

ACTUARIAL

- 78 LETTER OF CERTIFICATION
- 79 ACTUARIAL REPORT
- 83 ANALYSIS OF FUNDING
- 87 TESTS OF FINANCIAL SOUNDNESS

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LETTER OF CERTIFICATION



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December 14, 2018

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

Re: Certification of Actuarial Results.

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the State Universities Retirement System of Illinois ("SURS") as of June 30, 2018. GRS provided the June 30, 2018 actuarial valuation report to the Board of Trustees on November 9, 2018. The purpose of this actuarial valuation, which is performed annually, is to determine the funding status and annual contribution requirements of SURS. GRS has prepared this actuarial valuation exclusively for the benefit of, and at the request of the Trustees of the State Universities Retirement System; GRS is not responsible for reliance upon this actuarial valuation for any other purpose or by any other party.

The actuarial valuation is based upon:

- Data relative to the Members of SURS** – Data for all members, including those participating in the Self Managed Plan, was provided by SURS staff. GRS reviewed such data for reasonableness, but did not verify or audit the data.
- Assets of the Fund** – The values of SURS assets are provided by SURS staff and were reviewed for reasonableness, but were not verified or audited. First effective with the actuarial valuation as of June 30, 2009, the actuarial value of assets, as defined in statute, smooths investment gains and losses compared to the actuarial assumption of 6.75% (7.25% prior to fiscal year 2019, 7.75% prior to fiscal year 2015 and 8.50% prior to fiscal year 2011) over a five-year period, and is calculated by the actuary and used to develop actuarial results.
- Benefit Provisions** – The benefit provisions for members hired on or after January 1, 2011, were changed under Public Act 96-0889. PA 100-0023, effective July 6, 2017, creates a new plan option (Optional Hybrid Plan or OHP). SURS is not currently moving forward with the implementation of the OHP created under PA 100-0023. Additional clarifying legislation is needed for SURS to be able to do so.
- Actuarial Cost Method** – The actuarial cost method prescribed in the statute and utilized by SURS is the Projected Unit Credit Cost Method. The objective of this method is to finance the benefits of SURS as such benefits accrue to each member. Any Unfunded Actuarial Accrued Liability (UAAL) under this method is separately financed. All actuarial gains and losses under this method are reflected in the UAAL.
- Actuarial Assumptions** – The actuarial assumptions used in this actuarial valuation are summarized in the next few pages. The actuarial assumptions were reviewed and updated as part of the experience study conducted for the period June 30, 2014 through June 30, 2017, and adopted by the Board first effective for the actuarial valuation as of June 30, 2018. 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.

The actuarial assumptions and methods used to calculate the actuarial liabilities, including the economic and demographic assumptions and the actuarial cost method, are in accordance with the Actuarial Standards of Practice. The actuarial assumptions are set by the Board under Section 15-155(a) of the Illinois Pension Code and the actuarial cost method is prescribed in Section 15-155 of the Illinois Pension Code. Calculations performed for GASB Statement Number 67 were performed in accordance with the requirements under the Statement, including the use of the Entry Age Normal Cost Method and a single discount rate of 6.65% for fiscal year ending June 30, 2018. Liabilities as of June 30, 2017, projected to June 30, 2018, were used for the GASB 67 schedules.

The trend data in the Financial Section and the schedules and other data in the Actuarial Section are prepared by SURS staff with our input.

The funding objective as defined in the Illinois Pension Code is to collect employer and employee contributions sufficient to provide the benefits of SURS when due and to achieve an asset value equal to 90% of the Actuarial Accrued Liability by the end of fiscal year 2045. The financing objective of SURS and the funding process to reach that objective are set out in Section 15-155 of the SURS Article of the Illinois Pension Code. Under the provisions of PA 100-0023, employers make contributions beginning in fiscal year 2018 for new members and for the portion of payroll for current members in excess of the Governor's pay.

