State Universities Retirement System of Illinois

GASB Statement Nos. 67 and 68 Accounting and Financial Reporting for Pensions

Measured as of June 30, 2018

Applicable to Plan's Fiscal Year End June 30, 2018

Applicable to Employer's Fiscal Year End June 30, 2019

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October 29, 2018

The Board of Trustees
State Universities Retirement System of Illinois

Dear Board Members:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 for the State Universities Retirement System of Illinois ("SURS"). These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement Nos. 67 and 68. The calculation of the plan's liability for this report is not applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than the State Universities Retirement System of Illinois ("SURS") only in its entirety and only with the permission of SURS. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by SURS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This information was checked for internal consistency, but it was not audited.

This report complements the funding actuarial valuation report that was provided to SURS and should be considered in conjunction with that report. Please see the actuarial valuation reports as of June 30, 2017, and June 30, 2018, for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions and benefit provisions.

Public Act (PA) 100-0023, which was effective July 6, 2017, created a new plan option (Optional Hybrid Plan) and changed the State and Employer's required contributions. SURS is currently not moving forward with the implementation of the Optional Hybrid Plan (OHP) created under PA 100-0023 and therefore, the results presented in this report do not include any of the changes under PA 100-0023 related to the OHP.

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As directed by SURS and the SURS auditor, the results presented in the last report (with a measurement date of June 30, 2017) were based on the law in effect as of June 30, 2016, and did not include any of the funding changes or changes related to the OHP under PA 100-0023.

Under the provisions of PA 100-0023, beginning in fiscal year 2018 employers make contributions for current members in excess of the Governor's pay and under PA 100-0587, beginning in academic years on or after July 1, 2018, employers make contributions equal to the present value of the increase in benefit attributable to member pay increases in excess of 3% during the final average salary (FAS) period.

Economic and demographic actuarial assumptions were changed from the prior actuarial valuation based on recommendations from the experience study report covering the period June 30, 2014 through June 30, 2017, and are consistent with the assumptions used in the funding actuarial valuation as of June 30, 2018. The long-term expected rate of investment return was decreased from 7.25% to 6.75%. The plan election assumptions (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) were provided by SURS staff.

To the best of our knowledge, the information contained in this report is accurate and fairly represents the actuarial position of the State Universities Retirement System of Illinois in accordance with the requirements of GASB Statement Nos. 67 and 68. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with our understanding of GASB Statement Nos. 67 and 68.

The signing actuaries are independent of the plan sponsor.

Amy Williams and Lance J. Weiss 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 contained herein.

Respectfully submitted,

By Amy Williams

Amy Williams, ASA, MAAA, FCA
Consultant

By Lance J. Weiss

Lance J. Weiss, EA, MAAA, FCA
Senior Consultant and Team Leader

Auditor's Note – This information is intended to assist in preparation of the financial statements of the State Universities Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2018

Actuarial Valuation Date		June 30, 2017
Measurement Date of the Net Pension Liability		June 30, 2018
Pension Plan's Fiscal Year Ending Date (Reporting Date) for GASB 67		June 30, 2018
Employer's Fiscal Year Ending Date (Reporting Date) for GASB 68		June 30, 2019
Membership		
Number of		
- Retirees and Beneficiaries		64,545
- Inactive, Nonretired Members		81,316
- Active Members		64,117
- Total		209,978
Covered Payroll [1]	$	3,470,226,046
Net Pension Liability		
Total Pension Liability	$	46,815,632,183
Plan Fiduciary Net Position		19,321,075,501
Net Pension Liability	$	27,494,556,682
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		41.27 %
Net Pension Liability as a Percentage of Covered Payroll		792.30 %
Development of the Single Discount Rate		
Single Discount Rate, Beginning of Year		7.09 %
Single Discount Rate, End of Year		6.65 %
Long-Term Expected Rate of Investment Return		6.75 %
Long-Term Municipal Bond Rate, Beginning of Year*		3.56 %
Long-Term Municipal Bond Rate, End of Year*		3.62 %
Last year ending June 30 in the 2018 to 2117 projection period for which projected benefit payments are fully funded		2075
Total Pension Expense	$	2,724,982,044

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ 65,521,614	$ 181,032,053
Changes in assumptions	1,286,257,095	123,218,306
Net difference between projected and actual earnings on pension plan investments	26,810,634	0
Total	$ 1,378,589,343	$ 304,250,359

[1] *Payroll for active members from census data as of June 30, 2018, increased by the wage inflation assumption of 3.25%.*

*Source: *Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2017 for beginning of year and as of June 30, 2018 for end of year. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax exempt securities.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain non-actuarial information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to SURS subsequent to the measurement date of June 30, 2018.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires disclosure of the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions in the notes of the employer's financial statements.

GASB Statement Nos. 67 and 68 require disclosure of certain additional information in the notes of the financial statements for the employers and pension plans. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position and the net pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than the rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- A comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

General Implications of SURS Statutory Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's statutorily defined funding policy, if all actuarial assumptions are met (including the assumption of the plan earning 6.75% on the actuarial value of assets), then the following outcomes are expected:

1. The unfunded liability is not expected to be fully amortized during the lifetimes of current members.
2. The funded status of the plan is expected to increase gradually towards a 90% funded ratio at 2045 and then remain level at 90% funded thereafter.

This statutory funding policy results in an expected crossover date in 2075 and a GASB single discount rate of 6.65% to measure the total pension liability as of June 30, 2018. The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

Roll-Forward Methodology

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2017, measured using the assumptions from the most recent experience study and first adopted for use in the funding actuarial valuation as of June 30, 2018, and projected to a measurement date of June 30, 2018. The June 30, 2017 Total Pension Liability was rolled-forward to the June 30, 2018 measurement date by applying one year of service cost (increases TPL), actual benefit payments and refunds during the year (reduces TPL), and an interest rate adjustment assuming the beginning of year Single Discount Rate of 7.09%. A full year of interest was applied to the beginning of year TPL and one-half year of interest was applied to the service cost and benefit payments.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) a tax-exempt municipal bond rate based on an index of 20-year mixed maturity general obligation bonds with an average Standard & Poor's Corp.'s AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.75%; the municipal bond rate is 3.62% (based on the most recent daily rate available on or before the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting Single Discount Rate is 6.65%.

The last year for which projected benefits for current members are fully funded by projected assets attributable to those members remained at 2075 between the measurement performed in the last actuarial valuation and in this year's actuarial valuation.

Effective Date and Transition

GASB Statement Nos. 67 and 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014, respectively. Earlier application is encouraged by the GASB.

SECTION B

FINANCIAL STATEMENTS

Auditor's Note – This information is intended to assist in preparation of the financial statements of the State Universities Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Statement of Pension Expense under GASB Statement No. 68
Fiscal Year Ended June 30, 2018*

A. Expense

1. Service Cost	$	628,356,344
2. Interest on the Total Pension Liability		3,050,584,303
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(282,726,126)
5. Projected Earnings on Plan Investments (made negative for addition here)		(1,316,515,744)
6. Pension Plan Administrative Expense		14,396,609
7. Other Changes in Plan Fiduciary Net Position		0
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		746,390,177
9. Recognition of Outflow (Inflow) of Resources due to Assets		(115,503,519)
10. Total Pension Expense	**$**	**2,724,982,044**

* *Based on a measurement date of June 30, 2018. Will be used for fiscal year ending June 30, 2019. Employers' proportionate share of calculations of the net pension liability, pension expense and deferred inflows and outflows are outside the scope of this report.*

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees who are provided with pensions through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan were approximately 586,927 years. Additionally, the total plan membership (active employees and inactive employees) was 209,978. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 2.7952 years.

