

Public School Teachers' Pension and Retirement Fund of Chicago

Actuarial Valuation Report as of June 30, 2023





October 9, 2023

Board of Trustees
Public School Teachers' Pension and Retirement Fund of Chicago
425 S. Financial Place, Suite 1400
Chicago, Illinois 60605-10000

**Re: Public School Teachers' Pension and Retirement Fund of Chicago Actuarial Valuation as of
June 30, 2023**

Dear Members of the Board:

In accordance with your request, we have performed an actuarial valuation of the Public School Teachers' Pension and Retirement Fund of Chicago (commonly known as the Chicago Teachers' Pension Fund, "CTPF" or "Fund") as of the June 30, 2023.

The purposes of the actuarial valuation are to measure the Fund's funding progress, and to determine the contribution requirements for the fiscal year beginning July 1, 2024, and ending June 30, 2025. The employer's contribution requirement has been determined in accordance with Illinois State Statutes, in particular under 40 ILCS Sections 5/17-127, 5/17-127.2, and 5/17-129.

Information required by Governmental Accounting Standards Board ("GASB") Statement Nos. 67 and 68 is provided in a separate report.

This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

This report was prepared at the request of the Board and is intended for use by the Fund and those designated or approved by the Board. This report may be provided to parties other than the Fund only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The contribution requirement in this report is determined using the actuarial assumptions and methods disclosed in Section G of this report. This report includes risk metrics beginning on page 18, but does not include a more robust assessment of the risks if future experience deviates from the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This actuarial valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside the scope of this assignment and was not performed.

The findings in this report are based on data and other information through June 30, 2023. The actuarial valuation was based upon information furnished by CTPF staff, concerning Retirement Fund benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by CTPF staff.

This report was prepared using actuarial assumptions adopted by the Board as authorized under the Illinois Pension Code. The actuarial assumptions used for the June 30, 2023 actuarial valuation are based on an experience study for the five-year period from July 1, 2018 through June 30, 2022, performed by GRS, first used with this actuarial valuation as of June 30, 2023. All actuarial assumptions used in this report are reasonable for the purposes of this actuarial valuation. Additional information about the actuarial assumptions is included in Section G of this report, entitled "Actuarial Methods and Assumptions."

The benefit provisions for members hired on or after January 1, 2011 were changed under Public Act 96-0889. Public Act 100-0023 created a third tier of benefits for new members, provided that adoption by a resolution or ordinance occurs. Given this uncertainty, GRS has not valued the benefits provided under Public Act 100-0023. Members hired on or after this date and the assumed new hires in the projections were valued under Public Act 96-0889 benefit provisions.

Although the statutory contribution requirements were met, in our opinion the statutory funding method generates a contribution requirement that is less than a reasonable actuarially determined contribution ("ADC"). Meeting the statutory requirement does not mean that the undersigned agree that adequate actuarial funding has been achieved. We recommend the adherence to a funding policy, such as the Board policy used to calculate the ADC under GASB Statement Nos. 67 and 68, which funds the normal cost of the plan, as well as an amortization payment that seeks to pay off 100 percent of the unfunded accrued liability over a closed period of 30 years, beginning July 1, 2013 (20 years remaining as of July 1, 2023, which determines the fiscal year 2024 ADC). The Board policy targets a funded ratio of 100 percent by 2043.

This report was prepared using our proprietary valuation model and related software and spreadsheet models used to calculate the statutory contributions in each future year through 2059 under the CTPF statutory funding policy. In our professional judgment, the models used have the capability to provide results that are consistent with the purposes of the actuarial valuation and have no material limitations or known weaknesses. We performed tests to ensure that the models reasonably represent that which is intended to be modeled.



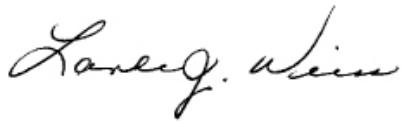
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the CTPF as of the actuarial valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Lance J. Weiss and Alex Rivera are Members of the American Academy of Actuaries and meet the American Academy of Actuaries Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

Gabriel, Roeder, Smith & Company will be pleased to review this actuarial valuation and report with the Board of Trustees and to answer any questions pertaining to the actuarial valuation.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



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



Alex Rivera, FSA, EA, MAAA, FCA
Senior Consultant

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SECTION A

EXECUTIVE SUMMARY

Executive Summary

Actuarial Valuation Date:	June 30, 2023	June 30, 2022
Required Employer Contributions for Fiscal Year Ending:	June 30, 2025	June 30, 2024
Estimated Required Employer Contributions:		
· Required Board of Education Contributions	\$ 645,435,000	\$ 684,307,000
· Additional Board of Education Contributions (0.58 percent of pay)	16,201,000	15,528,000
· Additional State Contributions (0.544 percent of pay)	15,195,000	14,564,000
· State Contributions Pursuant to P.A. 100-0465 (Normal Cost) ^a	338,683,000	308,147,000
· Total Required Employer Contributions	\$ 1,015,514,000	\$ 1,022,546,000
· Percentage of Projected Capped Payroll	36.357%	38.194%
Actuarial Valuation Date:	June 30, 2023	June 30, 2022
Actuarial Information for Fiscal Year Ending:	June 29, 2024	June 30, 2023
Actuarially Determined Contribution^b as of the Actuarial Valuation Date:		
· Annual Amount	\$ 1,416,379,231	\$ 1,369,769,491
· Percentage of Projected Capped Payroll for Upcoming Year	52.39%	52.59%
Membership:		
· Number of		
- Active Members ^c	31,824	31,261
- Members Receiving Payments	27,474	27,638
- Vested Former Members Eligible for Deferred Benefits	6,947	6,861
- Non-vested Former Members Eligible for Refunds Only	27,834	26,630
- Total	94,079	92,390
· Covered Payroll as of the Actuarial Valuation Date	\$ 2,682,495,863	\$ 2,585,653,167
· Projected Capped Payroll for Upcoming Year	\$ 2,703,751,200	\$ 2,604,858,671
· Projected Capped Payroll for Upcoming Year + 1	\$ 2,793,198,579	\$ 2,677,247,688
· Annualized Benefit Payments	\$ 1,574,905,689	\$ 1,545,032,731
Assets:		
· Market Value of Assets (MVA)	\$ 12,118,493,196	\$ 11,764,941,881
· Actuarial Value of Assets (AVA)	\$ 12,363,785,813	\$ 12,142,214,578
· Approximate Return on Market Value of Assets	8.22%	-8.57%
· Approximate Return on Actuarial Value of Assets	6.84%	5.99%
· Ratio – Actuarial Value of Assets to Market Value of Assets	102.02%	103.21%
Basic Results:		
· Total Normal Cost Amount (Including Admin. Expenses)	\$ 513,234,670	\$ 473,174,559
· Employer's Normal Cost Amount (Including Admin. Expenses)	\$ 269,897,062	\$ 238,737,279
· Employer's Normal Cost Amount (Including Admin. Expenses and Health Insurance Subsidy) ^d	\$ 334,897,062	\$ 303,737,279
· Actuarial Accrued Liability (AAL)	\$ 26,170,995,292	\$ 25,955,065,711
· Unfunded Actuarial Accrued Liability (UAAL)	\$ 13,807,209,479	\$ 13,812,851,133
· Funded Ratio based on Actuarial Value of Assets	47.24%	46.78%
· UAAL as % of Covered Payroll	514.72%	534.21%
· Funded Ratio based on Market Value of Assets	46.31%	45.33%

^a State Normal Cost contribution represents the projected employer Normal Cost for fiscal years 2024 and 2025, including \$65 million for the health insurance subsidy.

^b The policy adopted by the Board calculates the Actuarially Determined Contribution (ADC) as the Normal Cost plus a 30-year level percent of payroll closed-period (beginning June 30, 2013) amortization of the Unfunded Accrued Liability. As of June 30, 2023, the remaining amortization period is 20 years. The ADC is used for financial reporting purposes only.

^c Active count excludes members expected to be hired to replace retirements and terminations that occurred in June.

^d Used for calculation of the ADC.



SECTION B

SUMMARY OF THE ACTUARIAL VALUATION

Summary of the Actuarial Valuation

Introduction

The law governing the Public School Teachers' Pension and Retirement Fund of Chicago requires the Actuary, as the technical advisor to the Board of Trustees, to determine the amount of Board of Education contributions required for each fiscal year.

“The Board Shall determine the amount of Board of Education contributions required for each fiscal year on the basis of the actuarial tables and other assumptions adopted by the Board and the recommendations of the actuary, in order to meet the minimum contribution requirements of subsections (a) and (b). Annually, on or before February 28, the Board shall certify to the Board of Education the amount of the required Board of Education contribution for the coming fiscal year. The certification shall include a copy of the actuarial recommendations upon which it is based. (40 ILCS Section 5/17 - 129(c)).”

Gabriel, Roeder, Smith & Company has been retained by the CTPF Board of Trustees to perform an actuarial valuation as of June 30, 2023. In this report, we present the results of the actuarial valuation and the appropriation requirements under Public Act 96-0889, Public Act 90-0655, Public Act 91-0357 and Public Act 100-0465 for the fiscal year ending June 30, 2025.

Accounting information required by GASB Statement Nos. 67 and 68 is provided in a separate report.

The actuarial valuation was completed based upon membership and financial data provided by the administrative staff of the CTPF. The cost method used to determine the benefit liabilities for statutory funding is the Projected Unit Credit Cost Method as required by statute. For actuarial valuation purposes, as well as for projection purposes, the actuarial value of assets is based on a four-year smoothing method.

Assumptions and Methods

The actuarial assumptions used for the June 30, 2023 actuarial valuation were changed from the previous actuarial valuation based on recommendations from the 2023 Experience Study (covering experience for the five-year period from July 1, 2017 through June 30, 2022) and were adopted by the Board during the September 21, 2023 Board meeting.

The recommend and adopted changes in actuarial assumptions include:

- Maintain the investment return assumption of 6.50 percent;
 - The investment return assumption was most recently reduced to 6.50 percent based on the recommendation from the 2021 Actuarial Assumptions Study and was effective with the June 30, 2021 actuarial valuation.
- Maintain the price inflation assumption of 2.25 percent;
 - The price inflation assumption was most recently reduced to 2.25 percent, based on the recommendations from the 2020 Actuarial Assumptions Study and was effective with the June 30, 2020 actuarial valuation.



Summary of the Actuarial Valuation

- Maintain the wage inflation assumption of 2.75 percent;
 - The wage inflation assumption was most recently reduced to 2.75 percent, based on the recommendations from the 2020 Actuarial Assumptions Study and was effective with the June 30, 2020 actuarial valuation.
- Overall increases to the salary increase rates;
- Change the mortality assumptions to the Pub-2010 Public Retirement Plans Mortality Tables;
 - Pub-2010 General Healthy Retiree Mortality Tables for post-retirement;
 - Pub-2010 Disabled Retiree Mortality Tables for post-retirement disabled mortality;
 - Pub-2010 General Employee Mortality Tables for pre-retirement mortality.
- Continue to use generational mortality improvements and update mortality projection scales applied to the mortality tables;
- Increase retirement rates for most age and service bands;
- Decrease/maintain termination rates for most years of service;
- Decrease disability rates;
- Reduce the marriage assumption for males and females;
- Update the assumption for projecting administrative expenses in the actuarial projections based on past experience;
- Maintain assumption that the projected number of active employees is the same as the number as of the valuation date.

The actuarial assumptions can be found in Section G of the report.

Report Highlights

The employer's statutory contribution requirement for FY 2025 is \$1,015.5 million. The 2022 actuarial valuation had projected the employer statutory contribution would increase from \$1,022.5 million for FY 2024 to \$1,047.7 million for FY 2025. The primary reasons for the \$32.2 million decrease in the employer's statutory contribution requirement of \$1,015.5 million from the projected amount from the prior actuarial valuation of \$1,047.7 million are the favorable investment experience on the market value of assets and changes in actuarial assumptions. The State's portion of the total statutory contribution increased due to the increase in projected payroll being larger than expected, but is unaffected by the favorable investment experience. The State's portion also increased due to the changes in the actuarial assumptions. Because the total employer's statutory contribution requirement for FY 2025 decreased and the State's portion increased, the Board of Education's portion decreased.

Over the past 10 years, CTPF experienced investment gains on a market value basis compared to the actuarial assumption in fiscal years 2014, 2017, 2018, 2021 and 2023 and investment losses in fiscal years 2015, 2016, 2019, 2020 and 2022. The return on market value for the year ending June 30, 2023 was approximately 8.22 percent compared to a return of -8.57 percent in FY 2022. The average market value investment return over the most recent 10 years has been approximately 7.42 percent. Table 10 on page 42 provides historical investment returns (on an MVA and AVA basis) over the past 25 years.

The funded ratio increased from 45.3 percent as of June 30, 2022 to 46.3 percent as of June 30, 2023, based on the market value of assets, and increased from 46.8 percent as of June 30, 2022 to 47.2 percent



Summary of the Actuarial Valuation

as of June 30, 2023, based on the actuarial value of assets. There are net deferred asset losses of \$245.3 million, which will be recognized in the actuarial value of assets over the next three years.

The funded ratio and unfunded actuarial accrued liability are useful for assessing the need for and amount of future contributions other than normal cost contributions. They are not appropriate, however, for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

Experience during 2023

The Fund assets earned approximately 8.22 percent on a market value basis during FY 2023, which was more than the investment return assumption of 6.50 percent for FY 2023. The Fund assets earned approximately 6.84 percent on an actuarial value of assets basis during FY 2023 due to partial recognition of the fiscal year 2023 investment gain, losses from 2020 and 2022, and a portion of the deferred investment gain from fiscal year 2021 under the asset smoothing method. Since 6.84 percent is greater than the assumed rate of investment return of 6.50 percent for FY 2023, there was an asset gain of \$61.92 million on the actuarial value of assets.

There was a net loss of \$53.57 million from actuarial liabilities, which is comprised of a gain of approximately \$9.67 million from demographic experience offset by a loss of \$63.25 million from higher than expected pay increases and a decrease of \$329.23 million in actuarial liabilities due to changes in actuarial assumptions and methods.

The total loss from liabilities for the Fund is calculated as follows (dollars in millions):

1. Actuarial Accrued Liability ("AAL") - Prior Year (Pensions Only)	\$	25,955.07
2. Total Normal Cost - Prior Year ^a		473.17
3. Benefits and Administrative Expenses Paid in FY 2023 ^b		(1,630.87)
4. Interest on the above items, 1, 2 and 3		<u>1,650.05</u>
5. Expected AAL 06/30/2023 (1+2+3+4)		26,447.42
6. Impact of Change in Actuarial Assumptions and Methods		<u>(329.99)</u>
7. Expected AAL 06/30/2023 After Assumption Changes (5+6)		26,117.43
8. Actual AAL 06/30/2023		<u>26,171.00</u>
9. Actuarial (Gain)/Loss on Liabilities (8-7) (Pensions Only)	\$	53.57

^aTotal Normal Cost from the previous actuarial valuation includes both employee and employer portion. The employee portion is based on actual contributions.

^bIncludes refund of insurance premiums.

Numbers may not add due to rounding.



Summary of the Actuarial Valuation

CTPF experienced an overall actuarial gain of \$8.35 million. The total net actuarial gain is the total of the gain from assets and the net loss from liabilities. The total actuarial loss/(gain) for the year is as follows (dollars in millions):

1. Actuarial (Gain)/Loss on Assets	\$	(61.92)
2. Actuarial (Gain)/Loss on Liabilities		<u>53.57</u>
3. Total Actuarial (Gain)/Loss (1+2)		(8.35)

The experience of the population determines the liability gain or loss for the year. There was a loss on salaries, due to higher salary increases than assumed. From the last year to this year, there were small gains on retirement and active mortality and a small loss on disability experience. There was a gain due to termination experience and retiree and deferred experience, and there was a new entrant loss. New entrant losses will occur each year but are offset by additional contributions to the assets. Deviations from other assumptions generated a small actuarial gain. The changes in actuarial assumptions decreased the accrued liabilities.

See Table 4 (page 28), Section C, for detail of the gains and losses by source.

Asset Information

The market value of the assets of the Fund that are available for benefits increased from \$11,764.9 million as of June 30, 2022, to \$12,118.5 million as of June 30, 2023. The actuarial value of assets as of June 30, 2023, is \$12,363.8 million, which is \$245.3 million higher than the market value of assets. Twenty-five percent of the gains and losses based on the difference between the actual market value investment return and the expected return on the actuarial value of assets are recognized each year. There are net deferred asset losses of \$245.3 million, which will be recognized in the actuarial value of assets over the next three years (a \$130.6 million gain in FY 2024, a \$421.6 million loss in FY 2025 and a \$45.7 million gain in FY 2026).

The detailed determinations of asset values utilized in this valuation and the change in assets in the last year are set out in Section E.

Funding Status

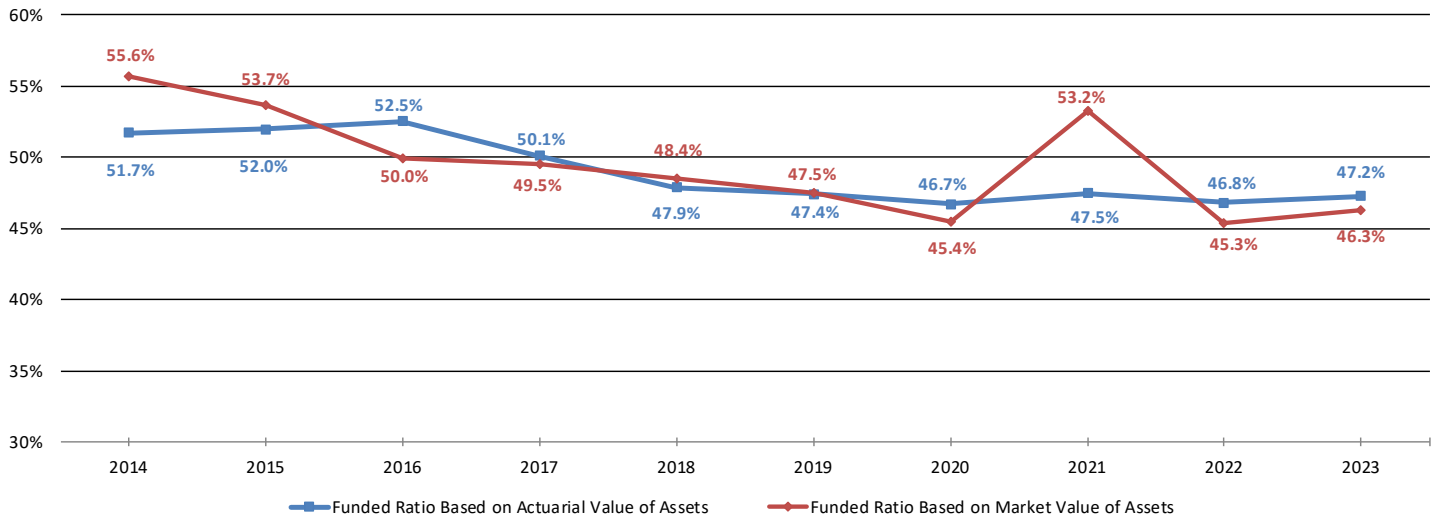
The funding status of CTPF is measured by the Funded Ratio. The Funded Ratio is the ratio of the assets available for benefits compared to the actuarial accrued liability of the Fund. Thus, it reflects the portion of benefits earned to date by CTPF members, which are covered by current Fund assets. A funded ratio of 100 percent means that all of the benefits earned to date by CTPF members are covered by assets. By monitoring changes in the funded ratio each year we can determine whether or not funding progress is being made.

Below is a comparison of funded ratios determined on a market value basis and an actuarial value basis over the last 10 years.



Summary of the Actuarial Valuation

Comparison of Historical Funded Ratios



Appropriation Requirements under P.A. 90-0655, P.A. 91-0357, P.A. 96-0889 and P.A. 100-0465

The law governing the Fund under P.A. 96-0889 provides that:

For fiscal years 2014 through 2059, the minimum contribution to the Fund to be made by the Board of Education in each fiscal year shall be an amount determined by the Fund to be sufficient to bring the total assets of the Fund up to 90 percent of the total actuarial liabilities of the Fund by the end of fiscal year 2059. In making these determinations, the required Board of Education contribution shall be calculated each year as a level percentage of the applicable employee payrolls over the years remaining to and including fiscal year 2059 and shall be determined under the Projected Unit Credit actuarial cost method. Beginning in fiscal year 2060, the minimum Board of Education contribution for each fiscal year shall be the amount needed to maintain the total assets of the Fund at 90 percent of the total actuarial liabilities of the Fund.

The above calculation provides the basis for calculating the appropriation requirements under P.A. 96-0889. Beginning in State fiscal year 1999, P.A. 90-0655 provides additional State contributions of 0.544 percent of the Fund's total teacher payroll to the Fund to offset the portion of the cost of benefit increases enacted under P.A. 90-0582, except that no additional contributions are required if the Board has certified in the previous fiscal year that the Fund is at least 90 percent funded.

Pursuant to P.A. 91-0357, beginning on and after July 1, 1999, the Board of Education shall make additional contributions of 0.58 percent of the Fund's total teacher payroll to the Fund to offset the portion of the cost of benefit increases enacted under P.A. 90-0582, except that no additional contributions are required if the Board has certified in the previous fiscal year that the Fund is at least 90 percent funded.

Pursuant to P.A. 100-0465, beginning with fiscal year 2018, the State shall contribute for each fiscal year an amount to be determined by the Fund, equal to the employer normal cost for that fiscal year, plus the retiree health insurance reimbursement subsidy. In addition, the Board of Education's property tax levy capped rate was increased from 0.383 percent to 0.567 percent, with proceeds dedicated solely for CTPF.

According to Section 17-129(b)(vii) of the Illinois Pension Code, any contribution by the State to or for the benefit of the Fund, shall be a credit against any contribution required to be made by the Board of Education.



Employer Contribution Requirement for Fiscal Year 2025

The funded ratio as of the June 30, 2023 actuarial valuation on an actuarial value basis is 47.2 percent. Therefore, additional contributions by the Board of Education and the State will be required for fiscal year 2025. The projected payroll for fiscal year 2025 is \$2,793,198,579. Based on the projected payroll for fiscal year 2025, and the additional State and Board of Education contribution rates of 0.544 percent and 0.58 percent of payroll, respectively, the additional State and Board of Education contributions for fiscal year 2025 are as follows:

Development of Additional Contributions under Section 17-127 and 17-127.2 of the Illinois Pension Code	Fiscal Year 2025	Fiscal Year 2024
Projected Total Capped Payroll	\$ 2,793,198,579	\$ 2,677,247,688
Additional State Contributions under Section 17-127 of the Illinois Pension Code (% of Projected Capped Payroll)	\$ 15,195,000 0.544%	\$ 14,564,000 0.544%
Additional Board of Education Contributions under Section 17-127.2 of the Illinois Pension Code (% of Projected Capped Payroll)	\$ 16,201,000 0.580%	\$ 15,528,000 0.580%

Pursuant to P.A. 100-0465, the State shall contribute for each fiscal year an amount to be determined by the Fund, equal to the employer normal cost for that fiscal year, plus the retiree health insurance reimbursement subsidy. The following table provides the development of the State contribution requirement under P.A. 100-0465:

Development of Normal Cost State Contributions under Section 17-127(d)(1) of the Illinois Pension Code	Fiscal Year 2025		Fiscal Year 2024*	
		% of Projected Capped Payroll		% of Projected Capped Payroll
Total Normal Cost	\$ 496,859,000	17.79%	\$ 486,991,000	18.38%
Projected Administrative Expenses	<u>28,212,000</u>	<u>1.01%</u>	<u>26,244,000</u>	<u>1.04%</u>
Total Normal Cost Including Administrative Expenses	\$ 525,071,000	18.80%	\$ 513,235,000	19.42%
Expected Employee Contributions	<u>251,388,000</u>	<u>9.00%</u>	<u>243,338,000</u>	<u>9.30%</u>
Employer Normal Cost	\$ 273,683,000	9.80%	\$ 269,897,000	10.12%
Health Insurance Subsidy	<u>65,000,000</u>	<u>2.33%</u>	<u>65,000,000</u>	<u>2.40%</u>
State Contributions under Section 17-127(d)(1) of the Illinois Pension Code	\$ 338,683,000	12.13%	\$ 334,897,000	12.53%

*The State normal cost contribution requirement for fiscal year 2024 was calculated in the actuarial valuation as of June 30, 2022 (and was projected from June 30, 2022) and differs from this amount. This amount for fiscal year 2024 is based on June 30, 2023 actuarial valuation results and is presented for illustrative and comparative purposes only. This normal cost is only used to develop the Actuarially Determined Contribution (ADC). Numbers may not add due to rounding.



