Qualifications

I am a Principal and Public Sector Practice Leader at The Terry Group, an actuarial and employee benefits consulting and research firm based in Chicago, Illinois. I have held this position since 2013.

I have served comparable roles at a succession of actuarial consulting firms since 2003: Chicago Consulting Actuaries (later named CCA Strategies), JPMorgan Compensation and Benefits Strategies, Aon Consulting, October Three and, currently, The Terry Group. I received a degree from the University of Illinois in 1996 and began my professional career at that time.

I have consulted on the risk, design, pricing, employee communications, and administration of retirement benefits throughout my career. In particular, I have advised public sector retirement system stakeholders on the risks inherent in defined benefit, defined contribution and other post-employment benefit programs.

I am a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, a Fellow of the Conference of Consulting Actuaries, and an Enrolled Actuary under the Employee Retirement Income Security Act ("ERISA").

I am and have been an active volunteer on various professional committees and task forces having to do with a cross section of professional and public policy matters ranging from technology to public sector retirement.

I am a member of the Milken Institute's Public Finance Advisory Council and of the Board of Directors of the Civic Federation, and a past member of the University of Chicago Center for Municipal Finance Board of Directors.

I have a Bachelor of Science degree in Liberal Arts and Sciences (with Highest Distinction in Actuarial Science) from the University of Illinois. Further details can be found in my CV, attached as Appendix A.

Statement of Engagement

I have been retained by Tabet DiVito & Rothstein LLC to review the financial position of the Teachers' Health Insurance Security Fund of the State of Illinois ("THIS Fund", or "Fund"), and to assess the expected impact on the Fund's financial position of the changes to contributions into the Fund as a result of recent decisions regarding the Fund's contribution rates. I understand that the purpose of this review is to examine the anticipated trajectory of the Fund assets to be able to inform discussions surrounding the ability of the Fund to make benefit payments when due.

I have also been asked to develop projections of the Fund's financial position under various alternate scenarios.

Summary

I performed analysis to estimate the impact of the contribution rate changes on the financial position of the Fund, specifically on the Fund's projected assets and cash flows, for fiscal years 2021 through 2027.

My analysis indicates that the Fund is expected to have negative cash flows (i.e., where deductions exceed revenues) starting as early as fiscal year 2022. I estimate that these negative cash flows will result in a total depletion of the Fund's assets at some point during fiscal year 2023.

Revenue comes primarily from contributions paid by active members,[1] employers (e.g., school districts) and the State. Deductions are composed of benefit payments (also referred to as expected employer claims) and operational expenses.

The reduction in contributions (as communicated by the Teachers' Retirement System of the State of Illinois for Fiscal Year 2022) from 1.30%[2] to 0.90%[3] for active members (along with the corresponding reduction to the employer contribution rate) and the partial-year reduction in the State contribution from 1.30% to 0.90% (for the period from July 1, 2021 to October 29, 2021)[4] reduces the expected revenues of the Fund by over $750 million in fiscal year 2022 through 2027. Considering all of the projections presented in this report, I estimate that the Fund will have no money left to pay any expected benefits by fiscal year 2026 at the latest.

Had contributions increased by 5% year-over-year starting with fiscal year 2022, I estimate that the Fund assets would remain sufficient to pay benefits through fiscal year 2026.

Given the lower expected future contributions, there is a strong likelihood that the Fund will have insufficient assets to cover benefit payments beginning in two to four years. Further, the negative cash flows and strain on the Fund increase significantly through fiscal year 2027 (the time horizon evaluated in this report).

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[1] "Members" are sometimes referred to as "participants" in the various data sources. In this report I use the two terms interchangeably.

[2] See the letter entitled "Teacher Health Insurance Security Fund Certification for FY 2022" (dated October 30, 2020) published by the Teachers' Retirement System of the State of Illinois ("October 2020 Certification Letter")

[3] See the letter entitled "Teacher Health Insurance Security Fund Recertification for FY 2022" (dated June 25, 2021) published by the Teachers' Retirement System of the State of Illinois ("June 2021 Recertification Letter")

[4] The reduction in the State contribution from 1.30% to 0.90% for FY 2022 was rescinded for the remaining portion of FY 2022 effective October 29, 2021. See the Teachers' Retirement System of the State of Illinois Board Resolution entitled "Recission of June 2021 Recertification of FY 2022 Estimate of Teacher Health Insurance Security (THIS) Fund Contribution" dated October 29, 2021 ("October 2021 Board Resolution").

Background

The State of Illinois provides access to health insurance for eligible retired teachers ("retirees") via the Teacher Health Insurance Security Fund ("THIS Fund" or "Fund"). The provisions covering these medical insurance benefits is outlined in the State Employees Group Insurance Act of 1971. (5 ILCS 375/1, *et seq*.)

The retiree is only required to pay a portion of the total cost of coverage on an expected basis. The Fund pays "up to 75% of the total insurance rate" for those in the managed care program. (5 ILCS 375/6.5 (e))

The Fund's portion of the health insurance costs are known as the expected employer claims or the benefit payments. The total cash outflows payable from the Fund also include the Fund's own operating expenses.

There is a limit in the annual increase of the retiree health insurance premiums from year to year. The Director[5] determines the insurance rates and premiums "used to determine the amount of the health care premiums." Starting in fiscal year 2008, "the premium in each fiscal year shall not exceed 105% of the premium actually charged in the previous fiscal year." (5 ILCS 375/6.5 (e))

There are three difference sources of contributions to the Fund.

1. Active members of the Teachers' Retirement System, with some minor exceptions, "shall make contributions toward the cost of annuitant and survivor health benefits." These contributions are "a percentage of salary." The contributions in any given year "shall not exceed 105% of the percentage of salary actually required to be paid in the previous fiscal year." (5 ILCS 375/6.6 (a))

2. Beginning on January 1, 2002, "every employer of a teacher…shall pay an employer contribution toward the cost of annuitant and survivor health benefits." The contributions in any given year "shall not exceed 105% of the percentage of each teacher's salary actually required to be paid in the previous fiscal year." (5 ILCS 375/6.6 (a-5) (4))

3. The State contributes an amount equal to the "amount certified by the Board of Trustees of the Teachers' Retirement System of Illinois under subsection (c) of Section 6.6 of the State Employees Group Insurance Act of 1971 as the estimated total amount of contributions" expected to be paid by the active members. (40 ILCS 15/1.3)

The Fund also receives funds from the federal government and via the COBRA Program (these two revenue sources totaled $1,079,000 in fiscal year 2019 and $895,000 in fiscal year 2020).

[5] "Director" refers to the Director of the Department of Central Management Services.

Expected Projection of the Fund's Future Financial Position

Figure 1 below shows an estimated projection of the Fund assets reflecting contributions at the recertified (and partially reinstated)[6] fiscal year 2022 rates and the certified fiscal year 2023 rates and remaining at that 2023 level in subsequent years. This projection is based on the contribution rates set forth in the letter from the Teachers' Retirement System of the State of Illinois dated June 25, 2021 ("June 2021 Recertification Letter"), the Teachers' Retirement System of the State of Illinois Board Resolution dated October 29, 2021 rescinding the decrease in the State's contribution rate ("October 2021 Board Resolution"), and the rates for fiscal year 2023 (based on the "October 2021 FY2023 Certification Letter").[7]

In preparing this estimate, I have assumed that all the actuarial assumptions in the 2019 Actuarial Report[8] and the 2021 TRS Actuarial Report[9] are realized in future years and have used these projected figures as the inputs for the analysis I prepared for this report. The covered payroll for the Fund is assumed to be 99.474%[10] of the Assumed Payroll in Table 3 of the 2021 TRS Actuarial Report. I have assumed that the operational expenses are 0.09% of the active member payroll in all future years and have included these in the deductions.

The projection of the Expected Employer Claims in Exhibit 1 of the 2019 Actuarial Report and used in my analysis for this report already reflects an assumption that the retired member contribution increases by 5% per year.[11] The terms Expected Employer Claims (Exhibit 1 of the 2019 Actuarial Report) and Benefit Payments (page C-12 of the 2019 Actuarial Report) are used synonymously in the 2019 Actuarial Report and in this report.

