



State Universities Retirement System of Illinois

Actuarial Valuation Report as of
June 30, 2021

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September 30, 2021

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, 2021. GRS has prepared this report exclusively for the Trustees of the State Universities Retirement System of Illinois; GRS is not responsible for reliance upon this report by any other party. This report may be provided to parties other than 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, 2023, 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. Therefore, provisions related to the OHP are not reflected in this actuarial valuation. Under the provisions of PA 100-0023, employers make contributions beginning in fiscal year 2018 for current members who receive pay in excess of the Governor's pay and under PA 101-0010 (which rescinded the change to 3% from PA 100-0587), employers make contributions equal to the present value of the increase in benefit attributable to members who receive pay increases in excess of 6% 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, 2021, 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. Public Act 101-0610, effective January 1, 2020, added an unreduced retirement eligibility condition at age 60 with 20 years of service for Tier 2 police officers and firefighters. Effective September 1, 2020 the Retirement Savings Plan (RSP) has been renamed the Retirement Savings Plan (RSP).

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, 2020 actuarial valuation 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, 2017 through June 30, 2020. A summary of the changes can be found on page 4 of this report.

The actuarial assumptions were adopted by the Board pursuant to Section 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, 2021, 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 of 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 and no more than the period of time in order to attain 100% funding by 2045 (23 years remaining in the actuarial valuation as of June 30, 2021, which calculates the fiscal year 2023 contribution).

This report was prepared using our proprietary valuation model and related software and spreadsheet models used to calculate the statutory contributions in each future year through 2045 under the SURS statutory funding policy. In our professional judgment, the models used have the capability to provide results that are consistent with the purposes of the valuation and have no material limitations or known weaknesses. We performed tests to ensure that the models reasonably represent that which is intended to be modeled.

This report reflects the impact of COVID-19 through June 30, 2021. However, this report does not reflect the longer term and still developing future impact of COVID-19, which is likely to further influence demographic experience and economic expectations. We will continue to monitor these developments and their impact on the System and the actuarial assumptions. Actual experience will be reflected in each subsequent annual valuation, as experience emerges.

The signing actuaries are independent of the plan sponsor.

Amy Williams and Brian B. Murphy 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

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Executive Summary

(\$ in Millions)

Actuarial Valuation Date:	June 30, 2020		June 30, 2021	
Fiscal Year Ending:	June 30, 2022		June 30, 2023	
Estimated Statutory Contribution:		% of Payroll ⁷		% of Payroll ⁷
· Defined Benefit Plan Contribution Amount ¹	\$ 2,054.958	42.00%	\$ 2,075.345	41.55%
· Retirement Savings Plan Contribution Amount ¹	87.059	1.78%	92.244	1.85%
· Total Qualified Plan Contribution Amount	<u>\$ 2,142.017</u>	<u>43.78%</u>	<u>\$ 2,167.589</u>	<u>43.40%</u>
· Excess Benefit Arrangement (EBA) Contribution Amount ²	21.500	0.44%	24.200	0.48%
· Deferred Compensation Plan (DCP) Administrative Expense	0.131	0.00%	0.541	0.01%
· Combined State and Employer Contribution Amount	<u>\$ 2,163.648</u>	<u>44.22%</u>	<u>\$ 2,192.330</u>	<u>43.90%</u>
Estimated Statutory Contribution from Other Sources:				
· Federal/Trust Contribution Amount ⁶	\$ 57.000		\$ 62.000	
· Employer Contribution Amount Related to - Compensation in Excess of Governor's	\$ 5.369		\$ 5.048	
Net State Contribution:				
· Net Dollar Amount (Including EBA Contribution)	\$ 2,101.279	42.94%	\$ 2,125.282	42.55%
Actuarially Determined Contribution (ADC): ^{3,4}				
· Defined Benefit Plan Contribution Amount	\$ 2,458.736	50.25%	\$ 2,529.587	50.65%
· Defined Benefit Plan Contribution Amount as % of ADC	83.58%		82.04%	
Membership				
· Number of				
- Active Members (full time and part time)	76,335		73,443	
- Members Receiving Payments ³	69,172		70,111	
- Inactive Members	94,024		96,753	
- Total	<u>239,531</u>		<u>240,307</u>	
· Covered Capped Payroll Provided as of Valuation Date (Total)	\$ 4,583.907		\$ 4,639.067	
· Covered Capped Payroll Provided as of Valuation Date (DB)	3,527.958		3,532.276	
· Projected Capped Payroll for Fiscal Year (Total)	4,892.989		4,994.329	
· Defined Benefit Plan Capped Payroll ⁵	3,642.617		3,638.244	
· Annualized Benefit Payments ³	2,667.147		2,758.151	

¹ RSP contributions are net of RSP forfeitures of \$5,672,000 for fiscal year 2022 and of \$5,399,000 for fiscal year 2023. Projected Retirement Savings Plan (RSP) 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 RSP contribution.

² Amounts provided by SURS.

³ Excludes RSP.

⁴ 30-year initial closed period (23 years remaining as of June 30, 2021, applicable to the fiscal year 2023 contribution).

⁵ Defined benefit payroll from the current actuarial valuation increased with one year of wage inflation.

⁶ Pay increases in excess of 6% during FAS period for fiscal year 2022 and 2023 are included in the Federal/Trust Contribution Amount.

⁷ Percent of projected capped payroll.



Executive Summary

(\$ in Millions)

Actuarial Valuation Date:	June 30, 2020	June 30, 2021
Fiscal Year Ending:	June 30, 2022	June 30, 2023
Assets ¹		
· Market Value of Assets (MVA)	\$ 19,617.016	\$ 23,453.876
· Actuarial Value of Assets (AVA)	20,091.675	21,421.898
· SURS Reported Market Value Rate of Return	2.64%	23.75%
· Estimated Return on MVA	2.80%	23.04%
· Estimated Return on AVA	5.54%	9.81%
· Ratio – AVA to MVA	102%	91%
Actuarial Information ²		
· Total Normal Cost Rate	20.33%	20.84%
· Employer Normal Cost Rate	12.32%	12.83%
· Employer Normal Cost Amount	\$ 445.084	\$ 468.901
· Actuarial Accrued Liability (AAL)	47,580.470	48,898.480
· Unfunded Actuarial Accrued Liability (UAAL)	27,488.795	27,476.582
· Funded Ratio based on AVA	42.23%	43.81%
· UAAL as % of Defined Benefit Plan Capped Payroll	754.64%	755.22%
· Funded Ratio based on MVA	41.23%	47.96%
· Defined Benefit Plan Capped Payroll ³	3,642.617	3,638.244

¹ Amounts provided by SURS.

² Excludes RSP.

³ Defined benefit payroll from the current actuarial valuation increased with one year of wage inflation.



Summary of the Valuation

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, 2021.

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, 2023, 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 2023 is \$2.192 billion (\$2.168 billion excluding the EBA contribution and the Deferred Compensation Plan (DCP) projected administrative expense) and includes the State’s projected FY 2023 normal cost of \$456.2 million, an unfunded liability contribution of \$1.62 billion, a contribution to fund benefits from the Excess Benefit Arrangement (“EBA”) of \$24.2 million, a contribution to fund the administrative expenses of the DCP of \$0.5 million and the Retirement Savings Plan (“RSP”) contribution of \$92.2 million. The 2020 actuarial valuation had projected the Statutory contribution would increase, from \$2.142 billion for FY 2022 to \$2.215 billion for FY 2023 (excluding EBA contributions). The primary reason for the decrease in the Statutory contribution over the projected amount from the prior actuarial valuation is due to very favorable investment experience. Non-investment plan experience and the changes in assumptions due to the experience study had a small impact on the Statutory contribution.

Over the past 10 years, SURS experienced investment gains on a market value basis (compared to the actuarial assumption) in fiscal years 2013, 2014, 2017, 2018 and 2021. However, SURS incurred investment losses (or shortfalls in return compared to the actuarial assumption) in fiscal years 2012, 2015, 2016, 2019 and 2020. The market return for the year ending June 30, 2021, was approximately 23.75% and was 2.64% in FY 2020. The average market value investment return over the most recent 10 years has been approximately 8.5%.

The funded ratio increased from 41.2% as of June 30, 2020, to 48.0% as of June 30, 2021, based on the market value of assets, and increased from 42.2% as of June 30, 2020, to 43.8% as of June 30, 2021, based on the actuarial value of assets. The approximately \$2.0 billion in net deferred asset gains 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 8.1.



Summary of the Valuation

This means that approximately 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.

All other assumptions were first adopted by the Board for use with the actuarial valuation as of June 30, 2021 and were based on the recommendations from the experience study review performed for the period from June 30, 2017 through June 30, 2020. The changes in assumptions include:

- Decreasing the investment return assumption from 6.75% to 6.50%;
- Decreasing the general wage inflation assumption from 3.25% to 3.00%;
- Modifying overall rates of salary increase and using a different salary increase assumption for people under age 50 and age 50 and older;
- Decreasing Effective Rate of Interest (“ERI”) assumption from 6.75% to 6.50%;
- Using different demographic assumptions based on position type of academic or non-academic;
 - Academic
 - Decreasing retirement rates;
 - Decreasing service-based termination rates;
 - Decreasing disability rates;
 - Increasing life expectancies for retirees younger than age 70;
 - Non-Academic
 - Increasing retirement rates;
 - Decreasing service-based termination rates;
 - Increasing disability rates;
 - Decreasing life expectancies;
- Updating plan election assumptions for future new hires.
 - Academic: 55% elect to participate in Tier 2, 45% elect to participate in the Retirement Savings Plan (RSP)
 - Non-Academic: 75% elect to participate in Tier 2, 25% elect to participate in the Retirement Savings Plan (RSP)

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. Buyout election statistics can be found on page 68.

A complete description of 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. The basis for this assumption comes from 40 ILCS 5/1-160 (b-5) for Tier 2.

Summary of the Valuation

SURS Benefits

All benefit provisions valued in this June 30, 2021 actuarial valuation are identical to those valued in the prior actuarial valuation as of June 30, 2020. Due to the court ruling recent pension reform unconstitutional, this actuarial valuation does not reflect the provisions of Public Act 98-0599.

Public Act 100-0769 requires the SURS Board of Trustees, as soon as practicable after the effective date of the legislation, to establish and maintain a defined contribution plan. The defined contribution benefit must be an optional benefit to any member who chooses to participate. SURS has established the Deferred Compensation Plan (DCP).

Projected administrative expenses for this plan are included in the Statutory contribution. Other costs are not reflected in this valuation.

Effective September 1, 2020, the Self-Managed Plan (SMP) has been renamed the Retirement Savings Plan (RSP).

Experience During 2021

The System assets earned approximately 23.75% on a market value basis during FY 2021 which was more than the investment return assumption of 6.75% for FY 2021. The System assets earned 9.81% on an actuarial value of assets basis during FY 2021, due to recognition of a portion of current year asset gains and prior year net deferred investment gains under the asset smoothing method. Because 9.81% is more than the assumed rate of investment return of 6.75% for FY 2021, there was an asset gain of \$606.0 million on the actuarial value of assets.

There was also a net gain of \$47.3 million from actuarial liabilities, which is comprised of a loss of approximately \$41.2 million from demographic experience, and a gain of \$88.5 million from lower than expected pay increases.

Changes in actuarial assumptions increased the actuarial liabilities by \$363.8 million.

The estimated reduction in the actuarial liabilities due to the buyouts during fiscal year 2021 is \$17.9 million.

The SURS defined benefit programs experienced an overall actuarial gain of \$653.3 million.

The experience of the population determines the liability gain or loss for the year. There was a loss on salaries, due to larger salary increases than assumed and a small loss from active member mortality experience. From last year to this year, there were losses from retirement, termination and retiree mortality experience and a gain from disabilities. The other assumptions not easily attributable to one of the other categories generated an actuarial gain.

See Table 10 (page 32), Appendix C, for detail of the gains and losses by source.

Summary of the Valuation

Statutory Appropriations for the 2023 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 funded 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 FY 2045 is to be based on a (theoretically) constant percentage of the payroll¹ 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.

¹ 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. Required 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.

Summary of the Valuation

- 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%.
- 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% of payroll contributions and unfunded liability contributions. Estimates of Statutory contributions through 2045, assuming that 55% of academic and 75% of non-academic future new members elect the Tier 2 Plan, 45% of academic and 25% of non-academic future new members elect RSP and all other actuarial assumptions are realized, are set out in Table 14 (page 39).

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 2023



Summary of the Valuation

is \$62,000,000, 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.

The market value of the assets of the System that is available for benefits increased from \$19,617.0 million as of June 30, 2020, to \$23,453.9 million as of June 30, 2021. The actuarial value of assets as of June 30, 2021, is \$21,421.9 million, which is \$2,032.0 million less 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 \$2,032.0 million, which is the value of net deferred gains, will be smoothed into the actuarial value of assets over the next four years. The remaining unrecognized net asset gains from FY 2018 and FY 2021 will be smoothed in over the next one and four years, respectively, and the remaining asset losses from FY 2019 and FY 2020 will be smoothed in over the next two and three 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 29) of Appendix C.

Funding Status

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

As shown below, the SURS funded ratio increased from 41.2% as of June 30, 2020, to 48.0% as of June 30, 2021, based on the market value of assets, and increased from 42.2% as of June 30, 2020, to 43.8% as of June 30, 2021, based on the actuarial value of assets. There are net deferred gains that will be smoothed into the actuarial value of assets over the next four years. As a result of the approximately \$2.0 billion in net deferred gains and the funding policy, the funded ratio is projected to increase over the next four years if all assumptions are realized and all employer contributions are made on a timely basis.



Summary of the Valuation

Fiscal Year	Funded Ratio	
	AVA	MVA
2017	44.4 %	44.2 %
2018	42.8	42.7
2019	42.3	42.5
2020	42.2	41.2
2021	43.8	48.0

Short Condition Test

The following table shows a comparison, for fiscal years 2012 through 2021, 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 increased from 40.9% as of June 30, 2020, to 43.3% as of June 30, 2021.

Percentage of Benefits Covered by Net Assets (in Millions)							
Fiscal Year	Member Acc Contrib. (1)	Members Receiving Benefits (2)	Act/Inact Employer Portion (3)	Net Actuarial Value of Assets	% of Benefits Covered by Assets		
					(1)	(2)	(3)
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%
2019	6,594.1	31,856.5	7,993.4	19,661.9	100.0%	41.0%	0.0%
2020	6,651.0	32,862.0	8,067.5	20,091.7	100.0%	40.9%	0.0%
2021	6,843.1	33,661.7	8,393.6	21,421.9	100.0%	43.3%	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 rationale for contributions based on an 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 an initial

Summary of the Valuation

30-year closed period (23 years remaining as of the actuarial valuation as of June 30, 2021, applicable to the fiscal year 2023 contribution) 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 35) and Graph 4 (page 40), the funded ratio would increase more quickly and require lower contributions than under the Statutory policy after approximately 12 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 34) and an investment return of 6.50% each year, the funded ratio is projected to begin to increase from about 44% funded to 90% funded at 2045. The funded ratio is not projected to exceed 60% until 2035, 70% until 2040 and is projected to increase to 90% during the five-year period from 2040 until 2045. If the Statutory contributions are not made or investment return is less than the assumption of 6.50%, 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 assets in order to pay benefits which could have a further adverse effect on the funded status of the System.

The projected actuarial accrued liability of current retirees, current active and inactive members and future members is expected to increase from \$48.898 billion as of the end of FY 2021 to \$54.179 billion as of the end of FY 2033 and decrease to \$51.536 billion as of the end of FY 2045 (as shown in Graph 2, page 36, and Table 23, page 49). Total benefit payments are projected to increase from \$2.860 billion in fiscal year 2021 to \$4.229 billion in fiscal year 2045. Graph 3 (page 37, and Table 22, page 48) shows projected benefit payments separately for retirees as of June 30, 2021, active and inactive members as of June 30, 2021, 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;



Summary of the Valuation

- b. Calculating contributions as a level percentage of defined benefit plan pensionable payroll only instead of total payroll (including RSP payroll)
 - c. Eliminating smoothing of the change in the contribution requirement due to assumption changes.
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 2023 contribution would be \$2,621.831 (\$2,529.587 million for the SURS contribution and \$92.244 million for RSP) under this alternate funding policy. The current Statutory contribution does not comply with this recommendation. Because the alternate funding policy contribution is projected to decrease as deferred asset gains are recognized in the actuarial value of assets, it would be reasonable to smooth out the level of contributions over the next five years if funding were to occur based on the alternate funding policy. Underfunding the System 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 since 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 40 and projected funded ratios are shown in Graph 1 on page 35.

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 certain fiscal years 2023 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 RSP 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 case



Summary of the Valuation

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
2019	19,661.891	19,717.348	100
2020	20,091.675	19,617.016	102
2021	21,421.898	23,453.876	91

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 Statement Nos. 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. The actuarial accrued liability under the Entry Age Normal method is about \$1.2 billion higher as of the current actuarial valuation date than under the Projected Unit Credit 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 2011 and 2021, which is an average annualized decrease of about 1.0 percent.

Currently, the actuarial valuation assumes that the total number of active members in the future will be



Summary of the Valuation

equal to the number of actives or active members in the current actuarial valuation. Given the decrease in the number of active members over the past 10 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	RSP	Total	Annual Change in Membership	% Annual Change in Membership	Earnings (\$ in Millions)
2011	71,888	9,723	81,611			\$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
2019	62,589	12,531	75,120	170	0.2%	4,356.6
2020	63,206	13,129	76,335	1,215	1.6%	4,583.9
2021	60,397	13,046	73,443	(2,892)	-3.8%	4,639.1
Total Change				(8,168)	-1.0%	

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 actuarial 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.