Employer Contribution Requirement for Fiscal Year 2025

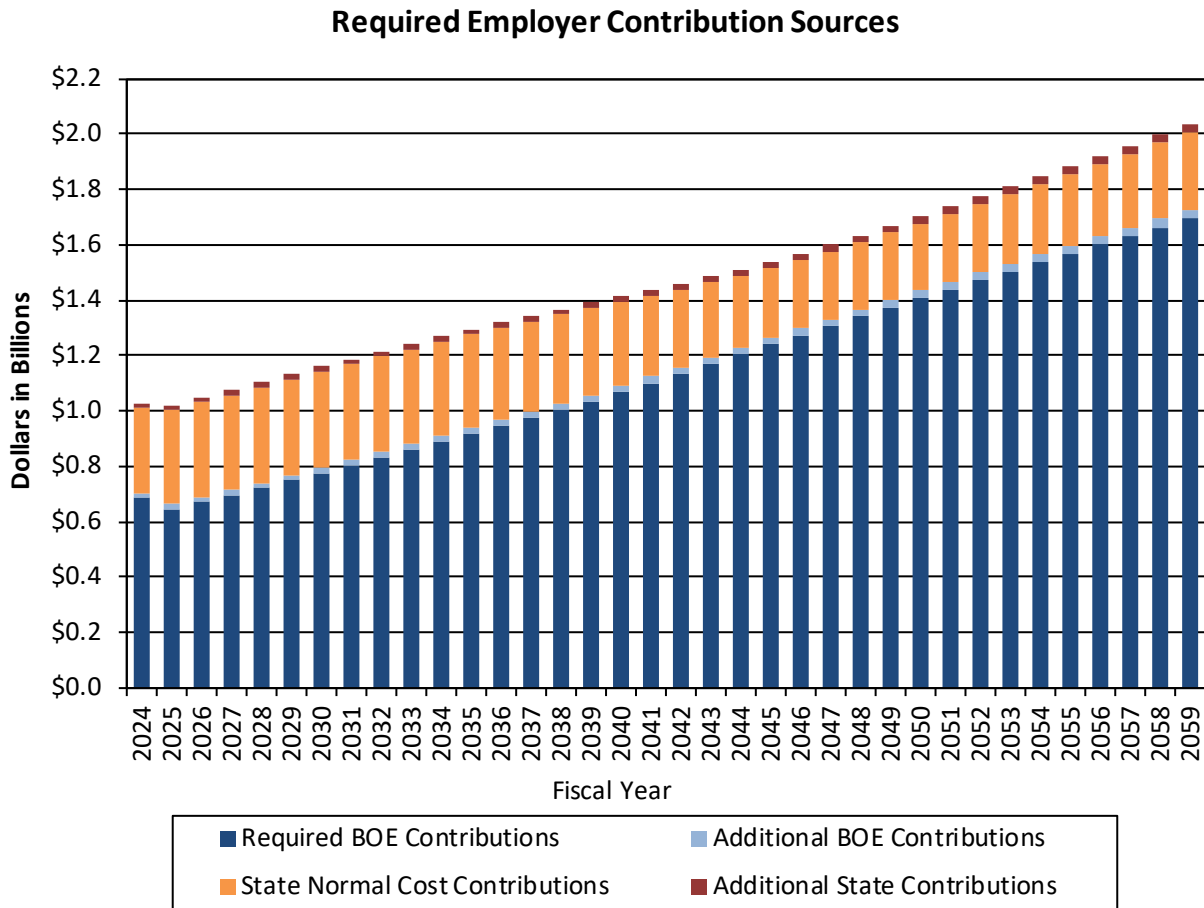
Pursuant to P.A. 96-0889, the Board of Education contribution requirement in each fiscal year shall be an amount determined by the Fund to be sufficient to bring the total assets of the Fund up to 90 percent of the total actuarial liabilities of the Fund by the end of fiscal year 2059. In making these determinations, the required Board of Education contribution shall be calculated each year as a level percentage of the applicable employee payrolls over the years remaining to and including fiscal year 2059 and shall be determined under the Projected Unit Credit actuarial cost method. Based on the funding projections provided in Section D of this report, the Board of Education’s required contribution for fiscal year 2025 is equal to \$645,435,000, (net of Additional State and Board of Education Contributions).

The fiscal year ending June 30, 2024 and June 30, 2025 certified contribution requirements and projected future year required contribution amounts are shown below:

Fiscal Year Ending June 30,	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contributions
2024	\$ 684,307,000	\$ 15,528,000	\$ 14,564,000	\$ 308,147,000	\$ 1,022,546,000
2025	645,435,000	16,201,000	15,195,000	338,683,000	1,015,514,000
2026	670,262,000	16,668,000	15,633,000	342,224,000	1,044,787,000
2027	695,748,000	17,130,000	16,067,000	344,847,000	1,073,792,000
2028	722,193,000	17,589,000	16,497,000	346,257,000	1,102,536,000
2029	749,064,000	18,040,000	16,921,000	346,819,000	1,130,844,000
2030	776,580,000	18,490,000	17,342,000	346,602,000	1,159,014,000
2031	804,538,000	18,936,000	17,761,000	345,759,000	1,186,994,000
2032	832,651,000	19,377,000	18,174,000	344,415,000	1,214,617,000
2033	861,114,000	19,813,000	18,583,000	342,450,000	1,241,960,000
2034	889,996,000	20,244,000	18,987,000	339,742,000	1,268,969,000

Employer Contribution Requirement for Fiscal Year 2025

The following graph details the projected employer contribution requirements by Source for fiscal years 2024 through 2059.



Method of Calculation for Appropriation Requirements

The actuarial valuation results are based on the Projected Unit Credit actuarial cost method, the data provided and actuarial assumptions used for the June 30, 2023 actuarial valuation. In order to determine projected contribution amounts, the following additional assumptions were used:

- Total employer contributions of \$1,022,546,000 for fiscal year 2024.
- Administrative expenses of \$25,863,783 for fiscal year 2023, as provided by the Fund. For fiscal year 2024, the budgeted administrative expense amount of \$26,243,563, as provided by Staff. Thereafter, administrative expenses are assumed to increase 7.50 percent annually for the first 14 years and then increase in line with projected capped payroll after 14 years.
- New entrants whose average age is 32.82 and average capped (pensionable) pay is \$58,075 (2023 dollars).
- The active member population is assumed to remain level at 32,190 (includes 366 expected new hires to replace June retirements and terminations) for all years of the 36-year projection. The projection is based on assuming that new active members are hired to replace the current members who leave active membership (through termination, retirement, death or disability). Table 12 on page 46 shows the historical number of active members each year.
- Projected benefits for members hired on or after January 1, 2011 are based on the new provisions established in P.A. 96-0889.
- Additional State contributions of 0.544 percent of pay are assumed to occur mid-year.
- State contributions of the employer's normal cost (includes administrative expenses and \$65 million health insurance subsidy) are assumed to occur mid-year.
- Additional Board of Education contributions of 0.58 percent of pay are assumed to occur end of year.
- A portion of the Board of Education's previous year's special tax levy is assumed to occur March of each year. The payments made through March 31 (which are assumed to be paid on March 1 on average) as provided by CTPF is equal to \$122,357,654 in fiscal year 2023 and is assumed to increase three percent per year.
- The remaining Board of Education required contribution is assumed to occur end of year.

The projected average increase in total uncapped payroll for the 36-year projection period is approximately 2.75 percent per year. It is important to note that benefits for new hires are based on capped payroll, which is ultimately projected to grow at 1.125 percent per year. All results in this actuarial valuation assume that employer contributions will be made on capped pay.

Recommendations and Future Considerations

Measuring the statutory contribution against a policy such as the Actuarially Determined Contribution (“ADC”) helps evaluate the funding adequacy of the current statutory funding method. Therefore, the Board adopted a policy to calculate the ADC. Under this policy, the ADC is calculated as the Normal Cost, plus a 30-year level percent of payroll closed-period amortization of the Unfunded Accrued Liability as of June 30, 2013, such that the Fund would be 100 percent funded by 2043. The remaining amortization period as of the June 30, 2023 actuarial valuation is 20 years.

A key objective of the ADC is to accrue costs over the working lifetime of plan members to ensure that benefit obligations are satisfied and intergenerational equity is promoted. The ADC is used in the Schedule of Contributions for accounting purposes under GASB Statement Nos. 67 and 68. In addition, the ADC could represent a reasonable annual funding target and therefore is used by some plan sponsors as their “de facto” funding requirement. Note that the statutory funding policy differs significantly from the ADC approach, and results in “back-loading,” meaning that contributions are deferred into the future. Back-loading could result in an underfunding of the fund.

The ADC for fiscal years 2023 and 2024, as well as the statutory employer contribution for fiscal years 2023 and 2024, are shown below as a percentage of projected capped payroll. The ADC for 2023 and statutory employer contribution for 2024 are based on the results of the June 30, 2022, actuarial valuation.

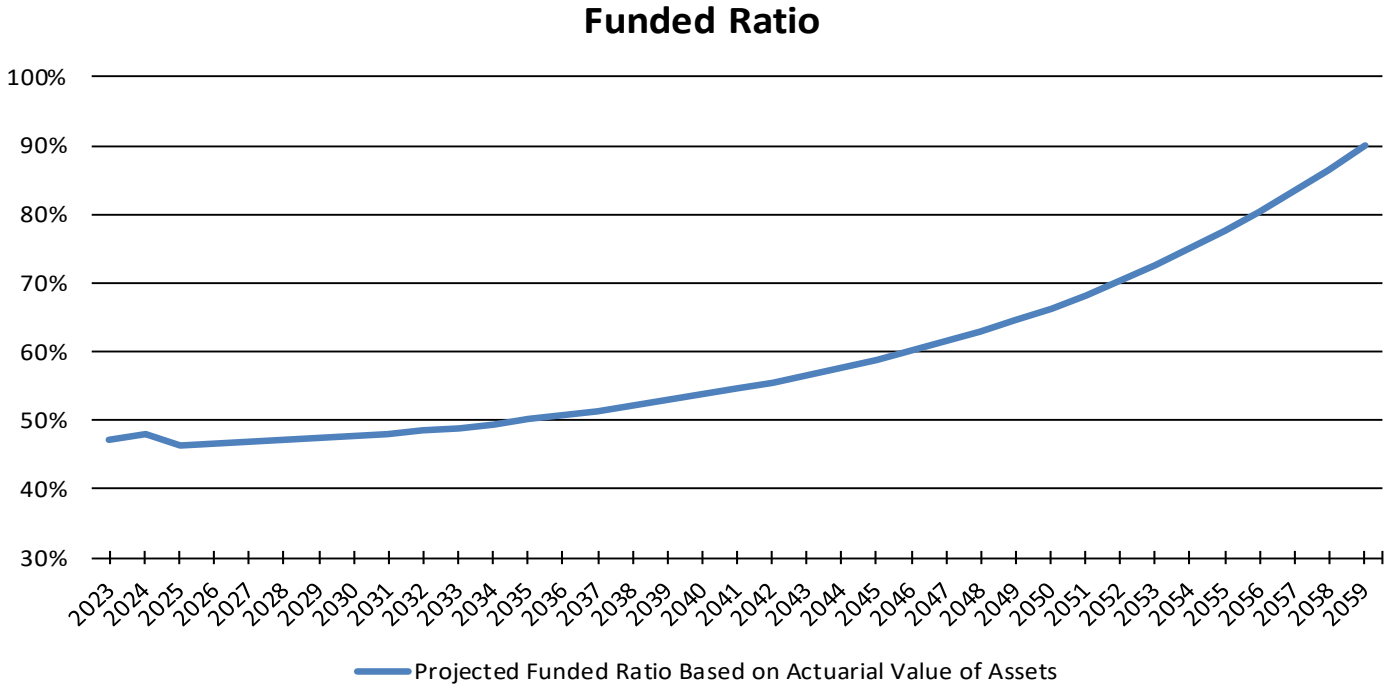
Actuarial Valuation Date:	June 30, 2023	June 30, 2022
Actuarially Determined Contributions for Fiscal Year Ending:	June 30, 2024	June 30, 2023
1. Actuarial Accrued Liability	\$ 26,170,995,292	\$ 25,955,065,711
2. Actuarial Value of Assets	\$ 12,363,785,813	\$ 12,142,214,578
3. Unfunded Actuarial Accrued Liability (1. – 2.)	\$ 13,807,209,479	\$ 13,812,851,133
4. Employer Normal Cost (Including Administrative Expenses and Health Insurance Subsidy)	\$ 334,897,062	\$ 303,737,279
5. Employer Normal Cost Adjusted for Contribution Timing	\$ 341,308,280	\$ 307,760,914
6. Amount to Amortize the Unfunded Liability over a 30-year Closed-period, Beginning July 1, 2013, as a Level Percentage of Payroll	<u>\$ 1,075,070,951</u>	<u>\$ 1,062,008,577</u>
7. Actuarially Determined Contribution Requirement [5. + 6.]	\$ 1,416,379,231	\$ 1,369,769,491
8. Projected Capped Payroll For Fiscal Year	\$ 2,703,751,200	\$ 2,604,858,671
9. Actuarially Determined Contribution as a Percentage of Projected Capped Payroll [7./8.]	52.39%	52.59%
10. Total Required Employer (Statutory) Contribution Including Health Insurance Subsidy	\$ 1,022,546,000	\$ 860,325,000
11. Total Required Employer Contribution as a Percentage of Projected Capped Payroll [10./8.]	37.82%	33.03%
12. Total Required Employer Contribution as a Percentage of Actuarially Determined Contribution [10./7.]	72.19%	62.81%

The fiscal year 2024 Actuarially Determined Contribution is based on an amortization factor which reflects 20 years remaining in the amortization period, an interest rate of 6.50 percent and an annualized assumed rate of increase in total capped payroll of 2.15 percent (which is consistent with the projected increase in total payroll from the projections used to calculate the statutory contribution requirements). The Employer Normal Cost and Amortization Payment are adjusted for expected contribution timing.



Recommendations and Future Considerations

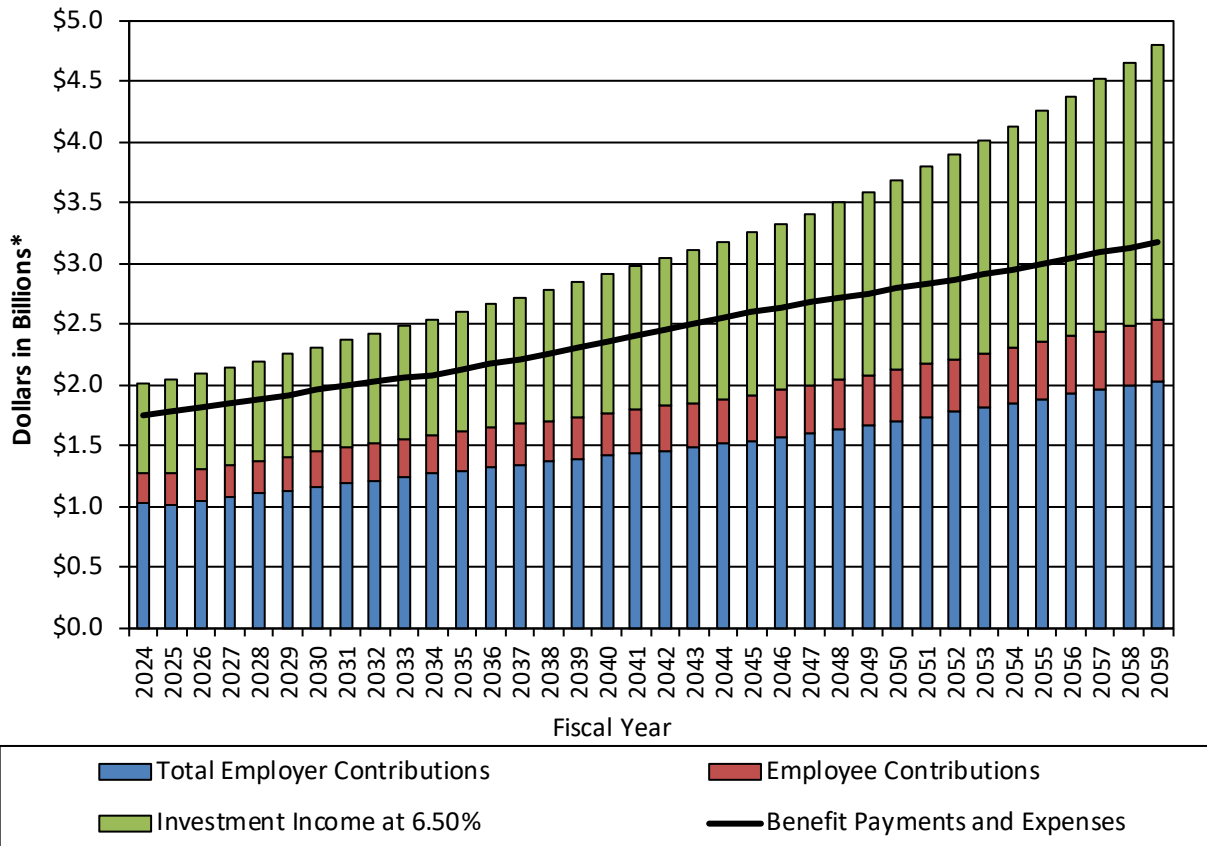
The statutory funding policy required for CTPF provides for level percent of pay funding that produces a funding target of 90 percent by 2059, assuming an open group projection. The following graph shows the projected funded ratio. A key observation is that the funded ratio does not grow markedly until after 2047. That is, a majority of the funding occurs between 2048 and 2059. This illustrates how significantly the current funding policy defers or back-loads contributions into the future.



Recommendations and Future Considerations

The following graph compares the projected benefits and expenses against employer contributions, employee contributions and investment income. From 2024 to 2059, the percentage of investment income needed to pay ongoing benefits decreases from 64.8 percent to 28.2 percent. This implies that a lower level of investment income is projected to be available for potential asset growth in the beginning of the projection period.

Comparison of Cash Flows



**Future dollar amounts are based on assumed inflationary increases.*

We are concerned about potential cash flow problems for CTPF. This is because the assets in the plan (\$12,118.5 million on a market value basis) are not sufficient to cover current retiree liabilities (\$17,132.3 million) and the ratio of market value of assets to retiree benefit payments and expenses is approximately 7.4. This means that approximately seven to eight years of retiree benefit payments can be paid from current assets; the ability to make such payments beyond that period is heavily dependent upon future employer contributions and future investment return.

Recommendations and Future Considerations

The calculations in this report were prepared based on the methods required by the statutory funding policy. GRS does not endorse this funding policy because the statutory funding policy defers funding for these benefits into the future and places a higher burden on future generations of taxpayers.

We recommend the following changes:

1. Implementing a funding policy that contributes normal cost plus closed period amortization as a level percentage of capped payroll amortization of the unfunded liability. (A policy which recognizes the unfunded liability at the valuation date and not a projected liability in the year 2059.)
2. Changing the actuarial cost method for calculating liabilities from the Projected Unit Credit to the Entry Age Normal method.

Change Funding Policy to a More Actuarially Sound Funding Method

We recommend a funding policy that contributes normal cost plus closed period amortization as a level percentage of capped payroll for paying off the current unfunded accrued liability (i.e., the amortization period declines by one year with each actuarial valuation) such that the funded ratio is projected to be 100 percent funded in 30 years or sooner. A 30-year closed amortization period (at the actuarial valuation as of June 30, 2013) methodology pays off the unfunded accrued liability in full by the end of the 30-year period in 2043. The fiscal year 2024 contribution would be \$1,416.4 million under this funding policy as compared to \$1,022.5 million under the statutory funding policy. The current statutory contribution does not comply with this recommendation. Underfunding the Fund creates the risk that, ultimately, benefit obligations cannot be met from the trust, and will require a greater amount of funding from other City and State resources. In addition, continually underfunding the Fund also creates more of a funding need from contributions and less is available from investment return – thereby creating a more expensive plan.

Change the Actuarial Cost Method to the Entry Age Normal Method

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

We recognize that the State Statute governs the funding policy of the Fund. The purpose of these comments is to highlight the difference between the statutory appropriation methodology and an actuarially sound funding policy and to highlight the risks and additional costs of continuing to underfund the Fund.



Recommendations and Future Considerations

Future Considerations

Changes (such as the addition of a new benefit tier and delaying the 90 percent funding target year from 2045 to 2059) have had the effect of reducing the statutory contribution amounts that would have otherwise been made. However, recent changes in the investment return assumption and other demographic assumption changes to more closely align the actuarial assumptions with current market expectations have increased the contribution amounts that would otherwise have been made. Assuming the statutory contributions are received each year (and the actuarial assumptions are met including a 6.50 percent investment rate of return, each year through 2059) CTPF is currently projected to have contributions sufficient to increase the funded ratio from the current level of 47.2 percent to 90.0 percent by 2059.

This is a severely underfunded plan and the ability of the plan to reach 90 percent funding by 2059 is heavily dependent on the State and the Board of Education contributing the statutory contributions each and every year until 2059. Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. A determination regarding whether or not the plan sponsor is actually able to do so is outside the scope of this assignment and was not performed.

Number of Projected Future Active Members

The total required employer contribution is based on performing an open group projection through the year 2059. The projection is based on assuming that new active members are hired to replace the current members who leave active membership (through termination, retirement, death or disability). As shown in Table 12 on page 46, the number of active members changes each year. The number of active as of June 30, 2023 is close to the number as of June 30, 2009.

Currently, the actuarial valuation assumes that the total number of active members in the future will be equal to the number active in the current actuarial valuation. As reviewed in the 2023 experience study, we believe that it is reasonable to maintain the current level future active member population assumption, but continue to monitor the number of active members in the coming years.

Actuarial Standards of Practice (ASOP) No. 4 Disclosures

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

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.50 percent on the actuarial value of assets), it is expected that:

1. The combined State and BOE contribution rate will be level as a percentage of payroll through 2059 (after all deferred asset gains and losses are fully recognized);
2. The unfunded liability will increase through 2038 before it begins to decrease in 2039;
3. The unfunded actuarial accrued liabilities will never be fully amortized; and



Recommendations and Future Considerations

4. The funded status of the plan will increase gradually towards a 90 percent funded ratio in 2059.

Limitations of Funded Status Measurements

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

1. The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to a unrelated third party in an arm's length market value type transaction.
2. The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions.
3. A funded status measurement in this report of 100 percent is not synonymous with no required future contributions. If the funded status were 100 percent, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
4. The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project. Consequently, the actuary performed no such evaluation.

Risks Associated with Measuring the Accrued Liability and Total Required Employer Contribution

The determination of the accrued liability and the total required employer contribution requires the use of actuarial assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the actuarial assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the total required employer contribution that result from the differences between actual experience and the actuarial assumptions.

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

Examples of risk that may reasonably be anticipated to significantly affect the Fund's future financial condition include:

1. **Investment risk** – actual investment returns may differ from the expected returns;
2. **Asset/Liability mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. **Contribution risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the Fund's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll or other relevant contribution base;
4. **Salary and Payroll risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **Other demographic risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The statutory contribution for fiscal year 2024 shown on page 9 should be considered as the minimum contribution that complies with the funding policy governed by State statute (Section 17-129(b)(vi) of the Illinois Pension Code). The timely receipt of the statutory contribution is critical to support the financial

Risks Associated with Measuring the Accrued Liability and Total Required Employer Contribution

health of the Fund. Users of this report should be aware that contributions made at the statutorily determined amount do not necessarily guarantee benefit security.

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	2023	2022	2021	2020
Ratio of the Market Value of Assets to Payroll	4.52	4.55	5.58	4.84
Ratio of Actuarial Accrued Liability to Payroll	9.76	10.04	10.48	10.64
Ratio of Actives to Retirees and Beneficiaries	1.16	1.13	1.13	1.07
Ratio of Net Cash Flow to Market Value of Assets	-4.86%	-4.10%	-3.74%	-4.94%

Ratios exclude inactive members not receiving benefits.

Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 5.0 times the payroll, a return on assets 5 percent different than assumed would equal 25 percent of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

Ratio of Actuarial Accrued Liability to Payroll

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

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 11 times the payroll, a change in liability 2 percent other than assumed would equal 22 percent of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.



Risks Associated with Measuring the Accrued Liability and Total Required Employer Contribution

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling and stress tests. At the Board's request, we conducted additional risk assessment of investment and contribution risk through stress testing the investment return assumption and future active population growth.

Low-Default-Risk Obligation Measure

Introduction

In December 2021, the Actuarial Standards Board (ASB) adopted a revision to Actuarial Standard of Practice (ASOP) No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions. The revised ASOP No. 4 requires the calculation and disclosure of a liability referred to by the ASOP as the “Low-Default-Risk Obligation Measure” (LDRM).

What is the LDRM?

The LDRM is a particular measure of the benefits earned (or costs accrued if appropriate under the actuarial cost method used for this purpose) as of the measurement date.

How is the LDRM calculated?

The LDRM is calculated using an immediate gain actuarial cost method, one in which gains and losses become part of the unfunded actuarial accrued liabilities. Examples would be Entry Age Normal Cost, Projected Unit Credit and Traditional Unit Credit. It is based upon a discount rate or discount rates derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future.

What does the LDRM tell me?

The LDRM gives an approximate measure of the cost as of the measurement date of securing benefits by constructing a hypothetical Low Default Risk Bond portfolio whose cash flows match the pattern of benefits expected to be paid in the future. The LDRM is very dependent upon market interest rates at the time of the LDRM measurement. The lower the market interest rates, the higher the LDRM and vice versa.

Is the LDRM the “right” liability that should be reported?

No single number, including the LDRM, can provide all of the information necessary to understand the financial condition of a pension plan. The rationale that the ASB cited for the calculation and disclosure of the LDRM was included in the Transmittal Memorandum of ASOP No. 4 and is presented below (emphasis added):

“The ASB believes that the calculation and disclosure of this measure provides **appropriate, useful information for the intended user regarding the funded status of a pension plan**. The calculation and disclosure of this additional measure is **not intended to suggest that this is the “right” liability measure** for a pension plan. However, the ASB does believe that **this additional disclosure provides a more complete assessment of a plan’s funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.**”



Low-Default-Risk Obligation Measure

Comparing the Accrued Liabilities and the LDRM

The LDRM results presented in this report are based on the Projected Unit Credit (PUC) actuarial cost method and discount rates based upon the June 2023 (end of month) FTSE Pension Discount Curve (PDC). The PDC is calculated based on a universe of AA rated corporate bonds from the FTSE US Broad Investment-Grade Bond Index (USBIG®) of varying maturities and the yields of the Treasury model curve.

Representative 1-, 5-, 10-, 20- and 30-year annual spot rates as of June 30, 2023 are: 5.76%, 4.64%, 4.68%, 5.22% and 4.85%, respectively.

The statutory funding actuarial accrued liability is based on the PUC actuarial cost method and discount rate (the expected long-term rate of return on assets) of 6.50%.

Presented below is a comparison of the statutory funding actuarial accrued liability and the LDRM as of June 30, 2023 for CTPF:

Funding Valuation Actuarial Accrued Liability (PUC)	\$ 26,170,995,292
LDRM (PUC)	32,159,892,140
Difference	(5,988,896,848)

The difference between the statutory funding actuarial liability and the LDRM illustrates the potential present value of future contribution savings due to investing in a well-diversified portfolio, consistent with the assumed long-term investment return assumption, instead of a hypothetical low default risk bond portfolio.

Since plan assets are actually invested in a well-diversified portfolio and not a low default risk bond portfolio, LDRM does not provide relevant information on the funded status or contribution requirements. Benefit security for members of the plan relies on a combination of the current assets in the plan, the future investment returns generated on those assets, and the promise of future contributions from the plan sponsor.

The LDRM liability contained in this report was provided solely to comply with the requirements of ASOP 4 section 3.11 and should not be used for any other purpose. This measure is not appropriate for assessing the need for or amount of future contributions. This measure is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation.