The statutory funding policy set out in Section 15-155 of the Illinois Pension Code results in a near-term contribution requirement that is less than a reasonable actuarially determined contribution. We recommend the development and adherence to a funding policy that funds the normal cost of the plan as well as an amortization payment that would seek to pay off any unfunded accrued liability over a closed period at least as long as 15 years (to limit contribution volatility) and no more than the period of time in order attain 100% funding by 2045 (26 years remaining in the actuarial valuation as of June 30, 2018). Although prior year statutory contribution requirements were met, the statutory funding method generates a contribution requirement that is less than a reasonable actuarially determined contribution. Meeting the statutory requirement does not mean that the undersigned agree that adequate actuarial funding has been achieved.

To the best of our knowledge, this actuarial statement is complete and accurate, fairly presents the actuarial position of SURS as of June 30, 2018, based on the data and actuarial techniques described above and applicable statutes, and has been prepared in accordance with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board, except where otherwise noted. The actuarial valuation report was prepared in accordance with the applicable law.

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

The signing actuaries are independent of the plan sponsor.

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

Respectfully submitted,

Amy Williams, ASA, MAAA, FCA
Consultant

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

David T. Kausch, FSA, EA, MAAA, FCA
Senior Consultant

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ACTUARIAL REPORT

Pension Financing

The State Universities Retirement System of Illinois (SURS) is financed by non-employer contributing entity contributions (State appropriations), employee contributions, employer contributions (trust, federal and grant funds), and investment earnings. Employee contributions are established by the Illinois Compiled Statutes at 8% of pay. Investment earnings and State funding are primary determinants of the System's financial status.

Non-employer contributing entity and employer contributions are determined through annual actuarial valuations. Actuaries use demographic data (such as employee age, salary, and service credits), economic assumptions (such as estimated salary increases and interest rates), and decrement assumptions (such as employee turnover, mortality, and disability rates) in performing these valuations.

Under the Illinois Compiled Statutes (40 ILCS 5/15-155), the required employer contributions (statutory contribution) under the statutory funding plan are calculated by the actuaries on an annual basis. To determine the statutory contribution, the actuary calculates the actuarial accrued liability and the actuarial value of assets. The normal cost for the active members is equal to the portion of the actuarial accrued liability assigned to this year. Any shortfall between the actuarial value of assets and the actuarial accrued liability is referred to as the unfunded actuarial accrued liability. The unfunded actuarial accrued liability is amortized over a 30-year closed amortization period.

Actuarial Asset Valuation

The actuarial value of assets is used in determining the funding progress of the System and in establishing the employer contribution rates necessary to adhere to the statutory funding plan. The actuarial value of assets is based on a smoothed expected income investment rate of 6.75%. Investment income in excess or shortfall of the expected 6.75% rate on fair value is smoothed over a five-year period with 20% of a year's excess or shortfall being recognized each year beginning with the current year. The use of this actuarial method began with the valuation for the period ending June 30, 2009, as required by Public Act 96-0043, which was signed into law on July 15, 2009.

In addition to an annual actuarial valuation, SURS periodically undertakes an actuarial audit by an independent firm. An actuarial audit is conducted to ensure that the actuarial valuation and other actuarial processes are performed accurately and that the methods and assumptions utilized are reasonable and prudent. An actuarial audit was performed and completed by Segal Consulting May 2016. The results of the audit were favorable and concluded that the calculations, method and assumptions were reasonable.

Actuarial Cost Method

For financial reporting, the entry age actuarial cost method is applied in accordance with the Governmental Accounting Standards Board (GASB) Statements 67 and 68. For purposes of determining the System's funding calculation of the non-employer contributing entity and employer contribution, the projected unit credit cost method is used as required by Public Act 96-0043. Under this method, the projected pension at retirement age is first calculated and the value thereof at the individual member's current attained age is determined. The normal cost for the member for the current year is equal to the value so determined divided by the member's projected years of service at retirement. The employer normal cost for fiscal year 2018 was 12.46%. The actuarial liability at any point in time is the value of the projected pensions at that time less the value of future normal costs. For ancillary benefits for active members, in particular disability benefits, death and survivor benefits, termination benefits, and the postretirement increases, the same procedure as outlined above is followed. Estimated annual administrative expenses are added to the normal cost.