Additionally, differences between projected and actual earnings on pension plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

Statement of Outflows and Inflows Arising from
Current Reporting Period
Fiscal Year Ended June 30, 2018*

Increase (Decrease) in Pension Expense Arising from difference between expected and actual experience

Year Ending June 30	Difference between expected and actual experience	Recognition Period (Years)	Total Deferred (2019-2022)	Recognized in Year Ending June 30: 2016 & Prior	2017	2018	2019	2020	2021	2022
2014	$ -	3.1357	$ -	$ -	$ -					
2015	40,408,204	3.0855	-	26,192,322	13,096,161	$ 1,119,721				
2016	(3,426,377)	3.0381	(42,968)	(1,127,803)	(1,127,803)	(1,127,803)	$ (42,968)			
2017	210,625,398	2.9031	65,521,614	-	72,551,892	72,551,892	65,521,614			
2018	(281,807,425)	2.7952	(180,989,085)	-		(100,818,340)	(100,818,340)	(80,170,745)		
Total			(115,510,439)	25,064,519	84,520,250	(28,274,530)	(35,339,694)	(80,170,745)	-	-

Increase (Decrease) in Pension Expense Arising from changes in assumptions

Year Ending June 30	Changes in assumptions	Recognition Period (Years)	Total Deferred (2019-2022)	Recognized in Year Ending June 30: 2016 & Prior	2017	2018	2019	2020	2021	2022
2014	$ 130,585,622	3.1357	$ -	$ 124,934,421	$ 5,651,201					
2015	831,624,586	3.0855	-	539,053,370	269,526,685	$ 23,044,531				
2016	532,522,898	3.0381	6,678,227	175,281,557	175,281,557	175,281,557	$ 6,678,227			
2017	(396,096,848)	2.9031	(123,218,306)	-	(136,439,271)	(136,439,271)	(123,218,306)			
2018	1,992,356,758	2.7952	1,279,578,868	-		712,777,890	712,777,890	$ 566,800,978		
Total			1,163,038,789	839,269,348	314,020,172	774,664,707	596,237,811	566,800,978	-	-

Increase (Decrease) in Pension Expense Arising from net difference between projected and actual earnings on pension plan investments

Year Ending June 30	Difference between projected and actual earnings on pension plan investments	Recognition Period (Years)	Total Deferred (2019-2022)	Recognized in Year Ending June 30: 2016 & Prior	2017	2018	2019	2020	2021	2022
2014	$ (1,588,882,440)	5.0000	$ -	$ (953,329,464)	$ (317,776,488)	$ (317,776,488)				
2015	742,300,803	5.0000	148,460,159	296,920,322	148,460,161	148,460,161	$ 148,460,159			
2016	1,232,126,031	5.0000	492,850,413	246,425,206	246,425,206	246,425,206	246,425,206	$ 246,425,207		
2017	(779,748,280)	5.0000	(467,848,968)	-	(155,949,656)	(155,949,656)	(155,949,656)	(155,949,656)	$ (155,949,656)	
2018	(183,313,712)	5.0000	(146,650,970)	-		(36,662,742)	(36,662,742)	(36,662,742)	(36,662,742)	$ (36,662,744)
Total			26,810,634	(409,983,936)	(78,840,777)	(115,503,519)	202,272,967	53,812,809	(192,612,398)	(36,662,744)

Increase (Decrease) in Pension Expense Arising from All Sources

Year Ending June 30	Total Difference	Recognition Period (Years)	Total Deferred (2019-2022)	Recognized in Year Ending June 30: 2016 & Prior	2017	2018	2019	2020	2021	2022
2014	$ (1,458,296,818)	Varies by Type	$ -	$ (828,395,043)	$ (312,125,287)	$ (317,776,488)				
2015	1,614,333,593	Varies by Type	148,460,159	862,166,014	431,083,007	172,624,413	$ 148,460,159			
2016	1,761,222,552	Varies by Type	499,485,672	420,578,960	420,578,960	420,578,960	253,060,465	$ 246,425,207		
2017	(965,219,730)	Varies by Type	(525,545,660)	-	(219,837,035)	(219,837,035)	(213,646,348)	(155,949,656)	$ (155,949,656)	
2018	1,527,235,621	Varies by Type	951,938,813	-		575,296,808	575,296,808	449,967,491	(36,662,742)	$ (36,662,744)
Total			1,074,338,984	454,349,931	319,699,645	630,886,658	763,171,084	540,443,042	(192,612,398)	(36,662,744)

* *Based on a measurement date of* June 30, 2018. *Will be used for fiscal year ending* June 30, 2019. *Employers' proportionate share of calculations of the net pension liability, pension expense and deferred inflows and outflows are outside the scope of this report.*

Statement of Outflows and Inflows Arising from
Current Reporting Period
Fiscal Year Ended June 30, 2018*

	Total Deferred (2019-2022)	**Outflow of Resources Recognized in Year Ending June 30**						
		2016 & Prior	2017	2018	2019	2020	2021	2022
Difference between expected and actual experience	$ 65,521,614	$ 26,192,322	$ 85,648,053	$ 73,671,613	$ 65,521,614	$ -	$ -	$ -
Changes in assumptions	1,286,257,095	839,269,348	450,459,443	911,103,978	719,456,117	566,800,978	-	-
Difference between projected and actual earnings on investments	641,310,572	543,345,528	394,885,367	394,885,367	394,885,365	246,425,207	-	-
Total	1,993,089,281	$ 1,408,807,198	930,992,863	1,379,660,958	1,179,863,096	813,226,185	-	-

	Total Deferred (2019-2022)	**(Inflows) of Resources Recognized in Year Ending June 30**						
		2016 & Prior	2017	2018	2019	2020	2021	2022
Difference between expected and actual experience	$ (181,032,053)	$ (1,127,803)	$ (1,127,803)	$ (101,946,143)	$ (100,861,308)	$ (80,170,745)	$ -	$ -
Changes in assumptions	(123,218,306)	-	(136,439,271)	(136,439,271)	(123,218,306)	-	-	-
Difference between projected and actual earnings on investments	(614,499,938)	(953,329,464)	(473,726,144)	(510,388,886)	(192,612,398)	(192,612,398)	(192,612,398)	(36,662,744)
Total	(918,750,297)	$ (954,457,267)	(611,293,218)	(748,774,300)	(416,692,012)	(272,783,143)	(192,612,398)	(36,662,744)

	Total Deferred (2019-2022)	**Increase (Decrease) in Pension Expense Arising from Assets and Liabilities Recognized in Year Ending June 30**						
		2016 & Prior	2017	2018	2019	2020	2021	2022
Total Liabilities	$ 1,047,528,350	$ 864,333,867	$ 398,540,422	$ 746,390,177	$ 560,898,117	$ 486,630,233	$ -	$ -
Total Assets	26,810,634	(409,983,936)	(78,840,777)	(115,503,519)	202,272,967	53,812,809	(192,612,398)	(36,662,744)
Total	1,074,338,984	$ 454,349,931	319,699,645	630,886,658	763,171,084	540,443,042	(192,612,398)	(36,662,744)

* *Based on a measurement date of June 30, 2018. Will be used for fiscal year ending June 30, 2019. Employers' proportionate share of calculations of the net pension liability, pension expense and deferred inflows and outflows are outside the scope of this report.*