SECTION C

ACTUARIAL DETERMINATIONS

Table 1

Results of Actuarial Valuation as of June 30, 2023

1. Number of Members		
a. Active ^a		31,824
b. Inactive:		
i. Eligible for deferred vested pension benefits		6,947
ii. Eligible for return of contributions only		27,834
c. Current Benefit Recipients:		
i. Retirement annuities		23,672
ii. Survivor annuities		3,377
iii. Disability annuities		425
d. Total		94,079
2. Covered Payroll		
a. As of the Actuarial Valuation Date	\$	2,682,495,863
b. Projected Capped Payroll for Fiscal Year 2024		2,703,751,200
c. Projected Capped Payroll for Fiscal Year 2025		2,793,198,579
3. Annualized Benefit Payments Currently Being Made		
a. Retirement annuities	\$	1,462,225,898
b. Survivor annuities		93,907,777
c. Disability annuities		18,772,015
d. Total	\$	1,574,905,690
4. Actuarial Accrued Liability—Annuitants		
a. Current Benefit Recipients:		
i. Retirement annuities	\$	16,135,496,272
ii. Survivor annuities		779,600,863
iii. Disability annuities		217,217,172
b. Total	\$	17,132,314,307
5. Actuarial Accrued Liability—Inactive Members		
a. Eligible for Deferred Vested Pension Benefits	\$	495,709,283
b. Eligible for Return of Contributions Only		176,517,519
c. Total	\$	672,226,802

^a Active count excludes 366 members expected to be hired to replace retirements and terminations that occurred in June 2023. Active count with the 366 members is 32,190.



Table 1 (Continued)

Results of Actuarial Valuation as of June 30, 2023

	Normal Cost	Actuarial Accrued Liability
6. Active Members		
a. Retirement Benefits	\$ 387,828,873	\$ 7,389,487,502
b. Withdrawal	86,751,409	806,856,719
c. Death Benefits	5,125,059	70,666,141
d. Disability	7,285,766	99,443,821
e. Administrative Expenses	26,243,563	-
f. Total	\$ 513,234,670	\$ 8,366,454,183
7. Total Actuarial Accrued Liability (4. + 5. + 6.)		\$ 26,170,995,292
8. Market Value of Assets (MVA)		\$ 12,118,493,196
9. Unfunded Actuarial Accrued Liability Based on MVA (7. – 8.)		\$ 14,052,502,096
10. Funded Percentage Based on MVA (8. ÷ 7.) ^a		46.31%
11. Actuarial Value of Assets (AVA)		\$ 12,363,785,813
12. Unfunded Actuarial Accrued Liability Based on AVA (7. – 11.)		\$ 13,807,209,479
13. Funded Percentage Based on AVA (11. ÷ 7.) ^a		47.24%
14. Total Normal Cost	\$ 513,234,670	
15. Expected Employee Contributions	\$ 243,337,608	
16. Annual Employer Normal Cost (% of Projected Capped Payroll for Fiscal Year 2024)	\$ 269,897,062 9.98%	
17. Health Insurance Subsidy	\$ 65,000,000	
18. Annual Employer Normal Cost, including Health Insurance Reimbursement (16. + 17.) % of Projected Capped Payroll for Fiscal Year 2024 ^b	\$ 334,897,062 12.39%	

^a The funded status measure is appropriate for assessing the need for future contributions. The funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

^b Used for calculation of the ADC.



Table 2
Components of Actuarial Accrued Liability and Normal Cost by Tier

Actuarial Valuation Results	Tier 1		Tier 2 ^a		Total	
1. Count	16,193		15,631		31,824	
2. Covered Payroll						
a. As of the Valuation Date	\$	1,646,680,147	\$	1,035,815,716	\$	2,682,495,863
b. Projected Capped Payroll for Fiscal Year 2024		1,646,680,147		1,057,071,053		2,703,751,200
c. Projected Capped Payroll for Fiscal Year 2025		1,611,154,073		1,182,044,506		2,793,198,579
3. Actuarial Accrued Liability						
a. Retirement Benefits	\$	7,153,870,351	\$	235,617,151	\$	7,389,487,502
b. Withdrawal		613,132,293		193,724,426		806,856,719
c. Death Benefits		60,430,267		10,235,874		70,666,141
d. Disability		82,809,463		16,634,358		99,443,821
e. Total	\$	7,910,242,374	\$	456,211,809	\$	8,366,454,183
4. Normal Cost	Amount	% of Payroll	Amount	% of Payroll	Amount	% of Payroll
a. Retirement Benefits	\$ 348,192,886	21.15%	\$ 39,635,987	3.75%	\$ 387,828,873	14.34%
b. Withdrawal	44,001,644	2.67%	42,749,765	4.04%	86,751,409	3.21%
c. Death Benefits	3,319,576	0.20%	1,805,483	0.17%	5,125,059	0.19%
d. Disability	4,609,249	0.28%	2,676,517	0.25%	7,285,766	0.27%
e. Administrative Expenses	15,983,258	0.97%	10,260,305	0.97%	26,243,563	0.97%
f. Total	\$ 416,106,613	25.27%	\$ 97,128,057	9.19%	\$ 513,234,670	18.98%
5. Expected Employee Contributions	\$ 148,201,213	9.00%	\$ 95,136,395	9.00%	\$ 243,337,608	9.00%
6. Annual Employer Normal Cost	\$ 267,905,400	16.27%	\$ 1,991,662	0.19%	\$ 269,897,062	9.98%

^aThe actuarial accrued liability, normal cost, projected capped payroll and expected employee contributions include the results for 366 members expected to be hired to replace retirements and terminations that occurred in June 2023. Active count excludes 366 members expected to be hired to replace retirements and terminations that occurred in June 2023. Active count with the 366 members is 32,190.

Actuarial Accrued Liability and Normal Cost are determined under the Projected Unit Credit actuarial cost method.

Normal Cost rates as a percent of pay under the Projected Unit Credit actuarial cost method increase over a member's career.



Table 3a

Analysis of Change in Total Required Employer Contribution

	Total Required Employer Contributions	Required Board of Education Contributions	Required State Contributions
1. FY 2024 Statutory Contribution	\$ 1,022,546,000	\$ 699,835,000	\$ 322,711,000
2. Contributions projected from 6/30/2022			
a. Based on Normal Cost plus interest on the UAAL	\$ 1,027,227,000	\$ 700,264,000	\$ 326,963,000
b. Based on Statutory Funding Policy	\$ 1,047,702,000	\$ 720,739,000	\$ 326,963,000
3. Change from			
a. investment experience	\$ (11,949,000)	\$ (11,949,000)	\$ -
b. salary, demographic, and other	854,000	(1,498,000)	2,352,000
c. total	\$ (11,095,000)	\$ (13,447,000)	\$ 2,352,000
4. Assumption Changes	\$ (21,093,000)	\$ (45,656,000)	\$ 24,563,000
5. FY 2025 Statutory Contribution	\$ 1,015,514,000	\$ 661,636,000	\$ 353,878,000

2.a. is the total required employer contribution for fiscal year 2025 if normal cost plus interest on the UAAL had been contributed during fiscal year 2023.

Table 3b

Analysis of Change in Unfunded Actuarial Accrued Liability

In addition to the expected change in the unfunded accrued actuarial liability, changes in membership demographics and fund assets have affected the actuarial valuation results. The change in the unfunded actuarial accrued liability (UAAL) of \$(5,641,654) was due to the following:

1. Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2022	\$ 13,812,851,133
2. Contributions	
a. Contributions due (Normal Cost plus interest on the UAAL)	
i interest on item 1.	\$ 897,835,324
ii members contributions	240,059,409
iii employer normal cost (middle of year)	298,115,150
iv interest on ii and iii	17,215,328
v total due	\$ 1,453,225,211
b. Contributions paid (Actual)	
i member contributions	\$ 240,059,409
ii employer	860,325,000
iii interest on i and ii ^a	20,148,688
iv total paid	\$ 1,120,533,097
c. Expected increase in Unfunded Actuarial Accrued Liability	\$ 332,692,114
3. Expected Unfunded Actuarial Accrued Liability at 06/30/2023	\$ 14,145,543,247
4. (Gains)/Losses	
a. investment income	\$ (64,744,784)
b. retiree health insurance cash flows	2,828,469
c. salary increases	63,246,202
d. demographic	(9,672,123)
e. total	\$ (8,342,236)
5. Plan Provision Changes	\$ -
6. Assumption Changes	\$ (329,991,532)
7. Total Change in UAAL	\$ (5,641,654)
8. UAAL at 06/30/2023	\$ 13,807,209,479

^aInterest on employer contributions is estimated based on a weighted timing of middle of year, 8/12^{ths} of a year, and end of year.



Table 4

Analysis of Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability for Fiscal Year Ending June 30, 2023

Activity	(Gain)/Loss	% of 06/30/2022 AAL
1. Actuarial (Gain)/Loss		
a. Retirements	\$ 33,846,543	0.13%
b. Incidence of Disability	(1,462,045)	-0.01%
c. In-Service Mortality	16,898	0.00%
d. Retiree and Deferred Experience	(9,068,795)	-0.03%
e. Salary Increases	63,246,202	0.24%
f. Terminations	(52,662,780)	-0.20%
g. Investment Return	(64,744,784)	-0.25%
h. Retiree Health Insurance Cash Flows	2,828,469	0.01%
i. New Entrant Liability	55,511,914	0.21%
j. Other	(35,853,858)	-0.14%
k. Total Actuarial (Gain)/Loss	\$ (8,342,236)	-0.04%
2. Plan Provision Changes	\$ -	0.00%
3. Assumption Changes	\$ (329,991,532)	-1.27%
4. Contribution (Excess)/Shortfall ^a	\$ 332,692,114	1.28%
5. Total Financial (Gain)/Loss (1.k.+2.+3.+4.)	\$ (5,641,654)	-0.03%

^a Represents the increase in the Unfunded Actuarial Accrued Liability due to actual contributions being less than the Normal Cost plus interest on the beginning of year Unfunded Actuarial Accrued Liability.

Graph 1

Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability for Fiscal Year Ending June 30, 2023, by Source

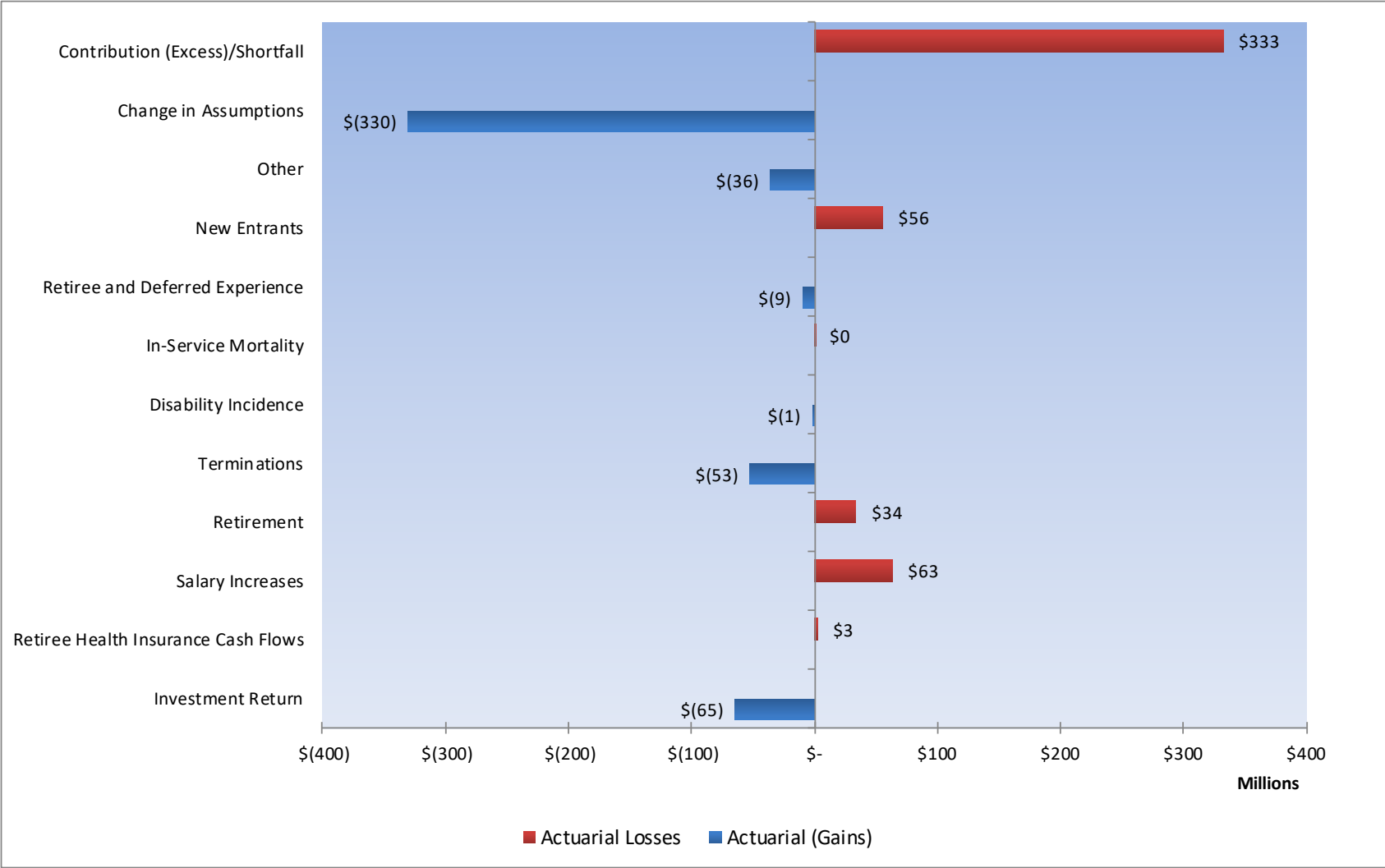


Table 5a

Historical Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability

	Amount of (Gain) or Loss					Total Five-year Change
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	
Investment Return (AVA Basis)	\$ 98,317,079	\$ (22,146,029)	\$ (460,056,077)	\$ 40,273,676	\$ (64,744,784)	\$ (408,356,135)
Retiree Health Insurance Cash Flows	(6,608,283)	(14,032,804)	(14,758,285)	(3,832,677)	2,828,469	(36,403,580)
Salary Increases	(62,859,630)	(118,074,777)	(46,401,560)	407,976,795	63,246,202	243,887,030
Retirements	1,996,977	6,878,558	(4,923,996)	58,489,465	33,846,543	96,287,547
Terminations	(46,251,276)	(19,358,722)	(15,640,541)	(78,134,732)	(52,662,780)	(212,048,051)
Disability Incidence	(966,542)	(1,131,160)	(1,469,401)	(1,954,503)	(1,462,045)	(6,983,651)
In-Service Mortality	123,792	(70,494)	981,677	(694,179)	16,898	357,694
Retiree and Deferred Experience	5,854,235	(55,588,659)	(97,252,780)	(22,702,211)	(9,068,795)	(178,758,210)
New Entrants	44,926,283	45,481,403	39,611,532	40,167,927	55,511,914	225,699,059
Other ^a	(22,939,305)	(31,564,992)	7,363,260	(11,905,239)	(35,853,858)	(94,900,134)
Total Actuarial (Gain)/Loss	\$ 11,593,330	\$ (209,607,676)	\$ (592,546,171)	\$ 427,684,322	\$ (8,342,236)	\$ (371,218,431)
(Gain)/Loss as a % of BOY AAL	0.1%	(0.9)%	(2.5)%	1.7%	(0.0)%	
Total Non-Investment (Gain)/Loss	\$ (86,723,749)	\$ (187,461,647)	\$ (132,490,094)	\$ 387,410,646	\$ 56,402,548	\$ 37,137,704
(Gain)/Loss as a % of BOY AAL	(0.4)%	(0.8)%	(0.6)%	1.5%	0.2%	
(Gain)/Loss Due to Plan Provisions Changes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(Gain)/Loss as a % of BOY AAL	-	-	-	-	-	
(Gain)/Loss Due to Assumption Changes	\$ -	\$ 565,206,537	\$ 727,707,442	\$ -	\$ (329,991,532)	\$ 962,922,447
(Gain)/Loss as a % of BOY AAL	0.0%	2.4%	3.0%	0.0%	(1.3)%	
(Gain)/Loss Due to Contribution (Excess)/Shortfall	\$ 264,851,308	\$ 247,324,028	\$ 224,017,626	\$ 192,713,352	\$ 332,692,114	\$ 1,261,598,428
(Gain)/Loss as a % of BOY AAL	1.2%	1.1%	0.9%	0.8%	1.3%	
Total Financial (Gain)/Loss	\$ 276,444,638	\$ 602,922,889	\$ 359,178,897	\$ 620,397,674	\$ (5,641,654)	\$ 1,853,302,444
(Gain)/Loss as a % of BOY AAL	1.2%	2.6%	1.5%	2.5%	(0.0)%	
BOY Actuarial Accrued Liability (AAL)	\$ 22,922,992,558	\$ 23,252,163,307	\$ 24,073,482,607	\$ 25,117,988,742	\$ 25,955,065,711	

^a Includes other experience such as deviations between actual and expected benefit payments and unexpected changes in service.



Table 5b
Historical Normal Cost Amounts (\$ and % of Pay)

Actuarial Valuation Date: Required Employer Contributions for Fiscal Year Ending:	June 30, 2022 June 30, 2023		June 30, 2023 June 30, 2024		Projected from June 30, 2023 June 30, 2025	
1. Projected Capped Payroll for the Fiscal Year	\$ 2,604,858,671		\$ 2,703,751,200		\$ 2,793,198,579	
2. Normal Cost	Amount	% of Payroll	Amount	% of Payroll	Amount	% of Payroll
a. Retirement Benefits	\$ 343,646,846	13.19%	\$ 387,828,873	14.34%	\$ 397,138,484	14.22%
b. Withdrawal	89,903,151	3.45%	86,751,409	3.21%	87,144,659	3.12%
c. Death Benefits	6,000,309	0.23%	5,125,059	0.19%	5,139,580	0.18%
d. Disability	8,754,093	0.34%	7,285,766	0.27%	7,436,571	0.27%
e. Administrative Expenses	24,870,160	0.95%	26,243,563	0.97%	28,212,000	1.01%
f. Total	\$ 473,174,559	18.17%	\$ 513,234,670	18.98%	\$ 525,071,294	18.80%
3. Expected Employee Contributions	\$ 234,437,280 9.00%		\$ 243,337,608 9.00%		\$ 251,387,872 9.00%	
4. Annual Employer Normal Cost	\$ 238,737,279 9.17%		\$ 269,897,062 9.98%		\$ 273,683,422 9.80%	

SECTION D

ACTUARIAL PROJECTIONS

Table 6

**Baseline Projections — Employer Contributions Determined under Public Act 90-0655,
Public Act 91-0357, Public Act 96-0889 and Public Act 100-0465
Investment Return of 6.50% Each Year (\$ in Millions)**

Fiscal Year	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Liability	Funded Ratio	Pensionable Payroll	Annual Normal Cost				Total Employer Contributions					Total Expenses	
						Total	Employer			Required Employer Contribution	Additional State Contributions	State Normal Cost	Additional Board of Education Contributions	Required Board of Education Contributions		Percent of Pay
							Employee Contribution	Normal Cost	Percent of Pay							
2024	\$26,659.3	\$12,772.3	\$13,887.0	47.91%	\$2,703.8	\$578.2	\$243.3	\$334.9	12.39%	\$1,022.5	\$14.6	\$308.1	\$15.5	\$684.3	37.82%	\$1,753.5
2025	27,157.8	12,616.3	14,541.5	46.46%	2,793.2	590.1	251.4	338.7	12.13%	1,015.5	15.2	338.7	16.2	645.4	36.36%	1,786.1
2026	27,666.7	12,921.7	14,745.0	46.70%	2,873.7	600.9	258.6	342.2	11.91%	1,044.8	15.6	342.2	16.7	670.3	36.36%	1,818.2
2027	28,185.8	13,203.2	14,982.6	46.84%	2,953.5	610.7	265.8	344.8	11.67%	1,073.8	16.1	344.8	17.1	695.7	36.36%	1,850.3
2028	28,712.2	13,509.1	15,203.1	47.05%	3,032.6	619.2	272.9	346.3	11.42%	1,102.5	16.5	346.3	17.6	722.2	36.36%	1,884.4
2029	29,245.1	13,841.5	15,403.6	47.33%	3,110.4	626.8	279.9	346.8	11.15%	1,130.8	16.9	346.8	18.0	749.1	36.36%	1,918.8
2030	29,782.9	14,193.8	15,589.1	47.66%	3,187.9	633.5	286.9	346.6	10.87%	1,159.0	17.3	346.6	18.5	776.6	36.36%	1,954.4
2031	30,324.7	14,567.2	15,757.5	48.04%	3,264.9	639.6	293.8	345.8	10.59%	1,187.0	17.8	345.8	18.9	804.5	36.36%	1,990.4
2032	30,870.4	14,962.8	15,907.6	48.47%	3,340.8	645.1	300.7	344.4	10.31%	1,214.6	18.2	344.4	19.4	832.7	36.36%	2,026.4
2033	31,414.3	15,376.3	16,038.0	48.95%	3,416.0	649.9	307.4	342.5	10.03%	1,242.0	18.6	342.5	19.8	861.1	36.36%	2,067.2
2034	31,980.7	15,833.6	16,147.1	49.51%	3,490.3	653.9	314.1	339.7	9.73%	1,269.0	19.0	339.7	20.2	890.0	36.36%	2,083.7
2035	32,543.7	16,309.8	16,233.9	50.12%	3,561.2	656.9	320.5	336.4	9.45%	1,294.7	19.4	336.4	20.7	918.3	36.36%	2,125.6
2036	33,100.8	16,803.5	16,297.3	50.76%	3,630.0	659.1	326.7	332.4	9.16%	1,319.7	19.7	332.4	21.1	946.5	36.36%	2,169.0
2037	33,648.9	17,312.7	16,336.2	51.45%	3,695.8	660.4	332.6	327.8	8.87%	1,343.7	20.1	327.8	21.4	974.4	36.36%	2,214.2
2038	34,185.2	17,836.4	16,348.8	52.18%	3,760.5	661.1	338.4	322.6	8.58%	1,367.2	20.5	322.6	21.8	1,002.3	36.36%	2,260.8
2039	34,706.5	18,377.2	16,329.3	52.95%	3,824.4	657.3	344.2	313.1	8.19%	1,390.4	20.8	313.1	22.2	1,034.3	36.36%	2,305.2
2040	35,210.1	18,935.0	16,275.1	53.78%	3,888.8	653.1	350.0	303.2	7.80%	1,413.8	21.2	303.2	22.6	1,067.0	36.36%	2,351.2
2041	35,691.3	19,508.9	16,182.4	54.66%	3,954.3	648.1	355.9	292.3	7.39%	1,437.7	21.5	292.3	22.9	1,101.0	36.36%	2,399.5
2042	36,146.5	20,097.7	16,048.8	55.60%	4,019.1	642.7	361.7	281.0	6.99%	1,461.2	21.9	281.0	23.3	1,135.1	36.36%	2,449.6
2043	36,575.7	20,704.4	15,871.3	56.61%	4,086.3	638.2	367.8	270.4	6.62%	1,485.7	22.2	270.4	23.7	1,169.3	36.36%	2,499.0

Normal cost includes administrative expenses and health insurance subsidy. The health insurance subsidy is assumed to be \$65 million each year.

Total expenses shown include benefit payments, refunds, administrative expenses and health insurance subsidy.

Actuarial accrued liability and assets are measured at the end of the fiscal year. Normal Cost is measured at the middle of the fiscal year.

State contributions, benefit payments, refunds, administrative expenses and employee contributions are assumed to occur during the middle of the year.

55 percent of the Board of Education's dedicated property tax levy of 0.567 percent is assumed to be paid March 1, each fiscal year. The remaining Board of Education contributions are assumed to occur at the end of the year.

Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.



Table 6 (Continued)
**Baseline Projections — Employer Contributions Determined under Public Act 90-0655,
Public Act 91-0357, Public Act 96-0889 and Public Act 100-0465**
Investment Return of 6.50% Each Year (\$ in Millions)

Fiscal Year	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Liability	Funded Ratio	Pensionable Payroll	Annual Normal Cost				Total Employer Contributions					Total Expenses	
						Total	Employee Contribution	Employer Normal Cost	Percent of Pay	Required Employer Contribution	Additional State Contributions	State Normal Cost	Additional Board of Education Contributions	Required Board of Education Contributions		Percent of Pay
2044	\$36,978.9	\$21,332.4	\$15,646.5	57.69%	\$4,157.7	\$634.9	\$374.2	\$260.8	6.27%	\$1,511.6	\$22.6	\$260.8	\$24.1	\$1,204.1	36.36%	\$2,548.0
2045	37,359.0	21,987.1	15,371.9	58.85%	4,232.7	633.9	380.9	252.9	5.97%	1,538.9	23.0	252.9	24.5	1,238.4	36.36%	2,594.7
2046	37,720.2	22,676.1	15,044.1	60.12%	4,313.9	635.5	388.3	247.2	5.73%	1,568.4	23.5	247.2	25.0	1,272.7	36.36%	2,638.6
2047	38,066.5	23,406.2	14,660.3	61.49%	4,399.6	639.8	396.0	243.9	5.54%	1,599.6	23.9	243.9	25.5	1,306.2	36.36%	2,680.1
2048	38,403.3	24,186.5	14,216.8	62.98%	4,491.1	646.9	404.2	242.7	5.40%	1,632.8	24.4	242.7	26.0	1,339.7	36.36%	2,718.1
2049	38,734.0	25,024.0	13,710.0	64.60%	4,586.7	655.9	412.8	243.1	5.30%	1,667.6	25.0	243.1	26.6	1,372.9	36.36%	2,754.2
2050	39,060.2	25,924.5	13,135.7	66.37%	4,685.0	666.1	421.7	244.5	5.22%	1,703.3	25.5	244.5	27.2	1,406.2	36.36%	2,789.7
2051	39,381.0	26,891.1	12,489.9	68.28%	4,784.0	677.0	430.6	246.5	5.15%	1,739.3	26.0	246.5	27.7	1,439.1	36.36%	2,826.4
2052	39,695.2	27,926.9	11,768.3	70.35%	4,883.1	688.4	439.5	248.9	5.10%	1,775.3	26.6	248.9	28.3	1,471.6	36.36%	2,864.3
2053	40,000.5	29,034.2	10,966.3	72.58%	4,982.4	700.0	448.4	251.6	5.05%	1,811.4	27.1	251.6	28.9	1,503.9	36.36%	2,904.4
2054	40,295.6	30,216.6	10,079.0	74.99%	5,081.9	712.2	457.4	254.9	5.02%	1,847.6	27.6	254.9	29.5	1,535.6	36.36%	2,945.7
2055	40,577.2	31,476.4	9,100.8	77.57%	5,182.9	725.1	466.5	258.6	4.99%	1,884.3	28.2	258.6	30.1	1,567.5	36.36%	2,990.2
2056	40,842.1	32,816.4	8,025.7	80.35%	5,285.1	738.3	475.7	262.6	4.97%	1,921.5	28.8	262.6	30.7	1,599.4	36.36%	3,037.4
2057	41,088.8	34,241.4	6,847.4	83.34%	5,388.0	751.9	484.9	267.0	4.96%	1,958.9	29.3	267.0	31.3	1,631.3	36.36%	3,085.3
2058	41,317.6	35,758.3	5,559.3	86.55%	5,491.5	765.8	494.2	271.6	4.95%	1,996.5	29.9	271.6	31.9	1,663.2	36.36%	3,132.1
2059	41,531.4	37,377.1	4,154.3	90.00%	5,595.6	780.1	503.6	276.5	4.94%	2,034.4	30.4	276.5	32.5	1,695.0	36.36%	3,175.3

Normal cost includes administrative expenses and health insurance subsidy. The health insurance subsidy is assumed to be \$65 million each year.

