



State Actuary's Report of the

## Actuarial Assumptions and Valuations of the State-Funded Retirement Systems

### Background:

On June 18, 2012, Public Act 097-0694 was signed into law, which directed the Auditor General to contract with or hire an actuary to serve as the State Actuary. Cheiron was selected as the State Actuary. The Public Act directed the State Actuary to:

- Review assumptions and valuations prepared by actuaries of the State-funded retirement systems;
- Issue preliminary reports to the boards of trustees of the State-funded retirement systems concerning proposed certifications of required State contributions; and
- Identify recommended changes to actuarial assumptions that the boards must consider before finalizing their certifications of the required State contributions.

On August 31, 2017, Public Act 100-0465 was signed into law, which added a sixth retirement system to be reviewed by the State Actuary. The Illinois Pension Code was revised to require the Chicago Teachers' Pension Fund (CTPF) to submit information to the State Actuary similar to the requirement for the other State-funded retirement systems.

liability from increasing if all assumptions are met). Actual contributions have been significantly less than the tread water cost. Each year that total contributions remain below the tread water cost, the unfunded actuarial liability is expected to grow.

### Key Findings:

- The State Actuary, Cheiron, reviewed the actuarial assumptions used in each of the six systems' actuarial valuations for the year ended June 30, 2023, and **concluded that they generally were reasonable**. Cheiron **did not recommend any changes** to the assumptions used in the June 30, 2023 actuarial valuations.
- The combined total of the required Fiscal Year 2025 State contribution for the six retirement systems was **\$11.48 billion, an increase of \$0.23 billion over the previous year**. Cheiron verified the arithmetic calculations made by the systems' actuaries to develop the required State contribution and reviewed the assumptions on which it was based.
- The Illinois Pension Code (for TRS, SURS, SERS, JRS, and GARS) establishes **a method that does not adequately fund the systems**. It requires the actuary to calculate the employer contribution as the level percentage of projected payroll that would accumulate assets equal to 90% of the actuarial accrued liability in the year 2045 if all assumptions are met. This methodology does not conform to generally accepted actuarial principles and practices. Generally accepted actuarial funding methods target the accumulation of assets equal to 100% of the actuarial liability, not 90%.
- According to the systems' 2023 actuarial valuation reports, the funded ratio of the retirement systems ranged from 47.2% (CTPF) to 23.5% (GARS), based on the actuarial value of assets as a ratio to the actuarial liability. If there is a significant market downturn, the unfunded actuarial liability and the required State contribution rate could both increase significantly, putting the sustainability of the systems further into question.
- The interest rate assumption (also called the investment return or discount rate) is the most impactful assumption affecting the required State contribution amount. The retirement systems use varying interest rate assumptions ranging from 6.50 percent to 7.00 percent. The interest rate assumption remained unchanged for each of the systems for the 2023 actuarial valuations.
- One of the persistent sources of the increase in unfunded actuarial liability is due to actual contributions to the System being less than the tread water contribution (the amount needed to prevent the unfunded actuarial

### ***Key Recommendations:***

Cheiron recommended changes for both the 2023 valuations and also changes for future valuations. This year's report contains 33 recommendations compared to 39 in last year's report. Recommendations included the following:

- Cheiron recommends that the funding method be changed to employ a methodology that produces a reasonable Actuarially Determined Contribution and fully funds plan benefits within a reasonable period.
- Cheiron recommends the Boards continue to annually review the economic assumptions (interest rate and inflation) prior to commencing the valuation work and adjust assumptions accordingly. All of the systems complied with this recommendation prior to conducting the 2023 actuarial valuations.
- Because experience studies are performed every three years, Cheiron recommended that the phase-in period for the impact of assumption changes be reduced to no longer than three years.
- Cheiron assessed compliance with Actuarial Standard of Practice 51 (assessment and disclosure of risk) and made recommendations to improve the disclosures related to that standard:
  - Explain how each risk identified would reasonably be anticipated to significantly affect the specific plan's future financial condition; and
  - For each identified risk, provide an assessment, preferably quantitative, that considers the specific circumstances of the plan.

Cheiron put additional emphasis on the two recommendations related to risks identified under Actuarial Standards of Practice 51. In last year's report, the recommendations were recommended as changes for future valuations. However, as the recommendations were not addressed in this year's preliminary valuations, the recommendations were elevated as recommendations for the 2023 valuations. **Both recommendations need to be addressed by the systems prior to issuing the final 2023 actuarial valuations.** One system, SURS, provided a final actuarial valuation report that addressed both recommendations.