Deductions are equal to the sum of benefit payments and operational expenses. The Fund's own projections of benefit payments (prepared by the Fund's actuarial service provider) show projected benefit payments growing rapidly from $261 million (fiscal year 2019) to $734 million (fiscal year 2027). When actual operational expenses are included for fiscal year 2019, the total reported deductions total $271 million. When projected operational expenses are included for fiscal year 2027, the projected deductions total $745 million.

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[6] The term reinstated in this report refers to the State's 1.30% contribution rate that is put into effect as a result of the October 2021 Board Resolution.

[7] See the letter entitled "Teacher Health Insurance Security Fund Certification for FY 2023" (dated October 29, 2021) published by the Teachers' Retirement System of the State of Illinois ("October 2021 FY2023 Certification Letter").

[8] The full name of the report is the Teachers' Retirement Insurance Program of the State of Illinois GASB Statements No. 74 and 75 Accounting and Financial Reporting for Postemployment Benefits Other than Pensions Actuarial Valuation Report as of June 30, 2019.

[9] The full name of the report is the Teachers' Retirement System of the State of Illinois Preliminary Actuarial Valuation Review of Pension Benefits as of June 30, 2021.

[10] This is result of dividing item 1.c. by item 1.a. from Exhibit B of the October 2021 FY2023 Certification Letter.

[11] See page E-2 of the 2019 Actuarial Report. The assumed premium increase is -9.07% for non-MAPD plans for Fiscal Year 2021. Otherwise, the assumed premium increase is 5% per year through Fiscal Year 2034.

Consistent with the 2019 Valuation Report, fund assets are assumed not to earn any interest.[12]

As Figure 1 shows, the Fund is expected to have insufficient assets to pay benefit payments by the end of fiscal year 2023 (June 30, 2023) and continuing from that point.

Figure 1: Expected Projection of Fund Contribution Rates, Cash Flows and Net Assets for FY 2019 through FY 2027 Starting with the Recertified and Partially Reinstated 2022 Contribution Rates

	Contribution Rates			Cash Flows ($ millions)				
Fiscal Year	**Active Members**	**Employers**	**State**	**Revenues**	**Deductions**	**Net Cash Flow**	**Interest ($ millions)**	**Net Assets ($ millions)**
2019	1.24%	0.92%	1.24%	$357	($271)	$86	$0.4	$68
2020	1.24%	0.92%	1.24%	367	(247)	120	0.2	189
2021	1.30%	0.96%	1.30%	399	(378)	20	0.0	209
2022	0.90%	0.67%	0.90% / 1.30%[13]	314	(424)	(110)	0.0	99
2023	0.90%	0.67%	0.90%	288	(474)	(185)	0.0	(87)
2024	0.90%	0.67%	0.90%	295	(532)	(236)	0.0	(323)
2025	0.90%	0.67%	0.90%	303	(598)	(296)	0.0	(618)
2026	0.90%	0.67%	0.90%	310	(669)	(360)	0.0	(978)
2027	0.90%	0.67%	0.90%	316	(745)	(429)	0.0	(1,407)

[12] Page C-10 of the 2019 Actuarial Report indicates this assumption with the following statement: "Given the low asset value and pay-as-you-go funding policy, the investment return assumption was set to zero."

[13] The 0.90% rate is assumed to be effective for four months of the year, and the 1.30% rate is assumed to be effective for eight months of the year. The underlying model treats this as a weighted average effective rate of 1.17% for fiscal year 2022.

If the State were to increase the contributions for active members, employers and the State by 5% each year starting in fiscal year 2024 (the maximum yearly increases allowed by statute), I project that the net assets at fiscal year-end 2027 would be negative $1.251 billion.

Figure 2: Expected Projection of Fund Contribution Rates, Cash Flows and Net Assets for FY 2019 through FY 2027 Starting with the Recertified and Partially Reinstated 2022 Contribution Rates, assuming rates increase 5% per year starting in FY2024

	Contribution Rates			Cash Flows ($ millions)				
Fiscal Year	Active Members	Employers	State	Revenues	Deductions	Net Cash Flow	Interest ($ millions)	Net Assets ($ millions)
2019	1.24%	0.92%	1.24%	$357	($271)	$86	$0.4	$68
2020	1.24%	0.92%	1.24%	367	(247)	120	0.2	189
2021	1.30%	0.96%	1.30%	399	(378)	20	0.0	209
2022	0.90%	0.67%	0.90% / 1.30%	314	(424)	(110)	0.0	99
2023	0.90%	0.67%	0.90%	288	(474)	(185)	0.0	(87)
2024	0.94%	0.70%	0.94%	309	(532)	(223)	0.0	(310)
2025	0.99%	0.73%	0.99%	332	(598)	(266)	0.0	(576)
2026	1.04%	0.77%	1.04%	357	(669)	(312)	0.0	(888)
2027	1.09%	0.81%	1.09%	383	(745)	(363)	0.0	(1,251)

Contribution rates for fiscal year 2019 are reported in the 2018 Actuarial Report[14] and contribution rates for fiscal year 2020 are reported in the 2019 Actuarial Report. Revenues, deductions, interest and net assets for fiscal years 2019 and 2020 are those reported in Exhibit 3 in the 2019 Actuarial Report.

Projected benefit payments for fiscal year 2021 and beyond are found on Exhibit 1 of the 2019 Actuarial Report and operational expenses are projected as 0.09% of the Fund payroll.

The revenues for each year in Figure 1 above are calculated as the product of:

Assumed Payroll (from Table 3 of the 2021 TRS Actuarial Report)	X	99.474% (the proportion of Assumed Payroll assumed to be covered by the Fund)	X	the Contribution Rates

[14] The full name of the report is the Teachers' Retirement Insurance Program of the State of Illinois GASB Statements No. 74 and 75 Accounting and Financial Reporting for Postemployment Benefits Other than Pensions Actuarial Valuation Report as of June 30, 2018.

The cash flows above (i.e., revenues and deductions) exclude the costs of the benefits borne by retirees, as these figures do not impact the net cash flows. The retired member contributions that flow through revenues equals the portion of the total benefit payments that are borne by the retired members. See Appendix B for a more detailed discussion of the retired member contributions.

As shown in Figure 1 above, projected deductions are expected to exceed revenues starting in fiscal year 2022 resulting in negative cash flows. More importantly, the negative cash flows are projected to increase each year from 2023 to 2027. I did not see any data to indicate that the projected negative cash flows would be temporary, that they would reverse, or that they would self-correct over the timeframe of the forecast above. As such, the Fund deficit, as illustrated by negative assets, would be expected to grow through fiscal year 2027.

For years in which the Fund is estimated to have deductions that exceed revenues and to have negative assets, there would be no money left in the Fund to pay all of the deductions (benefits payments and operating expenses) in the year. This has significant importance for the Fund, as benefits are paid on a "pay-as-you-go" basis.[15] The Fund has no other source of revenues to make benefit payments on behalf of retired members in such years.

The 2019 Actuarial Report (page C-12) indicates that Fund assets were negative at fiscal year-ends 2016 to 2018. This "self-corrected" and assets became positive again in fiscal year 2019 because actual revenues increased from fiscal years 2017 to 2019 while deductions decreased from fiscal years 2017 to 2019. Despite that temporary improvement, Figure 1 above shows that revenues are projected to be lower at each year from 2022 through fiscal year 2027 than they were during fiscal years 2019 to 2021, and deductions are expected to grow each year from fiscal year 2021 through 2027.

More specifically, Fund assets were negative $45.029 million at fiscal year-end 2017 and negative $18.487 million at fiscal year-end 2018. The State contributions for these two years were $109.703 million and $119.568 million respectively, indicating that the negative balance was less than one year's worth of the State's contribution. In contrast, based on the projection in Figure 1 – the projected Fund balance of negative $1,407 million at fiscal year-end 2027 is estimated to be over 12 times the State's projected 2027 contribution of $115 million. So unlike years past where the Fund balance was less than one year of the State's contribution, the projected Fund balance would be over 12 times the projected State contribution in fiscal year 2027. Therefore, the deficit appears to be beyond correction over this horizon.