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 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 6.50% 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 43.8% to 90.0% by 2045. However, policy makers should be aware that current capital market assumptions suggest that average future returns may be lower than 6.50% in the near



Summary of the Valuation

term, and that a certain amount of erosion in the funding level may occur.

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 6.50% 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 decrease in dollar amount;
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 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

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 factor;
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

The statutory contribution may be considered as a minimum contribution that complies with State statute. Contributions above this minimum level would enhance benefit security and improve the plan's funding level. 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:

	2020	2021
Ratio of the market value of assets to total payroll	4.28	5.06
Ratio of actuarial accrued liability to payroll	10.38	10.54
Ratio of actives to retirees and beneficiaries	1.10	1.05
Ratio of net non-investment cash flow to market value of assets	-3.3%	-2.6%
Approximate modified duration of the present value of future benefits	13.33	13.29

Payroll used in the above table includes RSP 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.

Summary of the Valuation

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.

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.

Duration of the Present Value of Future Benefits

The duration of the present value of future benefits may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

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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Summary of the Valuation

Risk Measures Summary (\$ in Millions)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Market		Market				
	Accrued	Market	Value	Valuation	Value	Retiree	RetLiab /	AAL /	Assets /
Valuation	Liabilities	Value of	Unfunded	Payroll	Funded	Liabilities	AAL	Payroll	Payroll
Date (6/30)	(AAL)	Assets	AAL		Ratio	(RetLiab)	(6)/(1)	(1)/(4)	(2)/(4)
					(2)/(1)				
2014	\$ 37,430	\$ 17,391	\$ 20,038	\$ 4,131	46.5%	\$ 24,389	65.2%	906.1%	421.0%
2015	39,521	17,463	22,058	4,281	44.2%	26,042	65.9%	923.3%	408.0%
2016	40,923	17,006	23,918	4,218	41.6%	27,342	66.8%	970.1%	403.1%
2017	41,853	18,485	23,369	4,184	44.2%	28,226	67.4%	1000.2%	441.7%
2018	45,259	19,321	25,938	4,264	42.7%	30,711	67.9%	1061.3%	453.1%
2019	46,444	19,717	26,727	4,357	42.5%	31,857	68.6%	1066.1%	452.6%
2020	47,580	19,617	27,963	4,584	41.2%	32,862	69.1%	1038.0%	428.0%
2021	48,898	23,454	25,445	4,639	48.0%	33,662	68.8%	1054.1%	505.6%

	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				Non-			
	Portfolio	Std Dev %	Unfunded	Investment	NICF /	Market	5-Year
Valuation	StdDev	of Pay	/ Payroll	Cash Flow	Assets	Rate of	Trailing
Date (6/30)				(NICF)	(13)/(2)	Return	Average
2014			485.1%	\$ (314)	-1.8%	17.9%	0.0%
2015			515.3%	(432)	-2.5%	2.9%	13.6%
2016			567.0%	(474)	-2.8%	0.1%	11.1%
2017			558.5%	(515)	-2.8%	11.9%	6.5%
2018			608.3%	(664)	-3.4%	8.3%	8.9%
2019			613.5%	(734)	-3.7%	6.0%	8.0%
2020	10.9%	46.6%	610.0%	(643)	-3.3%	2.8%	5.8%
2021	11.9%	60.2%	548.5%	(612)	-2.6%	23.0%	10.2%

(5). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7). The ratio of Retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio change. A ratio on the order of 50% indicates a maturing system.

(8) and (9). The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

(10) and (11). The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as



Summary of the Valuation

a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability. This ratio is likely to increase as the plan approaches full funding which is expected to lead to increasing volatility of contribution rates.

- (12). The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.
- (13) and (14). The ratio of Non-Investment Cash Flow to assets is an important measure of sustainability. 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.
- (15) and (16). Investment return is probably the largest single risk that most systems face. The year-by-year return and the 5-year geometric average both give an indication of the reasonableness of the system's assumed return. Of course, past performance is not a guarantee of future results. Market rate shown is based on actuarial estimation method and differs modestly from figures reported by State Street.

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APPENDICES

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APPENDIX A

ASSET INFORMATION

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Table 1
Statement of Plan Net Position
as of June 30, 2021 and June 30, 2020

	Defined Benefit Plan	
	2021	2020
Assets		
Cash and short-term investments	\$ 1,709,442,191	\$ 1,266,766,677
Receivables		
Members	10,614,296	11,158,593
Non-employer contributing entity		116,889,698
Federal, trust funds, and other	7,179,061	6,687,733
Pending investment sales	78,161,517	1,952,064,461
Interest and dividends	59,907,750	47,440,102
Total receivables	155,862,624	2,134,240,587
Prepaid expenses	124,134	133,923
Investments, at fair value		
Equity investments	9,996,158,858	6,684,436,960
Fixed income investments	6,315,692,168	5,467,304,396
Real estate investments	1,502,395,027	1,124,007,562
Alternative investments	3,933,795,322	4,977,446,278
Total investments	21,748,041,375	18,253,195,196
Securities lending collateral	2,128,611,343	1,381,940,165
Capital assets, at cost, net of accum deprec	11,092,315	10,388,424
Total assets	25,753,173,982	23,046,664,972
Liabilities		
Benefits payable	17,463,445	12,718,437
Refunds payable	5,318,074	3,601,916
Securities lending collateral	2,128,014,523	1,381,486,080
Payable to brokers for unsettled trades	127,147,762	2,013,885,643
Reverse repurchase agreements	619,908	512,000
Investment expenses payable	14,916,881	8,041,750
Administrative expenses payable	5,817,154	9,403,540
Total liabilities	2,299,297,747	3,429,649,366
Plan Net Position	\$ 23,453,876,235	\$ 19,617,015,606

Table 2

Statement of Changes in Plan Net Position for Years Ended June 30, 2021 and June 30, 2020

	Defined Benefit Plan	
	2021	2020
Additions		
Contributions		
Employer	\$ 57,001,311	\$ 52,968,295
Non-employer contributing entity	1,921,742,123	1,785,817,785
Member	288,476,321	282,367,290
Total Contributions	<u>2,267,219,755</u>	<u>2,121,153,370</u>
Investment Income		
Net appreciation		
in fair value of investments	4,144,443,130	213,670,350
Interest	197,972,831	191,342,519
Dividends	185,053,012	200,038,867
Securities lending	6,297,262	5,597,401
Gross Investment Income	<u>4,533,766,235</u>	<u>610,649,137</u>
Less investment expense		
Asset management expense	84,650,481	67,967,190
Securities lending expense	566,754	504,180
Net investment income	<u>4,448,549,000</u>	<u>542,177,767</u>
Total additions	<u>6,715,768,755</u>	<u>2,663,331,137</u>
Deductions		
Benefits	2,780,374,481	2,676,192,703
Refunds of contributions	79,128,037	69,001,514
Administrative expense	19,405,608	18,469,275
Total deductions	<u>2,878,908,126</u>	<u>2,763,663,492</u>
Net increase (decrease)	3,836,860,629	(100,332,355)
Plan Net Position		
Beginning of year	<u>19,617,015,606</u>	<u>19,717,347,961</u>
Plan Net Position		
End of year	<u>\$ 23,453,876,235</u>	<u>\$ 19,617,015,606</u>

APPENDIX B

MEMBERSHIP DATA

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Table 3A

Summary of Data Characteristics – Active, Inactive, Retired

(\$ in Millions)

	June 30, 2020		June 30, 2021	
	Number	Earnings	Number	Earnings
Active Members				
Full time				
Traditional SURS	42,143	\$2,298.1	40,399	\$2,292.1
Portable SURS	17,446	1,203.8	17,198	1,217.8
RSP	12,726	1,052.2	12,669	1,103.0
Total Full Time ¹	72,315	\$4,554.1	70,266	\$4,612.9
Part time				
Traditional SURS	3,133	\$ 21.9	2,385	\$ 18.6
Portable SURS	484	4.2	415	3.8
RSP	403	3.7	377	3.8
Total Part Time	4,020	\$ 29.8	3,177	\$ 26.2
Total	76,335	\$4,583.9	73,443	\$4,639.1
Inactive Members				
Traditional SURS	70,630		72,539	
Portable SURS	13,114		13,596	
RSP	10,280		10,618	
Total	94,024		96,753	

¹ Includes 678 police officers and firefighters (including RSP) as of June 30, 2020, and 669 as of June 30, 2021.

	Annual Benefits		Annual Benefits	
	Number	Benefits	Number	Benefits
Benefit Recipients				
Retirement				
Traditional SURS	51,534	\$ 2,174.4	51,860	\$ 2,226.3
Portable SURS	7,526	274.8	8,012	302.2
Total Retirement	59,060	\$ 2,449.2	59,872	\$ 2,528.5
Survivor				
Traditional SURS	8,874	\$ 189.9	9,022	\$ 201.4
Portable SURS	283	5.8	310	6.6
Total Survivor	9,157	\$ 195.7	9,332	\$ 208.0
Disability				
Traditional SURS	779	\$ 17.5	734	\$ 16.8
Portable SURS	176	4.8	173	4.9
Total Disability	955	\$ 22.3	907	\$ 21.7
Total	69,172	\$ 2,667.1	70,111	\$ 2,758.2
Total Participants				
Total Traditional SURS	177,093		176,939	
Total Portable SURS	39,029		39,704	
Total RSP	23,409		23,664	
Total	239,531		240,307	

Values may not add due to rounding.



Table 3B

Summary of Data Characteristics – Full Time Active

(\$ in Millions)

	June 30, 2020		June 30, 2021	
	Number	Earnings	Number	Earnings
Active Members				
Full time				
Continuing Full Time Actives and Full Time Actives from Inactive and Part Time status - Tier 1				
Traditional SURS	24,231	\$ 1,559.0	22,274	\$ 1,488.5
Portable SURS	9,408	759.4	8,689	727.8
RSP	5,254	464.8	4,916	455.9
Total	38,893	\$ 2,783.2	35,879	\$ 2,672.2
Continuing Full Time Actives and Full Time Actives from Inactive and Part Time status - Tier 2				
Traditional SURS	14,065	\$ 641.2	15,462	\$ 735.7
Portable SURS	6,724	395.5	7,408	449.3
RSP	6,193	512.5	6,903	595.7
Total	26,982	\$ 1,549.3	29,773	\$ 1,780.7
New Actives - Tier 1				
Traditional SURS	378	\$ 10.3	216	\$ 6.3
Portable SURS	79	3.1	63	2.5
RSP	50	2.1	26	1.1
Total	507	\$ 15.5	305	\$ 9.9
New Actives - Tier 2				
Traditional SURS	3,469	\$ 87.6	2,447	\$ 61.5
Portable SURS	1,235	45.7	1,038	38.3
RSP	1,229	72.8	824	50.3
Total	5,933	\$ 206.1	4,309	\$ 150.1
Total Actives - Tier 1				
Traditional SURS	24,609	\$ 1,569.3	22,490	\$ 1,494.8
Portable SURS	9,487	762.5	8,752	730.3
RSP	5,304	467.0	4,942	457.0
Total	39,400	\$ 2,798.8	36,184	\$ 2,682.1
Total Actives - Tier 2				
Traditional SURS	17,534	\$ 728.8	17,909	\$ 797.2
Portable SURS	7,959	441.3	8,446	487.6
RSP	7,422	585.3	7,727	646.0
Total	32,915	\$ 1,755.3	34,082	\$ 1,930.8
Total Actives - Tier 1 and Tier 2				
Traditional SURS	42,143	\$ 2,298.1	40,399	\$ 2,292.1
Portable SURS	17,446	1,203.8	17,198	1,217.8
RSP	12,726	1,052.2	12,669	1,103.0
Total	72,315	\$ 4,554.1	70,266	\$ 4,612.9

Values may not add due to rounding.



Table 3C

Summary of Data Characteristics – Part Time Active/Inactive

(\$ in Millions)

	June 30, 2020		June 30, 2021	
	Number	Earnings	Number	Earnings
Active Members				
Part time				
Total Actives - Tier 1				
Traditional SURS	826	\$ 5.5	563	\$ 3.9
Portable SURS	152	1.0	106	0.8
RSP	79	0.6	56	0.4
Total	1,057	\$ 7.1	725	\$ 5.1
Total Actives - Tier 2				
Traditional SURS	2,307	\$ 16.4	1,822	\$ 14.7
Portable SURS	332	3.2	309	3.0
RSP	324	3.1	321	3.3
Total	2,963	\$ 22.7	2,452	\$ 21.0
Total Actives - Tier 1 and Tier 2				
Traditional SURS	3,133	\$ 21.9	2,385	\$ 18.6
Portable SURS	484	4.2	415	3.8
RSP	403	3.7	377	3.8
Total	4,020	\$ 29.8	3,177	\$ 26.2
Inactive Members				
Total Inactives - Tier 1				
Traditional SURS	54,916		54,500	
Portable SURS	9,025		8,991	
RSP	6,926		6,879	
Total	70,867		70,370	
Total Inactives - Tier 2				
Traditional SURS	15,714		18,039	
Portable SURS	4,089		4,605	
RSP	3,354		3,739	
Total	23,157		26,383	
Total Inactives - Tier 1 and Tier 2				
Traditional SURS	70,630		72,539	
Portable SURS	13,114		13,596	
RSP	10,280		10,618	
Total	94,024		96,753	

Values may not add due to rounding.



Table 3D

Summary of Data Characteristics – Academic/Non-Academic

(\$ in Millions)

	June 30, 2020				June 30, 2021			
	Academic		Non-Academic		Academic		Non-Academic	
	Number	Earnings	Number	Earnings	Number	Earnings	Number	Earnings
Full time								
Traditional SURS	14,370	\$ 850.8	27,773	\$ 1,432.1	13,489	\$ 850.8	26,910	\$ 1,441.3
Portable SURS	6,216	522.2	11,230	681.1	6,012	522.2	11,186	695.6
RSP	5,558	573.9	7,168	499.3	5,455	573.9	7,214	529.1
Total	26,144	\$ 1,946.9	46,171	\$ 2,612.6	24,956	\$ 1,946.9	45,310	\$ 2,666.0
Part time								
Traditional SURS	2,470	\$ 850.8	663	\$ 5.1	1,901	\$ 14.5	484	\$ 4.1
Portable SURS	395	522.2	89	0.9	340	3.1	75	0.7
RSP	347	573.9	56	0.6	328	3.3	49	0.5
Total	3,212	\$ 1,946.9	808	\$ 6.6	2,569	\$ 20.9	608	\$ 5.3
Inactive								
Traditional SURS	37,648		32,982		38,355		34,184	
Portable SURS	6,146		6,968		6,288		7,308	
RSP	5,733		4,547		5,837		4,781	
Total	49,527		44,497		50,480		46,273	
	Number	Annual Benefit	Number	Annual Benefit	Number	Annual Benefit	Number	Annual Benefit
Benefit Recipients								
Traditional SURS	27,519	\$ 1,302.2	33,668	\$ 1,079.6	27,659	\$ 1,326.0	33,957	\$ 1,118.5
Portable SURS	3,449	141.3	4,536	144.0	3,662	155.1	4,833	158.6
Total	30,968	1,443.5	38,204	1,223.7	31,321	1,481.1	38,790	1,277.1
Total Participants								
Total Traditional SURS	82,007		95,086		81,404		95,535	
Total Portable SURS	16,206		22,823		16,302		23,402	
Total RSP	11,638		11,771		11,620		12,044	
Total	109,851		129,680		109,326		130,981	

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, 2021

Age	Years of Service									Totals
	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30 & Over		
Under 20	9	6	-	-	-	-	-	-	-	15
	\$ 50,998	\$ 103,157	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 154,155
20-24	321	694	21	-	-	-	-	-	-	1,036
	\$ 3,295,294	\$ 21,208,709	\$ 776,354	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25,280,357
25-29	513	3,403	519	3	-	-	-	-	-	4,438
	\$ 6,884,444	\$ 150,207,180	\$ 23,618,487	\$ 136,224	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 180,846,335
30-34	514	4,218	2,206	351	11	-	-	-	-	7,300
	\$ 9,609,364	\$ 235,810,403	\$ 123,048,973	\$ 20,054,826	\$ 649,304	\$ -	\$ -	\$ -	\$ -	\$ 389,172,869
35-39	361	3,411	2,932	1,599	414	24	-	-	-	8,741
	\$ 6,805,814	\$ 212,497,151	\$ 191,729,908	\$ 105,221,190	\$ 27,026,175	\$ 1,331,171	\$ -	\$ -	\$ -	\$ 544,611,409
40-44	234	2,483	2,686	2,000	1,367	445	16	-	-	9,231
	\$ 4,587,768	\$ 150,037,468	\$ 184,040,069	\$ 148,367,967	\$ 106,136,161	\$ 31,585,455	\$ 1,084,642	\$ -	\$ -	\$ 625,839,529
45-49	206	1,912	2,021	1,742	1,678	1,226	314	7	-	9,106
	\$ 4,107,878	\$ 111,798,779	\$ 128,181,788	\$ 138,417,476	\$ 145,136,161	\$ 100,944,153	\$ 24,504,639	\$ 457,243	\$ -	\$ 653,548,116
50-54	182	1,649	1,864	1,561	1,755	1,627	842	200	-	9,680
	\$ 3,952,514	\$ 90,848,703	\$ 112,124,008	\$ 110,589,254	\$ 148,413,604	\$ 144,407,984	\$ 74,288,875	\$ 16,257,802	\$ -	\$ 700,882,744
55-59	135	1,294	1,608	1,366	1,486	1,571	887	424	-	8,771
	\$ 2,978,161	\$ 73,251,184	\$ 92,000,587	\$ 92,331,110	\$ 117,401,278	\$ 138,974,089	\$ 86,237,264	\$ 42,774,408	\$ -	\$ 645,948,082
60-64	63	820	1,241	1,080	1,174	1,128	665	509	-	6,680
	\$ 1,408,214	\$ 45,139,062	\$ 67,538,960	\$ 68,777,924	\$ 86,251,941	\$ 92,194,374	\$ 66,115,781	\$ 61,183,713	\$ -	\$ 488,609,969
65 & Over	19	539	975	886	894	863	497	595	-	5,268
	\$ 439,817	\$ 24,350,639	\$ 44,506,114	\$ 48,195,985	\$ 58,975,393	\$ 67,538,123	\$ 43,359,548	\$ 70,649,324	\$ -	\$ 358,014,943
Total Count	2,557	20,429	16,073	10,588	8,779	6,884	3,221	1,735	-	70,266
Total Payroll	\$ 44,120,265	\$ 1,115,252,434	\$ 967,565,248	\$ 732,091,955	\$ 689,990,017	\$ 576,975,349	\$ 295,590,748	\$ 191,322,491	\$ -	\$ 4,612,908,507

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



Table 5
Distribution of Benefit Recipients by Age
as of June 30, 2021

<u>Age</u>	<u>Number</u>	<u>Annual Benefit</u>
Retirees and Survivors		
Under 50	409	\$ 3,423,895
50-54	399	14,998,066
55-59	3,141	107,618,260
60-64	8,044	297,852,923
65-69	13,683	515,248,614
70-74	15,912	619,895,227
75-79	11,691	515,570,213
80-84	7,909	349,982,030
85-89	4,807	201,308,627
90 & Over	3,209	110,589,838
Total	69,204	\$ 2,736,487,693
Disabilitants		
Under 50	117	\$ 2,969,487
50-54	93	2,314,771
55-59	178	4,729,922
60-64	200	4,990,607
65-69	171	3,827,265
70-74	81	1,652,615
75-79	31	474,144
80-84	23	513,163
85-89	7	78,723
90 & Over	6	113,041
Total	907	\$ 21,663,738

Excludes RSP.



