



State Universities Retirement System of Illinois

Actuarial Valuation Report as of
June 30, 2020

DRAFT





September 24, 2020

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, 2020. GRS has prepared this report exclusively for the Trustees of the State Universities Retirement System; GRS is not responsible for reliance upon this report by any other party. This report may be provided to parties other than SURS only in its entirety and only with the permission of the Trustees.

This actuarial valuation provides information on the funding status and the contribution requirements of SURS. This actuarial valuation includes a determination of the statutory State contribution requirement (the "Statutory Contribution") for the fiscal year ending June 30, 2022, 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in fiscal year 2018 for current members who receive pay in excess of the Governor's pay and under PA 101-0010 (which rescinded the change to 3% from PA 100-0587), employers make contributions equal to the present value of the increase in benefit attributable to members who receive pay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, 2020, 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. 30% of assumed new hires in the actuarial valuation projections are assumed to elect the Self-Managed Plan and 70% are assumed to elect Tier 2 under Public Act 96-0889. The plan election assumptions were provided by SURS staff.

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. New retirement rates for Tier 2 police officers and firefighters were used for the new retirement eligibility condition. The actuarial cost method (Projected Unit Credit, as required by statute) and the asset smoothing method (also as required by statute) and all other assumptions and methods used in this actuarial valuation are unchanged from the prior June 30, 2019 actuarial valuation of SURS.

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

To the best of our knowledge, this actuarial statement is complete and accurate, fairly presents the actuarial position of SURS as of June 30, 2020, 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 (24 years remaining in the actuarial valuation as of June 30, 2020, which calculates the fiscal year 2022 contribution).



This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor.

Amy Williams and Brian 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,

Amy Williams, ASA, MAAA
Senior Consultant

Brian B. Murphy, FSA, EA, MAAA, PhD
Senior Consultant

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SUMMARY OF THE ACTUARIAL VALUATION

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Executive Summary

(\$ in Millions)

| Actuarial Valuation Date: | June 30, 2019 | | June 30, 2020 | |
|---|---------------|----------------------------------|---------------|----------------------------------|
| Fiscal Year Ending: | June 30, 2021 | | June 30, 2022 | |
| Estimated Statutory Contribution: | | % of Projected Capped Payroll | | % of Projected Capped Payroll |
| · Defined Benefit Plans Contribution Amount ¹ | \$ 1,954.566 | 41.88% | \$ 2,057.686 | 42.05% |
| · Self Managed Plan Contribution Amount ¹ | 81.230 | 1.74% | 86.033 | 1.76% |
| · Total Qualified Plan Contribution Amount | \$ 2,035.796 | 43.62% | \$ 2,143.719 | 43.81% |
| · Excess Benefit Arrangement (EBA) Contribution Amount ² | 18.000 | 0.39% | 21.500 | 0.44% |
| · Supplemental Plan Administrative Expense | - | | 0.131 | 0.00% |
| · Combined State and Employer Contribution Amount | \$ 2,053.796 | 44.00% | \$ 2,165.350 | 44.25% |
| Estimated Statutory Contribution from Other Sources: | | | | |
| · Federal/Trust Contribution Amount ⁶ | \$ 52.500 | | \$ 57.000 | |
| · Employer Contribution Amount Related to - Compensation in Excess of Governor's | \$ 5.529 | | \$ 5.369 | |
| Net State Contribution: | | | | |
| · Net Dollar Amount (Including EBA Contribution) | \$ 1,995.767 | 42.76% | \$ 2,102.981 | 42.98% |
| Actuarially Determined Contribution (ADC): ^{3,4} | | | | |
| · Annual Amount | \$ 2,454.219 | 52.58% | \$ 2,501.017 | 51.11% |
| Membership | | | | |
| · Number of | | | | |
| - Active Members (full time and part time) | 75,120 | | 76,335 | |
| - Members Receiving Payments ³ | 67,842 | | 69,172 | |
| - Inactive Members | 93,077 | | 94,024 | |
| - Total | 236,039 | | 239,531 | |
| · Covered Payroll Provided as of Valuation Date | \$ 4,356.631 | | \$ 4,583.907 | |
| · Projected Capped Payroll for Fiscal Year | 4,667.191 | | 4,892.989 | |
| · Defined Benefit Plan Capped Payroll ⁵ | 3,506.650 | | 3,642.617 | |
| · Annualized Benefit Payments ³ | 2,560.431 | | 2,667.147 | |
| Assets ² | | | | |
| · Market Value of Assets (MVA) | \$ 19,717.348 | | \$ 19,514.558 | |
| · Actuarial Value of Assets (AVA) | 19,661.891 | | 20,071.413 | |
| · SURS Reported Market Value Rate of Return | 6.07% | | 2.64% | |
| · Estimated Return on MVA | 5.96% | | 2.27% | |
| · Estimated Return on AVA | 5.52% | | 5.44% | |
| · Ratio – AVA to MVA | 100% | | 103% | |
| Actuarial Information ³ | | | | |
| · Total Normal Cost Rate | 20.71% | | 20.33% | |
| · Employer Normal Cost Rate | 12.70% | | 12.32% | |
| · Employer Normal Cost Amount | \$ 444.743 | | \$ 445.084 | |
| · Actuarial Accrued Liability (AAL) | 46,443.937 | | 47,580.470 | |
| · Unfunded Actuarial Accrued Liability (UAAL) | 26,782.045 | | 27,509.057 | |
| · Funded Ratio based on AVA | 42.33% | | 42.18% | |
| · UAAL as % of Defined Benefit Plan Capped Payroll | 763.75% | | 755.20% | |
| · Funded Ratio based on MVA | 42.45% | | 41.01% | |
| · Defined Benefit Plans Contribution Amount as % of ADC | 79.64% | | 82.27% | |

Amounts from the June 30, 2019 and June 30, 2020 actuarial valuations assume 30% elect SMP and 70% elect Tier 2.

¹ SMP contributions are net of SMP forfeitures of \$6,578,000 for fiscal year 2021 and of \$5,672,000 for fiscal year 2022. Projected Self Managed Plan (SMP) contribution is updated based on the most recent actuarial valuation. Contribution amount for SURS defined benefit plans is the total qualified plan statutory contribution minus the SMP contribution.

² Amounts provided by SURS.

³ Excludes SMP.

⁴ 30-year initial closed period (24 years remaining as of June 30, 2020, applicable to the fiscal year 2022 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 2021 and 2022 are included in the Federal/Trust Contribution Amount.



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, 2020.

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, 2022, 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 2022 is \$2.165 billion (\$2.144 billion excluding the EBA contribution and the new supplemental defined contribution plan projected administrative expense) and includes the State’s projected FY 2022 normal cost of \$433.1 million, an unfunded liability contribution of \$1.625 billion, a contribution to fund benefits from the Excess Benefit Arrangement (“EBA”) of \$21.5 million, a contribution to fund the administrative expenses of the new supplemental defined contribution plan of \$0.1 million and the Self Managed Plan (“SMP”) contribution of \$86.0 million. The 2019 actuarial valuation had projected the Statutory contribution would increase, from \$2.036 billion for FY 2021 to \$2.112 billion for FY 2022 (excluding EBA contributions). The primary reason for the increase in the Statutory contribution over the projected amount from the prior actuarial valuation is due to unfavorable experience and an increase in the number of current and projected future active members from 75,120 to 76,335.

Over the past 10 years, SURS experienced investment gains on a market value basis (compared to the actuarial assumption) in fiscal years 2011, 2013, 2014, 2017 and 2018. 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, 2020, was approximately 2.64% and was 6.07% in FY 2019. The average market value investment return over the most recent 10 years has been approximately 8.5%.

The funded ratio decreased from 42.5% as of June 30, 2019, to 41.0% as of June 30, 2020, based on the market value of assets, and decreased slightly from 42.3% as of June 30, 2019, to 42.2% as of June 30, 2020, based on the actuarial value of assets. The net deferred asset losses will be recognized in the actuarial value of assets over the next four years.

The ratio of the market value of assets of the Defined Benefit Plan to the annual deductions (consisting of benefit payments, refunds of contributions and administrative expenses) and sometimes referred to as the liquidation ratio is about 7.1.



Summary of the Valuation

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

Actuarial Assumptions

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

The plan election assumptions for new hires remain the same as in the prior actuarial valuation. Future new hires are assumed to elect to participate in the offered plans as follows: 30% would elect to participate in the Self-Managed Plan (SMP) and 70% would elect to participate in the Tier 2 Plan.

New retirement rates for Tier 2 police officers and firefighters were used for the new retirement eligibility condition. All other actuarial assumptions were first adopted by the Board for use with the actuarial valuation as of June 30, 2018, and were based on the recommendations from the experience review performed for the period from June 30, 2014, through June 30, 2017. An experience review will be completed for the period June 30, 2017, through June 30, 2020 prior to the next actuarial valuation.

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 64.

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.

SURS Benefits

Public Act 101-0610 added an unreduced retirement eligibility condition for Tier 2 police officers and firefighters to retire at age 60 with 20 years of service. All other benefit provisions valued in this June 30, 2020 actuarial valuation are identical to those valued in the prior actuarial valuation as of June 30, 2019. Due to the court ruling recent pension reform unconstitutional, this actuarial valuation does not reflect the provisions of Public Act 98-0599.

HB 4712 requires the SURS Board of Trustees, within one year after the effective date of the legislation, to establish and maintain a defined contribution plan to address the retirement preparedness gap for participants in a defined benefit plan who are not on track to maintain their standard of living in retirement.

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



Summary of the Valuation

Experience During 2020

The System assets earned approximately 2.64% on a market value basis during FY 2020 which was less than the investment return assumption of 6.75% for FY 2020. The System assets earned 5.44% on an actuarial value of assets basis during FY 2020, due to recognition of a portion of current year asset losses and prior year net deferred investment losses under the asset smoothing method. Because 5.44% is less than the assumed rate of investment return of 6.75% for FY 2020, there was an asset loss of \$254.1 million on the actuarial value of assets.

There was also a net loss of \$102.2 million from actuarial liabilities, which is comprised of a loss of approximately \$96.8 million from demographic experience, and a loss of \$5.4 million from higher than expected pay increases.

The changes in retirement eligibility for Tier 2 police officers and firefighters increased the actuarial liabilities by \$1.0 million.

The estimated reduction in the actuarial liabilities due to the buyouts during fiscal year 2020 is \$5.2 million.

The SURS defined benefit programs experienced an overall actuarial loss of \$356.3 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 30), Appendix C, for detail of the gains and losses by source.

Statutory Appropriations for the 2022 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.

Summary of the Valuation

- 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.
 - 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.

Summary of the Valuation

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 70% of future new members elect the Tier 2 Plan, 30% of future new members elect SMP and all other actuarial assumptions are realized, are set out in Table 14 (page 37).

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 2022 is \$57,000,000, 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 decreased from \$19,717.3 million as of June 30, 2019, to \$19,514.6 million as of June 30, 2020. The actuarial value of assets as of June 30, 2020, is \$20,071.4 million, which is \$556.9 million larger 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 \$556.9 million, which is the value of net deferred losses, will be smoothed into the actuarial value of assets over the next four years. The remaining unrecognized net asset gains from FY 2017 and FY 2018 will be smoothed in over the next one and two



Summary of the Valuation

years, respectively, and the remaining asset losses from FY 2019 and FY 2020 will be smoothed in over the next three and four 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 27) 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 decreased from 42.5% as of June 30, 2019, to 41.0% as of June 30, 2020, based on the market value of assets, and decreased slightly from 42.3% as of June 30, 2019, to 42.2% as of June 30, 2020, based on the actuarial value of assets. There are net deferred losses that will be smoothed into the actuarial value of assets over the next four years. As a result of the net deferred losses and the funding policy, the funded ratio is projected to increase very slightly over the next four years if all assumptions are realized and all employer contributions are made on a timely basis.

| Fiscal Year | Funded Ratio | |
|-------------|--------------|--------|
| | AVA | MVA |
| 2016 | 43.3 % | 41.6 % |
| 2017 | 44.4 | 44.2 |
| 2018 | 42.8 | 42.7 |
| 2019 | 42.3 | 42.5 |
| 2020 | 42.2 | 41.0 |

Short Condition Test

The following table shows a comparison, for fiscal years 2011 through 2020, of the percentage of benefits that are covered by the actuarial value of assets. The employer financed liabilities for current active and inactive members are 0% funded by the assets. Only a portion of the retiree liabilities are funded by current assets and the percentage covered decreased from 41.0% as of June 30, 2019, to 40.8% as of June 30, 2020.

Summary of the Valuation

| Fiscal Year | Percentage of Benefits Covered by Net Assets (in Millions) | | | | | | |
|-------------|---|----------------------------|----------------------------|-------------------------------|---------------------------------|-------|------|
| | Member Acc Contrib. | Members Receiving Benefits | Act/Inact Employer Portion | Net Actuarial Value of Assets | % of Benefits Covered by Assets | | |
| | (1) | (2) | (3) | | (1) | (2) | (3) |
| 2011 | \$ 6,007.4 | \$ 18,918.1 | \$ 6,588.8 | \$ 13,945.7 | 100.0% | 42.0% | 0.0% |
| 2012 | 5,962.4 | 20,651.4 | 6,556.4 | 13,949.9 | 100.0% | 38.7% | 0.0% |
| 2013 | 5,830.1 | 22,099.9 | 6,443.1 | 14,262.6 | 100.0% | 38.2% | 0.0% |
| 2014 | 6,094.9 | 24,388.6 | 6,946.0 | 15,844.7 | 100.0% | 40.0% | 0.0% |
| 2015 | 6,196.6 | 26,042.4 | 7,281.7 | 17,104.6 | 100.0% | 41.9% | 0.0% |
| 2016 | 6,145.8 | 27,342.2 | 7,435.3 | 17,701.6 | 100.0% | 42.3% | 0.0% |
| 2017 | 6,348.8 | 28,226.0 | 7,278.6 | 18,594.3 | 100.0% | 43.4% | 0.0% |
| 2018 | 6,516.3 | 30,710.7 | 8,031.7 | 19,347.9 | 100.0% | 41.8% | 0.0% |
| 2019 | 6,594.1 | 31,856.5 | 7,993.4 | 19,661.9 | 100.0% | 41.0% | 0.0% |
| 2020 | 6,652.6 | 32,862.0 | 8,065.9 | 20,071.4 | 100.0% | 40.8% | 0.0% |

Actuarial Funding and Statutory Funding

Measuring the Statutory Contribution against a funding policy under which the sum of the normal cost and amortization of the unfunded accrued liability is contributed helps evaluate the funding adequacy of the current Statutory funding method. The 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 30-year closed period (24 years remaining as of the actuarial valuation as of June 30, 2020, applicable to the fiscal year 2022 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 33) and Graph 4 (page 38), the funded ratio would increase more quickly and require lower contributions than under the Statutory policy after approximately 13 years. The Statutory contributions are projected to continue to rise in order to meet the ultimate funding objective of a 90% funded ratio in 2045.

Based on projections assuming that the Statutory contributions are made every year (as shown in Table 12, page 32) and an investment return of 6.75% each year, the funded ratio is projected to begin to increase from about 42% funded to 90% funded at 2045. The funded ratio is not projected to exceed 50% until 2032, 70% until 2041 and is projected to increase to 90% during the four-year period from 2041 until 2045. If the Statutory contributions are not made or investment return is less than the assumption of 6.75%, the funded ratio will be lower and the cash flow strain will be higher. If another significant market downturn occurred while the System’s funded ratio is low, the System could be required to liquidate 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



Summary of the Valuation

future members is expected to increase from \$47.580 billion as of the end of FY 2020 to \$52.423 billion as of the end of FY 2045 (as shown in Graph 2, page 34, and Table 23, page 47). Total benefit payments are projected to increase from \$2.745 billion in fiscal year 2020 to \$4.393 billion in fiscal year 2045. Graph 3 (page 35, and Table 22, page 46) shows projected benefit payments separately for retirees as of June 30, 2020, active and inactive members as of June 30, 2020, and future members.

Additional Projection Details

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

Recommendations

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

We recommend the following changes:

1. Implementing a funding policy that contributes normal cost plus closed period amortization as a level percentage of defined benefit plan capped payroll of the unfunded liability. (Policy which recognizes unfunded liability at the valuation date and not projected liability in the year 2045.)
2. If the current Statutory funding policy is retained, we recommend:
 - a. Eliminating the maximum contribution cap
 - b. Calculating contributions as a level percentage of defined benefit plan pensionable payroll only instead of total payroll (including SMP 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 2022 contribution would be \$2,587.050 (\$2,501.017 million for the SURS contribution and \$86.033 million for SMP) under this alternate funding



Summary of the Valuation

policy. The current Statutory contribution does not comply with this recommendation. 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 38 and projected funded ratios are shown in Graph 1 on page 33.

Eliminate Maximum Contribution Cap

If the current statutory funding policy is not changed, we recommend that the provision that establishes a maximum contribution cap be eliminated. The contribution cap is based on the projected hypothetical contributions if the proceeds from the 2003 bond issue had not been received. The cap is projected to lower contributions during fiscal years 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 SMP payroll. We recommend that the contributions be calculated as a level percentage of defined benefit plan pensionable payroll only.

Implement an Asset Corridor

In addition, we recommend that an asset corridor on the actuarial value of assets be implemented, in case 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.

Summary of the Valuation

| (\$ in Millions) | | | | | |
|------------------|------------------------------|------------|---------------------------|------------|--|
| Year | Actuarial Value of Assets | | Market Value of Assets | | Ratio of Actuarial Value to Market Value |
| 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 | | 20,071.413 | | 19,514.558 | 103 |

Change the Actuarial Cost Method to the Entry Age Normal Method

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

Number of Projected Future Active Members

The statutory contribution is based on performing an open group projection through the year 2045. The projection is based on assuming that new active members are hired to replace the current members who leave active membership (through termination, retirement, death or disability). The number of active members has decreased by about 8 percent between 2010 and 2020, which is an average annualized decrease of about 0.8 percent.

Currently, the actuarial valuation assumes that the total number of active members in the future will be equal to the number active in the current actuarial valuation. Given the decrease in the number of active members over the past 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.

Summary of the Valuation

| Total Active Members (Full and Part Time) | | | | | | |
|---|------------------------|--------|--------|-----------------------------|-------------------------------|---------------------------|
| June 30 | Traditional & Portable | SMP | Total | Annual Change in Membership | % Annual Change in Membership | Earnings (\$ in Millions) |
| 2010 | 72,996 | 9,746 | 82,742 | | | \$3,904.6 |
| 2011 | 71,888 | 9,723 | 81,611 | (1,131) | -1.4% | 3,893.4 |
| 2012 | 71,056 | 10,100 | 81,156 | (455) | -0.6% | 3,956.6 |
| 2013 | 70,556 | 10,746 | 81,302 | 146 | 0.2% | 4,078.1 |
| 2014 | 69,436 | 11,409 | 80,845 | (457) | -0.6% | 4,131.0 |
| 2015 | 69,381 | 11,928 | 81,309 | 464 | 0.6% | 4,280.5 |
| 2016 | 66,245 | 11,880 | 78,125 | (3,184) | -3.9% | 4,218.4 |
| 2017 | 64,117 | 11,852 | 75,969 | (2,156) | -2.8% | 4,184.5 |
| 2018 | 62,844 | 12,106 | 74,950 | (1,019) | -1.3% | 4,264.3 |
| 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 |
| Total Change | | | | (6,407) | -0.8% | |

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 two new benefit tiers) have had the effect of reducing the Statutory contribution amounts that would have otherwise been made. However, the change in the investment return assumption and other changes to more closely align the actuarial assumptions with current market expectations have increased the contribution amounts that would otherwise have been made. Assuming the statutory contributions are received (and the actuarial assumptions are met including a 6.75% investment rate of return, each year through 2045) SURS is currently projected to have contributions sufficient to increase the funded ratio from the current level of 42.2% to 90.0% by 2045. However, policy makers should be aware that current capital market assumptions suggest that it is unlikely that 6.75% will be realized in the near term, and that a certain amount of erosion in 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.