More detail on how I developed this forecast can be found in Appendix D which describes my projection methodology.

[15] See page F-2 of the 2019 Actuarial Report.

Estimates of the Fund's Future Financial Position Under Alternate Scenarios

In this section are estimated projections of the Fund's position under various alternate scenarios. These scenarios differ from the baseline expected scenario described in the previous section in various ways, as noted below:

- Alternate Scenario 1: *Expected Projection, Original 2022 Contribution Rates.* This scenario is the same as the baseline expected projection shown above, except that it uses the original certified 2022 contribution rates for 2022 and beyond.
- Alternate Scenario 2: *Optimistic Projection, Recertified and Partially Reinstated 2022 Contribution Rates.* This scenario is based on the recertified and partially reinstated 2022 contribution rates, but uses higher contribution rates for 2023 and beyond, a higher payroll base, and lower benefit payments.
- Alternate Scenario 3: *Pessimistic Projection, Recertified and Partially Reinstated 2022 Contribution Rates.* This scenario is based on the recertified and partially reinstated 2022 contribution rates for 2022 and beyond but uses a lower payroll base and higher benefit payments.
- Alternate Scenario 4: *Optimistic Projection, Original 2022 Contribution Rates.* This scenario uses the original certified 2022 contribution rates for 2022 and uses increases in contributions rates for 2023 and beyond, a higher payroll base, and lower benefit payments.
- Alternate Scenario 5: *Pessimistic Projection, Original 2022 Contribution Rates.* This scenario uses the original certified 2022 contribution rates for 2022 and beyond and uses a lower payroll base and higher benefit payments.

Alternate Scenario 1: Expected Projection, Original 2022 Contribution Rates

This scenario is based on the same assumptions as in the Expected Scenario, with one exception: the original certified 2022 contribution rates from the Teacher Health Insurance Security Fund Certification for FY 2022 (dated October 30, 2020) published by the Teachers' Retirement System of the State of Illinois ("October 2020 Certification Letter") are used for fiscal year 2022 and beyond. The rates from the October 2020 Certification Letter are also referred to here as the Original 2022 Certified Rates.

The increases in revenues (from using the Original 2022 Certified Rates) results in the assets being projected to be sufficient to pay claims through fiscal year 2024, then being projected to be insufficient to pay claims starting in fiscal year 2025.

Figure 3: Alternate Scenario 1: Expected Projection, Starting with the Original 2022 Contribution Rates

	Contribution Rates			Cash Flows ($ millions)				
Fiscal Year	Active Members	Employers	State	Revenues	Deductions	Net Cash Flow	Interest ($ millions)	Net Assets ($ millions)
2019	1.24%	0.92%	1.24%	$357	($271)	$86	$0.4	$68
2020	1.24%	0.92%	1.24%	367	(247)	120	0.2	189
2021	1.30%	0.96%	1.30%	399	(378)	20	0.0	209
2022	1.30%	0.96%	1.30%	407	(424)	(17)	0.0	193
2023	1.30%	0.96%	1.30%	415	(474)	(59)	0.0	134
2024	1.30%	0.96%	1.30%	425	(532)	(106)	0.0	28
2025	1.30%	0.96%	1.30%	436	(598)	(162)	0.0	(135)
2026	1.30%	0.96%	1.30%	446	(669)	(224)	0.0	(358)
2027	1.30%	0.96%	1.30%	456	(745)	(290)	0.0	(648)

The projected fiscal year 2022 Revenues in this case are $407 million versus projected fiscal year 2022 Revenues of $314 million in the Expected case. The lower contribution rates result in a decrease in revenues of $93 million in Fiscal Year 2022. Over the period from fiscal year 2022 to fiscal year 2027, this means an overall decrease of over $750 million in funds flowing into the Fund due exclusively to the changes in contribution rates (i.e., the lower recertified contribution rates relative to the Original 2022 Certified Rates).

Alternate Scenario 2: Optimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Contribution Rates

This scenario is based on the Recertified 2022 Contribution Rates. However, in this scenario there are three changes, each of which serves to lengthen the time that assets remain sufficient to pay claims. Here is a summary of the changes:

- Contribution rates as a percentage of payroll increase by 5% each year, with the first increase applied in Fiscal Year 2024.
- The payroll base itself (i.e., the total sum of compensation paid to all active members) increases by an additional 1% each year over what is assumed in the expected/baseline scenario.
- The employer benefit payments payable by the Fund increase by 1% less annually than in the expected/baseline scenario starting in fiscal year 2022.

The increases in revenues (from the contribution rates and the payroll base) and the decrease in benefit payments payable result in the assets being projected to be insufficient to pay benefit payments starting in Fiscal Year 2023.

Figure 4: Alternate Scenario 2: Optimistic Projection, Recertified and Partially Reinstated 2022 Contribution Rates

	Contribution Rates			Cash Flows ($ millions)				
Fiscal Year	Active Members	Employers	State	Revenues	Deductions	Net Cash Flow	Interest ($ millions)	Net Assets ($ millions)
2019	1.24%	0.92%	1.24%	$357	($271)	$86	$0.4	$68
2020	1.24%	0.92%	1.24%	367	(247)	120	0.2	189
2021	1.30%	0.96%	1.30%	399	(378)	20	0.0	209
2022	0.90%	0.67%	0.90% / 1.30%	314	(420)	(106)	0.0	103
2023	0.90%	0.67%	0.90%	291	(465)	(174)	0.0	(70)
2024	0.94%	0.70%	0.94%	315	(516)	(202)	0.0	(272)
2025	0.99%	0.73%	0.99%	342	(575)	(233)	0.0	(505)
2026	1.04%	0.77%	1.04%	372	(638)	(266)	0.0	(771)
2027	1.09%	0.81%	1.09%	402	(703)	(301)	0.0	(1,072)

Alternate Scenario 3: Pessimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Contribution Rates

This scenario is based on the Recertified 2022 Contribution Rates. However, in this scenario there are two changes – each of which serves to shorten the time that assets remain sufficient to pay claims. Stated another way, the changes in this scenario serve to accelerate the rate of negative cash flows, resulting in an earlier date at which assets are no longer sufficient to pay claims. Here is a summary of the changes:

- The payroll base itself (i.e., the total sum of compensation paid to all active members) increases by 1% less each year than what is assumed in the expected/baseline scenario.
- The employer benefit payments payable by the Fund increase by 1% more annually than in the expected/baseline scenario starting in fiscal year 2022.

In this scenario, the contribution rates as a percentage of payroll are not increased in any year.

The decreases in revenues (from the contribution rates and the payroll base) and the increases in benefit payments payable results in the assets being projected to be insufficient to pay benefit payments starting in Fiscal Year 2023. This is the same Fiscal Year as in the "Expected" scenario.

Figure 5: Alternate Scenario 3: Pessimistic Projection, Recertified and Partially Reinstated 2022 Contribution Rates

	Contribution Rates			Cash Flows ($ millions)				
Fiscal Year	Active Members	Employers	State	Revenues	Deductions	Net Cash Flow	Interest ($ millions)	Net Assets ($ millions)
2019	1.24%	0.92%	1.24%	$357	($271)	$86	$0.4	$68
2020	1.24%	0.92%	1.24%	367	(247)	120	0.2	189
2021	1.30%	0.96%	1.30%	399	(378)	20	0.0	209
2022	0.90%	0.67%	0.90% / 1.30%	314	(428)	(114)	0.0	95
2023	0.90%	0.67%	0.90%	285	(483)	(198)	0.0	(103)
2024	0.90%	0.67%	0.90%	290	(547)	(258)	0.0	(360)
2025	0.90%	0.67%	0.90%	294	(622)	(328)	0.0	(688)
2026	0.90%	0.67%	0.90%	298	(703)	(405)	0.0	(1,093)
2027	0.90%	0.67%	0.90%	301	(790)	(489)	0.0	(1,582)

Alternate Scenario 4: Optimistic Projection, Starting with the Original 2022 Contribution Rates

This scenario is based on the Original 2022 Contribution Rates. However, in this scenario there are three changes, each of which serves to lengthen the time that assets remain sufficient to pay benefit payments. Here is a summary of the changes:

- Contribution rates as a percentage of payroll increase by 5% each year, with the first increase applied in Fiscal Year 2023.
- The payroll base itself (i.e., the total sum of compensation paid to all active members) increases by an additional 1% each year over what is assumed in the expected/baseline scenario.
- The employer benefit payments payable by the Fund increase by 1% less annually than in the expected/baseline scenario starting in fiscal year 2022.

