13.237	0.000	23.811	328.969	77.887	239.046	0.000	645.902
2031	296.820	74.235	246.672	0.000	617.727	6.702	3.327	14.556	0.000	24.585	303.522	77.563	261.228	0.000	642.313
2032	271.894	74.017	267.812	0.000	613.723	6.186	3.292	15.906	0.000	25.384	278.080	77.309	283.718	0.000	639.107
2033	247.942	73.804	289.157	0.000	610.903	5.681	3.253	17.275	0.000	26.209	253.623	77.057	306.433	0.000	637.113
2034	224.982	73.626	310.684	0.000	609.292	5.188	3.211	18.662	0.000	27.061	230.170	76.837	329.346	0.000	636.353
2035	202.391	73.528	332.370	0.000	608.289	4.702	3.170	20.068	0.000	27.940	207.094	76.698	352.438	0.000	636.230
2036	180.037	73.492	354.275	0.000	607.804	4.222	3.129	21.497	0.000	28.848	184.258	76.621	375.773	0.000	636.652
2037	157.973	73.425	376.386	0.000	607.784	3.749	3.086	22.951	0.000	29.786	161.722	76.512	399.336	0.000	637.570
2038	136.382	73.322	398.737	0.000	608.441	3.286	3.042	24.427	0.000	30.754	139.667	76.363	423.163	0.000	639.193
2039	115.856	73.203	421.229	0.000	610.288	2.843	2.994	25.916	0.000	31.753	118.699	76.198	447.145	0.000	642.042
2040	96.881	73.002	443.800	0.000	613.683	2.431	2.942	27.412	0.000	32.785	99.312	75.945	471.212	0.000	646.469
2041	80.220	72.661	466.391	0.000	619.272	2.061	2.884	28.906	0.000	33.851	82.281	75.545	495.296	0.000	653.122
2042	66.267	72.098	488.890	0.000	627.255	1.741	2.818	30.392	0.000	34.951	68.009	74.916	519.282	0.000	662.207
2043	54.567	71.309	511.314	0.000	637.190	1.465	2.744	31.877	0.000	36.087	56.033	74.053	543.191	0.000	673.277
2044	44.783	70.199	533.660	0.000	648.642	1.228	2.662	33.370	0.000	37.260	46.012	72.860	567.030	0.000	685.902
2045	36.407	68.669	556.024	0.000	661.100	1.019	2.567	34.885	0.000	38.471	37.427	71.236	590.909	0.000	699.572
2046	29.142	66.764	578.418	0.000	674.324	0.831	2.463	36.427	0.000	39.721	29.973	69.227	614.845	0.000	714.045

<sup>1</sup> Normal Cost excludes expense portion.

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023.

Values may not add due to rounding.

**Table 20**  
**Additional Details – Normal Cost Rates**  
(\$ in Millions)

Fiscal Year Ending	Expected Defined Benefit Plan Pay <sup>1</sup>					Total Normal Cost Rate <sup>1</sup>						Employer Normal Cost Rate			
	Tier 2		Optional Hybrid			Tier 2		Optional Hybrid		Combined	Optional Hybrid				
	Tier 1	Current	Future	Plan Future	Total	Tier 1	Current	Future	Plan Future		Total	Tier 2	Tier 1	Tier 2	Plan
2019	\$ 2,503.974	\$ 967.737	\$ 0.000	\$ 0.000	\$ 3,471.711	25.01%	10.76%			21.03%	10.76%	17.00%	2.75%		13.02%
2020	2,353.789	881.628	237.748	0.000	3,473.165	25.24%	11.13%	10.19%		20.63%	10.93%	17.23%	2.92%		12.62%
2021	2,215.249	807.061	465.054	0.000	3,487.364	25.48%	11.52%	10.11%		20.20%	11.01%	17.47%	3.00%		12.19%
2022	2,084.970	748.708	683.945	0.000	3,517.623	25.73%	11.89%	10.12%	0.00%	19.75%	11.04%	17.72%	3.03%	0.00%	11.74%
2023	1,960.297	705.789	886.155	0.000	3,552.241	25.97%	12.19%	10.19%	0.00%	19.30%	11.08%	17.96%	3.07%	0.00%	11.29%
2024	1,839.345	672.480	1,078.365	0.000	3,590.190	26.21%	12.47%	10.30%	0.00%	18.86%	11.13%	18.20%	3.12%	0.00%	10.85%
2025	1,721.150	644.872	1,265.430	0.000	3,631.452	26.46%	12.73%	10.43%	0.00%	18.43%	11.20%	18.45%	3.19%	0.00%	10.42%
2026	1,606.427	621.319	1,451.430	0.000	3,679.176	26.71%	13.00%	10.54%	0.00%	18.02%	11.28%	18.70%	3.27%	0.00%	10.01%
2027	1,495.648	600.820	1,633.970	0.000	3,730.438	26.97%	13.27%	10.66%	0.00%	17.62%	11.36%	18.96%	3.35%	0.00%	9.61%
2028	1,388.880	582.716	1,814.512	0.000	3,786.108	27.25%	13.54%	10.78%	0.00%	17.24%	11.45%	19.24%	3.44%	0.00%	9.23%
2029	1,285.480	566.599	1,993.103	0.000	3,845.182	27.53%	13.82%	10.89%	0.00%	16.89%	11.54%	19.52%	3.53%	0.00%	8.88%
2030	1,183.664	551.747	2,172.466	0.000	3,907.877	27.79%	14.12%	11.00%	0.00%	16.53%	11.63%	19.78%	3.62%	0.00%	8.52%
2031	1,082.819	537.602	2,351.771	0.000	3,972.192	28.03%	14.43%	11.11%	0.00%	16.17%	11.73%	20.02%	3.72%	0.00%	8.16%
2032	984.429	523.865	2,531.166	0.000	4,039.460	28.25%	14.76%	11.21%	0.00%	15.82%	11.82%	20.24%	3.81%	0.00%	7.81%
2033	891.129	510.202	2,709.859	0.000	4,111.190	28.46%	15.10%	11.31%	0.00%	15.50%	11.91%	20.45%	3.90%	0.00%	7.49%
2034	802.816	496.808	2,887.606	0.000	4,187.230	28.67%	15.47%	11.41%	0.00%	15.20%	12.00%	20.66%	3.99%	0.00%	7.19%
2035	717.910	483.942	3,063.884	0.000	4,265.736	28.85%	15.85%	11.50%	0.00%	14.91%	12.10%	20.84%	4.09%	0.00%	6.90%
2036	636.123	471.497	3,239.246	0.000	4,346.866	28.97%	16.25%	11.60%	0.00%	14.65%	12.19%	20.96%	4.18%	0.00%	6.64%
2037	557.555	459.053	3,413.513	0.000	4,430.121	29.01%	16.67%	11.70%	0.00%	14.39%	12.29%	21.00%	4.28%	0.00%	6.38%
2038	482.510	446.668	3,587.152	0.000	4,516.330	28.95%	17.10%	11.80%	0.00%	14.15%	12.38%	20.94%	4.37%	0.00%	6.14%
2039	412.416	434.318	3,758.912	0.000	4,605.646	28.78%	17.54%	11.90%	0.00%	13.94%	12.48%	20.77%	4.47%	0.00%	5.93%
2040	348.326	421.617	3,927.982	0.000	4,697.925	28.51%	18.01%	12.00%	0.00%	13.76%	12.58%	20.50%	4.57%	0.00%	5.75%
2041	291.873	408.464	4,093.767	0.000	4,794.104	28.19%	18.49%	12.10%	0.00%	13.62%	12.68%	20.18%	4.67%	0.00%	5.61%
2042	243.790	394.543	4,255.123	0.000	4,893.456	27.90%	18.99%	12.20%	0.00%	13.53%	12.78%	19.89%	4.77%	0.00%	5.52%
2043	202.835	379.869	4,412.177	0.000	4,994.881	27.62%	19.49%	12.31%	0.00%	13.48%	12.88%	19.61%	4.87%	0.00%	5.47%
2044	168.035	364.109	4,565.083	0.000	5,097.227	27.38%	20.01%	12.42%	0.00%	13.46%	12.98%	19.37%	4.97%	0.00%	5.45%
2045	137.730	346.952	4,714.951	0.000	5,199.633	27.17%	20.53%	12.53%	0.00%	13.45%	13.08%	19.16%	5.07%	0.00%	5.44%
2046	110.966	328.692	4,862.089	0.000	5,301.747	27.01%	21.06%	12.65%	0.00%	13.47%	13.18%	19.00%	5.17%	0.00%	5.46%

<sup>1</sup>Expected pay for members in the defined benefit plans at June 30. Used to develop normal cost as a percent of pay.

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023.

Values may not add due to rounding.