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods
Fiscal Year Ended June 30, 2018*

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows (Inflows) of Resources
1. Due to Liabilities	$ 984,775,591	$ 238,385,414	$ 746,390,177
2. Due to Assets	0	115,503,519	(115,503,519)
3. Total	$ 984,775,591	$ 353,888,933	$ 630,886,658

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows (Inflows) of Resources
1. Differences between expected and actual experience	$ 73,671,613	$ 101,946,143	$ (28,274,530)
2. Assumption Changes	911,103,978	136,439,271	774,664,707
3. Net difference between projected and actual earnings on pension plan investments	0	115,503,519	(115,503,519)
4. Total	$ 984,775,591	$ 353,888,933	$ 630,886,658

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows (Inflows) of Resources
1. Differences between expected and actual experience	$ 65,521,614	$ 181,032,053	$ (115,510,439)
2. Assumption Changes	1,286,257,095	123,218,306	1,163,038,789
3. Net difference between projected and actual earnings on pension plan investments	26,810,634	0	26,810,634
4. Total	$ 1,378,589,343	$ 304,250,359	$ 1,074,338,984

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows (Inflows) of Resources
2019	$ 763,171,084
2020	540,443,042
2021	(192,612,398)
2022	(36,662,744)
2023	0
Thereafter	0
Total	$ 1,074,338,984

* *Based on a measurement date of June 30, 2018. Will be used for fiscal year ending June 30, 2019. Employers' proportionate share of calculations of the net pension liability, pension expense and deferred inflows and outflows are outside the scope of this report.*

Statement of Fiduciary Net Position
as of June 30, 2018

	2018
Assets	
Cash and short-term investments	$ 672,523,980
Receivables	
Members	$ 10,819,032
Non-employer contributing entity	74,687,334
Federal, trust funds and other	6,529,410
Pending investment sales	290,212,669
Interest and dividends	47,303,282
Total Receivables	$ 429,551,727
Prepaid expenses	$ 158,297
Investments, at fair value	
Equity investments	$ 10,693,258,510
Fixed income investments	4,747,532,656
Real estate investments	1,008,813,053
Alternative investments	2,433,890,246
Total Investments	$ 18,883,494,465
Securities lending collateral	$ 780,639,420
Capital assets, at cost, net of accumulated depreciation $ 19,688,845	$ 6,109,409
Total Assets	$ 20,772,477,298
Liabilities	
Payables	
Benefits payable	$ 13,124,100
Refunds payable	4,946,571
Securities lending collateral	779,626,493
Reverse repurchase agreements	34,476,500
Payable to brokers for unsettled trades	603,464,724
Administrative expenses payable	15,763,409
Total Liabilities	$ 1,451,401,797
Net Position Restricted for Pensions	$ 19,321,075,501

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2018

		2018
Additions		
Contributions		
Employer	$	39,659,344
Non-employer contributing entity		1,568,220,976
Member		282,726,126
Total Contributions	$	1,890,606,446
Investment Income		
Net Appreciation in Fair Value of Investments	$	1,208,428,215
Interest		127,396,974
Dividends		232,971,148
Securities lending		4,741,875
Gross Investment Income	$	1,573,538,212
Less investment expense		
Asset management expense		73,281,987
Securities lending expense		426,769
Net investment income	$	1,499,829,456
Total Additions	$	3,390,435,902
Deductions		
Benefits	$	2,446,291,238
Refunds of contributions		93,492,132
Administrative expense		14,396,609
Total Deductions	$	2,554,179,979
Net Increase in Net Position	$	836,255,923
Net Position Restricted for Pensions		
Beginning of Year	$	18,484,819,578
End of Year	$	19,321,075,501

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Auditor's Note – This information is intended to assist in preparation of the financial statements of the State Universities Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Schedule of Changes in Net Pension Liability and Related Ratios
Current Reporting Period
Fiscal Year Ended June 30, 2018

A. Total pension liability		
1. Service cost	$	628,356,344
2. Interest on the total pension liability		3,050,584,303
3. Changes of benefit terms		0
4. Difference between expected and actual experience of the total pension liability		(281,807,425)
5. Changes of assumptions		1,992,356,758
6. Benefit payments, including refunds of employee contributions		(2,539,783,370)
7. Net change in total pension liability		2,849,706,610
8. Total pension liability – beginning		43,965,925,573
9. Total pension liability – ending	$	46,815,632,183
B. Plan fiduciary net position		
1. Contributions – employer & non-employer contributing entity	$	1,607,880,320
2. Contributions – employee		282,726,126
3. Net investment income		1,499,829,456
4. Benefit payments, including refunds of employee contributions		(2,539,783,370)
5. Pension plan administrative expense		(14,396,609)
6. Other		0
7. Net change in plan fiduciary net position		836,255,923
8. Plan fiduciary net position – beginning		18,484,819,578
9. Plan fiduciary net position – ending	$	19,321,075,501
C. Net pension liability	$	27,494,556,682
D. Plan fiduciary net position as a percentage of the total pension liability		41.27 %
E. Covered-employee payroll	$	3,470,226,046
F. Net pension liability as a percentage of covered-employee payroll		792.30 %

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2018	2017	2016	2015	2014	2013
Total pension liability						
Service cost	$ 628,356,344	$ 658,715,745	$ 666,374,861	$ 654,968,438	$ 675,257,078	
Interest on the total pension liability	3,050,584,303	2,951,246,535	2,876,930,310	2,723,714,885	2,643,353,237	
Changes of benefit terms	-	-	-	-	-	
Difference between expected and actual experience	(281,807,425)	210,625,398	(3,426,377)	40,408,204	-	
Changes of assumptions	1,992,356,758	(396,096,848)	532,522,898	831,624,586	130,585,622	
Benefit payments	(2,446,291,238)	(2,339,897,357)	(2,235,812,995)	(2,129,977,721)	(2,002,869,428)	
Refunds	(93,492,132)	(89,569,617)	(85,015,923)	(83,715,720)	(82,897,092)	
Net change in total pension liability	2,849,706,610	995,023,856	1,751,572,774	2,037,022,672	1,363,429,417	
Total pension liability - beginning	43,965,925,573	42,970,901,717	41,219,328,943	39,182,306,271	37,818,876,854	
Total pension liability - ending (a)	$ 46,815,632,183	$ 43,965,925,573	$ 42,970,901,717	$ 41,219,328,943	$ 39,182,306,271	
Plan fiduciary net position						
Employer & non-employer contributing entity contributions	$ 1,607,880,320	$ 1,650,550,710	$ 1,582,294,952	$ 1,528,525,398	$ 1,502,863,618	
Employee contributions	282,726,126	278,642,830	278,883,776	267,682,083	283,081,326	
Pension plan net investment income	1,499,829,456	1,994,310,048	17,043,679	503,199,957	2,667,900,403	
Benefit payments	(2,446,291,238)	(2,339,897,357)	(2,235,812,995)	(2,129,977,721)	(2,002,869,428)	
Refunds	(93,492,132)	(89,569,617)	(85,015,923)	(83,715,720)	(82,897,092)	
Pension plan administrative expense	(14,396,609)	(14,847,009)	(14,731,372)	(14,069,273)	(13,857,522)	
Other	-	-	-	-	-	
Net change in plan fiduciary net position	836,255,923	1,479,189,605	(457,337,883)	71,644,724	2,354,221,305	
Plan fiduciary net position - beginning	18,484,819,578	17,005,629,973	17,462,967,856	17,391,323,132	15,037,101,827	
Plan fiduciary net position - ending (b)	$ 19,321,075,501	$ 18,484,819,578	$ 17,005,629,973	$ 17,462,967,856	$ 17,391,323,132	
Net pension liability - ending (a) - (b)	$ 27,494,556,682	$ 25,481,105,995	$ 25,965,271,744	$ 23,756,361,087	$ 21,790,983,139	
Plan fiduciary net position as a percentage of total pension liability	41.27 %	42.04 %	39.57 %	42.37 %	44.39 %	
Covered-employee payroll	$ 3,470,226,046	$ 3,458,319,586	$ 3,513,107,948	$ 3,606,536,514	$ 3,522,245,937	
Net pension liability as a percentage of covered-employee payroll	792.30 %	736.81 %	739.10 %	658.70 %	618.67 %	
Single Discount Rate, Beginning of Year	7.09 %	7.01 %	7.12 %	7.09 %	7.12 %	
Single Discount Rate, End of Year	6.65 %	7.09 %	7.01 %	7.12 %	7.09 %	7.12 %
Long-Term Municipal Bond Rate	3.62 %	3.56 %	2.85 %	3.80 %	4.29 %	4.63 %
Long-Term Municipal Bond Rate Date	June 30, 2018	June 30, 2017	June 30, 2016	June 25, 2015	June 26, 2014	June 27, 2013