APPENDIX C

ACTUARIAL DETERMINATIONS

DRAFT

Table 6
Summary of Actuarial Values
as of June 30, 2021
(\$ in Millions)

	Actuarial Present Value of Projected Benefits (APV)	Projected Unit Credit Values		Gross NC % of Pay ¹
		Actuarial Accrued Liability (AAL)	Gross Normal Cost (NC) ¹	
1. Active Members				
a. Retirement	\$16,120.2	\$ 10,711.2	\$584.1	15.91%
b. Death	237.6	150.6	10.0	0.27%
c. Disability	253.9	146.1	15.8	0.43%
d. Termination	1,888.6	1,147.3	131.9	3.59%
Total - Active Members	\$18,500.3	\$ 12,155.2	\$741.9	20.20%
2. Benefit Recipients				
a. Retirement	\$31,486.2	\$31,486.2	\$ 0.0	
b. Survivor	1,904.0	1,904.0	0.0	
c. Disability	271.6	271.6	0.0	
Total - Benefit Recipients	\$33,661.7	\$33,661.7	\$ 0.0	
3. Other Inactive	\$ 3,081.5	\$ 3,081.5		
4. Grand Total	\$55,243.5	\$48,898.5	\$741.9	20.20%
5. Operating Expense			\$ 23.4	0.64%
6. Total Normal Cost ²			\$765.3	20.84%
7. Expected Pay During Fiscal Year 2022 for Defined Benefit Plans¹				\$ 3,672.3
8. Present Value of Future Salaries (PVFS) ¹				\$ 30,270.8

¹ For members currently active as of June 30, 2021, in the Traditional and Portable defined benefit plans and includes the use of capped payroll for members hired on or after January 1, 2011.

² The normal cost as a percent of capped pay is 26.61% for Tier 1 members and 11.67% for Tier 2 members.

Excludes RSP.

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, 2021

	2020	2021	2022	2023	2024	2025
Beginning of Year:						
(1) Market Value of Assets	\$ 19,717,347,961	\$ 19,617,015,606				
(2) Actuarial Value of Assets	19,661,891,301	20,091,674,784				
End of Year:						
(3) Market Value of Assets	19,617,015,606	23,453,876,235				
(4) Net of Contributions and Disbursements	(642,510,122)	(611,688,371)				
(5) Total Investment Income						
=(3)-(1)-(4)	542,177,767	4,448,549,000				
(6) Projected Rate of Return	6.75%	6.75%				
(7) Projected Investment Income						
=(1)x(6)+([1+(6)] ⁵ -1)x(4)	1,309,590,348	1,303,841,163				
(8) Investment Income in Excess of Projected Income	(767,412,581)	3,144,707,837				
(9) Excess Investment Income Recognized This Year (5 year recognition)						
(9a) From This Year	(153,482,516)	628,941,567				
(9b) From One Year Ago	(30,001,418)	(153,482,516)	\$ 628,941,567			
(9c) From Two Years Ago	36,662,742	(30,001,418)	(153,482,516)	\$ 628,941,567		
(9d) From Three Years Ago	155,949,656	36,662,742	(30,001,418)	(153,482,516)	\$ 628,941,567	
(9e) From Four Years Ago	(246,425,207)	155,949,656	36,662,744	(30,001,419)	(153,482,517)	\$ 628,941,569
(9f) Total Recognized Investment Gain/(Loss)	(237,296,743)	638,070,031	482,120,377	445,457,632	475,459,050	628,941,569
(10) Change in Actuarial Value of Assets						
=(4)+(7)+(9f)	429,783,483	1,330,222,823				
End of Year:						
(3) Market Value of Assets	19,617,015,606	23,453,876,235				
(11) Final Actuarial Value of Assets	20,091,674,784	21,421,897,607				
(12) Difference Between Market & Actuarial Values	(474,659,178)	2,031,978,628				
(13) Actuarial Value Rate of Return	5.54 %	9.81 %				
(14) Estimated Market Value Rate of Return	2.80 %	23.04 %				
(15) Ratio of Actuarial Value to Market Value	102 %	91 %				
(16) SURS Reported Market Value Rate of Return	2.64 %	23.75 %				

Excludes RSP.



Table 8
Analysis of Change in
Actuarial Accrued Liability and Actuarial Value of Assets
for the Year Ending June 30, 2021
(\$ in Millions)

1. Actuarial (Gain)/Loss on Actuarial Accrued Liability ("AAL")		
(a) AAL 6/30/2020		\$ 47,580.5
(b) Normal Cost FY 2021	\$ 739.7	
(c) Benefits and Admin Expenses Paid FY 2021	(2,878.9)	
(d) Interest on (a), (b), and (c) at 6.75%	3,140.7	
(e) Expected AAL 6/30/2021 (a+b+c+d)		48,581.9
(f) Actual AAL 6/30/2021 Before Assumption and Method Changes		48,534.6
(g) Actuarial (Gain)/Loss on AAL (f-e)		<u>\$ (47.3)</u>
(h) Impact of Benefit Changes		0.0
(i) Impact of Change in Actuarial Assumptions and Methods		363.8
(j) Actual AAL After Changes (f+h+i)		<u>\$ 48,898.5</u>
2. Actuarial (Gain)/Loss on Assets		
(a) Actuarial Value of Assets 6/30/2020		\$ 20,091.7
(b) Contributions FY 2021	2,267.2	
(c) Benefits and Administrative Expenses	(2,878.9)	
(d) Interest on (a), (b), and (c) at 6.75%	1,335.9	
(e) Expected Assets 6/30/2021 (a+b+c+d)		\$ 20,815.9
(f) Actual Actuarial Value of Assets 6/30/2021		21,421.9
(g) Actuarial (Gain)/Loss on Assets (e-f)		<u>\$ (606.0)</u>
3. Total Actuarial (Gain)/Loss		
(a) (Gain)/Loss on AAL		\$ (47.3)
(b) (Gain)/Loss on Assets		(606.0)
(c) Net (Gain)/Loss (a+b)		<u>\$ (653.3)</u>

Excludes RSP.

Values may not add due to rounding.



Table 9
Analysis of Change in
Unfunded Actuarial Accrued Liability
for the Year Ending June 30, 2021
(\$ in Millions)

1. Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2020	\$	27,488.8
2. Contributions		
a. Contributions equal to normal cost plus interest on UAAL		
i Interest on 1)	\$	1,855.5
ii Member contributions		288.5
iii Employer/State normal cost		451.2
iv Interest on ii and iii		24.6
v Total due	\$	2,619.7
b. Contributions paid based on funding policy		
i Member contributions	\$	288.5
ii Employer/State contributions		1,978.7
iii Interest on i and ii		75.3
iv Total paid	\$	2,342.5
c. Expected increase in UAAL (2a.v-2b.iv)		277.2
3. Expected UAAL at 06/30/2021 (1+2c)		27,766.0
4. (Gains)/Losses		
a. Investment income	\$	(606.0)
b. Salary increases		(88.5)
c. Demographic and other		41.2
d. Total	\$	(653.3)
5. Plan Provision Changes		-
6. Assumption Changes		363.8
7. Total Change in UAAL (2c + 4d + 5 + 6)		(12.2)
8. UAAL at 06/30/2021 (1 + 7)	\$	27,476.6

Excludes RSP.

Values may not add due to rounding.



Table 10

Analysis of Actuarial (Gains) and Losses

(\$ in Millions)

	Amount of (Gain) or Loss			
	FY 2018	FY 2019	FY 2020	FY 2021
Investment Return ¹	\$ (92.7)	\$ 234.1	\$ 233.5	\$ (606.0)
Salary Increase	(8.5)	(55.2)	5.4	(88.5)
Age and Service Retirement	16.1	53.4	6.0	9.6
General Employment Termination	15.3	29.3	22.3	28.8
Disability Incidence	5.4	4.5	(1.7)	(2.0)
In Service Mortality	(3.4)	(5.5)	1.2	3.8
Benefit Recipient ²	20.1	41.8	13.3	(61.8)
New Entrants ³	76.6	87.1	83.1	58.9
Other ⁴	(13.6)	(35.9)	(27.1)	3.9
Total Actuarial (Gain)/Loss	\$ 15.3	\$ 353.6	\$ 336.0	\$ (653.3)
BOY Actuarial Accrued Liability (AAL)	\$ 41,853.3	\$ 45,258.8	\$ 46,443.9	\$ 47,580.5
(Gain)/Loss as a % of BOY AAL	0.0%	0.8%	0.7%	(1.4)%
Total Non-Investment (Gain)/Loss	\$ 108.0	\$ 119.5	\$ 102.5	\$ (47.3)
(Gain)/Loss as a % of BOY AAL	0.3%	0.3%	0.2%	(0.1)%

Excludes RSP.

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

² 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.

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

⁴ 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 ¹	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Total Normal Cost	Member Contributions ²	Amortization of UAAL (30-year open) ³	Net State Contribution (30-year open) ³	Amortization of UAAL (30-year closed) ⁴	Net State Contribution (30-year closed) ⁴	Net State 30-year closed with 1 year Interest Adjustment ⁴
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	3,506.650	19,661.891	46,443.937	26,782.046	42.33	730.265	280.018	1,392.034	1,842.281	1,789.119	2,239.366	2,390.524
2020	3,642.617	20,091.675	47,580.470	27,488.795	42.23	729.332	282.367	1,414.304	1,861.269	1,852.066	2,299.031	2,454.215
2021	3,638.244	21,421.898	48,898.480	27,476.582	43.81	739.676	288.476	1,451.626	1,902.826	1,852.066	2,303.266	2,458.736
2022						765.300	296.399	1,452.434	1,921.335	1,906.298	2,375.199	2,529.587

¹ Defined Benefit Plan payroll is rolled forward with one year of salary scale at 3.00% (3.25% from 2018 through 2020, 3.75% prior to fiscal year 2018) and uses capped payroll for members hired on and after January 1, 2011.

² Projected for Fiscal Year 2022 and actual for years prior to Fiscal Year 2022.

³ 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 3.00% each year, 3.25% for fiscal years 2018 through 2021 and 3.75% for years prior to Fiscal Year 2019).

⁴ GRS recommends a 30-year (or shorter) closed amortization period beginning with Fiscal Year 2015, 23 years remaining at Fiscal Year 2022. (The statutory contribution would apply to Fiscal Year 2023; 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

ACTUARIAL PROJECTIONS

DRAFT

Table 12
Baseline Projections – Actuarial Valuation June 30, 2021
Assumes Contributions Based on Table 14 & Investment Return of 6.50% Each Year
(\$ in Millions)

Fiscal Year Ending	Total Payroll ¹	RSP Payroll	DB Payroll ¹	SURS Contributions ²	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	Maximum Contribution ³	SURS Contribution % of Total Payroll
2021	\$ 4,639.067	\$ 1,106.791	\$ 3,532.276	\$ 1,962.151	\$ 288.476	\$ 2,859.503	\$ 19.406	\$ 21,421.898	\$ 48,898.480	43.81 %	\$ 27,476.582	\$ 139.615	\$ 1,962.151	42.30 %
2022	4,906.777	1,206.414	3,700.363	2,054.958	296.399	3,045.764	23.371	22,687.782	49,699.352	45.65	27,011.570	146.736	2,058.734	41.88
2023	4,994.329	1,270.644	3,723.685	2,075.345	298.267	3,114.392	24.072	23,919.368	50,469.582	47.39	26,550.214	153.373	2,087.291	41.55
2024	5,097.777	1,338.998	3,758.779	2,098.616	301.078	3,215.529	24.794	25,153.853	51,174.310	49.15	26,020.457	164.417	2,109.211	41.17
2025	5,210.642	1,407.642	3,803.000	2,096.436	304.620	3,320.619	25.538	26,483.343	51,805.954	51.12	25,322.611	174.604	2,106.025	40.23
2026	5,328.838	1,475.531	3,853.307	2,094.866	308.650	3,422.007	26.304	27,126.544	52,364.596	51.80	25,238.052	179.149	2,108.538	39.31
2027	5,451.986	1,543.689	3,908.297	2,084.266	313.055	3,519.704	27.093	27,703.522	52,851.004	52.42	25,147.482	183.195	2,102.023	38.23
2028	5,579.895	1,612.394	3,967.501	2,133.165	317.797	3,615.574	27.906	28,273.586	53,264.148	53.08	24,990.562	191.634	2,147.197	38.23
2029	5,712.086	1,682.338	4,029.748	2,183.701	322.783	3,706.224	28.743	28,843.589	53,605.407	53.81	24,761.818	199.325	2,194.914	38.23
2030	5,847.857	1,753.121	4,094.736	2,235.605	327.988	3,800.281	29.606	29,411.623	53,866.895	54.60	24,455.272	211.160	2,239.987	38.23
2031	5,985.645	1,825.475	4,160.169	2,286.905	333.230	3,892.808	30.494	29,978.524	54,045.442	55.47	24,066.918	221.997	2,286.905	38.21
2032	6,128.196	1,900.647	4,227.548	2,341.709	338.627	3,974.340	31.409	30,559.318	54,147.402	56.44	23,588.084	226.944	2,341.709	38.21
2033	6,278.327	1,979.042	4,299.285	2,400.172	344.373	4,045.827	32.351	31,169.379	54,179.083	57.53	23,009.704	226.249	2,405.332	38.23
2034	6,432.690	2,059.837	4,372.853	2,459.184	350.266	4,110.617	33.321	31,818.212	54,143.761	58.77	22,325.549	NA	2,696.282	38.23
2035	6,590.216	2,142.939	4,447.277	2,519.405	356.227	4,170.804	34.321	32,514.375	54,042.206	60.16	21,527.831	NA	2,762.310	38.23
2036	6,749.900	2,227.354	4,522.546	2,580.452	362.256	4,224.206	35.351	33,268.837	53,877.193	61.75	20,608.356	NA	2,829.242	38.23
2037	6,913.671	2,314.908	4,598.763	2,643.061	368.361	4,193.709	36.411	34,173.628	53,731.174	63.60	19,557.546	NA	2,897.887	38.23
2038	7,081.668	2,404.768	4,676.901	2,707.285	374.620	4,232.185	37.504	35,169.135	53,534.512	65.69	18,365.377	NA	2,968.304	38.23
2039	7,254.484	2,496.113	4,758.371	2,773.352	381.146	4,260.113	38.629	36,274.282	53,295.977	68.06	17,021.695	NA	3,040.740	38.23
2040	7,432.748	2,590.542	4,842.206	2,841.501	387.861	4,280.697	39.788	37,506.085	53,021.984	70.74	15,515.899	NA	3,115.460	38.23
2041	7,618.403	2,686.842	4,931.561	2,912.476	395.018	4,289.678	40.981	38,888.086	52,724.525	73.76	13,836.439	NA	3,193.278	38.23
2042	7,808.665	2,784.286	5,024.380	2,985.212	402.453	4,287.542	42.211	40,443.588	52,416.251	77.16	11,972.663	NA	3,273.027	38.23
2043	8,003.846	2,883.260	5,120.585	3,059.829	410.159	4,275.951	43.477	42,195.809	52,108.558	80.98	9,912.749	NA	3,354.837	38.23
2044	8,202.461	2,984.064	5,218.397	3,135.758	417.994	4,256.042	44.781	44,167.568	51,811.916	85.25	7,644.348	NA	3,438.088	38.23
2045	8,404.973	3,087.065	5,317.909	3,213.178	425.964	4,228.503	46.125	46,382.646	51,536.274	90.00	5,153.628	NA	3,522.971	38.23

Projections are based on 55% of academic and 75% of non-academic new hires electing Tier 2 and 45% of academic and 25% of non-academic new hires electing RSP and 73,443 total active members (70,266 full time and 3,177 part time) in each future year.

- ¹ Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in Tier 2 participating in the Traditional and Portable plans.
- ² Excludes RSP contributions. Includes employer contributions. Fiscal year 2031 and 2032 contribution is capped at the maximum contribution.
- ³ Maximum contribution after the impact of debt service. Maximum contribution is equal to the SURS contribution shown on Table 17 (before the impact of the bonds issued in 2004) minus the debt service.