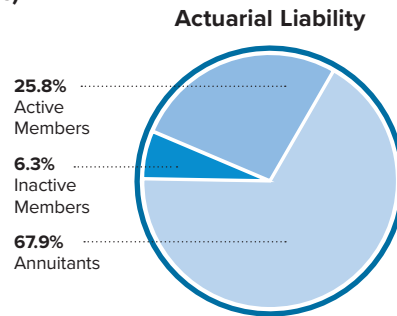
Employee Data

Employee data are provided by the administrative staff of the State Universities Retirement System. Various tests are applied to check internal consistency as well as consistency from year to year. No calculations are made for employees not yet hired as of the valuation date.

ACTUARIAL REPORT

Valuation Results For Fiscal Year Ended June 30, 2018 (\$ in millions)

Actuarial liability (reserves)	
For members receiving annuities	\$ 30,710.7
For inactive members	2,859.5
For active members	11,688.5
Total	<u>45,258.7</u>
Actuarial value of assets	
available for benefits	19,347.9
Unfunded actuarial accrued liability	<u>\$ 25,910.8</u>



Analysis of Financial Experience For Fiscal Year Ended June 30, 2018 (\$ in millions)

Investments other than 6.75%	\$ (92.7)
Salary increases other than 3.25%	(8.5)
Age and service retirement differences	16.1
Termination differences	15.3
Mortality and disability differences	2.0
Benefit recipient differences	20.1
New entrants	76.6
Other actuarial differences	<u>(13.6)</u>
Total actuarial gain	<u>\$ 15.3</u>

Change in the Unfunded Actuarial Accrued Liability (\$ in millions)

Unfunded actuarial accrued liability at June 30, 2017	\$ 23,259.0
Expected increase in unfunded actuarial accrued liability	455.2
Impact of change in actuarial assumptions	2,181.3
Total actuarial gain	<u>15.3</u>
Unfunded actuarial accrued liability at June 30, 2018	<u>\$ 25,910.8</u>

ACTUARIAL REPORT

Summary of Major Actuarial Assumptions

■ Interest

6.75% per annum, compounded annually (adopted by the SURS Board effective June 30, 2018) for funding purposes. The actuarial assumption rate credited to member accounts is 6.75% per annum (adopted by the SURS Board effective June 30, 2018).

■ Net Position

Assets available for benefits are used at market value.

■ Expenses

As estimated and advised by the SURS staff, based on current expenses with an allowance for expected increases.

The following assumptions were adopted by the SURS Board effective with the June 30, 2018 actuarial valuation. They were developed based upon an experience study completed in February 2018. These assumptions are the same for financial reporting and funding purposes.

■ Termination

Rates of withdrawal are based upon ages and years of service as developed from plan experience. Shown at right is a table of termination rates based upon experience in the 2014-2017 period. The assumption consists of a table of ultimate turnover rates by years of service credit.

Termination Rates

Years of Service	All Members
0	0.200
1	0.200
2	0.150
3	0.140
4	0.130
5	0.120
6	0.100
7	0.090
8	0.080
9	0.070
10	0.060
11	0.050
12	0.045
13-15	0.040
16-18	0.035
19-21	0.030
22-24	0.025
25-29	0.020

■ Mortality

Mortality rates are based upon the RP2014 Mortality White Collar Table with gender distinct, projected using MP-2014 two dimensional mortality improvement scale, set forward one year for male and female annuitants.

ACTUARIAL REPORT

■ Salary 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 as shown at right.

The payroll of the entire system is assumed to increase at 3.25% per year for purposes of calculating employer required contributions.

■ Retirement Age

Upon eligibility, active members are assumed to retire as shown below.

■ Other Assumptions

The disability rates are graduated based on age. The Cost of Living Adjustment (COLA) is 3.00% per annum for members hired before January 1, 2011 based on the benefit provision of 3.00% annual compound increases. The assumed rate is 1.13% for members hired on or after January 1, 2011, based on the provision of increases equal to half of the increase in the Consumer Price Index with a maximum increase of 3.00%. The female spouse is assumed to be three years younger than the male spouse.