**Table 21**  
**Additional Details – Number of Members, Contributions and Payroll**  
(\$ in Millions)

Fiscal Year Ending	SMP Total Active Members	Number of Defined Benefit Plan Active Members					Defined Benefit Plan Payroll <sup>1</sup>					Member Contributions				
		Tier 2		Optional Hybrid			Tier 2		Optional Hybrid			Tier 2		Optional Hybrid		
		Tier 1	Current	Future	Plan Future	Total	Tier 1	Current	Future	Plan Future	Total	Tier 1	Current	Future	Plan Future	Total
2018	12,106	39,872	22,972	0	0	62,844	\$ 2,485.038	\$ 875.956	\$ 0.000	\$ 0.000	\$ 3,360.994					\$ 282.726
2019	13,414	35,739	19,393	6,404	0	61,536	2,373.669	891.310	235.173	0.000	3,500.152	\$ 190.131	\$ 71.394	\$ 18.837	\$ 0.000	280.362
2020	14,604	32,007	16,273	12,066	0	60,346	2,234.510	816.693	460.839	0.000	3,512.042	178.984	65.417	36.913	0.000	281.314
2021	15,640	28,703	13,744	16,863	0	59,310	2,105.276	753.473	679.890	0.000	3,538.639	168.634	60.353	54.459	0.000	283.446
2022	16,380	25,957	12,177	20,436	0	58,570	1,981.403	707.281	886.566	0.000	3,575.250	158.709	56.653	71.014	0.000	286.376
2023	16,973	23,535	11,077	23,365	0	57,977	1,861.909	672.501	1,082.630	0.000	3,617.040	149.139	53.867	86.719	0.000	289.725
2024	17,501	21,312	10,170	25,967	0	57,449	1,744.971	644.013	1,272.412	0.000	3,661.396	139.772	51.585	101.920	0.000	293.277
2025	17,971	19,270	9,407	28,302	0	56,979	1,630.710	619.960	1,457.810	0.000	3,708.480	130.619	49.659	116.771	0.000	297.049
2026	18,390	17,395	8,751	30,414	0	56,560	1,520.518	599.255	1,641.471	0.000	3,761.244	121.792	48.000	131.482	0.000	301.274
2027	18,768	15,661	8,180	32,341	0	56,182	1,413.718	580.816	1,823.468	0.000	3,818.002	113.239	46.523	146.060	0.000	305.822
2028	19,109	14,070	7,675	34,096	0	55,841	1,311.316	564.481	2,003.189	0.000	3,878.986	105.036	45.215	160.455	0.000	310.706
2029	19,415	12,592	7,225	35,718	0	55,535	1,210.948	549.772	2,182.247	0.000	3,942.967	96.997	44.037	174.798	0.000	315.832
2030	19,696	11,210	6,813	37,231	0	55,254	1,111.538	535.730	2,362.274	0.000	4,009.542	89.035	42.912	189.218	0.000	321.165
2031	19,961	9,916	6,434	38,639	0	54,989	1,012.910	522.393	2,542.322	0.000	4,077.625	81.133	41.844	203.640	0.000	326.617
2032	20,208	8,733	6,079	39,930	0	54,742	918.422	509.112	2,721.319	0.000	4,148.853	73.566	40.780	217.978	0.000	332.324
2033	20,435	7,665	5,744	41,106	0	54,515	829.844	495.856	2,898.843	0.000	4,224.543	66.471	39.718	232.197	0.000	338.386
2034	20,644	6,684	5,434	42,188	0	54,306	745.064	483.046	3,075.659	0.000	4,303.769	59.680	38.692	246.360	0.000	344.732
2035	20,836	5,780	5,145	43,189	0	54,114	663.134	470.781	3,251.474	0.000	4,385.389	53.117	37.710	260.443	0.000	351.270
2036	21,009	4,951	4,875	44,115	0	53,941	584.491	458.745	3,426.109	0.000	4,469.345	46.818	36.745	274.431	0.000	357.994
2037	21,171	4,187	4,615	44,977	0	53,779	508.866	446.458	3,599.891	0.000	4,555.215	40.761	35.761	288.351	0.000	364.873
2038	21,320	3,490	4,372	45,768	0	53,630	437.159	434.495	3,772.029	0.000	4,643.683	35.015	34.803	302.140	0.000	371.958
2039	21,454	2,874	4,138	46,484	0	53,496	371.325	422.303	3,941.597	0.000	4,735.225	29.742	33.826	315.722	0.000	379.290
2040	21,572	2,336	3,914	47,128	0	53,378	311.429	409.711	4,107.942	0.000	4,829.082	24.946	32.818	329.046	0.000	386.810
2041	21,672	1,896	3,695	47,687	0	53,278	260.705	396.491	4,269.647	0.000	4,926.843	20.884	31.759	341.999	0.000	394.642
2042	21,759	1,535	3,478	48,178	0	53,191	217.195	382.357	4,427.264	0.000	5,026.816	17.397	30.627	354.624	0.000	402.648
2043	21,833	1,241	3,266	48,610	0	53,117	180.456	367.664	4,580.826	0.000	5,128.946	14.455	29.450	366.924	0.000	410.829
2044	21,900	996	3,051	49,003	0	53,050	148.978	351.316	4,731.274	0.000	5,231.568	11.933	28.140	378.975	0.000	419.048
2045	21,958	789	2,836	49,367	0	52,992	121.009	333.863	4,878.984	0.000	5,333.856	9.693	26.742	390.807	0.000	427.242

<sup>1</sup> Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023.

Values may not add due to rounding.

**Table 22**  
**Additional Details – Present Value of Future Benefits and Benefit Payments**  
(\$ in Millions)

Fiscal Year Ending	Present Value of Future Benefits							Benefit Payments							
	Current Retirees	Current Inactives	Tier 1 Actives	Tier 2 Actives		Optional Hybrid		Current Retirees	Current Inactives	Tier 1 Actives	Tier 2 Actives		Optional Hybrid		
				Current	Future	Plan	Future				Current	Future	Plan	Future	
2018	\$ 30,710.699	\$ 2,859.532	\$ 16,070.718	\$ 1,479.415	\$ 0.000	\$ 0.000	\$ 51,120.364								\$ 2,539.783
2019	30,213.089	2,988.842	17,028.437	1,533.577	200.310	0.000	51,964.255	2,487.984	61.661	122.973	44.230	0.000	0.000	0.000	2,716.848
2020	29,686.201	3,113.161	17,999.415	1,585.007	421.999	0.000	52,805.783	2,483.811	74.940	172.707	50.413	2.130	0.000	0.000	2,784.001
2021	29,108.583	3,234.521	18,965.390	1,643.390	667.679	0.000	53,619.563	2,498.489	85.926	240.986	47.043	7.588	0.000	0.000	2,880.032
2022	28,481.033	3,352.466	19,915.206	1,712.931	932.717	0.000	54,394.353	2,509.080	97.160	319.733	40.057	13.835	0.000	0.000	2,979.865
2023	27,804.719	3,465.936	20,843.333	1,792.752	1,216.711	0.000	55,123.451	2,515.280	109.196	402.778	34.652	22.654	0.000	0.000	3,084.560
2024	27,081.128	3,571.169	21,741.993	1,884.268	1,521.103	0.000	55,799.661	2,516.853	124.581	491.933	28.547	31.810	0.000	0.000	3,193.724
2025	26,311.931	3,666.848	22,604.653	1,988.009	1,844.873	0.000	56,416.314	2,513.720	140.704	585.486	22.694	42.967	0.000	0.000	3,305.571
2026	25,499.081	3,751.871	23,429.679	2,103.320	2,188.878	0.000	56,972.829	2,505.718	157.268	678.271	18.273	52.833	0.000	0.000	3,412.363
2027	24,645.010	3,827.060	24,210.223	2,229.202	2,553.393	0.000	57,464.888	2,492.509	172.341	775.223	15.576	64.385	0.000	0.000	3,520.034
2028	23,752.410	3,889.876	24,943.637	2,363.826	2,938.574	0.000	57,888.323	2,474.005	189.228	871.832	15.337	76.164	0.000	0.000	3,626.566
2029	22,824.481	3,938.791	25,624.582	2,504.163	3,354.456	0.000	58,246.473	2,449.884	206.787	970.530	18.603	80.454	0.000	0.000	3,726.258
2030	21,864.725	3,972.888	26,244.900	2,650.242	3,803.066	0.000	58,535.821	2,420.065	224.324	1,073.696	22.215	84.648	0.000	0.000	3,824.948
2031	20,877.140	3,990.955	26,797.599	2,802.107	4,285.311	0.000	58,753.112	2,384.297	242.067	1,179.668	26.158	89.770	0.000	0.000	3,921.960
2032	19,866.177	3,993.185	27,282.658	2,959.699	4,801.617	0.000	58,903.336	2,342.405	258.575	1,281.243	30.536	95.450	0.000	0.000	4,008.209
2033	18,836.644	3,979.221	27,698.044	3,122.895	5,352.822	0.000	58,989.626	2,294.331	274.395	1,380.367	35.408	101.573	0.000	0.000	4,086.074
2034	17,793.737	4,011.592	28,039.763	3,291.598	5,940.959	0.000	59,077.649	2,240.014	228.636	1,478.804	40.739	108.003	0.000	0.000	4,096.196
2035	16,742.896	4,033.968	28,304.093	3,465.732	6,567.807	0.000	59,114.496	2,179.560	240.424	1,576.032	46.505	115.406	0.000	0.000	4,157.927
2036	15,689.757	4,046.148	28,487.444	3,645.249	7,234.648	0.000	59,103.246	2,113.130	251.755	1,671.678	52.671	123.634	0.000	0.000	4,212.868
2037	14,640.161	4,047.405	28,586.673	3,829.741	7,943.415	0.000	59,047.395	2,040.900	263.123	1,765.075	59.584	132.689	0.000	0.000	4,261.371
2038	13,600.139	4,036.930	28,597.449	4,018.700	8,695.136	0.000	58,948.354	1,963.062	274.559	1,857.168	67.313	142.601	0.000	0.000	4,304.703
2039	12,575.583	4,015.034	28,520.516	4,211.685	9,490.601	0.000	58,813.419	1,880.146	284.930	1,942.763	75.763	153.674	0.000	0.000	4,337.276
2040	11,572.331	3,981.115	28,355.601	4,408.277	10,330.898	0.000	58,648.222	1,792.592	295.135	2,022.892	84.879	165.888	0.000	0.000	4,361.386
2041	10,596.016	3,935.651	28,104.971	4,607.791	11,216.345	0.000	58,460.774	1,700.978	304.094	2,095.079	94.894	179.340	0.000	0.000	4,374.385
2042	9,651.941	3,879.313	27,774.907	4,808.983	12,148.461	0.000	58,263.605	1,605.989	311.647	2,155.586	106.304	194.102	0.000	0.000	4,373.628
2043	8,744.970	3,812.736	27,370.219	5,010.685	13,128.684	0.000	58,067.294	1,508.401	317.878	2,206.249	118.955	210.483	0.000	0.000	4,361.966
2044	7,879.487	3,736.158	26,894.855	5,211.426	14,159.199	0.000	57,881.125	1,408.990	323.208	2,248.216	133.063	228.576	0.000	0.000	4,342.053
2045	7,059.259	3,650.195	26,356.073	5,409.150	15,241.571	0.000	57,716.248	1,308.648	327.288	2,278.540	149.097	248.525	0.000	0.000	4,312.098

*SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023.*

*Values may not add due to rounding.*

**Table 23**  
**Additional Details – Actuarial Accrued Liability and Employer Normal Cost Dollars**  
(\$ in Millions)

Fiscal Year Ending	Actuarial Accrued Liability							Fiscal Year Ending	Employer Normal Cost Dollar		
	Current Retirees	Current Inactives	Tier 1 Actives	Tier 2 Actives		Optional Hybrid Plan Future	Total		Tier 1	Tier 2	Total
2018	\$ 30,710.699	\$ 2,859.532	\$ 11,297.123	\$ 391.397	\$ 0.000	\$ 0.000	\$ 45,258.751	2019	\$ 435.991	\$ 13.912	\$ 449.903
2019	30,213.089	2,988.842	12,567.051	474.895	0.000	0.000	46,243.877	2020	415.069	20.002	435.071
2020	29,686.201	3,113.161	13,838.552	551.701	21.597	0.000	47,211.212	2021	395.703	25.215	420.918
2021	29,108.583	3,234.521	15,095.021	632.152	61.345	0.000	48,131.622	2022	377.696	30.534	408.230
2022	28,481.033	3,352.466	16,326.511	721.348	118.974	0.000	49,000.332	2023	360.009	35.756	395.765
2023	27,804.719	3,465.936	17,527.599	819.257	191.961	0.000	49,809.472	2024	342.411	41.405	383.816
2024	27,081.128	3,571.169	18,690.235	927.879	280.714	0.000	50,551.125	2025	324.770	47.602	372.372
2025	26,311.931	3,666.848	19,807.473	1,048.170	384.272	0.000	51,218.694	2026	307.297	54.276	361.573
2026	25,499.081	3,751.871	20,877.571	1,179.828	505.161	0.000	51,813.512	2027	290.199	61.242	351.441
2027	24,645.010	3,827.060	21,893.718	1,322.140	642.833	0.000	52,330.761	2028	273.445	68.755	342.200
2028	23,752.410	3,889.876	22,853.349	1,473.508	798.484	0.000	52,767.627	2029	256.893	76.614	333.507
2029	22,824.481	3,938.791	23,750.873	1,631.153	981.249	0.000	53,126.547	2030	239.934	84.803	324.737
2030	21,864.725	3,972.888	24,577.154	1,795.303	1,193.330	0.000	53,403.400	2031	222.389	93.307	315.696
2031	20,877.140	3,990.955	25,323.955	1,966.159	1,435.991	0.000	53,594.200	2032	204.514	102.269	306.783
2032	19,866.177	3,993.185	25,990.463	2,143.800	1,711.005	0.000	53,704.630	2033	187.152	111.575	298.727
2033	18,836.644	3,979.221	26,574.800	2,328.177	2,020.309	0.000	53,739.151	2034	170.490	121.131	291.621
2034	17,793.737	4,011.592	27,073.152	2,519.308	2,366.089	0.000	53,763.878	2035	153.977	130.983	284.960
2035	16,742.896	4,033.968	27,481.346	2,717.281	2,749.967	0.000	53,725.458	2036	137.440	141.218	278.658
2036	15,689.757	4,046.148	27,795.175	2,922.210	3,173.889	0.000	53,627.179	2037	120.961	151.736	272.697
2037	14,640.161	4,047.405	28,010.893	3,133.759	3,639.913	0.000	53,472.131	2038	104.652	162.583	267.235
2038	13,600.139	4,036.930	28,123.714	3,351.495	4,150.247	0.000	53,262.525	2039	88.957	173.795	262.752
2039	12,575.583	4,015.034	28,134.507	3,575.077	4,706.825	0.000	53,007.026	2040	74.366	185.293	259.659
2040	11,572.331	3,981.115	28,043.634	3,804.124	5,311.674	0.000	52,712.878	2041	61.397	197.083	258.480
2041	10,596.016	3,935.651	27,854.828	4,037.931	5,966.793	0.000	52,391.219	2042	50.612	208.947	259.559
2042	9,651.941	3,879.313	27,576.348	4,275.150	6,674.127	0.000	52,056.879	2043	41.578	220.870	262.448
2043	8,744.970	3,812.736	27,214.635	4,514.495	7,435.448	0.000	51,722.284	2044	34.079	232.775	266.854
2044	7,879.487	3,736.158	26,775.039	4,754.272	8,252.554	0.000	51,397.510	2045	27.734	244.596	272.330
2045	7,059.259	3,650.195	26,265.786	4,992.086	9,127.309	0.000	51,094.635	2046	22.248	256.396	278.644

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023.

Values may not add due to rounding.

**Table 24**  
**Additional Details – Payroll and Payroll in Excess of Governor’s Pay**  
**(\$ in Millions)**

Fiscal Year Ending	Defined Benefit Plan Payroll <sup>1</sup>					Defined Benefit Plan Payroll in Excess of Governor's Pay <sup>2</sup>		
	Tier 1	Tier 2		Optional Hybrid	Total	Tier 1	Tier 2	
		Current	Future	Plan Future			Current	Total
2018	\$ 2,485.038	\$ 875.956	\$ 0.000	\$ 0.000	\$ 3,360.994	\$ 55.726	\$ 0.000	\$ 55.726
2019	2,373.669	891.310	235.173	0.000	3,500.152	67.326	0.000	67.326
2020	2,234.510	816.693	460.839	0.000	3,512.042	57.194	0.000	57.194
2021	2,105.276	753.473	679.890	0.000	3,538.639	53.017	0.000	53.017
2022	1,981.403	707.281	886.566	0.000	3,575.250	49.031	0.000	49.031
2023	1,861.909	672.501	1,082.630	0.000	3,617.040	44.707	0.000	44.707
2024	1,744.971	644.013	1,272.412	0.000	3,661.396	40.779	0.000	40.779
2025	1,630.710	619.960	1,457.810	0.000	3,708.480	37.071	0.000	37.071
2026	1,520.518	599.255	1,641.471	0.000	3,761.244	33.576	0.000	33.576
2027	1,413.718	580.816	1,823.468	0.000	3,818.002	30.464	0.000	30.464
2028	1,311.316	564.481	2,003.189	0.000	3,878.986	27.595	0.000	27.595
2029	1,210.948	549.772	2,182.247	0.000	3,942.967	24.925	0.000	24.925
2030	1,111.538	535.730	2,362.274	0.000	4,009.542	22.410	0.000	22.410
2031	1,012.910	522.393	2,542.322	0.000	4,077.625	19.837	0.000	19.837
2032	918.422	509.112	2,721.319	0.000	4,148.853	17.674	0.000	17.674
2033	829.844	495.856	2,898.843	0.000	4,224.543	15.653	0.000	15.653
2034	745.064	483.046	3,075.659	0.000	4,303.769	13.861	0.000	13.861
2035	663.134	470.781	3,251.474	0.000	4,385.389	12.210	0.000	12.210
2036	584.491	458.745	3,426.109	0.000	4,469.345	10.787	0.000	10.787
2037	508.866	446.458	3,599.891	0.000	4,555.215	9.404	0.000	9.404
2038	437.159	434.495	3,772.029	0.000	4,643.683	8.133	0.000	8.133
2039	371.325	422.303	3,941.597	0.000	4,735.225	7.040	0.000	7.040
2040	311.429	409.711	4,107.942	0.000	4,829.082	6.011	0.000	6.011
2041	260.705	396.491	4,269.647	0.000	4,926.843	5.113	0.000	5.113
2042	217.195	382.357	4,427.264	0.000	5,026.816	4.289	0.000	4.289
2043	180.456	367.664	4,580.826	0.000	5,128.946	3.622	0.000	3.622
2044	148.978	351.316	4,731.274	0.000	5,231.568	3.008	0.000	3.008
2045	121.009	333.863	4,878.984	0.000	5,333.856	2.470	0.000	2.470

<sup>1</sup> Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in the Tier 2 and Optional Hybrid Plan participating in the Traditional and Portable plans.

<sup>2</sup> Governor’s pay is \$177,500 in 2018 and 2019 and is projected to increase annually by 3.25 percent.

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023. Values may not add due to rounding.

**Table 25**  
**Additional Details – Statutorily Required Employer Contributions**  
(\$ in Millions)

Fiscal Year Ending	Applicable Employer Normal Cost Rates		Employer Normal Cost Contributions for Pay in Excess of the Governor's Pay <sup>1</sup>			Employer Contributions For Pay Increases in Excess of 3.0%			Total Employer Contributions Required by Statute			
	Tier 1	Total	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total	Tier 1	Tier 2	Optional Hybrid	
											Plan	Future
2020	17.00%	13.02%			\$ 5.124	\$ 5.155	\$ 0.005	\$ 5.160	\$ 5.155	\$ 0.005	\$ 0.000	\$ 10.284
2021	17.23%	12.62%	\$ 8.119	\$ 0.000	8.119	5.348	0.073	5.421	13.467	0.073	0.000	13.540
2022	17.47%	12.19%	6.992	0.000	6.992	5.347	0.139	5.486	12.339	0.139	0.000	12.478
2023	17.72%	11.74%	6.575	0.000	6.575	5.251	0.191	5.443	11.826	0.191	0.000	12.018
2024	17.96%	11.29%	6.165	0.000	6.165	5.229	0.256	5.485	11.394	0.256	0.000	11.650
2025	18.20%	10.85%	5.697	0.000	5.697	5.091	0.303	5.393	10.788	0.303	0.000	11.091
2026	18.45%	10.42%	5.266	0.000	5.266	4.881	0.315	5.195	10.147	0.315	0.000	10.461
2027	18.70%	10.01%	4.853	0.000	4.853	4.791	0.325	5.116	9.644	0.325	0.000	9.969
2028	18.96%	9.61%	4.457	0.000	4.457	4.581	0.331	4.913	9.038	0.331	0.000	9.370
2029	19.24%	9.23%	4.103	0.000	4.103	4.544	0.314	4.857	8.647	0.314	0.000	8.960
2030	19.52%	8.88%	3.771	0.000	3.771	4.531	0.305	4.836	8.301	0.305	0.000	8.607
2031	19.78%	8.52%	3.452	0.000	3.452	4.543	0.289	4.832	7.995	0.289	0.000	8.283
2032	20.02%	8.16%	3.141	0.000	3.141	4.442	0.294	4.736	7.582	0.294	0.000	7.876
2033	20.24%	7.81%	2.810	0.000	2.810	4.208	0.283	4.490	7.018	0.283	0.000	7.301
2034	20.45%	7.49%	2.530	0.000	2.530	4.113	0.277	4.390	6.643	0.277	0.000	6.920
2035	20.66%	7.19%	2.264	0.000	2.264	4.093	0.265	4.358	6.357	0.265	0.000	6.622
2036	20.84%	6.90%	2.022	0.000	2.022	4.009	0.268	4.278	6.031	0.268	0.000	6.299
2037	20.96%	6.64%	1.791	0.000	1.791	3.953	0.275	4.228	5.744	0.275	0.000	6.019
2038	21.00%	6.38%	1.585	0.000	1.585	3.784	0.267	4.051	5.370	0.267	0.000	5.637
2039	20.94%	6.14%	1.378	0.000	1.378	3.561	0.277	3.838	4.939	0.277	0.000	5.216
2040	20.77%	5.93%	1.182	0.000	1.182	3.214	0.265	3.479	4.397	0.265	0.000	4.662
2041	20.50%	5.75%	1.010	0.000	1.010	2.617	0.272	2.889	3.627	0.272	0.000	3.899
2042	20.18%	5.61%	0.849	0.000	0.849	2.138	0.284	2.422	2.987	0.284	0.000	3.271
2043	19.89%	5.52%	0.712	0.000	0.712	1.720	0.281	2.001	2.431	0.281	0.000	2.712
2044	19.61%	5.47%	0.589	0.000	0.589	1.371	0.304	1.676	1.960	0.304	0.000	2.264
2045	19.37%	5.45%	0.491	0.000	0.491	1.075	0.314	1.389	1.567	0.314	0.000	1.880
2046	19.16%	5.44%	0.403	0.000	0.403	0.830	0.319	1.150	1.234	0.319	0.000	1.553
2047	19.00%	5.46%	0.329	0.000	0.329	0.667	0.323	0.990	0.996	0.323	0.000	1.318

<sup>1</sup> FY 2020 based on excess pay amount as provided by SURS and the total employer normal cost rate. FY 2021 and thereafter based on excess pay amount projected by GRS and the employer normal cost rate by tier. GRS recommends that employer normal cost contributions be based on the normal cost rate by tier. 30% of future Tier 1 excess pay employer contributions that would have been calculated are not included because they are already assumed to be part of the federal and trust funds contributions.

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023.

Values may not add due to rounding.