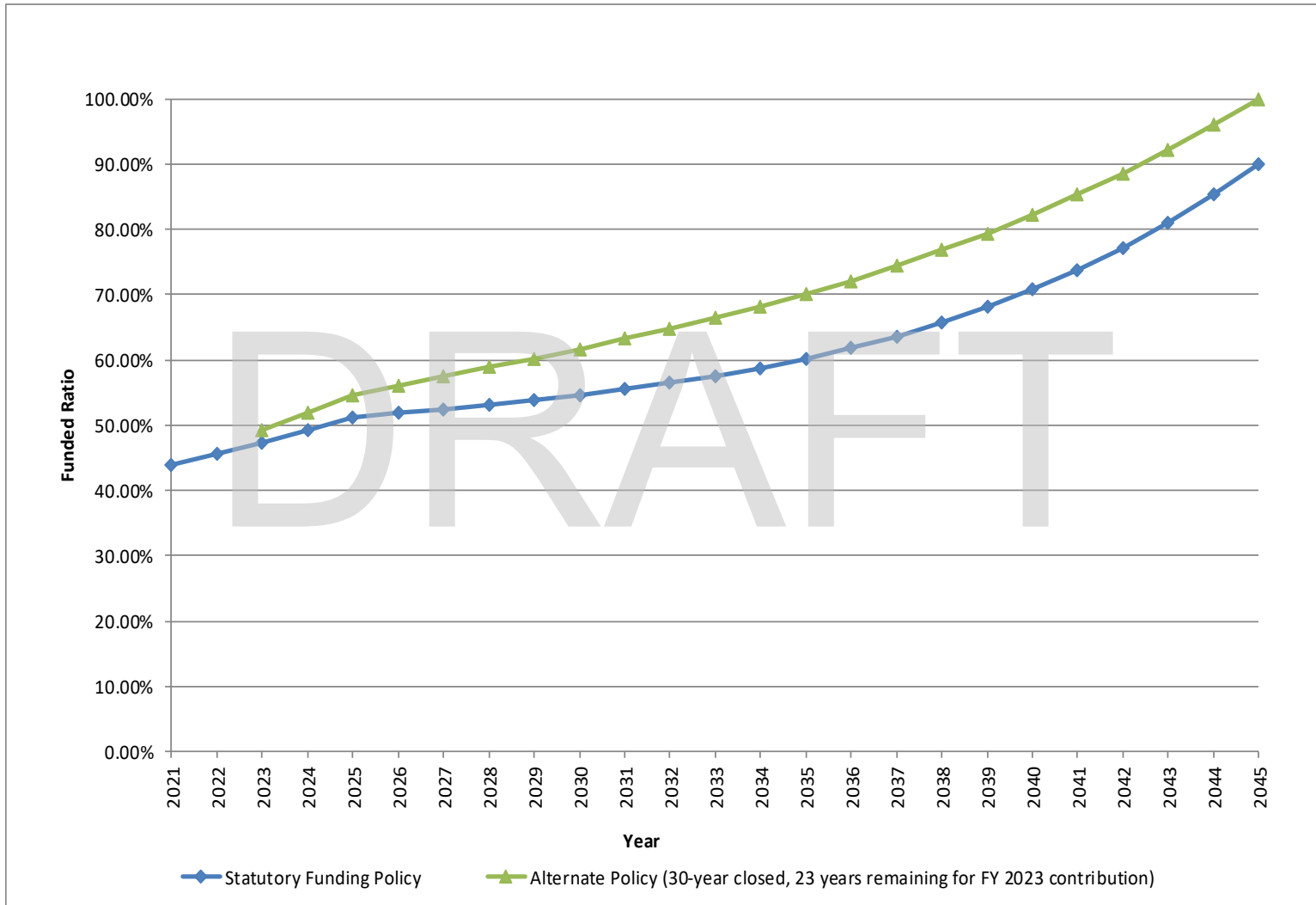


Graph 1

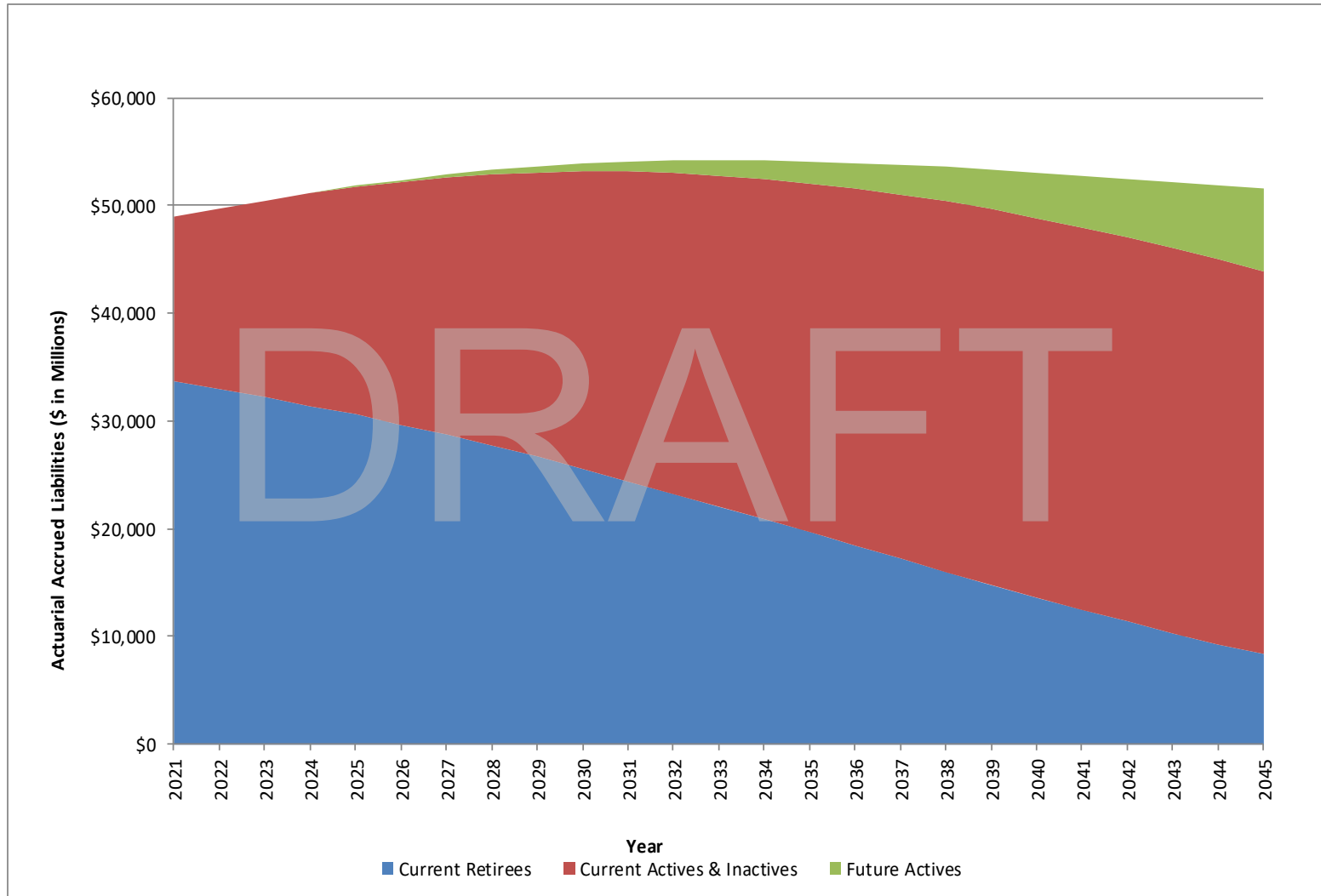
Projected Funded Ratio Based on Statutory Contributions

Actuarial Valuation as of June 30, 2021

(\$ in Millions)



Graph 2
Projected Actuarial Accrued Liabilities
Actuarial Valuation as of June 30, 2021
 (\$ in Millions)



Graph 3 Projected Benefit Payments Actuarial Valuation as of June 30, 2021 (\$ in Millions)

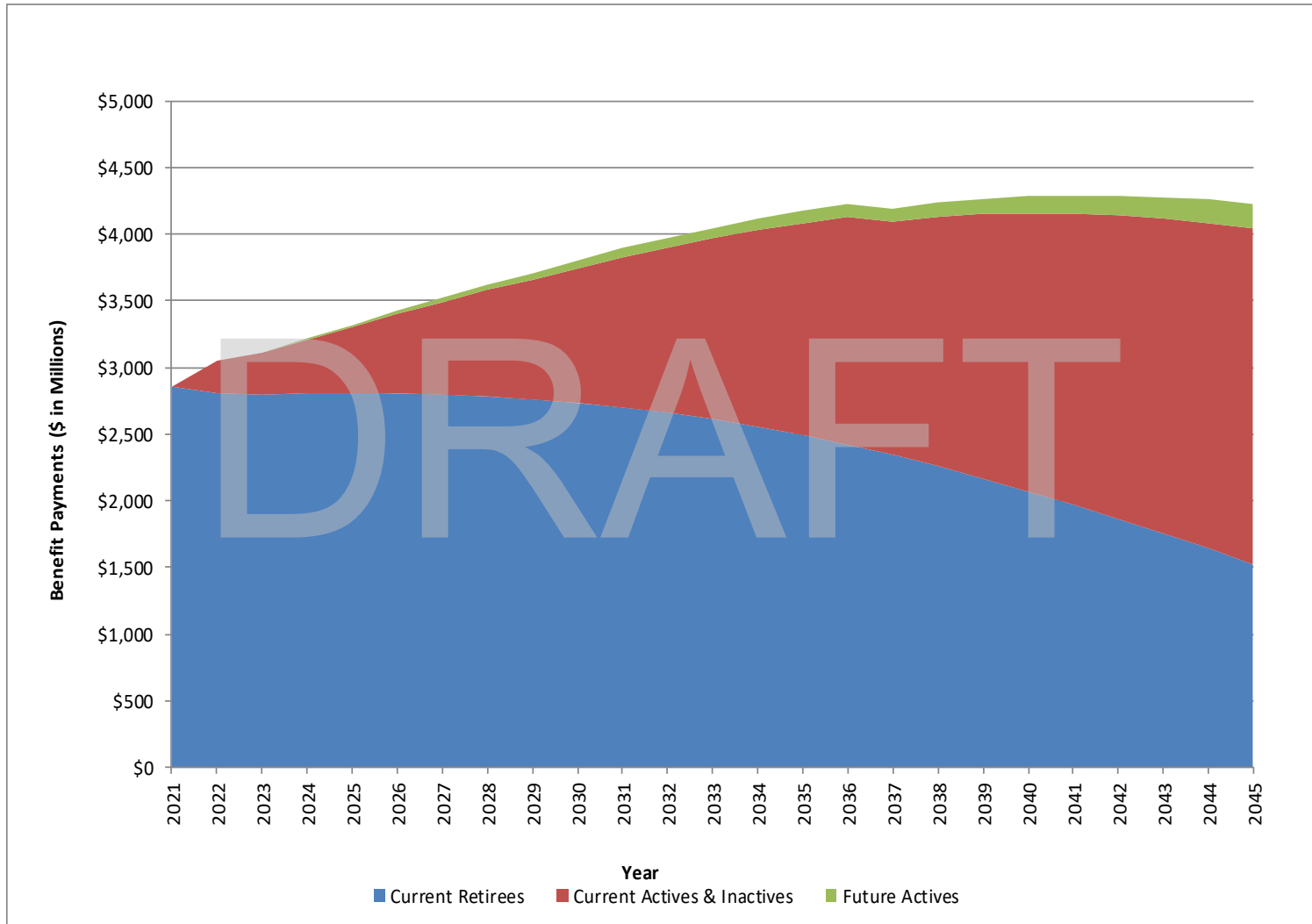


Table 13
Projected Statutory Contributions for the Actuarial Valuation as of June 30, 2021
Before Impact of Bonds Issued in 2004
(\$ in Millions)

FYE	SURS Cont. ¹	RSP Cont. ¹	Combined State and Employer Contribution	
			\$	% of Pay ²
2022	\$ 2,205.470	\$ 87.059	\$ 2,292.529	46.72 %
2023	2,240.664	92.244	2,332.908	46.71
2024	2,273.628	95.156	2,368.784	46.47
2025	2,280.629	100.012	2,380.641	45.69
2026	2,287.687	104.816	2,392.503	44.90
2027	2,285.217	109.640	2,394.857	43.93
2028	2,338.831	114.504	2,453.335	43.97
2029	2,394.239	119.455	2,513.694	44.01
2030	2,451.148	124.467	2,575.615	44.04
2031	2,508.902	129.590	2,638.492	44.08
2032	2,568.653	134.913	2,703.566	44.12
2033	2,631.581	140.463	2,772.044	44.15
2034	2,696.282	146.183	2,842.465	44.19
2035	2,762.310	152.066	2,914.376	44.22
2036	2,829.242	158.043	2,987.285	44.26
2037	2,897.887	164.242	3,062.129	44.29
2038	2,968.304	170.604	3,138.908	44.32
2039	3,040.740	177.072	3,217.812	44.36
2040	3,115.460	183.758	3,299.218	44.39
2041	3,193.278	190.577	3,383.855	44.42
2042	3,273.027	197.479	3,470.506	44.44
2043	3,354.837	204.489	3,559.326	44.47
2044	3,438.088	211.629	3,649.717	44.50
2045	3,522.971	218.926	3,741.897	44.52
Total	\$65,559.075	\$3,527.387	\$69,086.462	

¹ Assumes 75 percent of new hires elect Tier 2 and 25 percent elect to participate in the Retirement Savings Plan (RSP) for the Non-Academic members and 55 percent of new hires elect Tier 2 and 45 percent elect to participate in the Retirement Savings Plan (RSP) for the Academic members.

² 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 Tier 2 participating in the Traditional and Portable plans.

Table 14
Projected Statutory Contributions for the Actuarial Valuation as of June 30, 2021
Including Impact of Bonds Issued in 2004
(\$ in Millions)

FYE	SURS Cont. ¹	RSP Cont. ¹	Combined State and Employer Contribution		Debt Service		SURS Alternate Policy Contribution ³		Projected % of Alternate Policy Contributed ⁴	Employer Contributions	Federal/Trust Fund Contributions	Qualified Plan State Contribution
			\$	% of Pay ²	\$	% of Pay ²	SURS Cont.	Total (w/RSP)				
2022	\$ 2,054.958	\$ 87.059	\$ 2,142.017	43.65 %	\$ 146.736	2.99 %	\$ 2,458.736	\$ 2,545.795	84.14 %	\$ 5.369	\$ 57.000	\$ 2,079.648
2023	2,075.345	92.244	2,167.589	43.40	153.373	3.07	2,529.587	2,621.831	82.67	5.048	62.000	2,100.541
2024	2,098.616	95.156	2,193.772	43.03	164.417	3.23	2,484.515	2,579.671	85.04	9.198	NA	2,184.574
2025	2,096.436	100.012	2,196.448	42.15	174.604	3.35	2,442.857	2,542.869	86.38	8.784	NA	2,187.664
2026	2,094.866	104.816	2,199.682	41.28	179.149	3.36	2,399.728	2,504.544	87.83	8.652	NA	2,191.030
2027	2,084.266	109.640	2,193.906	40.24	183.195	3.36	2,344.633	2,454.273	89.39	8.494	NA	2,185.412
2028	2,133.165	114.504	2,247.669	40.28	191.634	3.43	2,350.236	2,464.740	91.19	8.315	NA	2,239.354
2029	2,183.701	119.455	2,303.156	40.32	199.325	3.49	2,362.902	2,482.357	92.78	8.204	NA	2,294.952
2030	2,235.605	124.467	2,360.072	40.36	211.160	3.61	2,376.144	2,500.611	94.38	8.053	NA	2,352.019
2031	2,286.905	129.590	2,416.495	40.37	221.997	3.71	2,389.434	2,519.024	95.93	7.866	NA	2,408.629
2032	2,341.709	134.913	2,476.622	40.41	226.944	3.70	2,403.046	2,537.959	97.58	7.664	NA	2,468.958
2033	2,400.172	140.463	2,540.635	40.47	226.249	3.60	2,416.737	2,557.200	99.35	7.401	NA	2,533.234
2034	2,459.184	146.183	2,605.367	40.50			2,431.664	2,577.847	101.07	7.145	NA	2,598.222
2035	2,519.405	152.066	2,671.471	40.54			2,446.946	2,599.012	102.79	6.863	NA	2,664.608
2036	2,580.452	158.043	2,738.495	40.57			2,461.912	2,619.955	104.52	6.570	NA	2,731.925
2037	2,643.061	164.242	2,807.303	40.61			2,476.010	2,640.252	106.33	6.220	NA	2,801.083
2038	2,707.285	170.604	2,877.889	40.64			2,488.815	2,659.419	108.21	5.817	NA	2,872.072
2039	2,773.352	177.072	2,950.424	40.67			2,500.095	2,677.167	110.21	5.357	NA	2,945.067
2040	2,841.501	183.758	3,025.259	40.70			2,509.935	2,693.693	112.31	4.856	NA	3,020.403
2041	2,912.476	190.577	3,103.053	40.73			2,519.745	2,710.322	114.49	4.347	NA	3,098.706
2042	2,985.212	197.479	3,182.691	40.76			2,525.560	2,723.039	116.88	3.825	NA	3,178.866
2043	3,059.829	204.489	3,264.318	40.78			2,523.697	2,728.186	119.65	3.350	NA	3,260.968
2044	3,135.758	211.629	3,347.387	40.81			2,503.389	2,715.018	123.29	2.901	NA	3,344.486
2045	3,213.178	218.926	3,432.104	40.83			2,423.116	2,642.042	129.90	2.503	NA	3,429.601
Total	\$ 59,916.437	\$ 3,527.387	\$ 63,443.824		\$ 2,278.782		\$ 58,769.439	\$ 62,296.826		\$ 152.800	\$ 119.000	\$ 63,172.024

¹ Assumes 75 percent of new hires elect Tier 2 and 25 percent elect to participate in the Retirement Savings Plan (RSP) for the Non-Academic members and 55 percent of new hires elect Tier 2 and 45 percent elect to participate in the Retirement Savings Plan (RSP) for the Academic members.