10 fiscal years will be built prospectively.

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 (3.25% beginning in 2018 and 3.75% prior to 2018).

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability Multiyear

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2014	$ 39,182,306,271	$ 17,391,323,132	$ 21,790,983,139	44.39 %	$ 3,522,245,937	618.67 %
2015	41,219,328,943	17,462,967,856	23,756,361,087	42.37 %	3,606,536,514	658.70 %
2016	42,970,901,717	17,005,629,973	25,965,271,744	39.57 %	3,513,107,948	739.10 %
2017	43,965,925,573	18,484,819,578	25,481,105,995	42.04 %	3,458,319,586	736.81 %
2018	46,815,632,183	19,321,075,501	27,494,556,682	41.27 %	3,470,226,046	792.30 %

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 (3.25% beginning in 2018 and 3.75% prior to 2018).

Schedule of Contributions Multiyear
Last 10 Fiscal Years
($ in 000s)

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

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

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

Contributions include combined amounts from both the employers and the State.

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 (3.25% beginning in 2018 and 3.75% prior to 2018).

Notes to Schedule of Contributions

Valuation Date:	June 30, 2017
Notes	Actuarially determined contribution rates are calculated as of June 30, which is 12 months prior to the beginning of the fiscal year in which contributions will be made.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Projected Unit Credit
Amortization Method	The Statutory Contribution is equal to the level percentage of pay contribution determined so that the Plan attains a 90% funded ratio by the end of 2045.
Remaining Amortization Period	Not Applicable. An amortization payment is not directly calculated. The amortization payment is the difference between the total statutory contribution and the employer normal cost contribution.
Asset Valuation Method	5-Year smoothed market.
Inflation	2.25%.
Salary Increases	3.25% to 12.25% including inflation.
Investment Rate of Return	6.75% beginning with the actuarial valuation as of June 30, 2018.
Retirement Age	Experience-based table of rates. Last updated for the 2018 actuarial valuation pursuant to an experience study of the period 2015 - 2017.
Mortality	Non-disabled post-retirement mortality uses RP-2006 White Collar Healthy Annuitant, sex distinct with rates set for males multiplied by 96% and rates for females multiplied by 93%. Disabled post-retirement mortality uses RP-2006 Disabled Annuitant, sex distinct with rates for males multiplied by 112% and rates for females multiplied by 123%. Pre-retirement mortality uses RP-2006 White Collar Employee, sex distinct with rates multiplied by 93% for males and multiplied by 100% for males. The RP-2006 base mortality tables use a base mortality table of RP-2014 and projected the rates back from the year 2014 to the year 2006 using the Society of Actuaries (SOA) MP-2014 projection scale. The provision for future mortality improvement is based on the generational application of the MP-2017 improvement scales from 2006.
Cost-of-Living Adjustment	3.00% compound for members hired before January 1, 2011. The lesser of 1/2 of CPI-U or 3.00% simple for members hired on or after January 1, 2011.

Other Information:

Notes	The statutory contribution for fiscal year ending June 30, 2017 was determined in the actuarial valuation as of June 30, 2015 and the statutory contribution for fiscal year ending June 30, 2018 was determined in the actuarial valuation as of June 30, 2016. All other projected contributions are projected using current assumptions which were first effective with the funding actuarial valuation as of June 30, 2018, and reflected in the total pension liability as of June 30, 2018. The GASB Statement Nos. 67 and 68 actuarial valuation does not include provisions related to the Option Hybrid Plan created under P.A. 100-0023 which became effective July 6, 2017. SURS is currently not moving forward with implementation of the OHP.

Schedule of Investment Returns Multiyear
Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	

[1] *Annual money-weighted rate of return, net of investment expenses.*

To be provided by SURS.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Auditor's Note – This information is intended to assist in preparation of the financial statements of the State Universities Retirement System of Illinois. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Single Discount Rate

A Single Discount Rate of 6.65% was used to measure the total pension liability. This Single Discount Rate was based on an expected rate of return on pension plan investments of 6.75% and a municipal bond rate of 3.62%. The projection of cash flows used to determine this Single Discount Rate were the amounts of contributions attributable to current plan members, and assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the statutory contribution rates under the System's funding policy. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year 2075. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2075, and the municipal bond rate was applied to all benefit payments after that date.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 6.65%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

1% Decrease 5.65%	Current Single Discount Rate Assumption 6.65%	1% Increase 7.65%
$ 33,352,188,584	$ 27,494,556,682	$ 22,650,651,520

Summary of Population Statistics
as of June 30, 2017

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	64,545
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	81,316
Active Plan Members	64,117
Total Plan Members	209,978

Excludes SMP.

SECTION E

SUMMARY OF BENEFITS

It should be noted that the purpose of this Section 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.

Plans

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

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

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

The pay cap history is as follows:

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

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

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

The Optional Hybrid Plan is a hybrid plan. Members who elect to participate in the Optional Hybrid Plan (instead of Tier 2 or SMP) participate in both a defined benefit (DB) plan and a defined contribution (DC) plan. Under the DC plan, employees contribute a minimum of 4% of salary and employers contribute a rate between 2% and 6% of salary. Optional Hybrid Plan DC plan benefits are funded by the employers and are not included in this actuarial valuation.

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

Member Contributions

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

The total contribution is broken down as follows:

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

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

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

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

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

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

Effective Rate of Interest

The Effective Rate of Interest ("ERI") is the interest rate that is applied to member contribution balances. Effective for the 2006 fiscal year, the ERI for the purpose of determining the money purchase benefit is established by the State Comptroller annually. The ERI for other purposes such as the calculation of purchases of service credit, refunds for excess contributions, portable plan refunds and lump sum portable retirements is determined by the SURS Board annually and certified to the Governor. For purposes of the actuarial valuation, the assumed ERI is 6.75% beginning with the actuarial valuation as of June 30, 2018.

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

Retirement Benefits

Final Average Salary

Final average salary is equal to:

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 ten years or the average of the last 96 consecutive months within the last 120 months
Optional Hybrid Plan	Final average salary equal to the average salary during the last ten years of service.