Total expenses shown include benefit payments, refunds, administrative expenses and health insurance subsidy.

Actuarial accrued liability and assets are measured at the end of the fiscal year. Normal Cost is measured at the middle of the fiscal year.

State contributions, benefit payments, refunds, administrative expenses and employee contributions are assumed to occur during the middle of the year.

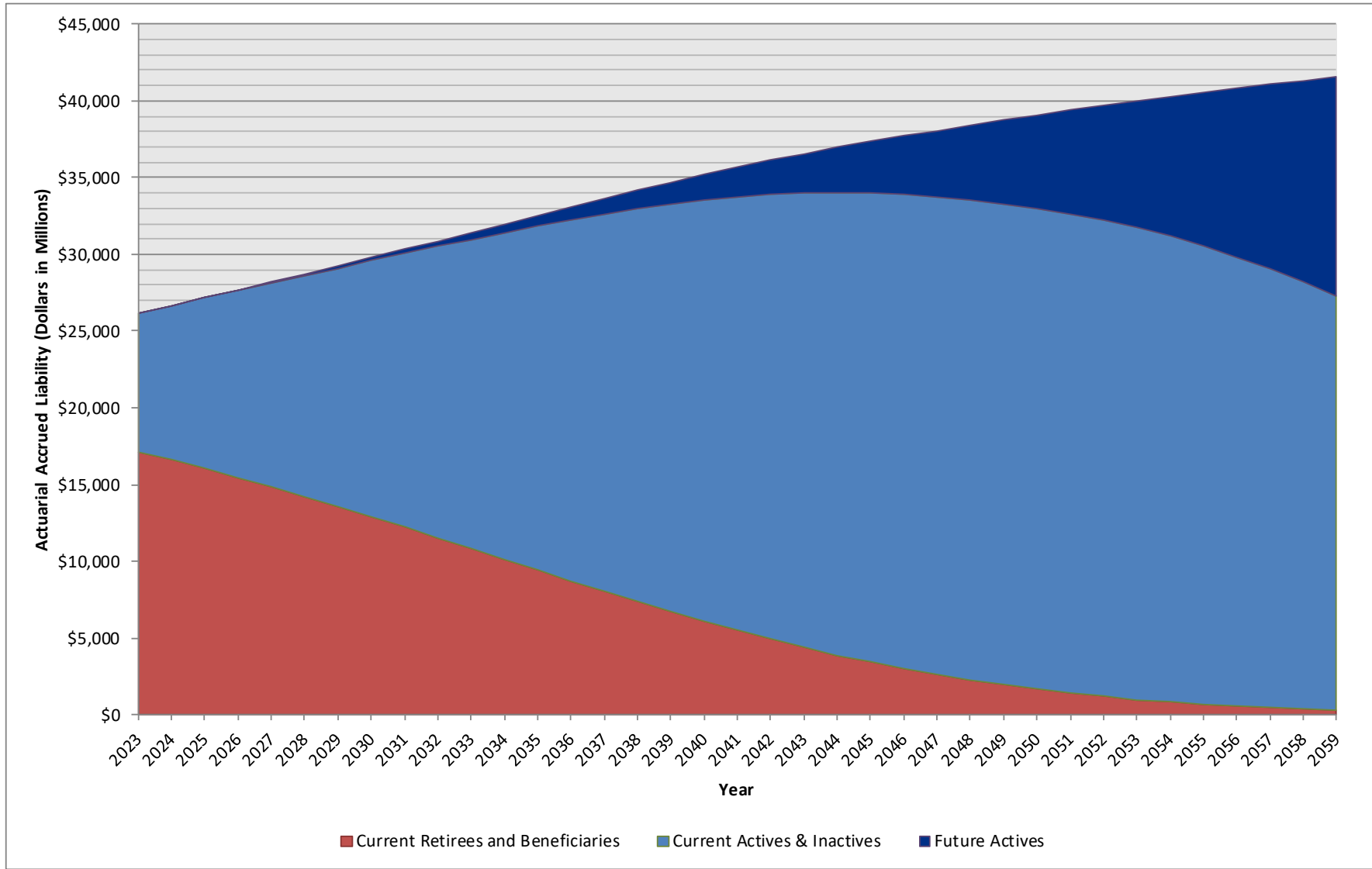
55 percent of the Board of Education's dedicated property tax levy of 0.567 percent is assumed to be paid March 1, each fiscal year. The remaining Board of Education contributions are assumed to occur at the end of the year.

Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.

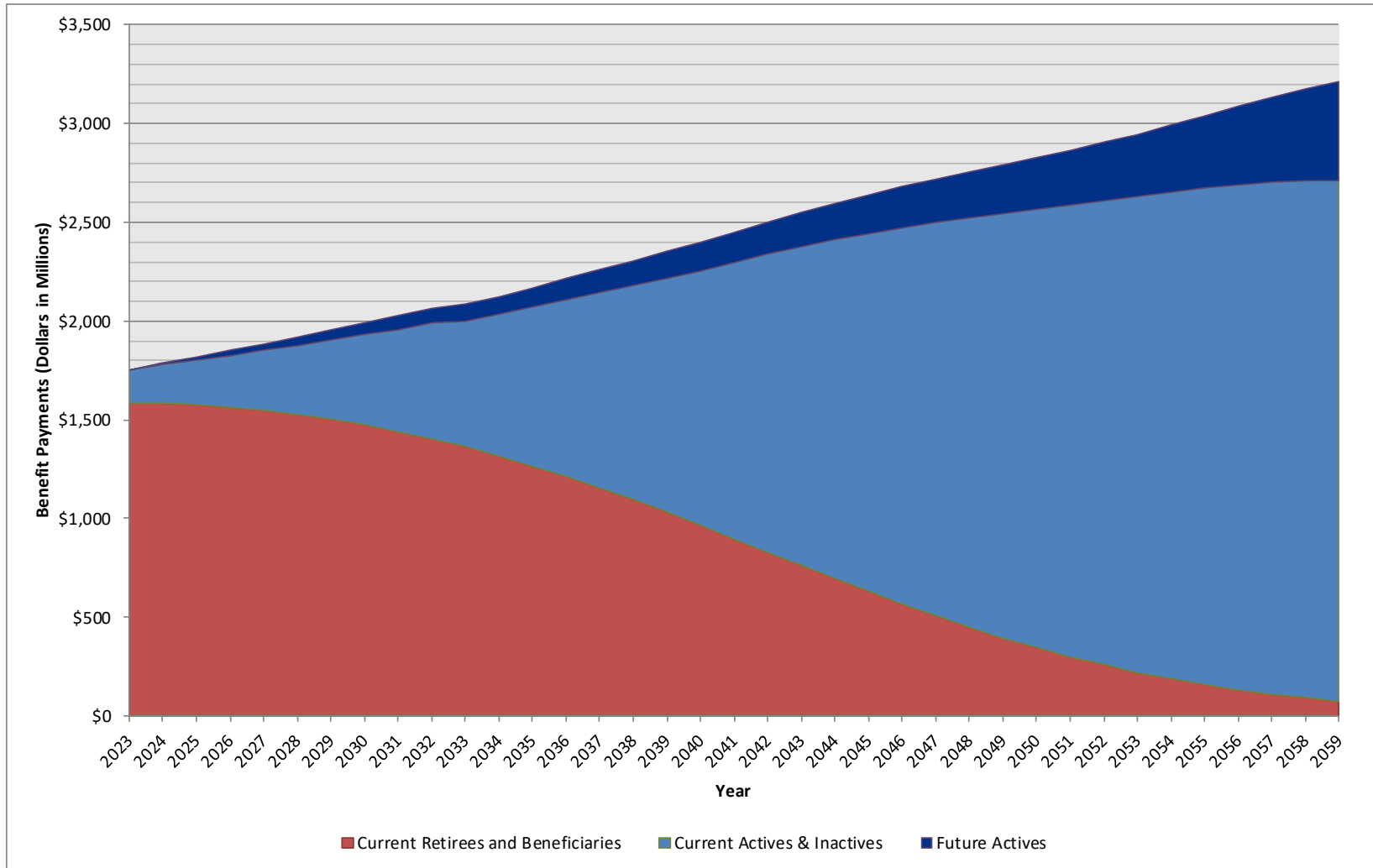


Graph 2

Projected Actuarial Accrued Liabilities Actuarial Valuation as of June 30, 2023

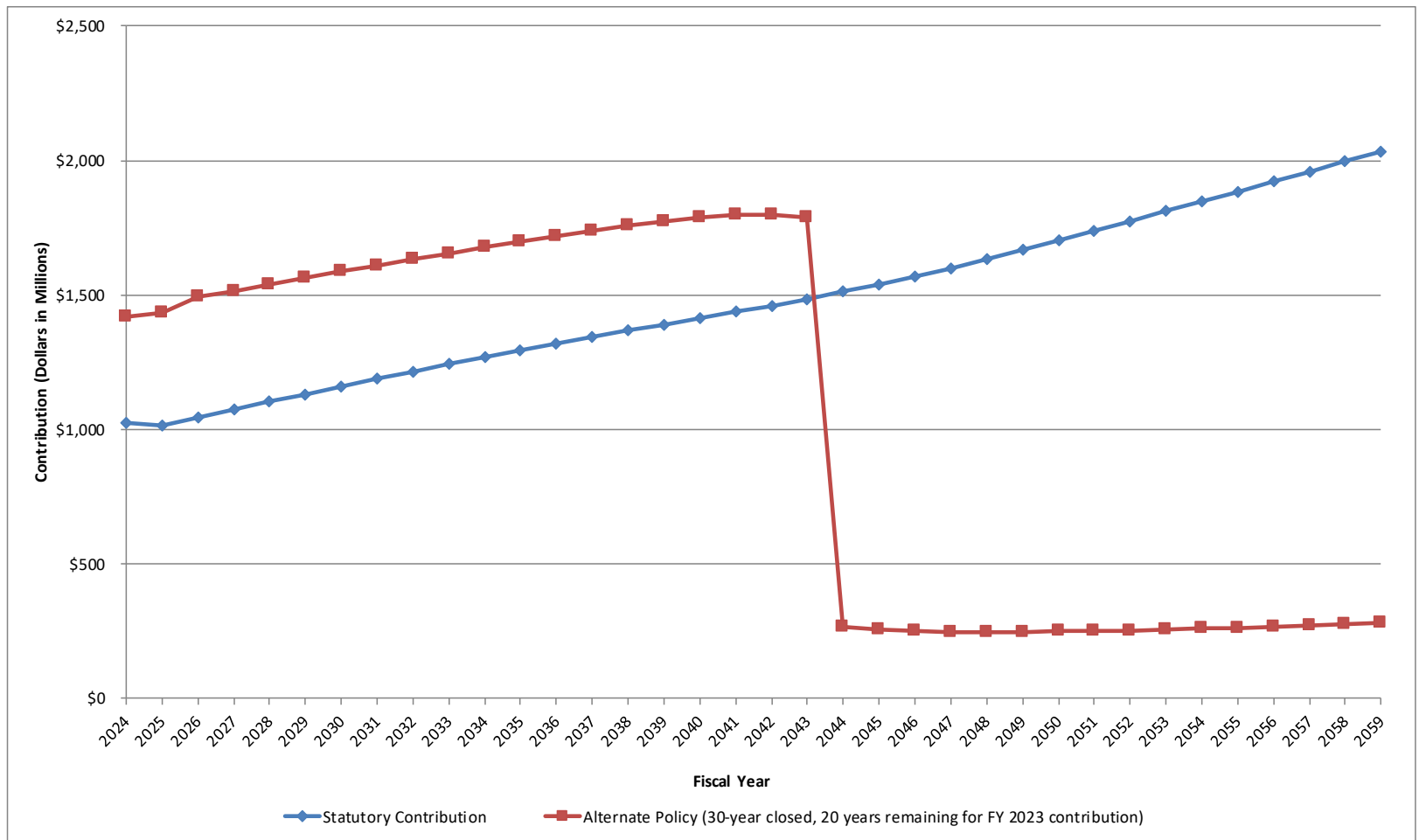


Graph 3 Projected Benefit Payments (Including Administrative Expenses and Health Insurance Subsidy) Actuarial Valuation as of June 30, 2023



Graph 4

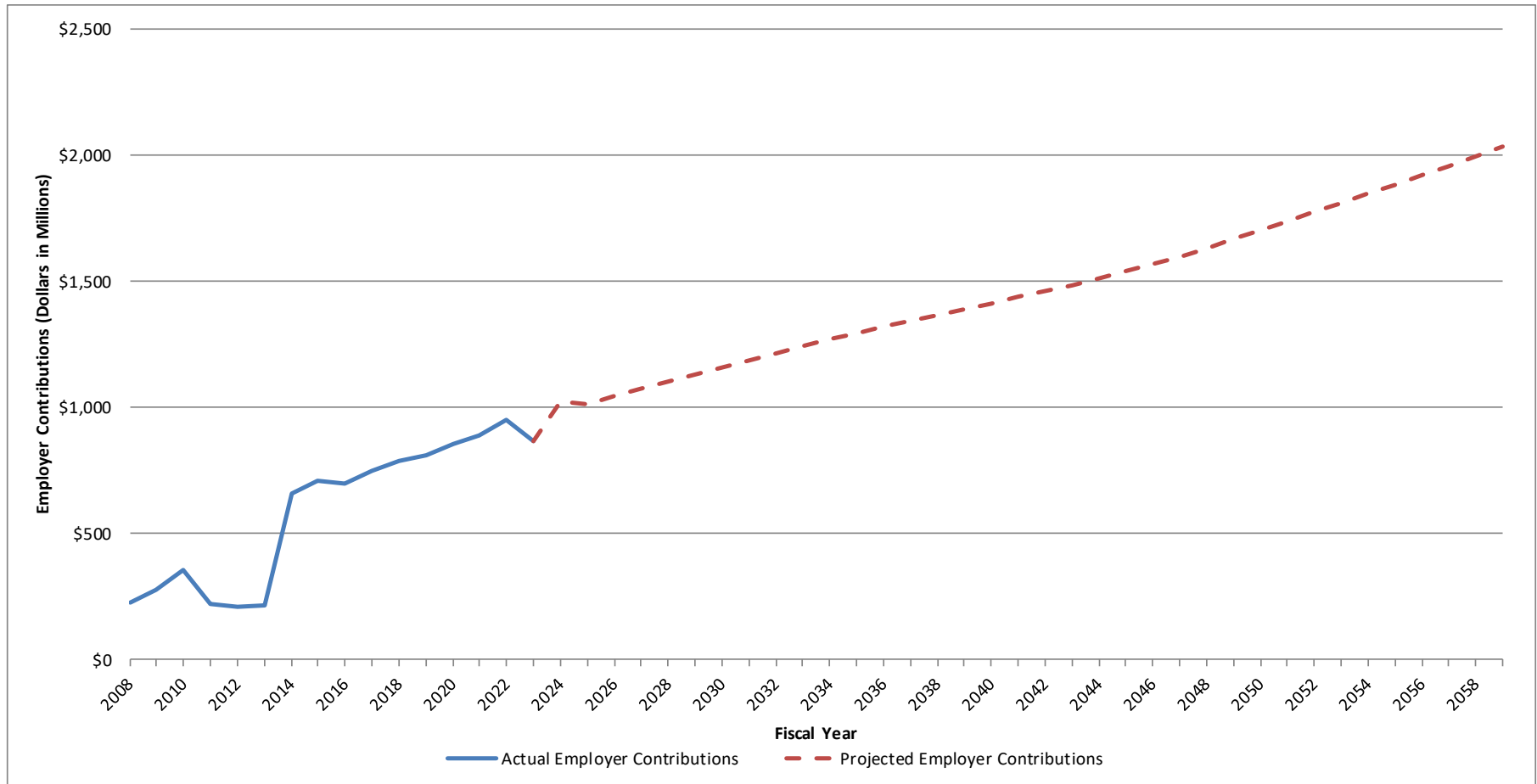
Projected Statutory Contributions vs. Contributions under Alternate Policy (Normal Cost Plus 30-Year Closed Period Level Percent of Pay Amortization) (20 Years Remaining in Amortization Period for FY 2024 Contribution)



Alternate funding policy of normal cost plus 30-year closed period amortization of the unfunded liability as a level percentage of capped payroll beginning in FY 2014 and 20 years remaining in FY 2024.



Graph 5 Actual and Projected Employer Contributions



SECTION E

FUND ASSETS

Table 7

Statement of Fiduciary Net Position for Years Ended June 30, 2023 and 2022

	June 30, 2023			June 30, 2022		
	Pension Fund	Health Insurance Fund	Total Fund - Pension and Health Insurance	Pension Fund	Health Insurance Fund	Total Fund - Pension and Health Insurance
Assets:						
Cash	\$ 3,280,442	\$ -	\$ 3,280,442	\$ 2,290,096	\$ -	\$ 2,290,096
Prepaid expense	1,333,038	-	1,333,038	1,006,691	-	1,006,691
Receivables:						
Minimum funding requirement (Employer)	244,723,615	-	244,723,615	260,178,417	-	260,178,417
Employee	9,579,721	-	9,579,721	9,435,986	-	9,435,986
Accrued investment income	47,685,274	-	47,685,274	46,285,236	-	46,285,236
Due from brokers	13,392,660	-	13,392,660	64,089,704	-	64,089,704
Participating teachers' accounts for contributions	5,346,279	-	5,346,279	4,798,811	-	4,798,811
Other receivables	16,669,265	6,468,526	23,137,791	19,114,866	5,280,595	24,395,461
Total receivables	337,396,814	6,468,526	343,865,340	403,903,020	5,280,595	409,183,615
Investments, at fair value:						
U.S. government and agency fixed income	1,346,359,644	-	1,346,359,644	1,341,767,577	-	1,341,767,577
U.S. corporate fixed income	846,122,321	-	846,122,321	977,782,641	-	977,782,641
Foreign fixed income securities	41,147,480	-	41,147,480	34,063,859	-	34,063,859
U.S. equities	3,288,029,591	-	3,288,029,591	2,975,324,892	-	2,975,324,892
Foreign equities	3,248,837,107	-	3,248,837,107	3,038,474,987	-	3,038,474,987
Public REITs	107,292,622	-	107,292,622	120,644,386	-	120,644,386
Pooled short-term investment funds	436,183,167	-	436,183,167	523,199,050	-	523,199,050
Real estate	1,364,749,561	-	1,364,749,561	1,430,604,441	-	1,430,604,441
Infrastructure	263,731,109	-	263,731,109	231,525,701	-	231,525,701
Private equity	979,246,160	-	979,246,160	938,426,581	-	938,426,581
Total investments	11,921,698,762	-	11,921,698,762	11,611,814,115	-	11,611,814,115
Securities lending collateral	801,112,438	-	801,112,438	895,171,463	-	895,171,463
Capital assets, net of accumulated depreciation	619,661	-	619,661	892,772	-	892,772
Total assets	13,065,441,155	6,468,526	13,071,909,681	12,915,078,157	5,280,595	12,920,358,752
Liabilities:						
Benefits payable	8,941,401	6,362,136	15,303,537	7,231,823	5,199,548	12,431,371
Refunds payable	17,523,441	-	17,523,441	18,972,581	-	18,972,581
Accounts and administrative expenses payable	28,260,693	106,390	28,367,083	21,330,256	81,047	21,411,303
Securities lending collateral payable	800,856,343	-	800,856,343	900,151,040	-	900,151,040
Due to brokers	91,366,081	-	91,366,081	202,450,576	-	202,450,576
Total liabilities	946,947,959	6,468,526	953,416,485	1,150,136,276	5,280,595	1,155,416,871
Net Position Restricted for Pension Benefits	<u>\$ 12,118,493,196</u>	<u>\$ -</u>	<u>\$ 12,118,493,196</u>	<u>\$ 11,764,941,881</u>	<u>\$ -</u>	<u>\$ 11,764,941,881</u>



Table 8
Statement of Changes in Fiduciary Net Position
for Years Ended June 30, 2023 and 2022

	June 30, 2023			June 30, 2022		
	Pension Fund	Health Insurance Fund	Total Fund - Pension and Health Insurance	Pension Fund	Health Insurance Fund	Total Fund - Pension and Health Insurance
Additions:						
Contributions:						
Employee	\$ 240,059,409	\$ -	\$ 240,059,409	\$ 221,641,463	\$ -	\$ 221,641,463
Minimum funding requirement (Employer)	551,652,000	-	551,652,000	667,180,000	-	667,180,000
Minimum funding requirement (State)	308,673,000	-	308,673,000	277,497,000	-	277,497,000
Allocation to health insurance fund	(68,577,722)	68,577,722	-	(62,017,292)	62,017,292	-
Total contributions	1,031,806,687	68,577,722	1,100,384,409	1,104,301,171	62,017,292	1,166,318,463
Investment income:						
Net appreciation (depreciation) in fair value	682,609,188	-	682,609,188	(1,364,631,909)	-	(1,364,631,909)
Interest	104,069,433	-	104,069,433	31,294,672	-	31,294,672
Dividends	198,562,149	-	198,562,149	253,817,005	-	253,817,005
Miscellaneous	873,910	-	873,910	1,478,703	-	1,478,703
Securities lending income, net	3,694,080	-	3,694,080	4,461,024	-	4,461,024
Less investment expense:	(47,060,110)	-	(47,060,110)	(51,725,939)	-	(51,725,939)
Net investment income	942,748,650	-	942,748,650	(1,125,306,444)	-	(1,125,306,444)
Interest on late required contribution payments	8,529,706	-	8,529,706	4,082,944	-	4,082,944
Miscellaneous	503,225	-	503,225	337,453	-	337,453
Total additions	1,983,588,268	68,577,722	2,052,165,990	(16,584,876)	62,017,292	45,432,416
Deductions:						
Pension benefits	1,575,361,180	-	1,575,361,180	1,543,936,297	-	1,543,936,297
Refunds	24,024,295	-	24,024,295	21,506,750	-	21,506,750
2.2 Legislative refunds	715,178	-	715,178	349,346	-	349,346
Refund of insurance premiums	-	67,740,795	67,740,795	-	61,286,124	61,286,124
Death benefits	4,909,444	-	4,909,444	4,154,352	-	4,154,352
Total benefits payments	1,605,010,097	67,740,795	1,672,750,892	1,569,946,745	61,286,124	1,631,232,869
Administrative and miscellaneous expenses	25,026,856	836,927	25,863,783	21,568,090	731,168	22,299,258
Total deductions	1,630,036,953	68,577,722	1,698,614,675	1,591,514,835	62,017,292	1,653,532,127
Net increase (decrease)	353,551,315	-	353,551,315	(1,608,099,711)	-	(1,608,099,711)
Net Position Restricted for Pension Benefits						
Beginning of the Year	11,764,941,881	-	11,764,941,881	13,373,041,592	-	13,373,041,592
End of year	\$ 12,118,493,196	\$ -	\$ 12,118,493,196	\$ 11,764,941,881	\$ -	\$ 11,764,941,881



Table 9

Development of the Actuarial Value of Assets

Year Ending June 30	2023	2024	2025	2026
Beginning of Year:				
(1) Market Value of Assets	\$ 11,764,941,881			
(2) Actuarial Value of Assets	12,142,214,578			
End of Year:				
(3) Market Value of Assets	12,118,493,196			
(4) Contributions and Disbursements				
(4a) Actual Employer & Misc. Contributions	869,357,931			
(4b) Employee Contributions	240,059,409			
(4c) Benefit Payouts & Refunds	(1,672,750,892)			
(4d) Administrative Expenses	(25,863,783)			
(4e) Net of Contributions and Disbursements	(589,197,335)			
(5) Total Investment Return				
=(3)-(1)-(4e)	942,748,650			
(6) Projected Rate of Return		6.50%		
(7) Projected Investment Income ^a	755,056,717			
(8) Investment Income in Excess of Projected Income				
(9) Excess Investment Income Recognized	187,691,933			
This Year (4-year recognition)				
(9a) From This Year	\$ 46,922,983			
(9b) From One Year Ago	(467,368,270)	\$ 46,922,983		
(9c) From Two Years Ago	552,220,554	(467,368,270)	\$ 46,922,983	
(9d) From Three Years Ago	(74,881,554)	552,220,552	(467,368,269)	\$ 46,922,984
(9e) From June 30, 2002 Restatement ^b	(1,181,860)	(1,181,860)	(1,181,860)	(1,181,860)
(9f) Total Recognized Investment Gain (Loss)	55,711,853	130,593,405	(421,627,146)	45,741,124
(10) Change in Actuarial Value of Assets				
=(4e)+(7)+(9f)	\$ 221,571,235			
End of Year:				
(3) Market Value of Assets	\$ 12,118,493,196			
(11) Actuarial Value of Assets	\$ 12,363,785,813			
=(2)+(10)				
(12) Difference between Market & Actuarial Values	\$ (245,292,617)			
(13) Estimated Actuarial Value Rate of Return		6.84%		
(14) Estimated Market Value Rate of Return		8.22%		
(15) Ratio of Actuarial Value to Market Value		102.02%		

^aProjected investment income is estimated based on the actuarial value of assets and weighted timing of middle of year, 8/12^{ths} of a year, and end of year for non-investment cash flows.

^bJune 30, 2002 market value of assets were restated after the June 30 actuarial valuation. The change was not recognized in the actuarial value of assets.