² 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 Tier 2 participating in the Traditional and Portable plans.

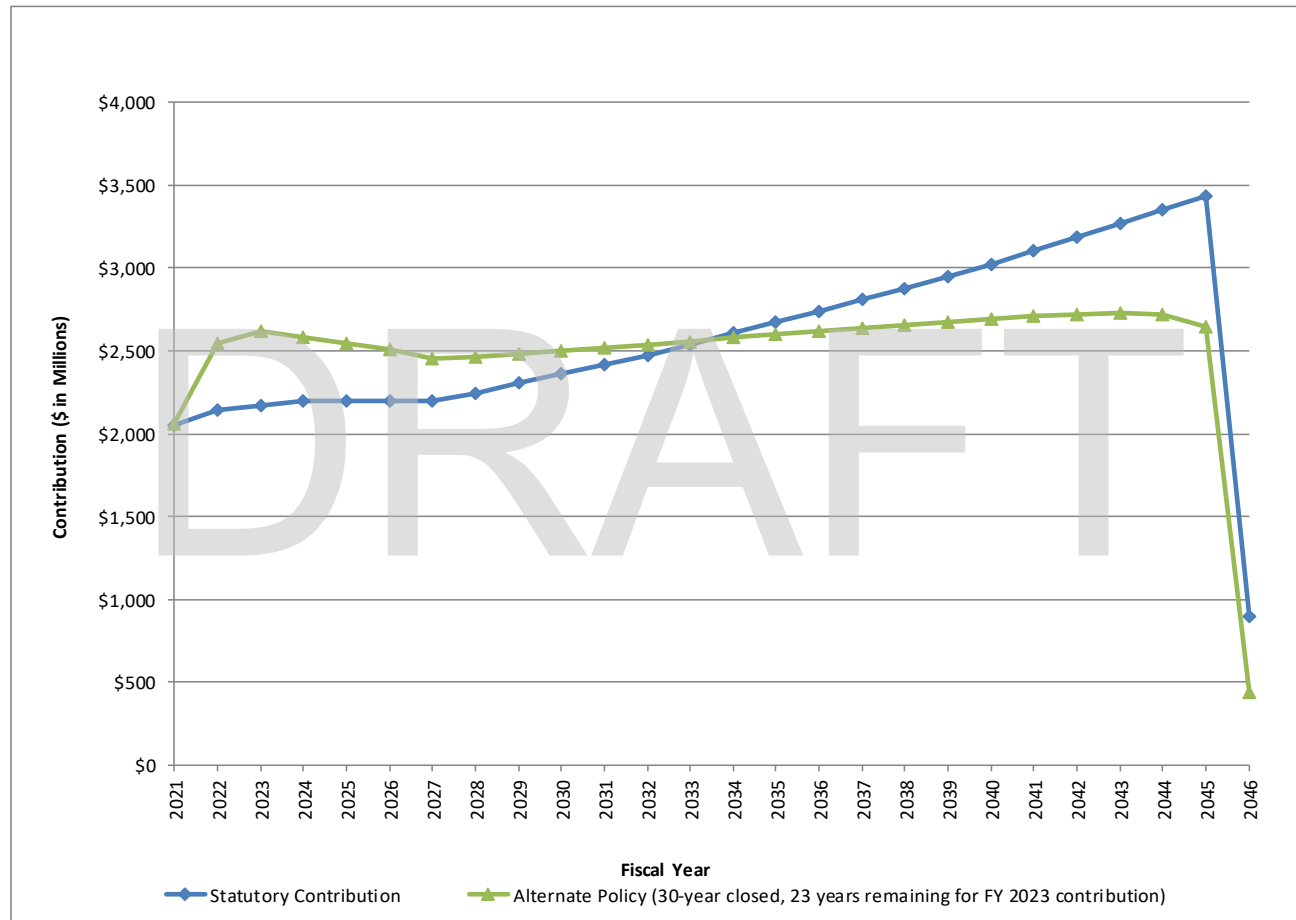
³ Alternate funding policy of normal cost plus 30-year closed period amortization of the unfunded liability as a level percentage of defined benefit plan capped payroll beginning in FY 2016 with 23 years remaining as of FY 2023.

⁴ 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) (23 years remaining in Amortization Period for FY 2023 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 23 years remaining in FY 2023. Alternate funding policy contributions based on actual assets as of the current valuation and the alternate policy contribution being made. The alternate funding policy contributions are projected to decrease after fiscal year 2023 as deferred asset gains are recognized in the actuarial value of assets.

APPENDIX E

ADDITIONAL PROJECTION DETAILS

DRAFT

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 6.50% Each Year on Actuarial Value of Assets
(\$ in Millions)

Fiscal Year Ending	Total Payroll ¹	RSP Payroll	DB Payroll ¹	SURS Contributions ²	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	Maximum Contribution ³	SURS Contribution % of Total Payroll
2021	\$ 4,639.067	\$ 1,106.791	\$ 3,532.276	\$ 1,962.151	\$ 288.476	\$ 2,859.503	\$ 19.406	\$ 21,421.898	\$ 48,898.480	43.81 %	\$ 27,476.582	\$ 139.615	\$ 1,962.151	42.30 %
2022	4,906.777	1,206.414	3,700.363	2,054.958	296.399	3,045.764	23.371	22,073.583	49,699.352	44.41	27,625.769	146.736	2,058.734	41.88
2023	4,994.329	1,270.644	3,723.685	2,075.345	298.267	3,114.392	24.072	22,719.048	50,469.582	45.02	27,750.534	153.373	2,087.291	41.55
2024	5,097.777	1,338.998	3,758.779	2,148.409	301.078	3,215.529	24.794	23,379.653	51,174.310	45.69	27,794.657	164.417	2,149.166	42.14
2025	5,210.642	1,407.642	3,803.000	2,183.429	304.620	3,320.619	25.538	24,013.772	51,805.954	46.35	27,792.182	174.604	2,183.429	41.90
2026	5,328.838	1,475.531	3,853.307	2,225.445	308.650	3,422.007	26.304	24,631.207	52,364.596	47.04	27,733.389	179.149	2,225.445	41.76
2027	5,451.986	1,543.689	3,908.297	2,269.336	313.055	3,519.704	27.093	25,236.978	52,851.004	47.75	27,614.026	183.195	2,269.336	41.62
2028	5,579.895	1,612.394	3,967.501	2,318.435	317.797	3,615.574	27.906	25,837.913	53,264.148	48.51	27,426.235	191.634	2,318.435	41.55
2029	5,712.086	1,682.338	4,029.748	2,370.209	322.783	3,706.224	28.743	26,442.071	53,605.407	49.33	27,163.336	199.325	2,370.209	41.49
2030	5,847.857	1,753.121	4,094.736	2,419.449	327.988	3,800.281	29.606	27,043.731	53,866.895	50.20	26,823.164	211.160	2,419.449	41.37
2031	5,985.645	1,825.475	4,160.169	2,470.595	333.230	3,892.808	30.494	27,646.285	54,045.442	51.15	26,399.157	221.997	2,470.595	41.28
2032	6,128.196	1,900.647	4,227.548	2,529.774	338.627	3,974.340	31.409	28,269.564	54,147.402	52.21	25,877.838	226.944	2,529.774	41.28
2033	6,278.327	1,979.042	4,299.285	2,598.004	344.373	4,045.827	32.351	28,934.952	54,179.083	53.41	25,244.131	226.249	2,598.004	41.38
2034	6,432.690	2,059.837	4,372.853	2,694.913	350.266	4,110.617	33.321	29,681.817	54,143.761	54.82	24,461.944	NA	2,893.692	41.89
2035	6,590.216	2,142.939	4,447.277	2,760.908	356.227	4,170.804	34.321	30,488.341	54,042.206	56.42	23,553.865	NA	2,964.553	41.89
2036	6,749.900	2,227.354	4,522.546	2,827.806	362.256	4,224.206	35.351	31,366.377	53,877.193	58.22	22,510.816	NA	3,036.386	41.89
2037	6,913.671	2,314.908	4,598.763	2,896.416	368.361	4,193.709	36.411	32,408.968	53,731.174	60.32	21,322.206	NA	3,110.057	41.89
2038	7,081.668	2,404.768	4,676.901	2,966.797	374.620	4,232.185	37.504	33,557.586	53,534.512	62.68	19,976.926	NA	3,185.629	41.89
2039	7,254.484	2,496.113	4,758.371	3,039.196	381.146	4,260.113	38.629	34,832.330	53,295.977	65.36	18,463.647	NA	3,263.369	41.89
2040	7,432.748	2,590.542	4,842.206	3,113.878	387.861	4,280.697	39.788	36,251.496	53,021.984	68.37	16,770.488	NA	3,343.559	41.89
2041	7,618.403	2,686.842	4,931.561	3,191.657	395.018	4,289.678	40.981	37,840.060	52,724.525	71.77	14,884.465	NA	3,427.075	41.89
2042	7,808.665	2,784.286	5,024.380	3,271.365	402.453	4,287.542	42.211	39,622.747	52,416.251	75.59	12,793.504	NA	3,512.663	41.89
2043	8,003.846	2,883.260	5,120.585	3,353.134	410.159	4,275.951	43.477	41,624.300	52,108.558	79.88	10,484.258	NA	3,600.463	41.89
2044	8,202.461	2,984.064	5,218.397	3,436.342	417.994	4,256.042	44.781	43,869.110	51,811.916	84.67	7,942.806	NA	3,689.808	41.89
2045	8,404.973	3,087.065	5,317.909	3,521.183	425.964	4,228.503	46.125	46,382.646	51,536.274	90.00	5,153.628	NA	3,780.907	41.89

¹ Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in Tier 2 participating in the Traditional and Portable plans.

² Excludes RSP contributions. Includes employer contributions.

³ Maximum contribution after impact of debt service.



Table 16
Development of Market and Actuarial Value of Assets as of June 30, 2021
after Bonds (Valuation Basis) and before Bonds (Hypothetical Basis)

		After Bonds (Valuation Basis)	Before Bonds (Hypothetical)
1	Market Value at 6/30/2020	\$19,617,015,606	\$17,323,378,042
2a	Employer and Non-Employer Contributing Entity Contributions ¹	1,978,743,434	2,101,766,117
2b	Member Contributions	288,476,321	288,476,321
2c	Benefits and Expenses	2,878,908,126	2,878,908,126
2d	Net Non-Investment Cash Flow	(611,688,371)	(488,665,688)
3	Investment Return (Based on Estimated Rate of 23.04%)	4,448,549,000	3,937,267,685
4	Expected Return (Based on Estimated Rate of 6.75%)	1,303,841,163	1,153,104,847
5	Market Value at 6/30/2021 (1+2d+3)	23,453,876,235	20,771,980,039
6	Expected Market Value at 6/30/2021 (1+2d+4)	20,309,168,398	17,987,817,201
7a	Actuarial Gain/(Loss) Current Year	3,144,707,837	2,784,162,838
7b	Actuarial Gain/(Loss) 1 Year Prior	(767,412,581)	(676,460,110)
7c	Actuarial Gain/(Loss) 2 Years Prior	(150,007,091)	(131,557,100)
7d	Actuarial Gain/(Loss) 3 Years Prior	183,313,712	161,071,013
7e	Actuarial Gain/(Loss) 4 Years Prior	779,748,280	680,927,833
8	Actuarial Value at 6/30/2020	20,091,674,784	17,742,866,398
9	Actuarial Value at 6/30/2021 (8+2d+4+.2*(7a+7b+7c+7d+7e))	21,421,897,607	18,970,934,452

¹Hypothetical contributions (before bonds) are equal to the total contributions of \$2,187,128,000 minus actual fiscal year 2020 RSP contributions of \$85,361,883.

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 ¹	RSP Payroll	DB Payroll ¹	SURS Contributions ²	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	SURS Contribution % of Total Payroll
2021	\$ 4,639.067	\$ 1,106.791	\$ 3,532.276	\$ 2,101.766	\$ 288.476	\$ 2,859.503	\$ 19.406	\$ 18,970.934	\$ 48,898.480	38.80 %	\$ 29,927.546	NA	45.31 %
2022	4,906.777	1,206.414	3,700.363	2,205.470	296.399	3,045.764	23.371	20,163.145	49,699.352	40.57	29,536.207	NA	44.95
2023	4,994.329	1,270.644	3,723.685	2,240.664	298.267	3,114.392	24.072	21,339.552	50,469.582	42.28	29,130.030	NA	44.86
2024	5,097.777	1,338.998	3,758.779	2,273.628	301.078	3,215.529	24.794	22,524.848	51,174.310	44.02	28,649.462	NA	44.60
2025	5,210.642	1,407.642	3,803.000	2,280.629	304.620	3,320.619	25.538	23,796.742	51,805.954	45.93	28,009.212	NA	43.77
2026	5,328.838	1,475.531	3,853.307	2,287.687	308.650	3,422.007	26.304	24,464.302	52,364.596	46.72	27,900.294	NA	42.93
2027	5,451.986	1,543.689	3,908.297	2,285.217	313.055	3,519.704	27.093	25,075.614	52,851.004	47.45	27,775.390	NA	41.92
2028	5,579.895	1,612.394	3,967.501	2,338.831	317.797	3,615.574	27.906	25,687.110	53,264.148	48.23	27,577.038	NA	41.92
2029	5,712.086	1,682.338	4,029.748	2,394.239	322.783	3,706.224	28.743	26,306.264	53,605.407	49.07	27,299.143	NA	41.92
2030	5,847.857	1,753.121	4,094.736	2,451.148	327.988	3,800.281	29.606	26,931.809	53,866.895	50.00	26,935.086	NA	41.92
2031	5,985.645	1,825.475	4,160.169	2,508.902	333.230	3,892.808	30.494	27,566.621	54,045.442	51.01	26,478.821	NA	41.92
2032	6,128.196	1,900.647	4,227.548	2,568.653	338.627	3,974.340	31.409	28,224.844	54,147.402	52.13	25,922.558	NA	41.92
2033	6,278.327	1,979.042	4,299.285	2,631.581	344.373	4,045.827	32.351	28,921.976	54,179.083	53.38	25,257.107	NA	41.92
2034	6,432.690	2,059.837	4,372.853	2,696.282	350.266	4,110.617	33.321	29,669.410	54,143.761	54.80	24,474.351	NA	41.92
2035	6,590.216	2,142.939	4,447.277	2,762.310	356.227	4,170.804	34.321	30,476.575	54,042.206	56.39	23,565.631	NA	41.92
2036	6,749.900	2,227.354	4,522.546	2,829.242	362.256	4,224.206	35.351	31,355.329	53,877.193	58.20	22,521.864	NA	41.92
2037	6,913.671	2,314.908	4,598.763	2,897.887	368.361	4,193.709	36.411	32,398.720	53,731.174	60.30	21,332.454	NA	41.92
2038	7,081.668	2,404.768	4,676.901	2,968.304	374.620	4,232.185	37.504	33,548.227	53,534.512	62.67	19,986.285	NA	41.92
2039	7,254.484	2,496.113	4,758.371	3,040.740	381.146	4,260.113	38.629	34,823.956	53,295.977	65.34	18,472.021	NA	41.92
2040	7,432.748	2,590.542	4,842.206	3,115.460	387.861	4,280.697	39.788	36,244.210	53,021.984	68.36	16,777.774	NA	41.92
2041	7,618.403	2,686.842	4,931.561	3,193.278	395.018	4,289.678	40.981	37,833.973	52,724.525	71.76	14,890.552	NA	41.92
2042	7,808.665	2,784.286	5,024.380	3,273.027	402.453	4,287.542	42.211	39,617.979	52,416.251	75.58	12,798.272	NA	41.92
2043	8,003.846	2,883.260	5,120.585	3,354.837	410.159	4,275.951	43.477	41,620.981	52,108.558	79.87	10,487.577	NA	41.92
2044	8,202.461	2,984.064	5,218.397	3,438.088	417.994	4,256.042	44.781	43,867.376	51,811.916	84.67	7,944.540	NA	41.92
2045	8,404.973	3,087.065	5,317.909	3,522.971	425.964	4,228.503	46.125	46,382.646	51,536.274	90.00	5,153.628	NA	41.92

¹ Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in Tier 2 participating in the Traditional and Portable plans.