## Background

On June 18, 2012, Public Act 097-0694 was signed into law, which directed the Auditor General to contract with or hire an actuary to serve as the State Actuary. The Public Act amended the Illinois State Auditing Act as well as sections of the Illinois Pension Code for each of the following State-funded retirement systems:

- The Teachers’ Retirement System (TRS);
- The State Universities Retirement System (SURS);
- The State Employees’ Retirement System (SERS);
- The Judges’ Retirement System (JRS); and
- The General Assembly Retirement System (GARS).

### Requirements of Public Act 097-0694

Public Act 097-0694 requires the State Actuary to conduct an annual review of the valuations prepared by the actuaries of the State-funded retirement systems. Specifically the Act requires the State Actuary to:

- Review assumptions and valuations prepared by actuaries retained by the boards of trustees of the State-funded retirement systems;
- Issue preliminary reports to the boards of trustees of the State-funded retirement systems concerning proposed certifications of required State contributions submitted to the State Actuary by those boards; and
- Identify recommended changes to actuarial assumptions that the boards must consider before finalizing their certifications of the required State contributions.

On or before November 1 of each year, beginning November 1, 2012, the boards of each of the systems must submit to the State Actuary a proposed certification of the amount of the required State contribution to the system for the next fiscal year, along with all of the actuarial assumptions, calculations, and data upon which that proposed certification is based.

On or before January 1, 2013, and each January 1 thereafter, the Auditor General shall submit a written report to the General Assembly and Governor documenting the initial assumptions and valuations prepared by actuaries retained by the boards of trustees of the State-funded retirement systems, any changes recommended by the State Actuary in the actuarial assumptions, and the responses of each Board to the State Actuary's recommendations.

On or before January 15, 2013, and every January 15 thereafter, each Board shall certify to the Governor and the General Assembly the amount of the required State contribution for the next fiscal year. The Boards’ certification must note any deviations from the State Actuary's recommended changes, the reason or reasons for not following the State Actuary's recommended changes, and the

fiscal impact of not following the State Actuary's recommended changes on the required State contribution.

### **Requirements of Public Act 100-0465**

On August 31, 2017, Public Act 100-0465 was signed into law, which added a sixth retirement system to be reviewed by the State Actuary. The Illinois Pension Code was revised to require the Chicago Teachers’ Pension Fund (CTPF) to submit information to the State Actuary similar to the requirement for the other State-funded retirement systems. Public Act 100-0465 specified the following regarding the Chicago Teachers’ Pension Fund:

- For State fiscal year 2018, the State shall contribute \$221,300,000 for the employer normal cost.
- Beginning in State fiscal year 2019, the State shall contribute an amount equal to the employer normal cost for that fiscal year.
- On or before November 1 of each year, beginning November 1, 2017, the Board shall submit to the State Actuary, the Governor, and the General Assembly a proposed certification of the amount of the required State contribution to the Fund for the next fiscal year, along with all of the actuarial assumptions, calculations, and data upon which that proposed certification is based.
- On or before January 1 of each year, beginning January 1, 2018, the State Actuary shall issue a preliminary report concerning the proposed certification and identifying, if necessary, recommended changes in actuarial assumptions that the Board must consider before finalizing its certification of the required State contributions.
- On or before January 15, 2018, and each January 15 thereafter, the Board shall certify to the Governor and the General Assembly the amount of the required State contribution for the next fiscal year. The Board's certification must note any deviations from the State Actuary's recommended changes, the reason or reasons for not following the State Actuary's recommended changes, and the fiscal impact of not following the State Actuary's recommended changes on the required State contribution.

### **Contracting with the State Actuary**

On July 12, 2012, the Office of the Auditor General issued a Request for Proposals for the services of a State Actuary. On August 24, 2012, the contract was awarded to Cheiron. Cheiron is a full-service actuarial and consulting firm with offices in eight locations throughout the United States. Cheiron has experience working with multiple public pension plans around the country.

## Review of the Actuarial Assumptions

Cheiron reviewed the actuarial assumptions used in each of the six systems’ actuarial valuations for the year ended June 30, 2023, and **concluded that they were reasonable. Cheiron did not recommend any changes to the assumptions used in the June 30, 2023 actuarial valuations.**

Cheiron did recommend changes for both the 2023 valuations and also changes for future valuations. The systems’ responses to Cheiron’s preliminary reports can be found in Appendix C of this report.