Graph 6 Historical Assets Values From June 30, 2014-2023

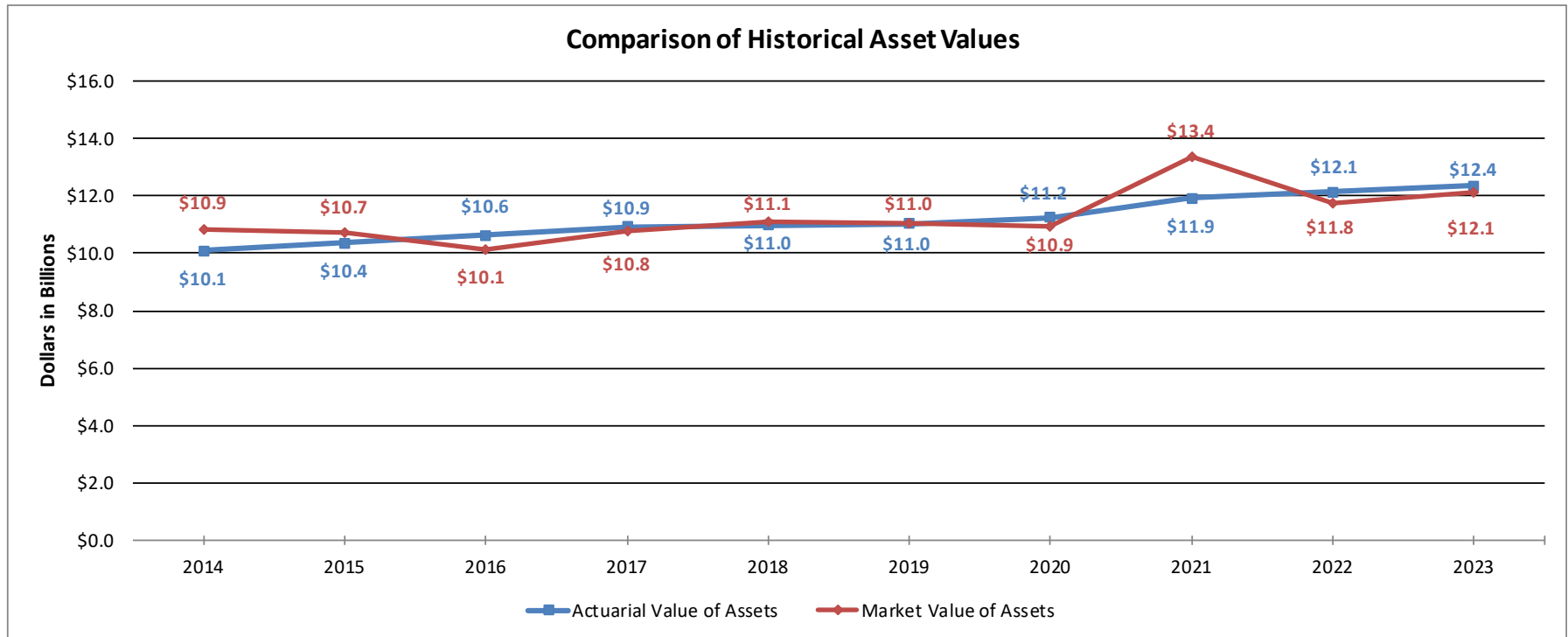
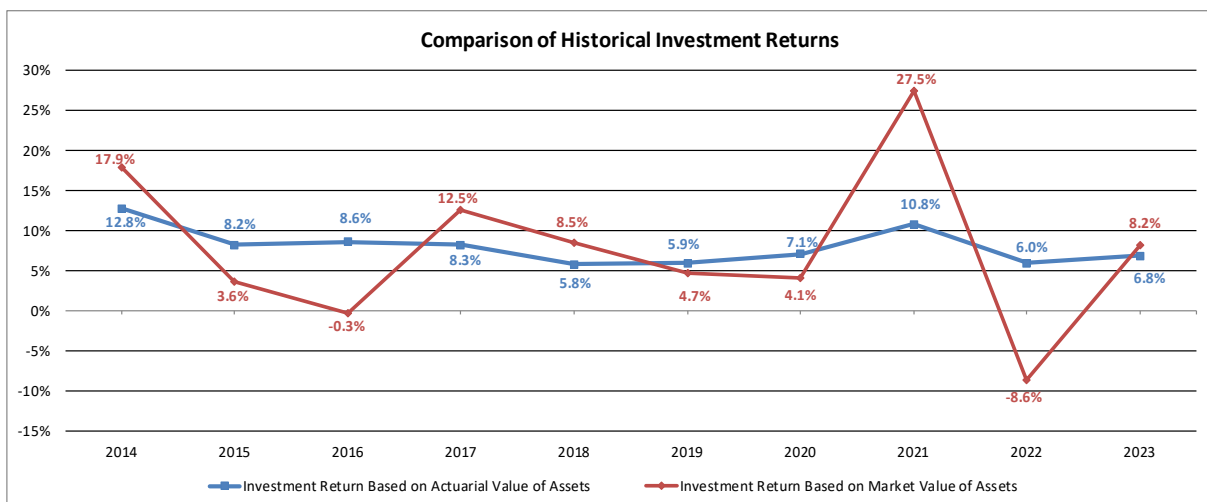


Table 10 Historical Investment Returns

Year Ended June 30,	Market Value Return	Actuarial Value Return
1999	10.7%	n/a
2000	9.5%	n/a
2001	(1.5%)	n/a
2002	(3.3%)	n/a
2003	4.0%	2.3%
2004	15.0%	3.2%
2005	10.8%	6.0%
2006	10.7%	9.6%
2007	17.7%	13.3%
2008	(5.3%)	7.9%
2009	(22.4%)	0.2%
2010	13.6%	(0.4%)
2011	24.8%	(0.5%)
2012	(0.4%)	1.0%
2013	13.1%	11.2%
2014	17.9%	12.8%
2015	3.6%	8.2%
2016	(0.3%)	8.6%
2017	12.5%	8.3%
2018	8.5%	5.8%
2019	4.7%	5.9%
2020	4.1%	7.1%
2021	27.5%	10.8%
2022	(8.6%)	6.0%
2023	8.2%	6.8%
Average Returns		
Last 10 Years:	7.4%	8.0%
Last 25 Years:	6.5%	n/a

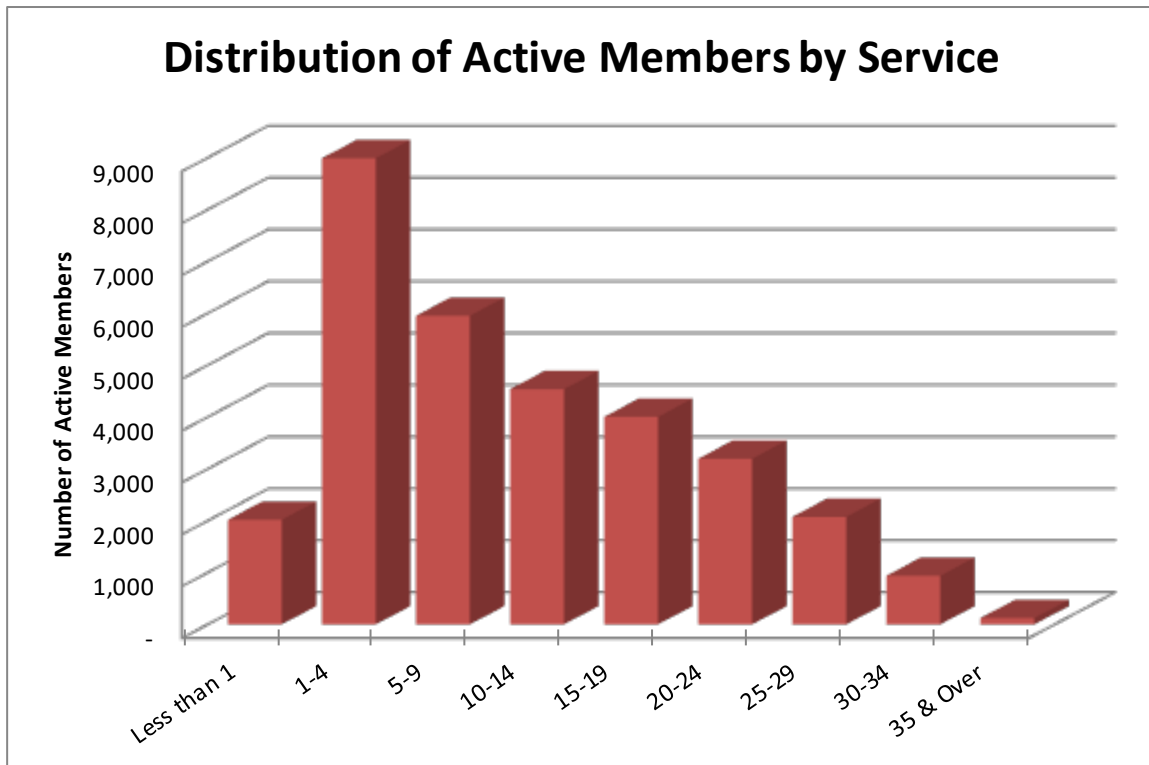
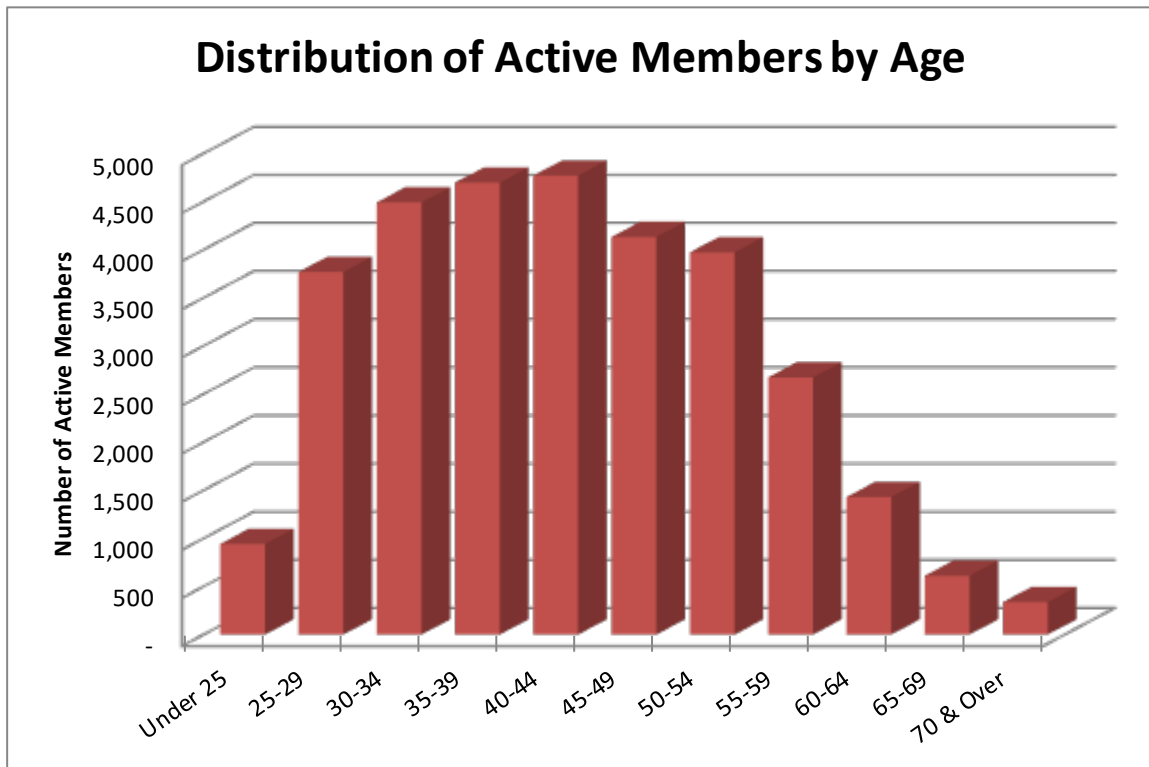


SECTION F

PARTICIPANT DATA

Graph 7

Active Members Classified by Age and Service



Graph 8 Retirees Classified by Benefit Amount and Age

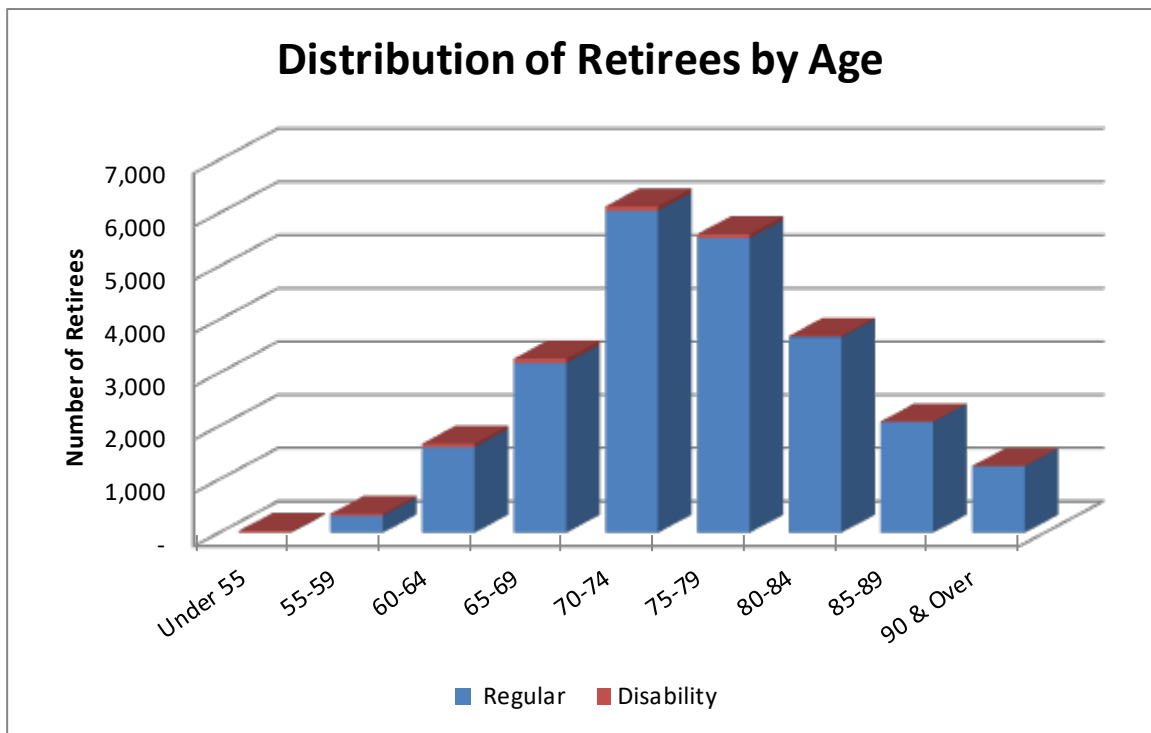
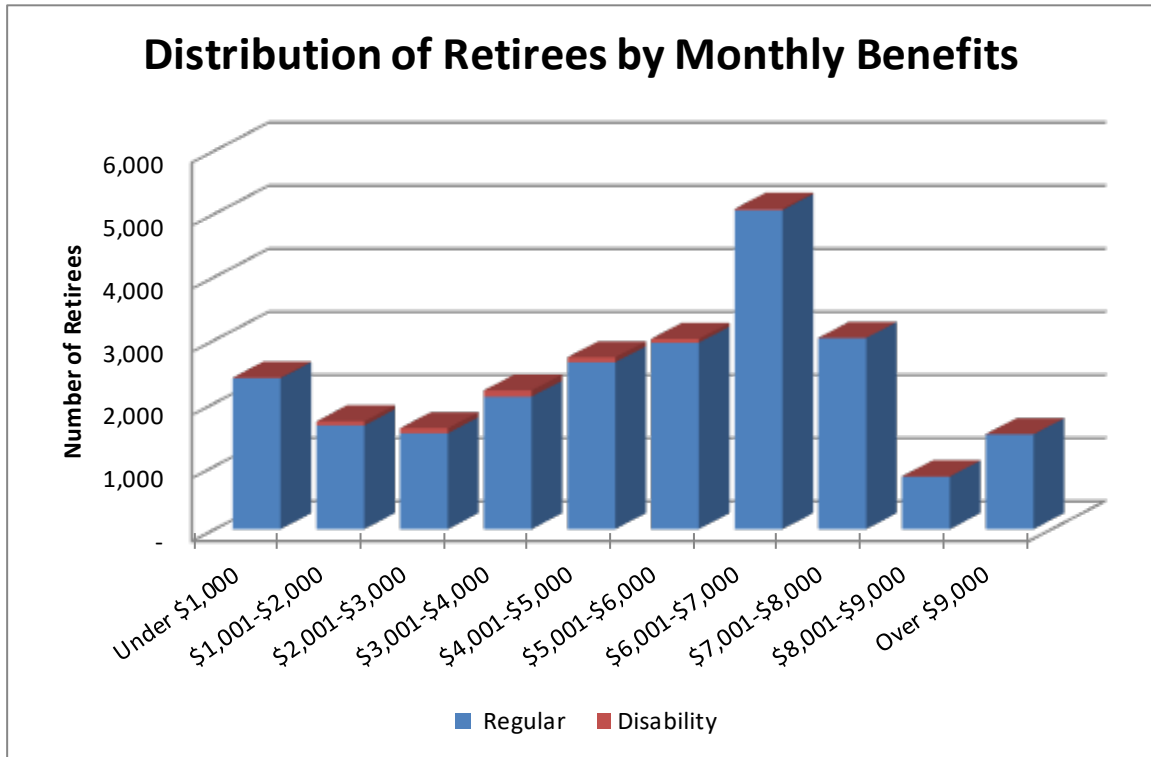


Table 11
Summary of Fund Membership

	Year Ended		Change from Prior Year
	June 30, 2023	June 30, 2022	
Active Members			
Number ^a	31,824	31,261	1.8%
Average Age	42.9	42.6	
Average Service	11.1	11.0	
Total Salary Supplied by Fund	\$2,649,728,047	\$2,522,166,316	5.1%
Average Annual Salary	\$83,262	\$80,681	3.2%
Total Active Vested Participants	16,375	16,302	0.4%
Male Members	7,657	7,440	2.9%
Female Members	24,167	23,821	1.5%
Tier 1 Members	16,193	16,811	-3.7%
Tier 2 Members	15,631	14,450	8.2%
Inactive Vested Members^b			
Number	6,947	6,861	1.3%
Average Age	49.9	49.4	
Average Service (Excluding Reciprocal Service)	10.9	10.8	
Inactive Non-Vested Members			
Number	27,834	26,630	4.5%
Retirees			
Number	23,672	23,859	-0.8%
Average Age	76.1	75.8	
Average Annual Benefit	\$61,770	\$60,197	2.6%
Total Annual Benefit	\$1,462,225,898	\$1,436,243,793	1.8%
Disabled Retirees			
Number	425	430	-1.2%
Average Age	69.3	69.0	
Average Annual Benefit	\$44,169	\$42,748	3.3%
Total Annual Benefit	\$18,772,015	\$18,381,534	2.1%
Beneficiaries (Including Children)			
Number	3,377	3,349	0.8%
Average Age	78.8	78.4	
Average Annual Benefit	\$27,808	\$26,995	3.0%
Total Annual Benefit	\$93,907,777	\$90,407,404	3.9%
Total Members	94,079	92,390	1.8%

^a Active count excludes members expected to be hired to replace retirements and terminations that occurred in June.

^b CTPF's determination of whether an inactive member is vested includes reciprocal service.



Table 12
Member Population and Ratio of Non-Actives to Actives

Year Ended June 30,	Active Participants ^a	Vested Terminated Participants ^b	Retirees and Beneficiaries	Ratio of Non- Actives to Actives
2009	31,905	3,056	24,218	0.85
2010	31,012	3,554	24,600	0.91
2011	30,133	4,253	25,199	0.98
2012	30,366	4,245	25,926	0.99
2013	30,969	4,502	27,440	1.03
2014	30,654	4,818	27,722	1.06
2015	29,706	5,464	28,114	1.13
2016	29,543	5,715	28,298	1.15
2017	28,855	6,062	28,439	1.20
2018	28,958	9,398	28,549	1.31
2019	29,295	9,926	28,317	1.31
2020	30,091	10,024	28,015	1.26
2021	31,215	6,658	27,610	1.10
2022	31,261	6,861	27,638	1.10
2023	31,824	6,947	27,474	1.08

^a Active count excludes members expected to be hired to replace retirements and terminations that occurred in June.

^b Excludes non-vested terminated participants due a refund of member contributions.

Table 13
Total Lives and Annual Salaries of Active Members Classified by Age
and Years of Service as of June 30, 2023

Attained Age	Completed Years of Service										Total
	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
Under 20	1	-	-	-	-	-	-	-	-	-	1
	\$ 6,851	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 6,851
20-24	290	651	-	-	-	-	-	-	-	-	941
	\$ 3,606,727	\$ 38,589,468	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 42,196,195
25-29	413	2,714	641	-	-	-	-	-	-	-	3,768
	\$ 5,365,263	\$ 171,354,653	\$ 46,546,950	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 223,266,866
30-34	267	1,923	1,828	474	-	-	-	-	-	-	4,492
	\$ 3,797,971	\$ 125,304,338	\$ 143,168,579	\$ 43,315,944	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 315,586,831
35-39	260	1,134	1,345	1,580	378	-	-	-	-	-	4,697
	\$ 3,438,627	\$ 74,440,400	\$ 107,403,405	\$ 151,561,428	\$ 41,177,956	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 378,021,816
40-44	194	814	808	1,082	1,479	393	-	-	-	-	4,770
	\$ 2,699,100	\$ 53,773,479	\$ 64,670,853	\$ 105,091,207	\$ 163,562,341	\$ 45,535,243	\$ -	\$ -	\$ -	\$ -	\$ 435,332,222
45-49	149	577	465	557	959	1,184	241	1	-	-	4,133
	\$ 1,816,419	\$ 36,469,815	\$ 37,095,592	\$ 54,297,286	\$ 105,182,891	\$ 136,741,689	\$ 29,524,948	\$ 117,679	\$ -	\$ -	\$ 401,246,317
50-54	136	476	370	397	557	868	958	208	2	-	3,972
	\$ 1,515,501	\$ 30,518,949	\$ 28,992,031	\$ 37,878,731	\$ 60,146,555	\$ 98,762,950	\$ 115,026,170	\$ 26,426,083	\$ 226,762	\$ -	\$ 399,493,731
55-59	116	322	219	224	315	418	551	480	28	-	2,673
	\$ 1,380,556	\$ 18,348,707	\$ 16,544,798	\$ 20,664,921	\$ 32,906,984	\$ 46,684,404	\$ 64,462,370	\$ 58,000,004	\$ 3,583,953	\$ -	\$ 262,576,696
60-64	86	178	157	127	213	220	228	175	45	-	1,429
	\$ 740,854	\$ 8,346,965	\$ 11,369,085	\$ 10,189,553	\$ 21,679,934	\$ 24,139,963	\$ 26,391,901	\$ 20,529,302	\$ 5,398,239	\$ -	\$ 128,785,796
65-69	56	113	70	62	69	82	70	56	33	-	611
	\$ 471,032	\$ 3,479,948	\$ 4,615,813	\$ 4,746,330	\$ 6,112,017	\$ 8,769,485	\$ 7,954,943	\$ 6,249,485	\$ 4,107,776	\$ -	\$ 46,506,829
70 & Over	49	88	49	33	32	29	25	18	14	-	337
	\$ 262,359	\$ 1,794,948	\$ 1,422,735	\$ 1,621,231	\$ 2,605,076	\$ 2,896,001	\$ 2,629,592	\$ 1,921,043	\$ 1,554,913	\$ -	\$ 16,707,898
Total	2,017	8,990	5,952	4,536	4,002	3,194	2,073	938	122	-	31,824
	\$ 25,101,260	\$ 562,421,669	\$ 461,829,840	\$ 429,366,629	\$ 433,373,753	\$ 363,529,734	\$ 245,989,923	\$ 113,243,596	\$ 14,871,643	\$ -	\$ 2,649,728,047

Total lives and annual salaries exclude 340 members expected to be hired to replace retirements and terminations that occurred in June 2022.



Table 14
Reconciliation of Member Data as of June 30, 2023

	Actives	Deferred Vested	Expected Refunds	Retirees	Disabilities	Beneficiaries	Total
Totals as of the June 30, 2022 Actuarial Valuation	31,261	6,861	26,630	23,859	430	3,349	92,390
New Entrants	3,287	-	-	-	-	-	3,287
Rehires — Members with Service	756	(171)	(585)	-	-	-	-
Non-Vested Terminations	(2,240)	(5)	2,245	-	-	-	-
Vested Terminations	(572)	594	(22)	-	-	-	-
Service Retirements	(401)	(244)	(43)	689	(1)	-	-
Disabilities	(7)	(5)	-	-	12	-	-
Deaths	(36)	(11)	(10)	(883)	(17)	(243)	(1,200)
New Beneficiaries	-	-	-	-	-	271	271
Refunds and Benefit Terminations	(224)	(81)	(612)	-	-	-	(917)
Data Adjustments	-	9	231	7	1	-	248
Net Change	563	86	1,204	(187)	(5)	28	1,689
Totals as of the June 30, 2023 Actuarial Valuation	31,824	6,947	27,834	23,672	425	3,377	94,079

Active count excludes members expected to be hired to replace retirements and terminations that occurred in June.