² Excludes RSP 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 6.50% Each Year on Actuarial Value of Assets
(\$ in Millions)**

Fiscal Year Ending	Total Payroll ¹	RSP Payroll	DB Payroll ¹	SURS Contributions ²	Member Contributions	Benefits	Expenses	Assets EOY	AAL	Funding Ratio	UAAL	Debt Service	SURS Contribution % of Total Payroll
2021	\$ 4,639.067	\$ 1,106.791	\$ 3,532.276	\$ 2,101.766	\$ 288.476	\$ 2,859.503	\$ 19.406	\$ 18,970.934	\$ 48,898.480	38.80 %	\$ 29,927.546	NA	45.31 %
2022	4,906.777	1,206.414	3,700.363	2,205.470	296.399	3,045.764	23.371	19,618.633	49,699.352	39.47	30,080.719	NA	44.95
2023	4,994.329	1,270.644	3,723.685	2,240.664	298.267	3,114.392	24.072	20,275.134	50,469.582	40.17	30,194.448	NA	44.86
2024	5,097.777	1,338.998	3,758.779	2,313.584	301.078	3,215.529	24.794	20,947.342	51,174.310	40.93	30,226.968	NA	45.38
2025	5,210.642	1,407.642	3,803.000	2,358.032	304.620	3,320.619	25.538	21,603.551	51,805.954	41.70	30,202.403	NA	45.25
2026	5,328.838	1,475.531	3,853.307	2,404.594	308.650	3,422.007	26.304	22,249.200	52,364.596	42.49	30,115.396	NA	45.12
2027	5,451.986	1,543.689	3,908.297	2,452.530	313.055	3,519.704	27.093	22,889.196	52,851.004	43.31	29,961.808	NA	44.98
2028	5,579.895	1,612.394	3,967.501	2,510.069	317.797	3,615.574	27.906	23,535.289	53,264.148	44.19	29,728.859	NA	44.98
2029	5,712.086	1,682.338	4,029.748	2,569.534	322.783	3,706.224	28.743	24,195.478	53,605.407	45.14	29,409.929	NA	44.98
2030	5,847.857	1,753.121	4,094.736	2,630.609	327.988	3,800.281	29.606	24,869.024	53,866.895	46.17	28,997.871	NA	44.98
2031	5,985.645	1,825.475	4,160.169	2,692.592	333.230	3,892.808	30.494	25,559.321	54,045.442	47.29	28,486.121	NA	44.98
2032	6,128.196	1,900.647	4,227.548	2,756.718	338.627	3,974.340	31.409	26,281.150	54,147.402	48.54	27,866.252	NA	44.98
2033	6,278.327	1,979.042	4,299.285	2,824.253	344.373	4,045.827	32.351	27,050.777	54,179.083	49.93	27,128.306	NA	44.98
2034	6,432.690	2,059.837	4,372.853	2,893.692	350.266	4,110.617	33.321	27,880.308	54,143.761	51.49	26,263.453	NA	44.98
2035	6,590.216	2,142.939	4,447.277	2,964.553	356.227	4,170.804	34.321	28,779.894	54,042.206	53.25	25,262.312	NA	44.98
2036	6,749.900	2,227.354	4,522.546	3,036.386	362.256	4,224.206	35.351	29,762.134	53,877.193	55.24	24,115.059	NA	44.98
2037	6,913.671	2,314.908	4,598.763	3,110.057	368.361	4,193.709	36.411	30,920.924	53,731.174	57.55	22,810.250	NA	44.98
2038	7,081.668	2,404.768	4,676.901	3,185.629	374.620	4,232.185	37.504	32,198.651	53,534.512	60.15	21,335.861	NA	44.98
2039	7,254.484	2,496.113	4,758.371	3,263.369	381.146	4,260.113	38.629	33,616.409	53,295.977	63.07	19,679.568	NA	44.98
2040	7,432.748	2,590.542	4,842.206	3,343.559	387.861	4,280.697	39.788	35,193.568	53,021.984	66.38	17,828.416	NA	44.98
2041	7,618.403	2,686.842	4,931.561	3,427.075	395.018	4,289.678	40.981	36,956.315	52,724.525	70.09	15,768.210	NA	44.98
2042	7,808.665	2,784.286	5,024.380	3,512.663	402.453	4,287.542	42.211	38,930.574	52,416.251	74.27	13,485.677	NA	44.98
2043	8,003.846	2,883.260	5,120.585	3,600.463	410.159	4,275.951	43.477	41,142.377	52,108.558	78.96	10,966.181	NA	44.98
2044	8,202.461	2,984.064	5,218.397	3,689.808	417.994	4,256.042	44.781	43,617.437	51,811.916	84.18	8,194.479	NA	44.98
2045	8,404.973	3,087.065	5,317.909	3,780.907	425.964	4,228.503	46.125	46,382.646	51,536.274	90.00	5,153.628	NA	44.98

¹ Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in Tier 2 participating in the Traditional and Portable plans.

² Excludes RSP contributions. Includes employer contributions.



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

Fiscal Year Ending	Total Normal Cost ¹				Admin Expense				Normal Cost with Admin Expense			
	Tier 2				Tier 2				Tier 2			
	Tier 1	Current	Future	Total	Tier 1	Current	Future	Total	Tier 1	Current	Future	Total
2022	\$ 585.472	\$ 156.458	\$ 0.000	\$ 741.929	\$ 14.345	\$ 9.026	\$ 0.000	\$ 23.371	\$ 599.816	\$ 165.484	\$ 0.000	\$ 765.300
2023	554.673	151.127	24.623	730.423	13.806	8.696	1.570	24.072	568.479	159.823	26.193	754.495
2024	524.885	146.464	48.226	719.575	13.235	8.370	3.189	24.794	538.120	154.834	51.415	744.369
2025	495.712	142.938	70.810	709.460	12.630	8.117	4.792	25.538	508.342	151.055	75.602	734.999
2026	467.498	140.390	92.436	700.324	12.020	7.944	6.340	26.304	479.518	148.334	98.776	726.628
2027	440.440	138.538	113.863	692.841	11.412	7.814	7.868	27.093	451.852	146.351	121.731	719.934
2028	414.452	137.207	135.420	687.079	10.800	7.704	9.402	27.906	425.252	144.911	144.823	714.986
2029	388.794	136.173	157.085	682.052	10.179	7.609	10.956	28.743	398.973	143.781	168.041	710.795
2030	363.038	135.361	178.917	677.316	9.551	7.528	12.526	29.606	372.589	142.889	191.443	706.921
2031	337.156	134.744	201.105	673.005	8.917	7.458	14.119	30.494	346.073	142.201	215.224	703.498
2032	311.225	134.331	223.520	669.076	8.278	7.393	15.739	31.409	319.502	141.723	239.259	700.484
2033	285.960	134.147	245.936	666.043	7.645	7.329	17.377	32.351	293.604	141.476	263.312	698.392
2034	261.478	134.164	268.266	663.908	7.026	7.269	19.026	33.321	268.505	141.433	287.292	697.230
2035	237.116	134.349	290.676	662.141	6.412	7.209	20.700	34.321	243.527	141.559	311.376	696.462
2036	212.551	134.585	313.313	660.449	5.795	7.146	22.410	35.351	218.346	141.730	335.722	695.798
2037	187.795	134.738	336.218	658.751	5.178	7.073	24.160	36.411	192.973	141.810	360.378	695.161
2038	163.165	134.790	359.395	657.350	4.566	6.991	25.946	37.504	167.731	141.781	385.341	694.853
2039	139.457	134.836	382.797	657.090	3.974	6.902	27.752	38.629	143.432	141.738	410.549	695.719
2040	117.279	134.731	406.329	658.339	3.417	6.802	29.569	39.788	120.696	141.532	435.898	698.126
2041	97.548	134.309	429.982	661.839	2.911	6.684	31.386	40.981	100.459	140.993	461.368	702.820
2042	80.799	133.554	453.606	667.959	2.470	6.549	33.192	42.211	83.269	140.103	486.797	710.169
2043	66.586	132.415	477.347	676.348	2.085	6.396	34.996	43.477	68.671	138.811	512.343	719.825
2044	54.613	130.673	501.240	686.526	1.753	6.218	36.810	44.781	56.366	136.892	538.050	731.308
2045	44.511	128.161	525.348	698.020	1.464	6.014	38.646	46.125	45.975	134.175	563.995	744.145
2046	36.004	124.997	549.648	710.649	1.215	5.788	40.506	47.508	37.219	130.785	590.154	758.158

¹ Normal Cost excludes expense portion.

Values may not add due to rounding.



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

Fiscal Year Ending	Expected Defined Benefit Plan Pay ¹				Total Normal Cost Rate ¹					Employer Normal Cost Rate		
	Tier 1	Tier 2		Total	Tier 1	Tier 2		Total	Combined Tier 2	Tier 1	Tier 2	Total
		Current	Future			Current	Future					
2022	\$ 2,254.052	\$ 1,418.260	\$ 0.000	\$ 3,672.312	26.61%	11.67%		20.84%	11.67%	18.60%	3.66%	12.83%
2023	2,116.471	1,333.075	240.705	3,690.251	26.86%	11.99%	10.88%	20.45%	11.82%	18.85%	3.81%	12.44%
2024	1,985.238	1,255.590	478.363	3,719.191	27.11%	12.33%	10.75%	20.01%	11.89%	19.10%	3.88%	12.00%
2025	1,858.616	1,194.464	705.144	3,758.224	27.35%	12.65%	10.72%	19.56%	11.93%	19.34%	3.92%	11.55%
2026	1,737.456	1,148.181	916.414	3,802.051	27.60%	12.92%	10.78%	19.11%	11.97%	19.59%	3.96%	11.10%
2027	1,622.065	1,110.611	1,118.289	3,850.965	27.86%	13.18%	10.89%	18.69%	12.03%	19.85%	4.02%	10.68%
2028	1,511.753	1,078.366	1,316.122	3,906.241	28.13%	13.44%	11.00%	18.30%	12.10%	20.12%	4.09%	10.29%
2029	1,404.512	1,049.847	1,511.657	3,966.016	28.41%	13.70%	11.12%	17.92%	12.17%	20.40%	4.16%	9.91%
2030	1,299.320	1,024.155	1,704.022	4,027.497	28.68%	13.95%	11.23%	17.55%	12.25%	20.67%	4.24%	9.54%
2031	1,196.141	1,000.354	1,893.965	4,090.460	28.93%	14.22%	11.36%	17.20%	12.35%	20.92%	4.34%	9.19%
2032	1,095.213	978.117	2,082.406	4,155.736	29.17%	14.49%	11.49%	16.86%	12.45%	21.16%	4.44%	8.85%
2033	998.417	957.222	2,269.451	4,225.090	29.41%	14.78%	11.60%	16.53%	12.55%	21.40%	4.54%	8.52%
2034	905.954	937.242	2,453.275	4,296.471	29.64%	15.09%	11.71%	16.23%	12.64%	21.63%	4.63%	8.22%
2035	816.177	917.753	2,635.085	4,369.015	29.84%	15.42%	11.82%	15.94%	12.75%	21.83%	4.74%	7.93%
2036	728.334	898.041	2,816.348	4,442.723	29.98%	15.78%	11.92%	15.66%	12.85%	21.97%	4.84%	7.65%
2037	642.499	877.531	2,997.539	4,517.569	30.03%	16.16%	12.02%	15.39%	12.96%	22.02%	4.95%	7.38%
2038	559.333	856.359	3,178.088	4,593.780	29.99%	16.56%	12.12%	15.13%	13.07%	21.98%	5.06%	7.12%
2039	480.810	834.972	3,357.292	4,673.074	29.83%	16.98%	12.23%	14.89%	13.17%	21.82%	5.16%	6.88%
2040	408.357	812.960	3,534.217	4,755.534	29.56%	17.41%	12.33%	14.68%	13.28%	21.55%	5.27%	6.67%
2041	343.973	789.830	3,708.862	4,842.665	29.21%	17.85%	12.44%	14.51%	13.39%	21.20%	5.38%	6.50%
2042	288.687	765.463	3,879.513	4,933.663	28.84%	18.30%	12.55%	14.39%	13.50%	20.83%	5.49%	6.38%
2043	241.170	739.645	4,047.322	5,028.137	28.47%	18.77%	12.66%	14.32%	13.60%	20.46%	5.59%	6.31%
2044	200.563	711.641	4,212.662	5,124.866	28.10%	19.24%	12.77%	14.27%	13.71%	20.09%	5.70%	6.26%
2045	165.808	681.039	4,376.397	5,223.244	27.73%	19.70%	12.89%	14.25%	13.80%	19.72%	5.79%	6.24%
2046	136.082	648.505	4,538.445	5,323.032	27.35%	20.17%	13.00%	14.24%	13.90%	19.34%	5.89%	6.23%

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

Values may not add due to rounding.



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

Fiscal Year Ending	RSP Total Active Members	Number of Defined Benefit Plan Active				Defined Benefit Plan Payroll ¹				Member Contributions			
		Tier 2				Tier 2				Tier 2			
		Tier 1	Current	Future	Total	Tier 1	Current	Future	Total	Tier 1	Current	Future	Total
2021	13,046	31,911	28,486	0	60,397	\$ 2,229.774	\$ 1,302.501	\$ 0.000	\$ 3,532.276				\$ 288.476
2022	14,268	28,640	25,025	5,510	59,175	2,137.294	1,332.087	230.982	3,700.363	\$ 171.197	\$ 106.700	\$ 18.502	296.399
2023	15,486	25,646	21,796	10,515	57,957	2,008.212	1,255.482	459.991	3,723.685	160.858	100.564	36.845	298.267
2024	16,538	22,961	19,197	14,747	56,905	1,882.772	1,190.405	685.602	3,758.779	150.810	95.351	54.917	301.078
2025	17,269	20,673	17,474	18,027	56,174	1,761.849	1,142.133	899.018	3,803.000	141.124	91.485	72.011	304.620
2026	17,853	18,640	16,167	20,783	55,590	1,646.385	1,104.120	1,102.802	3,853.307	131.876	88.440	88.334	308.650
2027	18,374	16,788	15,052	23,229	55,069	1,536.444	1,071.772	1,300.081	3,908.297	123.070	85.849	104.136	313.055
2028	18,838	15,101	14,079	25,425	54,605	1,430.704	1,043.356	1,493.441	3,967.501	114.599	83.573	119.625	317.797
2029	19,252	13,539	13,224	27,428	54,191	1,326.460	1,017.710	1,685.578	4,029.748	106.249	81.519	135.015	322.783
2030	19,632	12,095	12,454	29,262	53,811	1,224.649	994.453	1,875.634	4,094.736	98.094	79.656	150.238	327.988
2031	19,983	10,748	11,764	30,948	53,460	1,124.081	972.425	2,063.663	4,160.169	90.040	77.891	165.299	333.230
2032	20,312	9,516	11,135	32,480	53,131	1,026.601	951.969	2,248.978	4,227.548	82.231	76.253	180.143	338.627
2033	20,617	8,396	10,553	33,877	52,826	934.134	932.349	2,432.802	4,299.285	74.825	74.681	194.867	344.373
2034	20,901	7,366	10,020	35,156	52,542	845.088	913.573	2,614.192	4,372.853	67.692	73.177	209.397	350.266
2035	21,169	6,411	9,519	36,344	52,274	757.811	894.912	2,794.554	4,447.277	60.701	71.682	223.844	356.227
2036	21,416	5,526	9,049	37,452	52,027	672.491	875.670	2,974.385	4,522.546	53.867	70.141	238.248	362.256
2037	21,648	4,706	8,595	38,494	51,795	589.114	855.346	3,154.303	4,598.763	47.188	68.513	252.660	368.361
2038	21,865	3,951	8,164	39,463	51,578	509.042	834.667	3,333.192	4,676.901	40.774	66.857	266.989	374.620
2039	22,063	3,281	7,753	40,346	51,380	434.857	813.837	3,509.677	4,758.371	34.833	65.188	281.125	381.146
2040	22,249	2,689	7,356	41,149	51,194	366.709	791.742	3,683.755	4,842.206	29.373	63.419	295.069	387.861
2041	22,408	2,198	6,970	41,867	51,035	308.514	768.540	3,854.507	4,931.561	24.712	61.560	308.746	395.018
2042	22,550	1,790	6,587	42,516	50,893	258.198	743.887	4,022.295	5,024.380	20.682	59.585	322.186	402.453
2043	22,674	1,452	6,209	43,108	50,769	215.264	717.777	4,187.544	5,120.585	17.243	57.494	335.422	410.159
2044	22,788	1,171	5,829	43,655	50,655	178.492	688.736	4,351.169	5,218.397	14.297	55.168	348.529	417.994
2045	22,892	940	5,445	44,166	50,551	147.041	657.491	4,513.377	5,317.909	11.778	52.665	361.521	425.964

¹ Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in the Tier 2 participating in the Traditional and Portable plans.