The increases in revenues (from the contribution rates and the payroll base) and the decrease in benefit payments payable result in the assets being projected to be insufficient to pay benefit payments starting in Fiscal Year 2026.

Figure 6: Alternate Scenario 4: Optimistic Projection, Original 2022 Contribution Rates

	Contribution Rates			Cash Flows ($ millions)				
Fiscal Year	**Active Members**	**Employers**	**State**	**Revenues**	**Deductions**	**Net Cash Flow**	**Interest ($ millions)**	**Net Assets ($ millions)**
2019	1.24%	0.92%	1.24%	$357	($271)	$86	$0.4	$68
2020	1.24%	0.92%	1.24%	367	(247)	120	0.2	189
2021	1.30%	0.96%	1.30%	399	(378)	20	0.0	209
2022	1.30%	0.96%	1.30%	407	(420)	(13)	0.0	197
2023	1.30%	0.96%	1.30%	419	(465)	(46)	0.0	151
2024	1.36%	1.00%	1.36%	453	(516)	(63)	0.0	88
2025	1.43%	1.05%	1.43%	493	(575)	(83)	0.0	6
2026	1.50%	1.11%	1.50%	536	(638)	(102)	0.0	(97)
2027	1.58%	1.16%	1.58%	581	(703)	(122)	0.0	(219)

Alternate Scenario 5: Pessimistic Projection, Starting with the Original 2022 Contribution Rates.

This scenario is based on the Original 2022 Contribution Rates. However, in this scenario there are two changes – each of which serves to shorten the time that assets remain sufficient to pay benefit payments. Stated another way, the changes in this scenario serve to accelerate the rate of negative cash flows, resulting in an earlier date at which assets are no longer sufficient to pay benefit payments. Here is a summary of the changes:

- The payroll base itself (i.e., the total sum of compensation paid to all active members) increases by 1% less each year below what is assumed in the expected/baseline scenario.
- The employer benefit payments payable by the Fund increase by 1% more annually than in the expected/baseline scenario starting in fiscal year 2022.

In this scenario, the contribution rates as a percentage of payroll are not increased in any year.

The decreases in revenues (from the contribution rates and the payroll base) and the increases in benefit payments payable results in the assets being projected to be insufficient to pay benefit payments starting in Fiscal Year 2024. This is one year after the Fiscal Year in the "Expected" scenario.

Figure 7: Alternate Scenario 5: Pessimistic Projection, Original 2022 Contribution Rates

	Contribution Rates			Cash Flows ($ millions)				
Fiscal Year	**Active Members**	**Employers**	**State**	**Revenues**	**Deductions**	**Net Cash Flow**	**Interest ($ millions)**	**Net Assets ($ millions)**
2019	1.24%	0.92%	1.24%	$357	($271)	$86	$0.4	$68
2020	1.24%	0.92%	1.24%	367	(247)	120	0.2	189
2021	1.30%	0.96%	1.30%	399	(378)	20	0.0	209
2022	1.30%	0.96%	1.30%	407	(428)	(21)	0.0	188
2023	1.30%	0.96%	1.30%	411	(483)	(72)	0.0	116
2024	1.30%	0.96%	1.30%	417	(547)	(130)	0.0	(14)
2025	1.30%	0.96%	1.30%	423	(622)	(199)	0.0	(213)
2026	1.30%	0.96%	1.30%	428	(703)	(274)	0.0	(487)
2027	1.30%	0.96%	1.30%	433	(790)	(357)	0.0	(844)

Estimated State Contribution Rates Needed to Cover the Revenue Shortfall

For each of the six projections shown above in Figures 1 and 3 through 7, I have estimated the contribution that would need to be paid by the State to ensure that the Fund would have assets on hand to fulfill the payment of the deductions (operating expenses and benefit payments). The contribution rates determine below assume the active members and employers maintain the rates found in Figures 1 and 3 through 7.

In the Figure 8 below, I have shaded the cells where the State contribution would need to exceed what is otherwise expected to be paid according to that projection.

Figure 8: Estimated State contribution rates that would be needed assuming the State covers the revenue shortfall

Fiscal Year	Expected Projection, Starting with the Recertified and Partially Reinstated 2022 Rates		Alternative Scenarios: Scenario 1: Expected Projection, Starting with the Original 2022 Rates		Scenario 2: Optimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Rates		Scenario 3: Pessimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Rates		Scenario 4: Optimistic Projection, Starting with the Original 2022 Rates		Scenario 5: Pessimistic Projection, Starting with the Original 2022 Rates	
	Model	Rev	Projected State rate	New State rate	Projected State rate	New State rate	Projected State rate	New State rate	Projected State rate	New State rate	Projected State rate	New State rate
2021	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%	1.30%
2022	1.17%	1.17%	1.30%	1.30%	1.17%	1.17%	1.17%	1.17%	1.30%	1.30%	1.30%	1.30%
2023	0.90%	1.64%	1.30%	1.30%	0.90%	1.50%	0.90%	1.79%	1.30%	1.30%	1.30%	1.30%
2024	0.90%	2.88%	1.30%	1.30%	0.94%	2.60%	0.90%	3.10%	1.36%	1.36%	1.30%	1.42%
2025	0.90%	3.32%	1.30%	2.41%	0.99%	2.85%	0.90%	3.67%	1.43%	1.43%	1.30%	2.98%
2026	0.90%	3.78%	1.30%	3.09%	1.04%	3.09%	0.90%	4.27%	1.50%	2.24%	1.30%	3.58%
2027	0.90%	4.26%	1.30%	3.57%	1.09%	3.33%	0.90%	4.93%	1.58%	2.49%	1.30%	4.24%

"Projected State rate" refers to the State contribution rates from the projections (expected/baseline and alternate scenarios), as described and shown in Figures 1 and 3 through 7 above.

"New State rate" refers to the revised State contribution rate that would be needed (under each projection) to maintain the ability of the Fund to pay benefit payments and operating expenses on a pay-as-you-go basis without additional changes to active members or employers. Cells shaded in gray represent a resulting increase in the State contribution (i.e., where the State's contribution would need to be higher than that shown in the corresponding projection in Figures 1 through 6) necessary to enable pay-as-you-go funding.

As can be seen above, given the active member and employer contributions described above in each of the projections, the State's own contribution rate would need to increase to as much as 4.93% of pay (in fiscal year 2027) to ensure that the Fund has sufficient revenues to pay all deductions.

Estimated Overall Increase in Contribution Rates Needed to Cover the Revenue Shortfall

For each of the six projections shown above in Figures 1 through 6, I have also estimated the contributions that would need to be paid by all three groups (active members, employers, and the State) to ensure that the Fund would have assets on hand to fulfill the payment of the deductions (operating expenses and benefit payments). For purposes of this estimate, I assumed that contribution rates for each of these three groups would increase by an equivalent proportion such that:

1. the State is paying the same rate as the active members and
2. the employers continue to pay about 74% of the active member rate.

In Figure 9 below, I have shaded the cells where the contributions would need to exceed what is otherwise expected to be paid according to that projection.