Summary of the Valuation

Actuarial Standards of Practice (ASOP) 4 Disclosures

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

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

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

Limitations of Funded Status Measurements

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

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

| | 2019 | 2020 |
|---|-------|-------|
| Ratio of the market value of assets to total payroll | 4.53 | 4.26 |
| Ratio of actuarial accrued liability to payroll | 10.66 | 10.38 |
| Ratio of actives to retirees and beneficiaries | 1.11 | 1.10 |
| Ratio of net cash flow to market value of assets | -3.7% | -3.3% |
| Approximate modified duration of the present value of future benefits | 13.44 | 13.33 |

Payroll used in the above table includes SMP payroll.

Ratio of Market Value of Assets to Payroll

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

Ratio of Actuarial Accrued Liability to Payroll

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

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

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0.



Summary of the Valuation

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) |
|-----------------------|---------------------------|------------------------|---------------------------|-------------------|-----------------------------------|-------------------------------|-----------------------|-----------------------|--------------------------|
| Valuation Date (6/30) | Accrued Liabilities (AAL) | Market Value of Assets | Market Value Unfunded AAL | Valuation Payroll | Market Value Funded Ratio (2)/(1) | Retiree Liabilities (RetLiab) | RetLiab / AAL (6)/(1) | AAL / Payroll (1)/(4) | Assets / Payroll (2)/(4) |
| 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 | 19,515 | 28,066 | 4,584 | 41.0% | 32,862 | 69.1% | 1038.0% | 425.7% |

| | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
|-----------------------|------------------|------------------|--------------------|---------------------------------|------------------------|-----------------------|-------------------------|
| Valuation Date (6/30) | Portfolio StdDev | Std Dev % of Pay | Unfunded / Payroll | Non-Investment Cash Flow (NICF) | NICF / Assets (13)/(2) | Market Rate of Return | 5-Year Trailing Average |
| 2014 | | | 485.1% | \$ (314) | -1.8% | 17.9% | 13.6% |
| 2015 | | | 515.3% | (432) | -2.5% | 2.9% | 11.1% |
| 2016 | | | 567.0% | (474) | -2.8% | 0.1% | 6.5% |
| 2017 | | | 558.5% | (515) | -2.8% | 11.9% | 8.9% |
| 2018 | | | 608.3% | (664) | -3.4% | 8.3% | 8.0% |
| 2019 | | | 613.5% | (734) | -3.7% | 6.0% | 5.8% |
| 2020 | 10.9% | 46.4% | 612.3% | (642) | -3.3% | 2.3% | 5.6% |

- (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 a percent of payroll. This figure helps users understand the difficulty of dealing with investment

Summary of the Valuation

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. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.
- (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, 2020 and June 30, 2019

| | Defined Benefit | Self Managed | Total | |
|--|-------------------|------------------|-------------------|-------------------|
| | Plan | Plan | 2020 | 2019 |
| Assets | | | | |
| Cash and short-term investments | \$ 1,264,663,984 | - | \$ 1,264,663,984 | \$ 819,413,471 |
| Receivables | | | | |
| Members | 11,158,596 | \$ 4,559,763 | 15,718,359 | 17,067,516 |
| Non-employer contributing entity | 116,889,698 | 2,074,606 | 118,964,304 | 152,988,640 |
| Federal, trust funds, and other | 6,666,614 | 28,535 | 6,695,149 | 6,983,445 |
| Pending investment sales | 1,952,064,461 | - | 1,952,064,461 | 360,501,773 |
| Interest and dividends | 47,440,102 | - | 47,440,102 | 47,226,953 |
| Total receivables | 2,134,219,471 | 6,662,904 | 2,140,882,375 | 584,768,327 |
| Prepaid expenses | 133,923 | - | 133,923 | 147,246 |
| Investments, at fair value | | | | |
| Equity investments | 6,684,436,960 | 48,304,182 | 6,732,741,142 | 10,512,849,950 |
| Fixed income investments | 5,469,407,089 | 40,073,020 | 5,509,480,109 | 4,880,148,427 |
| Real estate investments | 1,154,316,738 | 8,341,514 | 1,162,658,252 | 1,195,261,337 |
| Alternative investments | 4,844,397,822 | 35,007,388 | 4,879,405,210 | 2,451,664,597 |
| Mutual fund and variable annuities | | 2,884,738,092 | 2,884,738,092 | 2,592,580,384 |
| Total investments | 18,152,558,609 | 3,016,464,196 | 21,169,022,805 | 21,632,504,695 |
| Securities lending collateral | 1,381,940,165 | - | 1,381,940,165 | 878,205,520 |
| Capital assets, at cost, net of accum deprec \$20,617,119 and \$20,143,800 respectively | 10,426,888 | - | 10,426,888 | 9,796,210 |
| Total assets | 22,943,943,040 | 3,023,127,100 | 25,967,070,140 | 23,924,835,469 |
| Liabilities | | | | |
| Benefits payable | 12,495,171 | - | 12,495,171 | 10,467,190 |
| Refunds payable | 3,601,916 | - | 3,601,916 | 5,200,177 |
| Securities lending collateral | 1,381,486,080 | - | 1,381,486,080 | 876,550,517 |
| Payable to brokers for unsettled trades | 2,013,885,643 | - | 2,013,885,643 | 483,348,912 |
| Reverse repurchase agreements | 512,000 | - | 512,000 | 85,456,713 |
| Administrative expenses payable | 17,404,610 | - | 17,404,610 | 16,856,965 |
| Total liabilities | 3,429,385,420 | - | 3,429,385,420 | 1,477,880,474 |
| Plan Net Position | \$ 19,514,557,620 | \$ 3,023,127,100 | \$ 22,537,684,720 | \$ 22,446,954,995 |



Table 2

Statement of Changes in Plan Net Position for Years Ended June 30, 2020 and June 30, 2019

| | Defined Benefit | Self Managed | Totals | |
|----------------------------------|--------------------------|-------------------------|--------------------------|-----------------------|
| | Plan | Plan | 2020 | 2019 |
| Additions | | | | |
| Contributions | | | | |
| Employer | \$ 52,865,528 | \$ 9,378,893 | \$ 62,244,421 | \$ 58,133,608 |
| Non-employer contributing entity | 1,785,936,806 | 68,755,194 | 1,854,692,000 | 1,655,154,000 |
| Member | 282,363,846 | 95,728,110 | 378,091,956 | 368,588,213 |
| Total Contributions | <u>2,121,166,180</u> | <u>173,862,197</u> | <u>2,295,028,377</u> | <u>2,081,875,821</u> |
| Investment Income | | | | |
| Net appreciation | | | | |
| in fair value of investments | 110,934,513 | 223,640,319 | 334,574,832 | 958,763,679 |
| Interest | 191,342,519 | - | 191,342,519 | 155,798,932 |
| Dividends | 200,038,867 | - | 200,038,867 | 237,287,406 |
| Securities lending | 5,597,401 | - | 5,597,401 | 5,191,144 |
| Gross Investment Income | <u>507,913,300</u> | <u>223,640,319</u> | <u>731,553,619</u> | <u>1,357,041,161</u> |
| Less investment expense | | | | |
| Asset management expense | 67,967,190 | - | 67,967,190 | 64,109,736 |
| Securities lending expense | 504,180 | - | 504,180 | 468,824 |
| Net investment income | <u>439,441,930</u> | <u>223,640,319</u> | <u>663,082,249</u> | <u>1,292,462,601</u> |
| Total additions | <u>2,560,608,110</u> | <u>397,502,516</u> | <u>2,958,110,626</u> | <u>3,374,338,422</u> |
| Deductions | | | | |
| Benefits | 2,676,192,703 | 67,927,971 | 2,744,120,674 | 2,617,196,859 |
| Refunds of contributions | 68,778,249 | 35,408,462 | 104,186,711 | 115,051,659 |
| Administrative expense | 18,427,499 | 646,017 | 19,073,516 | 16,662,874 |
| Total deductions | <u>2,763,398,451</u> | <u>103,982,450</u> | <u>2,867,380,901</u> | <u>2,748,911,392</u> |
| Net increase (decrease) | (202,790,341) | 293,520,066 | 90,729,725 | 625,427,030 |
| Plan Net Position | | | | |
| Beginning of year | <u>19,717,347,961</u> | <u>2,729,607,034</u> | <u>22,446,954,995</u> | <u>21,821,527,965</u> |
| Plan Net Position | | | | |
| End of year | <u>\$ 19,514,557,620</u> | <u>\$ 3,023,127,100</u> | <u>\$ 22,537,684,720</u> | <u>22,446,954,995</u> |



APPENDIX B

MEMBERSHIP DATA

DRAFT

Table 3A

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

| | June 30, 2019 | | June 30, 2020 | |
|------------------------------|---------------|-----------|---------------|-----------|
| | Number | Earnings | Number | Earnings |
| Active Members | | | | |
| Full time | | | | |
| Traditional SURS | 41,801 | \$2,212.0 | 42,143 | \$2,298.1 |
| Portable SURS | 17,192 | 1,158.4 | 17,446 | 1,203.8 |
| SMP | 12,118 | 956.4 | 12,726 | 1,052.2 |
| Total Full Time ¹ | 71,111 | \$4,326.9 | 72,315 | \$4,554.1 |
| Part time | | | | |
| Traditional SURS | 3,124 | \$ 21.6 | 3,133 | \$ 21.9 |
| Portable SURS | 472 | 4.2 | 484 | 4.2 |
| SMP | 413 | 3.9 | 403 | 3.7 |
| Total Part Time | 4,009 | \$ 29.7 | 4,020 | \$ 29.8 |
| Total | 75,120 | \$4,356.6 | 76,335 | \$4,583.9 |
| Inactive Members | | | | |
| Traditional SURS | 70,114 | | 70,630 | |
| Portable SURS | 12,930 | | 13,114 | |
| SMP | 10,033 | | 10,280 | |
| Total | 93,077 | | 94,024 | |

¹ Includes 677 police officers and firefighters (including SMP) as of June 30, 2019, and 678 as of June 30, 2020.

| | Annual Benefits | | Annual Benefits | |
|---------------------------|-----------------|------------|-----------------|------------|
| | Number | Benefits | Number | Benefits |
| Benefit Recipients | | | | |
| Retirement | | | | |
| Traditional SURS | 50,900 | \$ 2,110.9 | 51,534 | \$ 2,174.4 |
| Portable SURS | 6,990 | 244.3 | 7,526 | 274.8 |
| Total Retirement | 57,890 | \$ 2,355.2 | 59,060 | \$ 2,449.2 |
| Survivor | | | | |
| Traditional SURS | 8,720 | \$ 177.9 | 8,874 | \$ 189.9 |
| Portable SURS | 253 | 5.0 | 283 | 5.8 |
| Total Survivor | 8,973 | \$ 182.8 | 9,157 | \$ 195.7 |
| Disability | | | | |
| Traditional SURS | 795 | \$ 17.5 | 779 | \$ 17.5 |
| Portable SURS | 184 | 4.9 | 176 | 4.8 |
| Total Disability | 979 | \$ 22.4 | 955 | \$ 22.3 |
| Total | 67,842 | \$ 2,560.4 | 69,172 | \$ 2,667.1 |
| Total Participants | | | | |
| Total Traditional SURS | 175,454 | | 177,093 | |
| Total Portable SURS | 38,021 | | 39,029 | |
| Total SMP | 22,564 | | 23,409 | |
| Total | 236,039 | | 239,531 | |

Values may not add due to rounding.



Table 3B
Summary of Data Characteristics – Full Time Active
(\$ in Millions)

| | June 30, 2019 | | June 30, 2020 | |
|-----------------------------------|---------------|------------|---------------|------------|
| | Number | Earnings | Number | Earnings |
| Active Members | | | | |
| Full time | | | | |
| Continuing Actives - Tier 1 | | | | |
| Traditional SURS | 25,622 | \$ 1,591.3 | 24,231 | \$ 1,559.0 |
| Portable SURS | 9,943 | 775.6 | 9,408 | 759.4 |
| SMP | 5,490 | 465.4 | 5,254 | 464.8 |
| Total | 41,055 | \$ 2,832.3 | 38,893 | \$ 2,783.2 |
| Continuing Actives - Tier 2 | | | | |
| Traditional SURS | 12,206 | \$ 530.0 | 14,065 | \$ 641.2 |
| Portable SURS | 5,945 | 338.3 | 6,724 | 395.5 |
| SMP | 5,422 | 433.6 | 6,193 | 512.5 |
| Total | 23,573 | \$ 1,301.9 | 26,982 | \$ 1,549.3 |
| New Actives - Tier 1 | | | | |
| Traditional SURS | 456 | \$ 11.8 | 378 | \$ 10.3 |
| Portable SURS | 94 | 3.2 | 79 | 3.1 |
| SMP | 67 | 2.2 | 50 | 2.1 |
| Total | 617 | \$ 17.3 | 507 | \$ 15.5 |
| New Actives - Tier 2 | | | | |
| Traditional SURS | 3,517 | \$ 79.0 | 3,469 | \$ 87.6 |
| Portable SURS | 1,210 | 41.3 | 1,235 | 45.7 |
| SMP | 1,139 | 55.2 | 1,229 | 72.8 |
| Total | 5,866 | \$ 175.5 | 5,933 | \$ 206.1 |
| Total Actives - Tier 1 | | | | |
| Traditional SURS | 26,078 | \$ 1,603.1 | 24,609 | \$ 1,569.3 |
| Portable SURS | 10,037 | 778.8 | 9,487 | 762.5 |
| SMP | 5,557 | 467.6 | 5,304 | 467.0 |
| Total | 41,672 | \$ 2,849.5 | 39,400 | \$ 2,798.8 |
| Total Actives - Tier 2 | | | | |
| Traditional SURS | 15,723 | \$ 609.0 | 17,534 | \$ 728.8 |
| Portable SURS | 7,155 | 379.6 | 7,959 | 441.3 |
| SMP | 6,561 | 488.8 | 7,422 | 585.3 |
| Total | 29,439 | \$ 1,477.4 | 32,915 | \$ 1,755.3 |
| Total Actives - Tier 1 and Tier 2 | | | | |
| Traditional SURS | 41,801 | \$ 2,212.0 | 42,143 | \$ 2,298.1 |
| Portable SURS | 17,192 | 1,158.4 | 17,446 | 1,203.8 |
| SMP | 12,118 | 956.4 | 12,726 | 1,052.2 |
| Total | 71,111 | \$ 4,326.9 | 72,315 | \$ 4,554.1 |

Values may not add due to rounding.



Table 3C

Summary of Data Characteristics – Part Time Active/Inactive

(\$ in Millions)

| | June 30, 2019 | | June 30, 2020 | |
|-------------------------------------|---------------|----------|---------------|----------|
| | Number | Earnings | Number | Earnings |
| Active Members | | | | |
| Part time | | | | |
| Total Actives - Tier 1 | | | | |
| Traditional SURS | 900 | \$ 6.0 | 826 | \$ 5.5 |
| Portable SURS | 135 | 1.0 | 152 | 1.0 |
| SMP | 101 | 0.8 | 79 | 0.6 |
| Total | 1,136 | \$ 7.8 | 1,057 | \$ 7.1 |
| Total Actives - Tier 2 | | | | |
| Traditional SURS | 2,224 | \$ 15.6 | 2,307 | \$ 16.4 |
| Portable SURS | 337 | 3.2 | 332 | 3.2 |
| SMP | 312 | 3.1 | 324 | 3.1 |
| Total | 2,873 | \$ 21.9 | 2,963 | \$ 22.7 |
| Total Actives - Tier 1 and Tier 2 | | | | |
| Traditional SURS | 3,124 | \$ 21.6 | 3,133 | \$ 21.9 |
| Portable SURS | 472 | 4.2 | 484 | 4.2 |
| SMP | 413 | 3.9 | 403 | 3.7 |
| Total | 4,009 | \$ 29.7 | 4,020 | \$ 29.8 |
| Inactive Members | | | | |
| Total Inactives - Tier 1 | | | | |
| Traditional SURS | 56,142 | | 54,916 | |
| Portable SURS | 9,275 | | 9,025 | |
| SMP | 7,055 | | 6,926 | |
| Total | 72,472 | | 70,867 | |
| Total Inactives - Tier 2 | | | | |
| Traditional SURS | 13,972 | | 15,714 | |
| Portable SURS | 3,655 | | 4,089 | |
| SMP | 2,978 | | 3,354 | |
| Total | 20,605 | | 23,157 | |
| Total Inactives - Tier 1 and Tier 2 | | | | |
| Traditional SURS | 70,114 | | 70,630 | |
| Portable SURS | 12,930 | | 13,114 | |
| SMP | 10,033 | | 10,280 | |
| Total | 93,077 | | 94,024 | |

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, 2020

| Age | Years of Service | | | | | | | | | Totals |
|---------------|------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|------------------|
| | Under 1 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30 & Over | | |
| Under 20 | 11 | 17 | - | - | - | - | - | - | - | 28 |
| | \$ 80,532 | \$ 288,286 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 368,818 |
| 20-24 | 356 | 876 | 17 | - | - | - | - | - | - | 1,249 |
| | \$ 4,279,382 | \$ 25,575,638 | \$ 478,768 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 30,333,789 |
| 25-29 | 642 | 3,463 | 549 | 6 | - | - | - | - | - | 4,660 |
| | \$ 10,030,684 | \$ 146,968,388 | \$ 24,625,005 | \$ 236,477 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 181,860,554 |
| 30-34 | 594 | 4,224 | 2,261 | 349 | 6 | - | - | - | - | 7,434 |
| | \$ 11,256,198 | \$ 230,536,402 | \$ 124,508,487 | \$ 20,333,989 | \$ 311,872 | \$ - | \$ - | \$ - | \$ - | \$ 386,946,949 |
| 35-39 | 422 | 3,273 | 3,074 | 1,585 | 415 | 20 | - | - | - | 8,789 |
| | \$ 8,492,114 | \$ 193,195,219 | \$ 193,519,255 | \$ 102,877,936 | \$ 26,867,847 | \$ 1,175,273 | \$ - | \$ - | \$ - | \$ 526,127,645 |
| 40-44 | 312 | 2,574 | 2,675 | 2,013 | 1,347 | 402 | 12 | - | - | 9,335 |
| | \$ 6,340,088 | \$ 145,192,141 | \$ 177,243,916 | \$ 150,084,835 | \$ 100,738,379 | \$ 28,393,800 | \$ 709,137 | \$ - | \$ - | \$ 608,702,297 |
| 45-49 | 286 | 1,926 | 2,135 | 1,867 | 1,735 | 1,188 | 314 | 10 | - | 9,461 |
| | \$ 6,066,716 | \$ 102,913,877 | \$ 130,913,117 | \$ 144,424,486 | \$ 148,031,416 | \$ 96,937,454 | \$ 25,386,987 | \$ 576,793 | \$ - | \$ 655,250,845 |
| 50-54 | 224 | 1,667 | 1,917 | 1,647 | 1,727 | 1,512 | 832 | 222 | - | 9,748 |
| | \$ 3,994,225 | \$ 87,019,851 | \$ 110,738,736 | \$ 115,708,109 | \$ 141,690,447 | \$ 131,853,290 | \$ 71,566,280 | \$ 18,040,818 | \$ - | \$ 680,611,755 |
| 55-59 | 179 | 1,309 | 1,698 | 1,475 | 1,640 | 1,472 | 949 | 415 | - | 9,137 |
| | \$ 3,955,605 | \$ 69,760,074 | \$ 91,443,635 | \$ 96,452,113 | \$ 124,431,599 | \$ 126,379,364 | \$ 90,906,051 | \$ 41,193,532 | \$ - | \$ 644,521,971 |
| 60-64 | 74 | 878 | 1,356 | 1,141 | 1,227 | 1,069 | 725 | 462 | - | 6,932 |
| | \$ 1,306,251 | \$ 42,709,339 | \$ 72,490,133 | \$ 71,187,164 | \$ 89,508,340 | \$ 84,338,489 | \$ 75,152,016 | \$ 50,995,144 | \$ - | \$ 487,686,878 |
| 65 & Over | 42 | 578 | 1,060 | 964 | 1,020 | 800 | 609 | 469 | - | 5,542 |
| | \$ 728,698 | \$ 22,685,351 | \$ 44,165,654 | \$ 48,515,930 | \$ 67,663,591 | \$ 58,540,801 | \$ 48,282,436 | \$ 61,121,093 | \$ - | \$ 351,703,553 |
| Total Count | 3,142 | 20,785 | 16,742 | 11,047 | 9,117 | 6,463 | 3,441 | 1,578 | - | 72,315 |
| Total Payroll | \$ 56,530,494 | \$ 1,066,844,567 | \$ 970,126,705 | \$ 749,821,039 | \$ 699,243,491 | \$ 527,618,471 | \$ 312,002,907 | \$ 171,927,380 | \$ - | \$ 4,554,115,054 |