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		Total	Current Retirees	Current Inactives	Tier 1 Actives	Tier 2 Actives		Total
				Current	Future					Current	Future	
2021	\$ 33,661.717	\$ 3,081.538	\$ 15,788.527	\$ 2,711.727	\$ 0.000	\$ 55,243.509						\$ 2,859.503
2022	32,951.000	3,201.686	16,701.224	2,837.236	253.884	55,945.030	\$ 2,808.878	\$ 77.668	\$ 110.038	\$ 49.180	\$ 0.000	3,045.764
2023	32,209.780	3,315.412	17,605.516	2,967.975	528.542	56,627.225	2,793.671	91.458	175.668	52.017	1.578	3,114.392
2024	31,410.568	3,424.758	18,488.868	3,108.535	825.474	57,258.203	2,803.179	102.865	252.916	50.735	5.834	3,215.529
2025	30,555.224	3,528.755	19,341.023	3,261.493	1,143.347	57,829.842	2,807.233	114.935	338.784	47.574	12.093	3,320.619
2026	29,646.286	3,625.779	20,161.779	3,426.965	1,482.976	58,343.785	2,805.291	128.243	422.883	45.083	20.507	3,422.007
2027	28,686.600	3,714.653	20,946.669	3,606.718	1,844.935	58,799.575	2,797.217	142.251	509.333	41.667	29.236	3,519.704
2028	27,679.033	3,791.843	21,691.722	3,803.041	2,227.941	59,193.580	2,783.167	159.171	597.372	36.933	38.931	3,615.574
2029	26,627.191	3,856.112	22,393.523	4,016.721	2,633.886	59,527.433	2,762.608	176.553	686.210	32.479	48.374	3,706.224
2030	25,535.147	3,905.855	23,044.966	4,244.824	3,062.850	59,793.642	2,735.312	194.677	779.210	31.962	59.120	3,800.281
2031	24,407.525	3,939.332	23,641.430	4,484.964	3,515.502	59,988.753	2,701.005	213.572	873.517	34.664	70.050	3,892.808
2032	23,249.448	3,957.400	24,177.201	4,733.928	4,000.551	60,118.528	2,659.494	230.612	969.896	41.239	73.099	3,974.340
2033	22,066.473	3,960.174	24,651.007	4,991.596	4,518.932	60,188.182	2,610.677	246.569	1,063.686	48.487	76.408	4,045.827
2034	20,864.706	3,945.726	25,060.856	5,257.905	5,072.058	60,201.251	2,554.378	263.433	1,155.504	56.342	80.960	4,110.617
2035	19,650.523	3,913.147	25,400.894	5,532.786	5,661.438	60,158.788	2,490.715	280.091	1,248.965	64.810	86.223	4,170.804
2036	18,430.598	3,861.657	25,666.826	5,816.046	6,289.073	60,064.200	2,419.804	296.364	1,342.191	74.005	91.842	4,224.206
2037	17,211.801	3,869.968	25,854.849	6,107.116	6,957.102	60,000.836	2,341.873	235.174	1,434.436	84.277	97.949	4,193.709
2038	16,001.335	3,866.187	25,959.829	6,405.294	7,666.122	59,898.767	2,257.035	247.415	1,526.747	95.722	105.266	4,232.185
2039	14,806.250	3,850.749	25,981.567	6,710.025	8,416.504	59,765.095	2,165.888	258.472	1,614.021	108.153	113.579	4,260.113
2040	13,633.562	3,822.723	25,918.581	7,020.427	9,209.778	59,605.071	2,068.913	269.698	1,697.488	121.852	122.746	4,280.697
2041	12,490.096	3,782.737	25,773.332	7,335.076	10,046.442	59,427.683	1,966.734	279.521	1,773.234	137.288	132.901	4,289.678
2042	11,382.302	3,731.595	25,549.197	7,652.376	10,928.667	59,244.137	1,860.147	287.813	1,840.527	154.536	144.519	4,287.542
2043	10,316.152	3,669.928	25,249.092	7,970.618	11,857.750	59,063.540	1,750.019	294.791	1,900.024	173.609	157.508	4,275.951
2044	9,297.099	3,597.838	24,876.971	8,287.472	12,836.156	58,895.536	1,637.232	301.006	1,950.905	194.999	171.900	4,256.042
2045	8,329.870	3,516.104	24,437.770	8,599.635	13,865.788	58,749.167	1,522.827	305.811	1,992.469	219.500	187.896	4,228.503

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		Total		Tier 1	Tier 2	Total
				Current	Future					
2021	\$ 33,661.717	\$ 3,081.538	\$ 11,355.073	\$ 800.152	\$ 0.000	\$ 48,898.480	2022	\$ 428.619	\$ 40.282	\$ 468.901
2022	32,951.000	3,201.686	12,583.795	962.871	0.000	49,699.352	2023	407.621	48.607	456.228
2023	32,209.780	3,315.412	13,792.870	1,127.738	23.782	50,469.582	2024	387.310	55.981	443.291
2024	31,410.568	3,424.758	14,970.076	1,299.832	69.076	51,174.310	2025	367.218	63.161	430.379
2025	30,555.224	3,528.755	16,105.079	1,482.735	134.161	51,805.954	2026	347.642	70.336	417.978
2026	29,646.286	3,625.779	17,197.952	1,677.468	217.111	52,364.596	2027	328.782	78.097	406.879
2027	28,686.600	3,714.653	18,244.721	1,886.473	318.557	52,851.004	2028	310.653	86.536	397.189
2028	27,679.033	3,791.843	19,241.857	2,112.576	438.839	53,264.148	2029	292.724	95.288	388.012
2029	26,627.191	3,856.112	20,185.647	2,356.904	579.553	53,605.407	2030	274.495	104.438	378.933
2030	25,535.147	3,905.855	21,068.230	2,616.810	740.853	53,866.895	2031	256.033	114.235	370.268
2031	24,407.525	3,939.332	21,884.145	2,890.183	924.257	54,045.442	2032	237.271	124.586	361.857
2032	23,249.448	3,957.400	22,626.874	3,174.114	1,139.566	54,147.402	2033	218.779	135.240	354.019
2033	22,066.473	3,960.174	23,295.016	3,468.832	1,388.588	54,179.083	2034	200.813	146.151	346.964
2034	20,864.706	3,945.726	23,886.567	3,774.617	1,672.145	54,143.761	2035	182.826	157.409	340.235
2035	19,650.523	3,913.147	24,394.978	4,091.731	1,991.827	54,042.206	2036	164.479	169.063	333.542
2036	18,430.598	3,861.657	24,814.875	4,420.212	2,349.851	53,877.193	2037	145.785	181.015	326.800
2037	17,211.801	3,869.968	25,141.323	4,759.600	2,748.482	53,731.174	2038	126.957	193.276	320.233
2038	16,001.335	3,866.187	25,368.307	5,109.292	3,189.391	53,534.512	2039	108.599	205.974	314.573
2039	14,806.250	3,850.749	25,495.514	5,468.933	3,674.531	53,295.977	2040	91.323	218.942	310.265
2040	13,633.562	3,822.723	25,521.965	5,837.704	4,206.030	53,021.984	2041	75.747	232.055	307.802
2041	12,490.096	3,782.737	25,451.605	6,214.081	4,786.006	52,724.525	2042	62.587	245.129	307.716
2042	11,382.302	3,731.595	25,289.941	6,596.342	5,416.071	52,416.251	2043	51.428	258.238	309.666
2043	10,316.152	3,669.928	25,041.699	6,982.594	6,098.185	52,108.558	2044	42.069	271.245	313.314
2044	9,297.099	3,597.838	24,712.458	7,370.079	6,834.442	51,811.916	2045	34.197	283.984	318.181
2045	8,329.870	3,516.104	24,308.499	7,754.873	7,626.928	51,536.274	2046	29.454	286.507	315.961

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 ¹				Defined Benefit Plan Payroll in Excess of Governor’s Pay ²		
	Tier 1	Tier 2		Total	Tier 1	Tier 2	
		Current	Future			Current	Total
2021	\$ 2,229.774	\$ 1,302.501	\$ 0.000	\$ 3,532.276	\$ 54.838	\$ 0.000	\$ 54.838
2022	2,137.294	1,332.087	230.982	3,700.363	69.709	0.000	69.709
2023	2,008.212	1,255.482	459.991	3,723.685	65.716	0.000	65.716
2024	1,882.772	1,190.405	685.602	3,758.779	63.905	0.000	63.905
2025	1,761.849	1,142.133	899.018	3,803.000	61.942	0.000	61.942
2026	1,646.385	1,104.120	1,102.802	3,853.307	59.851	0.000	59.851
2027	1,536.444	1,071.772	1,300.081	3,908.297	58.249	0.000	58.249
2028	1,430.704	1,043.356	1,493.441	3,967.501	56.402	0.000	56.402
2029	1,326.460	1,017.710	1,685.578	4,029.748	54.375	0.000	54.375
2030	1,224.649	994.453	1,875.634	4,094.736	52.326	0.000	52.326
2031	1,124.081	972.425	2,063.663	4,160.169	49.963	0.000	49.963
2032	1,026.601	951.969	2,248.978	4,227.548	47.704	0.000	47.704
2033	934.134	932.349	2,432.802	4,299.285	45.330	0.000	45.330
2034	845.088	913.573	2,614.192	4,372.853	43.002	0.000	43.002
2035	757.811	894.912	2,794.554	4,447.277	40.447	0.000	40.447
2036	672.491	875.670	2,974.385	4,522.546	37.728	0.000	37.728
2037	589.114	855.346	3,154.303	4,598.763	34.821	0.000	34.821
2038	509.042	834.667	3,333.192	4,676.901	31.788	0.000	31.788
2039	434.857	813.837	3,509.677	4,758.371	28.819	0.000	28.819
2040	366.709	791.742	3,683.755	4,842.206	25.782	0.000	25.782
2041	308.514	768.540	3,854.507	4,931.561	22.968	0.000	22.968
2042	258.198	743.887	4,022.295	5,024.380	20.254	0.000	20.254
2043	215.264	717.777	4,187.544	5,120.585	17.793	0.000	17.793
2044	178.492	688.736	4,351.169	5,218.397	15.507	0.000	15.507
2045	147.041	657.491	4,513.377	5,317.909	13.390	0.000	13.390

¹ Payroll shown is pensionable pay. It does not include amounts in excess of the pay caps applicable to members in Tier 2 participating in the Traditional and Portable plans.

² Governor’s pay is \$184,800 in 2022 and is projected to increase annually by 1.125 percent.

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 ¹			Total Employer Contributions Required by Statute ²		
	Tier 1	Total	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total
2023	18.60%	12.83%			\$ 5.048	\$ 0.000	\$ 0.000	\$ 5.048
2024	18.85%	12.44%	\$ 9.198	\$ 0.000	9.198	9.198	0.000	9.198
2025	19.10%	12.00%	8.784	0.000	8.784	8.784	0.000	8.784
2026	19.34%	11.55%	8.652	0.000	8.652	8.652	0.000	8.652
2027	19.59%	11.10%	8.494	0.000	8.494	8.494	0.000	8.494
2028	19.85%	10.68%	8.315	0.000	8.315	8.315	0.000	8.315
2029	20.12%	10.29%	8.204	0.000	8.204	8.204	0.000	8.204
2030	20.40%	9.91%	8.053	0.000	8.053	8.053	0.000	8.053
2031	20.67%	9.54%	7.866	0.000	7.866	7.866	0.000	7.866
2032	20.92%	9.19%	7.664	0.000	7.664	7.664	0.000	7.664
2033	21.16%	8.85%	7.401	0.000	7.401	7.401	0.000	7.401
2034	21.40%	8.52%	7.145	0.000	7.145	7.145	0.000	7.145
2035	21.63%	8.22%	6.863	0.000	6.863	6.863	0.000	6.863
2036	21.83%	7.93%	6.570	0.000	6.570	6.570	0.000	6.570
2037	21.97%	7.65%	6.220	0.000	6.220	6.220	0.000	6.220
2038	22.02%	7.38%	5.817	0.000	5.817	5.817	0.000	5.817
2039	21.98%	7.12%	5.357	0.000	5.357	5.357	0.000	5.357
2040	21.82%	6.88%	4.856	0.000	4.856	4.856	0.000	4.856
2041	21.55%	6.67%	4.347	0.000	4.347	4.347	0.000	4.347
2042	21.20%	6.50%	3.825	0.000	3.825	3.825	0.000	3.825
2043	20.83%	6.38%	3.350	0.000	3.350	3.350	0.000	3.350
2044	20.46%	6.31%	2.901	0.000	2.901	2.901	0.000	2.901
2045	20.09%	6.26%	2.503	0.000	2.503	2.503	0.000	2.503
2046	19.72%	6.24%	2.140	0.000	2.140	2.140	0.000	2.140
2047	19.34%	6.23%	1.813	0.000	1.813	1.813	0.000	1.813

¹ FY 2023 amount based on excess pay amount as provided by SURS and the total employer normal cost rate. Amounts in FY 2024 and thereafter based on excess pay amount projected by GRS and the employer normal cost rate by tier. SURS may want to consider having 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.

² Projected employer contributions do not include 6% employer billing contributions. No additional assumption is made for earnings greater than 6% during the final average salary (FAS) period. The participant's employer is required to make contributions equal to the present value of the increase in benefits attributable to member pay increases in excess of 6% during the FAS period. These contributions are collected when the participant retires.

Values may not add due to rounding.



APPENDIX F

HISTORICAL SCHEDULES

DRAFT

Table 26
Historical Schedule of Funding Status
(\$ in Thousands)

As of June 30	Actuarial Value of Assets	AAL	UAAL	Funded Ratio	Payroll/DB*	UAAL as % of Payroll
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
2019	19,661,891	46,443,937	26,782,046	42.33	3,506,650	763.75
2020	20,091,675	47,580,470	27,488,795	42.23	3,642,617	754.64
2021	21,421,898	48,898,480	27,476,582	43.81	3,638,244	755.22

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, decreased from 7.25 percent to 6.75 percent in plan year 2018, and decreased from 6.75 percent to 6.50 percent in plan year 2021.



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
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
2019	2,239,366	1,642,054	597,312	3,506,650	46.83
2020	2,299,031	1,838,786	460,245	3,642,617	50.48
2021	2,303,266	1,978,743	324,523	3,638,244	54.39

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

ACTUARIAL METHODS AND ASSUMPTIONS

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Actuarial Methods and Assumptions

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”).* Pensionable pay does not include amounts in excess of the pay cap (\$116,740 in 2021 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) 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

Employer Contributions

- 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%.

PA 101-0010 rescinded the change to 3% from PA 100-0587. Therefore, employers make contributions equal to the present value of the increase in benefit attributable to members who receive pay increases in excess of 6% during the final average salary (FAS) period.

The 6% 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, 2018 actuarial valuation, there were changes to the economic and demographic actuarial assumptions.
2. Beginning with the June 30, 2021 actuarial valuation, there were changes to the economic and demographic actuarial assumptions.

Actuarial Methods and Assumptions

Valuation Year Ending 6/30	2020	2021	2022	2023	2024	2025
Applicable Fiscal Year Ending 6/30	2022	2023	2024	2025	2026	2027
\$ in Millions						
After Impact of Bonds						
Contribution Before Assumption Change:						
(1) Contribution Dollar	\$ 2,142.0	\$ 2,166.4				
(2) Contribution Rate	43.78%	43.55%				
Contribution After Assumption Change:						
(3) Contribution Dollar	2,142.0	2,153.4				
(4) Contribution Rate	43.78%	43.12%				
(5) Assumption Impact as Percentage of Payroll						
=(4)-(2)	0.00%	-0.43%				
(6) Assumption Change Impact Recognized						
This Year (5 year recognition)						
(6a) From This Year	0.00%	-0.09%				
(6b) From One Year Ago	0.00%	0.00%	-0.09%			
(6c) From Two Years Ago	0.67%	0.00%	0.00%	-0.09%		
(6d) From Three Years Ago	0.00%	0.67%	0.00%	0.00%	-0.09%	
(6e) From Four Years Ago	0.00%	0.00%	0.68%	0.00%	0.00%	-0.07%
(6f) Total Recognized Assumption Change Impact	0.67%	0.58%	0.59%	-0.09%	-0.09%	-0.07%

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 ¹	Estimated Employer Contributions	
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	
July 1, 2020 - June 30, 2021	177,500	60.295	12.70%	7.657	(2.128)	5.529	
July 1, 2021 - June 30, 2022	181,700	58.515	12.32%	7.209	(1.840)	5.369	
July 1, 2022 - June 30, 2023	184,800	54.838	12.83%	7.036	(1.988)	5.048	

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

Actuarial Methods and Assumptions

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 through June 30, 2020	6.75%
June 30, 2021	6.50%

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Actuarial Methods and Assumptions

Actuarial Assumptions

(Most Adopted Effective with the June 30, 2021, 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, 2017 through June 30, 2021, issued to the Board of Trustees on June 1, 2021.

Rate of Investment Return. For all purposes under the system the rate of investment return is assumed to be 6.50% per annum beginning with the **June 30, 2021** 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 6.50% per annum, beginning with the June 30, 2021 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 3.00% each year, 2.25% reflecting salary inflation and 0.75% reflecting standard of living increases. That rate is increased for members with less than 35 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	
	Under Age 50	50 and Older
0	12.75%	12.00%
1	12.75%	12.00%
2	9.00%	8.25%
3	7.75%	7.00%
4	6.75%	6.00%
5	6.25%	5.50%
6	6.00%	5.25%
7	5.50%	4.75%
8-10	5.00%	4.25%
11-14	4.50%	3.75%
15-18	4.25%	3.50%
19	4.00%	3.25%
20-33	3.75%	3.25%
34+	3.50%	3.00%



Actuarial Methods and Assumptions

General Wage Inflation. The assumed rate of general wage inflation is 3.00%.

Mortality. The mortality assumptions are as follows:

Members classified as an employee type of academic:

Applicable Group	Base Mortality Table	Male Scaling Factor	Female Scaling Factor
Pre-retirement	Pub-2010 Employee Mortality Table (for Teachers)	101%	97%
Post-retirement (non-disabled)	Pub-2010 Healthy Retiree Mortality Table (for Teachers)	99%	105%
Post-retirement (disabled)	Pub-2010 Disabled Retiree Mortality Table (for Non-Safety Employees)	112%	110%

Members classified as an employee type of non-academic:

Applicable Group	Base Mortality Table	Male Scaling Factor	Female Scaling Factor
Pre-retirement	Pub-2010 Employee Mortality Table (for General Employees)	114%	105%
Post-retirement (non-disabled)	Pub-2010 Healthy Retiree Mortality Table (for General Employees)	99%	107%
Post-retirement (disabled)	Pub-2010 Disabled Retiree Mortality Table (for Non-Safety Employees)	112%	110%

Future mortality improvements are reflected by projecting the base mortality tables from 2010 using the Society of Actuaries (SOA) MP-2020 projection scale. The assumptions are generational mortality tables and include a margin for improvement.