Annual Compensation Increases

Years of Service	All Members
0	.1225
1	.1225
2	.0875
3	.0700
4	.0625
5	.0550
6	.0550
7	.0550
8	.0475
9	.0450
10	.0450
11-14	.0400
15-18	.0375
19-33	.0350
34 & over	.0325

Retirement Rates

Age	Members Hired Before January 1, 2011 and Eligible for		Members Hired On or After January 1, 2011 and Eligible for	
	Normal Retirement	Early Retirement	Normal Retirement	Early Retirement
Under 50	50%	- %	- %	- %
50	50	-	-	-
51	40	-	-	-
52	40	-	-	-
53	35	-	-	-
54	35	-	-	-
55	35	7.0	-	-
56	30	5.5	-	-
57	25	4.0	-	-
58	25	5.0	-	-
59	25	5.5	-	-
60	11	-	-	-
61	11	-	-	-
62	12	-	-	25
63	12	-	-	10
64	12	-	-	10
65	15	-	-	10
66	15	-	-	10
67	15	-	35	-
68	15	-	15	-
69	15	-	15	-
70-79	15	-	15	-
80+	100	-	100	-

ANALYSIS OF FUNDING

Funding Objective

Beginning in fiscal year 1996 the required contribution rates were based upon Public Act 88-0593, which calls for a 15-year phase-in to a 35-year funding plan which provides for adequate annual funding of the employer’s normal cost while amortizing the unfunded actuarial accrued liability. Annual funding under this plan will occur as a continuing appropriation. This method does not conform with the provisions of GASB 67 and 68 for financial reporting. The statutory funding plan requires the State to contribute annually an amount equal to a constant percent of payroll necessary to allow SURS to achieve a 90% funded ratio by fiscal year 2045, subject to any revisions necessitated by actuarial gains or losses, or actuarial assumptions.

Employer Contributions Received in Fiscal Year 2018

State appropriations	\$ 1,353,220,976
State pension fund	215,000,000
Federal/trust/employer funds/other	39,659,344
Total	\$ 1,607,880,320

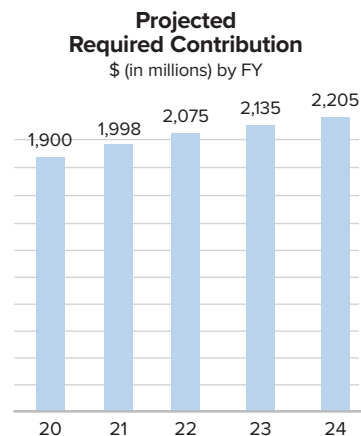
Reconciliation to Total State Appropriations

Defined benefit plan–State appropriations received	\$ 1,568,220,976
Defined contribution plan–State appropriations received	61,086,631
Total State appropriations received	\$ 1,629,307,607

The net State appropriation results are based on the projected unit credit actuarial cost method, and on the data provided and assumptions used, for the June 30, 2018 actuarial valuation.

Projected Required Contribution

Fiscal Year	Assumed % of Payroll	Required Payroll (\$ billions)	Contribution (\$ millions)
2020	41.8%	\$ 4.55	\$ 1,899.9
2021	43.1	4.63	1,997.6
2022	43.9	4.72	2,075.0
2023	44.3	4.82	2,134.8
2024	44.8	4.92	2,205.3



ANALYSIS OF FUNDING

Schedule of Employer Contributions (\$ in millions)

Fiscal Year	Total ADC	Member Contributions	Net ER ADC	Actual ER Contributions	ER Contributions as % of Net ADC	Total Contributions as % of Total ADC
2009	\$1,147.3	\$ 273.3	\$ 874.0	\$ 451.6	51.7%	63.2%
2010	1,278.3	275.0	1,003.3	696.6	69.4	76.0
2011	1,519.2	260.2	1,259.0	773.6	61.4	68.0
2012	1,701.6	258.2	1,443.3	985.8	68.3	73.1
2013	1,794.4	245.1	1,549.3	1,401.5	90.5	91.8
2014	1,843.6	283.1	1,560.5	1,502.9	96.3	96.9
2015	1,890.3	267.7	1,622.7	1,528.5	94.2	95.0
2016	2,090.0	278.9	1,811.1	1,582.3	87.4	89.1
2017	2,143.4	278.6	1,864.8	1,650.6	88.5	90.0
2018	2,144.7	282.7	1,862.0	1,607.9	86.4	88.2