## **APPENDIX F**

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### **HISTORICAL SCHEDULES**

**Table 26**  
**Historical Schedule of Funding Status**  
(\$ in 000s)

As of June 30	Actuarial Value		UAAL	Funding Ratio	Payroll/DB*	UAAL as % of Payroll
	of Assets	AAL				
2003	\$ 9,714,547	\$ 18,025,032	\$8,310,485	53.89 %	\$2,763,428	300.73 %
2004	12,586,305	19,078,583	6,492,278	65.97	2,814,071	230.71
2005	13,350,278	20,349,922	6,999,644	65.60	2,939,185	238.15
2006	14,175,147	21,688,935	7,513,788	65.36	3,054,100	246.02
2007	15,985,730	23,362,079	7,376,349	68.43	3,180,985	231.89
2008	14,586,325	24,917,678	10,331,353	58.54	3,303,220	312.77
2009	11,032,973	26,316,231	15,283,258	41.92	3,463,922	441.21
2009 **	14,281,998	26,316,231	12,034,233	54.27	3,463,922	347.42
2010 ***	13,966,643	30,120,427	16,153,784	46.37	3,491,071	462.72
2011	13,945,680	31,514,336	17,568,656	44.25	3,460,838	507.64
2012	13,949,905	33,170,216	19,220,311	42.06	3,477,166	552.76
2013	14,262,621	34,373,104	20,110,483	41.49	3,533,858	569.08
2014 ***	15,844,714	37,429,515	21,584,801	42.33	3,522,246	612.81
2015	17,104,607	39,520,687	22,416,080	43.28	3,606,537	621.54
2016	17,701,646	40,923,301	23,221,655	43.26	3,513,108	661.00
2017	18,594,326	41,853,348	23,259,022	44.43	3,458,320	672.55
2018 ***	19,347,886	45,258,751	25,910,865	42.75	3,470,226	746.66

AAL – Actuarial Accrued Liability.

UAAL – Unfunded Actuarial Accrued Liability.

\* Payroll is rolled forward with salary scale for one year and uses capped payroll for members hired on and after January 1, 2011.

\*\* Assets at Actuarial Value (Market Value through first 2009, then Actuarial Value).

\*\*\* Investment rate of return assumption decreased from 8.50 percent to 7.75 percent in plan year 2010, decreased from 7.75 percent to 7.25 percent in plan year 2014, and decreased from 7.25 percent to 6.75 percent in plan year 2018.

**Table 27**  
**Historical Comparison of ARC and State Contributions**  
(\$ in Millions)

Fiscal Year	(1) Total Normal Cost	(2) Amortization of UAAL	(3) (1) + (2) Total ADC	(4) Member Contribution	(5) (3) - (4) Net State ARC*	(6) Actual State Contribution	(7) (6) / (5) State Cont. as Percent of Net ARC
2003			\$ 843.8	\$ 246.3	\$ 597.5	\$ 285.3	47.74 %
2004			934.8	243.8	691.0	1,757.5	254.36
2005			859.7	251.9	607.8	285.4	46.96
2006			914.9	252.9	662.0	180.0	27.19
2007			968.3	262.4	705.9	261.1	36.99
2008			971.6	264.1	707.5	344.9	48.75
2009			1,147.3	273.3	874.0	451.6	51.67
2010 **			1,278.3	275.0	1,003.3	696.6	69.43
2011 ***	\$ 723.798	\$ 795.427	1,519.2	260.2	1,259.0	773.6	61.44
2012	700.972	1,000.612	1,701.584	258.236	1,443.348	985.815	68.30
2013	699.747	1,094.681	1,794.428	245.141	1,549.287	1,401.481	90.46
2014	698.225	1,145.380	1,843.605	283.081	1,560.524	1,502.864	96.31

\* ARC - Annual Required Contribution as defined in GASB Statements No. 25 and 27. The ARC is the Actuarially Determined Contribution ("ADC") net of member contributions.

\*\* Assets at Actuarial Value (Market Value through 2009, then Actuarial Value beginning with Fiscal Year 2010).

\*\*\* Investment rate of return assumption decreased from 8.50 percent to 7.75 percent in Fiscal Year 2011.

Beginning in Fiscal Year 2011, dollars are shown rounded to three decimal places.

Information beginning with Fiscal Year 2015 can be found in Table 11 of the report.



## Table 28

### Historical Schedule of Contributions

(\$ in Thousands)

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2009	\$ 874,032	\$ 451,600	\$ 422,432	\$ 3,463,922	13.04 %
2010	1,003,331	696,600	306,731	3,491,071	19.95
2011	1,259,048	773,595	485,453	3,460,838	22.35
2012	1,443,348	985,815	457,533	3,477,166	28.35
2013	1,549,287	1,401,481	147,806	3,533,858	39.66
2014	1,560,524	1,502,864	57,660	3,522,246	42.67
2015	1,622,656	1,528,525	94,130	3,606,537	42.38
2016	1,811,060	1,582,295	228,765	3,513,108	45.04
2017	1,864,843	1,650,551	214,292	3,458,320	47.73
2018	1,862,033	1,607,880	254,153	3,470,226	46.33

*For Fiscal Years 2015 and prior, the Actuarially Determined Contribution is equal to normal cost plus 30-year open period amortization of the unfunded actuarial accrued liability as a level percentage of total payroll.*

*For Fiscal Years 2016 and after, the Actuarially Determined Contribution is equal to net normal cost plus 29-year closed period amortization of the unfunded actuarial accrued liability (from June 30, 2016) as a level percentage of defined benefit plan pensionable (capped) payroll.*

*Covered employee payroll is equal to defined benefit payroll from the actuarial valuation as of the same date and rolled forward with one year of wage inflation.*

## **APPENDIX G**

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### **ACTUARIAL METHODS AND ASSUMPTIONS**

# Actuarial Methods and Assumptions

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## Projected Unit Credit Method

The Projected Unit Credit Method is mandated under Section 15-155 of the SURS Article of the Illinois Pension Code as the funding method to be used for SURS.

The concept of this method is that funding of benefits should occur as benefits are accrued (earned) by active members of SURS.

The Normal Cost (“NC”) for a fiscal year under this method is the actuarial present value of all benefits expected to be accrued during the fiscal year adjusted for future expected salary increases. The Actuarial Accrued Liability (“AAL”) under this method is the actuarial present value of all benefits accrued to the valuation date. To the extent that the assets of the fund are insufficient to cover the AAL, an Unfunded Actuarial Accrued Liability (“UAAL”) develops. Under the classical application of this method, the contribution for a year is the NC for that year plus an amount to amortize the UAAL.

## Funding Policy to Calculate Statutory Contributions

Under Section 15-155 of the Illinois Pension Code, the employer/State contribution is determined such that the assets of SURS reach 90% of the AAL by the end of FY 2045.

This contribution is determined as a level percentage of pay for all years except that the contribution rates through 2010 shall grade in equal steps to the desired level contribution rate. *We have assumed the contribution would be based on pensionable (capped) payroll for members hired on or after January 1, 2011 (“Tier 2 members” and “Optional Hybrid Plan members”).* Pensionable pay does not include amounts in excess of the pay cap (\$113,645 in 2018 for Tier 2, increased by the lesser of 3% and 1/2 of the increase in CPI-U as measured in the preceding 12-month calendar year and the federal Social Security Wage Base for the Optional Hybrid Plan) that is applicable to members hired on or after January 1, 2011, participating in the defined benefit plans.

Public Act 100-0023 (Effective July 6, 2017) made the following changes to the SURS funding policy:

### State Contributions

- Requires the State to make additional contributions to SURS in FY 2018, FY 2019 and FY 2020 equal to 2 percent of the total payroll of each employee who participates in the Optional Hybrid Plan or who participates in the Tier 2 plan in lieu of the Optional Hybrid Plan.
- Requires any change in an actuarial assumption that increases or decreases the required State contribution to be implemented in equal annual amounts over a five-year period beginning in the State fiscal year in which the change first applies to the required State contribution.
  - For changes that first applied in FY 2014, FY 2015, FY 2016 or FY 2017, the impact is calculated based on a five-year period and the applicable portion is recognized during the remaining fiscal years in that five-year period.

# Actuarial Methods and Assumptions

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## Employer Contributions

- Requires employers to contribute for each employee of the employer who participates in the optional hybrid plan or participates in the Tier 2 plan in lieu of the Optional Hybrid Plan.
  - The employer normal cost for Fiscal Years 2018, 2019 and 2020.
  - The employer normal cost plus two percent of pay for Fiscal Years 2021 and thereafter.
  - Beginning in FY 2018, the amount for that fiscal year to amortize any unfunded actuarial accrued liability attributable to the defined benefits of the employer's employees who first became participants on or after the implementation date of the Optional Hybrid Plan and the employer's employees who were previously Tier 2 participants but elected to participate in the Optional Hybrid Plan, determined as a level percentage of payroll over a 30-year rolling amortization period.
- Requires employers to contribute the employer normal cost of the portion of an employee's earnings that exceeds the amount of salary set for the [governor](#), for academic years beginning on or after July 1, 2017. (Applicable to Tier 1 and Tier 2 employees.)

Public Act 100-0587 (Effective June 4, 2018) made the following changes to the SURS funding policy:

## Employer Contributions

- For academic years beginning on or after July 1, 2018, and for earnings paid under a contract or collective bargaining agreement entered into, amended or renewed on or after the effective date of the amendatory Act (June 5, 2018), if a participant's earnings for any academic year with the same employer as the previous academic year used to determine the final average salary increased by more than 3.00%, then the participant's employer shall pay the System the present value of the increase in benefits resulting from the portion of the increase in earnings that is in excess of 3.00%. Prior to the effective date of Public Act 100-0587, the payment from employers was for pay increases in excess of 6.00%.

The 3% employer billing rule is assumed to apply to all current and future Tier 1 and Tier 2 members.

## Statutory Contributions Related to the Optional Hybrid Plan

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan (OHP) created under PA 100-0023. Additional clarifying legislation is needed for SURS to be able to do so. Therefore, contributions related to the OHP are not included in the actuarial valuation, including contributions for employer normal cost, additional 2 percent of payroll contributions and unfunded liability contributions.

## Phase In of the Financial Impact of Assumption Changes

On the following page is a table with the recognition schedule for the phase in of actuarial assumption changes required under Public Act 100-0023. The following actuarial assumption changes were made:

1. Beginning with the June 30, 2014, actuarial valuation the assumed rate of investment return was reduced to 7.25%.
2. Beginning with the June 30, 2015, actuarial valuation there were changes to the demographic assumptions.

## Actuarial Methods and Assumptions

3. Beginning with the June 30, 2018, actuarial valuation there were changes to the economic and demographic actuarial assumptions.

Valuation Year Ending 6/30	2018	2019	2020	2021	2022
Applicable Fiscal Year Ending 6/30	2020	2021	2022	2023	2024
<b>\$ in Millions</b>					
<b>After Impact of Bonds</b>					
Contribution Before Assumption Change:					
(1) Contribution Dollar	\$ 1,865.3				
(2) Contribution Rate	40.66%				
Contribution After Assumption Change:					
(3) Contribution Dollar	2,003.3				
(4) Contribution Rate	44.02%				
(5) Assumption Impact as Percentage of Payroll					
=(4)-(3)	3.36%				
(6) Assumption Change Impact Recognized					
This Year (5 year recognition)					
(6a) From This Year	0.67%				
(6b) From One Year Ago	0.00%	0.67%			
(6c) From Two Years Ago	0.00%	0.00%	0.67%		
(6d) From Three Years Ago	0.25%	0.00%	0.00%	0.67%	
(6e) From Four Years Ago	0.38%	0.25%	0.00%	0.00%	0.68%
(6f) Total Recognized Assumption Change Impact	1.30%	0.92%	0.67%	0.67%	0.68%

### Contribution Related to Pay in Excess of Governor's Pay

Following is a table with the estimated contributions required under Public Act 100-0023 to be made by employers for pay in excess of the Governor's pay. (Information calculated and provided by SURS).