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

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

Normal Retirement

Eligibility

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

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

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

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

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

Initial Benefit Amount

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

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

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

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

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

2. Money Purchase Formula (Applicable to Tier only, hired before July 1, 2005):

   a) The member contributions for retirement benefits (8.0% of compensation for police officers and firefighters and 6.5% of compensation for all others) accumulated with interest at the ERI, plus

   b) An imputed employer contribution match at $1.40 per dollar of member contribution accumulated with interest at the ERI.

   c) The total of the accumulations in (a) and (b) is converted into an annuity using a life annuity factor that takes into account neither the automatic 50% spousal survivor benefit nor the automatic annual increases.

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

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

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

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

Maximum Benefit

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

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

Benefit Duration

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

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

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

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

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 34 for a description of the increase for members who have elected the AAI buyout.

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

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

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

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

Early Retirement

Eligibility

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

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

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

Benefits

The benefit amounts and all terms of benefit payment are the same as that for Normal Retirement, except that the benefit amounts calculated under the General Formula and the Minimum Formula shall be reduced by .5% for each month by which the retirement date precedes the 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.

Benefits

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

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

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

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

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.

Annual Increases

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

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

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

Portable Plan

Eligibility

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

Benefits

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

Benefit Duration

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

Annual Increases

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

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

Lump Sum Death Benefit

Eligibility

Death of member prior to retirement.

Traditional Plan

Benefit

With Eligible Survivor

- 7/8^{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 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.

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

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

Benefit Duration

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

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

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

Portable Plan

Benefits

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

Benefit Duration

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

Annual Increases

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

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

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 (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 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 34 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 certified annually by the SURS Board, plus, if the member has the required years of service, a like amount of imputed employer contributions.

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

Accelerated Pension Benefit Options

Under Public Act (PA) 100-0587, SURS shall offer an accelerated pension benefit payment to eligible members beginning on the implementation date and until June 30, 2021.
There are two accelerated pension benefit payment options that will be offered:

1. For vested inactive members, a payment equal to 60% of the present value of the member's pension benefit in lieu of receiving any pension benefit.

2. For members eligible for retirement, a payment equal to 70% of the difference between: (i) the present value of the automatic annual increases (AAI) to a Tier 1 member's retirement and survivor's annuity under the current AAI provisions and (ii) the present value of the automatic annual increases to the Tier 1 member's retirement annuity under revised AAI provisions

    a. The current AAI provisions are an annual 3% increase of the prior year's benefit (compound COLA) payable as of the January 1 following the annuity start date (first increase is prorated).
    b. The revised AAI provisions are an annual 1.5% increase of the originally granted benefit (simple COLA) payable as of the later of age 67 or the first anniversary of the annuity start. The survivor AAI is first payable 1 year after the survivor annuity commences.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Valuation Methods – Calculation of the Total Pension Liability Entry Age Normal Method

Actuarial Cost Method – Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an Individual Entry-Age Actuarial Cost Method having the following characteristics:

(i) The annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Valuation Methods – Calculation of Contributions Projected Unit Credit Method

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

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

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

Funding Policy to Calculate Statutory Contributions

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

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

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

State Contributions

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

Employer Contributions

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

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

Employer Contributions

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

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

Statutory Contributions Related to the Optional Hybrid Plan

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

Phase In of the Financial Impact of Assumption Changes

The following 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.

Valuation Year Ending 6/30	2018	2019	2020	2021	2022
Applicable Fiscal Year Ending 6/30	2020	2021	2022	2023	2024
	$ in Millions				
	After Impact of Bonds				
Contribution Before Assumption Change:					
(1) Contribution Dollar	$ 1,866.1				
(2) Contribution Rate	40.67%				
Contribution After Assumption Change:					
(3) Contribution Dollar	2,004.1				
(4) Contribution Rate	44.04%				
(5) Assumption Impact as Percentage of Payroll					
=(4)-(3)	3.36%				
(6) Assumption Change Impact Recognized					
This Year (5 year recognition)					
(6a) From This Year	0.67%				
(6b) From One Year Ago	0.00%	0.67%			
(6c) From Two Years Ago	0.00%	0.00%	0.67%		
(6d) From Three Years Ago	0.25%	0.00%	0.00%	0.67%	
(6e) From Four Years Ago	0.38%	0.25%	0.00%	0.00%	0.68%
(6f) Total Recognized Assumption Change Impact	1.30%	0.92%	0.67%	0.67%	0.68%

Contribution Related to Pay in Excess of Governor's Pay

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

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

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

Asset Valuation Method

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

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

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

Actuarial 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%

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.

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

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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the Fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) a tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.75%; the municipal bond rate is 3.62%; and the resulting Single Discount Rate is 6.65%.

The tables in this section provide detailed information on the development of the Single Discount Rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

As shown on Page 51, the sum of the present value of (1) the funded portion of projected benefit payments using the expected 6.75% rate of return on assets plus (2) the present value of the unfunded projected benefit payments using a tax-exempt municipal bond rate of 3.62% is equal to the present value of all projected benefit payments using a single equivalent discount rate of 6.65%.

Single Discount Rate Development
Projection of Contributions Ending June 30 for 2018 to 2067

Year	Projected Contributions from Current Employees	Projected Service Cost and Expense Contributions	Projected UAL Contributions	Projected Total Contributions
0				
1	$ 259,334,735	$ 376,427,471	$ 1,255,632,502	$ 1,891,394,708
2	242,361,443	351,454,706	1,341,430,839	1,935,246,988
3	226,770,137	328,563,643	1,467,473,432	2,022,807,213
4	213,296,638	307,044,977	1,585,410,506	2,105,752,120
5	201,069,050	287,437,480	1,675,196,277	2,163,702,808
6	189,633,951	269,026,551	1,744,583,309	2,203,243,811
7	178,713,203	251,445,525	1,821,751,130	2,251,909,858
8	168,258,368	234,452,842	1,871,573,393	2,274,284,602
9	158,344,665	218,115,260	1,928,239,216	2,304,699,140
10	148,810,525	202,537,627	1,985,817,421	2,337,165,574
11	139,771,874	187,569,018	2,040,523,757	2,367,864,650
12	130,960,734	173,326,342	2,098,473,005	2,402,760,082
13	122,251,716	159,472,256	2,152,793,583	2,434,517,555
14	113,634,125	145,857,543	2,209,039,000	2,468,530,669
15	105,331,664	132,534,175	2,273,311,408	2,511,177,247
16	97,520,448	119,891,374	2,346,236,137	2,563,647,960
17	90,052,782	108,112,215	2,454,808,180	2,652,973,177
18	82,870,500	97,052,701	2,524,576,449	2,704,499,650
19	75,959,504	86,740,373	2,595,101,654	2,757,801,531
20	69,278,527	77,137,016	2,666,929,747	2,813,345,290
21	62,897,019	68,106,646	2,739,955,323	2,870,958,988
22	56,969,104	59,697,557	2,814,071,032	2,930,737,693
23	51,475,149	52,050,079	2,889,193,006	2,992,718,234
24	46,640,645	45,123,510	2,966,220,070	3,057,984,226
25	42,326,259	39,145,717	3,044,268,256	3,125,740,232
26	38,472,586	33,963,533	3,123,258,664	3,195,694,783
27	34,902,492	29,505,771	3,202,609,381	3,267,017,645
28	31,523,672	25,586,330	3,282,434,321	3,339,544,323
29	28,330,209	22,110,120	424,310,099	474,750,428
30	25,247,614	19,025,850	423,530,459	467,803,923
31	22,297,246	16,218,274	422,732,794	461,248,314
32	19,505,879	13,698,694	421,961,901	455,166,474
33	16,870,000	11,465,264	421,282,441	449,617,705
34	14,380,622	9,527,111	420,691,427	444,599,160
35	12,018,929	7,881,167	420,190,000	440,090,096
36	9,826,970	6,431,172	419,843,141	436,101,282
37	7,747,891	5,182,911	419,736,482	432,667,284
38	5,822,215	4,047,733	419,864,050	429,733,998
39	4,171,209	3,001,951	420,244,365	427,417,525
40	2,864,812	2,113,222	420,898,846	425,876,880
41	1,924,442	1,417,279	421,858,418	425,200,140
42	1,241,690	937,281	423,009,119	425,188,091
43	770,325	596,497	424,401,281	425,768,103
44	458,116	365,128	426,042,337	426,865,580
45	264,355	213,245	427,936,909	428,414,510
46	147,395	120,377	430,111,601	430,379,373
47	76,397	65,762	432,569,912	432,712,072
48	39,696	31,910	435,272,861	435,344,467
49	19,879	15,549	438,215,169	438,250,598
50	9,915	7,021	441,388,159	441,405,095