Figure 9: Estimated overall contribution rates in Fiscal Year 2027 that would be needed assuming all groups cover the revenue shortfall

			Alternative Scenarios									
Group	Expected Projection, Starting with the Recertified and Partially Reinstated 2022 Rates		Scenario 1: Expected Projection, Starting with the Original 2022 Rates		Scenario 2: Optimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Rates		Scenario 3: Pessimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Rates		Scenario 4: Optimistic Projection, Starting with the Original 2022 Rates		Scenario 5: Pessimistic Projection, Starting with the Original 2022 Rates	
	Original	Revised	Original	Revised	Original	Revised	Original	Revised	Original	Revised	Original	Revised
Active Members	0.90%	2.12%	1.30%	2.12%	1.09%	1.91%	0.90%	2.37%	1.58%	1.91%	1.30%	2.37%
Employers	0.67%	1.58%	0.96%	1.58%	0.81%	1.42%	0.67%	1.76%	1.16%	1.42%	0.96%	1.76%
State	0.90%	2.12%	1.30%	2.12%	1.09%	1.91%	0.90%	2.37%	1.58%	1.91%	1.30%	2.37%
Total	2.47%	5.83%	3.56%	5.83%	2.99%	5.23%	2.47%	6.50%	4.32%	5.23%	3.56%	6.50%

"Original" refers to the contribution rates from the projections (expected/baseline and alternate scenarios), as described and shown in Figures 1 through 6 above.

"Revised" refers to the contribution rates as increased in order to have revenues equal deductions in fiscal year 2027. The revised rates are the same in multiple scenarios since the underlying deductions in these scenarios are equal (e.g., the deductions under the two "pessimistic" scenarios are the same).

As shown in Figure 9, I estimate that the overall total contribution rate would need to increase between 0.91% and 4.03% under the scenarios shown above.

Summary of My Analysis

The following chart summarizes the years in which assets are estimated to no longer be sufficient to make benefit payments.

Figure 10: Year in Which Assets Become Insufficient to Make Benefit Payments Under Expected/Baseline Projection and Alternate Scenarios

Scenario	Scenario Description	Projected Fiscal Year of Insufficient Assets	Estimated State Contribution Rate in Fiscal Year 2027 Presuming State Covers Entire Shortfall
Expected Projection	Expected Projection Starting with the Recertified and Partially Reinstated 2022 Contribution Rates	2023	4.26%
Alternate Scenario 1	Expected Projection, Starting with the Original 2022 Contribution Rates	2025	3.57%
Alternate Scenario 2	Optimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Contribution Rates	2023	3.33%
Alternate Scenario 3	Pessimistic Projection, Starting with the Recertified and Partially Reinstated 2022 Contribution Rates	2023	4.93%
Alternate Scenario 4	Optimistic Projection, Starting with the Original 2022 Contribution Rates	2026	2.49%
Alternate Scenario 5	Pessimistic Projection, Starting with the Original 2022 Contribution Rates	2024	4.24%

In summary, my analysis based on the assumptions and methods of this report leads to these conclusions:

- The reduction in contribution rates leads to a projected reduction in revenue to the Fund of approximately $750 million over the six years from July 1, 2021 to June 30, 2027 (fiscal years 2022 to 2027).

- This reduction in revenue resulting from the lowered contribution rates accelerates the point in time at which there are no longer assets in the Fund to make benefits payments and pay operating expenses.
- With the lowered contribution rates, the projected inadequacy of the assets is estimated to be significantly more pronounced than in recent history, and there is no indication that this will self-correct.
- There is a strong likelihood that with the lowered contribution rates, the assets of the Fund will be exhausted and the Fund will be unable to make benefit payments starting within the next two to four years.
- Even in optimistic scenarios (e.g., scenarios where contributions are increased by the statutory maximum of 5% per year, payroll grows faster than expected, and benefit payments grow slower than expected), the assets of the fund are expected to become insufficient to make benefit payments over the period of time I considered in my analysis.
- Based on my analysis, the State's contribution would need to increase to as much as 4.93% of pay should the State decide to increase its contribution to a level that would enable the Fund to cover the benefits payments and operating expenses.

Actuarial Certification

This analysis was prepared for Tabet DiVito & Rothstein LLC to model the cash flows and assets under the Teachers' Health Insurance Security Fund ("Fund") under specific scenarios. The results of this analysis have been prepared in accordance with our understanding of the various provisions of the Fund. The contents of this analysis are based on specific assumptions as outlined in this document and in the materials considered (Appendix E). Any changes will impact the results documented herein.

To prepare my analysis I was asked, for purposes of consistency, to use as my starting point the actuarial valuation of the Fund (i.e., the June 30, 2019 valuation prepared by GRS) and the actuarial valuation of the Teachers' Retirement System of State of Illinois ("TRS") (i.e., June 30, 2021 valuation prepared Segal), including the use of the assumptions, methods and projections in those reports. I have relied upon these reports as presented. I have no reason to believe these reports are not accurate or reasonable, but I did not, for example, audit the member or claim data, independently validate the assumptions or independently replicate liabilities.

This analysis was prepared to model cash flows for the purposes discussed in this report and should not be relied upon for any other purpose. This work is not intended to replace the valuation work of the Fund or TRS. There are several risks here that this analysis does not explore – including investment risk, mortality risk, contribution risk, assumption risk and modeling risk. The predictive value of results diminishes over time, and thus the shorter-term results should be weighted more heavily. I am not aware of any conflicts of interest that would impair the objectivity of my analysis. I meet the Qualification Standards of the American Academy of Actuaries to render the opinions contained herein.

Appendix A: Brian Septon CV

Brian M. Septon
Professional Biography and Qualifications

Brian M. Septon, FSA, EA, MAAA, FCA
Principal
The Terry Group
130 East Randolph Street, Suite 2810
Chicago, Illinois 60601

Office: 312-574-1507
Cell: 847-778-6859
Email: brian.septon@terrygroup.com

Education

Bachelor of Science in Liberal Arts and Sciences, University of Illinois, 1996
Highest Distinction in Actuarial Science

Professional Experience

The Terry Group, 2013 to present
- Principal, Executive Committee Member
- Public Sector Practice Leader

October Three Consulting, 2012 to 2013
- Partner, Public Pensions Practice Leader

Aon Hewitt, 2010 to 2012
- Via acquisition of J.P. Morgan Compensation and Benefit Strategies
- Chicago Retirement Practice Leader (2010)
- National Continuing Education Committee
- National Product Development Committee

J.P. Morgan Compensation and Benefit Strategies, 2006 to 2010
- Via acquisition of CCA Strategies LLC
- New York Retirement Practice Manager (2006 to 2010)
- Member of firm-wide retirement product development team

CCA Strategies LLC, 1997 to 2006
- Firm of over 200 professionals with ten offices

- New York Retirement Practice Manager (2005) (relocated to New York to open and run practice)
- Principal

KPMG Peat Marwick, 1996 to 1997

Professional Memberships

Fellow of the Society of Actuaries (2003)
Enrolled Actuary (2008)
Member of the American Academy of Actuaries (2005)
Fellow of the Conference of Consulting Actuaries (2013)

Professional Involvement

American Academy of Actuaries - Public Plans Subcommittee (2012 to 2020)

Conference of Consulting Actuaries - Seminar Committee (2013 to 2017)

Economic Club of Chicago (2014 to present)

The Civic Federation
- Executive Committee: 2018 to present
- Board of Directors: 2015 to present

University of Chicago Center for Municipal Finance Board of Directors (2016 to 2020)

Milken Institute Public Finance Advisory Council (2021 to present)

Society of Actuaries Technology Section (2003 to 2006)
- Chairman: 2005 to 2006
- Vice Chair: 2004 to 2005

Speeches and Panels

Cyber Risk: Understanding Business and Industry Risks
Conference of Consulting Actuaries – October 2021

Public Pension Plan Solvency: Crisis or Myth?
Conference of Consulting Actuaries Webinar – August 2019

Quick! Google 'Climate Scientist, Chapter 9 & Pension Actuary'
National Federation of Municipal Analysts – May 2019

Ethics
Conference of Consulting Actuaries Annual Meeting – October 2018

Assessing Illinois Pensions – An Examination of Illinois TRS, SERS, SURS
The Civic Committee of the Commercial Club of Chicago – May 2018

Pensions: State of The State
The Bond Buyer's Texas Public Financial Conference – February 2018

Great Expectations of Inflation
Conference of Consulting Actuaries Webinar – March 2017