Year	Governor's Pay	\$ in Millions						
		Pay for Preceding Fiscal Year for Affected Members		Employer Normal Cost Rate	Excess Pay * ER NC Rate	Additional Adjustments <sup>1</sup>	Estimated Employer Contributions	
Excess Pay								
July 1, 2017 - June 30, 2018	\$ 177,500	\$ 46.831	12.46%	\$ 5.835	\$ (1.579)	\$ 4.256		
July 1, 2018 - June 30, 2019	177,500	47.193	12.29%	5.800	(1.654)	4.146		
July 1, 2019 - June 30, 2020	177,500	55.726	13.02%	7.256	(2.132)	5.124		

<sup>1</sup> Additional adjustments for members with pay in excess of the Governor's pay whose employers' already make normal cost contributions.

# Actuarial Methods and Assumptions

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## Asset Valuation Method

Prior to the actuarial valuation as of June 30, 2009, market value of assets was used. Under Section 15-155(l) of the Illinois Pension Code, beginning with the actuarial valuation as of June 30, 2009, the asset value is the actuarial value of assets which is calculated by recognizing 20% of the investment gain or loss (the difference between the actual investment return and the expected investment return) on the market value of assets for each of the five following fiscal years. This method was not applied retroactively to recognize a portion of investment gains or losses from previous fiscal years.

Following is a table with the investment return assumption used in recent actuarial valuations.

Valuation Date	Investment Return Assumption
Prior to June 30, 2010	8.50%
June 30, 2010 through June 30, 2013	7.75%
June 30, 2014 through June 30, 2017	7.25%
June 30, 2018, and after	6.75%

# Actuarial Methods and Assumptions

## Actuarial Assumptions

### (Most Adopted Effective with the June 30, 2018, Actuarial Valuation)

Under Section 15-155(a) of the Illinois Pension Code, the Board adopts the assumptions after consultation with the actuary. All actuarial assumptions are expectations of future experience and are not market measures. The rationale for the actuarial assumptions may be found in the experience study report covering the period June 30, 2014 through June 30, 2017, issued to the Board of Trustees on February 26, 2018.

**Rate of Investment Return.** For all purposes under the system the rate of investment return is assumed to be 6.75% per annum beginning with the **June 30, 2018**, actuarial valuation. This assumption is net of investment expenses.

**Price Inflation (Increase in Consumer Price Index "CPI").** The assumed rate is 2.25% per annum.

**Effective Rate of Interest.** The actuarial valuation assumed rate credited to member accounts is 6.75% per annum, beginning with the June 30, 2018, actuarial valuation.

**Cost of Living Adjustment "Automatic Annual Increase (AAI)."** The assumed rate is 3.00% per annum based on the benefit provision of 3.00% annual compound increases for members hired before January 1, 2011, who have not elected the AAI buyout and 1.50% simple (non-compound) increases for members who have elected the buyout. The assumed rate is 1.125% for members hired on or after January 1, 2011, based on the benefit provision of increases equal to ½ of the increase in CPI-U with a maximum increase of 3.00%.

**Annual Compensation Increases.** Each member's compensation is assumed to increase by 3.25% each year, 2.25% reflecting salary inflation and 1.00% reflecting standard of living increases. That rate is increased for members with less than 34 years of service to reflect merit, longevity and promotion increases. The rates are based on service at the beginning of the year and are as follows:

Service Year	Total Increase
0	12.25%
1	12.25%
2	8.75%
3	7.00%
4	6.25%
5	5.50%
6	5.50%
7	5.50%
8	4.75%
9	4.50%
10	4.50%
11-14	4.00%
15-18	3.75%
19-33	3.50%
34+	3.25%

## Actuarial Methods and Assumptions

**Payroll Growth.** The assumed rate of total payroll growth is 3.25%.

**Mortality.** The mortality assumptions are as follows:

Applicable Group	Base Mortality Table	Male Scaling Factor	Female Scaling Factor
Pre-retirement	RP-2014 White Collar Employee, sex distinct	93%	100%
Post-retirement (non-disabled)	RP-2014 White Collar Healthy Annuitant, sex distinct	96%	93%
Post-retirement (disabled)	RP-2014 Disabled Annuitant, sex distinct	112%	123%

Future mortality improvements are reflected by projecting the base mortality tables back from the year 2014 to the year 2006 using the Society of Actuaries (SOA) MP-2014 scale (referred to as the RP-2006 base mortality tables) and projecting from 2006 using the SOA MP-2017 projection scale. The assumptions are generational mortality tables and include a margin for improvement.

Age	Future Life Expectancy (years) in 2018				Future Life Expectancy (years) in 2030			
	Post-retirement		Disabled - Retiree		Post-retirement		Disabled - Retiree	
	Male	Female	Male	Female	Male	Female	Male	Female
35	52.18	54.34	32.64	38.14	53.34	55.44	34.52	39.88
40	46.98	49.15	29.06	33.85	48.12	50.23	30.74	35.45
45	41.87	44.02	25.87	29.90	42.97	45.08	27.41	31.40
50	36.82	38.92	22.79	26.09	37.91	39.97	24.26	27.51
55	31.90	33.88	19.82	22.51	32.96	34.91	21.19	23.83
60	27.12	28.98	16.97	19.25	28.12	29.95	18.16	20.40
65	22.51	24.27	14.28	16.10	23.43	25.18	15.27	17.07
70	18.12	19.77	11.69	12.95	18.96	20.61	12.51	13.81
75	14.05	15.51	9.20	10.02	14.80	16.30	9.91	10.79



## Actuarial Methods and Assumptions

**Disability.** A table of disability incidence with rates follows:

Age	Male	Female	Age	Male	Female
20	0.0247%	0.0328%	50	0.1214%	0.1360%
21	0.0253%	0.0347%	51	0.1287%	0.1401%
22	0.0259%	0.0366%	52	0.1361%	0.1442%
23	0.0265%	0.0385%	53	0.1435%	0.1483%
24	0.0271%	0.0404%	54	0.1508%	0.1524%
25	0.0277%	0.0423%	55	0.1552%	0.1565%
26	0.0283%	0.0442%	56	0.1552%	0.1565%
27	0.0289%	0.0461%	57	0.1552%	0.1565%
28	0.0295%	0.0481%	58	0.1552%	0.1565%
29	0.0300%	0.0500%	59	0.1552%	0.1565%
30	0.0315%	0.0541%	60	0.1552%	0.1565%
31	0.0330%	0.0582%	61	0.1552%	0.1565%
32	0.0345%	0.0623%	62	0.1552%	0.1565%
33	0.0359%	0.0664%	63	0.1552%	0.1565%
34	0.0374%	0.0705%	64	0.1552%	0.1565%
35	0.0395%	0.0745%	65	0.1552%	0.1565%
36	0.0415%	0.0786%	66	0.1552%	0.1565%
37	0.0436%	0.0827%	67	0.1552%	0.1565%
38	0.0457%	0.0868%	68	0.1552%	0.1565%
39	0.0477%	0.0909%	69	0.1552%	0.1565%
40	0.0536%	0.0950%	70	0.1552%	0.1565%
41	0.0595%	0.0991%	71	0.1552%	0.1565%
42	0.0654%	0.1032%	72	0.1552%	0.1565%
43	0.0713%	0.1073%	73	0.1552%	0.1565%
44	0.0772%	0.1114%	74	0.1552%	0.1565%
45	0.0845%	0.1155%	75	0.1552%	0.1565%
46	0.0919%	0.1196%	76	0.1552%	0.1565%
47	0.0993%	0.1237%	77	0.1552%	0.1565%
48	0.1066%	0.1278%	78	0.1552%	0.1565%
49	0.1140%	0.1319%	79	0.1552%	0.1565%

Disability rates apply during the retirement eligibility period.

Members are assumed to first receive disability benefits (DB) and then receive disability retirement annuity (DRA) benefits.

## Actuarial Methods and Assumptions

**Retirement.** Upon eligibility, active members are assumed to retire as follows:

Age	Members Hired Before January 1, 2011, and Eligible for:		Members Hired on or after January 1, 2011, and Eligible for:	
	Normal Retirement	Early Retirement	Normal Retirement	Early Retirement
Under 50	50.0%	-	-	-
50	50.0	-	-	-
51	40.0	-	-	-
52	40.0	-	-	-
53	35.0	-	-	-
54	35.0	-	-	-
55	35.0	7.0%	-	-
56	30.0	5.5	-	-
57	25.0	4.0	-	-
58	25.0	5.0	-	-
59	25.0	5.5	-	-
60	11.0	-	-	-
61	11.0	-	-	-
62	12.0	-	-	25.0%
63	12.0	-	-	10.0
64	12.0	-	-	10.0
65	15.0	-	-	10.0
66	15.0	-	-	10.0
67	15.0	-	35.0%	-
68	15.0	-	15.0	-
69	15.0	-	15.0	-
70-79	15.0	-	15.0	-
80+	100.0	-	100.0	-

*A rate of 50 percent is used if a member has 40 or more years of service and is less than 80 years old. The rates shown above are for members with less than 40 years of service.*

Members who retire are assumed to elect the most valuable option on a present value basis – refund of contributions (or portable lump sum retirement, if applicable) or a retirement annuity.

For purposes of the projections in the actuarial valuation, members of the Self Managed Plan are assumed to retire in accordance with the Tier 1 and Tier 2 retirement rates (based on hire date).

## Actuarial Methods and Assumptions

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**General Turnover.** A table of termination rates based on the most recent experience study period. The assumption is a table of turnover rates by years of service. A sample of these rates follows:

Years of Service	All Members
0	20.00%
1	20.00
2	15.00
3	14.00
4	13.00
5	12.00
6	10.00
7	9.00
8	8.00
9	7.00
10	6.00
11	5.00
12	4.50
13	4.00
14	4.00
15	4.00
16	3.50
17	3.50
18	3.50
19	3.00
20	3.00
21	3.00
22	2.50
23	2.50
24	2.50
25	2.00
26	2.00
27	2.00
28	2.00
29	2.00

Part-time members with less than three years of service (all members classified as part time for valuation purposes) are assumed to terminate at the valuation date.

Members who terminate with at least five years of service (10 years of service for Tier 2 members) are assumed to elect the most valuable option on a present value basis – refund of contributions or a deferred benefit.

Termination rate for 29 years of service used for Tier 2 members until retirement eligibility is met.

## Actuarial Methods and Assumptions

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**Operational Expenses.** The amount of operational expenses for administration incurred in the latest fiscal year are supplied by SURS staff and incorporated in the Normal Cost. Estimated administrative expenses for FY 2020 and after are assumed to increase by 3.25%.

**Marital Status.** Members are assumed to be married in the following proportions:

Age	Males	Females
20	25 %	40 %
30	70	75
40	80	80
50	85	80
60	85	70

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

**Benefit Commencement Age.** Inactive members eligible for a deferred benefit are assumed to commence benefits at their earliest normal retirement age. For Tier 1 members this is age 62 with at least five years of service, age 60 with at least eight years of service or immediately if at least 30 years of service. For Tier 2 members, this is age 67 with 10 or more years of service.