Cheiron put additional emphasis on two recommendations from last year. The recommendations both related to risks identified under Actuarial Standards of Practice (ASOP) 51. In last year’s report, the recommendations were recommended as changes for future valuations. However, as the recommendations were not addressed in this year’s preliminary valuations, the recommendations were **elevated** as recommendations for the 2023 valuations. **Both recommendations need to be addressed by the systems prior to issuing the final 2023 actuarial valuations.** One system, SURS, provided a final actuarial valuation report that addressed both recommendations.

Digest Exhibit 1 summarizes the recommendations made to the retirement systems. At the end of each of the reports located in chapters one through six is a chart summarizing the status of recommendations made by the State Actuary in last year’s 2022 report. This year’s report contains 33 recommendations compared to 39 recommendations made in last year’s report.

The following sections discuss some of the key assumptions and recommendations. Further details on the assumptions and recommendations are contained in the chapters for each of the retirement systems.

Digest Exhibit 1  
**RECOMMENDATIONS TO THE RETIREMENT SYSTEMS**

Recommendations	TRS	SURS	SERS	JRS	GARS	CTPF
<b>Recommended Changes to Actuarial Assumptions used in the 2023 Actuarial Valuations:</b>						
Cheiron reviewed the actuarial assumptions and concluded that they were reasonable. Consequently, Cheiron did not have any recommended changes to assumptions this year.						
<b>Recommended Changes for the 2023 Actuarial Valuations:</b>						
• Related to ASOP 51, explain how each risk identified would reasonably be anticipated to significantly affect the specific plan’s future financial condition		✓	✓	✓	✓	
• Related to ASOP 51, for each identified risk, provide an assessment, preferably quantitative, that considers the specific circumstances of the plan	✓	✓	✓	✓	✓	
<b>Recommended Changes for Future Actuarial Valuations:</b>						
• Annually review the economic assumptions (interest rate and inflation rate) and adjust assumptions accordingly	✓	✓	✓	✓	✓	✓
• Disclose how long before the State Mandated Contribution is expected to exceed the normal cost plus interest on the unfunded actuarial accrued liability	✓					
• Provide additional information about the new entrant population used in the projection such as the average age and service of the population each year	✓					
• Increase the Full-Time future service accrual rate assumption to 1.0 years of service and consider changes to non-full-time member future service accrual rates	✓					
• Provide more information related to new retiree liability losses such as a participant data reconciliation which would identify the number of new lives being valued in the current valuation.			✓			
• Provide explanation and justification for certain specific selections related to the mortality assumptions			✓			
• Include annual opt-out data in the Active Membership table					✓	
• Expand the participant data section to include average pay and service for active members and information on inactive members owed a benefit in the future					✓	
• Continue to include stress testing of the System within the valuation report, including the impact to the required State contribution of potential reductions in the discount rate						✓
<b>Other Recommendations:</b>						
• Change the funding method to employ a methodology that produces a reasonable Actuarially Determined Contribution and fully fund plan benefits within a reasonable period	✓	✓	✓	✓	✓	
• Reduce the phase-in period for the impact of assumption changes to no longer than three years	✓	✓	✓	✓	✓	

Source: OAG summary of Cheiron’s preliminary reports to the six retirement systems.

### Economic Assumptions

Cheiron reviewed the economic assumptions utilized in the actuarial valuations for each of the six retirement systems. The following sections discuss two of those assumptions – the interest rate assumption and the inflation assumption.

#### Interest Rate Assumption

The interest rate assumption (also called the investment return or discount rate) is **the most impactful assumption affecting the required State contribution amount**. This assumption is used to value liabilities for funding purposes. The retirement systems use varying interest rate assumptions. Digest Exhibit 2 shows the interest rate assumptions for each of the six retirement systems for every year since 2013. As can be seen in the exhibit, the interest rate assumption remained unchanged for each of the systems for the 2023 actuarial valuations.

Digest Exhibit 2 INTEREST RATE ASSUMPTIONS											
System	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
TRS	8.00%	7.50%	7.00%								
SURS	7.75%	7.25%				6.75%			6.50%		
SERS	7.75%	7.25%	7.00%				6.75%				
JRS	7.00%			6.75%			6.50%				
GARS	7.00%			6.75%			6.50%				
CTPF	7.75%			7.25%	7.00%	6.75%	6.50%				

Source: Retirement system actuarial reports.

Cheiron concluded that the interest rate assumptions for all of the systems were reasonable. As it did in last year’s report, Cheiron again recommended that the Boards annually review the economic assumptions (interest rate and inflation) prior to commencing the valuation work and adjust assumptions accordingly. All of the systems complied with this recommendation prior to conducting the 2023 actuarial valuations.