Assessing Pension Costs and Affordability – How Big is the Problem?
National Federation of Municipal Analysts – January 2017

It's Time to Bust the Myth that Assumptions Drive Pension Costs
Council on State Government – December 2016

Don't Gamble with Ethics
Conference of Consulting Actuaries Annual Meeting – October 2016

Public Sector Plan Headlines
Conference of Consulting Actuaries Webinar – July 2016

Talking in Pictures: Effective Strategies for Communicating in the 21st Century
Conference of Consulting Actuaries Annual Meeting – October 2015

Incredibly Credible Assumptions
Conference of Consulting Actuaries Webinar – June 2015

Ethics in Action
Conference of Consulting Actuaries Annual Meeting – October 2014

Is There an Actuary in the House? Financial Planning and Taxation for Actuaries
Conference of Consulting Actuaries Webinar – July 2014

Ask the Experts – Pension Policy Discussion
Symposium on Sustainable State and Local Retirement Systems – October 2013

Inputs and Outputs: What Should We Be Smoothing Now?
Conference of Consulting Actuaries Annual Meeting – October 2013

Social Media Networking
Conference of Consulting Actuaries Annual Meeting – October 2012

Social Media for Actuaries
Society of Actuaries Life Insurance Meeting – May 2012
Society of Actuaries Annual Meeting – October 2011

ERISA Jeopardy
Conference of Consulting Actuaries Annual Meeting – October 2005

Balancing Issues of Stakeholders: Management vs. Shareholders, Employees & Guaranty Agencies
Symposium on Addressing the Financial Risks from Retirement Systems – June 2005

Electronic Security in the Internet Age
Society of Actuaries Summer Meeting – June 2003
Society of Actuaries Spring Meeting – May 2003

Publications

It's time to bust the myth that assumptions drive pension costs
Pensions and Investments – July 2015

The 457 Answer Book
Contributing author to chapter on Current Funding, Investment, Disclosure and Legal Issues with Governmental Defined Benefit Plans – Starting Fall 2014, updated annually

Testimony

State of Illinois Pension Hearing – November 2011, May 2011

Appendix B: More Information on the Revenue, Deductions and Assets of the Fund

Revenues

The 2019 Actuarial Report contains the financial information for both Fiscal Year 2019 and Fiscal Year 2020. Exhibit 3 (page D-3) shows the following sources of Revenue for the Fund for Fiscal Year 2019 and Fiscal Year 2020.

Revenues	Fiscal Year 2019	Fiscal Year 2020
State Contributions	$ 130,068,000	$ 133,896,000
Employer Contributions	96,021,000	98,816,000
Federal Government Medicare Part D Subsidy	975,000	794,000
Active Member Contributions	130,068,000	133,896,000
Retired Member Contributions	145,861,868	144,302,471
COBRA	104,000	101,000
Interest	397,000	193,000
Total Revenues	504,494,668	511,988,471

The actual Fiscal Year 2020 revenues attributable to State Contributions, Employer Contributions and Active Member Contributions (from Exhibit 3 of the 2019 Actuarial Report, replicated above) totaled $366,608,000.

These contributions are paid as a percentage of payroll according to the Recertification of the FY2020 Contribution Rate (dated June 19, 2019) published by the Teachers' Retirement System of the State of Illinois ("June 2019 Certification Letter"). The contribution rates for Fiscal Year 2020 were 1.24% of compensation for members (interpreted as "Active Members" for the purposes of Exhibit 3) and 0.92% of compensation for employers (interpreted as "Employer Contributions" for the purposes of Exhibit 3). I was able to corroborate that these two figures are based on page F-2 of the 2019 Actuarial Valuation. Exhibit B of the June 2019 Certification Letter refers to the "Matching State contribution" as matching the Active Member contribution rate. Page F-2 of the 2019 Actuarial Valuation states that "the State contributes 1.24 percent of pay" (interpreted as "State Contributions" for the purposes of Exhibit 3).

The June 2019 Certification Letter expected that the matching State contribution for Fiscal Year would be $132,158,560 ($135,221,802 minus an adjustment $3,063,242). This figure is within 1.6% of the actual value contributed.

The actual Fiscal Year 2020 revenues also include amounts from the Federal Government Medicare Part D Subsidy of $794,000, COBRA receipts $101,000 and Interest of $193,000. The actual Fiscal Year 2020 revenues also includes Retired Member Contributions in the amount of $144,302,471.

The total revenues for Fiscal Year 2020 therefore total to $511,998,471.

Deductions

The term “Deductions” is used in the 2019 Actuarial Report for payments made by the Fund. Exhibit 3 of the 2019 Actuarial Report shows two such deductions: Operating Expenses and Benefit Payments, as shown below:

Deductions	Fiscal Year 2019	Fiscal Year 2020
Benefits	$ 407,513,668	$ 381,768,471
Administrative Expense	10,430,000	9,472,000
Total Deductions	417,943,668	391,240,471

The term Administrative Expense and Operating Expenses appears to be used interchangeably in the 2019 Valuation Report. Page C-9 of the 2019 Actuarial Report clarifies that “Expenses” (assumed to mean Administrative Expense and its synonym Operating Expense) excludes the health administrative expenses. The Expense above can therefore be assumed to be the expenses associated with running the Fund itself.

The term “Benefit Payments” is not explicitly defined in the 2019 Actuarial Report. On page D-3 of the 2019 Actuarial Report, the term “Benefits” refers to the total claims (gross claims) paid by the Fund. On page C-6 of the 2019 Actuarial Report, the term “Benefit Payments” refers to the total claims paid by the Fund minus the retired member contributions (net claims). The difference between the gross claims and net claims are the costs borne by retirees towards their own insurance.

Here are the values from the 2019 Actuarial Report:

Name	Value	Source (2019 Actuarial Report)	Item Number
Benefits	$ 381,768,471	D-3	(1)
Retired Member Contributions	144,302,471	D-3	(2)
Benefit Payments	237,466,000	C-6	(3) = (1) minus (2)

We can conclude that the “Benefit Payments” is net of the Retirement Member Contributions by the following formula:

“Benefits minus Retired Member Contributions equals Benefit Payments.”

The Benefit Payments on page C-6 have the following footnote associated with them:

a *Actual benefits paid by sponsor.*

This note is helpful in that it further clarifies that the Benefit Payments figure found on page C-6 only includes payments made by the employer. This specifically excludes all the components of Retired Member Contributions.

Assets

The Fund has assets which grow with Revenues (including Interest) and are reduced by Deductions. The following is a summary of Exhibit 3 from the 2019 Valuation Report

Item	Date	Time	Item Number
Net Assets Held in Trust for Post-Employment Benefits, Beginning of Year	$ 68,064,000	June 30, 2019	(1)
Revenues	511,998,471	Fiscal Year 2020	(2)
Deductions (based on gross claims)	391,240,471	Fiscal Year 2020	(3)
Net Assets Held in Trust for Post-Employment Benefits, End of Year	188,822,000	June 30, 2020	(4) = (1) + (2) – (3)

As shown above, the Net Assets Held in Trust for Post-Employment Benefits ("Assets") on June 30, 2020 totaled $188,822,000.

As established above, the figures above include the Retired Member Contributions in both the revenues and deductions. The following chart depicts that the June 30, 2020 Assets can also be developed by (a) excluding the Retired Member Contributions from the Revenues and (b) using net claims in the Expenses.

Item	Date	Time	Item Number
Net Assets Held in Trust for Post-Employment Benefits, Beginning of Year	$ 68,064,000	June 30, 2019	(1)
Revenues (excluding Retired Member Contributions)	367,696,000	Fiscal Year 2020	(2)
Expenses (based on net claims)	246,938,000	Fiscal Year 2020	(3)
Net Assets Held in Trust for Post-Employment Benefits, End of Year	188,822,000	June 30, 2020	(4) = (1) + (2) – (3)

Therefore, a projection of Assets can be performed with Revenues (excluding Retired Member Contributions) and Expenses (based on net claims), and these values match a projection that includes Retired Member Contributions in both Revenues and Deductions.