**Load on Final Average Salary.** No load is assumed to account for higher than assumed pay increases in final years of employment before retirement.

**Load on Liabilities for Service Retirees With Non-finalized Benefits.** A load of 10% on liabilities for service retirees whose benefits have not been finalized as of the valuation date is assumed to account for finalized benefits that on average are 10% higher than 100% of the preliminary estimated benefit. A load of 5% is used if a “best formula” benefit was provided in the data by Staff.

**Valuation of Inactives.** An annuity benefit is estimated based on information provided by staff for Tier 1 inactive members with five or more years of service and Tier 2 members with 10 or more years of service.

**Assumption for Missing Data.** Members with an unknown gender are assumed to be female. Active and inactive members with an unknown date of birth are assumed to be 37 years old at the valuation date. An assumed spouse date of birth is calculated for current service retirees in the traditional plan for purposes of calculating future survivor benefits. The female spouse is assumed to be three years younger than the male spouse. 70% of current total male retirees and 80% of current total female retirees in the traditional plan who have not elected a survivor refund are assumed to have a spouse at the valuation date.

**Reciprocal Service.** Reciprocal service is included for current inactive members for purposes of determining vesting eligibility and eligibility age to commence benefits.

The recently updated actuarial assumptions (including retirement and termination rates) were based on SURS service only. Therefore, reciprocal service was not included for current active members.

## Actuarial Methods and Assumptions

**Projection Assumptions.** The number of total active members throughout the projection period will remain the same as the total number of active members in the defined benefit plans and the SMP in the current valuation.

Future new hires are assumed to elect to participate in the offered plans as follows:

- 30% elect to participate in the Self Managed Plan.
- 70% elect to participate in the Tier 2 Plan.
  - 75% are assumed to elect the Traditional Plan (consistent with the current election split).
  - 25% are assumed to elect the Portable Plan (consistent with the current election split).

SURS is currently not moving forward with the implementation of the Optional Hybrid Plan created under PA 100-0023. Additional clarifying legislation is needed for SURS to be able to do so.

New entrants have an average age of 36.9 and average capped pay of \$39,276 and average uncapped pay of \$41,373 (2018 dollars). These values are based on the average age and average pay of current members. The range profile is based on the age at hire and assumed pay at hire (using the actuarial assumptions, inflated to 2018 dollars) of current active members with service between one and four years.

Age	Number Males	Average Pay		Number Females	Average Pay		Total Number	Average Pay	
		Capped Male	Uncapped Male		Capped Female	Uncapped Female		Capped Total	Uncapped Total
<20	50	\$18,210	\$18,210	44	\$17,914	\$17,914	94	\$18,072	\$18,072
20 - 24	628	30,101	30,101	1,001	28,365	28,365	1,629	29,034	29,034
25 - 29	1,438	40,474	40,794	2,068	37,366	37,601	3,506	38,641	38,910
30 - 34	1,263	46,760	50,031	1,715	42,384	43,848	2,978	44,240	46,470
35 - 39	948	46,805	51,116	1,274	40,407	41,960	2,222	43,136	45,867
40 - 44	603	46,568	50,611	946	39,026	40,403	1,549	41,962	44,377
45 - 49	495	43,467	48,653	816	36,274	37,624	1,311	38,990	41,789
50 - 54	469	43,493	50,088	647	34,552	36,847	1,116	38,309	42,412
55 - 59	387	40,691	49,515	487	32,688	35,687	874	36,232	41,810
60 - 64	212	36,223	43,604	226	33,024	36,494	438	34,572	39,935
65 - 69	13	18,078	28,254	7	15,933	15,933	20	17,327	23,942
<b>Total</b>	<b>6,506</b>	<b>\$42,284</b>	<b>\$45,649</b>	<b>9,231</b>	<b>\$37,156</b>	<b>\$38,360</b>	<b>15,737</b>	<b>\$39,276</b>	<b>\$41,373</b>

**SMP Contribution Assumptions.** The projected SMP contributions are equal to 7.6% of SMP payroll, plus estimated SMP expenses minus SMP employer forfeitures. Estimated SMP expenses for FY 2019 are \$580,465 and actual FY 2018 SMP employer forfeitures used to reduce the certified contributions for FY 2020 are \$7,940,772. Estimated SMP expenses for FY 2020 and after are assumed to increase by 3.25%. Estimated SMP employer forfeitures used to reduce the certified contributions for FY 2021 and after are assumed to be 7.5% of the gross SMP employer contribution.

## Actuarial Methods and Assumptions

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**Pensionable Earnings Greater than 3%.** The participant's employer is required to pay the present value of the increase in benefits resulting from the portion of the increase in excess of 3.00% for earnings used in the calculation of the final average salary. The projections include a component paid for by employers for earnings increases greater than 3.00% in the calculation of the final average salary.

**Governor's Pay.** The governor's pay is \$177,500 as of June 30, 2018 and June 30, 2019, and is expected to increase each year by the assumed rate of total payroll growth of 3.25%.

**Buyout Election Assumption.** 0% of eligible Tier 1 active members are assumed to elect to receive a reduced and delayed AAI benefit at retirement and an accelerated pension benefit option in accordance with Public Act 100-0587. 0% of eligible inactive members are assumed to elect to receive an accelerated pension benefit option in lieu of an annuity at retirement in accordance with Public Act 100-0587.

**Treatment of Benefits in Excess of the Internal Revenue Code Section 415 Limits.** The benefit amounts in excess of the IRC Section 415 limits for current retirees are paid through the Excess Benefit Arrangement (EBA) and are not reported in the actuarial valuation data. Therefore, the liabilities and the required contributions for these EBA benefits are not reflected in the actuarial valuation results. The amount of the estimated EBA payments for the upcoming fiscal year are provided by SURS Staff and included in the Statutory contribution requirement.

## **APPENDIX H**

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### **SUMMARY OF BENEFIT PROVISIONS OF SURS**

## Summary of Benefit Provisions of SURS

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It should be noted that the purpose of this Appendix is to describe the benefit structures of SURS for which actuarial values have been generated. There is no description of the Self Managed Plan (SMP) and many portions of the defined plans are described in a manner which may not be legally complete or precise.

It is not our intent to provide an exhaustive description of all benefits provided under SURS or the policies and procedures utilized by SURS staff. A more precise description of the provisions of SURS is contained in the Member's Guide, published by SURS staff. Of course, the statute is controlling.



# Summary of Benefit Provisions of SURS

## Plans

There are two defined benefit plans available under SURS, the Traditional Plan and the Portable Plan, and one defined contribution plan, the Self Managed Plan (SMP). A Member must select one of these plans within the first six months of participation. If no choice is made in that time, the Traditional Plan is deemed chosen.

New tiers of benefits have been established for members hired on or after January 1, 2011 (“Tier 2”) and members hired after July 6, 2017 (“Optional Hybrid Plan”). Members hired before January 1, 2011, participate in Tier 1. Members in Tiers 1, 2 and the Optional Hybrid Plan are eligible to choose either the Traditional or the Portable Plan. **SURS is currently not moving forward with the implementation of the optional hybrid plan created under PA 100-0023. Additional clarifying legislation is needed for SURS to be able to do so.**

Tier 2 and Optional Hybrid Plan members who participate in the Traditional and Portable Plans are subject to the pay caps established under Public Act 96-0889 and Public Act 100-0023, respectively. The Tier 2 pay cap was \$106,800 in 2011 and increases by the lesser of (1) 3% and (2) ½ the increase in the Consumer Price Index-Urban (“CPI-U”) for the 12 months ending with the September proceeding each November 1. The Optional Hybrid Plan pay cap is equal to the federal Social Security Wage Base.

The pay cap history is as follows:

Year	CPI-U	½ CPI-U	Tier 2 Pensionable Pay Cap	Optional Hybrid Plan Pensionable Pay Cap
2011			\$106,800.00	
2012	3.90%	1.95%	\$108,882.60	
2013	2.00%	1.00%	\$109,971.43	
2014	1.20%	0.60%	\$110,631.26	
2015	1.70%	0.85%	\$111,571.63	
2016	0.00%	0.00%	\$111,571.63	
2017	1.50%	0.75%	\$112,408.42	\$127,200.00
2018	2.20%	1.10%	\$113,644.91	\$128,400.00

The Tier 2 pay cap is calculated annually by the Illinois Department of Insurance.

The Self Managed Plan is a defined contribution plan under which members contribute 8.0% of compensation and the State contributes 7.6% of compensation. A portion of the employer contribution is used to fund disability benefits for SMP participants. Members hired on or after January 1, 2011, who participate in the SMP are not subject to the Tier 2 and Optional Hybrid Plan pay caps.

The Optional Hybrid Plan is a hybrid plan. Members who elect to participate in the Optional Hybrid Plan (instead of Tier 2 or SMP) participate in both a defined benefit (DB) plan and a defined contribution (DC) plan. Under the DC plan, employees contribute a minimum of 4% of salary and employers contribute a rate between 2% and 6% of salary. Optional Hybrid Plan DC plan benefits are funded by the employers

# Summary of Benefit Provisions of SURS

and are not included in this actuarial valuation.

The provisions of the Traditional and Portable defined benefit plans are identical in many areas. The description below is primarily of the Traditional Plan. Where different, the Portable plan provisions will be described in *italics*.

## Member Contributions

Most members in Tier 1 and Tier 2 contribute a total of 8% of pensionable compensation. Police officers and firefighters contribute a total of 9.5% of pensionable compensation, with the additional 1.5% allocated to the retirement annuity. Optional Hybrid Plan members contribute the lesser of 6.2% of pensionable compensation and the total normal cost rate for the Optional Hybrid Plan defined benefit plan.

The total contribution is broken down as follows:

	Tier 1 and Tier 2		Optional Hybrid Plan
	Police/Fire	All Others	All*
Retirement Annuity	8.0%	6.5%	
Survivor Benefits	1.0%	1.0%	
Annual Increases in Retirement	0.5%	0.5%	
Total Contribution	9.5%	8.0%	6.2%

\* *Optional Hybrid Plan members contribute the lesser of 6.2% of pensionable compensation and the total normal cost rate for the Optional Hybrid Plan defined benefit plan.*

*Portable Plan members contribute the same percent of compensation, but the breakdown set out above does not apply.*

The retirement annuity portion of the total contribution (8.0% of compensation for police officers and firefighters and 6.5% of compensation for all others) is annuitized for the money purchase formula (Rule 2) calculation for Tier 1 members.

Contributions for Tier 2 and Optional Hybrid Plan members are assumed not to be made on pay in excess of the respective pay caps.

Since January 1, 1981, the member contributions under SURS have been “picked up” for IRS purposes by employers.

## Effective Rate of Interest

The Effective Rate of Interest (“ERI”) is the interest rate that is applied to member contribution balances. Effective for the 2006 fiscal year, the ERI for the purpose of determining the money purchase benefit is established by the State Comptroller annually. The ERI for other purposes such as the

# Summary of Benefit Provisions of SURS

calculation of purchases of service credit, refunds for excess contributions, portable plan refunds and lump sum portable retirements is determined by the SURS Board annually and certified to the Governor. For purposes of the actuarial valuation, the assumed ERI is 6.75% beginning with the actuarial valuation as of June 30, 2018.