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



Table 5
Distribution of Benefit Recipients by Age
as of June 30, 2020

| <u>Age</u> | <u>Number</u> | <u>Annual Benefit</u> |
|-------------------------------|---------------|-------------------------|
| Retirees and Survivors | | |
| Under 50 | 432 | \$ 3,794,022 |
| 50-54 | 409 | 15,683,779 |
| 55-59 | 3,370 | 118,344,471 |
| 60-64 | 8,278 | 301,935,059 |
| 65-69 | 14,035 | 520,602,485 |
| 70-74 | 15,152 | 585,561,976 |
| 75-79 | 11,335 | 493,170,677 |
| 80-84 | 7,396 | 313,406,684 |
| 85-89 | 4,663 | 189,435,008 |
| 90 & Over | 3,147 | 102,911,499 |
| Total | 68,217 | \$ 2,644,845,660 |
| Disabilitants | | |
| Under 50 | 127 | \$ 3,060,105 |
| 50-54 | 98 | 2,530,977 |
| 55-59 | 194 | 4,893,820 |
| 60-64 | 220 | 5,404,472 |
| 65-69 | 165 | 3,471,094 |
| 70-74 | 83 | 1,684,005 |
| 75-79 | 37 | 660,498 |
| 80-84 | 17 | 402,322 |
| 85-89 | 7 | 97,788 |
| 90 & Over | 7 | 96,264 |
| Total | 955 | \$ 22,301,345 |

Excludes SMP.



APPENDIX C

ACTUARIAL DETERMINATIONS

DRAFT

Table 6
Summary of Actuarial Values
as of June 30, 2020
(\$ 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 | \$14,950.4 | \$ 10,041.2 | \$539.4 | 14.83% |
| b. Death | 285.5 | 184.7 | 11.8 | 0.32% |
| c. Disability | 268.5 | 164.3 | 16.3 | 0.45% |
| d. Termination | 2,169.3 | 1,364.8 | 149.5 | 4.11% |
| Total - Active Members | \$17,673.8 | \$ 11,755.1 | \$717.0 | 19.71% |
| 2. Benefit Recipients | | | | |
| a. Retirement | \$30,762.3 | \$30,762.3 | \$ 0.0 | |
| b. Survivor | 1,829.5 | 1,829.5 | 0.0 | |
| c. Disability | 270.2 | 270.2 | 0.0 | |
| Total - Benefit Recipients | \$32,862.0 | \$32,862.0 | \$ 0.0 | |
| 3. Other Inactive | \$ 2,963.4 | \$ 2,963.4 | | |
| 4. Grand Total | \$53,499.2 | \$47,580.5 | \$717.0 | 19.71% |
| 5. Operating Expense | | | \$ 22.7 | 0.62% |
| 6. Total Normal Cost² | | | \$739.7 | 20.33% |
| 7. Expected Pay During Fiscal Year 2021 for Defined Benefit Plans¹ | | | | \$ 3,637.6 |
| 8. Present Value of Future Salaries (PVFS)¹ | | | | \$ 28,264.8 |

¹ For members currently active as of June 30, 2020, 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 25.39% for Tier 1 members and 11.09% for Tier 2 members.

Excludes SMP.

Values may not add due to rounding.



Table 7
Defined Benefit Plan Development of the Actuarial Value of Assets
for the Year Ending June 30, 2020

| | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--|-----------------------|-----------------------|------------------|------------------|------------------|------------------|
| Beginning of Year: | | | | | | |
| (1) Market Value of Assets | \$19,321,075,501 | \$19,717,347,961 | | | | |
| (2) Actuarial Value of Assets | 19,347,886,135 | 19,661,891,301 | | | | |
| End of Year: | | | | | | |
| (3) Market Value of Assets | 19,717,347,961 | 19,514,557,620 | | | | |
| (4) Net of Contributions and Disbursements | (733,540,302) | (642,232,271) | | | | |
| (5) Total Investment Income | | | | | | |
| =(3)-(1)-(4) | 1,129,812,762 | 439,441,930 | | | | |
| (6) Projected Rate of Return | 6.75% | 6.75% | | | | |
| (7) Projected Investment Income | | | | | | |
| =(1)x(6)+[(1+(6)) ⁵ -1]x(4) | 1,279,819,853 | 1,309,599,572 | | | | |
| (8) Investment Income in Excess of Projected Income | (150,007,091) | (870,157,642) | | | | |
| (9) Excess Investment Income Recognized This Year (5 year recognition) | | | | | | |
| (9a) From This Year | (30,001,418) | (174,031,528) | | | | |
| (9b) From One Year Ago | 36,662,742 | (30,001,418) | \$ (174,031,528) | | | |
| (9c) From Two Years Ago | 155,949,656 | 36,662,742 | (30,001,418) | \$ (174,031,528) | | |
| (9d) From Three Years Ago | (246,425,206) | 155,949,656 | 36,662,742 | (30,001,418) | \$ (174,031,528) | |
| (9e) From Four Years Ago | (148,460,159) | (246,425,207) | 155,949,656 | 36,662,744 | (30,001,419) | \$ (174,031,530) |
| (9f) Total Recognized Investment Gain/(Loss) | (232,274,385) | (257,845,755) | (11,420,548) | (167,370,202) | (204,032,947) | (174,031,530) |
| (10) Change in Actuarial Value of Assets | | | | | | |
| =(4)+(7)+(9f) | 314,005,166 | 409,521,546 | | | | |
| End of Year: | | | | | | |
| (3) Market Value of Assets | 19,717,347,961 | 19,514,557,620 | | | | |
| (11) Final Actuarial Value of Assets | 19,661,891,301 | 20,071,412,847 | | | | |
| (12) Difference Between Market & Actuarial Values | 55,456,660 | (556,855,227) | | | | |
| (13) Actuarial Value Rate of Return | 5.52 % | 5.44 % | | | | |
| (14) Estimated Market Value Rate of Return | 5.96 % | 2.27 % | | | | |
| (15) Ratio of Actuarial Value to Market Value | 100 % | 103 % | | | | |
| (16) SURS Reported Market Value Rate of Return | 6.07 % | 2.64 % | | | | |

Excludes SMP.



Table 8
Analysis of Change in
Actuarial Accrued Liability and Actuarial Value of Assets
for the Year Ending June 30, 2020
(\$ in Millions)

| | | |
|---|-----------|--------------------|
| 1. Actuarial (Gain)/Loss on Actuarial Accrued Liability ("AAL") | | |
| (a) AAL 6/30/2019 | | \$ 46,443.9 |
| (b) Normal Cost FY 2020 | \$ 729.3 | |
| (c) Benefits and Admin Expenses Paid FY 2020 | (2,763.4) | |
| (d) Interest on (a), (b), and (c) at 6.75% | 3,067.4 | |
| (e) Expected AAL 6/30/2020 (a+b+c+d) | | 47,477.3 |
| (f) Actual AAL 6/30/2020 Before Assumption and Method Changes | | 47,579.5 |
| (g) Actuarial (Gain)/Loss on AAL (f-e) | | <u>\$ 102.2</u> |
| (h) Impact of Benefit Changes ¹ | | 1.0 |
| (i) Impact of Change in Actuarial Assumptions and Methods | | 0.0 |
| (j) Actual AAL After Changes (f+h+i) | | <u>\$ 47,580.5</u> |
| 2. Actuarial (Gain)/Loss on Assets | | |
| (a) Actuarial Value of Assets 6/30/2019 | | \$ 19,661.9 |
| (b) Contributions FY 2020 | 2,121.2 | |
| (c) Benefits and Administrative Expenses | (2,763.4) | |
| (d) Interest on (a), (b), and (c) at 6.75% | 1,305.9 | |
| (e) Expected Assets 6/30/2020 (a+b+c+d) | | \$ 20,325.5 |
| (f) Actual Actuarial Value of Assets 6/30/2020 | | 20,071.4 |
| (g) Actuarial (Gain)/Loss on Assets (e-f) | | <u>\$ 254.1</u> |
| 3. Total Actuarial (Gain)/Loss | | |
| (a) (Gain)/Loss on AAL | | \$ 102.2 |
| (b) (Gain)/Loss on Assets | | 254.1 |
| (c) Net (Gain)/Loss (a+b) | | <u>\$ 356.3</u> |

Excludes SMP.

Values may not add due to rounding.

¹Under Public Act 101-610, an additional unreduced retirement eligibility condition was added for Tier 2 police officers and firefighters to retire at age 60 with 20 years of service.



Table 9
Analysis of Change in
Unfunded Actuarial Accrued Liability
for the Year Ending June 30, 2020
(\$ in Millions)

| | | | |
|------|---|----|----------|
| 1. | Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2019 | \$ | 26,782.0 |
| 2. | Contributions | | |
| a. | Contributions equal to normal cost plus interest on UAAL | | |
| i. | Interest on 1) | \$ | 1,807.8 |
| ii. | Member contributions | | 282.4 |
| iii. | Employer/State normal cost | | 447.0 |
| iv. | Interest on ii and iii | | 24.2 |
| v. | Total due | \$ | 2,561.3 |
| b. | Contributions paid based on funding policy | | |
| i. | Member contributions | \$ | 282.4 |
| ii. | Employer/State contributions | | 1,838.8 |
| iii. | Interest on i and ii | | 70.4 |
| iv. | Total paid | \$ | 2,191.6 |
| c. | Expected increase in UAAL (2a.v-2b.iv) | | 369.7 |
| 3. | Expected UAAL at 06/30/2020 (1+2c) | | 27,151.7 |
| 4. | (Gains)/Losses | | |
| a. | Investment income | \$ | 254.1 |
| b. | Salary increases | | 5.4 |
| c. | Demographic and other | | 96.8 |
| d. | Total | \$ | 356.3 |
| 5. | Plan Provision Changes ¹ | | 1.0 |
| 6. | Assumption Changes | | - |
| 7. | Total Change in UAAL (2c + 4d + 5 + 6) | | 727.1 |
| 8. | UAAL at 06/30/2020 (1 + 7) | \$ | 27,509.1 |

Excludes SMP.

Values may not add due to rounding.

¹Under Public Act 101-610, an additional unreduced retirement eligibility condition was added for Tier 2 police officers and firefighters to retire at age 60 with 20 years of service.



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

| | Amount of (Gain) or Loss | | | |
|---|--------------------------|-----------------|-----------------|-----------------|
| | FY 2017 | FY 2018 | FY 2019 | FY 2020 |
| Investment Return ¹ | \$ (142.8) | \$ (92.7) | \$ 234.1 | \$ 254.1 |
| Salary Increase | (144.7) | (8.5) | (55.2) | 5.4 |
| Age and Service Retirement | (26.0) | 16.1 | 53.4 | 6.0 |
| General Employment Termination | 10.7 | 15.3 | 29.3 | 22.3 |
| Disability Incidence | 0.3 | 5.4 | 4.5 | (1.7) |
| In Service Mortality | (7.3) | (3.4) | (5.5) | 1.2 |
| Benefit Recipient ² | 14.2 | 20.1 | 41.8 | 13.3 |
| New Entrants ³ | 84.1 | 76.6 | 87.1 | 83.1 |
| Data Refinements ⁴ | (152.9) | 0.0 | 0.0 | 0.0 |
| Other ⁵ | (28.8) | (13.6) | (35.9) | (27.4) |
| Total Actuarial (Gain)/Loss | \$ (393.2) | \$ 15.3 | \$ 353.6 | \$ 356.3 |
| BOY Actuarial Accrued Liability (AAL) | \$ 40,923.3 | \$ 41,853.3 | \$ 45,258.8 | \$ 46,443.9 |
| (Gain)/Loss as a % of BOY AAL | (1.0)% | 0.0% | 0.8% | 0.8% |
| Total Non-Investment (Gain)/Loss | \$ (250.4) | \$ 108.0 | \$ 119.5 | \$ 102.2 |
| (Gain)/Loss as a % of BOY AAL | (0.6)% | 0.3% | 0.3% | 0.2% |

Excludes SMP.

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

²Benefit 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.

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

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

⁵Includes 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 | 20,071.413 | 47,580.470 | 27,509.057 | 42.18 | 729.332 | 282.364 | 1,414.304 | 1,861.272 | 1,852.066 | 2,299.034 | 2,454.219 |
| 2021 | | | | | | 739.676 | 294.592 | 1,452.696 | 1,897.780 | 1,897.789 | 2,342.873 | 2,501.017 |

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

² Projected for Fiscal Year 2021 and actual for years prior to Fiscal Year 2021.

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 3.25% each year, 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, 24 years remaining at Fiscal Year 2021. (The statutory contribution would apply to Fiscal Year 2022; 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, 2020

Assumes Contributions Based on Table 14 & Investment Return of 6.75% Each Year

(\$ in Millions)

| Fiscal Year Ending | Total Payroll ¹ | SMP 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 |
|--------------------|----------------------------|--------------|-------------------------|---------------------------------|----------------------|--------------|-----------|---------------|---------------|---------------|---------------|--------------|-----------------------------------|--------------------------------------|
| 2020 | \$ 4,583.907 | \$ 1,055.949 | \$ 3,527.958 | \$ 1,838.802 | \$ 282.364 | \$ 2,744.971 | \$ 18.427 | \$ 20,071.413 | \$ 47,580.470 | 42.18 % | \$ 27,509.057 | \$ 132.009 | \$ 1,841.408 | 40.11 % |
| 2021 | 4,819.585 | 1,141.786 | 3,677.799 | 1,954.566 | 294.592 | 2,954.590 | 22.708 | 20,624.911 | 48,480.243 | 42.54 | 27,855.332 | 139.615 | 1,966.283 | 40.55 |
| 2022 | 4,892.989 | 1,192.608 | 3,700.381 | 2,057.686 | 296.400 | 3,015.379 | 23.446 | 21,105.434 | 49,366.678 | 42.75 | 28,261.244 | 146.736 | 2,061.046 | 42.05 |
| 2023 | 4,981.962 | 1,247.474 | 3,734.488 | 2,129.736 | 299.132 | 3,115.551 | 24.208 | 21,566.007 | 50,199.054 | 42.96 | 28,633.047 | 153.373 | 2,129.736 | 42.75 |
| 2024 | 5,080.891 | 1,303.135 | 3,777.756 | 2,210.697 | 302.598 | 3,215.479 | 24.995 | 22,084.614 | 50,975.092 | 43.32 | 28,890.477 | 164.417 | 2,210.697 | 43.51 |
| 2025 | 5,184.626 | 1,359.421 | 3,825.205 | 2,264.740 | 306.399 | 3,321.078 | 25.807 | 22,773.825 | 51,685.207 | 44.06 | 28,911.381 | 174.604 | 2,264.740 | 43.68 |
| 2026 | 5,293.145 | 1,415.941 | 3,877.204 | 2,324.367 | 310.564 | 3,424.900 | 26.646 | 23,467.333 | 52,327.656 | 44.85 | 28,860.323 | 179.149 | 2,324.367 | 43.91 |
| 2027 | 5,406.414 | 1,472.954 | 3,933.460 | 2,373.894 | 315.070 | 3,529.986 | 27.512 | 24,154.011 | 52,897.827 | 45.66 | 28,743.816 | 183.195 | 2,373.894 | 43.91 |
| 2028 | 5,525.376 | 1,530.524 | 3,994.852 | 2,421.720 | 319.988 | 3,629.736 | 28.406 | 24,837.547 | 53,397.800 | 46.51 | 28,560.253 | 191.634 | 2,421.720 | 43.83 |
| 2029 | 5,648.061 | 1,588.895 | 4,059.166 | 2,472.056 | 325.139 | 3,730.896 | 29.329 | 25,519.080 | 53,821.940 | 47.41 | 28,302.860 | 199.325 | 2,472.056 | 43.77 |
| 2030 | 5,773.801 | 1,648.243 | 4,125.558 | 2,519.693 | 330.457 | 3,836.165 | 30.282 | 26,191.581 | 54,160.993 | 48.36 | 27,969.412 | 211.160 | 2,519.693 | 43.64 |
| 2031 | 5,903.125 | 1,709.664 | 4,193.461 | 2,570.022 | 335.896 | 3,936.786 | 31.267 | 26,862.117 | 54,413.989 | 49.37 | 27,551.872 | 221.997 | 2,570.022 | 43.54 |
| 2032 | 6,039.836 | 1,774.398 | 4,265.438 | 2,629.737 | 341.662 | 4,025.587 | 32.283 | 27,552.768 | 54,587.785 | 50.47 | 27,035.017 | 226.944 | 2,629.737 | 43.54 |
| 2033 | 6,183.587 | 1,841.773 | 4,341.814 | 2,698.422 | 347.779 | 4,107.308 | 33.332 | 28,281.808 | 54,685.449 | 51.72 | 26,403.642 | 226.249 | 2,698.422 | 43.64 |
| 2034 | 6,332.784 | 1,911.096 | 4,421.688 | 2,820.964 | 354.177 | 4,184.028 | 34.415 | 29,112.892 | 54,708.205 | 53.21 | 25,595.313 | NA | 2,995.237 | 44.55 |
| 2035 | 6,486.230 | 1,982.291 | 4,503.939 | 2,889.317 | 360.765 | 4,255.835 | 35.534 | 30,002.156 | 54,656.664 | 54.89 | 24,654.508 | NA | 3,067.813 | 44.55 |
| 2036 | 6,644.488 | 2,055.280 | 4,589.209 | 2,959.814 | 367.596 | 4,245.281 | 36.688 | 31,041.051 | 54,611.359 | 56.84 | 23,570.308 | NA | 3,142.665 | 44.55 |
| 2037 | 6,807.163 | 2,130.409 | 4,676.753 | 3,032.278 | 374.608 | 4,299.041 | 37.881 | 32,175.409 | 54,506.652 | 59.03 | 22,331.243 | NA | 3,219.605 | 44.55 |
| 2038 | 6,975.119 | 2,207.927 | 4,767.193 | 3,107.095 | 381.852 | 4,347.286 | 39.112 | 33,420.003 | 54,344.911 | 61.50 | 20,924.908 | NA | 3,299.044 | 44.55 |
| 2039 | 7,148.364 | 2,286.739 | 4,861.625 | 3,184.267 | 389.416 | 4,385.276 | 40.383 | 34,795.593 | 54,134.277 | 64.28 | 19,338.684 | NA | 3,380.984 | 44.55 |
| 2040 | 7,327.371 | 2,368.094 | 4,959.277 | 3,264.006 | 397.238 | 4,414.690 | 41.696 | 36,322.757 | 53,882.047 | 67.41 | 17,559.290 | NA | 3,465.650 | 44.55 |
| 2041 | 7,513.880 | 2,451.785 | 5,062.095 | 3,347.088 | 405.474 | 4,433.527 | 43.051 | 38,026.490 | 53,598.666 | 70.95 | 15,572.176 | NA | 3,553.864 | 44.55 |
| 2042 | 7,706.500 | 2,537.980 | 5,168.520 | 3,432.891 | 413.998 | 4,438.243 | 44.450 | 39,936.367 | 53,299.267 | 74.93 | 13,362.901 | NA | 3,644.968 | 44.55 |
| 2043 | 7,904.557 | 2,625.854 | 5,278.703 | 3,521.116 | 422.824 | 4,431.948 | 45.894 | 42,080.445 | 52,996.414 | 79.40 | 10,915.970 | NA | 3,738.643 | 44.55 |
| 2044 | 8,106.900 | 2,715.668 | 5,391.232 | 3,611.251 | 431.838 | 4,417.435 | 47.386 | 44,485.141 | 52,700.181 | 84.41 | 8,215.040 | NA | 3,834.346 | 44.55 |
| 2045 | 8,313.292 | 2,807.990 | 5,505.302 | 3,703.189 | 440.975 | 4,392.809 | 48.926 | 47,180.438 | 52,422.709 | 90.00 | 5,242.271 | NA | 3,931.964 | 44.55 |

Projections are based on 70% of new hires electing Tier 2 and 30% electing SMP and 76,335 total active members (72,315 full time and 4,020 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 SMP contributions. Includes employer contributions.