Appendix C: Description of Scenario Inputs

The following provides information on the year-by-year inputs that are used in the projections contained within this report.

Contribution rates

The following chart shows the contribution rates that are based on the Recertified 2022 Contribution Rates as modified by the Partially Rescinded 2022 Contribution Rates.

	Recertified 2022 Contribution Rates (without increases)			Recertified 2022 Contribution Rates with annual increases of 5%		
Fiscal Year	Active Members	Employers	State	Active Members	Employers	State
2021	1.30%	0.96%	1.30%	1.30%	0.96%	1.30%
2022	0.90%	0.67%	0.90% / 1.30%	0.90%	0.67%	0.90% / 1.30%
2023	0.90%	0.67%	0.90%	0.90%	0.67%	0.90%
2024	0.90%	0.67%	0.90%	0.94%	0.70%	0.94%
2025	0.90%	0.67%	0.90%	0.99%	0.73%	0.99%
2026	0.90%	0.67%	0.90%	1.04%	0.77%	1.04%
2027	0.90%	0.67%	0.90%	1.09%	0.81%	1.09%

The Recertified 2022 Contribution Rates are as set forth in the June 2021 Recertification Letter. The Partially Rescinded 2022 Contribution Rates are as set forth in the October 2021 Board Resolution.

The following chart shows the contribution rates used that are based on the Original 2022 Contribution Rates.

	Original 2022 Contribution Rates (without increases)			Original 2022 Contribution Rates with annual increases of 5%		
Fiscal Year	Active Members	Employers	State	Active Members	Employers	State
2021	1.30%	0.96%	1.30%	1.30%	0.96%	1.30%
2022	1.30%	0.96%	1.30%	1.30%	0.96%	1.30%
2023	1.30%	0.96%	1.30%	1.30%	0.96%	1.30%
2024	1.30%	0.96%	1.30%	1.36%	1.00%	1.36%
2025	1.30%	0.96%	1.30%	1.43%	1.05%	1.43%
2026	1.30%	0.96%	1.30%	1.50%	1.11%	1.50%
2027	1.30%	0.96%	1.30%	1.58%	1.16%	1.58%

The Original 2022 Contribution Rates are as set forth in the October 2020 Certification Letter.

Except for the fiscal year 2021 Retired Member Contribution rates, the retired member premiums are assumed to increase 5% per year according to page E-2 of the 2019 Actuarial Report.

Payroll

The payroll is the basis on which Active Member, Employer and State contributions are made. The following describes the three sets of payroll projections:

- Adjusted expected payroll: The projection of the payroll on which contributions are made, as found in Table 3 of the 2021 TRS Actuarial Report (adjusted by the proportion of members that pay into the Fund).
- Adjusted optimistic projection of payroll: In an optimistic projection of payroll, payroll increases faster than expected year-over-year starting in fiscal year 2023 (e.g., due to some combination of strong growth in wages and larger than expected growth in the covered population) such that contributions themselves are larger than expected.
- Adjusted pessimistic projection of the payroll: In a pessimistic projection of payroll, payroll increases slower than expected year-over-year starting in fiscal year 2023 (e.g., due to some combination of lower-than-expected wage growth and smaller than expected growth in the covered population) such that contributions themselves are lower than expected.

In the projections above, the optimistic payroll is expected to increase 1.00% per year faster than expected, and the pessimistic payroll is expected to increase 1.00% per year slower than expected.

The following table shows the expected, optimistic and pessimistic projections of payroll (in millions of dollars). These figures are based on the Assumed Payroll from the 2021 TRS Actuarial Report after being adjusted by a factor of 99.474%.

Fiscal Year	Adjusted Expected Payroll	Adjusted Optimistic Payroll	Adjusted Pessimistic Payroll
2021	$11,164	$11,164	$11,164
2022	11,411	11,411	11,411
2023	11,622	11,737	11,505
2024	11,919	12,159	11,681
2025	12,208	12,577	11,845
2026	12,496	13,003	12,004
2027	12,768	13,419	12,142

Benefit Payments

The benefit payments are the key deduction (i.e., cash outflow) of the forecast. The following describes the three sets of benefit payments used in my analysis:

- Expected benefit payments: The projection of the Expected Employer Claims set forth in Exhibit 1 of the 2019 Actuarial Report.
- Optimistic projection of benefit payments: In an optimistic projection of benefit payments, Deductions to the Fund grow at 1.00% per year less than expected starting in fiscal year 2022 (e.g., due to some combination of lower enrollment than expected and lower than expected medical costs).
- Pessimistic projection of benefit payments: In a pessimistic projection of benefit payments, Deductions to the Fund grow at 1.00% per year more than expected starting in fiscal year 2022 (e.g., due to some combination of higher enrollment than expected and higher than expected medical costs).

The following table shows the expected, optimistic and pessimistic projections of employer benefit payments (in millions of dollars):

Fiscal Year	Expected Benefit Payments	Optimistic Benefit Payments	Pessimistic Benefit Payments
2021	($368)	($368)	($368)
2022	(414)	(410)	(418)
2023	(463)	(454)	(472)
2024	(521)	(505)	(537)
2025	(587)	(564)	(611)
2026	(658)	(626)	(692)
2027	(734)	(691)	(779)

Appendix D: Projection Methodology

This appendix provides information regarding the projection methodology I used for the analysis presented in this report.

Projecting Fund Revenues

The Revenues[16] of the Fund are based on:

1. Contributions (paid as a percentage of payroll) for Active Members, Employers and the State
2. Other Revenues from the Federal Government and COBRA premium contributions from members
3. Interest

The contribution rates for fiscal year 2022 for the State as stated in the October 2021 Board Resolution were set at 0.90% through October 29, 2021 and 1.30% for the rest of the fiscal year.

The contribution rates for fiscal year 2022 for Active Members and Employers, as stated in the letter dated June 25, 2021 ("June 2021 Recertification Letter"), were set at 0.90% and 0.67% respectively. Given the appearance of the phrase "… the member contribution rate for FY 2023 will remain unchanged…" in the October 2021 FY2023 Certification Letter, the October 2021 Board Resolution is not assumed to apply to Active Members or Employers.

The contribution rates for fiscal year 2023, as stated in the letter dated October 29, 2021 from the Teachers' Retirement System of the State of Illinois ("October 2021 FY2023 Certification Letter"), were 0.90% of compensation for Active Members, 0.67% of compensation for Employers and 0.90% of compensation for the State.

The expected Active Member contributions (before the $1,739,104 true-up to a prior year) were $104,589,754 as shown in Exhibit B of the October 2021 FY2023 Certification Letter.

The fiscal year 2023 payroll of $11,682,564,466 was determined by Segal in the Teachers' Retirement System of the State of Illinois Actuarial Valuation Review of Pension Benefits as of June 30, 2021, dated October 12, 2021 ("2021 TRS Valuation Report"). This figure can be found as Item 8 ("Total Membership Payroll") on page 40 under the fiscal year 2023 column.

Page 79 of the 2021 TRS Valuation Report contains a future projection of this Total Membership Payroll (under the label of "Assumed Payroll"). Page 120 clarifies that this projection is conducted on an "open group" basis where "the number of active participants [members] assumed to remain level for both full-time and substitute/hourly groups". This means these forecasts include the payroll for individuals expected to be hired after June 30, 2021. Therefore, this payroll stream represents Segal's projection of the payroll of the then current workforce in each future year.

[16] More background information on the Fund revenues can be found in Appendix B

The October 2021 FY2023 Certification Letter shows a payroll adjustment figure of 99.474%.[17] The payroll forecasts in the rest of this report use this figure to covert the Total Membership Payroll into the Fund Payroll.

The inflows due to the Federal Government Medicare Part D Subsidy were assumed to be $975,000 in all years and the inflows related to COBRA were assumed to be $100,000 in all years. In total, these two inflows are assumed to be $1,075,000 in all years.

Projecting Fund Deductions

The deductions[18] payable by the Fund each year are for expenses and benefit payments.