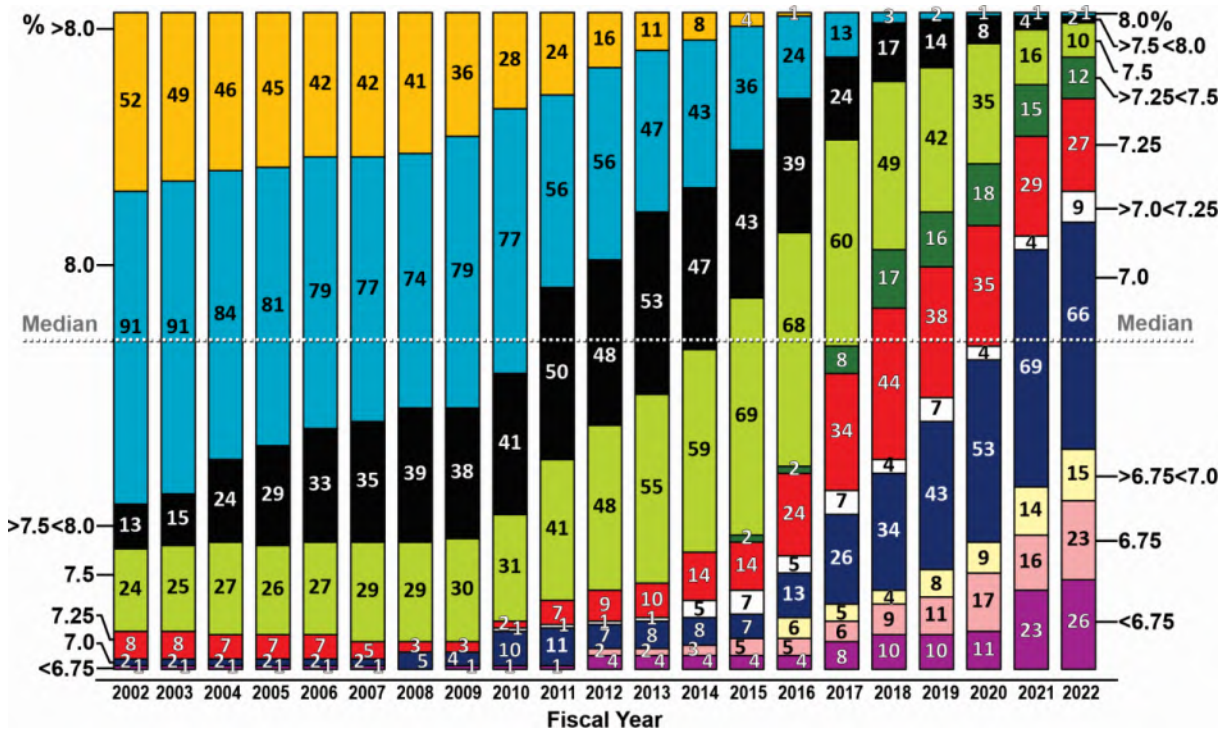
Cheiron noted that, over the last two decades, declining interest rates have forced pension plans to either reduce their discount rates, increase their exposure to investment risk, or some combination of the two. For example, in June 2006, the yield on 10-year Treasury bonds (a proxy for a risk free investment) reached a high of 5.11%. To achieve an assumed return of 8.00%, a system’s investments had to outperform the yield on the 10-year Treasury by 2.89%. In June 2020, the yield on the 10-year Treasury had dropped to 0.7%, and to achieve an assumed return of 6.50%, a system’s investments need to exceed the 10-year Treasury



yield by 5.80%. Even though, in this example, a system reduced its assumption by 150 basis points, it still had to take more investment risk in 2020 to meet its assumption than it did in 2002. Since 2020, yields on 10-year Treasury bonds have increased, reducing the expected risk premium needed to achieve the System’s assumed return. With recent action by the Federal Reserve, 10-year Treasury bond yields have increased rapidly from 1.5% in December 2021 to 3.1% in June 2022 and 3.75% in June 2023. If these higher Treasury bond yields persist, plans may be able to achieve the expected return with less exposure to investment risk. However, if these higher Treasury bond yields prove temporary, plans could quickly find the pressure returning to further reduce discount rates or increase their exposure to investment risk.

Cheiron discussed the nationwide movement among pension plans to lower the interest rate assumption. The Public Plans Database is maintained by a partnership between the Center for State and Local Government Excellence and the Center for Retirement Research at Boston College with support from the National Association of State Retirement Administrators. This database contains historical information on large public pension plans, including key assumptions used in their actuarial valuations. Digest Exhibit 3 shows the change in the interest rate assumptions for 191 public pension plans from 2002 through 2022 as of October 31, 2023.