Following are the future life expectancies for post-retirement (non-disabled) mortality:

Age	Future Life Expectancy (years) in 2021				Future Life Expectancy (years) in 2035			
	Academic		Non-Academic		Academic		Non-Academic	
	Male	Female	Male	Female	Male	Female	Male	Female
35	53.42	55.17	51.01	53.34	54.48	56.13	52.30	54.46
40	48.18	49.91	45.74	48.04	49.23	50.88	47.03	49.17
45	42.94	44.67	40.51	42.76	43.99	45.64	41.77	43.88
50	37.74	39.44	35.39	37.59	38.78	40.41	36.63	38.70
55	32.61	34.31	30.50	32.64	33.65	35.27	31.70	33.72
60	27.65	29.37	25.79	27.82	28.65	30.29	26.92	28.84
65	22.90	24.57	21.31	23.14	23.82	25.42	22.32	24.07
70	18.38	19.90	17.06	18.65	19.19	20.67	17.93	19.48
75	14.18	15.49	13.15	14.46	14.87	16.17	13.87	15.17



Actuarial Methods and Assumptions

Disability. A table of disability incidence with rates follows:

Age	Academic		Non-Academic	
	Male	Female	Male	Female
20	0.007410%	0.016400%	0.027170%	0.037720%
21	0.007590%	0.017350%	0.027830%	0.039905%
22	0.007770%	0.018300%	0.028490%	0.042090%
23	0.007950%	0.019250%	0.029150%	0.044275%
24	0.008130%	0.020200%	0.029810%	0.046460%
25	0.008310%	0.021150%	0.030470%	0.048645%
26	0.008490%	0.022100%	0.031130%	0.050830%
27	0.008670%	0.023050%	0.031790%	0.053015%
28	0.008850%	0.024050%	0.032450%	0.055315%
29	0.009000%	0.025000%	0.033000%	0.057500%
30	0.009450%	0.027050%	0.034650%	0.062215%
31	0.009900%	0.029100%	0.036300%	0.066930%
32	0.010350%	0.031150%	0.037950%	0.071645%
33	0.010770%	0.033200%	0.039490%	0.076360%
34	0.011220%	0.035250%	0.041140%	0.081075%
35	0.011850%	0.037250%	0.043450%	0.085675%
36	0.012450%	0.039300%	0.045650%	0.090390%
37	0.013080%	0.041350%	0.047960%	0.095105%
38	0.013710%	0.043400%	0.050270%	0.099820%
39	0.014310%	0.045450%	0.052470%	0.104535%
40	0.016080%	0.047500%	0.058960%	0.109250%
41	0.017850%	0.049550%	0.065450%	0.113965%
42	0.019620%	0.051600%	0.071940%	0.118680%
43	0.021390%	0.053650%	0.078430%	0.123395%
44	0.023160%	0.055700%	0.084920%	0.128110%
45	0.025350%	0.057750%	0.092950%	0.132825%
46	0.027570%	0.059800%	0.101090%	0.137540%
47	0.029790%	0.061850%	0.109230%	0.142255%
48	0.031980%	0.063900%	0.117260%	0.146970%
49	0.034200%	0.065950%	0.125400%	0.151685%
50	0.036420%	0.068000%	0.133540%	0.156400%
51	0.038610%	0.070050%	0.141570%	0.161115%
52	0.040830%	0.072100%	0.149710%	0.165830%
53	0.043050%	0.074150%	0.157850%	0.170545%
54	0.045240%	0.076200%	0.165880%	0.175260%
55 & Older	0.046560%	0.078250%	0.170720%	0.179975%

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	Tier 1					
	Normal (Unreduced) Retirement				Early (Reduced) Retirement	
	Academic		Non-Academic		Academic	Non-Academic
	Under 40 Years	40+ Years	Under 40 Years	40+ Years		
Under 50	55.0%		55.0%			
50	55.0%		40.0%			
51	40.0%		30.0%			
52	40.0%		30.0%			
53	30.0%		30.0%			
54	30.0%		30.0%			
55	20.0%	30.0%	25.0%	37.5%	7.0%	4.0%
56	20.0%	30.0%	25.0%	37.5%	5.5%	4.0%
57	20.0%	30.0%	25.0%	37.5%	4.0%	4.0%
58	20.0%	30.0%	25.0%	37.5%	5.0%	4.0%
59	20.0%	30.0%	25.0%	37.5%	5.5%	4.0%
60	13.0%	19.5%	20.0%	30.0%		
61	13.0%	19.5%	15.0%	22.5%		
62	13.0%	19.5%	15.0%	22.5%		
63	13.0%	19.5%	15.0%	22.5%		
64	13.0%	19.5%	15.0%	22.5%		
65	17.0%	25.5%	25.0%	37.5%		
66	17.0%	25.5%	25.0%	37.5%		
67	17.0%	25.5%	25.0%	37.5%		
68	17.0%	25.5%	25.0%	37.5%		
69	17.0%	25.5%	25.0%	37.5%		
70	17.0%	25.5%	20.0%	30.0%		
71-79	15.0%	22.5%	20.0%	30.0%		
80+	100.0%	100.0%	100.0%	100.0%		

The Non-Academic retirement rates apply to Police and Firefighters.

Actuarial Methods and Assumptions

Tier 2					
Age	Normal (Unreduced) Retirement			Early (Reduced) Retirement	
	Academic	Non-Academic	Police	Academic	Non-Academic
60			60.0%		
61			25.0%		
62			25.0%	25.0%	35.0%
63			25.0%	10.0%	15.0%
64			25.0%	10.0%	15.0%
65			15.0%	10.0%	15.0%
66			15.0%	10.0%	15.0%
67	35.0%	35.0%	15.0%		
68	17.0%	25.0%	25.0%		
69	17.0%	25.0%	25.0%		
70	17.0%	20.0%	20.0%		
71-79	15.0%	20.0%	20.0%		
80+	100.0%	100.0%	100.0%		

A rate equal to 1.5 times the Tier 2 rate shown is used if the member has 40 or more years of service and is younger than 80 years old. The Tier 2 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 Retirement Savings Plan are assumed to retire in accordance with the Tier 1 and Tier 2 retirement rates (based on hire date).

Actuarial Methods and Assumptions

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	Academic	Non-Academic
0	15.00%	15.00%
1	15.00	15.00
2	12.00	15.00
3	11.00	14.00
4	10.00	12.00
5	9.00	10.00
6	8.00	9.00
7	7.00	8.00
8	6.00	7.00
9	5.00	6.00
10	4.00	5.00
11	4.00	5.00
12	3.00	3.50
13	3.00	3.50
14	3.00	3.50
15	2.50	3.00
16	2.50	3.00
17	2.50	3.00
18	2.50	3.00
19	2.50	3.00
20	2.00	2.00
21	2.00	2.00
22	2.00	2.00
23	2.00	2.00
24	2.00	2.00
25	1.50	1.50
26	1.50	1.50
27	1.50	1.50
28	1.50	1.50
29	1.50	1.50

A termination rate of 100 percent is assumed at three years of service for members classified as part time for valuation purposes.

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

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 2023 and after are assumed to increase by 3.00%.

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

Age	Males	Females
20-24	10 %	25 %
25-29	35	45
30-34	60	65
35-39	70	70
40-44	75	75
45-49	80	75
50-54	80	75
55-59	80	75
60-64	80	70
65-69	80	70
70-74	80	70
75-79	80	70
80-84	80	70
85-89	80	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



Actuarial Methods and Assumptions

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.

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 RSP in the current valuation.

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

- Academic
 - 45% elect to participate in the Retirement Savings Plan
 - 55% elect to participate in the Tier 2 Plan
- Non-Academic
 - 25% elect to participate in the Retirement Savings Plan
 - 75% elect to participate in the Tier 2 Plan

New entrants have an average age of 36.8 and average capped pay of \$43,292 and average uncapped pay of \$45,565 (2021 dollars). These values are based on the average age and average pay of current members. The new entrant data is based on the age at hire and assumed pay at hire (using the actuarial assumptions, inflated to 2021 dollars) of current active members with service between one and four years.

Academic

Summary of New Entrants - Academic									
Age	Number Males	Average Pay		Number Females	Average Pay		Total Number	Average Pay	
		Tier 2 Capped Male	Tier 2 Uncapped Male		Tier 2 Capped Female	Tier 2 Uncapped Female		Tier 2 Capped Total	Tier 2 Uncapped Total
<20	2	\$46,423	\$46,423	2	\$34,714	\$34,714	4	\$40,568	\$40,568
20 - 24	74	28,716	28,716	96	30,642	30,642	170	29,804	29,804
25 - 29	308	45,082	48,422	393	42,895	44,061	701	43,856	45,977
30 - 34	427	59,409	66,698	574	51,395	56,549	1,001	54,814	60,878
35 - 39	424	53,116	61,094	475	47,854	51,967	899	50,336	56,272
40 - 44	266	52,270	62,487	300	43,204	47,122	566	47,465	54,343
45 - 49	191	43,273	49,475	212	40,229	44,675	403	41,672	46,950
50 - 54	141	45,309	54,497	151	39,231	43,161	292	42,166	48,635
55 - 59	122	44,509	52,812	130	33,093	36,664	252	38,620	44,482
60 - 64	90	33,655	44,608	79	30,968	35,193	169	32,399	40,207
65 - 69	10	23,525	25,224	2	8,223	8,223	12	20,975	22,391
Total	2,055	\$49,267	\$56,438	2,414	\$44,026	\$47,704	4,469	\$46,436	\$51,721

Actuarial Methods and Assumptions

Non-Academic

Summary of New Entrants - Non-Academic									
Age	Number Males	Average Pay		Number Females	Average Pay		Total Number	Average Pay	
		Tier 2			Tier 2			Tier 2	
		Capped Male	Uncapped Male		Capped Female	Uncapped Female		Capped Total	Uncapped Total
<20	45	\$21,401	\$21,401	47	\$19,229	\$19,229	92	\$20,291	\$20,291
20 - 24	646	32,652	32,652	1,094	30,919	30,919	1,740	31,562	31,562
25 - 29	1,239	41,746	41,818	1,866	40,292	40,390	3,105	40,872	40,960
30 - 34	976	47,297	48,817	1,449	43,226	43,898	2,425	44,865	45,878
35 - 39	598	50,844	52,562	1,089	43,879	44,588	1,687	46,347	47,414
40 - 44	466	50,584	52,709	794	44,319	45,626	1,260	46,636	48,246
45 - 49	419	49,900	53,695	719	42,414	44,169	1,138	45,170	47,676
50 - 54	353	48,657	52,190	553	40,681	42,475	906	43,789	46,260
55 - 59	253	50,351	58,875	423	39,922	42,725	676	43,825	48,769
60 - 64	120	49,463	59,239	165	38,119	42,040	285	42,895	49,282
65 - 69	4	66,862	66,862	5	20,099	20,099	9	40,882	40,882
Total	5,119	\$45,115	\$47,021	8,204	\$40,443	\$41,302	13,323	\$42,238	\$43,500

RSP Contribution Assumptions. The projected RSP contributions are equal to 7.6% of RSP payroll, plus estimated RSP expenses minus RSP employer forfeitures. Estimated RSP expenses for FY 2022 are \$1,043,478 and actual FY 2021 RSP employer forfeitures used to reduce the certified contributions for FY 2023 are \$5,399,471 (as provided by SURS). Estimated RSP expenses for FY 2023 and after are assumed to increase by 3.00%. Estimated RSP employer forfeitures used to reduce the certified contributions for FY 2024 and after are assumed to be 7.5% of the gross RSP employer contribution.

Pensionable Earnings Greater than 6%. 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 6.00% 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 6.00% in the calculation of the final average salary.

Governor's Pay. The governor's pay is \$181,700 as of June 30, 2021, and budgeted as \$184,800 as of June 30, 2022, and is expected to increase each year by the assumed rate of increase in the Tier 2 pay cap (1/2 the increase in CPI or 1.125%).

Actuarial Methods and Assumptions

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 Acts 100-0587 and 101-0010. 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 Acts 100-0587 and 101-0010.

	Through 5/31/2020			Through 6/30/2021		
	<u>AAI</u>	<u>VIB</u>	<u>Total</u>	<u>AAI</u>	<u>VIB</u>	<u>Total</u>
Number Eligible for the buyout*	2,454	23,669	26,123	5,765	23,669	29,434
Buyout applications received	80	59	139	221	94	315
Buyout election forms sent	22	31	53	106	67	173
Buyout election forms approved	14	19	33	72	42	114
Application %	3.3%	0.2%	0.5%	3.8%	0.4%	1.1%
Approved %	0.6%	0.1%	0.1%	1.2%	0.2%	0.4%
Approved buyout amount**	\$1.4	\$3.0	\$4.3	\$6.8	\$17.5	\$24.3
Estimated Approved buyout (non EBA)	\$1.4	\$3.0	\$4.3	\$6.8	\$ 9.1	\$15.9
Estimated Liability Reduction	\$2.0	\$4.9	\$6.9	\$9.6	\$15.2	\$24.8

* Number eligible for the VIB buyout is the number of vested Tier 1 inactive members included in the actuarial valuation as of June 30, 2019 who are in the Traditional or Portable Plan.

** Includes amounts attributable to benefits that would have been payable from the Excess Benefit Arrangement (EBA). There was one \$11.2 million VIB buyout of which \$8.4 million was payable from the EBA.

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. Following are the estimates used in the previous and current valuations:

Valuation Year	Applicable Fiscal Year	Estimated EBA Payments
2018	2020	\$17.065 million
2019	2021	\$18.000 million
2020	2022	\$21.500 million
2021	2023	\$24.200 million

Actuarial Methods and Assumptions

Estimated Federal/Trust Fund Employer Contributions. Following are the estimated employer contributions provided by SURS that reduce the estimated State contributions.

Valuation Year	Applicable Fiscal Year	Estimated Federal/Trust Fund Payments
2018	2020	\$52.0 million
2019	2021	\$52.5 million
2020	2022	\$57.0 million
2021	2023	\$62.0 million

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APPENDIX H

SUMMARY OF BENEFIT PROVISIONS OF SURS

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Summary of Benefit Provisions of SURS

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 Retirement Savings Plan (RSP) 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.

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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 Retirement Savings Plan (RSP). 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. Effective September 1, 2020 the Retirement Savings Plan (RSP) has been renamed the Retirement Savings Plan (RSP).

New tiers of benefits have been established for members hired on or after January 1, 2011 (“Tier 2”). Members hired before January 1, 2011, participate in Tier 1. Members in Tiers 1 and 2 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 members who participate in the Traditional and Portable Plans are subject to the pay caps established under Public Act 96-0889. 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 pay cap history is as follows:

Year	CPI-U	½ CPI-U	Tier 2 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
2018	2.20%	1.10%	\$113,644.91
2019	2.30%	1.15%	\$114,951.83
2020	1.70%	0.85%	\$115,928.92
2021	1.40%	0.70%	\$116,740.42

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

The Retirement Savings 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 RSP participants. Members hired on or after January 1, 2011, who participate in the RSP are not subject to the Tier 2 pay cap.

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*.



Summary of Benefit Provisions of SURS

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.

The total contribution is broken down as follows:

	Tier 1 and Tier 2	
	Police/Fire	All Others
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%

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 members are assumed not to be made on pay in excess of the pay cap.

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 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 6.50% beginning with the actuarial valuation as of June 30, 2021.

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.



Summary of Benefit Provisions of SURS

Retirement Benefits

Final Average Salary

Final average salary is equal to:

Tier 1	High four consecutive year average compensation or the average of the last 48 consecutive months of employment.
Tier 2	High final eight consecutive year average compensation within the last 10 years or the average of the last 96 consecutive months within the last 120 months.

The Tier 2 pay cap history is 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 6% 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 police officers and firefighters, separation from service on or after the attainment of the earlier of:

Tier 1	Tier 2
Age 55/20 Years of Service	Age 60/20 Years of Service
Age 50/25 Years of Service	Age 67/10 Years of Service

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

Tier 1	Tier 2
Age 62/5 Years of Service	Age 67/10 Years of Service
Age 60/8 Years of Service	
Any age/30 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.



Summary of Benefit Provisions of SURS

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	
	General	Police/Fire
1 st 10 Years	2.20 %	2.25 %
Next 10 Years	2.20	2.50
Over 20	2.20	2.75

2. Money Purchase Formula (Applicable to Tier 1 only, hired before July 1, 2005):
- 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
 - An imputed employer contribution match at \$1.40 per dollar of member contribution accumulated with interest at the ERI.
 - 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.

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



Summary of Benefit Provisions of SURS

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 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.

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 84 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.



Summary of Benefit Provisions of SURS

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%
2019	2.30%	1.15%	1.15%
2020	1.70%	0.85%	0.85%
2021	1.40%	0.70%	0.70%

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.

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.

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 60th birthday for Tier 1 members and the 67th 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.



Summary of Benefit Provisions of SURS

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 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.

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.



Summary of Benefit Provisions of SURS

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 and Tier 2 members.)

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.

Lump Sum Death Benefit

Eligibility

Death of member prior to retirement.

Traditional Plan

Benefit

With Eligible Survivor

- 7/8^{ths} 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



Summary of Benefit Provisions of SURS

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 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.



Summary of Benefit Provisions of SURS

For Tier 2 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.

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,



Summary of Benefit Provisions of SURS

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.

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 61st 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 70th 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



Summary of Benefit Provisions of SURS

(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, 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



Summary of Benefit Provisions of SURS

of the attainment of age 67 or the first anniversary of the commencement of the annuity.

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 84 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.

Portable Plan

Refund of total accumulated member contributions at the full Effective Rate of Interest that is



Summary of Benefit Provisions of SURS

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 and PA 101-0010, SURS shall offer an accelerated pension benefit payment to eligible members beginning on the implementation date and until June 30, 2024.

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). The delayed AAI begins the January 1 following the first anniversary of the retirement date, or the January 1 following age 67, whichever is later. The survivor AAI is first payable 1 year after the survivor annuity commences.

Defined Contribution Plan

Public Act 100-0769, effective August 10, 2018, requires the SURS Board of Trustees, as soon as practicable after the effective date of the legislation, to establish and maintain a defined contribution plan. The defined contribution benefit must be an optional benefit to any member who chooses to participate. SURS has established the Deferred Compensation Plan (DCP).

Projected administrative expenses for this plan are included in the Statutory contribution. Other costs are not reflected in this valuation.



APPENDIX I

GLOSSARY OF TERMS

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Glossary of Terms

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 \$1.065 after a year, the asset return is 6.50 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

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.”

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APPENDIX J

STRESS TESTING SCENARIOS

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