For the purposes of withdrawal of contributions at termination or death by Traditional Plan Members, this rate is not greater than 4.5% by statute.

## Retirement Benefits

### Final Average Salary

Final average salary is equal to:

<b>Tier 1</b>	High four consecutive year average compensation or the average of the last 48 consecutive months of employment.
<b>Tier 2</b>	High final eight consecutive year average compensation within the last ten years or the average of the last 96 consecutive months within the last 120 months.
<b>Optional Hybrid Plan</b>	Final average salary equal to the average salary during the last ten years of service.

The Tier 2 and Optional Hybrid Plan pay caps are shown in a table earlier in this section. We have assumed that the pay cap each year applies to the individual pay amounts that are used to develop the final average compensation.

The present value of the benefits for pay increases in excess of 3% (6% prior to July 1, 2018 and for increases awarded under contracts and collective bargaining agreements entered into, amended, or renewed before June 4, 2018) during the final average earnings period immediately preceding retirement will be paid by the employer. The employer will pay this amount in a lump sum to the Retirement System.

### Normal Retirement

#### Eligibility

For Tier 1 police officers and firefighters, separation from service on or after the attainment of the earlier of:

1. Age 55 with 20 years of service; or
2. Age 50 with 25 years of service.

## Summary of Benefit Provisions of SURS

For all other Tier 1 members and for all Tier 2 and Optional Hybrid Plan members, separation from service on or after attainment of the earlier of:

Tier 1	Tier 2	Optional Hybrid Plan
Age 62/5 Years	Age 67/10 Years	Age 67/10 Years*
Age 60/8 Years		
Any age/30 Years		

*\* Optional Hybrid Plan members are eligible to retire at their normal Social Security retirement age, but no earlier than age 67 with 10 years of service.*

### Initial Benefit Amount

There are three alternate formulae. The initial benefit is the largest produced by one of the three:

1. General Formula (Applicable to all Tiers)
2. Money Purchase Formula (Applicable to Tier 1 only, hired before July 1, 2005)
3. Minimum Benefit (Applicable to all Tiers)

Following is a description of the benefits provided under each of the three alternate formulae.

1. General Formula (Applicable to all Tiers): The following percentages of final average compensation for each year of service:

Year of Service	Tier 1 and Tier 2		Optional Hybrid
	General	Police/Fire	All Members
1 <sup>st</sup> 10 Years	2.20 %	2.25 %	1.25 %
Next 10 Years	2.20	2.50	1.25
Over 20	2.20	2.75	1.25

2. Money Purchase Formula (Applicable to Tier 1 only, hired before July 1, 2005):
  - a) The member contributions for retirement benefits (8.0% of compensation for police officers and firefighters and 6.5% of compensation for all others) accumulated with interest at the ERI, plus
  - b) An imputed employer contribution match at \$1.40 per dollar of member contribution accumulated with interest at the ERI.
  - c) The total of the accumulations in (a) and (b) is converted into an annuity using a life annuity factor that takes into account neither the automatic 50% spousal survivor benefit nor the automatic annual increases.

Members hired on or after July 1, 2005, no longer receive the Money Purchase Formula under the plan.

## Summary of Benefit Provisions of SURS

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3. Minimum Benefit(Applicable to all Tiers) – A benefit for each year of service, up to 30, based on final annual pay, as follows:

Under 3,500	\$ 8
\$3,500 - \$4,500	9
\$4,500 - \$5,500	10
\$5,500 - \$6,500	11
\$6,500 - \$7,500	12
\$7,500 - \$8,500	13
\$8,500 - \$9,500	14
Over \$9,500	15

Minimum Retirement Annuity – No retiree shall receive a retirement annuity less than \$25 per month for each year of service up to 30. The comparable benefit for survivor benefit recipients is \$17.50 per month for each year of service up to 30.

### Maximum Benefit

All Tiers have a maximum benefit equal to 80% of final average compensation.

Contribution waivers are applicable to members whose benefits are capped at 80% of final average compensation. Member contributions made once the maximum benefit is achieved are refunded to the member with interest (at the Effective Rate of Interest).

### Benefit Duration

The Normal Retirement benefit is payable for the lifetime of the retired member. If the retiree under the Traditional Plan has a spouse at date of retirement and if that spouse survives the retiree the spouse will receive, upon the death of the retiree, a survivor benefit equal to the following percentage of the monthly benefit being paid to the retiree as of the date of death.

1. The survivor benefit for Tier 1 members is equal to 50% of the monthly benefit being paid to the retiree as of the date of death.
2. The survivor benefit for Tier 2 and Optional Hybrid Plan members is equal to 66 2/3% of the monthly benefit being paid to the retiree as of the date of death.

Such benefit will continue for the lifetime of the surviving spouse.

*For retirees under the Portable Plan, the normal form of benefit is a single-life annuity for unmarried participants and a reduced 50% joint and survivor benefit for married participants. With spousal consent, a member may designate a contingent annuitant to receive a joint and survivor annuity or elect a single-life annuity or lump sum distribution. Those receiving a joint and survivor annuity will have their benefit reduced to cover the cost of the option. The available joint and survivor options are 50%, 75% and 100%. A member may elect the 75% or 100% spousal joint and survivor annuity without consent.*

## Summary of Benefit Provisions of SURS

*Portable Plan members may also elect to receive their retirement benefit as a lump sum equal to member contributions with an equal employer match (if have the required years of service), accumulated with interest (at the Effective Rate of Interest that is certified annually by the SURS Board).*

*The required years of service is five years for all plans. (Must have 10 years if retirement age.)*

### Annual Increases

For Tier 1 members who have not elected the Automatic Annual Increase (AAI) buyout, each January 1 subsequent to retirement date, the monthly benefit being paid each retiree shall be increased by 3% (compound COLA). The adjustment for the first January after retirement shall be proportional based on the portion of the year retired. See page 78 for a description of the increase for members who have elected the AAI buyout.

For Tier 2 members, each January 1 subsequent to retirement date, the monthly benefit being paid each retiree shall be increased by fifty percent of the Consumer Price Index-Urban (“CPI-U”) up to a maximum of 3% applied to the original benefit (simple COLA). The first increase will be granted upon the later of the attainment of age 67 or the first anniversary of the commencement of the annuity.

For Optional Hybrid Plan members, each January 1 subsequent to retirement date, the monthly benefit under the DB Plan being paid each retiree shall be increased by fifty percent of the Consumer Price Index-Workers (“CPI-W”) applied to the original benefit (simple COLA). The first increase will be granted on the first anniversary of the commencement of the annuity.

The historical development of the Tier 2 Annual Increase as determined by the Illinois Department of Insurance can be found in the following table.

Year	CPI-U	½ CPI-U	Annual Increase
2011			3.00%
2012	3.90%	1.95%	1.95%
2013	2.00%	1.00%	1.00%
2014	1.20%	0.60%	0.60%
2015	1.70%	0.85%	0.85%
2016	0.00%	0.00%	0.00%
2017	1.50%	0.75%	0.75%
2018	2.20%	1.10%	1.10%

### Early Retirement

#### Eligibility

For Tier 1 members other than police and fire employees, separation from service on or after attainment of age 55 with 8 years of service, but not eligible for Normal Retirement.

# Summary of Benefit Provisions of SURS

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For Tier 2 members, separation from service on or after attainment of age 62 with 10 years of service, but not eligible for Normal Retirement.

There is no early retirement provision for the Optional Hybrid Plan.

## Benefits

The benefit amounts and all terms of benefit payment are the same as that for Normal Retirement, except that the benefit amounts calculated under the General Formula and the Minimum Formula shall be reduced by .5% for each month by which the retirement date precedes the 60<sup>th</sup> birthday for Tier 1 members and the 67<sup>th</sup> birthday for Tier 2 members.

## Benefits on Death before Retirement

### Survivor Benefits

#### Traditional Plan

##### Eligibility

Payable to eligible survivor(s) (spouse, child or dependent parent) for the death of an active member with at least 1.5 years of service or a terminated member with at least 10 years of service. For this purpose, service under the State Employees' Retirement System, the Teachers' Retirement System of the State of Illinois and the Public School Teachers' Pension Fund of Chicago is recognized.

##### Benefits

For Tier 1 members, an annuity to the eligible survivor(s) equal to the greater of:

1. 50% of the benefit accrued to the date of the death of the member, and
2. The lowest applicable benefit from the following list:
  - a) \$400 per month to a single eligible survivor or \$600 per month to two or more eligible survivors.
  - b) 30% (one survivor), or 60% (two survivors), or 80% (three or more survivors) of the member's final rate of earnings.
  - c) If member inactive, 80% of base retirement annuity.

For Tier 2 and Optional Hybrid Plan members, an annuity to the survivor(s) equal to 66 2/3% of the benefit accrued to the date of the death of the member.

Supplemental Minimum Survivor Annuity of \$17.50 per month times number of years of service credit, up to 30 years. No annual increases payable on the supplemental minimum survivor annuity.

# Summary of Benefit Provisions of SURS

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## Benefit Duration

### *Surviving spouse*

May receive a lifetime benefit commencing at the later of the day following the member's date of death and the spouse's attainment of age 50. May be payable the day following the member's date of death if a dependent child in their care is also receiving benefits.

### *Dependent child*

Payable to unmarried child(ren) under age 18 (over 18 if disabled prior to age 18), and children age 18-22 if a qualified full-time student.

### *Dependent parent*

Payable to a parent of the member who was dependent upon the member at the time of their death. Payable at the later of the day following the member's date of death and the parent's attainment of age 55. The benefit continues until the parent dies.

## Annual Increases

For Tier 1 members, each January 1 subsequent to retirement date the monthly benefit being paid each survivor annuity recipient shall be increased by 3%. The first increase begins with the first January closest to the first anniversary of the survivor annuity.

For Tier 2 members, each January 1 subsequent to retirement date the monthly benefit being paid each survivor annuity recipient shall be increased fifty percent of the Consumer Price Index-Urban ("CPI-U") up to a maximum of 3% of the originally granted survivor annuity (simple COLA). The first increase will be granted upon January 1 following the first anniversary of the commencement of the survivor annuity.

For Optional Hybrid Plan members, there is no AAI for survivor benefits.

## Portable Plan

### Eligibility

Payable to an eligible spouse for the death of an active or inactive member with at least 1.5 years of SURS service.

### Benefits

An annuity to the eligible spouse equal to 50% of the member's earned retirement benefit after the reductions to pay for the cost of providing the pre-retirement survivor annuity. (Applicable to Tier 1, Tier 2 and Optional Hybrid Plan members.)



# Summary of Benefit Provisions of SURS

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## Benefit Duration

### *Surviving spouse*

May receive a lifetime benefit commencing at the member's earliest retirement age.

## Annual Increases

For members hired before January 1, 2011 and for all members hired on or after January 1, 2011, each January 1 subsequent to retirement date the monthly benefit being paid each survivor annuity recipient shall be increased by 3%. The adjustment for the first January after retirement shall be proportional.

For Optional Hybrid Plan members, there is no AAI for survivor benefits.

## Lump Sum Death Benefit

### Eligibility

Death of member prior to retirement.