Digest Exhibit 3  
**CHANGE IN INTEREST RATE ASSUMPTIONS SINCE 2002**  
 191 Pension Plans in the Nation’s Largest Public Retirement Systems



Source: Public Pension Database as of October 31, 2023.



The exhibit shows the shift to lower interest rate assumptions. In 2002, 143 of the 191 plans (75.3%) used an interest rate assumption of 8.0% or higher. The data as of October 31, 2023, shows that this number has dropped to only 1 of 191 plans (0.5%) that use an interest rate of 8.0% or higher. The median assumption has fallen to 7.00%. Since 2018, 140 of the 191 plans have reduced the interest rate assumption with an average reduction of 0.39%. In addition, in 2022, 130 plans have adopted a rate of 7.0% or lower.

**Inflation Assumption**

Five of six retirement systems use an inflation assumption of 2.25% (see Digest Exhibit 4). TRS uses an inflation assumption of 2.50% which was increased for its 2022 valuation.

Digest Exhibit 4 <b>INFLATION ASSUMPTIONS</b> June 30, 2023 Valuation		
System	Inflation Rate	Notes
Teachers’ Retirement System	2.50%	Increased from 2.25% for the June 30, 2022 actuarial valuation
State Universities Retirement System	2.25%	Lowered from 2.75% for the June 30, 2018 actuarial valuation
State Employees’ Retirement System	2.25%	Lowered from 2.50% for the June 30, 2019 actuarial valuation
Judges’ Retirement System	2.25%	Lowered from 2.50% for the June 30, 2019 actuarial valuation
General Assembly Retirement System	2.25%	Lowered from 2.50% for the June 30, 2019 actuarial valuation
Chicago Teachers’ Pension Fund	2.25%	Lowered from 2.50% for the June 30, 2020 actuarial valuation

Source: Retirement system actuarial reports.

Cheiron concluded that the inflation assumptions used by the six retirement systems were reasonable. Cheiron’s rationale for concurring with the inflation assumptions includes the following:

- The March 2023 Old-Age, Survivors, and Disability Insurance Trustees Report projects that over the long-term (next 75 years), inflation will average between 1.8% and 3.0%. Under the intermediate cost projection, the Social Security Administration uses an assumption of 2.4%.
- Cheiron presented three inflation comparisons: 1) the distribution of inflation expectations for the Third Quarter 2023 survey of professional economic forecasters published by the Philadelphia Federal Reserve; 2) the 2023 Horizon survey of investment consultant capital market assumptions (20-year); and 3) the 2022 inflation assumptions used by plans in the Public Plans Database. The 2.50% rate used by TRS is near the middle of the range used by other public pension plans, and is in the third quartile of the ranges

projected by investment consultants in the Horizon survey and by professional economic forecasters. The 2.25% rate used by the other five retirement systems is in the second quartile of the range projected by professional economic forecasters, the lower quartile for investment consultants, and the lower quartile compared to other public pension plans.

The inflation assumption primarily impacts the salary increase assumption. The salary increase assumption is generally comprised of the inflation assumption and a productivity, or real wage growth assumption.

### **Demographic Assumptions**

The retirement systems utilize a number of demographic assumptions such as mortality rates, disability rates, and termination rates. Cheiron reviewed the demographic assumptions and concluded that they were reasonable. Cheiron included additional analysis in its reports on each of the systems. Cheiron collected data from past valuation reports and presented a historical review of past demographic and salary increase experience gains and losses. Results were presented in a chart which showed the pattern of annual gains and losses attributable to different sources. These charts can be found in chapters one through six. Different measures were used for each system depending on the information available but sources used included:

- Active and retiree mortality;
- Disability;
- New entrants;
- Benefit recipients;
- Salary increases;
- Retirement; and
- Terminations.

An examination of these trends can be used to determine if adjustments need to be made to assumptions or if additional disclosures need to be made in the actuarial valuation reports. Additional details on the demographic assumptions examined can be found in the chapters for each of the six retirement systems.

## Proposed Certification of Required State Contribution

Each of the six retirement systems submitted to the State Actuary a proposed certification of the amount of the required State contribution for that system. **Cheiron verified the arithmetic calculations made by the systems’ actuaries to develop the required State contribution and reviewed the assumptions on which it was based.** Digest Exhibit 5 shows the amounts of proposed State contributions submitted by the systems for Fiscal Year 2025 and compares it to the previous year’s contribution. Overall, the required State contribution increased from \$11.25 billion to \$11.48 billion, an increase of \$0.23 billion.