In an inflationary economy, the value of dollars is decreasing. This environment results in employee pay increasing in dollar amounts, retirement benefits increasing in dollar amounts, and then, unfunded accrued liabilities increasing in dollar amounts, all at a time when the actual substance of these items may be decreasing. Looking at just the dollar amounts of unfunded accrued liabilities can be misleading. Unfunded accrued liabilities dollars divided by active employee payroll dollars provides a helpful index which shows that the smaller the ratio of unfunded liabilities to active member payroll, the stronger the system. Observation of this relative index over a period of years will give an indication of whether the System is becoming financially stronger or weaker.

Schedule of Funding Progress (\$ in millions)

Fiscal Year**	Actuarial Value of Assets (A)	Actuarial Accrued Liabilities	Unfunded Actuarial Accrued Liabilities	Funding Ratio	Covered Payroll	UAAL as % of Covered Payroll
2009	\$ 14,282.0	\$ 26,316.2	\$ 12,034.2	54.3%	\$ 3,463.9	347.4%
2010	13,966.6	30,120.4	16,153.8	46.4	3,491.1	462.7
2011	13,945.7	31,514.3	17,568.6	44.3	3,460.8	507.6
2012	13,949.9	33,170.2	19,220.3	42.1	3,477.2	552.8
2013	14,262.6	34,373.1	20,110.5	41.5	3,533.9	569.1
2014	15,844.7	37,429.5	21,584.8	42.3	3,522.2	612.8
2015	17,104.6	39,520.7	22,416.1	43.3	3,606.5	621.5
2016	17,701.6	40,923.3	23,221.7	43.3	3,513.1	661.0
2017	18,594.3	41,853.3	23,259.0	44.4	3,458.3	672.6
2018	19,347.9	45,258.7	25,910.8	42.7	3,470.2	746.7

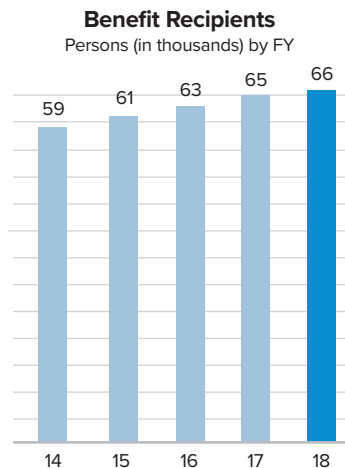
For FY2018, if calculated using Market Value of Assets of \$19,321.1, the funding ratio is 42.7%.

(A) Per Public Act 96-0043, beginning fiscal year 2009, measures of financial soundness will be calculated using an actuarial value of assets based on a smoothed investment income rate. Investment income in excess or shortfall of the expected 6.75% rate on fair value is smoothed over a five-year period with 20% of a year's excess or shortfall being recognized each year beginning with the current year.

ANALYSIS OF FUNDING

Schedule of Increases and Decreases of Benefit Recipients 10-Year Summary

Fiscal Year	Beginning Balance	Additions	Subtractions	Ending Balance
2009	45,346	3,017	1,553	46,810
2010	46,810	3,599	1,506	48,903
2011	48,903	4,207	1,740	51,370
2012	51,370	4,782	1,620	54,532
2013	54,532	4,529	1,832	57,229
2014	57,229	4,073	1,896	59,406
2015	59,406	3,511	1,897	61,020
2016	61,020	4,058	1,932	63,146
2017	63,146	3,465	2,066	64,545
2018	64,545	3,764	2,140	66,169