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.

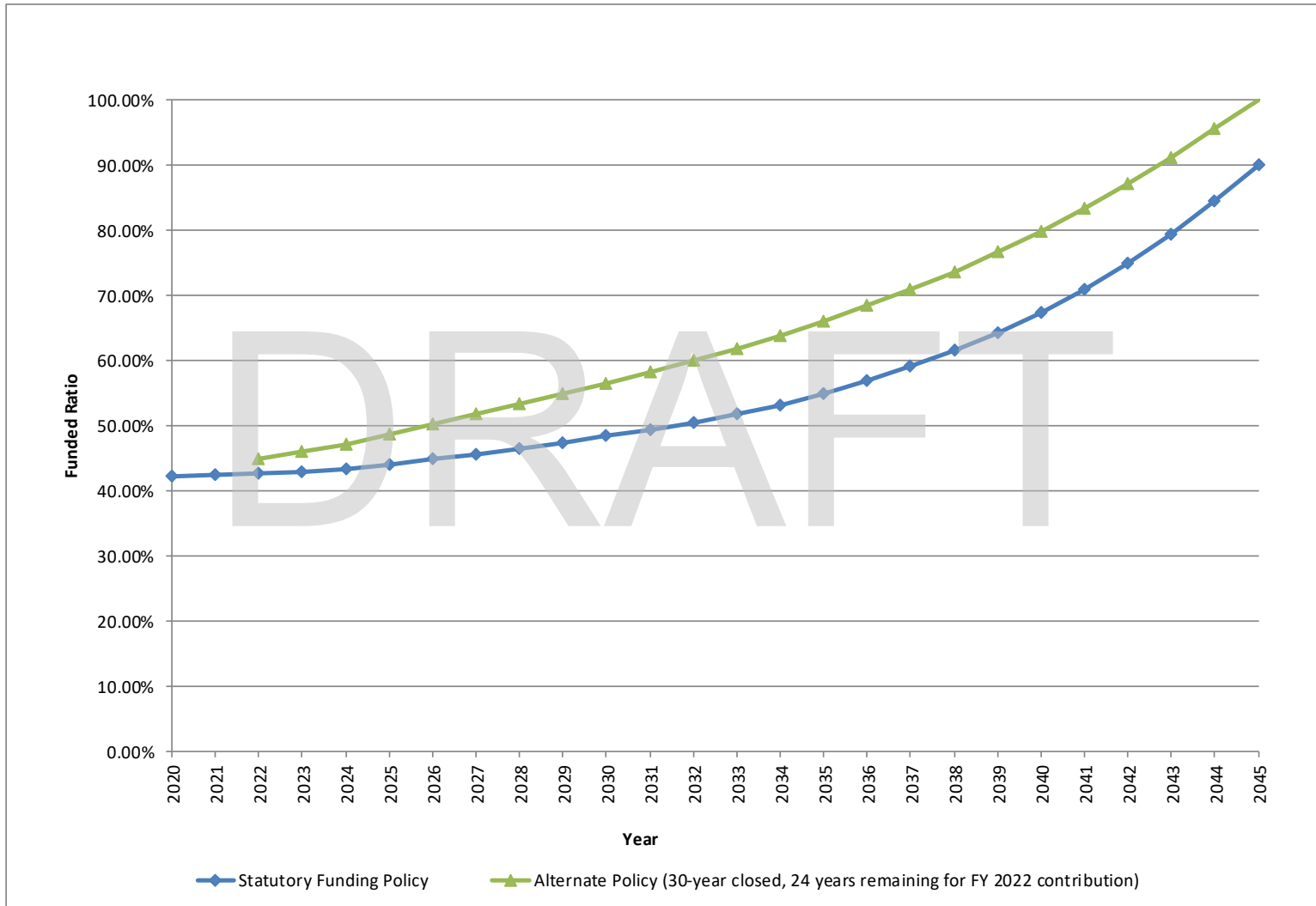


Graph 1

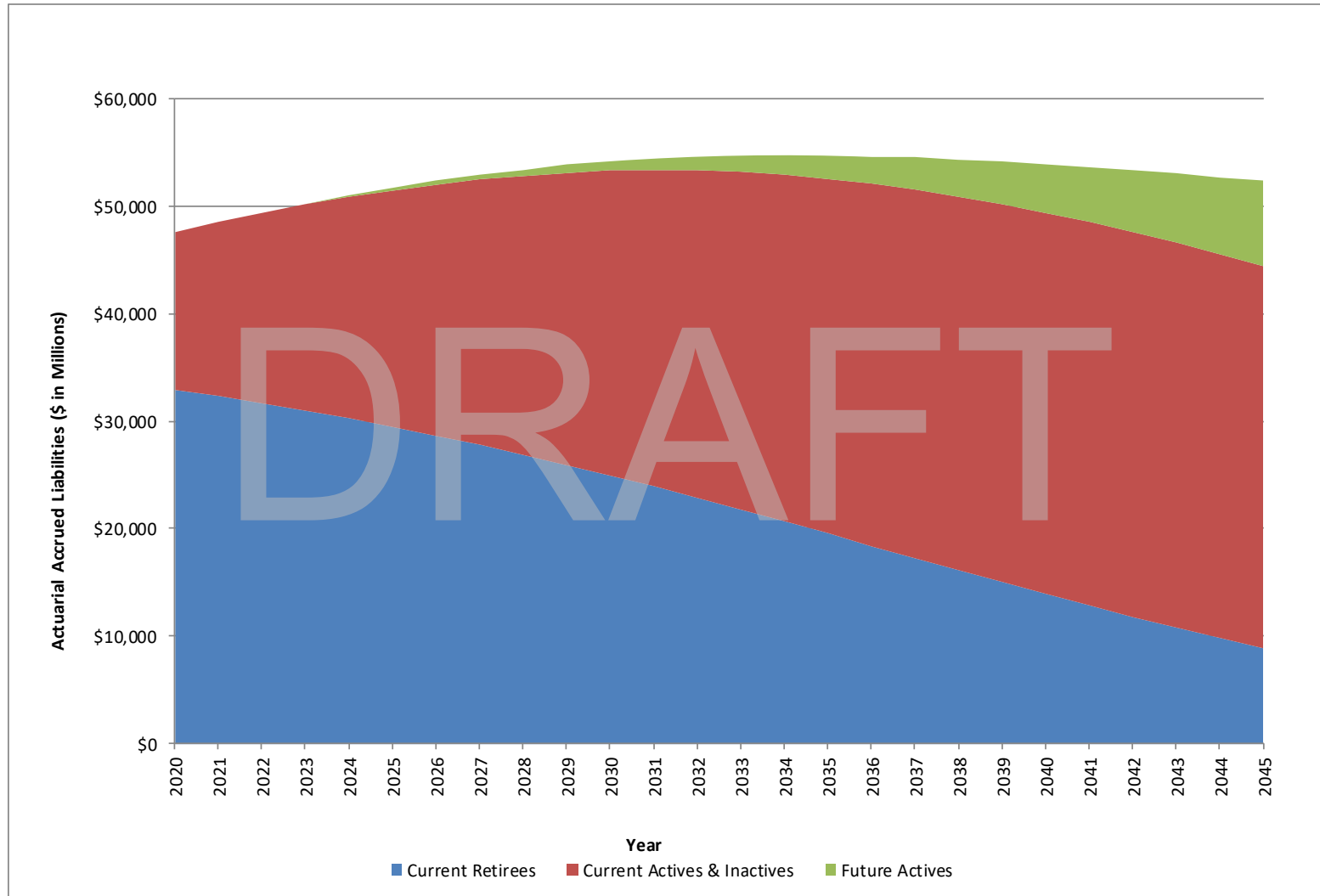
Projected Funded Ratio Based on Statutory Contributions

Actuarial Valuation as of June 30, 2020

(\$ in Millions)



Graph 2
Projected Actuarial Accrued Liabilities
Actuarial Valuation as of June 30, 2020
(\$ in Millions)



Graph 3 Projected Benefit Payments Actuarial Valuation as of June 30, 2020 (\$ in Millions)

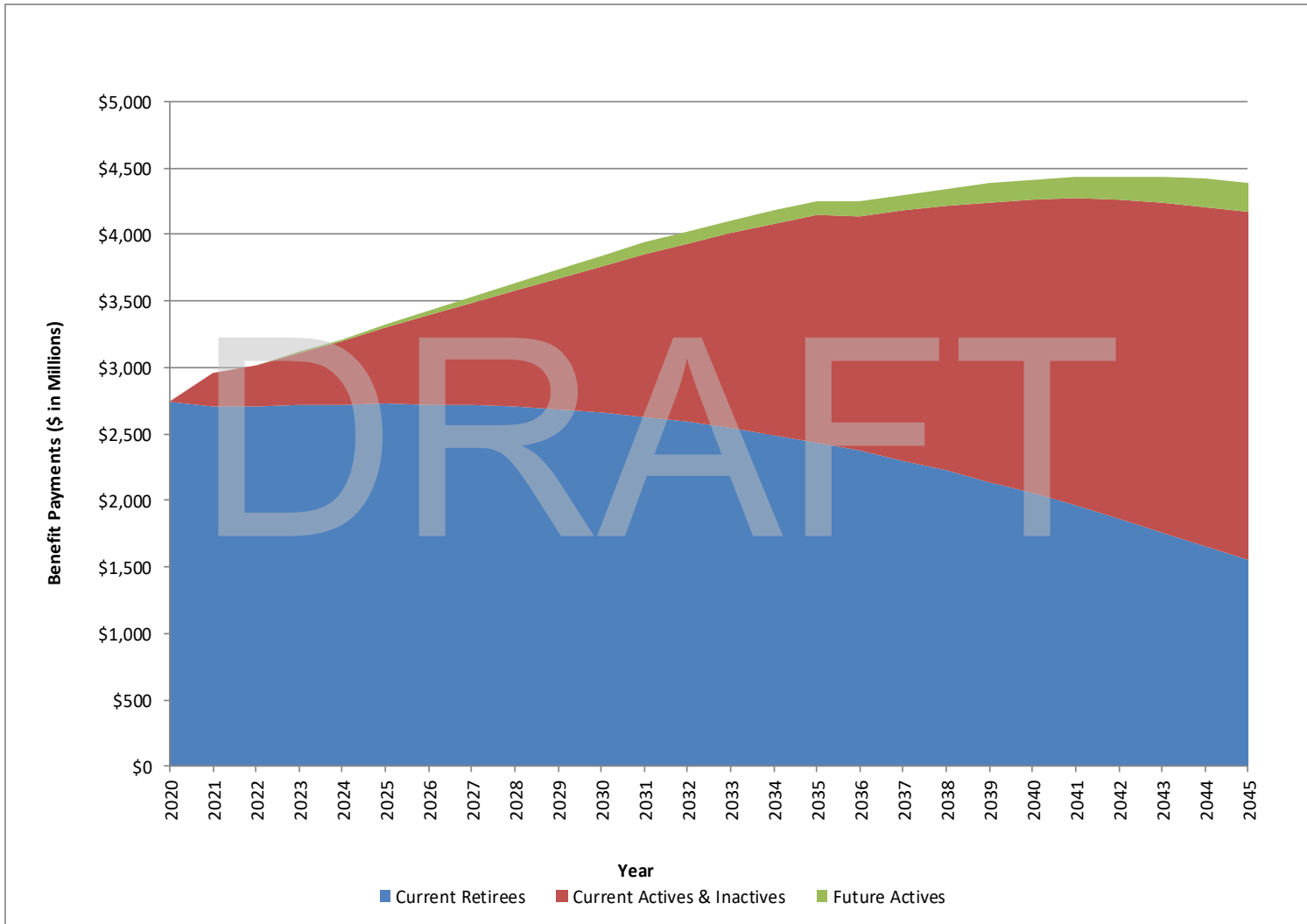


Table 13
Projected Statutory Contributions for the Actuarial Valuation as of June 30, 2020
Before Impact of Bonds Issued in 2004
(\$ in Millions)

| FYE | 70% of New Members to Tier 2, 30% to SMP Combined State and Employer Contribution | | | |
|-------|--|-------------|--------------|-----------------------|
| | SURS Cont. | SMP Cont. | \$ | % of Pay ¹ |
| 2021 | \$ 2,105.898 | \$ 81.230 | \$ 2,187.128 | 45.38 % |
| 2022 | 2,207.781 | 86.033 | 2,293.814 | 46.88 |
| 2023 | 2,283.109 | 88.716 | 2,371.825 | 47.61 |
| 2024 | 2,375.115 | 92.662 | 2,467.777 | 48.57 |
| 2025 | 2,439.343 | 96.653 | 2,535.996 | 48.91 |
| 2026 | 2,503.515 | 100.662 | 2,604.177 | 49.20 |
| 2027 | 2,557.089 | 104.706 | 2,661.795 | 49.23 |
| 2028 | 2,613.355 | 108.791 | 2,722.146 | 49.27 |
| 2029 | 2,671.381 | 112.933 | 2,784.314 | 49.30 |
| 2030 | 2,730.853 | 117.146 | 2,847.999 | 49.33 |
| 2031 | 2,792.020 | 121.505 | 2,913.525 | 49.36 |
| 2032 | 2,856.680 | 126.099 | 2,982.779 | 49.39 |
| 2033 | 2,924.671 | 130.879 | 3,055.550 | 49.41 |
| 2034 | 2,995.237 | 135.798 | 3,131.035 | 49.44 |
| 2035 | 3,067.813 | 140.850 | 3,208.663 | 49.47 |
| 2036 | 3,142.665 | 146.030 | 3,288.695 | 49.50 |
| 2037 | 3,219.605 | 151.362 | 3,370.967 | 49.52 |
| 2038 | 3,299.044 | 156.863 | 3,455.907 | 49.55 |
| 2039 | 3,380.984 | 162.457 | 3,543.441 | 49.57 |
| 2040 | 3,465.650 | 168.231 | 3,633.881 | 49.59 |
| 2041 | 3,553.864 | 174.172 | 3,728.036 | 49.62 |
| 2042 | 3,644.968 | 180.290 | 3,825.258 | 49.64 |
| 2043 | 3,738.643 | 186.529 | 3,925.172 | 49.66 |
| 2044 | 3,834.346 | 192.905 | 4,027.251 | 49.68 |
| 2045 | 3,931.964 | 199.460 | 4,131.424 | 49.70 |
| Total | \$74,335.593 | \$3,362.962 | \$77,698.555 | |

¹ 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, 2020
Including Impact of Bonds Issued in 2004
(\$ in Millions)

| FYE | 70% of New Members to Tier 2, 30% to SMP | | Combined State and Employer Contribution | | Debt Service | | SURS Alternate Policy Contribution ² | | Projected % of Alternate Policy Contributed ³ | Employer Contributions | Federal/Trust Fund Contributions | Qualified Plan State Contribution |
|-------|--|--------------|--|-----------------------|--------------|-----------------------|---|---------------|--|------------------------|----------------------------------|-----------------------------------|
| | SURS Cont. | SMP Cont. | \$ | % of Pay ¹ | \$ | % of Pay ¹ | SURS Cont. | Total (w/SMP) | | | | |
| | | | | | | | | | | | | |
| 2021 | \$ 1,954.566 | \$ 81.230 | \$ 2,035.796 | 42.24 % | \$ 139.615 | 2.90 % | \$ 2,454.219 | \$ 2,535.449 | 80.29 % | \$ 5.529 | \$ 52.500 | \$ 1,977.767 |
| 2022 | 2,057.686 | 86.033 | 2,143.719 | 43.81 | 146.736 | 3.00 | 2,501.017 | 2,587.050 | 82.86 | 5.369 | 57.000 | 2,081.350 |
| 2023 | 2,129.736 | 88.716 | 2,218.452 | 44.53 | 153.373 | 3.08 | 2,511.895 | 2,600.611 | 85.31 | 8.411 | NA | 2,210.041 |
| 2024 | 2,210.697 | 92.662 | 2,303.359 | 45.33 | 164.417 | 3.24 | 2,535.939 | 2,628.601 | 87.63 | 8.109 | NA | 2,295.250 |
| 2025 | 2,264.740 | 96.653 | 2,361.393 | 45.55 | 174.604 | 3.37 | 2,563.513 | 2,660.166 | 88.77 | 7.990 | NA | 2,353.403 |
| 2026 | 2,324.367 | 100.662 | 2,425.029 | 45.81 | 179.149 | 3.38 | 2,588.060 | 2,688.722 | 90.19 | 7.881 | NA | 2,417.148 |
| 2027 | 2,373.894 | 104.706 | 2,478.600 | 45.85 | 183.195 | 3.39 | 2,597.345 | 2,702.051 | 91.73 | 7.755 | NA | 2,470.845 |
| 2028 | 2,421.720 | 108.791 | 2,530.511 | 45.80 | 191.634 | 3.47 | 2,613.502 | 2,722.293 | 92.96 | 7.597 | NA | 2,522.914 |
| 2029 | 2,472.056 | 112.933 | 2,584.989 | 45.77 | 199.325 | 3.53 | 2,630.899 | 2,743.832 | 94.21 | 7.489 | NA | 2,577.500 |
| 2030 | 2,519.693 | 117.146 | 2,636.839 | 45.67 | 211.160 | 3.66 | 2,648.741 | 2,765.887 | 95.33 | 7.352 | NA | 2,629.487 |
| 2031 | 2,570.022 | 121.505 | 2,691.527 | 45.59 | 221.997 | 3.76 | 2,666.589 | 2,788.094 | 96.54 | 7.205 | NA | 2,684.322 |
| 2032 | 2,629.737 | 126.099 | 2,755.836 | 45.63 | 226.944 | 3.76 | 2,684.289 | 2,810.388 | 98.06 | 7.000 | NA | 2,748.836 |
| 2033 | 2,698.422 | 130.879 | 2,829.301 | 45.76 | 226.249 | 3.66 | 2,702.053 | 2,832.932 | 99.87 | 6.697 | NA | 2,822.604 |
| 2034 | 2,820.964 | 135.798 | 2,956.762 | 46.69 | | | 2,723.070 | 2,858.868 | 103.42 | 6.421 | NA | 2,950.341 |
| 2035 | 2,889.317 | 140.850 | 3,030.167 | 46.72 | | | 2,744.565 | 2,885.415 | 105.02 | 6.133 | NA | 3,024.034 |
| 2036 | 2,959.814 | 146.030 | 3,105.844 | 46.74 | | | 2,765.776 | 2,911.806 | 106.66 | 5.840 | NA | 3,100.004 |
| 2037 | 3,032.278 | 151.362 | 3,183.640 | 46.77 | | | 2,786.207 | 2,937.569 | 108.38 | 5.507 | NA | 3,178.133 |
| 2038 | 3,107.095 | 156.863 | 3,263.958 | 46.79 | | | 2,805.461 | 2,962.324 | 110.18 | 5.147 | NA | 3,258.811 |
| 2039 | 3,184.267 | 162.457 | 3,346.724 | 46.82 | | | 2,824.945 | 2,987.402 | 112.03 | 4.748 | NA | 3,341.976 |
| 2040 | 3,264.006 | 168.231 | 3,432.237 | 46.84 | | | 2,842.441 | 3,010.672 | 114.00 | 4.324 | NA | 3,427.913 |
| 2041 | 3,347.088 | 174.172 | 3,521.260 | 46.86 | | | 2,856.855 | 3,031.027 | 116.17 | 3.897 | NA | 3,517.363 |
| 2042 | 3,432.891 | 180.290 | 3,613.181 | 46.88 | | | 2,866.041 | 3,046.331 | 118.61 | 3.462 | NA | 3,609.719 |
| 2043 | 3,521.116 | 186.529 | 3,707.645 | 46.91 | | | 2,865.350 | 3,051.879 | 121.49 | 3.054 | NA | 3,704.591 |
| 2044 | 3,611.251 | 192.905 | 3,804.156 | 46.92 | | | 2,841.755 | 3,034.660 | 125.36 | 2.651 | NA | 3,801.505 |
| 2045 | 3,703.189 | 199.460 | 3,902.649 | 46.94 | | | 2,745.020 | 2,944.480 | 132.54 | 2.297 | NA | 3,900.352 |
| Total | \$ 69,500.612 | \$ 3,362.962 | \$ 72,863.574 | | \$ 2,418.397 | | \$ 67,365.549 | \$ 70,728.511 | | \$ 147.864 | \$ 109.500 | \$ 72,606.210 |

¹ 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.