Digest Exhibit 5  
**AMOUNTS OF STATUTORILY REQUIRED STATE CONTRIBUTIONS**

System	State Contribution (for Fiscal Year 2024)	State Contribution (for Fiscal Year 2025)
Teachers’ Retirement System	\$6,043,454,650	\$6,203,922,413
State Universities Retirement System	\$2,138,328,000	\$2,216,284,000
State Employees’ Retirement System	\$2,584,129,000	\$2,547,978,000
Judges’ Retirement System	\$147,838,000	\$148,889,000
General Assembly Retirement System	\$26,474,000	\$26,210,000
Chicago Teachers’ Pension Fund <sup>1</sup>	\$308,147,000	\$338,683,000
<b>Total</b>	<b>\$11,248,370,650</b>	<b>\$11,481,966,413</b>

<sup>1</sup>The State contribution for CTPF is limited to the employer normal cost for that fiscal year.  
Source: 2023 Retirement system actuarial valuation reports.

## Actuarial Funding Methods

Actuarial funding methods consist of three components: (1) the actuarial cost method, which is the attribution of total costs to past, current, and future years; (2) the asset valuation method (i.e., asset smoothing); and (3) the amortization method.

### Actuarial Cost Method

All of the retirement systems use the Projected Unit Credit cost method to assign costs to years of service. This method is required under the Illinois Pension Code. Cheiron had no objection to using the Projected Unit Credit cost method as it is an acceptable method that is used by other public sector pension funds. However, Cheiron would prefer the Entry Age Normal funding method as it is more consistent with the Pension Code’s requirement for level percentage of pay funding.

Under the Projected Unit Credit method, the benefits of active participants are calculated based on their compensation projected with assumed annual increases to ages at which they are assumed to leave the active workforce by any of these

causes: retirement, disability, turnover, or death. Only past service (through the valuation date but not beyond) is taken into account in calculating these benefits. The present value of these benefits based on past service and future compensation is the actuarial accrued liability for a given active participant. Under the Projected Unit Credit cost method, the value of an active participant’s benefits tends to increase more sharply over their later years of service than over their earlier ones.

As a result of this pattern of benefit values increasing, while the Projected Unit Credit method is not an unreasonable method, more plans use the Entry Age Normal funding method to mitigate this effect. It should also be noted that the Entry Age Normal method is the required method to calculate liability for the Governmental Accounting Standards Board Statements 67 and 68.

### **Asset Valuation Method**

The actuarial value of assets for the systems is a smoothed market value. Unanticipated changes in market value are recognized over five years for all of the systems except CTPF, which smooths over four years. The primary purpose for smoothing out gains and losses over multiple years is so fluctuations in the contributions will be less volatile over time than if based on the market value of assets. Cheiron concurred with the use of the asset smoothing method noting that smoothing the market gains and losses over a period of years to determine the actuarial value of assets is a generally accepted approach in determining actuarial cost.

### **Amortization Method**

The mandated State contribution is based on a determination of the level percentage of payroll that is expected to achieve a 90% funded ratio in 2045 (2059 for CTPF). While not a traditional amortization method, this methodology effectively amortizes a portion of the unfunded actuarial liability over the remaining period until 2045, which is currently 22 years.

One of the principles of funding public plans identified by the American Academy of Actuaries is that there should be “a plan to make up for any variations in actual assets from the funding target within a defined and reasonable time period.” Because it only targets 90%, the State method does not include a plan to achieve the funding target over any period of time.

Typical public plan amortization methods are designed to increase each year by expected payroll growth. Under the State mandated method, however, the effective amortization payment increases each year by more than the expected growth in payroll. As a result, the State mandated method defers payments on the unfunded actuarial liability further into the future than under typical public plan amortization methods.

Finally, as the remaining period to achieve 90% funding shortens, the State mandated method will also produce more volatile contributions. Instead of a single fixed period, typical public plan amortization methods use layered amortization bases such that new assumption changes and experience gains and

losses are amortized over a new period (e.g., 20 years) while the remaining period for the prior amortization layers becomes one year shorter.