Year 1 is the year beginning June 30, 2017, and ending June 30, 2018.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Single Discount Rate Development
Projection of Plan Fiduciary Net Position Ending June 30 for 2018 to 2067

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 6.750%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 18,484,819,578	$ 1,891,394,708	$ 2,568,216,289	$ 14,697,218	$ 1,224,767,647	$ 19,018,068,425
2	19,018,068,425	1,935,246,988	2,654,352,270	14,060,850	1,259,379,298	19,544,281,592
3	19,544,281,592	2,022,807,213	2,756,354,415	13,417,638	1,294,440,585	20,091,757,337
4	20,091,757,337	2,105,752,120	2,848,502,898	12,915,099	1,331,106,332	20,667,197,793
5	20,667,197,793	2,163,702,808	2,944,666,903	12,481,272	1,368,694,325	21,242,446,749
6	21,242,446,749	2,203,243,811	3,043,747,908	12,066,983	1,405,560,720	21,795,436,389
7	21,795,436,389	2,251,909,858	3,145,039,192	11,651,932	1,441,154,199	22,331,809,322
8	22,331,809,322	2,274,284,602	3,246,277,959	11,218,649	1,474,755,556	22,823,352,874
9	22,823,352,874	2,304,699,140	3,343,766,977	10,789,300	1,505,722,200	23,279,217,937
10	23,279,217,937	2,337,165,574	3,441,379,827	10,358,556	1,534,344,602	23,698,989,730
11	23,698,989,730	2,367,864,650	3,537,488,722	9,930,686	1,560,521,867	24,079,956,838
12	24,079,956,838	2,402,760,082	3,631,469,308	9,487,206	1,584,290,307	24,426,050,714
13	24,426,050,714	2,434,517,555	3,723,852,238	9,030,151	1,605,654,118	24,733,339,999
14	24,733,339,999	2,468,530,669	3,813,615,164	8,559,101	1,624,560,950	25,004,257,352
15	25,004,257,352	2,511,177,247	3,892,655,415	8,087,127	1,641,655,310	25,256,347,367
16	25,256,347,367	2,563,647,960	3,906,513,765	7,624,753	1,659,968,625	25,565,825,434
17	25,565,825,434	2,652,973,177	3,966,760,373	7,168,327	1,681,838,925	25,926,708,836
18	25,926,708,836	2,704,499,650	4,018,782,664	6,715,442	1,706,197,130	26,311,907,509
19	26,311,907,509	2,757,801,531	4,063,716,291	6,265,886	1,732,490,782	26,732,217,645
20	26,732,217,645	2,813,345,290	4,101,009,440	5,816,554	1,761,482,534	27,200,219,475
21	27,200,219,475	2,870,958,988	4,131,839,636	5,374,967	1,793,976,501	27,727,940,361
22	27,727,940,361	2,930,737,693	4,150,637,670	4,954,504	1,830,972,133	28,334,058,014
23	28,334,058,014	2,992,718,234	4,159,814,012	4,555,768	1,873,651,355	29,036,057,823
24	29,036,057,823	3,057,984,226	4,156,976,406	4,199,276	1,923,309,143	29,856,175,509
25	29,856,175,509	3,125,740,232	4,139,050,545	3,876,888	1,981,522,334	30,820,510,643
26	30,820,510,643	3,195,694,783	4,108,802,283	3,585,369	2,049,951,259	31,953,769,033
27	31,953,769,033	3,267,017,645	4,068,463,607	3,310,599	2,130,162,364	33,279,174,837
28	33,279,174,837	3,339,544,323	4,016,917,876	3,044,797	2,223,755,150	34,822,511,636
29	34,822,511,636	474,750,428	3,957,118,882	2,787,783	2,234,816,126	33,572,171,525
30	33,572,171,525	467,803,923	3,892,559,506	2,532,482	2,152,339,329	32,297,222,790
31	32,297,222,790	461,248,314	3,823,257,654	2,280,873	2,068,371,750	31,001,304,326
32	31,001,304,326	455,166,474	3,749,960,182	2,035,631	1,983,136,882	29,687,611,869
33	29,687,611,869	449,617,705	3,673,258,799	1,796,754	1,896,832,761	28,359,006,781
34	28,359,006,781	444,599,160	3,593,865,868	1,563,546	1,809,628,809	27,017,805,335
35	27,017,805,335	440,090,096	3,512,585,778	1,334,423	1,721,654,033	25,665,629,263
36	25,665,629,263	436,101,282	3,429,465,306	1,114,445	1,633,016,536	24,304,167,332
37	24,304,167,332	432,667,284	3,345,013,266	897,825	1,543,814,758	22,934,738,283
38	22,934,738,283	429,733,998	3,259,295,339	689,637	1,454,133,570	21,558,620,875
39	21,558,620,875	427,417,525	3,170,666,661	505,126	1,364,117,242	20,178,983,856
40	20,178,983,856	425,876,880	3,076,675,703	354,720	1,274,065,987	18,801,896,299
41	18,801,896,299	425,200,140	2,976,266,984	243,714	1,184,427,255	17,435,012,996
42	17,435,012,996	425,188,091	2,870,706,564	160,877	1,095,669,474	16,085,003,120
43	16,085,003,120	425,768,103	2,760,919,719	102,133	1,008,209,818	14,757,959,188
44	14,757,959,188	426,865,580	2,647,716,445	62,170	922,430,340	13,459,476,494
45	13,459,476,494	428,414,510	2,532,067,722	36,729	838,674,438	12,194,460,991
46	12,194,460,991	430,379,373	2,415,125,131	20,971	757,234,013	10,966,928,276
47	10,966,928,276	432,712,072	2,297,840,426	11,133	678,347,049	9,780,135,838
48	9,780,135,838	435,344,467	2,180,646,377	5,926	602,216,841	8,637,044,843
49	8,637,044,843	438,250,598	2,063,937,982	3,041	529,029,367	7,540,383,785
50	7,540,383,785	441,405,095	1,948,028,710	1,554	458,957,583	6,492,716,199

Year 1 is the year beginning June 30, 2017, and ending June 30, 2018.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Single Discount Rate Development
Present Values of Projected Benefits Ending
June 30 for 2018 to 2067