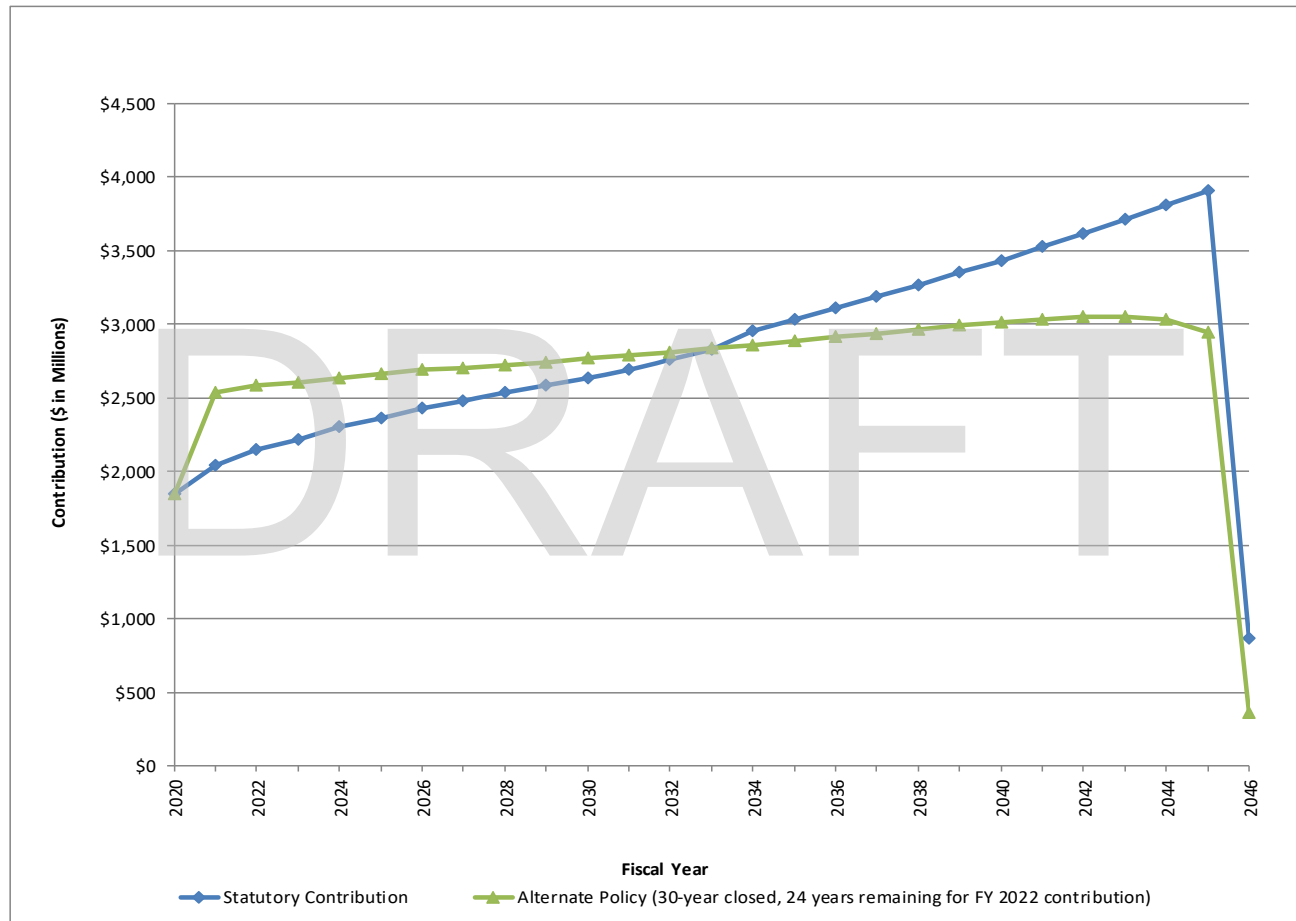
² Alternate funding policy of normal cost plus 30-year closed period amortization of the unfunded liability as a level percentage of defined benefit plan capped payroll beginning in FY 2016 with 24 years remaining as of FY 2022.

³ 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) (24 years remaining in Amortization Period for FY 2022 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 24 years remaining in FY 2022. Alternate funding policy contributions based on actual assets as of the current valuation and the alternate policy contribution being made.

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

| Fiscal Year Ending | Total Payroll ¹ | SMP 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 |
|--------------------|----------------------------|--------------|-------------------------|---------------------------------|----------------------|--------------|-----------|---------------|---------------|---------------|---------------|--------------|-----------------------------------|--------------------------------------|
| 2020 | \$ 4,583.907 | \$ 1,055.949 | \$ 3,527.958 | \$ 1,838.802 | \$ 282.364 | \$ 2,744.971 | \$ 18.427 | \$ 20,071.413 | \$ 47,580.470 | 42.18 % | \$ 27,509.057 | \$ 132.009 | \$ 1,841.408 | 40.11 % |
| 2021 | 4,819.585 | 1,141.786 | 3,677.799 | 1,954.566 | 294.592 | 2,954.590 | 22.708 | 20,673.919 | 48,480.243 | 42.64 | 27,806.324 | 139.615 | 1,966.283 | 40.55 |
| 2022 | 4,892.989 | 1,192.608 | 3,700.381 | 2,057.686 | 296.400 | 3,015.379 | 23.446 | 21,361.937 | 49,366.678 | 43.27 | 28,004.741 | 146.736 | 2,061.046 | 42.05 |
| 2023 | 4,981.962 | 1,247.474 | 3,734.488 | 2,126.440 | 299.132 | 3,115.551 | 24.208 | 22,065.971 | 50,199.054 | 43.96 | 28,133.083 | 153.373 | 2,126.440 | 42.68 |
| 2024 | 5,080.891 | 1,303.135 | 3,777.756 | 2,193.691 | 302.598 | 3,215.479 | 24.995 | 22,786.533 | 50,975.092 | 44.70 | 28,188.558 | 164.417 | 2,193.691 | 43.18 |
| 2025 | 5,184.626 | 1,359.421 | 3,825.205 | 2,231.650 | 306.399 | 3,321.078 | 25.807 | 23,488.936 | 51,685.207 | 45.45 | 28,196.271 | 174.604 | 2,231.650 | 43.04 |
| 2026 | 5,293.145 | 1,415.941 | 3,877.204 | 2,277.470 | 310.564 | 3,424.900 | 26.646 | 24,182.260 | 52,327.656 | 46.21 | 28,145.396 | 179.149 | 2,277.470 | 43.03 |
| 2027 | 5,406.414 | 1,472.954 | 3,933.460 | 2,325.994 | 315.070 | 3,529.986 | 27.512 | 24,867.704 | 52,897.827 | 47.01 | 28,030.123 | 183.195 | 2,325.994 | 43.02 |
| 2028 | 5,525.376 | 1,530.524 | 3,994.852 | 2,372.766 | 319.988 | 3,629.736 | 28.406 | 25,548.836 | 53,397.800 | 47.85 | 27,848.964 | 191.634 | 2,372.766 | 42.94 |
| 2029 | 5,648.061 | 1,588.895 | 4,059.166 | 2,422.015 | 325.139 | 3,730.896 | 29.329 | 26,226.678 | 53,821.940 | 48.73 | 27,595.262 | 199.325 | 2,422.015 | 42.88 |
| 2030 | 5,773.801 | 1,648.243 | 4,125.558 | 2,468.537 | 330.457 | 3,836.165 | 30.282 | 26,894.088 | 54,160.993 | 49.66 | 27,266.905 | 211.160 | 2,468.537 | 42.75 |
| 2031 | 5,903.125 | 1,709.664 | 4,193.461 | 2,517.721 | 335.896 | 3,936.786 | 31.267 | 27,558.006 | 54,413.989 | 50.65 | 26,855.983 | 221.997 | 2,517.721 | 42.65 |
| 2032 | 6,039.836 | 1,774.398 | 4,265.438 | 2,576.224 | 341.662 | 4,025.587 | 32.283 | 28,240.341 | 54,587.785 | 51.73 | 26,347.444 | 226.944 | 2,576.224 | 42.65 |
| 2033 | 6,183.587 | 1,841.773 | 4,341.814 | 2,643.636 | 347.779 | 4,107.308 | 33.332 | 28,959.187 | 54,685.449 | 52.96 | 25,726.263 | 226.249 | 2,643.636 | 42.75 |
| 2034 | 6,332.784 | 1,911.096 | 4,421.688 | 2,748.666 | 354.177 | 4,184.028 | 34.415 | 29,761.296 | 54,708.205 | 54.40 | 24,946.909 | NA | 2,939.129 | 43.40 |
| 2035 | 6,486.230 | 1,982.291 | 4,503.939 | 2,815.267 | 360.765 | 4,255.835 | 35.534 | 30,617.820 | 54,656.664 | 56.02 | 24,038.845 | NA | 3,010.345 | 43.40 |
| 2036 | 6,644.488 | 2,055.280 | 4,589.209 | 2,883.958 | 367.596 | 4,245.281 | 36.688 | 31,619.898 | 54,611.359 | 57.90 | 22,991.461 | NA | 3,083.795 | 43.40 |
| 2037 | 6,807.163 | 2,130.409 | 4,676.753 | 2,954.564 | 374.608 | 4,299.041 | 37.881 | 32,713.034 | 54,506.652 | 60.02 | 21,793.618 | NA | 3,159.294 | 43.40 |
| 2038 | 6,975.119 | 2,207.927 | 4,767.193 | 3,027.464 | 381.852 | 4,347.286 | 39.112 | 33,911.644 | 54,344.911 | 62.40 | 20,433.267 | NA | 3,237.245 | 43.40 |
| 2039 | 7,148.364 | 2,286.739 | 4,861.625 | 3,102.659 | 389.416 | 4,385.276 | 40.383 | 35,236.101 | 54,134.277 | 65.09 | 18,898.176 | NA | 3,317.651 | 43.40 |
| 2040 | 7,327.371 | 2,368.094 | 4,959.277 | 3,180.354 | 397.238 | 4,414.690 | 41.696 | 36,706.570 | 53,882.047 | 68.12 | 17,175.477 | NA | 3,400.730 | 43.40 |
| 2041 | 7,513.880 | 2,451.785 | 5,062.095 | 3,261.306 | 405.474 | 4,433.527 | 43.051 | 38,347.582 | 53,598.666 | 71.55 | 15,251.084 | NA | 3,487.292 | 43.40 |
| 2042 | 7,706.500 | 2,537.980 | 5,168.520 | 3,344.911 | 413.998 | 4,438.243 | 44.450 | 40,188.231 | 53,299.267 | 75.40 | 13,111.037 | NA | 3,576.689 | 43.40 |
| 2043 | 7,904.557 | 2,625.854 | 5,278.703 | 3,430.875 | 422.824 | 4,431.948 | 45.894 | 42,256.072 | 52,996.414 | 79.73 | 10,740.342 | NA | 3,668.610 | 43.40 |
| 2044 | 8,106.900 | 2,715.668 | 5,391.232 | 3,518.699 | 431.838 | 4,417.435 | 47.386 | 44,576.999 | 52,700.181 | 84.59 | 8,123.182 | NA | 3,762.520 | 43.40 |
| 2045 | 8,313.292 | 2,807.990 | 5,505.302 | 3,608.281 | 440.975 | 4,392.809 | 48.926 | 47,180.438 | 52,422.709 | 90.00 | 5,242.271 | NA | 3,858.309 | 43.40 |

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 SMP 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, 2020
after Bonds (Valuation Basis) and before Bonds (Hypothetical Basis)

| | | After Bonds (Valuation Basis) | Before Bonds (Hypothetical) |
|----|--|----------------------------------|--------------------------------|
| 1 | Market Value at 6/30/2019 | \$19,717,347,961 | \$17,353,349,341 |
| 2a | Employer and Non-Employer Contributing Entity Contribution | 1,838,802,334 | 1,973,417,913 |
| 2b | Member Contributions | 282,363,846 | 282,363,846 |
| 2c | Benefits and Expenses | 2,763,398,451 | 2,763,398,451 |
| 2d | Net Non-Investment Cash Flow | (642,232,271) | (507,616,692) |
| 3 | Investment Return (Based on Estimated Rate of 2.27%) | 439,441,930 | 387,440,202 |
| 4 | Expected Return (Based on Estimated Rate of 6.75%) | 1,309,599,572 | 1,154,498,757 |
| 5 | Market Value at 6/30/2020 (1+2d+3) | 19,514,557,620 | 17,233,172,851 |
| 6 | Expected Market Value at 6/30/2020 (1+2d+4) | 20,384,715,262 | 18,000,231,406 |
| 7a | Actuarial Gain/(Loss) Current Year | (870,157,642) | (767,058,555) |
| 7b | Actuarial Gain/(Loss) 1 Year Prior | (150,007,091) | (131,557,100) |
| 7c | Actuarial Gain/(Loss) 2 Years Prior | 183,313,712 | 161,071,013 |
| 7d | Actuarial Gain/(Loss) 3 Years Prior | 779,748,280 | 680,927,833 |
| 7e | Actuarial Gain/(Loss) 4 Years Prior | (1,232,126,031) | (1,069,638,132) |
| 8 | Actuarial Value at 6/30/2019 | 19,661,891,301 | 17,303,508,886 |
| 9 | Actuarial Value at 6/30/2020 (8+2d+4+.2*(7a+7b+7c+7d+7e)) | 20,071,412,847 | 17,725,139,963 |

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 | SMP Payroll | DB Payroll ¹ | SURS Contributions ² | Member Contributions | Benefits | Expenses | Assets EOY | AAL | Funding Ratio | UAAL | Debt Service | SURS Contribution % of Total Payroll |
|--------------------|----------------------------|--------------|-------------------------|---------------------------------|----------------------|--------------|-----------|---------------|---------------|---------------|---------------|--------------|--------------------------------------|
| 2020 | \$ 4,583.907 | \$ 1,055.949 | \$ 3,527.958 | \$ 1,973.418 | \$ 282.364 | \$ 2,744.971 | \$ 18.427 | \$ 17,725.140 | \$ 47,580.470 | 37.25 % | \$ 29,855.330 | NA | 43.05 % |
| 2021 | 4,819.585 | 1,141.786 | 3,677.799 | 2,105.898 | 294.592 | 2,954.590 | 22.708 | 18,281.098 | 48,480.243 | 37.71 | 30,199.146 | NA | 43.69 |
| 2022 | 4,892.989 | 1,192.608 | 3,700.381 | 2,207.781 | 296.400 | 3,015.379 | 23.446 | 18,782.727 | 49,366.678 | 38.05 | 30,583.951 | NA | 45.12 |
| 2023 | 4,981.962 | 1,247.474 | 3,734.488 | 2,283.109 | 299.132 | 3,115.551 | 24.208 | 19,272.324 | 50,199.054 | 38.39 | 30,926.730 | NA | 45.83 |
| 2024 | 5,080.891 | 1,303.135 | 3,777.756 | 2,375.115 | 302.598 | 3,215.479 | 24.995 | 19,827.995 | 50,975.092 | 38.90 | 31,147.096 | NA | 46.75 |
| 2025 | 5,184.626 | 1,359.421 | 3,825.205 | 2,439.343 | 306.399 | 3,321.078 | 25.807 | 20,545.285 | 51,685.207 | 39.75 | 31,139.921 | NA | 47.05 |
| 2026 | 5,293.145 | 1,415.941 | 3,877.204 | 2,503.515 | 310.564 | 3,424.900 | 26.646 | 21,273.462 | 52,327.656 | 40.65 | 31,054.193 | NA | 47.30 |
| 2027 | 5,406.414 | 1,472.954 | 3,933.460 | 2,557.089 | 315.070 | 3,529.986 | 27.512 | 22,001.330 | 52,897.827 | 41.59 | 30,896.497 | NA | 47.30 |
| 2028 | 5,525.376 | 1,530.524 | 3,994.852 | 2,613.355 | 319.988 | 3,629.736 | 28.406 | 22,737.557 | 53,397.800 | 42.58 | 30,660.243 | NA | 47.30 |
| 2029 | 5,648.061 | 1,588.895 | 4,059.166 | 2,671.381 | 325.139 | 3,730.896 | 29.329 | 23,483.284 | 53,821.940 | 43.63 | 30,338.657 | NA | 47.30 |
| 2030 | 5,773.801 | 1,648.243 | 4,125.558 | 2,730.853 | 330.457 | 3,836.165 | 30.282 | 24,236.539 | 54,160.993 | 44.75 | 29,924.455 | NA | 47.30 |
| 2031 | 5,903.125 | 1,709.664 | 4,193.461 | 2,792.020 | 335.896 | 3,936.786 | 31.267 | 25,004.477 | 54,413.989 | 45.95 | 29,409.512 | NA | 47.30 |
| 2032 | 6,039.836 | 1,774.398 | 4,265.438 | 2,856.680 | 341.662 | 4,025.587 | 32.283 | 25,804.215 | 54,587.785 | 47.27 | 28,783.570 | NA | 47.30 |
| 2033 | 6,183.587 | 1,841.773 | 4,341.814 | 2,924.671 | 347.779 | 4,107.308 | 33.332 | 26,648.987 | 54,685.449 | 48.73 | 28,036.462 | NA | 47.30 |
| 2034 | 6,332.784 | 1,911.096 | 4,421.688 | 2,995.237 | 354.177 | 4,184.028 | 34.415 | 27,549.915 | 54,708.205 | 50.36 | 27,158.290 | NA | 47.30 |
| 2035 | 6,486.230 | 1,982.291 | 4,503.939 | 3,067.813 | 360.765 | 4,255.835 | 35.534 | 28,518.100 | 54,656.664 | 52.18 | 26,138.564 | NA | 47.30 |
| 2036 | 6,644.488 | 2,055.280 | 4,589.209 | 3,142.665 | 367.596 | 4,245.281 | 36.688 | 29,645.743 | 54,611.359 | 54.28 | 24,965.616 | NA | 47.30 |
| 2037 | 6,807.163 | 2,130.409 | 4,676.753 | 3,219.605 | 374.608 | 4,299.041 | 37.881 | 30,879.464 | 54,506.652 | 56.65 | 23,627.188 | NA | 47.30 |
| 2038 | 6,975.119 | 2,207.927 | 4,767.193 | 3,299.044 | 381.852 | 4,347.286 | 39.112 | 32,234.904 | 54,344.911 | 59.32 | 22,110.007 | NA | 47.30 |
| 2039 | 7,148.364 | 2,286.739 | 4,861.625 | 3,380.984 | 389.416 | 4,385.276 | 40.383 | 33,733.747 | 54,134.277 | 62.31 | 20,400.529 | NA | 47.30 |
| 2040 | 7,327.371 | 2,368.094 | 4,959.277 | 3,465.650 | 397.238 | 4,414.690 | 41.696 | 35,397.574 | 53,882.047 | 65.69 | 18,484.472 | NA | 47.30 |
| 2041 | 7,513.880 | 2,451.785 | 5,062.095 | 3,553.864 | 405.474 | 4,433.527 | 43.051 | 37,252.499 | 53,598.666 | 69.50 | 16,346.167 | NA | 47.30 |
| 2042 | 7,706.500 | 2,537.980 | 5,168.520 | 3,644.968 | 413.998 | 4,438.243 | 44.450 | 39,329.248 | 53,299.267 | 73.79 | 13,970.019 | NA | 47.30 |
| 2043 | 7,904.557 | 2,625.854 | 5,278.703 | 3,738.643 | 422.824 | 4,431.948 | 45.894 | 41,657.095 | 52,996.414 | 78.60 | 11,339.320 | NA | 47.30 |
| 2044 | 8,106.900 | 2,715.668 | 5,391.232 | 3,834.346 | 431.838 | 4,417.435 | 47.386 | 44,263.717 | 52,700.181 | 83.99 | 8,436.464 | NA | 47.30 |
| 2045 | 8,313.292 | 2,807.990 | 5,505.302 | 3,931.964 | 440.975 | 4,392.809 | 48.926 | 47,180.438 | 52,422.709 | 90.00 | 5,242.271 | NA | 47.30 |