Table 15
History of Retirees and Beneficiaries Added to Rolls during
Fiscal Year Ended June 30, 2023

Fiscal Year	Added to Rolls		Removed from Rolls		Rolls - End of Year		Average Annual Allowances	Increase in Avg. Annual Allowance
	No.	Annual Allowance	No.	Annual Allowance	No.	Annual Allowance		
2014	1,006	\$ 70,963,134	724	\$ 26,376,522	27,722	\$ 1,269,456,130	\$ 45,792	2.59%
2015	1,302	85,087,053	910	34,678,799	28,114	1,319,864,384	46,947	2.52%
2016	1,101	78,909,433	917	36,891,261	28,298	1,361,882,556	48,126	2.51%
2017	1,072	79,434,960	931	37,328,244	28,439	1,403,989,272	49,368	2.58%
2018	1,025	79,219,962	915	39,123,440	28,549	1,444,085,794	50,583	2.46%
2019	708	67,514,478	940	42,557,730	28,317	1,469,042,542	51,878	2.56%
2020	792	71,924,782	1,094	52,218,394	28,015	1,488,748,930	53,141	2.43%
2021	716	70,519,407	1,121	53,252,323	27,610	1,506,016,014	54,546	2.64%
2022	1,023	88,728,079	995	49,711,362	27,638	1,545,032,731	55,902	2.49%
2023	980	87,528,192	1,144	57,655,233	27,474	1,574,905,689	57,323	2.54%

Table 16
Number of Annuitants Classified by Benefit Type and Amount as of June 30, 2023

Amount of Monthly Benefit	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
\$ 1-500	325	918	1	-	156	220	482	1,138
501-1000	317	833	2	6	150	276	469	1,115
1,001-1,500	263	632	6	15	153	197	422	844
1,501-2,000	219	529	7	38	139	173	365	740
2,001-2,500	186	545	8	33	141	206	335	784
2,501-3,000	183	605	6	34	136	220	325	859
3,001-3,500	224	783	9	43	211	364	444	1,190
3,501-4,000	235	857	12	35	89	214	336	1,106
4,001-4,500	261	1,041	9	24	27	90	297	1,155
4,501-5,000	251	1,090	11	36	15	62	277	1,188
5,001-5,500	263	1,045	5	29	13	47	281	1,121
5,501-6,000	369	1,278	5	21	7	27	381	1,326
6,001-6,500	537	1,894	4	8	6	22	547	1,924
6,501-7,000	610	2,015	2	6	4	6	616	2,027
7,001-7,500	450	1,609	-	1	-	3	450	1,613
7,501-8,000	217	753	2	-	-	1	219	754
8,001-8,500	144	355	1	1	-	-	145	356
8,501-9,000	127	207	1	1	-	-	128	208
9,001-9,500	74	181	-	1	-	-	74	182
Over \$9,500	388	859	2	-	-	2	390	861
Totals	5,643	18,029	93	332	1,247	2,130	6,983	20,491

Table 17
Initial Year of Retirement Analysis

	Years of Credited Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	
Fiscal Year 2019								
Avg Monthly Annuity	\$ 305	\$ 699	\$ 1,634	\$ 2,547	\$ 3,672	\$ 4,789	\$ 6,009	\$ 3,150
Avg Monthly FAS	\$ 6,069	\$ 4,827	\$ 6,098	\$ 6,673	\$ 7,644	\$ 8,482	\$ 8,446	\$ 7,046
Number of Retirees	42	64	64	62	77	62	94	465
Average Age								63.7
Fiscal Year 2020								
Avg Monthly Annuity	\$ 318	\$ 768	\$ 1,615	\$ 2,578	\$ 3,587	\$ 4,659	\$ 6,170	\$ 3,211
Avg Monthly FAS	\$ 6,442	\$ 5,315	\$ 5,859	\$ 6,746	\$ 7,717	\$ 8,076	\$ 8,578	\$ 7,179
Number of Retirees	49	76	51	72	114	98	91	551
Average Age								63.5
Fiscal Year 2021								
Avg Monthly Annuity	\$ 349	\$ 883	\$ 1,638	\$ 2,850	\$ 3,652	\$ 4,780	\$ 6,439	\$ 3,500
Avg Monthly FAS	\$ 7,335	\$ 6,180	\$ 6,087	\$ 7,363	\$ 7,771	\$ 8,371	\$ 8,887	\$ 7,645
Number of Retirees	39	54	49	71	86	67	103	469
Average Age								63.9
Fiscal Year 2022								
Avg Monthly Annuity	\$ 342	\$ 829	\$ 1,572	\$ 2,904	\$ 3,997	\$ 5,103	\$ 6,527	\$ 4,056
Avg Monthly FAS	\$ 7,252	\$ 5,302	\$ 5,746	\$ 7,580	\$ 8,362	\$ 8,643	\$ 9,028	\$ 7,921
Number of Retirees	47	66	75	85	130	137	217	757
Average Age								63.7
Fiscal Year 2023								
Avg Monthly Annuity	\$ 367	\$ 887	\$ 1,718	\$ 2,690	\$ 3,989	\$ 5,356	\$ 6,755	\$ 4,025
Avg Monthly FAS	\$ 8,134	\$ 5,540	\$ 6,453	\$ 7,007	\$ 8,372	\$ 8,918	\$ 9,369	\$ 8,126
Number of Retirees	63	66	66	75	121	99	206	696
Average Age								63.7

Table 18
Schedule of Active Member Payroll

Valuation Date June 30,	Number	Covered Payroll	Average Annual Payroll	% Increase in Avg. Payroll
2014	30,654	\$2,233,280,995	\$ 72,854	
2015	29,706	2,273,551,432	76,535	5.05%
2016	29,543	2,281,268,890	77,219	0.89%
2017	28,855	2,030,175,116	70,358	-8.88%
2018	28,958	2,094,830,446	72,340	2.82%
2019	29,295	2,179,054,844	74,383	2.82%
2020	30,091	2,249,491,403	74,756	0.50%
2021	31,215	2,372,166,562	75,994	1.66%
2022	31,261	2,522,166,316	80,681	6.17%
2023	31,824	2,649,728,047	83,262	3.20%

Table 19
Solvency Test

Valuation Date June 30,	Total Actuarial Accrued Liability	(1) Active Member Contributions	(2) Retirees, Term Vested and Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	Portion (%) of Present Value Covered By Assets		
						(1)	(2)	(3)
2017	\$ 21,822,010,297	\$ 1,608,474,476	\$ 16,244,526,663	\$ 3,969,009,158	\$ 10,933,031,685	100%	57%	0%
2018	22,922,992,558	1,659,408,813	17,510,678,092	3,752,905,653	10,969,085,523	100%	53%	0%
2019	23,252,163,307	1,752,007,367	17,532,864,523	3,967,291,417	11,021,811,634	100%	53%	0%
2020	24,073,482,607	1,851,487,971	17,866,192,151	4,355,802,485	11,240,208,045	100%	53%	0%
2021	25,117,988,742	1,981,699,714	18,127,858,688	5,008,430,340	11,925,535,283	100%	55%	0%
2022	25,955,065,711	2,036,415,730	18,416,166,406	5,502,483,575	12,142,214,578	100%	55%	0%
2023	26,170,995,292	2,129,879,893	17,804,541,109	6,236,574,290	12,363,785,813	100%	57%	0%

10 fiscal years will be built prospectively.

Table 20
Participating Employers

Participating Employer	2023		2022	
	Covered Employees	% of Total CTPF Membership	Covered Employees	% of Total CTPF Membership
Chicago Public Schools	27,021	84.91%	26,380	84.39%
Noble Network of Charter Schools	786	2.47%	809	2.59%
UNO Charter School Network	700	2.20%	669	2.14%
KIPP Chicago Schools	260	0.82%	256	0.82%
Learn Charter School Network	252	0.79%	285	0.91%
Concept Schools	220	0.69%	189	0.60%
Distinctive Schools	203	0.64%	202	0.65%
Civitas Schools	156	0.49%	164	0.52%
Charter Schools USA	154	0.48%	175	0.56%
Perspectives Charter Schools	151	0.47%	133	0.43%
Total, Largest 10 Employers	29,903	93.96%	29,262	93.61%
All Other Employers	1,921	6.04%	1,999	6.39%
Grand Total	31,824	100.00%	31,261	100.00%

The total number of covered employees from the largest 10 employers in 2022 was 29,264. This differs slightly from the number shown above due to a difference in the 10th largest employer in 2023 compared to 2022.

Excludes the group of 199 covered employees in 2023 and 182 in 2022 whose employer is reported as NULL.

SECTION G

ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Actuarial Cost Method as Mandated by 40 ILCS 5/17-129, Adopted August 31, 1991

The Projected Unit Credit normal cost method is used. Under this method, the projected pension at retirement age is first calculated and the present value at the individual member's current or attained age is determined. The normal cost for the member for the current year is equal to the actuarial present value divided by the member's projected service at retirement. The normal cost for the plan for the year is the sum of the individual normal costs.

The actuarial liability at any point in time is the present value of the projected pensions at that time less the present value of future normal costs.

For ancillary benefits for active members, in particular death and survivor benefits, termination benefits and the postretirement increases, the same procedure as outlined above is followed.

Estimated annual administrative expenses are added to the normal cost.

For actuarial valuation purposes, as well as projection purposes, an actuarial value of assets is used. The actuarial value of assets is projected to equal about 100 percent of the market value on and after June 30, 2029.

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Actuarial Assumptions

Actuarial assumptions are set by the Board of Trustees. All actuarial assumptions are expectations of future experience and are not market measures. The rationale for the actuarial assumptions may be found in the 2023 Actuarial Experience Study issued on August 31, 2023.

Rate of Investment Return

6.50 percent per year, compounded annually, net of investment expenses. First effective with the actuarial valuation as of June 30, 2021.

Price Inflation (Increase in Consumer Price Index, “CPI”)

2.25 percent per annum, compounded annually. First effective with the actuarial valuation as of June 30, 2020.

This assumption serves as the basis for the determination of annual increases in pension and the pensionable salary cap for Tier 2 members.

Cost of Living Adjustment (“COLA”)

The assumed rate is 3.00 percent per year for members hired before January 1, 2011, based on the benefit provision of 3.00 percent annual compound increases. The assumed rate is 1.125 percent for members hired on and after January 1, 2011, based on the benefit provision of increases equal to ½ of the increase in CPI-U with a maximum increase of 3.00 percent. First effective with the actuarial valuation as of June 30, 2020.

Wage Inflation

2.75 percent per annum, compounded annually. First effective with the actuarial valuation as of June 30, 2020.

Calculation of the Actuarially Determined Contribution

The amortization factor used to calculate the ADC is based on the Fund’s assumed interest rate of 6.50 percent and an annualized assumed rate of increase in total capped payroll of 2.15 percent (which is consistent with the projected increase in total payroll from the projections used to calculate the statutory contribution requirements). The ADC is calculated as the Normal Cost, plus a 30-year level percent of payroll closed-period amortization of the Unfunded Accrued Liability as of June 30, 2013, such that the Fund would be 100 percent funded by 2043. The remaining amortization period as of the June 30, 2023 actuarial valuation is 20 years.



Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Total Payroll

Unless stated otherwise, total payroll includes employee contributions of 7.00 percent of salary picked up by the Board of Education for employees hired prior to January 1, 2017. All contributions are calculated based on total payroll.

Mortality

Applicable Group	Base Mortality Table	Male Scaling Factor	Female Scaling Factor
Pre-retirement Mortality	Pub-2010 General Employee, sex distinct	92%	122%
Post-retirement Disabled Mortality	Pub-2010 Disabled Retiree, sex distinct	100%	106%
Post-retirement Healthy Mortality	Pub-2010 General Healthy Retiree, sex distinct	108%	105%

Future mortality improvements are reflected by projecting the base mortality tables from the year 2010 using the Society of Actuaries (SOA) MP-2021 projection scale. The assumptions are generational mortality tables and include a margin for improvement.

Age	Future Life Expectancy (years) in 2023				Future Life Expectancy (years) in 2035			
	Post-retirement Healthy		Post-retirement Disabled		Post-retirement Healthy		Post-retirement Disabled	
	Male	Female	Male	Female	Male	Female	Male	Female
35	50.38	53.78	38.52	40.92	51.52	54.72	40.64	42.95
40	45.12	48.48	34.21	36.52	46.25	49.43	36.16	38.41
45	39.90	43.20	30.12	32.37	41.00	44.15	31.90	34.12
50	34.81	38.02	26.29	28.49	35.88	38.97	27.92	30.12
55	29.94	33.06	22.80	24.97	30.98	33.98	24.30	26.46
60	25.26	28.20	19.62	21.71	26.24	29.08	20.97	23.02
65	20.80	23.49	16.69	18.50	21.69	24.30	17.82	19.58
70	16.60	18.99	13.88	15.19	17.35	19.69	14.77	16.06
75	12.72	14.76	11.12	11.96	13.34	15.37	11.80	12.66

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Termination

Service-based termination rates were used. Sample rates are as follows:

Termination			
Service (Beginning of Year)	Rate (%)	Service (Beginning of Year)	Rate (%)
0	31.00%	16	2.50%
1	15.00%	17	2.50%
2	12.00%	18	2.00%
3	11.00%	19	2.00%
4	9.00%	20	2.00%
5	9.00%	21	2.00%
6	8.00%	22	2.00%
7	6.00%	23	2.00%
8	6.00%	24	2.00%
9	5.00%	25	1.75%
10	4.00%	26	1.75%
11	3.00%	27	1.75%
12	3.00%	28	1.75%
13	3.00%	29	1.75%
14	3.00%	30	1.50%
15	3.00%	31+	1.50%

It is assumed that terminated employees will not be rehired. The rates apply only to employees who have not fulfilled the service requirement necessary for retirement at any given age.

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Salary Increases

Illustrative rates of increase per individual employee per year, compounded annually:

Age	Annual Increase
20	12.75%
25	7.25%
30	6.75%
35	6.00%
40	4.75%
45	4.25%
50	3.75%
55	3.75%
60	3.50%
65	3.25%
70	2.75%

The underlying salary increase assumption is based on a wage inflation assumption of 2.75 percent per year. First effective with the actuarial valuation as of June 30, 2020.

Disability

Disability rates, based on recent experience of the Fund, were applied to members with at least 10 years of service. All disabilities are assumed to be non-duty disabilities. Sample rates are as follows:

Age	Rate (%)
20	0.03%
25	0.03%
30	0.03%
35	0.04%
40	0.04%
45	0.06%
50	0.14%
55	0.19%
60	0.24%

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Retirement

Employees are assumed to retire in accordance with the rates shown below. The rates apply only to employees who have fulfilled the service requirement necessary for retirement at any given age.

Retirement Rates for Tier 1 Employees		
Age	<34 Years of Service Rate (%)	34+ Years of Service Rate (%)
55	5.00%	30.00%
56	5.00%	30.00%
57	6.00%	30.00%
58	6.00%	30.00%
59	7.00%	25.00%
60	15.00%	25.00%
61	15.00%	25.00%
62	15.00%	25.00%
63	15.00%	25.00%
64	15.00%	25.00%
65	17.50%	27.50%
66	17.50%	27.50%
67	17.50%	27.50%
68	18.00%	27.50%
69	18.00%	27.50%
70	18.00%	27.50%
71	18.00%	27.50%
72	18.00%	27.50%
73	18.00%	27.50%
74	18.00%	35.00%
75	100.00%	100.00%

Retirement Rates for Tier 2 Employees	
Age	Rate (%)
62	40.00%
63	25.00%
64	25.00%
65	27.50%
66	27.50%
67	35.00%
68	27.50%
69	27.50%
70	27.50%
71	27.50%
72	27.50%
73	27.50%
74	35.00%
75	100.00%

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Active Member Population as of the Actuarial Valuation Date

The Tier 2 active population as of the actuarial valuation date of June 30, 2023, was increased by 366 members in order to estimate the total expected number of active members that will be working and making contributions in the upcoming fiscal year. Members who retire or terminate at the end of the school year have June retirement dates and are already reflected as retirees in the data received as of June 30, but new active members to replace these members are not hired until August or September and are not included in the census data until the following fiscal year. These members are assumed to have a demographic profile similar to the average age, salary and percent of females as new entrants who have been hired in the last three years.

Population Projection

For purposes of determining annual appropriation as a percent of total covered payroll, the size of the active group is assumed to remain level at the number of actives as of the actuarial valuation date including expected new hires, or 32,190. New entrants are assumed to enter with an average age and an average pay as disclosed below. New entrants are assumed to have a similar demographic profile of recent new entrants to the Fund (as shown in the table below). The average increase in uncapped payroll for the projection period is 2.75 percent per year.

New Entrant Profile		
Age Group	No.	Salary
Under 20		
20-24	1,016	\$ 53,806,709
25-29	1,853	107,642,915
30-34	1,102	66,960,133
35-39	665	40,965,821
40-44	438	26,458,026
45-49	293	17,424,370
50-54	258	15,027,065
55-59	155	8,334,913
60-64	75	3,600,804
65-69	11	447,305
70 & Over		
Total	5,866	\$ 340,668,061
Avg. Salary		\$ 58,075
Avg. Age		32.82
Percent Female		75%



Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Assets

The asset values used for the actuarial valuation were based on asset information contained in the financial statements for the year ended June 30, 2023, as prepared by the Fund. The actuarial value of assets was determined by smoothing unexpected gains or losses over a period of four years. The investment gain or loss for a year is calculated as the total investment income on the market value of assets, minus expected investment return on the prior actuarial value of assets. The final actuarial value is equal to the expected actuarial value plus (or minus) 25 percent of the calculated gain (or loss) in the prior four years.

Expenses

Administrative expenses included in the normal cost for fiscal year 2024 are the budgeted administrative expense amount of \$26,243,563, as provided by Staff. Future administrative expenses are assumed to increase by 7.50 percent per year for 14 years and then increase at a rate consistent with the increase in projected capped payroll thereafter.

Marriage Assumption

70.0 percent of active male participants and 55.0 percent of active female participants are assumed to be married. Actual marital status at benefit commencement is used for retirees.

Spouse's Age

The female spouse is assumed to be two years younger than the male spouse.

Total Service at Retirement

A teacher's total service credit at retirement is assumed to be 103.3 percent of the teacher's regular period of service at retirement.

Valuation of Inactive Members Eligible for Deferred Vested Pension Benefits

Benefits for inactive deferred vested members were determined by projecting the accumulated contribution balance to retirement (age 62 for members hired before January 1, 2011 and age 67 for members hired on or after January 1, 2011) with interest at the assumed investment rate of return, converted to an annuity, and then loaded by 35 percent.

Assumption for Missing Data

Members whose gender was not provided are assumed to be female.



Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Benefit Option

Retirees whose record includes a spouse's date of birth are assumed to have the automatic 50 percent Joint and Survivor benefit. All other retirees are assumed to have a straight life benefit.

Data Adjustments

The pay used to project liabilities was assumed to be the greater of the pay reported for 2023 and the adjusted pay used in the 2022 actuarial valuation and would not be less than \$10,000.

Contribution Timing

Projected employer contributions are assumed to occur based on the following timing:

1. Additional Board of Education Contribution (0.58 percent of pay) — June 30 (End of Year)
2. Additional State Contribution (0.544 percent of pay) — Monthly (Middle of Year)
3. State Normal Cost Contribution — Monthly (Middle of Year)
4. Board of Education Early Payment of Special Tax Levy — March 1, annually
 - a. A portion of the prior year's tax levy is assumed to occur each March 1
 - i. The payments made through March 31 (which are assumed to be paid on March 1 on average) as provided by CTPF is equal to \$122,357,654 for fiscal year 2023 and is assumed to increase three percent per year.
5. Remaining Board of Education Contribution — June 30 (End of Year)

Pay Increase Timing

Pay increases are assumed to occur at the beginning of the year.

Decrement Timing

All decrements are assumed to occur during the middle of the year.

Decrement Relativity

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Decrement Operation

Turnover decrements do not operate after a member reaches retirement eligibility. Disability decrements do not operate after a member reaches normal retirement eligibility.



Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2023 Actuarial Valuation)

Eligibility Testing

Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.

Assumptions as a Result of Public Act 96-0889

Members hired on or after January 1, 2011 are assumed to make contributions on salary up to the final average compensation cap in a given year.

State contributions, expressed as a percentage of pay, are calculated based upon capped pay.

Capped (pensionable) pay was \$123,489 for fiscal year 2023 and increases at $\frac{1}{2}$ the annual increase in the Consumer Price Index-U thereafter.

The annual increase in the Consumer Price Index-U is assumed to be 2.25 percent for all years. First effective with the actuarial valuation as of June 30, 2020.

Projection Methodology and Appropriation Requirements under P.A. 90-0655, P.A. 91-0357, P.A. 96-0889, P.A. 99-0521 and P.A. 100-0465

Employer Contributions under P.A. 96-0889

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/17-129 (b)(iv)-(b)(vii):

(iv) For fiscal years 2014 through 2059, the minimum contribution to the Fund to be made by the Board of Education in each fiscal year shall be an amount determined by the Fund to be sufficient to bring the total assets of the Fund up to 90% of the total actuarial liabilities of the Fund by the end of fiscal year 2059. In making these determinations, the required Board of Education contribution shall be calculated each year as a level percentage of the applicable employee payrolls over the years remaining to and including fiscal year 2059 and shall be determined under the Projected Unit Credit actuarial cost method.

(v) Beginning in fiscal year 2060, the minimum Board of Education contribution for each fiscal year shall be the amount needed to maintain the total assets of the Fund at 90% of the total actuarial liabilities of the Fund.

(vi) Notwithstanding any other provision of this subsection (b), for any fiscal year, the contribution to the Fund from the Board of Education shall not be required to be in excess of the amount calculated as needed to maintain the assets (or cause the assets to be) at the 90% level by the end of the fiscal year.

(vii) Any contribution by the State to or for the benefit of the Fund, including, without limitation, as referred to under Section 17-127, shall be a credit against any contribution required to be made by the Board of Education under this subsection (b).

Additional State and Employer Contributions under P.A. 90-0655 and P.A. 91-0357

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/17-127 (b):

(b) The General Assembly finds that for many years the State has contributed to the Fund an annual amount that is between 20% and 30% of the amount of the annual State contribution to the Article 16 retirement system, and the General Assembly declares that it is its goal and intention to continue this level of contribution to the Fund in the future. Beginning in State fiscal year 1999, the State shall include in its annual contribution to the Fund an additional amount equal to 0.544% of the Fund's total teacher payroll; except that this additional contribution need not be made in a fiscal year if the Board has certified in the previous fiscal year that the Fund is at least 90% funded, based on actuarial determinations. These additional State contributions are intended to offset a portion of the cost to the Fund of the increases in retirement benefits resulting from this amendatory Act of 1998.

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/17-127.2 (1)-(2):

Sec. 17-127.2. Additional contributions by employer of teachers. Beginning July 1, 1998, the employer of a teacher shall pay to the Fund an employer contribution computed as follows:



Projection Methodology and Appropriation Requirements under P.A. 90-0655, P.A. 91-0357, P.A. 96-0889, P.A. 99-0521 and P.A. 100-0465

(1) Beginning July 1, 1998 through June 30, 1999, the employer contribution shall be equal to 0.3% of each teacher's salary.

(2) Beginning July 1, 1999 and thereafter, the employer contribution shall be equal to 0.58% of each teacher's salary. The employer may pay these employer contributions out of any source of funding available for that purpose and shall forward the contributions to the Fund on the schedule established for the payment of member contributions. These employer contributions need not be made in a fiscal year if the Board has certified in the previous fiscal year that the Fund is at least 90% funded, based on actuarial determinations. These employer contributions are intended to offset a portion of the cost to the Fund of the increases in retirement benefits resulting from Public Act 90-582.

Board of Education Dedicated Property Tax Levy under P.A. 99-0521 as Amended by P.A. 100-0465

The following is an excerpt from the Illinois Compiled statutes 105 ILCS 5/34-53:

Beginning on the effective date of this amendatory Act of the 99th General Assembly, for the purpose of making an employer contribution to the Public School Teachers' Pension and Retirement Fund of Chicago, the board may levy annually for taxable years prior to 2017, upon all taxable property located within the district, a tax at a rate not to exceed 0.383%. Beginning with the 2017 taxable year, for the purpose of making an employer contribution to the Public School Teachers' Pension and Retirement Fund of Chicago, the board may levy annually, upon all taxable property within the district, a tax at a rate of 0.567%. The proceeds from this additional tax shall be paid, as soon as possible after collection, directly to the Public School Teachers' Pension and Retirement Fund of Chicago and not to the Board of Education.

State Contributions under P.A. 100-0465

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/17-127 (d)(1)-(d)(2):

(d) In addition to any other contribution required under this Article, including the contribution required under subsection (c), the State shall contribute to the Fund the following amounts:

(1) For State fiscal year 2018, the State shall contribute \$221,300,000 for the employer normal cost for fiscal year 2018 and the amount allowed under paragraph (3) of Section 17-142.1 of this Code to defray health insurance costs. Funds to this paragraph (1) shall come from funds appropriated for Evidence-Based Funding pursuant to Section 18-8.15 of the School Code.

(2) Beginning in State fiscal year 2019, the State shall contribute for each fiscal year an amount to be determined by the Fund, equal to the employer normal cost for that fiscal year, plus the amount allowed pursuant to paragraph (3) of Section 17-142.1 to defray health insurance costs.

We calculated the required contribution based on the above legislation; the results are shown in the summary section of this report.



SECTION H

SUMMARY OF PLAN PROVISIONS

Summary of Plan Provisions (as of June 30, 2023)

It should be noted that the purpose of this section is to describe the benefit structures of CTPF for which actuarial values have been generated. Many portions of the defined plans are described in a manner which may not be legally complete or precise.

It is not our intent to provide an exhaustive description of all benefits provided under CTPF or the policies and procedures utilized by CTPF staff. A more precise description of the provisions of CTPF can be found in Illinois Compiled Statutes (ILCS) Chapter 40, Articles 1, 17 and 20. In all situations, the plan provisions described in the Statutes govern.



Summary of Plan Provisions (as of June 30, 2023)

Purpose

The Public School Teachers' Pension and Retirement Fund of Chicago, established in 1895 by the Illinois state legislature, is a defined benefit public employee retirement fund that provides retirement, survivor and disability benefits to certain teachers and employees of the Chicago Public Schools.

Administration

Responsibility for the operation of the Fund and the direction of its policies is vested in a Board of Trustees of 12 members. The 12-member Board of Trustees is comprised of six members elected by the teacher contributors, three members elected by the annuitants, one member elected by the principal contributors and two members are appointed by the Board of Education. The administration of the detailed affairs of the Fund is the responsibility of the Executive Director who is appointed by the Board of Trustees. Administrative policies and procedures are designed to ensure an accurate accounting of funds of CTPF and prompt payment of claims for benefits within the applicable statute.

Membership

Any teacher and certain other employees of the Chicago Public Schools, approved charter schools and the Chicago Teachers' Pension Fund are participants of CTPF. Members hired prior to January 1, 2011 participate under the Tier 1 benefit structure. Members hired on and after January 1, 2011 participate under the Tier 2 benefit structure.

Membership Service

Membership service includes all service rendered while a member of the Fund for which credit is allowable. Contributors to the Fund cannot earn more than one year of service credit per fiscal year. Validated service within a fiscal year is determined on a schedule of 170 days.

Member Contributions

Members are required to contribute a percentage of salary as their share of meeting the cost of the various benefits. The total contribution rate of 9.0 percent of salary consists of 7.5 percent towards the retirement pension, 1.0 percent towards the survivor pension and 0.5 percent towards the post-retirement increase.

As of September 1981, the Board of Education has been paying 7.0 percent of the required teacher contributions for Chicago public school teachers. Charter school contributions may be contributed at various rates by the employers and teachers.

As a result of the collective bargaining agreement between the Board of Education of the City of Chicago and the Chicago Teachers Union, Local No. 1, American Federation of Teachers, AFL-CIO, which became effective December 7, 2016, teachers hired on and after January 1, 2017 will no longer receive the pension pick-up of 7.0 percent from the Board of Education.



Summary of Plan Provisions (as of June 30, 2023)

Retirement Pension

Qualification of Member

A member is eligible for a retirement pension after (1) completing 20 years of validated service, with the pension payable at age 55 or older, or (2) after completing five years of service with the pension payable at age 62 or older.