Active Participant Statistics 10-Year Summary

Fiscal Year	Males	Females	Total Actives	Percent Change	Average Salary	Percent Change	Average Age	Average Service Credit
2009	31,185	42,514	73,699	0.8%	45,204	4.0%	47.3	9.9
2010	30,935	42,061	72,996	(1.0)	45,988	1.7	47.4	10.1
2011	30,448	41,440	71,888	(1.5)	46,402	0.9	47.4	10.1
2012	30,198	40,858	71,056	(1.2)	47,167	1.6	47.1	9.8
2013	29,963	40,593	70,556	(0.7)	48,276	2.4	47.1	9.9
2014	29,423	40,013	69,436	(1.6)	48,893	1.3	47.1	9.8
2015	29,420	39,961	69,381	(0.1)	50,103	2.5	47.2	10.0
2016	28,041	38,204	66,245	(4.5)	51,115	2.0	47.3	10.2
2017	27,068	37,049	64,117	(3.2)	51,988	1.7	47.5	10.4
2018	26,350	36,494	62,844	(2.0)	53,482	2.9	47.5	10.5

ANALYSIS OF FUNDING

Analysis of Change in Membership 10-Year Summary

Fiscal Year	Beginning Members	Additions	Retired	Died	Other Terminations	Ending Members
2009	73,086	9,610	1,484	120	7,393	73,699
2010	73,699	8,341	1,761	115	7,168	72,996
2011	72,996	8,434	2,200	106	7,236	71,888
2012	71,888	9,739	2,553	110	7,908	71,056
2013	71,056	9,188	1,811	118	7,759	70,556
2014	70,556	8,962	2,098	91	7,893	69,436
2015	69,436	9,021	1,425	102	7,549	69,381
2016	69,381	7,443	2,135	92	8,352	66,245
2017	66,245	7,530	1,644	105	7,909	64,117
2018	64,117	7,823	1,737	115	7,244	62,844

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls 10-Year Summary

Fiscal Year	Beginning of Year Balance	Number Added to Rolls	Allowances	Number Removed from Rolls	Allowances	End of Year Balance	Annual Pension Benefit Amount	Average Annual Benefit	% Increase in Average Benefit
2009(A)	45,346	3,017	127,710,300	1,553	(30,203,460)	46,810	\$1,351,537,635	\$ 28,873	4.4%
2010	46,810	3,599	139,122,054	1,506	(33,710,616)	48,903	1,454,470,195	29,742	3.0
2011	48,903	4,207	169,921,275	1,740	(40,835,477)	51,370	1,619,615,689	31,528	6.0
2012	51,370	4,782	191,103,116	1,620	(39,279,398)	54,532	1,771,439,407	32,484	3.0
2013	54,532	4,529	184,293,143	1,832	(46,183,430)	57,229	1,909,495,120	33,366	2.7
2014	57,229	4,073	166,748,080	1,896	(51,879,123)	59,406	1,984,416,426	33,404	0.1
2015	59,406	3,511	158,067,006	1,897	(53,610,853)	61,020	2,112,232,940	34,615	3.7
2016	61,020	4,058	175,156,703	1,932	(56,407,539)	63,146	2,218,653,518	35,135	5.3
2017	63,146	3,465	156,500,627	2,066	(62,821,394)	64,545	2,319,439,374	35,935	7.6
2018	64,545	3,764	174,309,588	2,140	(69,500,663)	66,169	2,425,701,962	36,659	2.0

(A) FY 2009 is the first year in which the allowances related to retirees added to or removed from the rolls have been calculated as part of the actuarial valuation.

TESTS OF FINANCIAL SOUNDNESS

The following four exhibits illustrate different measures of the financial soundness of the System. The Schedule of Funding compares State appropriations to the actuarial funding requirements, statutory funding requirement, and System expense.

Schedule of Contributions from Employers and Non-Employer Contributing Entity: Fiscal Year 2009-2018 (\$ in millions)