## State Mandated Funding Method

The Illinois Pension Code (for TRS, SURS, SERS, JRS, and GARS) establishes a method that does not adequately fund the systems. It requires the actuary to calculate the employer contribution as the level percentage of projected payroll that would accumulate assets equal to 90% of the actuarial accrued liability in the year 2045 if all assumptions are met. This methodology does not conform to generally accepted actuarial principles and practices. Generally accepted actuarial funding methods target the accumulation of assets equal to 100% of the actuarial accrued liability, not 90%.

Cheiron recommended that the funding method be changed to employ a methodology that produces a reasonable Actuarially Determined Contribution and fully funds plan benefits within a reasonable period. The State Mandated Method will soon enter a period in which the contribution amount it produces may be reasonable even though the overall methodology is not. This period offers an opportunity to change the methodology to one that is consistent with actuarial standards for a reasonable Actuarially Determined Contribution without significantly affecting the immediate contribution amount. Such a method would set contributions at a level that is expected to prevent the unfunded actuarial liability from growing and remain high enough to reduce the unfunded actuarial liability each year until the plan is ultimately 100% funded within a reasonable period. The State Mandated Method will produce increasingly volatile contribution levels as the remaining period to achieve 90% funding shortens. Consequently, when changing to a reasonable Actuarially Determined Contribution, consideration should be given to a method, such as layered amortization, that produces more stable contribution requirements.

In the actuarial valuation reports, the systems’ actuaries discuss their concerns with the State mandated funding method. The actuarial valuation reports include

recommended funding policies that conform to a goal of full funding within a reasonable time period and conform with generally accepted actuarial principles and practices.

Based on the systems’ 2023 actuarial valuation reports, the funded ratio of the systems ranged from 47.2% (CTPF) to 23.5% (GARS) based on the actuarial value of assets as a ratio to the actuarial liability (see Digest Exhibit 6). If there is a significant market downturn, the unfunded actuarial liability and the required State contribution rate could both increase significantly, putting the sustainability of the systems further into question.

Digest Exhibit 6  
**SYSTEM FUNDED RATIO  
(ACTUARIAL VALUE OF ASSETS)**

<b>System</b>	<b>Funded Ratio</b>
Teachers’ Retirement System	44.8%
State Universities Retirement System	45.8%
State Employees’ Retirement System	44.7%
Judges’ Retirement System	44.6%
General Assembly Retirement System	23.5%
Chicago Teachers’ Pension Fund	47.2%

Source: 2023 actuarial valuation reports.

## Recognition of Changes in Actuarial Assumptions

Public Act 100-0023, effective July 6, 2017, modified the State’s funding policy to require that the contribution impact of all assumption changes be phased-in over a five-year period. As such, the Act delays the funding of the System. Assumption changes are intended to more accurately anticipate the obligations for funding based on the most recent experience analysis and forward-looking changes to future investment returns. However, only one-fifth of the impact of these changes are now recognized from the date of adoption. The remainder of the impact is recognized over four additional years such that the full impact is only recognized at the end of a five-year period beginning at the date of adoption. This phase-in provides time to adjust to a higher level of contributions.

However, the Conference of Consulting Actuaries White Paper on Actuarial Funding Policies and Practices for Public Pension Plans recommends that the “phase-in period should be no longer than the time period until the next review of assumptions.” Since experience studies are performed every three years, Cheiron recommended that the phase-in period for the impact of assumption changes be reduced to no longer than three years. However, changing the funding method is under the jurisdiction of State law and not the Retirement Systems.

## Assessment and Disclosure of Risk

Actuarial Standard of Practice (ASOP) 51 provides guidance to actuaries on the assessment and disclosure of risks to help readers of the actuarial valuation report “*understand the effects of future experience differing from the assumptions used*” and “*the potential volatility of future measurements resulting from such differences.*”

Cheiron assessed compliance with ASOP 51 for five of the systems (TRS, SURS, SERS, JRS, and GARS) and recommended:

- The actuary explain how each risk identified would reasonably be anticipated to significantly affect the specific plan’s future financial condition. (SURS, SERS, JRS, and GARS)
- For each identified risk the actuary provide an assessment, preferably quantitative, that considers the specific circumstances of this plan. (TRS, SURS, SERS, JRS, and GARS)

As noted previously, Cheiron put added emphasis on these two recommendations as the recommendations were not addressed in this years’ preliminary valuations. The recommendations were **elevated** as recommendations for the 2023 valuations. **Both recommendations need to be addressed by the systems prior to issuing the final 2023 actuarial valuations.**