Amount of Pension

The pension is based on the member's final average salary and the number of years of service credit that has been established.

Final Average Salary is the average of the highest rates of salary for any four consecutive years of validated service within the last 10 years.

For service earned before July 1, 1998, the amount of the service retirement pension is 1.67 percent of final average salary for the first 10 years, 1.90 percent for each of the next 10 years, 2.10 percent for each of the following 10 years and 2.30 percent for each year above 30. For service earned after June 30, 1998, the amount of the service retirement pension is 2.2 percent of final average salary for each year of service.

Service earned before July 1, 1998, can be upgraded to the 2.2 percent formula through the payment of additional employee contributions of 1 percent of the teacher's highest salary within the last four years for each year of prior service, up to a maximum of 20 percent, which upgrades all service years. The number of years for which contributions are required is reduced by one for each three full years of service after June 30, 1998. No contribution is required if the member has at least 30 years of service.

The maximum pension payable is 75 percent of final average salary or \$1,500 per month, whichever is greater.

Annual Increases in Pension

Postretirement increases of 3.0 percent of the current pension (i.e., increases are compounded) are granted to members effective each January 1, occurring on or after the first anniversary of the pension or the 61st birthday, whichever is later.

Reductions

Except for retirement after 34 years of service, the retirement pension is reduced by $\frac{1}{2}$ of 1.0 percent for each month the member is under age 60.



Summary of Plan Provisions (as of June 30, 2023)

Survivors Annuity

Qualification of Survivor

A surviving spouse or unmarried minor children are entitled to a pension upon the death of a member while in service or in retirement. Survivor's pensions are conditioned upon marriage having been in effect at least one year prior to death.

Amount of Pension

The minimum survivor's pension upon death of an active or retired member is 50 percent of the deceased member's pension at the date of death. If the surviving spouse is under age 50, and no unmarried minor children under age 18 survive, payment of the survivor's pension is deferred until age 50.

Annual Increases in Pension

Survivor's pensions are subject to annual increases of 3.0 percent per year based on the current amount of pension starting the later of when the member would have attained age 61 and receipt of one year's pension payments.

Death Benefits

Amount and Duration of Payment

Upon the death of a member in service, a refund equal to the total contributions less contributions for survivor's pensions is payable without interest to a designated beneficiary or the estate of the member. The death benefit payable is the lesser of \$10,000 and salary earned for the most recent six months.

Upon death of a member after retirement, the death benefit consists of the excess, if any, of the total contributions over the total pension payments paid to the member or his/her beneficiary. Furthermore, the death benefit is the lesser of \$10,000 and the most recent salary earned for a six-month period less 20% of the death benefit for each year that the member has been on pension, to a minimum of \$5,000.

Non-Duty Disability Benefits

Qualification and Amount of Payment

A disability retirement pension is payable in the event of total or permanent disability with 10 or more years of service, irrespective of age. The benefit is the unreduced service retirement pension. However, if the participant has 20 or more and less than 25 years of service and is under age 55, the benefit is reduced by $\frac{1}{2}$ of 1.0 percent for each month that the age of the member is below age 55 down to a minimum age of 50. If total service is 20 years or more and the member has attained age 55, or after 25 years of service, regardless of age, the retirement pension is payable without reduction.



Summary of Plan Provisions (as of June 30, 2023)

Annual Increases in Annuity

Postretirement increases of 3.0 percent of the current pension (i.e., increases are compounded) are granted to members effective each January 1, occurring on or after the first anniversary of the pension or the 61st birthday, whichever is later.

Duty Disability Benefits

Qualification and Amount of Payment

A disability retirement pension is payable in the event of total or permanent disability from an injury that occurred while working. The disability benefit provided is 75 percent of final average salary until attainment of age 65. At age 65, the disabled retiree shall receive a service retirement pension, which includes service earned while disabled.

Annual Increases in Annuity

Postretirement increases of 3.0 percent of the current pension (i.e., increases are compounded) are granted to members effective each January 1, occurring on or after the first anniversary of the pension or the 61st birthday, whichever is later.

Refunds

Upon termination of employment, a member may obtain a refund of his/her total contributions and those contributions made on his/her behalf, without interest.

A member who is unmarried at the date of retirement is entitled to a refund of the full amount contributed for the survivor's pension, without interest.

Reversionary Pension

A member can provide a reversionary pension for a surviving beneficiary by having his/her current pension reduced. If the beneficiary survives the date of the member's retirement, but does not survive the retired member, the member's pension shall be restored to the full amount of pension in place prior to choosing the reversionary pension.

Health Insurance Subsidy

The board may pay each recipient of a retirement, disability or survivor's pension an amount to be determined by the board, which shall represent partial reimbursement for the cost of the recipient's health insurance coverage, with the total amount of payment not to exceed \$65,000,000, or 75 percent of the total cost of health insurance coverage in any year.



Summary of Plan Provisions (as of June 30, 2023)

Retirement Systems Reciprocal Act

The Fund complies with the Retirement Systems Reciprocal Act (Chapter 40 Act 5 Article 20 of the Illinois Compiled Statutes) to provide reciprocal benefits if a member has service credit for other public employment in Illinois.

Provisions Applicable to Members Hired on or after January 1, 2011, as a result of Public Act 96-0889

Final Average Compensation

Based on last eight years of service and may not exceed \$106,800, as automatically increased by the lesser of 3 percent or one-half of the annual increase in the consumer price index-u during the preceding 12-month calendar year.

Retirement Eligibility

Normal retirement – 67 years old with 10 years of service.

Early Retirement – 62 years old with 10 years of service with a 6.0 percent per year reduction in benefit for each year age is under 67.

Annual Increases in Annuity

Annual increases begin at the later of the first anniversary of retirement or age 67. The annual increases are equal to the lesser of 3.0 percent or one-half of the annual increase in the consumer price index-u during the preceding 12-month calendar year and are not compounded.

Survivor Benefits

Benefit equal to 66.67 percent of the earned retirement benefit at death. Survivor benefits are increased by the lesser of 3.0 percent or one-half of the annual increase in the consumer price index-u during the preceding 12-month calendar year and are not compounded.



Summary of Plan Provisions (as of June 30, 2023)

Salary and COLA Development for Members Hired on or after January 1, 2011

Year Ending	CPI-U	1/2 CPI-U	COLA	Maximum Annual Pensionable Earnings
2011			3.00%	\$106,800.00
2012	3.90%	1.95%	1.95%	\$108,882.60
2013	2.00%	1.00%	1.00%	\$109,971.43
2014	1.20%	0.60%	0.60%	\$110,631.26
2015	1.70%	0.85%	0.85%	\$111,571.63
2016	0.00%	0.00%	0.00%	\$111,571.63
2017	1.50%	0.75%	0.75%	\$112,408.42
2018	2.20%	1.10%	1.10%	\$113,644.91
2019	2.30%	1.15%	1.15%	\$114,951.83
2020	1.70%	0.85%	0.85%	\$115,928.92
2021	1.40%	0.70%	0.70%	\$116,740.42
2022	5.40%	2.70%	2.70%	\$119,892.41
2023	8.20%	4.10%	3.00%	\$123,489.18

SECTION I

GLOSSARY OF TERMS

Glossary of Terms

<i>Actuarial Accrued Liability (“AAL”)</i>	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
<i>Actuarial Assumptions</i>	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
<i>Actuarial Cost Method</i>	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of future Normal Costs and the Actuarial Accrued Liability.
<i>Actuarial Equivalent</i>	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
<i>Actuarial Present Value (“APV”)</i>	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
<i>Actuarial Present Value of Future Benefits (“APVFB”)</i>	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
<i>Actuarial Valuation</i>	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB No. 67, such as the Funded Ratio and the Actuarially Determined Contribution (“ADC”).
<i>Actuarial Value of Assets (“AVA”)</i>	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio or contribution requirement.

Glossary of Terms

<i>Actuarially Determined Contribution (“ADC”)</i>	The employer’s periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and Amortization Payment.
<i>Amortization Method</i>	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.
<i>Amortization Payment</i>	That portion of the plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
<i>Amortization Period</i>	The period used in calculating the Amortization Payment.
<i>Closed Amortization Period</i>	A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.
<i>Employer Normal Cost</i>	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
<i>Equivalent Single Amortization Period</i>	For plans that do not establish separate amortization bases (separate components of the UAAL), this is the same as the Amortization Period. For plans that do establish separate amortization bases, this is the period over which the UAAL would be amortized if all amortization bases were combined upon the current UAAL payment.
<i>Experience Gain/Loss</i>	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge which may be larger or smaller than projected. Gains are due to favorable experience; e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience; i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.

Glossary of Terms

<i>Funded Ratio</i>	The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability.
<i>GASB</i>	Governmental Accounting Standards Board.
<i>GASB Statement No. 67 and GASB Statement No. 68</i>	These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. GASB Statement No. 68, which replaced GASB Statement No. 27 effective with the fiscal year ending June 30, 2015, sets the accounting rules for the employers that sponsor or contribute to public retirement systems. GASB Statement No. 67, which replaced GASB Statement No. 25 effective with fiscal year ending June 30, 2014, sets the rules for the systems themselves.
<i>Normal Cost</i>	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
<i>Open Amortization Period</i>	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.
<i>Unfunded Actuarial Accrued Liability</i>	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
<i>Valuation Date</i>	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.

SECTION J

ADDITIONAL PROJECTION DETAILS

Table 21

Additional Projection Details — Actuarial Accrued Liability (\$ in Millions)

Fiscal Year Ending	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries & Deferreds	Actives	Total
2023	\$17,132.31	\$672.23	\$7,910.24	\$456.21	\$0.00	\$17,804.54	\$8,366.45	\$26,171.00
2024	16,608.05	688.36	8,813.52	549.33	0.00	17,296.41	9,362.86	26,659.26
2025	16,052.98	704.89	9,741.96	646.93	11.05	16,757.88	10,399.93	27,157.81
2026	15,469.66	721.56	10,692.63	751.13	31.76	16,191.22	11,475.52	27,666.74
2027	14,860.60	738.15	11,661.32	864.03	61.72	15,598.75	12,587.06	28,185.81
2028	14,228.35	754.42	12,641.69	987.11	100.61	14,982.77	13,729.41	28,712.18
2029	13,575.79	770.23	13,627.61	1,122.42	149.09	14,346.02	14,899.12	29,245.14
2030	12,905.96	785.46	14,613.47	1,270.88	207.14	13,691.42	16,091.50	29,782.92
2031	12,222.21	799.64	15,593.99	1,433.45	275.45	13,021.85	17,302.89	30,324.74
2032	11,528.13	812.63	16,563.01	1,610.98	355.64	12,340.77	18,529.62	30,870.39
2033	10,827.55	823.68	17,513.14	1,801.42	448.55	11,651.23	19,763.11	31,414.34
2034	10,124.53	857.30	18,436.02	2,004.03	558.77	10,981.83	20,998.83	31,980.66
2035	9,423.33	890.10	19,323.05	2,219.57	687.65	10,313.42	22,230.28	32,543.70
2036	8,728.29	921.76	20,165.41	2,448.70	836.65	9,650.06	23,450.76	33,100.81
2037	8,043.86	952.16	20,953.60	2,691.95	1,007.31	8,996.02	24,652.86	33,648.88
2038	7,374.44	981.29	21,678.29	2,949.80	1,201.33	8,355.73	25,829.42	34,185.15
2039	6,724.29	1,008.47	22,330.87	3,222.47	1,420.43	7,732.76	26,973.78	34,706.54
2040	6,097.46	1,032.92	22,902.84	3,510.40	1,666.45	7,130.38	28,079.69	35,210.07
2041	5,497.64	1,054.24	23,384.50	3,813.63	1,941.31	6,551.88	29,139.43	35,691.32
2042	4,928.07	1,072.18	23,767.56	4,131.59	2,247.13	6,000.25	30,146.28	36,146.54
2043	4,391.46	1,086.76	24,047.87	4,463.52	2,586.11	5,478.22	31,097.50	36,575.72
2044	3,889.91	1,097.32	24,223.15	4,808.15	2,960.40	4,987.23	31,991.70	36,978.93
2045	3,424.86	1,103.67	24,293.84	5,164.43	3,372.22	4,528.53	32,830.49	37,359.02
2046	2,997.12	1,105.79	24,263.97	5,529.68	3,823.66	4,102.91	33,617.31	37,720.22
2047	2,606.82	1,103.12	24,138.93	5,900.62	4,316.97	3,709.94	34,356.52	38,066.46
2048	2,253.54	1,096.39	23,924.57	6,274.41	4,854.33	3,349.94	35,053.32	38,403.25
2049	1,936.31	1,085.74	23,627.15	6,646.91	5,437.91	3,022.06	35,711.97	38,734.03
2050	1,653.71	1,071.62	23,253.08	7,011.89	6,069.89	2,725.33	36,334.87	39,060.19
2051	1,403.93	1,054.37	22,808.53	7,361.63	6,752.55	2,458.30	36,922.71	39,381.01
2052	1,184.89	1,034.65	22,298.78	7,688.90	7,488.01	2,219.54	37,475.69	39,695.23
2053	994.30	1,012.39	21,728.08	7,987.57	8,278.16	2,006.70	37,993.80	40,000.50
2054	829.77	987.68	21,100.23	8,253.26	9,124.65	1,817.45	38,478.13	40,295.58
2055	688.83	960.37	20,419.04	8,480.46	10,028.53	1,649.21	38,928.02	40,577.23
2056	569.05	930.59	19,688.41	8,663.39	10,990.64	1,499.64	39,342.45	40,842.09
2057	468.05	898.41	18,912.55	8,798.45	12,011.35	1,366.46	39,722.35	41,088.81
2058	383.55	864.05	18,095.98	8,883.55	13,090.46	1,247.61	40,069.99	41,317.60
2059	313.41	827.81	17,243.63	8,919.45	14,227.10	1,141.22	40,390.18	41,531.40



Table 22
Additional Projection Details — Present Value of Future Benefits
(\$ in Millions)

Fiscal Year Ending	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries & Deferreds	Actives	Total
2023	\$17,132.31	\$672.23	\$12,015.73	\$1,957.44	\$0.00	\$17,804.54	\$13,973.18	\$31,777.72
2024	16,608.05	688.36	12,756.45	2,047.91	147.18	17,296.41	14,951.54	32,247.95
2025	16,052.98	704.89	13,512.56	2,145.21	311.20	16,757.88	15,968.97	32,726.85
2026	15,469.66	721.56	14,281.43	2,249.78	488.85	16,191.22	17,020.06	33,211.28
2027	14,860.60	738.15	15,059.78	2,362.80	679.23	15,598.75	18,101.81	33,700.56
2028	14,228.35	754.42	15,842.59	2,485.07	884.12	14,982.77	19,211.78	34,194.55
2029	13,575.79	770.23	16,625.15	2,617.98	1,101.96	14,346.02	20,345.08	34,691.10
2030	12,905.96	785.46	17,403.00	2,761.81	1,333.76	13,691.42	21,498.57	35,189.99
2031	12,222.21	799.64	18,172.00	2,917.05	1,581.12	13,021.85	22,670.18	35,692.03
2032	11,528.13	812.63	18,927.17	3,084.23	1,845.72	12,340.77	23,857.12	36,197.88
2033	10,827.55	823.68	19,662.57	3,261.04	2,128.86	11,651.23	25,052.47	36,703.70
2034	10,124.53	857.30	20,371.63	3,446.36	2,434.18	10,981.83	26,252.16	37,233.99
2035	9,423.33	890.10	21,047.68	3,640.52	2,763.70	10,313.42	27,451.90	37,765.32
2036	8,728.29	921.76	21,683.95	3,843.84	3,118.73	9,650.06	28,646.52	38,296.58
2037	8,043.86	952.16	22,273.26	4,056.51	3,500.67	8,996.02	29,830.45	38,826.47
2038	7,374.44	981.29	22,808.46	4,278.73	3,910.54	8,355.73	30,997.73	39,353.46
2039	6,724.29	1,008.47	23,283.79	4,511.44	4,349.78	7,732.76	32,145.01	39,877.78
2040	6,097.46	1,032.92	23,692.51	4,754.87	4,819.53	7,130.38	33,266.91	40,397.29
2041	5,497.64	1,054.24	24,027.15	5,008.91	5,322.71	6,551.88	34,358.76	40,910.64
2042	4,928.07	1,072.18	24,281.35	5,273.04	5,860.07	6,000.25	35,414.47	41,414.72
2043	4,391.46	1,086.76	24,451.38	5,546.66	6,432.17	5,478.22	36,430.21	41,908.43
2044	3,889.91	1,097.32	24,534.86	5,828.70	7,040.36	4,987.23	37,403.91	42,391.15
2045	3,424.86	1,103.67	24,531.26	6,118.31	7,684.11	4,528.53	38,333.68	42,862.21
2046	2,997.12	1,105.79	24,442.49	6,413.30	8,366.12	4,102.91	39,221.92	43,324.83
2047	2,606.82	1,103.12	24,271.54	6,711.19	9,086.99	3,709.94	40,069.71	43,779.66
2048	2,253.54	1,096.39	24,021.86	7,009.66	9,848.12	3,349.94	40,879.65	44,229.58
2049	1,936.31	1,085.74	23,697.66	7,305.36	10,652.23	3,022.06	41,655.25	44,677.31
2050	1,653.71	1,071.62	23,303.49	7,593.45	11,502.77	2,725.33	42,399.71	45,125.04
2051	1,403.93	1,054.37	22,844.02	7,867.95	12,401.40	2,458.30	43,113.37	45,571.67
2052	1,184.89	1,034.65	22,323.34	8,123.21	13,349.33	2,219.54	43,795.88	46,015.42
2053	994.30	1,012.39	21,744.75	8,354.57	14,348.22	2,006.70	44,447.55	46,454.24
2054	829.77	987.68	21,111.28	8,558.50	15,396.28	1,817.45	45,066.07	46,883.52
2055	688.83	960.37	20,426.15	8,729.77	16,495.32	1,649.21	45,651.24	47,300.45
2056	569.05	930.59	19,692.84	8,863.01	17,645.73	1,499.64	46,201.59	47,701.23
2057	468.05	898.41	18,915.19	8,954.82	18,847.64	1,366.46	46,717.65	48,084.11
2058	383.55	864.05	18,097.48	9,003.16	20,100.85	1,247.61	47,201.49	48,449.10
2059	313.41	827.81	17,244.43	9,008.63	21,404.55	1,141.22	47,657.61	48,798.83



Table 23
Additional Projection Details — Benefit Payments Including
Administrative Expenses and Health Insurance Subsidy
(\$ in Millions)

Fiscal Year Ending	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries & Deferreds	Actives	Total
2024	\$1,587.10	\$26.71	\$78.64	\$61.04	\$0.00	\$1,613.81	\$139.68	\$1,753.49
2025	1,583.92	27.33	108.29	58.15	8.43	1,611.26	174.87	1,786.12
2026	1,576.34	28.25	141.74	55.95	15.96	1,604.59	213.65	1,818.24
2027	1,564.54	29.37	179.23	53.35	23.79	1,593.91	256.36	1,850.28
2028	1,548.64	30.73	222.21	50.69	32.14	1,579.37	305.05	1,884.42
2029	1,528.52	32.19	270.02	47.43	40.60	1,560.71	358.05	1,918.76
2030	1,504.14	33.76	322.15	44.68	49.69	1,537.90	416.52	1,954.42
2031	1,475.44	35.73	378.03	42.25	59.00	1,511.17	479.28	1,990.45
2032	1,442.38	37.77	438.18	40.05	67.98	1,480.16	546.21	2,026.37
2033	1,404.97	40.48	503.23	40.86	77.64	1,445.45	621.73	2,067.18
2034	1,363.20	19.30	573.42	43.35	84.47	1,382.50	701.24	2,083.75
2035	1,317.16	22.22	648.40	46.07	91.76	1,339.38	786.23	2,125.61
2036	1,267.02	25.38	727.89	49.02	99.71	1,292.40	876.62	2,169.01
2037	1,212.97	28.60	811.82	52.32	108.47	1,241.57	972.60	2,214.17
2038	1,155.32	31.74	899.74	56.01	118.01	1,187.06	1,073.76	2,260.82
2039	1,094.47	35.47	989.83	59.36	126.10	1,129.95	1,175.30	2,305.24
2040	1,030.93	39.83	1,082.73	63.17	134.57	1,070.76	1,280.46	2,351.22
2041	965.28	44.40	1,178.70	67.75	143.39	1,009.68	1,389.85	2,399.52
2042	898.18	49.02	1,276.17	73.49	152.73	947.20	1,502.39	2,449.59
2043	830.37	53.41	1,372.27	80.44	162.48	883.78	1,615.19	2,498.97
2044	762.60	58.22	1,465.49	88.98	172.67	820.82	1,727.14	2,547.96
2045	695.64	62.97	1,553.90	98.85	183.36	758.60	1,836.11	2,594.71
2046	630.21	67.45	1,635.13	111.30	194.48	697.66	1,940.90	2,638.56
2047	566.97	72.24	1,708.29	126.44	206.20	639.21	2,040.93	2,680.14
2048	506.52	76.00	1,773.09	143.97	218.56	582.52	2,135.62	2,718.14
2049	449.34	79.38	1,829.00	164.78	231.70	528.71	2,225.48	2,754.19
2050	395.80	82.07	1,875.93	190.06	245.87	477.88	2,311.86	2,789.73
2051	346.20	84.21	1,914.02	220.59	261.35	430.40	2,395.96	2,826.36
2052	300.68	85.52	1,944.12	255.69	278.32	386.19	2,478.13	2,864.32
2053	259.31	86.74	1,967.24	294.08	297.02	346.04	2,558.35	2,904.39
2054	222.06	87.71	1,983.81	334.39	317.76	309.77	2,635.96	2,945.73
2055	188.83	88.67	1,993.86	378.09	340.72	277.50	2,712.67	2,990.17
2056	159.45	89.35	1,997.32	424.98	366.30	248.80	2,788.60	3,037.41
2057	133.71	89.80	1,994.03	472.83	394.91	223.51	2,861.76	3,085.27
2058	111.36	89.87	1,983.82	520.10	426.95	201.23	2,930.88	3,132.11
2059	92.13	89.54	1,966.53	564.11	462.97	181.67	2,993.61	3,175.28



Table 24

Additional Projection Details — Active Population, Covered Payroll, Employee Contributions and Normal Costs (\$ in Millions)

Fiscal Year Ending	Tier 1 Active Members				Current Tier 2 Active Members				Future Tier 2 Active Members			
	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost
2023	16,193	\$1,646.68	\$148.20	\$455.69	15,997	\$1,057.07	\$95.14	\$122.54	0	\$0.00	\$0.00	\$0.00
2024	15,109	1,611.15	145.00	452.83	14,155	1,007.43	90.67	118.11	2,926	174.61	15.72	19.13
2025	14,179	1,577.81	142.00	449.34	12,924	979.70	88.17	116.18	5,087	316.21	28.46	35.34
2026	13,291	1,541.91	138.77	444.42	11,945	961.43	86.53	115.43	6,954	450.16	40.51	50.81
2027	12,439	1,502.80	135.25	437.70	11,142	949.67	85.47	115.54	8,609	580.08	52.21	65.95
2028	11,601	1,458.38	131.25	429.15	10,465	942.47	84.82	116.37	10,124	709.56	63.86	81.23
2029	10,798	1,410.50	126.94	419.11	9,901	939.93	84.59	117.85	11,491	837.47	75.37	96.55
2030	10,021	1,359.02	122.31	407.72	9,424	940.44	84.64	119.73	12,745	965.40	86.89	112.15
2031	9,272	1,304.39	117.39	394.97	9,001	941.39	84.72	121.79	13,917	1,095.07	98.56	128.33
2032	8,542	1,245.96	112.14	380.69	8,616	941.92	84.77	123.93	15,032	1,228.17	110.53	145.27
2033	7,831	1,183.84	106.55	364.63	8,259	941.21	84.71	126.22	16,100	1,365.29	122.88	163.02
2034	7,136	1,117.01	100.53	346.74	7,953	939.31	84.54	128.70	17,101	1,504.89	135.44	181.45
2035	6,460	1,046.70	94.20	327.06	7,669	934.56	84.11	131.25	18,062	1,648.70	148.38	200.78
2036	5,799	972.20	87.50	305.46	7,403	926.45	83.38	133.79	18,988	1,797.19	161.75	221.14
2037	5,160	894.53	80.51	282.20	7,149	915.94	82.43	136.31	19,881	1,950.02	175.50	242.57
2038	4,546	813.98	73.26	256.77	6,910	904.28	81.39	137.80	20,734	2,106.15	189.55	262.74
2039	3,961	732.41	65.92	230.45	6,678	891.16	80.20	139.19	21,551	2,265.20	203.87	283.49
2040	3,407	650.09	58.51	202.89	6,457	877.87	79.01	140.49	22,326	2,426.38	218.37	304.77
2041	2,874	564.74	50.83	174.48	6,235	862.82	77.65	141.39	23,081	2,591.49	233.23	326.80
2042	2,383	481.82	43.36	146.89	6,009	845.59	76.10	141.85	23,799	2,758.92	248.30	349.41
2043	1,941	403.57	36.32	120.67	5,778	826.46	74.38	141.80	24,471	2,927.65	263.49	372.48
2044	1,547	330.31	29.73	96.70	5,539	804.99	72.45	141.24	25,104	3,097.44	278.77	395.95
2045	1,214	266.14	23.95	76.04	5,301	782.23	70.40	139.94	25,676	3,265.55	293.90	419.52
2046	938	211.18	19.01	58.86	5,038	754.57	67.91	137.59	26,213	3,433.86	309.05	443.39
2047	718	165.94	14.93	44.97	4,768	724.42	65.20	134.53	26,704	3,600.73	324.07	467.36
2048	542	128.68	11.58	33.91	4,491	691.98	62.28	130.54	27,157	3,766.02	338.94	491.43
2049	405	98.84	8.90	25.30	4,193	655.13	58.96	125.07	27,592	3,931.05	353.79	515.75
2050	299	75.02	6.75	18.65	3,861	611.31	55.02	117.84	28,030	4,097.68	368.79	540.53
2051	218	56.24	5.06	13.57	3,502	561.78	50.56	109.14	28,470	4,265.11	383.86	565.67
2052	157	41.59	3.74	9.73	3,128	508.33	45.75	99.21	28,905	4,432.49	398.92	591.05
2053	111	30.22	2.72	6.88	2,746	451.77	40.66	88.74	29,333	4,599.89	413.99	616.61
2054	77	21.68	1.95	4.78	2,391	397.84	35.81	78.41	29,722	4,763.37	428.70	641.87
2055	52	15.15	1.36	3.24	2,050	345.37	31.08	68.11	30,087	4,924.54	443.21	666.95
2056	35	10.33	0.93	2.14	1,730	294.76	26.53	58.03	30,426	5,082.87	457.46	691.72
2057	22	6.78	0.61	1.35	1,432	246.79	22.21	48.40	30,736	5,237.94	471.41	716.08
2058	13	4.23	0.38	0.82	1,158	201.86	18.17	39.36	31,019	5,389.52	485.06	739.88
2059	8	2.53	0.23	0.47	911	160.71	14.46	31.04	31,271	5,537.02	498.33	762.98

Employee contributions and normal cost are for the following year.