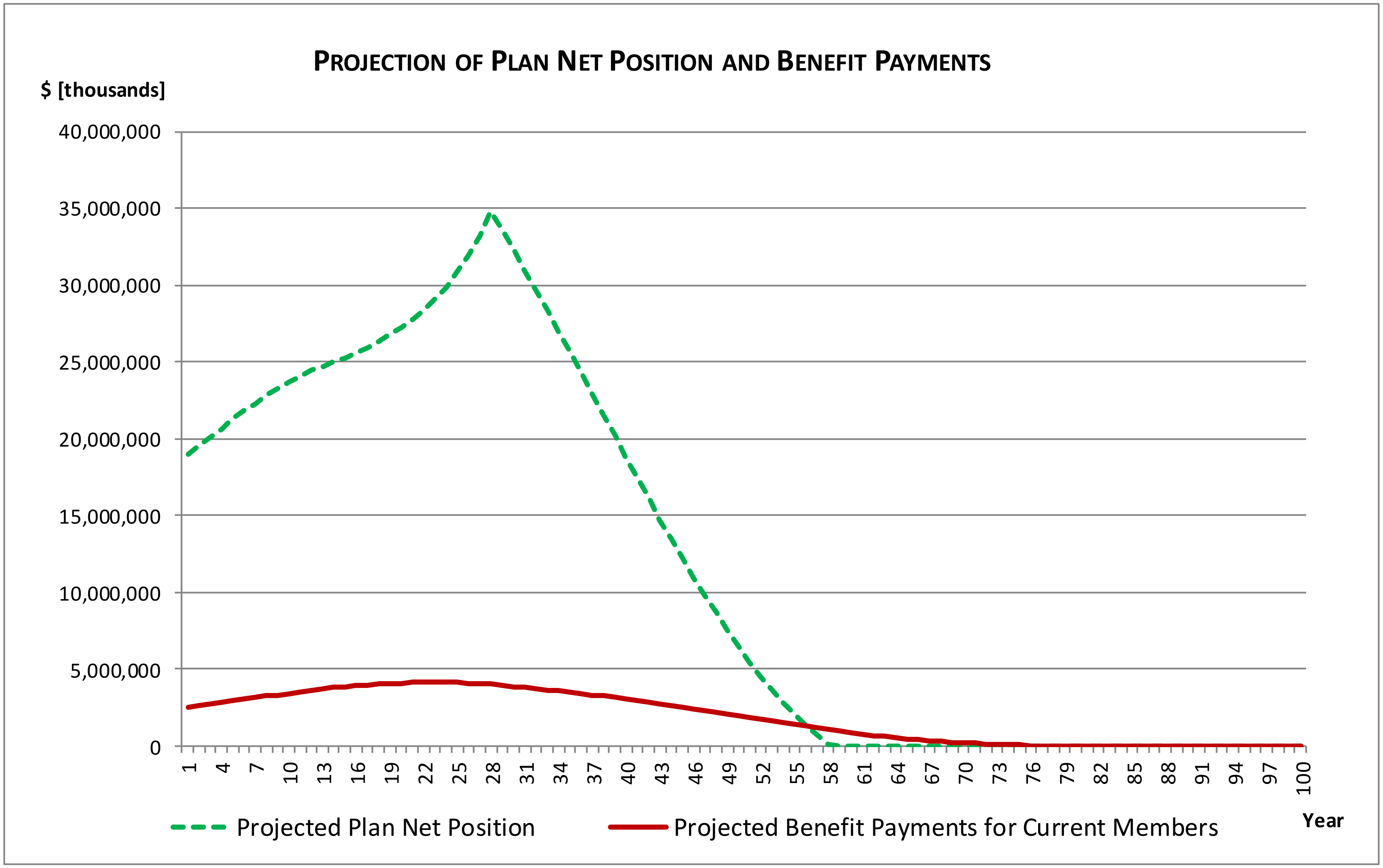
Year	Projected Beginning Plan Net Position	Projected Benefit Payments*	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate of 6.75% (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate of 3.62% (vf)	Present Value of All Benefit Payments using Single Discount Rate (SDR) of 6.65%
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+SDR)^(a-.5)
1	$ 18,484,819,578	$ 2,582,913,507	$ 2,582,913,507	$ 0	$ 2,499,918,909	$ 0	$ 2,501,095,846
2	19,018,068,425	2,668,413,119	2,668,413,119	0	2,419,364,153	0	2,422,782,798
3	19,544,281,592	2,769,772,053	2,769,772,053	0	2,352,471,224	0	2,358,014,036
4	20,091,757,337	2,861,417,997	2,861,417,997	0	2,276,636,589	0	2,284,149,914
5	20,667,197,793	2,957,148,175	2,957,148,175	0	2,204,030,550	0	2,213,386,869
6	21,242,446,749	3,055,814,891	3,055,814,891	0	2,133,554,213	0	2,144,629,267
7	21,795,436,389	3,156,691,124	3,156,691,124	0	2,064,623,400	0	2,077,295,199
8	22,331,809,322	3,257,496,608	3,257,496,608	0	1,995,835,965	0	2,009,976,794
9	22,823,352,874	3,354,556,276	3,354,556,276	0	1,925,342,824	0	1,940,810,334
10	23,279,217,937	3,451,738,383	3,451,738,383	0	1,855,850,451	0	1,872,521,568
11	23,698,989,730	3,547,419,408	3,547,419,408	0	1,786,692,272	0	1,804,439,965
12	24,079,956,838	3,640,956,513	3,640,956,513	0	1,717,848,379	0	1,736,546,169
13	24,426,050,714	3,732,882,389	3,732,882,389	0	1,649,854,937	0	1,669,383,406
14	24,733,339,999	3,822,174,265	3,822,174,265	0	1,582,501,222	0	1,602,740,503
15	25,004,257,352	3,900,742,541	3,900,742,541	0	1,512,909,581	0	1,533,701,907
16	25,256,347,367	3,914,138,518	3,914,138,518	0	1,422,112,630	0	1,443,014,864
17	25,565,825,434	3,973,928,700	3,973,928,700	0	1,352,539,601	0	1,373,711,795
18	25,926,708,836	4,025,498,107	4,025,498,107	0	1,283,458,002	0	1,304,776,500
19	26,311,907,509	4,069,982,177	4,069,982,177	0	1,215,588,713	0	1,236,943,747
20	26,732,217,645	4,106,825,993	4,106,825,993	0	1,149,033,181	0	1,170,320,162
21	27,200,219,475	4,137,214,603	4,137,214,603	0	1,084,342,383	0	1,105,471,057
22	27,727,940,361	4,155,592,173	4,155,592,173	0	1,020,289,507	0	1,041,149,728
23	28,334,058,014	4,164,369,780	4,164,369,780	0	957,793,539	0	978,296,500
24	29,036,057,823	4,161,175,682	4,161,175,682	0	896,542,300	0	916,596,528
25	29,856,175,509	4,142,927,433	4,142,927,433	0	836,169,218	0	855,678,116
26	30,820,510,643	4,112,387,652	4,112,387,652	0	777,522,584	0	796,412,537
27	31,953,769,033	4,071,774,206	4,071,774,206	0	721,165,212	0	739,381,656
28	33,279,174,837	4,019,962,673	4,019,962,673	0	666,968,340	0	684,459,803
29	34,822,511,636	3,959,906,665	3,959,906,665	0	615,460,612	0	632,196,111
30	33,572,171,525	3,895,091,988	3,895,091,988	0	567,107,185	0	583,076,491
31	32,297,222,790	3,825,538,528	3,825,538,528	0	521,761,617	0	536,959,260
32	31,001,304,326	3,751,995,813	3,751,995,813	0	479,373,485	0	493,801,089
33	29,687,611,869	3,675,055,553	3,675,055,553	0	439,853,131	0	453,518,022
34	28,359,006,781	3,595,429,415	3,595,429,415	0	403,112,869	0	416,027,799
35	27,017,805,335	3,513,920,201	3,513,920,201	0	369,062,490	0	381,245,233
36	25,665,629,263	3,430,579,750	3,430,579,750	0	337,526,323	0	348,996,434
37	24,304,167,332	3,345,911,091	3,345,911,091	0	308,380,311	0	319,160,259
38	22,934,738,283	3,259,984,975	3,259,984,975	0	281,462,123	0	291,575,450
39	21,558,620,875	3,171,171,787	3,171,171,787	0	256,481,619	0	265,947,595
40	20,178,983,856	3,077,030,423	3,077,030,423	0	233,131,192	0	241,963,039
41	18,801,896,299	2,976,510,698	2,976,510,698	0	211,255,565	0	219,465,183
42	17,435,012,996	2,870,867,441	2,870,867,441	0	190,873,645	0	198,477,950
43	16,085,003,120	2,761,021,852	2,761,021,852	0	171,962,910	0	178,982,229
44	14,757,959,188	2,647,778,614	2,647,778,614	0	154,482,301	0	160,939,513
45	13,459,476,494	2,532,104,451	2,532,104,451	0	138,391,938	0	144,312,374
46	12,194,460,991	2,415,146,101	2,415,146,101	0	123,653,012	0	129,064,352
47	10,966,928,276	2,297,851,559	2,297,851,559	0	110,208,573	0	115,139,890
48	9,780,135,838	2,180,652,303	2,180,652,303	0	97,974,250	0	102,454,540
49	8,637,044,843	2,063,941,022	2,063,941,022	0	86,867,020	0	90,924,937
50	7,540,383,785	1,948,030,264	1,948,030,264	0	76,804,286	0	80,467,845