There is no explicit formula for projecting the operating expenses. But given the assumption that they in part relate to the cost of personnel involved in operating the plan, these have been forecasted as a fixed percentage of the Fund's covered payroll. The operating expenses have averaged $9,951,000 in the last two years. This is close to 0.09% of the Fund payroll, and as such are forecasted to be 0.09% of Fund payroll in all future years.

Exhibit 1 of the 2019 Actuarial Report (page D-1) contains a projection of the "40-Year Projection of Expected Employer Claims." The following footnote confirms that the claims are also net of the retired member contributions:

a Expected claims net of retiree contributions for current participants.

The term current participants indicates that this expected claims exhibit covers all employees and former employees currently covered by the plan. This would imply that active employees (also referred to as active members) hired as recently as in the year prior to the 2019 Actuarial Report are included in this projection (to the extent that employees become active participants of the plan soon after their hire date). This would presumably not include any participants hired after June 30, 2019 who might be entitled to benefits in the future.

Page F-1 clarifies that members are eligible for benefits under this plan if they have "at least eight years of creditable services with TRS". This enables us to understand that the first eight years of claims produced in Exhibit 1 would be unaffected by future new hires – since each future new hire would need to work at least eight years to qualify for benefits under the plan. For the avoidance of doubt, the eight years would run from July 1, 2019 to June 30, 2027 (e.g., Fiscal Year 2020 to Fiscal Year 2027).

Future new hires contribute to the plan via their payroll linked deductions, and such future new hires represent a funding source for the plan over this eight-year period.

I have attempted to assess the large increase in benefit payments from $237,466,000 (fiscal year end 2020, page C-6 of the 2019 Actuarial Report) to $326,812,600 (fiscal year end 2020, page D-1 of the 2019 Actuarial Report). It appears that the values on C-6 are actual values for fiscal year 2020 whereas the values on page D-1 were forecasted using the June 30, 2019 data

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[17] See items 1.a. and 1.c. of Exhibit B of the October 2021 FY2023 Certification Letter

[18] More background information on the Fund deductions can be found in Appendix B

for fiscal year 2020. I have concluded that I can approximately reconcile these two figures by both using the benefit payments from fiscal year 2019 ($260,652,000, page C-6 of the 2019 Actuarial Report) and the various valuation assumptions.

After this reasonableness check, I conclude that we can use the values in Exhibit 1 for a projection as the expected benefit payments under the plan.

Projecting Fund Assets

Assets accumulate in the plan to the extent that revenues and interest exceed deductions. Page D-3 of the 2019 Actuarial Report shows that the plan assets as of June 30, 2020 were $188,822,000.

Page A-1 states that "Historically, these assets have been invested in cash and other short-term investments according to the current investment policy…" Page C-10 of the 2019 Actuarial Report states "Given the low asset value and pay-as-you-go funding policy, the investment return assumption was set to zero." Consistent with the 2019 Valuation Report, I have not assumed any interest on the investments.

The expected results shown below provide more detail on the results within Figure 1.

Positive assets indicate a balance that can be used to pay future claims. Negative assets indicate a cumulative balance of unpaid deductions (e.g., the cumulative result of deductions exceeding revenue and interest).

This projection shows that assets are expected to be totally depleted at some point in fiscal year 2023 (i.e., between July 1, 2022 and June 30, 2023). Further, this projection shows that Revenues are expected to be less than Deductions starting in Fiscal year 2022.

Table 1: Detailed Expected Projection Results by Year ($ millions)

		Contribution Rates			Revenues						Deductions					
FY	Payroll	Active Member	Emplr	State	Active Member	Emplr	State	Medicare Part D Subsidy	COBRA	Sub total	Benefit Pymts	Exp	Sub total	Net Cash Flow	Int	Net Assets
2019	n.a.	1.24%	0.92%	1.24%	$130	$96	$130	$1	$0	$357	($261)	($10)	($271)	$86	$0	$68
2020	10,905	1.24%	0.92%	1.24%	134	99	134	1	0	368	(237)	(9)	(247)	120	0	189
2021	11,156	1.30%	0.96%	1.30%	145	107	145	1	0	398	(368)	(10)	(378)	20	0	209
2022	11,411	0.90%	0.67%	0.90% / 1.30%	103	76	134	1	0	314	(414)	(10)	(424)	(110)	0	99
2023	11,622	0.90%	0.67%	0.90%	105	78	105	1	0	288	(463)	(11)	(474)	(186)	0	(87)
2024	11,919	0.90%	0.67%	0.90%	107	80	107	1	0	295	(521)	(11)	(532)	(237)	0	(323)
2025	12,208	0.90%	0.67%	0.90%	110	82	110	1	0	303	(587)	(11)	(598)	(295)	0	(618)
2026	12,496	0.90%	0.67%	0.90%	112	84	112	1	0	310	(658)	(11)	(669)	(359)	0	(978)
2027	12,768	0.90%	0.67%	0.90%	115	86	115	1	0	316	(734)	(12)	(745)	(429)	0	(1407)

In the table above, figures through fiscal year 2020 are actual figures from the 2019 Valuation Report. The future years (fiscal year 2021 and beyond) are projected using the above methodology.

The contribution rates for fiscal years 2021, 2022 and 2023 are based on correspondence from the Teachers' Retirement System of the State of Illinois. All future years (fiscal year 2024 and beyond) presume that contributions for active members, the employers and the State are kept level as a percentage of the covered payroll.

The figures above are referred to as the “Expected” figures throughout this report.

Appendix E: Materials Relied Upon in the Preparation of This Report

Publicly Available Documents:

1. State Employees Group Insurance Act of 1971 (5 ILCS 375/1, *et seq.*)
2. State Pension Funds Continuing Appropriation Act. (40 ILCS 15/1.3)
3. Teachers' Retirement Insurance Program of the State of Illinois GASB Statements No. 74 and 75 Accounting and Financial Reporting for Postemployment Benefits Other than Pensions Actuarial Valuation Report as of June 30, 2018, dated October 2, 2019 ("2018 Actuarial Report")
4. Teachers' Retirement Insurance Program of the State of Illinois GASB Statements No. 74 and 75 Accounting and Financial Reporting for Postemployment Benefits Other than Pensions Actuarial Valuation Report as of June 30, 2019, dated October 9, 2020 ("2019 Actuarial Report")
5. Teachers' Retirement System of the State of Illinois Actuarial Valuation Review of Pension Benefits as of June 30, 2019, dated January 10, 2020 ("2019 TRS Valuation Report").
6. Teachers' Retirement System of the State of Illinois Actuarial Valuation Review of Pension Benefits as of June 30, 2020, dated January 11, 2021 ("2020 TRS Valuation Report")
7. Teachers' Retirement System of the State of Illinois Preliminary Actuarial Valuation Review of Pension Benefits as of June 30, 2021, dated October 12, 2021 ("2021 TRS Valuation Report")
8. Recertification of the FY 2020 Teacher Health Insurance Security Fund (dated June 19, 2019) published by the Teachers' Retirement System of the State of Illinois ("June 2019 Certification Letter").
9. Teacher Health Insurance Security Fund Certification for FY 2021 (dated October 30, 2019) published by the Teachers' Retirement System of the State of Illinois ("October 2019 Certification Letter").
10. Teacher Health Insurance Security Fund Certification for FY 2022 (dated October 30, 2020) published by the Teachers' Retirement System of the State of Illinois ("October 2020 Certification Letter").
11. Teacher Health Insurance Security Fund Recertification for FY 2022 (dated June 25, 2021) published the Teachers' Retirement System of the State of Illinois ("June 2021 Recertification Letter").
12. Recission of the June 2021 Recertification of the FY2022 Estimate of Teacher Health Insurance Security Fund Contribution (dated October 29, 2021) ("October 2021 Board Resolution").
13. Teacher Health Insurance Security Fund Certification for FY 2023 (dated October 29, 2021) published by the Teachers' Retirement System of the State of Illinois ("October 2021 FY2023 Certification Letter").
14. Teachers' Retirement Insurance Program & the College Insurance Program July 2017 Update published by the Commission on Governmental Forecasting & Accountability