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 SMP contributions. Includes employer contributions.



Table 18

Hypothetical Assets to Determine Maximum Contribution

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

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

| Fiscal Year Ending | Total Payroll ¹ | SMP Payroll | DB Payroll ¹ | SURS Contributions ² | Member Contributions | Benefits | Expenses | Assets EOY | AAL | Funding Ratio | UAAL | Debt Service | SURS Contribution % of Total Payroll |
|--------------------|----------------------------|--------------|-------------------------|---------------------------------|----------------------|--------------|-----------|---------------|---------------|---------------|---------------|--------------|--------------------------------------|
| 2020 | \$ 4,583.907 | \$ 1,055.949 | \$ 3,527.958 | \$ 1,973.418 | \$ 282.364 | \$ 2,744.971 | \$ 18.427 | \$ 17,725.140 | \$ 47,580.470 | 37.25 % | \$ 29,855.330 | NA | 43.05 % |
| 2021 | 4,819.585 | 1,141.786 | 3,677.799 | 2,105.898 | 294.592 | 2,954.590 | 22.708 | 18,325.629 | 48,480.243 | 37.80 | 30,154.614 | NA | 43.69 |
| 2022 | 4,892.989 | 1,192.608 | 3,700.381 | 2,207.781 | 296.400 | 3,015.379 | 23.446 | 19,010.217 | 49,366.678 | 38.51 | 30,356.462 | NA | 45.12 |
| 2023 | 4,981.962 | 1,247.474 | 3,734.488 | 2,279.812 | 299.132 | 3,115.551 | 24.208 | 19,713.973 | 50,199.054 | 39.27 | 30,485.081 | NA | 45.76 |
| 2024 | 5,080.891 | 1,303.135 | 3,777.756 | 2,358.109 | 302.598 | 3,215.479 | 24.995 | 20,445.651 | 50,975.092 | 40.11 | 30,529.440 | NA | 46.41 |
| 2025 | 5,184.626 | 1,359.421 | 3,825.205 | 2,406.254 | 306.399 | 3,321.078 | 25.807 | 21,170.445 | 51,685.207 | 40.96 | 30,514.762 | NA | 46.41 |
| 2026 | 5,293.145 | 1,415.941 | 3,877.204 | 2,456.619 | 310.564 | 3,424.900 | 26.646 | 21,892.367 | 52,327.656 | 41.84 | 30,435.289 | NA | 46.41 |
| 2027 | 5,406.414 | 1,472.954 | 3,933.460 | 2,509.189 | 315.070 | 3,529.986 | 27.512 | 22,612.520 | 52,897.827 | 42.75 | 30,285.307 | NA | 46.41 |
| 2028 | 5,525.376 | 1,530.524 | 3,994.852 | 2,564.400 | 319.988 | 3,629.736 | 28.406 | 23,339.423 | 53,397.800 | 43.71 | 30,058.377 | NA | 46.41 |
| 2029 | 5,648.061 | 1,588.895 | 4,059.166 | 2,621.340 | 325.139 | 3,730.896 | 29.329 | 24,074.073 | 53,821.940 | 44.73 | 29,747.868 | NA | 46.41 |
| 2030 | 5,773.801 | 1,648.243 | 4,125.558 | 2,679.698 | 330.457 | 3,836.165 | 30.282 | 24,814.352 | 54,160.993 | 45.82 | 29,346.641 | NA | 46.41 |
| 2031 | 5,903.125 | 1,709.664 | 4,193.461 | 2,739.718 | 335.896 | 3,936.786 | 31.267 | 25,567.255 | 54,413.989 | 46.99 | 28,846.734 | NA | 46.41 |
| 2032 | 6,039.836 | 1,774.398 | 4,265.438 | 2,803.168 | 341.662 | 4,025.587 | 32.283 | 26,349.693 | 54,587.785 | 48.27 | 28,238.093 | NA | 46.41 |
| 2033 | 6,183.587 | 1,841.773 | 4,341.814 | 2,869.885 | 347.779 | 4,107.308 | 33.332 | 27,174.680 | 54,685.449 | 49.69 | 27,510.770 | NA | 46.41 |
| 2034 | 6,332.784 | 1,911.096 | 4,421.688 | 2,939.129 | 354.177 | 4,184.028 | 34.415 | 28,053.120 | 54,708.205 | 51.28 | 26,655.085 | NA | 46.41 |
| 2035 | 6,486.230 | 1,982.291 | 4,503.939 | 3,010.345 | 360.765 | 4,255.835 | 35.534 | 28,995.897 | 54,656.664 | 53.05 | 25,660.767 | NA | 46.41 |
| 2036 | 6,644.488 | 2,055.280 | 4,589.209 | 3,083.795 | 367.596 | 4,245.281 | 36.688 | 30,094.967 | 54,611.359 | 55.11 | 24,516.392 | NA | 46.41 |
| 2037 | 6,807.163 | 2,130.409 | 4,676.753 | 3,159.294 | 374.608 | 4,299.041 | 37.881 | 31,296.698 | 54,506.652 | 57.42 | 23,209.954 | NA | 46.41 |
| 2038 | 6,975.119 | 2,207.927 | 4,767.193 | 3,237.245 | 381.852 | 4,347.286 | 39.112 | 32,616.451 | 54,344.911 | 60.02 | 21,728.460 | NA | 46.41 |
| 2039 | 7,148.364 | 2,286.739 | 4,861.625 | 3,317.651 | 389.416 | 4,385.276 | 40.383 | 34,075.612 | 54,134.277 | 62.95 | 20,058.665 | NA | 46.41 |
| 2040 | 7,327.371 | 2,368.094 | 4,959.277 | 3,400.730 | 397.238 | 4,414.690 | 41.696 | 35,695.440 | 53,882.047 | 66.25 | 18,186.607 | NA | 46.41 |
| 2041 | 7,513.880 | 2,451.785 | 5,062.095 | 3,487.292 | 405.474 | 4,433.527 | 43.051 | 37,501.688 | 53,598.666 | 69.97 | 16,096.978 | NA | 46.41 |
| 2042 | 7,706.500 | 2,537.980 | 5,168.520 | 3,576.689 | 413.998 | 4,438.243 | 44.450 | 39,524.712 | 53,299.267 | 74.16 | 13,774.555 | NA | 46.41 |
| 2043 | 7,904.557 | 2,625.854 | 5,278.703 | 3,668.610 | 422.824 | 4,431.948 | 45.894 | 41,793.394 | 52,996.414 | 78.86 | 11,203.021 | NA | 46.41 |
| 2044 | 8,106.900 | 2,715.668 | 5,391.232 | 3,762.520 | 431.838 | 4,417.435 | 47.386 | 44,335.005 | 52,700.181 | 84.13 | 8,365.176 | NA | 46.41 |
| 2045 | 8,313.292 | 2,807.990 | 5,505.302 | 3,858.309 | 440.975 | 4,392.809 | 48.926 | 47,180.438 | 52,422.709 | 90.00 | 5,242.271 | NA | 46.41 |

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 SMP 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 |
| 2021 | \$ 582.499 | \$ 134.469 | \$ 0.000 | \$ 716.968 | \$ 14.685 | \$ 8.023 | \$ 0.000 | \$ 22.708 | \$ 597.183 | \$ 142.493 | \$ 0.000 | \$ 739.676 |
| 2022 | 553.294 | 127.537 | 25.233 | 706.064 | 14.192 | 7.577 | 1.677 | 23.446 | 567.486 | 135.114 | 26.910 | 729.510 |
| 2023 | 525.750 | 121.762 | 48.491 | 696.003 | 13.695 | 7.178 | 3.335 | 24.208 | 539.445 | 128.940 | 51.827 | 720.212 |
| 2024 | 498.649 | 117.254 | 71.119 | 687.022 | 13.142 | 6.848 | 5.004 | 24.995 | 511.791 | 124.102 | 76.124 | 712.017 |
| 2025 | 471.747 | 113.823 | 92.548 | 678.118 | 12.577 | 6.618 | 6.612 | 25.807 | 484.324 | 120.440 | 99.161 | 703.925 |
| 2026 | 445.199 | 111.192 | 113.665 | 670.056 | 11.995 | 6.448 | 8.203 | 26.646 | 457.194 | 117.640 | 121.868 | 696.702 |
| 2027 | 419.333 | 109.233 | 134.648 | 663.214 | 11.406 | 6.314 | 9.793 | 27.512 | 430.739 | 115.547 | 144.440 | 690.726 |
| 2028 | 394.189 | 107.747 | 155.836 | 657.772 | 10.801 | 6.195 | 11.410 | 28.406 | 404.990 | 113.942 | 167.246 | 686.178 |
| 2029 | 369.295 | 106.588 | 176.989 | 652.872 | 10.190 | 6.097 | 13.042 | 29.329 | 379.485 | 112.685 | 190.031 | 682.201 |
| 2030 | 343.974 | 105.627 | 198.477 | 648.078 | 9.562 | 6.012 | 14.708 | 30.282 | 353.537 | 111.639 | 213.184 | 678.360 |
| 2031 | 318.105 | 104.891 | 220.260 | 643.256 | 8.915 | 5.938 | 16.413 | 31.267 | 327.021 | 110.829 | 236.673 | 674.523 |
| 2032 | 292.234 | 104.338 | 242.302 | 638.874 | 8.256 | 5.867 | 18.159 | 32.283 | 300.490 | 110.205 | 260.462 | 671.157 |
| 2033 | 267.292 | 103.836 | 264.428 | 635.556 | 7.610 | 5.793 | 19.929 | 33.332 | 274.901 | 109.629 | 284.357 | 668.887 |
| 2034 | 243.284 | 103.416 | 286.693 | 633.393 | 6.976 | 5.717 | 21.722 | 34.415 | 250.260 | 109.132 | 308.415 | 667.807 |
| 2035 | 219.510 | 103.098 | 309.196 | 631.804 | 6.345 | 5.640 | 23.549 | 35.534 | 225.855 | 108.738 | 332.745 | 667.338 |
| 2036 | 195.812 | 102.820 | 332.020 | 630.652 | 5.715 | 5.561 | 25.413 | 36.688 | 201.527 | 108.381 | 357.432 | 667.340 |
| 2037 | 172.317 | 102.523 | 355.040 | 629.880 | 5.092 | 5.480 | 27.310 | 37.881 | 177.409 | 108.002 | 382.350 | 667.761 |
| 2038 | 149.238 | 102.195 | 378.331 | 629.764 | 4.479 | 5.394 | 29.239 | 39.112 | 153.717 | 107.589 | 407.570 | 668.876 |
| 2039 | 127.299 | 101.883 | 401.816 | 630.998 | 3.892 | 5.305 | 31.186 | 40.383 | 131.191 | 107.188 | 433.002 | 671.381 |
| 2040 | 107.024 | 101.483 | 425.406 | 633.913 | 3.343 | 5.208 | 33.145 | 41.696 | 110.367 | 106.691 | 458.551 | 675.609 |
| 2041 | 89.098 | 100.876 | 449.106 | 639.080 | 2.847 | 5.100 | 35.104 | 43.051 | 91.945 | 105.976 | 484.210 | 682.131 |
| 2042 | 73.942 | 100.069 | 472.795 | 646.806 | 2.414 | 4.981 | 37.054 | 44.450 | 76.357 | 105.050 | 509.849 | 691.256 |
| 2043 | 61.188 | 99.054 | 496.486 | 656.728 | 2.040 | 4.854 | 39.001 | 45.894 | 63.227 | 103.908 | 535.487 | 702.622 |
| 2044 | 50.500 | 97.664 | 520.243 | 668.407 | 1.717 | 4.712 | 40.957 | 47.386 | 52.217 | 102.377 | 561.200 | 715.794 |
| 2045 | 41.328 | 95.803 | 544.161 | 681.292 | 1.431 | 4.556 | 42.939 | 48.926 | 42.760 | 100.358 | 587.100 | 730.218 |
| 2046 | 33.360 | 93.512 | 568.258 | 695.130 | 1.176 | 4.385 | 44.955 | 50.516 | 34.536 | 97.897 | 613.214 | 745.647 |

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 | | | | | |
| 2021 | \$ 2,352.349 | \$ 1,285.247 | \$ 0.000 | \$ 3,637.596 | 25.39% | 11.09% | | 20.33% | 11.09% | 17.38% | 3.08% | 12.32% |
| 2022 | 2,210.308 | 1,180.032 | 261.095 | 3,651.435 | 25.67% | 11.45% | 10.31% | 19.98% | 11.24% | 17.66% | 3.23% | 11.97% |
| 2023 | 2,078.238 | 1,089.324 | 506.155 | 3,673.717 | 25.96% | 11.84% | 10.24% | 19.60% | 11.33% | 17.95% | 3.32% | 11.59% |
| 2024 | 1,951.366 | 1,016.866 | 743.067 | 3,711.299 | 26.23% | 12.20% | 10.24% | 19.19% | 11.38% | 18.22% | 3.37% | 11.18% |
| 2025 | 1,828.551 | 962.177 | 961.398 | 3,752.126 | 26.49% | 12.52% | 10.31% | 18.76% | 11.42% | 18.48% | 3.41% | 10.75% |
| 2026 | 1,709.415 | 918.954 | 1,168.990 | 3,797.359 | 26.75% | 12.80% | 10.43% | 18.35% | 11.47% | 18.74% | 3.46% | 10.34% |
| 2027 | 1,594.671 | 882.716 | 1,369.119 | 3,846.506 | 27.01% | 13.09% | 10.55% | 17.96% | 11.55% | 19.00% | 3.54% | 9.95% |
| 2028 | 1,484.170 | 851.331 | 1,567.868 | 3,903.369 | 27.29% | 13.38% | 10.67% | 17.58% | 11.62% | 19.28% | 3.61% | 9.57% |
| 2029 | 1,376.736 | 823.796 | 1,762.161 | 3,962.693 | 27.56% | 13.68% | 10.78% | 17.22% | 11.71% | 19.55% | 3.70% | 9.21% |
| 2030 | 1,270.706 | 798.991 | 1,954.497 | 4,024.194 | 27.82% | 13.97% | 10.91% | 16.86% | 11.80% | 19.81% | 3.79% | 8.85% |
| 2031 | 1,165.565 | 776.340 | 2,145.811 | 4,087.716 | 28.06% | 14.28% | 11.03% | 16.50% | 11.89% | 20.05% | 3.88% | 8.49% |
| 2032 | 1,062.856 | 755.241 | 2,337.689 | 4,155.786 | 28.27% | 14.59% | 11.14% | 16.15% | 11.98% | 20.26% | 3.97% | 8.14% |
| 2033 | 965.170 | 734.765 | 2,527.680 | 4,227.615 | 28.48% | 14.92% | 11.25% | 15.82% | 12.08% | 20.47% | 4.07% | 7.81% |
| 2034 | 872.291 | 714.788 | 2,716.111 | 4,303.190 | 28.69% | 15.27% | 11.36% | 15.52% | 12.17% | 20.68% | 4.16% | 7.51% |
| 2035 | 782.438 | 695.447 | 2,903.881 | 4,381.766 | 28.87% | 15.64% | 11.46% | 15.23% | 12.27% | 20.86% | 4.26% | 7.22% |
| 2036 | 695.319 | 676.569 | 3,091.965 | 4,463.853 | 28.98% | 16.02% | 11.56% | 14.95% | 12.36% | 20.97% | 4.35% | 6.94% |
| 2037 | 611.311 | 657.883 | 3,278.870 | 4,548.064 | 29.02% | 16.42% | 11.66% | 14.68% | 12.46% | 21.01% | 4.45% | 6.67% |
| 2038 | 530.812 | 639.295 | 3,465.229 | 4,635.336 | 28.96% | 16.83% | 11.76% | 14.43% | 12.55% | 20.95% | 4.54% | 6.42% |
| 2039 | 455.526 | 620.884 | 3,650.187 | 4,726.597 | 28.80% | 17.26% | 11.86% | 14.20% | 12.65% | 20.79% | 4.64% | 6.19% |
| 2040 | 386.579 | 602.229 | 3,832.892 | 4,821.700 | 28.55% | 17.72% | 11.96% | 14.01% | 12.74% | 20.54% | 4.73% | 6.00% |
| 2041 | 325.445 | 583.005 | 4,013.156 | 4,921.606 | 28.25% | 18.18% | 12.07% | 13.86% | 12.84% | 20.24% | 4.83% | 5.85% |
| 2042 | 272.976 | 563.251 | 4,189.674 | 5,025.901 | 27.97% | 18.65% | 12.17% | 13.75% | 12.94% | 19.96% | 4.93% | 5.74% |
| 2043 | 228.147 | 542.962 | 4,362.637 | 5,133.746 | 27.71% | 19.14% | 12.27% | 13.69% | 13.03% | 19.70% | 5.02% | 5.68% |
| 2044 | 189.984 | 521.539 | 4,532.803 | 5,244.326 | 27.48% | 19.63% | 12.38% | 13.65% | 13.13% | 19.47% | 5.12% | 5.64% |
| 2045 | 156.721 | 498.764 | 4,701.187 | 5,356.672 | 27.28% | 20.12% | 12.49% | 13.63% | 13.22% | 19.27% | 5.21% | 5.62% |
| 2046 | 127.352 | 474.811 | 4,868.128 | 5,470.291 | 27.12% | 20.62% | 12.60% | 13.63% | 13.31% | 19.11% | 5.30% | 5.62% |