## Analysis Of Funding Adequacy

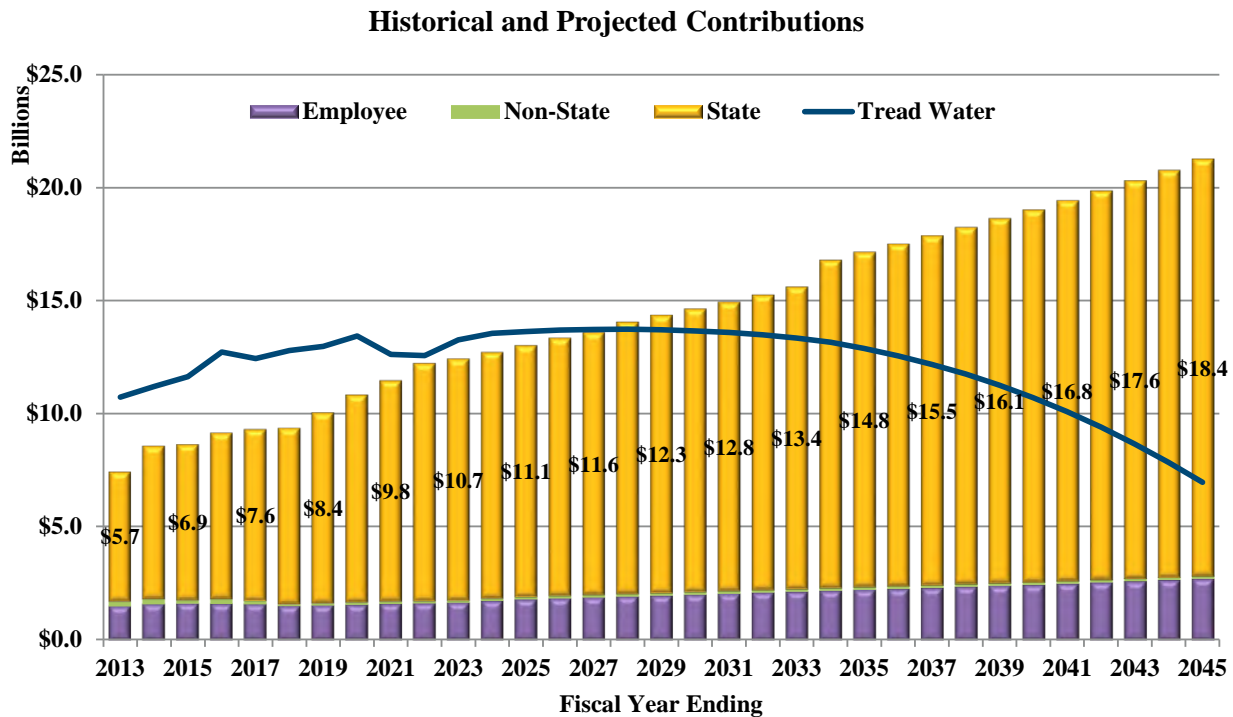
Cheiron examined the adequacy of the funding for the systems, including funded ratio, the sources of changes in the unfunded actuarial liability, and projections of the unfunded actuarial liability. This analysis is contained in the State Actuary’s preliminary reports for each of the retirement systems, found in chapters one through six of this report.

One of the persistent sources of the increase in unfunded actuarial liability is due to actual contributions to the System being less than the tread water contribution (the amount needed to prevent the unfunded actuarial liability from increasing if all assumptions are met).

Digest Exhibit 7 shows the combined historical and projected contributions for five of the systems (TRS, SURS, SERS, JRS, and GARS). As the chart below shows, actual contributions have been significantly less than the tread water cost. Each year that total contributions remain below the tread water cost (blue line), the unfunded actuarial liability is expected to grow. As shown in the graph below, the contributions from the State will need to increase before the total contribution reaches the tread water contribution and begins to pay down the unfunded actuarial liability.

Digest Exhibit 7

### HISTORICAL AND PROJECTED CONTRIBUTIONS COMPARED TO TREAD WATER COST



Source: Cheiron analysis of system funding adequacy.

## Responses to the Recommendations

Each of the six retirement systems provided responses to Cheiron’s recommendations contained in the preliminary reports. The systems generally agreed with Cheiron’s recommendations. The complete responses are in Appendix C.

This annual review was conducted by Cheiron, the State Actuary, with the assistance of the staff of the Office of the Auditor General.

**SIGNED ORIGINAL ON FILE**

\_\_\_\_\_  
JOE BUTCHER  
Division Director

This report is transmitted in accordance with Section 5/2-8.1(c) of the Illinois State Auditing Act.

**SIGNED ORIGINAL ON FILE**

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FRANK J. MAUTINO  
Auditor General

FJM:DJB