## Traditional Plan

### Benefit

#### With Eligible Survivor

- $7/8^{\text{th}}$  of accumulated member contributions balance (includes all contributions and interest)

#### Without Eligible Survivor

- Refund of the total accumulated member contribution and interest; and
- An amount up to \$5,000 based on the annual final average earnings amount to a dependent beneficiary or \$2,500 to a non-dependent beneficiary. The additional death benefit is only payable if the member was active at death. If the member was inactive, this additional death benefit is not payable.

## Portable Plan

### Benefit

#### With Eligible Spouse

- Refund of total accumulated member contributions at the full Effective Rate of Interest, plus, if the member has at least 1.5 years of service at death, a like amount of imputed employer

# Summary of Benefit Provisions of SURS

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contributions – less the actuarial equivalent of the Pre-Retirement Survivor Annuity.

## Without Eligible Spouse

- Refund of total accumulated member contributions at the full Effective Rate of Interest, plus, if the member has at least 1.5 years of service at death, a like amount of imputed employer contributions.

## Benefits on Death after Retirement

In addition to survivor/spouse benefits payable from the System, the following death benefit is payable if a member does not have an eligible survivor/spouse/contingent annuitant:

- The greater of the total accumulated member contributions and interest minus the total retirement annuities paid to the member through the date of their death or \$1,000.

### Eligibility

Payable to eligible survivor(s) (spouse, child or dependent parent) as long as the member did not take a refund of their survivor contributions at retirement.

## Traditional Plan

### Benefits

For Tier 1 members, an annuity to the eligible survivor(s) equal to the greater of:

1. 50% of the annuity at the time of the member's death:
2. The lowest applicable benefit from the following list:
  - a) \$400 per month to a single eligible survivor or \$600 per month to two or more eligible survivors.
  - b) 30% (one survivor), or 60% (two survivors), or 80% (three or more survivors) of the member's final rate of earnings.
  - c) 80% of base retirement annuity.

For Tier 2 and Optional Hybrid Plan members, an annuity to the survivor(s) equal to 66 2/3% of retirement annuity at the time of the member's death.

Supplemental Minimum Survivor Annuity of \$17.50 per month times number of years of service credit, up to 30 years. No annual increases payable on the supplemental minimum survivor annuity.

# Summary of Benefit Provisions of SURS

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## Benefit Duration

### *Surviving spouse*

May receive a lifetime benefit commencing at the later of the day following the member's date of death and the spouse's attainment of age 50. May be payable the day following the members' date of death if a dependent child in their care is also receiving benefits.

### *Dependent child*

Payable to unmarried child(ren) under age 18 (over 18 if disabled prior to age 18), and children age 18-22 if a qualified full-time student.

### *Dependent parent*

Payable to a parent of the member who was dependent upon the member at the time of their death. Payable at the later of the day following the member's date of death and the parent's attainment of age 55. The benefit continues until the parent dies.

## Portable Plan

### Benefits

A 50%, 75% or 100% Joint and Survivor annuity is payable to the Contingent Annuitant that the member chose at the time of retirement, if any. The member's retirement annuity is reduced to pay for the Joint and Survivor Annuity.

### Benefit Duration

#### *Surviving spouse*

May receive a lifetime benefit commencing at the member's earliest retirement age.

### Annual Increases

For members hired before January 1, 2011 and for all members hired on or after January 1, 2011, each January 1 on or after the survivor annuity shall be increased by 3% compounded. The first AAI begins with the January 1 on or after the commencement of the survivor annuity if retired January 14, 1991 or later. If the member retired prior to January 14, 1991, then January 1 on or closest to the 1st anniversary of the Survivor Annuity shall be increased by 3%. The adjustment for the first January after retirement shall be proportional.

For Optional Hybrid Plan members, there is no AAI for survivor benefits.

# Summary of Benefit Provisions of SURS

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## Benefits for Disability

### Disability Benefit

#### Eligibility

Disablement after completing two years of service. The service requirement is waived if the disablement is accidental.

Disability definition – inability to perform the duties of “own occupation.”

Pregnancy and childbirth are, by definition, disablement.

#### Benefit

The greater of 50% of the basic compensation paid at date of disablement or 50% of the average earnings for the 24 months prior to the date of disablement. This base benefit level is offset dollar for dollar by each of the following:

1. Earnings while disabled in excess of the disability benefit.
2. Other disability insurance either fully or partially employer provided.
3. Worker’s compensation benefits.

#### Duration of Benefit

Benefits become payable on the later of the termination of salary and sick leave, or the 61<sup>st</sup> day after disablement and continue to the earlier of the following:

1. Recovery or death.
2. Benefits paid equal 50% of total compensation during the period of SURS service.
3. If disablement occurs prior to age 65, the disability benefit may not continue past the August 31 following 70<sup>th</sup> birthday.
4. If disablement occurs at or after attainment of age 65, completion of five years in disablement.

Survivor and death benefits are payable if a member dies while receiving disability benefits.

If, at discontinuance of the disability benefit, the member is eligible for a retirement benefit (based on service, which includes the period of disability and may also include time receiving a disability retirement annuity), the member may retire and receive that benefit. The member may commence the retirement benefit once age and service requirements are met. The early retirement reduction does not apply for members who began first participating prior to January 1,

# Summary of Benefit Provisions of SURS

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2011 (Tier 1). The benefit is based on the greatest of three formulas (General Formula, Money Purchase and Minimum Benefit), subject to applicable maximums. Contributions are not made during the disability period. However, accumulated contributions continue to accrue interest.

## Annual Increases

Each January 1 subsequent to retirement date the monthly benefit being paid each retiree shall be increased by 3%. The adjustment for the first January after retirement shall be proportional.

## Disability Retirement Annuity

### Eligibility

Continuing disablement after discontinuation of the disability benefit as a result of reaching the "50% of total earnings" limitation. Disability is defined in accordance with the Social Security disability definition.

### Benefit

35% of the compensation being earned at disablement.

### Duration of Benefit

Benefits become payable upon discontinuance of the disability benefit and continue to the earlier of the following:

1. Recovery or death
2. Election to receive a retirement benefit

Survivor and death benefits are payable if a member dies while receiving a disability retirement annuity.

### Annual Increases

Each January 1 subsequent to retirement date the monthly benefit being paid each retiree shall be increased by 3%. The adjustment for the first January after retirement shall be proportional.

For members hired on or after January 1, 2011, if the member converts to a service retirement annuity (item 2 above), each January 1 subsequent to retirement date the monthly benefit being paid each retiree shall be increased fifty percent of the Consumer Price Index ("CPI") up to a maximum of 3% of the originally granted benefit. The first increase will be granted upon the later of the attainment of age 67 or the first anniversary of the commencement of the annuity.

# Summary of Benefit Provisions of SURS

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## Benefits for Deferred Members

### Eligibility

For members hired before January 1, 2011, separation from employment with at least five years of service and separation from employment with at least 10 years of service for members hired on or after January 1, 2011.

### Benefit

Benefit as defined for normal retirement purposes, but calculated based on final average compensation and service at date of termination.

### Commencement of Benefit

Benefits commence when member reaches the age condition for either normal or early retirement.

### Annual Increases

For members hired before January 1, 2011 who have not elected the AAI buyout, each January 1 subsequent to retirement date the monthly benefit being paid each retiree shall be increased by 3%. The adjustment for the first January after retirement shall be proportional. See page 78 for a description of the increase for members who have elected the AAI buyout.

For members hired on or after January 1, 2011, each January 1 subsequent to retirement date the monthly benefit being paid each retiree shall be increased fifty percent of the Consumer Price Index ("CPI") up to a maximum of 3% applied to the original benefit. The first increase will be granted upon the later of the attainment of age 67 or the first anniversary of the commencement of the annuity.

## Member Refunds

Non-vested terminated members and members who elect a refund in lieu of a vested benefit receive the following amounts.

### Traditional Plan

Refund of the total accumulated member contribution at 4.5% interest.

# Summary of Benefit Provisions of SURS

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## Portable Plan

Refund of total accumulated member contributions at the full Effective Rate of Interest that is certified annually by the SURS Board, plus, if the member has the required years of service, a like amount of imputed employer contributions.

The required years of service is five years for all plans. (Must have 10 years if retirement age.)

## Accelerated Pension Benefit Options

Under Public Act (PA) 100-0587, SURS shall offer an accelerated pension benefit payment to eligible members beginning on the implementation date and until June 30, 2021.

There are two accelerated pension benefit payment options that will be offered:

1. For vested inactive members, a payment equal to 60% of the present value of the member's pension benefit in lieu of receiving any pension benefit.
2. For members eligible for retirement, a payment equal to 70% of the difference between: (i) the present value of the automatic annual increases (AAI) to a Tier 1 member's retirement and survivor's annuity under the current AAI provisions and (ii) the present value of the automatic annual increases to the Tier 1 member's retirement annuity under revised AAI provisions
  - a. The current AAI provisions are an annual 3% increase of the prior year's benefit (compound COLA) payable as of the January 1 following the annuity start date (first increase is prorated).
  - b. The revised AAI provisions are an annual 1.5% increase of the originally granted benefit (simple COLA) payable as of the later of age 67 or the first anniversary of the annuity start. The survivor AAI is first payable 1 year after the survivor annuity commences.

## **APPENDIX I**

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### **GLOSSARY OF TERMS**



## Glossary of Terms

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**Actuarial Accrued Liability (“AAL”).** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

**Actuarial Assumptions.** Estimates of future plan experience such as investment return, expected lifetimes and the likelihood of receiving a pension from the Pension Plan. Demographic, or “people” assumptions, include rates of mortality, retirement and separation. Economic, or “money” assumptions, include expected investment return, inflation and salary increases.

**Actuarial Cost Method.** A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

**Actuarial Present Value of Future Plan Benefits (“APV”).** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

**Actuarial Value of Assets (“AVA”).** Smoothed value of assets that recognizes the difference between the expected investment return using the valuation assumption of 8.0 percent and the actual investment return over a five-year period. Dampens volatility of asset value over time.

**Actuarially Determined Contribution (“ADC”).** The sum of the gross normal cost (including employee contributions) and amortization of the unfunded actuarial accrued liability over a period not to exceed 30 years.

**Amortization.** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

**Annual Required Contribution (“ARC”).** The sum of the normal cost (net of employee contributions) and amortization of the unfunded actuarial accrued liability over a period not to exceed 30 years. Was required for accounting purposes by the Governmental Accounting Standards Board (GASB) Statement Nos. 25 and 27.

**Asset Return.** The net investment return for the asset divided by the mean asset value. Example: if \$1.00 is invested and yields \$1.0675 after a year, the asset return is 6.75 percent.

**Funded Ratio.** The actuarial value of assets divided by the actuarial accrued liability. Measures the portion of the actuarial accrued liability that is currently funded.

**Market Value of Assets (“MVA”).** The value of assets currently held in the trust available to pay for benefits of the Pension Plan. Each of the investments in the trust is valued at market price which is the price at which buyers and sellers trade similar items in the open market.

## Glossary of Terms

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**Normal Cost (“NC”).** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

**Unfunded Actuarial Accrued Liability (“UAAL”).** The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”