Year 1 is the year beginning June 30, 2017, and ending June 30, 2018.
The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.
**Includes projected benefit payments and administrative expenses.*

Single Discount Rate Development
Present Values of Projected Benefits Ending
June 30 for 2068 to 2117 (Concluded)

Year	Projected Beginning Plan Net Position	Projected Benefit Payments*	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate of 3.62% (vf)	Present Value of All Benefit Payments using Single Discount Rate (SDR) of 6.65%
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+SDR)^(a-.5)
51	$ 6,492,716,199	$ 1,833,078,700	$ 1,833,078,700	$ 0	$ 67,702,232	$ 0	$ 70,998,426
52	5,496,585,566	1,719,290,181	1,719,290,181	0	59,484,412	0	62,439,259
53	4,554,485,553	1,606,875,111	1,606,875,111	0	52,079,671	0	54,718,177
54	3,668,854,550	1,496,082,027	1,496,082,027	0	45,422,771	0	47,768,967
55	2,842,036,715	1,387,195,934	1,387,195,934	0	39,453,737	0	41,530,694
56	2,076,243,718	1,280,534,139	1,280,534,139	0	34,117,218	0	35,947,069
57	1,373,513,646	1,176,441,274	1,176,441,274	0	29,361,945	0	30,965,887
58	735,680,034	1,075,284,292	735,680,034	339,604,258	17,200,286	43,950,804	26,538,570
59	0	977,444,519	0	977,444,519	0	122,079,353	22,619,722
60	0	883,309,160	0	883,309,160	0	106,468,038	19,166,766
61	0	793,265,002	0	793,265,002	0	92,274,399	16,139,695
62	0	707,682,258	0	707,682,258	0	79,443,368	13,500,700
63	0	626,898,270	0	626,898,270	0	67,916,113	11,213,882
64	0	551,205,451	0	551,205,451	0	57,629,608	9,245,137
65	0	480,842,003	0	480,842,003	0	48,516,669	7,562,114
66	0	415,984,522	0	415,984,522	0	40,506,261	6,134,214
67	0	356,736,653	0	356,736,653	0	33,523,483	4,932,538
68	0	303,123,109	0	303,123,109	0	27,490,134	3,929,911
69	0	255,088,228	0	255,088,228	0	22,325,677	3,100,952
70	0	212,499,256	0	212,499,256	0	17,948,496	2,422,161
71	0	175,152,825	0	175,152,825	0	14,277,238	1,871,990
72	0	142,778,779	0	142,778,779	0	11,231,742	1,430,840
73	0	115,049,843	0	115,049,843	0	8,734,256	1,081,071
74	0	91,595,977	0	91,595,977	0	6,710,775	807,023
75	0	72,017,053	0	72,017,053	0	5,091,996	594,957
76	0	55,893,318	0	55,893,318	0	3,813,897	432,963
77	0	42,799,669	0	42,799,669	0	2,818,421	310,866
78	0	32,320,075	0	32,320,075	0	2,053,971	220,113
79	0	24,058,199	0	24,058,199	0	1,475,508	153,630
80	0	17,645,104	0	17,645,104	0	1,044,381	105,652
81	0	12,745,644	0	12,745,644	0	728,036	71,558
82	0	9,063,063	0	9,063,063	0	499,600	47,710
83	0	6,340,766	0	6,340,766	0	337,323	31,298
84	0	4,362,982	0	4,362,982	0	223,998	20,193
85	0	2,951,369	0	2,951,369	0	146,231	12,808
86	0	1,961,516	0	1,961,516	0	93,792	7,982
87	0	1,280,228	0	1,280,228	0	59,077	4,885
88	0	820,375	0	820,375	0	36,534	2,935
89	0	516,049	0	516,049	0	22,179	1,731
90	0	318,352	0	318,352	0	13,204	1,001
91	0	192,350	0	192,350	0	7,699	567
92	0	113,811	0	113,811	0	4,396	315
93	0	65,831	0	65,831	0	2,454	171
94	0	37,136	0	37,136	0	1,336	90
95	0	20,406	0	20,406	0	709	47
96	0	10,899	0	10,899	0	365	23
97	0	5,653	0	5,653	0	183	11
98	0	2,860	0	2,860	0	89	5
99	0	1,396	0	1,396	0	42	2
100	0	0	0	0	0	0	0
				Totals	$ 49,880,968,609	$ 819,501,836	$ 50,700,470,445

Year 1 is the year beginning June 30, 2017, and ending June 30, 2018.
The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.
**Includes projected benefit payments and administrative expenses.*



Year 1 is the year beginning June 30, 2017, and ending June 30, 2018.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Accrued Service	Service credited under the system that was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms (Continued)

Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of employees that are provided with pensions through the pension plan.
Deferred Inflows and Outflows	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Deferred Retirement Option Program (DROP)	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms (Continued)

Entry Age Actuarial Cost Method (EAN)	The EAN is a cost method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
Fiduciary Net Position	The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contributing entities.
Normal Cost	The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

Glossary of Terms (Concluded)

Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
Total Pension Expense	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: 1. Service Cost 2. Interest on the Total Pension Liability 3. Current-Period Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
Total Pension Liability (TPL)	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
Unfunded Actuarial Accrued Liability (UAAL)	The UAAL is the difference between actuarial accrued liability and valuation assets.
Valuation Assets	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.