Fiscal Year	Gross ADC (1) (A)	Member Contribution (2)	Net ADC (3) (B)	Employer Contribution (4) (C)	Non-Employer Entity Contribution (5) (D)	Employer/ Non-Employer Percentage Contributed (6) (E)
2009	\$1,147.3	\$ 273.3	\$ 874.0	\$ 34.3	\$ 417.3	51.7%
2010	1,278.3	275.0	1,003.3	34.2	662.4	69.4%
2011	1,519.2	260.2	1,259.0	36.5	737.1	61.4%
2012	1,701.6	258.2	1,443.3	45.6	940.2	68.3%
2013	1,794.4	245.1	1,549.3	41.9	1,359.6	90.5%
2014	1,843.6	283.1	1,560.5	43.9	1,459.0	96.3%
2015	1,890.3	267.7	1,622.6	39.9	1,488.6	94.2%
2016	2,090.0	278.9	1,811.1	39.3	1,542.9	87.4%
2017	2,143.4	278.6	1,864.8	38.4	1,612.2	88.5%
2018	2,144.7	282.7	1,862.0	39.7	1,568.2	86.4%

Schedule of Funding: Fiscal Year 2009-2018

- (A) Prior to 2014, the ADC (Actuarially Determined Contribution) was defined in GASB Statements 25 and 27 as the ARC (Annual Required Contribution).
 (B) The actuarially determined contribution per note A, less member contributions (2).
 (C) Contributions from SURS employers from trust and federal funds.
 (D) Contributions from the State of Illinois.
 (E) Employer and non-employer contributions divided by the Net ADC (Column 4 and 5 divided by Column 1).

The Funding Ratios exhibit shows the percentage of the System's accrued benefit cost covered by net position. This funding ratio is used to assess the System's ability to make future benefit payments. The exhibit illustrates the ratio of net position to the System's accrued benefit cost over 10 years, with net position valued both at cost and at market.

Funding Ratios 10-Year Summary (\$ in millions)

Fiscal Year	Net Position at Cost	Net Position at Market/ Actuarial Value of Assets (A)	Actuarial Funding Requirement	Funding Ratio	
				Cost	Market/Actuarial
2009	\$ 12,485.0	\$ 14,282.0	\$ 26,316.2	47.4%	54.3%
2010	12,672.7	13,966.6	30,120.4	42.1	46.4
2011	13,302.2	13,945.7	31,514.3	42.2	44.3
2012	12,806.2	13,949.9	33,170.2	38.6	42.1
2013	13,347.7	14,262.6	34,373.1	38.8	41.5
2014	14,234.5	15,844.7	37,429.5	38.0	42.3
2015	14,930.0	17,104.6	39,520.7	37.8	43.3
2016	15,070.8	17,701.6	40,923.3	36.8	43.3
2017	15,579.0	18,594.3	41,853.3	37.2	44.4
2018	16,044.1	19,347.9	45,258.7	35.4	42.7

(A) Per Public Act 96-0043, the actuarial value of assets is used in determining the funding progress of the System and in establishing the employer contribution rates necessary to adhere to the statutory funding plan. The actuarial value of assets is based on a smoothed investment income rate. Investment income in excess or shortfall of the expected 6.75% rate on fair value is smoothed over a five-year period with 20% of a year's excess or shortfall being recognized each year beginning with the current year.

TESTS OF FINANCIAL SOUNDNESS

The Percentage of Benefits Covered by Net Position exhibit compares the plan's net position with the members' accumulated contributions, the amount necessary to cover the present value of benefits currently being paid, and the employer's portion of future benefits for active members.

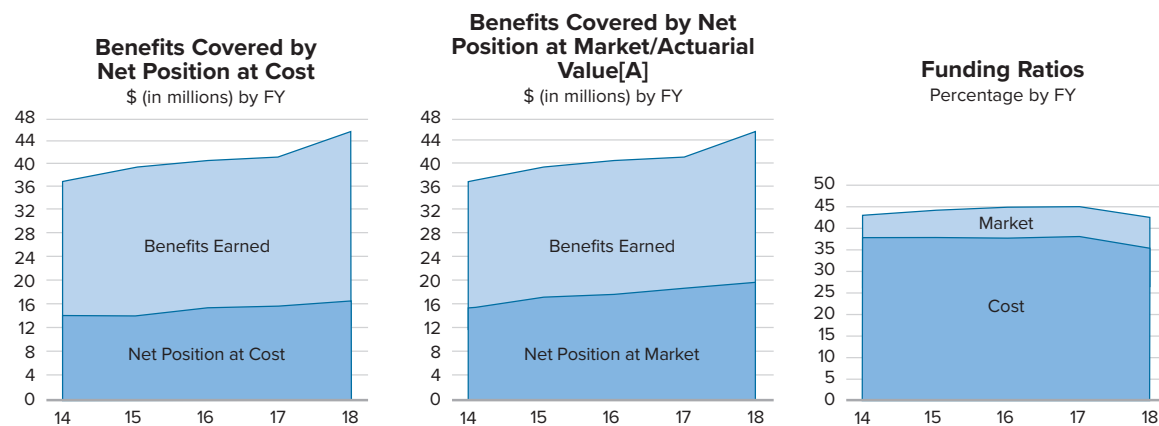
Percentage of Benefits Covered by Net Position 10-Year Summary (\$ in millions)