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 | SMP 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 |
| 2020 | 13,129 | 35,074 | 28,132 | 0 | 63,206 | \$ 2,338.314 | \$ 1,189.645 | \$ 0.000 | \$ 3,527.958 | | | | \$ 282.364 |
| 2021 | 14,367 | 31,416 | 23,969 | 6,583 | 61,968 | 2,229.672 | 1,189.828 | 258.298 | 3,677.798 | \$ 178.597 | \$ 95.305 | \$ 20.690 | 294.592 |
| 2022 | 15,473 | 28,173 | 20,461 | 12,228 | 60,862 | 2,098.689 | 1,099.901 | 501.791 | 3,700.381 | 168.105 | 88.102 | 40.193 | 296.400 |
| 2023 | 16,456 | 25,218 | 17,528 | 17,133 | 59,879 | 1,973.287 | 1,022.205 | 738.996 | 3,734.488 | 158.060 | 81.879 | 59.194 | 299.133 |
| 2024 | 17,152 | 22,747 | 15,642 | 20,794 | 59,183 | 1,851.920 | 963.937 | 961.899 | 3,777.756 | 148.340 | 77.211 | 77.048 | 302.599 |
| 2025 | 17,706 | 20,559 | 14,271 | 23,799 | 58,629 | 1,733.374 | 918.613 | 1,173.218 | 3,825.205 | 138.843 | 73.581 | 93.975 | 306.399 |
| 2026 | 18,190 | 18,558 | 13,140 | 26,447 | 58,145 | 1,619.024 | 881.547 | 1,376.632 | 3,877.203 | 129.684 | 70.612 | 110.268 | 310.564 |
| 2027 | 18,623 | 16,717 | 12,172 | 28,823 | 57,712 | 1,508.863 | 849.679 | 1,574.918 | 3,933.460 | 120.860 | 68.059 | 126.151 | 315.070 |
| 2028 | 19,007 | 15,030 | 11,340 | 30,958 | 57,328 | 1,402.706 | 821.818 | 1,770.328 | 3,994.852 | 112.357 | 65.828 | 141.803 | 319.988 |
| 2029 | 19,349 | 13,467 | 10,609 | 32,910 | 56,986 | 1,298.299 | 796.883 | 1,963.985 | 4,059.167 | 103.994 | 63.830 | 157.315 | 325.139 |
| 2030 | 19,663 | 12,005 | 9,957 | 34,710 | 56,672 | 1,194.769 | 774.119 | 2,156.670 | 4,125.558 | 95.701 | 62.007 | 172.749 | 330.457 |
| 2031 | 19,955 | 10,637 | 9,376 | 36,367 | 56,380 | 1,091.906 | 753.294 | 2,348.260 | 4,193.460 | 87.463 | 60.339 | 188.096 | 335.898 |
| 2032 | 20,228 | 9,389 | 8,837 | 37,881 | 56,107 | 993.213 | 733.238 | 2,538.986 | 4,265.437 | 79.557 | 58.732 | 203.373 | 341.662 |
| 2033 | 20,481 | 8,258 | 8,335 | 39,261 | 55,854 | 900.247 | 713.521 | 2,728.046 | 4,341.814 | 72.109 | 57.153 | 218.516 | 347.778 |
| 2034 | 20,714 | 7,218 | 7,870 | 40,533 | 55,621 | 810.921 | 694.518 | 2,916.248 | 4,421.687 | 64.955 | 55.631 | 233.591 | 354.177 |
| 2035 | 20,930 | 6,254 | 7,437 | 41,714 | 55,405 | 723.833 | 675.919 | 3,104.186 | 4,503.938 | 57.979 | 54.141 | 248.645 | 360.765 |
| 2036 | 21,127 | 5,370 | 7,032 | 42,806 | 55,208 | 639.884 | 657.654 | 3,291.671 | 4,589.209 | 51.255 | 52.678 | 263.663 | 367.596 |
| 2037 | 21,310 | 4,554 | 6,649 | 43,822 | 55,025 | 558.894 | 639.400 | 3,478.460 | 4,676.754 | 44.768 | 51.216 | 278.625 | 374.609 |
| 2038 | 21,479 | 3,810 | 6,287 | 44,759 | 54,856 | 481.860 | 621.392 | 3,663.940 | 4,767.192 | 38.597 | 49.773 | 293.482 | 381.852 |
| 2039 | 21,628 | 3,154 | 5,945 | 45,608 | 54,707 | 411.184 | 603.483 | 3,846.958 | 4,861.625 | 32.936 | 48.339 | 308.141 | 389.416 |
| 2040 | 21,764 | 2,579 | 5,615 | 46,377 | 54,571 | 346.595 | 584.896 | 4,027.786 | 4,959.277 | 27.762 | 46.850 | 322.626 | 397.238 |
| 2041 | 21,880 | 2,102 | 5,297 | 47,056 | 54,455 | 291.374 | 565.732 | 4,204.989 | 5,062.095 | 23.339 | 45.315 | 336.820 | 405.474 |
| 2042 | 21,982 | 1,710 | 4,988 | 47,655 | 54,353 | 243.755 | 546.071 | 4,378.695 | 5,168.521 | 19.524 | 43.740 | 350.733 | 413.997 |
| 2043 | 22,068 | 1,389 | 4,689 | 48,189 | 54,267 | 203.531 | 525.793 | 4,549.380 | 5,278.704 | 16.304 | 42.116 | 364.405 | 422.825 |
| 2044 | 22,145 | 1,122 | 4,391 | 48,677 | 54,190 | 168.941 | 503.882 | 4,718.409 | 5,391.232 | 13.533 | 40.361 | 377.945 | 431.839 |
| 2045 | 22,215 | 897 | 4,096 | 49,127 | 54,120 | 138.285 | 480.935 | 4,886.082 | 5,505.302 | 11.076 | 38.523 | 391.375 | 440.974 |

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 | |
| 2020 | \$ 32,861.981 | \$ 2,963.417 | \$ 15,555.616 | \$ 2,118.149 | \$ 0.000 | \$ 53,499.163 | | | | | | \$ 2,744.971 |
| 2021 | 32,282.740 | 3,092.461 | 16,478.582 | 2,203.893 | 218.865 | 54,276.541 | 2,707.536 | 68.706 | 122.955 | 55.393 | 0.000 | 2,954.590 |
| 2022 | 31,669.689 | 3,213.377 | 17,414.271 | 2,296.164 | 458.234 | 55,051.735 | 2,702.419 | 85.003 | 170.941 | 54.677 | 2.339 | 3,015.379 |
| 2023 | 31,001.972 | 3,331.194 | 18,338.335 | 2,396.643 | 723.647 | 55,791.791 | 2,715.277 | 95.902 | 243.321 | 52.760 | 8.291 | 3,115.551 |
| 2024 | 30,281.076 | 3,444.473 | 19,244.039 | 2,508.982 | 1,008.815 | 56,487.385 | 2,723.125 | 107.991 | 321.461 | 47.846 | 15.056 | 3,215.479 |
| 2025 | 29,508.462 | 3,552.114 | 20,123.049 | 2,633.680 | 1,314.005 | 57,131.310 | 2,726.083 | 120.849 | 406.469 | 43.223 | 24.454 | 3,321.078 |
| 2026 | 28,686.039 | 3,650.977 | 20,972.832 | 2,771.799 | 1,639.866 | 57,721.513 | 2,723.817 | 136.377 | 492.183 | 38.381 | 34.142 | 3,424.900 |
| 2027 | 27,816.223 | 3,741.156 | 21,786.150 | 2,924.259 | 1,986.050 | 58,253.838 | 2,715.957 | 151.241 | 582.993 | 33.523 | 46.272 | 3,529.986 |
| 2028 | 26,901.406 | 3,819.589 | 22,560.675 | 3,092.690 | 2,352.916 | 58,727.276 | 2,702.685 | 168.501 | 673.675 | 28.027 | 56.848 | 3,629.736 |
| 2029 | 25,944.604 | 3,884.704 | 23,290.844 | 3,276.081 | 2,741.501 | 59,137.734 | 2,683.555 | 186.515 | 767.206 | 24.551 | 69.069 | 3,730.896 |
| 2030 | 24,949.209 | 3,935.526 | 23,968.215 | 3,470.639 | 3,153.203 | 59,476.792 | 2,658.401 | 204.603 | 866.011 | 25.723 | 81.427 | 3,836.165 |
| 2031 | 23,919.085 | 3,969.986 | 24,584.578 | 3,673.047 | 3,597.626 | 59,744.322 | 2,626.983 | 223.760 | 969.311 | 30.836 | 85.896 | 3,936.786 |
| 2032 | 22,858.561 | 3,989.216 | 25,139.680 | 3,883.218 | 4,075.390 | 59,946.065 | 2,589.107 | 240.751 | 1,068.872 | 36.547 | 90.310 | 4,025.587 |
| 2033 | 21,772.396 | 3,993.073 | 25,630.617 | 4,100.993 | 4,587.380 | 60,084.459 | 2,544.638 | 256.887 | 1,167.240 | 42.917 | 95.626 | 4,107.308 |
| 2034 | 20,665.828 | 3,979.265 | 26,053.703 | 4,326.281 | 5,135.503 | 60,160.580 | 2,493.427 | 274.236 | 1,264.984 | 49.873 | 101.508 | 4,184.028 |
| 2035 | 19,544.334 | 3,946.983 | 26,403.424 | 4,558.952 | 5,721.655 | 60,175.348 | 2,435.579 | 291.215 | 1,363.634 | 57.446 | 107.961 | 4,255.835 |
| 2036 | 18,413.681 | 3,971.977 | 26,677.210 | 4,798.843 | 6,347.331 | 60,209.042 | 2,371.176 | 233.669 | 1,459.975 | 65.658 | 114.803 | 4,245.281 |
| 2037 | 17,279.894 | 3,986.214 | 26,870.797 | 5,045.469 | 7,014.458 | 60,196.832 | 2,300.341 | 245.714 | 1,555.485 | 74.812 | 122.689 | 4,299.041 |
| 2038 | 16,149.284 | 3,988.993 | 26,979.920 | 5,298.215 | 7,723.994 | 60,140.406 | 2,223.193 | 257.734 | 1,649.882 | 85.001 | 131.476 | 4,347.286 |
| 2039 | 15,028.098 | 3,980.197 | 27,004.642 | 5,556.639 | 8,476.779 | 60,046.355 | 2,140.210 | 269.119 | 1,738.699 | 96.018 | 141.230 | 4,385.276 |
| 2040 | 13,922.610 | 3,959.563 | 26,943.880 | 5,820.148 | 9,274.654 | 59,920.855 | 2,051.770 | 280.001 | 1,823.052 | 107.979 | 151.888 | 4,414.690 |
| 2041 | 12,838.990 | 3,927.173 | 26,799.529 | 6,087.674 | 10,117.964 | 59,771.330 | 1,958.381 | 290.032 | 1,899.985 | 121.306 | 163.823 | 4,433.527 |
| 2042 | 11,783.158 | 3,883.909 | 26,577.312 | 6,357.953 | 11,008.382 | 59,610.714 | 1,860.690 | 298.441 | 1,965.918 | 136.121 | 177.073 | 4,438.243 |
| 2043 | 10,760.666 | 3,830.277 | 26,281.390 | 6,629.709 | 11,947.798 | 59,449.840 | 1,759.444 | 305.648 | 2,022.738 | 152.347 | 191.771 | 4,431.948 |
| 2044 | 9,776.699 | 3,766.348 | 25,914.989 | 6,901.175 | 12,938.726 | 59,297.937 | 1,655.357 | 312.111 | 2,071.619 | 170.384 | 207.964 | 4,417.435 |
| 2045 | 8,835.876 | 3,692.867 | 25,484.744 | 7,169.779 | 13,983.132 | 59,166.398 | 1,549.314 | 317.180 | 2,109.474 | 190.887 | 225.954 | 4,392.809 |

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 | | | | | |
| 2020 | \$ 32,861.981 | \$ 2,963.417 | \$ 11,128.410 | \$ 626.662 | \$ 0.000 | \$ 47,580.470 | 2021 | \$ 418.586 | \$ 26.498 | \$ 445.084 |
| 2021 | 32,282.740 | 3,092.461 | 12,354.378 | 750.664 | 0.000 | 48,480.243 | 2022 | 399.381 | 33.729 | 433.110 |
| 2022 | 31,669.689 | 3,213.377 | 13,583.345 | 876.613 | 23.654 | 49,366.678 | 2023 | 381.385 | 39.694 | 421.079 |
| 2023 | 31,001.972 | 3,331.194 | 14,792.025 | 1,007.077 | 66.786 | 50,199.054 | 2024 | 363.451 | 45.967 | 409.418 |
| 2024 | 30,281.076 | 3,444.473 | 15,973.559 | 1,146.766 | 129.218 | 50,975.092 | 2025 | 345.481 | 52.045 | 397.526 |
| 2025 | 29,508.462 | 3,552.114 | 17,119.220 | 1,297.116 | 208.295 | 51,685.207 | 2026 | 327.510 | 58.628 | 386.138 |
| 2026 | 28,686.039 | 3,650.977 | 18,226.222 | 1,459.900 | 304.518 | 52,327.656 | 2027 | 309.879 | 65.777 | 375.656 |
| 2027 | 27,816.223 | 3,741.156 | 19,287.399 | 1,636.667 | 416.382 | 52,897.827 | 2028 | 292.633 | 73.557 | 366.190 |
| 2028 | 26,901.406 | 3,819.589 | 20,300.534 | 1,829.509 | 546.762 | 53,397.800 | 2029 | 275.491 | 81.571 | 357.062 |
| 2029 | 25,944.604 | 3,884.704 | 21,259.699 | 2,037.762 | 695.171 | 53,821.940 | 2030 | 257.836 | 90.067 | 347.903 |
| 2030 | 24,949.209 | 3,935.526 | 22,155.361 | 2,257.866 | 863.031 | 54,160.993 | 2031 | 239.558 | 99.067 | 338.625 |
| 2031 | 23,919.085 | 3,969.986 | 22,978.022 | 2,486.786 | 1,060.110 | 54,413.989 | 2032 | 220.933 | 108.562 | 329.495 |
| 2032 | 22,858.561 | 3,989.216 | 23,726.618 | 2,724.685 | 1,288.705 | 54,587.785 | 2033 | 202.792 | 118.317 | 321.109 |
| 2033 | 21,772.396 | 3,993.073 | 24,398.338 | 2,971.543 | 1,550.099 | 54,685.449 | 2034 | 185.305 | 128.325 | 313.630 |
| 2034 | 20,665.828 | 3,979.265 | 24,989.607 | 3,227.442 | 1,846.063 | 54,708.205 | 2035 | 167.876 | 138.697 | 306.573 |
| 2035 | 19,544.334 | 3,946.983 | 25,494.297 | 3,492.462 | 2,178.588 | 54,656.664 | 2036 | 150.272 | 149.472 | 299.744 |
| 2036 | 18,413.681 | 3,971.977 | 25,909.032 | 3,766.599 | 2,550.070 | 54,611.359 | 2037 | 132.641 | 160.511 | 293.152 |
| 2037 | 17,279.894 | 3,986.214 | 26,228.804 | 4,049.475 | 2,962.265 | 54,506.652 | 2038 | 115.120 | 171.904 | 287.024 |
| 2038 | 16,149.284 | 3,988.993 | 26,448.786 | 4,340.579 | 3,417.269 | 54,344.911 | 2039 | 98.255 | 183.710 | 281.965 |
| 2039 | 15,028.098 | 3,980.197 | 26,569.182 | 4,639.629 | 3,917.171 | 54,134.277 | 2040 | 82.605 | 195.766 | 278.371 |
| 2040 | 13,922.610 | 3,959.563 | 26,589.604 | 4,946.092 | 4,464.178 | 53,882.047 | 2041 | 68.606 | 208.051 | 276.657 |
| 2041 | 12,838.990 | 3,927.173 | 26,513.395 | 5,258.845 | 5,060.263 | 53,598.666 | 2042 | 56.833 | 220.426 | 277.259 |
| 2042 | 11,783.158 | 3,883.909 | 26,348.261 | 5,576.568 | 5,707.371 | 53,299.267 | 2043 | 46.923 | 232.874 | 279.797 |
| 2043 | 10,760.666 | 3,830.277 | 26,100.098 | 5,897.923 | 6,407.450 | 52,996.414 | 2044 | 38.684 | 245.271 | 283.955 |
| 2044 | 9,776.699 | 3,766.348 | 25,773.635 | 6,220.899 | 7,162.600 | 52,700.181 | 2045 | 31.684 | 257.560 | 289.244 |
| 2045 | 8,835.876 | 3,692.867 | 25,376.550 | 6,542.569 | 7,974.847 | 52,422.709 | 2046 | 25.620 | 269.791 | 295.411 |

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 |
| 2020 | \$ 2,338.314 | \$ 1,189.645 | \$ 0.000 | \$ 3,527.958 | \$ 58.515 | \$ 0.000 | \$ 58.515 |
| 2021 | 2,229.672 | 1,189.828 | 258.298 | 3,677.798 | 68.020 | 0.000 | 68.020 |
| 2022 | 2,098.689 | 1,099.901 | 501.791 | 3,700.381 | 64.547 | 0.000 | 64.547 |
| 2023 | 1,973.287 | 1,022.205 | 738.996 | 3,734.488 | 62.658 | 0.000 | 62.658 |
| 2024 | 1,851.920 | 963.937 | 961.899 | 3,777.756 | 60.936 | 0.000 | 60.936 |
| 2025 | 1,733.374 | 918.613 | 1,173.218 | 3,825.205 | 59.131 | 0.000 | 59.131 |
| 2026 | 1,619.024 | 881.547 | 1,376.632 | 3,877.203 | 57.114 | 0.000 | 57.114 |
| 2027 | 1,508.863 | 849.679 | 1,574.918 | 3,933.460 | 55.496 | 0.000 | 55.496 |
| 2028 | 1,402.706 | 821.818 | 1,770.328 | 3,994.852 | 53.709 | 0.000 | 53.709 |
| 2029 | 1,298.299 | 796.883 | 1,963.985 | 4,059.167 | 51.953 | 0.000 | 51.953 |
| 2030 | 1,194.769 | 774.119 | 2,156.670 | 4,125.558 | 49.883 | 0.000 | 49.883 |
| 2031 | 1,091.906 | 753.294 | 2,348.260 | 4,193.460 | 47.218 | 0.000 | 47.218 |
| 2032 | 993.213 | 733.238 | 2,538.986 | 4,265.437 | 44.808 | 0.000 | 44.808 |
| 2033 | 900.247 | 713.521 | 2,728.046 | 4,341.814 | 42.367 | 0.000 | 42.367 |
| 2034 | 810.921 | 694.518 | 2,916.248 | 4,421.687 | 40.006 | 0.000 | 40.006 |
| 2035 | 723.833 | 675.919 | 3,104.186 | 4,503.938 | 37.512 | 0.000 | 37.512 |
| 2036 | 639.884 | 657.654 | 3,291.671 | 4,589.209 | 34.993 | 0.000 | 34.993 |
| 2037 | 558.894 | 639.400 | 3,478.460 | 4,676.754 | 32.379 | 0.000 | 32.379 |
| 2038 | 481.860 | 621.392 | 3,663.940 | 4,767.192 | 29.709 | 0.000 | 29.709 |
| 2039 | 411.184 | 603.483 | 3,846.958 | 4,861.625 | 27.103 | 0.000 | 27.103 |
| 2040 | 346.595 | 584.896 | 4,027.786 | 4,959.277 | 24.431 | 0.000 | 24.431 |
| 2041 | 291.374 | 565.732 | 4,204.989 | 5,062.095 | 21.855 | 0.000 | 21.855 |
| 2042 | 243.755 | 546.071 | 4,378.695 | 5,168.521 | 19.221 | 0.000 | 19.221 |
| 2043 | 203.531 | 525.793 | 4,549.380 | 5,278.704 | 16.850 | 0.000 | 16.850 |
| 2044 | 168.941 | 503.882 | 4,718.409 | 5,391.232 | 14.600 | 0.000 | 14.600 |
| 2045 | 138.285 | 480.935 | 4,886.082 | 5,505.302 | 12.425 | 0.000 | 12.425 |

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 \$181,700 in 2020 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 |
| | 2022 | 17.38% | 12.32% | | | \$ 5,369 | \$ 0,000 | \$ 0,000 |
| 2023 | 17.66% | 11.97% | \$ 8,411 | \$ 0,000 | 8,411 | 8,411 | 0,000 | 8,411 |
| 2024 | 17.95% | 11.59% | 8,109 | 0,000 | 8,109 | 8,109 | 0,000 | 8,109 |
| 2025 | 18.22% | 11.18% | 7,990 | 0,000 | 7,990 | 7,990 | 0,000 | 7,990 |
| 2026 | 18.48% | 10.75% | 7,881 | 0,000 | 7,881 | 7,881 | 0,000 | 7,881 |
| 2027 | 18.74% | 10.34% | 7,755 | 0,000 | 7,755 | 7,755 | 0,000 | 7,755 |
| 2028 | 19.00% | 9.95% | 7,597 | 0,000 | 7,597 | 7,597 | 0,000 | 7,597 |
| 2029 | 19.28% | 9.57% | 7,489 | 0,000 | 7,489 | 7,489 | 0,000 | 7,489 |
| 2030 | 19.55% | 9.21% | 7,352 | 0,000 | 7,352 | 7,352 | 0,000 | 7,352 |
| 2031 | 19.81% | 8.85% | 7,205 | 0,000 | 7,205 | 7,205 | 0,000 | 7,205 |
| 2032 | 20.05% | 8.49% | 7,000 | 0,000 | 7,000 | 7,000 | 0,000 | 7,000 |
| 2033 | 20.26% | 8.14% | 6,697 | 0,000 | 6,697 | 6,697 | 0,000 | 6,697 |
| 2034 | 20.47% | 7.81% | 6,421 | 0,000 | 6,421 | 6,421 | 0,000 | 6,421 |
| 2035 | 20.68% | 7.51% | 6,133 | 0,000 | 6,133 | 6,133 | 0,000 | 6,133 |
| 2036 | 20.86% | 7.22% | 5,840 | 0,000 | 5,840 | 5,840 | 0,000 | 5,840 |
| 2037 | 20.97% | 6.94% | 5,507 | 0,000 | 5,507 | 5,507 | 0,000 | 5,507 |
| 2038 | 21.01% | 6.67% | 5,147 | 0,000 | 5,147 | 5,147 | 0,000 | 5,147 |
| 2039 | 20.95% | 6.42% | 4,748 | 0,000 | 4,748 | 4,748 | 0,000 | 4,748 |
| 2040 | 20.79% | 6.19% | 4,324 | 0,000 | 4,324 | 4,324 | 0,000 | 4,324 |
| 2041 | 20.54% | 6.00% | 3,897 | 0,000 | 3,897 | 3,897 | 0,000 | 3,897 |
| 2042 | 20.24% | 5.85% | 3,462 | 0,000 | 3,462 | 3,462 | 0,000 | 3,462 |
| 2043 | 19.96% | 5.74% | 3,054 | 0,000 | 3,054 | 3,054 | 0,000 | 3,054 |
| 2044 | 19.70% | 5.68% | 2,651 | 0,000 | 2,651 | 2,651 | 0,000 | 2,651 |
| 2045 | 19.47% | 5.64% | 2,297 | 0,000 | 2,297 | 2,297 | 0,000 | 2,297 |
| 2046 | 19.27% | 5.62% | 1,970 | 0,000 | 1,970 | 1,970 | 0,000 | 1,970 |
| 2047 | 19.11% | 5.62% | 1,662 | 0,000 | 1,662 | 1,662 | 0,000 | 1,662 |

¹ FY 2022 amount based on excess pay amount as provided by SURS and the total employer normal cost rate. Amounts in FY 2023 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

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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 |
|---------------|------------------------------|---------------|-------------|--------------|-------------|----------------------|
| 2006 | \$ 14,175,147 | \$ 21,688,935 | \$7,513,788 | 65.36 % | \$3,054,100 | 246.02 % |
| 2007 | 15,985,730 | 23,362,079 | 7,376,349 | 68.43 | 3,180,985 | 231.89 |
| 2008 | 14,586,325 | 24,917,678 | 10,331,353 | 58.54 | 3,303,220 | 312.77 |
| 2009 | 11,032,973 | 26,316,231 | 15,283,258 | 41.92 | 3,463,922 | 441.21 |
| 2009 ** | 14,281,998 | 26,316,231 | 12,034,233 | 54.27 | 3,463,922 | 347.42 |
| 2010 *** | 13,966,643 | 30,120,427 | 16,153,784 | 46.37 | 3,491,071 | 462.72 |
| 2011 | 13,945,680 | 31,514,336 | 17,568,656 | 44.25 | 3,460,838 | 507.64 |
| 2012 | 13,949,905 | 33,170,216 | 19,220,311 | 42.06 | 3,477,166 | 552.76 |
| 2013 | 14,262,621 | 34,373,104 | 20,110,483 | 41.49 | 3,533,858 | 569.08 |
| 2014 *** | 15,844,714 | 37,429,515 | 21,584,801 | 42.33 | 3,522,246 | 612.81 |
| 2015 | 17,104,607 | 39,520,687 | 22,416,080 | 43.28 | 3,606,537 | 621.54 |
| 2016 | 17,701,646 | 40,923,301 | 23,221,655 | 43.26 | 3,513,108 | 661.00 |
| 2017 | 18,594,326 | 41,853,348 | 23,259,022 | 44.43 | 3,458,320 | 672.55 |
| 2018 *** | 19,347,886 | 45,258,751 | 25,910,865 | 42.75 | 3,470,226 | 746.66 |
| 2019 | 19,661,891 | 46,443,937 | 26,782,046 | 42.33 | 3,506,650 | 763.75 |
| 2020 | 20,071,413 | 47,580,470 | 27,509,057 | 42.18 | 3,642,617 | 755.20 |

AAL – Actuarial Accrued Liability.

UAAL – Unfunded Actuarial Accrued Liability.

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

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

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



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

| Fiscal Year | (1) Total Normal Cost | (2) Amortization of UAAL | (3) (1) + (2) Total ADC | (4) Member Contributions | (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 |
|-----------------------|---|------------------------|--|--------------------|---|
| 2011 | \$ 1,259,048 | \$ 773,595 | \$ 485,453 | \$ 3,460,838 | 22.35 % |
| 2012 | 1,443,348 | 985,815 | 457,533 | 3,477,166 | 28.35 |
| 2013 | 1,549,287 | 1,401,481 | 147,806 | 3,533,858 | 39.66 |
| 2014 | 1,560,524 | 1,502,864 | 57,660 | 3,522,246 | 42.67 |
| 2015 | 1,622,656 | 1,528,525 | 94,130 | 3,606,537 | 42.38 |
| 2016 | 1,811,060 | 1,582,295 | 228,765 | 3,513,108 | 45.04 |
| 2017 | 1,864,843 | 1,650,551 | 214,292 | 3,458,320 | 47.73 |
| 2018 | 1,862,033 | 1,607,880 | 254,153 | 3,470,226 | 46.33 |
| 2019 | 2,239,366 | 1,642,054 | 597,312 | 3,506,650 | 46.83 |
| 2020 | 2,299,034 | 1,838,802 | 460,232 | 3,642,617 | 50.48 |

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 (\$115,929 in 2020 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 3% employer billing rule is assumed to apply to all current and future Tier 1 and Tier 2 members.

Statutory Contributions Related to the Optional Hybrid Plan

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

Phase In of the Financial Impact of Assumption Changes

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

1. Beginning with the June 30, 2014 actuarial valuation the assumed rate of investment return was reduced to 7.25%.
2. Beginning with the June 30, 2015 actuarial valuation there were changes to the demographic assumptions.
3. Beginning with the June 30, 2018 actuarial valuation there were changes to the economic and demographic actuarial assumptions.

Actuarial Methods and Assumptions

| Valuation Year Ending 6/30 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--|------------|------------|-------|-------|-------|-------|
| Applicable Fiscal Year Ending 6/30 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
| \$ in Millions | | | | | | |
| After Impact of Bonds | | | | | | |
| Contribution Before Assumption Change: | | | | | | |
| (1) Contribution Dollar | \$ 2,035.8 | \$ 2,143.7 | | | | |
| (2) Contribution Rate | 43.62% | 43.81% | | | | |
| Contribution After Assumption Change: | | | | | | |
| (3) Contribution Dollar | 2,035.8 | 2,143.7 | | | | |
| (4) Contribution Rate | 43.62% | 43.81% | | | | |
| (5) Assumption Impact as Percentage of Payroll | | | | | | |
| =(4)-(2) | 0.00% | 0.00% | | | | |
| (6) Assumption Change Impact Recognized | | | | | | |
| This Year (5 year recognition) | | | | | | |
| (6a) From This Year | 0.00% | 0.00% | | | | |
| (6b) From One Year Ago | 0.67% | 0.00% | 0.00% | | | |
| (6c) From Two Years Ago | 0.00% | 0.67% | 0.00% | 0.00% | | |
| (6d) From Three Years Ago | 0.00% | 0.00% | 0.67% | 0.00% | 0.00% | |
| (6e) From Four Years Ago | 0.25% | 0.00% | 0.00% | 0.68% | 0.00% | 0.00% |
| (6f) Total Recognized Assumption Change Impact | 0.92% | 0.67% | 0.67% | 0.68% | 0.00% | 0.00% |

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

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 and after | 6.75% |

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Actuarial Methods and Assumptions

Actuarial Assumptions

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

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

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

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

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

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

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

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



Actuarial Methods and Assumptions

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

Mortality. The mortality assumptions are as follows:

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

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

| Age | Future Life Expectancy (years) in 2020 | | | | Future Life Expectancy (years) in 2030 | | | |
|-----|--|--------|--------------------|--------|--|--------|--------------------|--------|
| | Post-retirement | | Disabled - Retiree | | Post-retirement | | Disabled - Retiree | |
| | Male | Female | Male | Female | Male | Female | Male | Female |
| 35 | 52.37 | 54.52 | 32.91 | 38.40 | 53.34 | 55.44 | 34.52 | 39.88 |
| 40 | 47.17 | 49.32 | 29.30 | 34.08 | 48.12 | 50.23 | 30.74 | 35.45 |
| 45 | 42.05 | 44.19 | 26.11 | 30.13 | 42.97 | 45.08 | 27.41 | 31.40 |
| 50 | 37.01 | 39.09 | 23.04 | 26.33 | 37.91 | 39.97 | 24.26 | 27.51 |
| 55 | 32.08 | 34.05 | 20.05 | 22.72 | 32.96 | 34.91 | 21.19 | 23.83 |
| 60 | 27.28 | 29.13 | 17.15 | 19.42 | 28.12 | 29.95 | 18.16 | 20.40 |
| 65 | 22.65 | 24.41 | 14.42 | 16.24 | 23.43 | 25.18 | 15.27 | 17.07 |
| 70 | 18.25 | 19.90 | 11.81 | 13.09 | 18.96 | 20.61 | 12.51 | 13.81 |
| 75 | 14.17 | 15.65 | 9.31 | 10.15 | 14.80 | 16.30 | 9.91 | 10.79 |

Actuarial Methods and Assumptions

Disability. A table of disability incidence with rates follows:

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

Disability rates apply during the retirement eligibility period.

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



Actuarial Methods and Assumptions

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

| Age | Members Hired Before | | Non Police/Fire Members Hired on or after | | Police/Fire Members Hired on or after | |
|-------|------------------------------------|------------------|--|------------------|--|------------------|
| | January 1, 2011, and Eligible for: | | January 1, 2011, and Eligible for: | | January 1, 2011, and Eligible for: | |
| | Normal Retirement | Early Retirement | Normal Retirement | Early Retirement | Normal Retirement | Early Retirement |
| Under | 50.0% | - | - | - | - | - |
| 50 | 50.0 | - | - | - | - | - |
| 51 | 40.0 | - | - | - | - | - |
| 52 | 40.0 | - | - | - | - | - |
| 53 | 35.0 | - | - | - | - | - |
| 54 | 35.0 | - | - | - | - | - |
| 55 | 35.0 | 7.0% | - | - | - | - |
| 56 | 30.0 | 5.5 | - | - | - | - |
| 57 | 25.0 | 4.0 | - | - | - | - |
| 58 | 25.0 | 5.0 | - | - | - | - |
| 59 | 25.0 | 5.5 | - | - | - | - |
| 60 | 11.0 | - | - | - | 60.0% | - |
| 61 | 11.0 | - | - | - | 25.0 | - |
| 62 | 12.0 | - | - | 25.0% | 25.0 | 25.0% |
| 63 | 12.0 | - | - | 10.0 | 25.0 | 10.0 |
| 64 | 12.0 | - | - | 10.0 | 25.0 | 10.0 |
| 65 | 15.0 | - | - | 10.0 | 15.0 | 10.0 |
| 66 | 15.0 | - | - | 10.0 | 15.0 | 10.0 |
| 67 | 15.0 | - | 35.0% | - | 15.0 | - |
| 68 | 15.0 | - | 15.0 | - | 15.0 | - |
| 69 | 15.0 | - | 15.0 | - | 15.0 | - |
| 70-79 | 15.0 | - | 15.0 | - | 15.0 | - |
| 80+ | 100.0 | - | 100.0 | - | 100.0 | - |

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

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

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



Actuarial Methods and Assumptions

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

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

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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 2022 and after are assumed to increase by 3.25%.

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

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

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

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

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

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

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

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

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

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



Actuarial Methods and Assumptions

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

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

- 30% elect to participate in the Self Managed Plan.
- 70% elect to participate in the Tier 2 Plan.
 - 76% are assumed to elect the Traditional Plan (consistent with the current election split).
 - 24% are assumed to elect the Portable Plan (consistent with the current election split).

New entrants have an average age of 37.0 and average capped pay of \$41,738 and average uncapped pay of \$43,752 (2020 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 2020 dollars) of current active members with service between one and four years.

| Summary of New Entrants | | | | | | | | | |
|-------------------------|--------------|-----------------|-----------------|----------------|-----------------|-----------------|---------------|-----------------|-----------------|
| Age | Number Males | Average Pay | | Number Females | Average Pay | | Total Number | Average Pay | |
| | | Capped Male | Uncapped Male | | Capped Female | Uncapped Female | | Capped Total | Uncapped Total |
| <20 | 58 | \$19,207 | \$19,207 | 67 | \$19,578 | \$19,578 | 125 | \$19,406 | \$19,406 |
| 20 - 24 | 732 | 31,425 | 31,425 | 1,265 | 29,789 | 29,789 | 1,997 | 30,389 | 30,389 |
| 25 - 29 | 1,550 | 42,292 | 42,864 | 2,309 | 39,882 | 40,231 | 3,859 | 40,850 | 41,289 |
| 30 - 34 | 1,395 | 50,072 | 53,660 | 2,013 | 44,610 | 46,486 | 3,408 | 46,846 | 49,422 |
| 35 - 39 | 1,062 | 50,820 | 54,536 | 1,551 | 42,902 | 44,411 | 2,613 | 46,120 | 48,526 |
| 40 - 44 | 747 | 48,732 | 53,330 | 1,162 | 41,683 | 43,390 | 1,909 | 44,441 | 47,279 |
| 45 - 49 | 611 | 47,138 | 51,802 | 972 | 39,288 | 41,162 | 1,583 | 42,318 | 45,269 |
| 50 - 54 | 493 | 47,654 | 52,058 | 758 | 37,912 | 40,190 | 1,251 | 41,751 | 44,867 |
| 55 - 59 | 391 | 45,518 | 52,074 | 622 | 34,390 | 36,611 | 1,013 | 38,685 | 42,580 |
| 60 - 64 | 239 | 37,754 | 42,074 | 259 | 35,105 | 38,835 | 498 | 36,377 | 40,390 |
| 65 - 69 | 13 | 28,491 | 38,274 | 11 | 29,111 | 29,111 | 24 | 28,775 | 34,074 |
| Total | 7,291 | \$45,176 | \$48,196 | 10,989 | \$39,456 | \$40,804 | 18,280 | \$41,738 | \$43,752 |

SMP Contribution Assumptions. The projected SMP contributions are equal to 7.6% of SMP payroll, plus estimated SMP expenses minus SMP employer forfeitures. Estimated SMP expenses for FY 2021 are \$1,032,960 and actual FY 2019 SMP employer forfeitures used to reduce the certified contributions for FY 2022 are \$5,671,844 (as provided by SURS). Estimated SMP expenses for FY 2022 and after are assumed to increase by 3.25%. Estimated SMP employer forfeitures used to reduce the certified contributions for FY 2023 and after are assumed to be 7.5% of the gross SMP 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.



Actuarial Methods and Assumptions

Governor's Pay. The governor's pay is \$177,500 as of June 30, 2020, 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%). The Governor's pay is scheduled to increase to \$181,700.

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.

Statistics from June 10, 2019 through May 31, 2020

as Provided by SURS Staff

| | <u>AAI</u> | <u>VIB</u> |
|---------------------------------|-------------|-------------|
| Number Eligible for the buyout* | 2,454 | 23,669 |
| Buyout applications received | 80 | 59 |
| Buyout election forms sent | 22 | 31 |
| Buyout election forms approved | 14 | 19 |
| Application % | 3.3% | 0.2% |
| Approved % | 0.6% | 0.1% |
| Approved buyout amount | \$1,369,244 | \$2,951,402 |

**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. Vested active Tier 1 members would also be eligible for the buyout upon termination.*

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 |

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 |

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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 Self Managed Plan (SMP) and many portions of the defined plans are described in a manner which may not be legally complete or precise.

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

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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 Self Managed Plan (SMP). A Member must select one of these plans within the first six months of participation. If no choice is made in that time, the Traditional Plan is deemed chosen.

New tiers of benefits have been established for members hired on or after January 1, 2011 ("Tier 2"). 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 |

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

The Self Managed Plan is a defined contribution plan under which members contribute 8.0% of compensation and the State contributes 7.6% of compensation. A portion of the employer contribution is used to fund disability benefits for SMP participants. Members hired on or after January 1, 2011, who participate in the SMP are not subject to the Tier 2 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 6.75% beginning with the actuarial valuation as of June 30, 2018.

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



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 80 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% |

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 80 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

HB 4712 requires the SURS Board of Trustees, within one year after the effective date of the legislation, to establish and maintain a defined contribution plan to address the retirement preparedness gap for participants in a defined benefit plan who are not on track to maintain their standard of living in retirement.

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 \$1.0675 after a year, the asset return is 6.75 percent.

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

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



Glossary of Terms

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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