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

(A) A test of financial soundness of the System is its ability to pay all promised benefits when due. The columns are in the order that assets would be used to cover certain types of obligations. Column 1 represents the value of members' accumulated contributions, which would be refunded first. Column 2 represents the amounts necessary to pay participants currently receiving benefits, which would be covered next. Column 3 represents the employer's portion of future benefits for active members, which would be covered last. If a System is receiving the actuarially determined contribution amounts, the total of the actuarial values in Columns 1 and 2 should generally be fully covered by assets, and the portion of the actuarial values of Column 3 covered by assets should increase over time.

(B) Per Public Act 96-0043, the actuarial value of assets is used in determining the funding progress of the System and in establishing the employer contribution rates necessary to adhere to the statutory funding plan. The actuarial value of assets is based on a smoothed investment income rate. Investment income in excess or shortfall of the expected 6.75% rate on fair value is smoothed over a five-year period with 20% of a year's excess or shortfall being recognized each year beginning with the current year.

(C) Per Public Act 96-0043, beginning fiscal year 2009, measures of financial soundness will be calculated using an actuarial value of assets based on a smoothed investment income rate. If the market value of net position is used for fiscal year 2018, the percentage of benefits covered by net position would decrease to 41.7%.



TESTS OF FINANCIAL SOUNDNESS

The final test, Payroll Percentages, compares member payroll to unfunded accrued benefit cost, normal cost, and total required contributions.

Payroll Percentages: Fiscal Year 2009-2018 (\$ in millions)

Fiscal Year	Member Payroll	Unfunded Accrued Benefit Cost		Employer Cost				Employer Contributions		
		Amount	% of Payroll	Normal Cost (A)	% of Payroll	Amortization of Unfunded Liability	Total	% of Payroll	Emp Cont.	% of Payroll
2009	\$ 3,463.9	\$12,034.2	347.4%	\$ 317.9	9.2%	\$ 829.4	\$1,147.3	33.1%	\$ 451.6	13.0%
2010	3,491.1	16,153.8	462.7	355.4	10.2	922.9	1,278.3	36.6	696.6	20.0
2011	3,460.8	17,568.6	507.6	463.6	13.4	1,055.6	1,519.2	43.9	773.6	22.4
2012	3,477.2	19,220.3	552.8	465.6	13.4	1,236.0	1,701.6	48.9	985.8	28.4
2013	3,533.9	20,110.5	569.1	454.6	12.9	1,339.9	1,794.4	50.8	1,401.5	39.7
2014	3,522.2	21,584.8	612.8	415.1	11.8	1,428.5	1,843.6	52.3	1,502.9	42.7
2015	3,606.5	22,416.1	621.5	462.3	12.8	1,396.2	1,858.5	51.6	1,528.5	42.4
2016	3,513.1	23,221.7	661.0	460.7	13.1	1,466.8	1,927.5	54.9	1,582.3	45.0
2017	3,458.3	23,259.0	672.6	423.2	12.2	1,720.3	2,143.4	62.0	1,650.6	47.7
2018	3,470.2	25,910.8	746.7	447.6	12.9	1,697.1	2,144.7	61.8	1,607.9	46.3

(A) Actuarially determined normal cost less member contributions.

CHANGES IN PLAN PROVISIONS

There were no changes in the SURS benefit plan provisions in fiscal year 2018. The plan summary can be found in the Notes to the Financial Statements.