Normal cost includes administrative expenses and the health insurance subsidy of \$65 million annually.

Covered payroll is capped for members hired after December 31, 2010, as defined by Public Act 96-0889.

Fiscal year ending June 30, 2023 includes 366 members expected to be hired to replace retirements and terminations that occurred in June 2023.



APPENDIX 1: STRESS TESTING SCENARIOS



October 2, 2023

Board of Trustees
Public School Teachers' Pension and Retirement Fund of Chicago
203 North LaSalle Street, Suite 2600
Chicago, Illinois 60601

Re: Stress Testing Scenarios Based on Actuarial Valuation Results as of June 30, 2022

Dear Members of the Board:

At your request, we have performed stress testing of the required employer contributions and funded ratio for the Public School Teachers' Pension and Retirement Fund of Chicago (commonly known as the Chicago Teachers' Pension Fund, "CTPF" or "Fund") based on the results of the June 30, 2022 actuarial valuation. This stress testing was performed to illustrate the potential impact on total required employer contributions and the CTPF funded ratio in the event there is (1) a significant and/or sustained market downturn, (2) significant volatility in investment returns, (3) no future investment income, (4) investment returns that are 0.25 percent lower than the current actuarial assumption or (5) volatility in future active population.

GRS has prepared this analysis exclusively for the Trustees of the Chicago Teachers' Pension Fund; GRS is not responsible for reliance upon this report by any other party. This report may be provided to parties other than the CTPF only in its entirety and only with the permission of the CTPF and the Board.

Description of Investment Return Stress Testing Scenarios

GRS performed eight alternative investment return stress testing scenarios. A summary of the results of these eight scenarios can be found in Exhibit I(A) and I(B) and the details of the results of these scenarios can be found in Exhibits II through IX. Based on FY 2023 Fund rate of return information provided to us by CTPF staff, we used a rate of return of 8.50 percent for FY 2023 for all alternative investment return scenarios. The alternative investment return stress testing scenarios are based on the Fund earning (on average) five different rates of investment return from fiscal year 2024 through fiscal year 2059. The five different rates of average investment returns are 1) earning the actuarial valuation assumption of 6.50 percent; 2) earning the 25th percentile return (2.58 percent) from the GRS 2022 Actuarial Assumptions Study; 3) earning the 40th percentile return (4.28 percent) from the GRS 2022 Actuarial Assumptions Study; 4) earning a static return of 0.00 percent (as requested by Senate Pension Chairman Martwick's proposal in February 2021); and 5) earning 6.25 percent (earning 25 basis points lower than the actuarial

assumption of 6.50 percent and reducing the discount rate used to determine liabilities to 6.25 percent as recommended in the 2021 State Actuary's Report). The percentile returns are the averages from the 12 investment consultants with shorter-term horizons (approximately 10 years) from the GRS 2022 Actuarial Assumptions Study dated September 8, 2022.

In order to demonstrate the risk and volatility of the returns, a static return scenario and a volatile return scenario were completed for the rates of return of 6.50 percent, 2.58 percent and 4.28 percent. We provided results assuming volatile returns with a geometric average equal to the actuarial valuation assumption, the 25th percentile return (75 percent probability that the average return will be higher than the 25th percentile return) and the 40th percentile return (60 percent probability that the average return will be higher than the 40th percentile return). Please note that each volatile return scenario represents one possible trial that generates the targeted average geometric return, and that another equally likely trial that produces the same targeted average geometric return could produce significantly different contribution and funded ratio patterns. Following is a summary table illustrating the alternate investment return stress testing scenarios:

Scenario	Return in FY 2023	Returns in FY 2024 through 2059	Basis for Returns
Baseline	6.50%	Static return of 6.50%	June 30, 2022 actuarial valuation results
1	8.50%	Static return of 6.50%	Valuation assumption
2	8.50%	Volatile returns, 36-year average of 6.50% from 2024 through 2059	Valuation assumption
3	8.50%	Static return of 2.58%	25 th percentile return
4	8.50%	Volatile returns, 36-year average of 2.58% from 2024 through 2059	25 th percentile return
5	8.50%	Static return of 4.28%	40 th percentile return
6	8.50%	Volatile returns, 36-year average of 4.28% from 2024 through 2059	40 th percentile return
7	8.50%	Static return of 0.00%	Senate Pension Chairman Martwick's proposal in February 2021
8	8.50%	Static return of 6.25%	Recommendation from 2021 State Actuary's Report; includes change in discount rate for determining liabilities

The future active population remains constant at 31,601 (31,261 active members as of June 30, 2022 plus 340 members assumed to be hired after June 30 to replace recent retirees) in these investment return stress testing scenarios.



Description of Future Active Population Stress Testing Scenarios

In addition to the eight investment return stress testing scenarios, GRS performed two additional stress testing scenarios based on variations in the future active population. A summary of these scenarios can be found in Exhibit I(B) and the details of the results of these scenarios can be found in Exhibits X and XI. Based on information reviewed during the most recent experience study, there was an average decrease in the CTPF active member population between 2007 and 2016 of approximately 1.2 percent per year. There was an additional decrease between 2016 to 2017 and increases between 2017 to 2018, 2018 to 2019, 2019 to 2020, 2020 to 2021 and 2021 to 2022. To demonstrate the risk and volatility associated with changes in the number of future active CTPF members, the table below illustrates the two additional future active population stress testing scenarios that we examined.

Scenario	Population Growth Assumption	Return in FY 2023	Returns in FY 2024 through 2059
9	1.0 percent reduction in the number of active members per year for the next 10 years, then remains constant	8.50%	Static return of 6.50%
10	1.0 percent increase in the number of active members per year for the next 10 years, then remains constant	8.50%	Static return of 6.50%

The future active population used in Scenarios 9 and 10 can be found in Exhibit I(B).

In each of these two scenarios, the discount rate used to determine liabilities remains at 6.50 percent, and average future uncapped salary growth or wage inflation remains at 2.75 percent per year.

The following graphs are included in the analysis:

- Exhibit XII: Projected Annual Rates of Return Used in the Stress Testing Scenarios
- Exhibit XIII: Projected Cumulative Rates of Return Used in the Volatile Stress Testing Scenarios
- Exhibit XIV(A): Projected Total Required Employer Contributions through 2059 under the Stress Testing Scenarios
- Exhibit XIV(B): Projected Total Required Employer Contributions through 2038 under the Stress Testing Scenarios
- Exhibit XV: Projected Funded Ratio under the Stress Testing Scenarios

GRS believes that these scenarios provide a reasonable illustration of the potential future volatility of investment returns, population and the resulting employer contribution requirements based on the



current actuarial assumptions and methods. These scenarios are not intended to represent the full range of all possible outcomes. Annual returns will likely be significantly different from the returns shown in Exhibit I(A) and the 36-year geometric average of actual returns from fiscal year 2024 through 2059 may be either higher or lower than the assumption of 6.50 percent.

Analysis of Stress Testing Scenario Results

Under the projected results from the actuarial valuation as of June 30, 2022, in which all future actuarial assumptions are assumed to be realized, the statutory contribution dollar amount increases at the rate of projected payroll growth. There is an increase in the funded ratio from 46.8 percent as of June 30, 2022, to 90 percent as of June 30, 2059, with a significant portion of the increase occurring after 2049. The funded ratio increases from about 46.8 percent to 64.0 percent between 2022 and 2049, and then to 90.0 percent by 2059.

The table on the next page presents a summary of the combined State and Board of Education contributions (“total required employer contributions”), and the present value of the total required employer contributions during the fiscal years 2023 through 2059 under the alternative stress testing scenarios. In addition, we have summarized the maximum and minimum percentage change in the annual total required employer contribution and the funded ratio for each scenario. The second table compares the results of the static and volatile return and the increasing and decreasing population scenarios.

	Contributions* FY 2023-2059 (\$ in Millions)		Annual Total Required Contribution \$ Change		Minimum Funded Ratio		Annual Funded Ratio (AVA) Change	
	Total	PV	Maximum	Maximum	(AVA)	(MVA)	Maximum	Maximum
	Contributions	Contributions ¹	Increase	Decrease			Increase	Decrease
Baseline (6.50% Static)	\$53,909.391	\$18,258.959	18.86%	-8.93%	45.44%	44.94%	3.49%	-1.51%
Scenario 1 (6.50% Static, 8.50% for FY 2023)	53,218.785	18,040.004	18.86%	-8.93%	46.08%	45.80%	3.43%	-1.31%
Scenario 2 (6.50% Volatile)	52,786.448	16,434.591	182.31%	-56.72%	46.67%	45.80%	9.24%	-5.67%
Scenario 3 (2.58% Static)	84,295.441	23,993.267	18.86%	-8.93%	34.64%	32.68%	9.57%	-2.18%
Scenario 4 (2.58% Volatile)	82,250.318	23,067.636	28.68%	-12.47%	37.89%	33.41%	9.15%	-3.11%
Scenario 5 (4.28% Static)	73,579.625	21,877.546	18.86%	-8.93%	41.06%	39.70%	7.53%	-1.81%
Scenario 6 (4.28% Volatile)	67,528.902	20,899.814	52.32%	-55.97%	40.66%	31.35%	7.69%	-2.68%
Scenario 7 (0.00% Static)	95,728.202	26,340.048	21.21%	-8.93%	27.03%	24.62%	11.67%	-2.73%
Scenario 8 (6.25% Static)	55,160.529	18,655.630	18.86%	-8.93%	44.60%	44.43%	3.45%	-1.58%
Scenario 9 (1% Population Decrease)	52,488.870	18,046.065	18.86%	-8.93%	46.30%	45.80%	3.48%	-1.09%
Scenario 10 (1% Population Increase)	53,920.045	18,032.727	18.86%	-8.93%	45.87%	45.80%	3.37%	-1.52%

	Total Contributions* FY 2023-2059 (\$ in Millions)			PV Contributions* FY 2023-2059 (\$ in Millions)		
	Static/ Decrease	Volatile/ Increase	Difference	Static/ Decrease	Volatile/ Increase	Difference
Baseline/Scenario 1 (6.50%)	\$53,909.391	\$ 53,218.785	\$ -690.606	\$ 18,258.959	\$ 18,040.004	\$ -218.955
Scenario 1/Scenario 2 (6.50%)	53,218.785	52,786.448	-432.337	18,040.004	16,434.591	-1,605.413
Scenario 3/Scenario 4 (2.86%)	84,295.441	82,250.318	-2,045.123	23,993.267	23,067.636	-925.631
Scenario 5/Scenario 6 (4.56%)	73,579.625	67,528.902	-6,050.723	21,877.546	20,899.814	-977.732
Scenario 7 (0.00%)	95,728.202	N/A	N/A	26,340.048	N/A	N/A
Scenario 8 (6.25%)	55,160.529	N/A	N/A	18,655.630	N/A	N/A
Scenario 9/Scenario 10 (Decrease/Increase)	52,488.870	53,920.045	1,431.175	18,046.065	18,032.727	-13.338
		Difference from	Difference from		Difference from	Difference from
	Scenario	Baseline	Scenario 1	Scenario	Baseline	Scenario 1
Scenario 1 (6.50% Static, 8.50% for FY 2023)	\$53,218.785	\$ -690.606	\$ 0.000	\$18,040.004	\$ -218.955	\$ 0.000
Scenario 2 (6.50% Volatile)	52,786.448	-1,122.943	-432.337	16,434.591	-1,824.368	-1,605.413
Scenario 3 (2.58% Static)	84,295.441	30,386.050	31,076.656	23,993.267	5,734.308	5,953.263
Scenario 4 (2.58% Volatile)	82,250.318	28,340.927	29,031.533	23,067.636	4,808.677	5,027.632
Scenario 5 (4.28% Static)	73,579.625	19,670.234	20,360.840	21,877.546	3,618.587	3,837.542
Scenario 6 (4.28% Volatile)	67,528.902	13,619.511	14,310.117	20,899.814	2,640.855	2,859.810
Scenario 7 (0.00% Static)	95,728.202	41,818.811	42,509.417	26,340.048	8,081.089	8,300.044
Scenario 8 (6.25% Static)	55,160.529	1,251.138	1,941.744	18,655.630	396.671	615.626
Scenario 9 (1% Population Decrease)	52,488.870	-1,420.521	-729.915	18,046.065	-212.894	6.061
Scenario 10 (1% Population Increase)	53,920.045	10.654	701.260	18,032.727	-226.232	-7.277

* Combined State and Board of Education contributions.

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year.

Based on the scenarios that are summarized on a previous page, the total required employer contributions and the present value of the total required employer contributions are dependent on both the annualized investment returns and the pattern of the investment returns. In the scenarios in which the average return is 6.50 percent (Baseline, Scenario 1 and Scenario 2), the total required employer contributions are approximately \$1.1 billion lower under Scenario 2 compared to the Baseline, with the present value of contributions about \$1.8 billion lower under Scenario 2 based on higher average returns during the earlier years of the projection period and lower average returns during the later years of the projection period. Due to the difference in the fiscal year 2023 return (6.50 percent in the Baseline and 8.50 percent in Scenario 1), the total required employer contributions are approximately \$0.7 billion lower under Scenario 1 compared to the Baseline, with the present value of contributions about \$0.2 billion lower under Scenario 1. Under Scenarios 3 and 4, in which the average annualized return is 2.58 percent, the volatile returns (in Scenario 3) result in lower total nominal contributions and lower contributions on a present value basis, when compared to the static return results (in Scenario 4). Under Scenarios 5 and 6, in which the average annualized return is 4.28 percent, the volatile returns result in



lower total nominal contributions and lower contributions on a present value basis, when compared to the static return results. Under Scenario 7, in which the annual return is 0.00 percent, the total required employer contributions are approximately \$41.8 billion higher compared to the Baseline, with the present value of contributions about \$8.1 billion higher compared to the Baseline. Under Scenario 8, in which the annual return is 6.25 percent and the assumed discount rate for determining liabilities is also 6.25 percent, the total required employer contributions are approximately \$1.3 billion higher compared to the Baseline, with the present value of contributions about \$0.4 billion higher compared to the Baseline.

For the period 2024 through 2059, an average annualized return approximately equal to 4.28 percent would result in higher required employer contributions (on a present value basis) of about \$4 billion (Scenario 5) to higher required employer contributions of about \$3 billion (Scenario 6), when compared to an average annualized return of 6.50 percent. For the same period, an average annualized return approximately equal to 2.58 percent would result in higher required employer contributions (on a present value basis) of about \$6 billion (Scenario 3), to higher required employer contributions of about \$5 billion (Scenario 4), when compared to an average annualized return of 6.50 percent.

Because of the volatility and deviation of the returns from the actuarial assumption of 6.50 percent, and the fact that the required employer contribution for fiscal year 2059 is determined based on the actuarial valuation results as of June 30, 2057, the funded ratios on both an actuarial value of assets basis and a market value of assets basis do not equal 90 percent in 2059. In Scenarios 3, 4, 5, 6 and 7, the funded ratio is less than 90 percent in 2059 and in Scenario 2, the funded ratio is greater than 90 percent.

Under Scenarios 9 and 10, in which the future active population decreases/increases 1.00 percent per year for 10 years then remains constant through 2059, the decreasing population scenario results in slightly lower total nominal contributions and slightly higher contributions on a present value basis, when compared to the Scenario 1 results (with the same returns). Incorporating an assumption of a decreasing active population is projected to result in an increase in the required employer contribution rate of about 3.00 percent of pay. In addition, the required employer contribution (as a dollar amount) is projected to be higher than Scenario 1 through the fiscal year 2030 contribution and lower thereafter. A decreasing active population (that is not reflected in the actuarial assumptions) is expected to result in losses due to the Fund receiving lower contributions than expected (based on lower payroll) and a continuously increasing employer rate as a percentage of payroll if the actual payroll is lower than had been projected. The increasing population scenario results in higher total nominal contributions and slightly lower contributions on a present value basis, when compared to the Scenario 1 results.

In each scenario, we have assumed that the State and the Board of Education will make the required contribution when due. However, some scenarios result in very high contributions for extended periods of time which may be difficult to afford. We are not able to opine on the sponsor's ability to pay such high contribution requirements.

Due to the volatility of the investment returns, the minimum market value of assets funded ratio during the projection period is less than 30 percent in Scenario 7, less than 40 percent in Scenarios 3, 4, 5 and 6,



and less than 50 percent in Scenarios 1, 2 and 8. (The minimum funded ratio is also less than 50 percent in Scenarios 9 and 10 and less than 50 percent in the baseline scenario.) The analysis does not consider the implication of potential required changes in asset allocation in order to maintain sufficient liquidity to make all required benefit payments or a change in the discount rate used to calculate liabilities if there were low expected future investment earnings.

The State and Board of Education each make employer contributions to CTPF.

- The State and Board of Education make additional contributions of 0.544 percent and 0.58 percent of payroll, respectively, except that no additional contributions are required if the Board has certified in the previous fiscal year that the Fund is at least 90 percent funded.
- Pursuant to P.A. 100-0465, the State shall contribute for each fiscal year an amount to be determined by the Fund, equal to the employer normal cost for that fiscal year, plus the retiree health insurance reimbursement subsidy.
- Pursuant to P.A. 96-0889, the Board of Education contribution requirement in each fiscal year shall be an amount determined by the Fund to be sufficient to bring the total assets of the Fund up to 90 percent of the total actuarial liabilities of the Fund by the end of fiscal year 2059. In making these determinations, the required Board of Education contribution shall be calculated each year as a level percentage of the applicable employee payrolls over the years remaining to and including fiscal year 2059 and shall be determined under the Projected Unit Credit actuarial cost method.

Following is a summary of the employer contributions by source. Year-by-year projections can be found in Exhibits III(B) through XI(B).

	Total Contributions FY 2023-2059 (\$ in Millions)				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
Baseline	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391
Scenario 1 (6.50% Static, 8.50% for FY 2023)	41,670.308	819.840	768.954	9,959.683	53,218.785
Scenario 2 (6.50% Volatile)	41,237.971	819.840	768.954	9,959.683	52,786.448
Scenario 3 (2.58% Static)	72,746.964	819.840	768.954	9,959.683	84,295.441
Scenario 4 (2.58% Volatile)	70,701.841	819.840	768.954	9,959.683	82,250.318
Scenario 5 (4.28% Static)	62,031.148	819.840	768.954	9,959.683	73,579.625
Scenario 6 (4.28% Volatile)	55,980.425	819.840	768.954	9,959.683	67,528.902
Scenario 7 (0.00% Static)	84,179.725	819.840	768.954	9,959.683	95,728.202
Scenario 8 (6.25% Static)	42,619.471	819.840	768.954	10,952.267	55,160.529
Scenario 9 (1% Population Decrease)	41,202.583	753.978	707.180	9,825.129	52,488.870
Scenario 10 (1% Population Increase)	42,090.471	891.643	836.300	10,101.632	53,920.045
Maximum Difference from Baseline	41,818.811	0.000	0.000	992.584	41,818.811

The additional State and Board of Education contributions are based on payroll, and therefore are affected by changes in payroll and if favorable returns result in the funded ratio exceeding 90 percent



(which results in the additional contributions ceasing). The State normal cost contributions are affected by the discount rate (investment return assumption) used to calculate liabilities and the projected number of active members, and therefore, are different for Scenarios 8 through 10 than for the other scenarios. Because the required Board of Education contributions are calculated as a level percentage of payroll in order to attain a funded ratio of 90 percent by the end of fiscal year 2059, they may change significantly due to the annual rates of investment return and demographic changes.

To the best of our knowledge, this actuarial statement is complete and accurate, fairly presents the actuarial position of CTPF as of June 30, 2022 under the alternative stress testing scenarios, and has been prepared in accordance with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions, contribution amounts or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements in this report.

This letter is part of the CTPF actuarial valuation as of June 30, 2022, and is subject to the same actuarial assumptions and disclosures as used in the presentation and the actuarial valuation report. The stress testing scenarios used future investment returns and active populations as shown in Exhibits I(A) and I(B). All other assumptions and methods were the same as those used in the CTPF actuarial valuation as of June 30, 2022, including the 6.50 percent discount rate used to determine liabilities in all stress testing scenarios except for Scenario 8, which uses a 6.25 percent discount rate to determine liabilities.

In each projection scenario, the total required employer contribution in each year has been projected as though an actuarial valuation in each of those years was performed. The market value of assets at each projected valuation is assumed to be based on the rates of investment return and total required employer contributions in the preceding years, according to the Scenario being modeled, and the valuation interest rate (6.50 percent for all scenarios except 6.25 percent for Scenario 8) going forward. At each projected actuarial valuation, an additional 20 percent of the investment gains and losses are recognized in the actuarial value of assets. This iterative process is followed for each projection year through 2059.

Numerous additional assumptions could be varied in stress testing scenarios, such as payroll growth, inflation and other member behavior. The stress testing analysis performed focused on variations in investment return, which is likely one of the most significant stressors on the Fund and population growth. GRS can perform additional stress testing scenarios at the Board's request.

The statutory funding method generates a contribution requirement that is less than a reasonable actuarially determined contribution. Meeting the statutory requirement does not mean that the



undersigned agree that adequate actuarial funding has been achieved; we recommend the adherence to a funding policy, such as the Board policy used to calculate the actuarially determined contribution under GASB Statement Nos. 67 and 68, which funds the normal cost of the plan, as well as an amortization payment that seeks to pay off any unfunded accrued liability over a closed period of 30 years, beginning July 1, 2013.

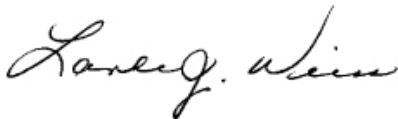
This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled. We are relying on the GRS actuaries and Internal Software, Training and Processes Team who developed and maintain the model.

The signing actuaries are independent of the plan sponsor.

Lance Weiss and Alex Rivera are Members of the American Academy of Actuaries ("MAAA") and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Sincerely,

Gabriel, Roeder, Smith & Company



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



Alex Rivera, FSA, EA, MAAA, FCA
Senior Consultant

LJW/AR:ah
Enclosure

cc: Kristen Brundirks, GRS



Public School Teachers' Pension and Retirement Fund of Chicago

Comparison of Assumed Investment Returns and Active Population Used in Stress Testing Scenarios and Total Required Employer Contributions and Funded Ratio Based on Actuarial Valuation as of June 30, 2022

Year	Baseline	Return for Population			Scenario 9 -			Scenario 10 -					Total Required Employer Contributions					Total Required Employer Contributions					Funded Ratio (AVA)				
		0.00% Return	6.25% Return	Change - 1% Decrease	Baseline - Population	Population decreases	Population increases	(\$ in millions)					(% of Payroll)														
		Scenario 7	Scenario 8	Scenario 9 / 1%	remains constant at	1% per year for 10	1% per year for 10	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
2023	8.50%	8.50%	8.50%	31,601	31,285	31,917	\$860.325	\$860.325	\$860.325	\$860.325	\$860.325	33.028%	33.028%	33.028%	33.028%	33.028%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2024	6.50%	0.00%	6.25%	31,601	30,972	32,236	1,022.547	1,022.547	1,022.547	1,022.547	1,022.547	38.194%	38.194%	38.194%	38.457%	37.934%	47.39%	46.69%	45.82%	47.39%	47.40%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2025	6.50%	0.00%	6.25%	31,601	30,662	32,559	1,033.795	1,033.795	1,072.897	1,096.239	974.145	37.687%	37.687%	39.112%	40.524%	35.023%	46.08%	43.96%	44.60%	46.30%	45.87%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2026	6.50%	0.00%	6.25%	31,601	30,356	32,884	1,057.870	1,105.101	1,097.883	1,113.659	1,004.123	37.687%	39.370%	39.112%	40.524%	35.023%	46.44%	42.36%	45.02%	46.85%	46.04%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2027	6.50%	0.00%	6.25%	31,601	30,052	33,213	1,081.856	1,176.110	1,122.776	1,130.477	1,034.608	37.687%	40.970%	39.112%	40.524%	35.023%	46.55%	40.08%	45.27%	47.25%	46.08%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2028	6.50%	0.00%	6.25%	31,601	29,752	33,545	1,105.538	1,246.463	1,147.354	1,146.409	1,065.464	37.687%	42.491%	39.112%	40.524%	35.023%	46.92%	37.98%	45.57%	47.67%	46.20%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2029	6.50%	0.00%	6.25%	31,601	29,454	33,881	1,128.934	1,316.205	1,171.635	1,161.506	1,096.717	37.687%	43.939%	39.112%	40.524%	35.023%	47.24%	36.08%	45.92%	48.12%	46.39%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2030	6.50%	0.00%	6.25%	31,601	29,160	34,219	1,152.282	1,385.744	1,195.866	1,175.963	1,128.637	37.687%	45.323%	39.112%	40.524%	35.023%	47.58%	34.37%	46.31%	48.57%	46.64%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2031	6.50%	0.00%	6.25%	31,601	28,868	34,562	1,175.628	1,455.206	1,220.095	1,189.870	1,161.247	37.687%	46.649%	39.112%	40.524%	35.023%	47.97%	32.86%	46.73%	49.02%	46.96%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2032	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,199.070	1,524.889	1,244.424	1,203.256	1,194.750	37.687%	47.928%	39.112%	40.524%	35.023%	48.39%	31.53%	47.19%	49.48%	47.34%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2033	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,222.752	1,595.992	1,269.001	1,216.280	1,229.241	37.687%	49.163%	39.112%	40.524%	35.023%	48.88%	30.43%	47.72%	49.97%	47.83%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2034	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,246.244	1,665.447	1,293.382	1,237.289	1,255.103	37.687%	50.364%	39.112%	40.524%	35.023%	49.40%	29.49%	48.29%	50.50%	48.36%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2035	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,269.568	1,736.146	1,317.589	1,258.056	1,280.865	37.687%	51.537%	39.112%	40.524%	35.023%	49.96%	28.71%	48.89%	51.05%	48.94%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2036	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,292.952	1,807.776	1,341.857	1,278.819	1,306.744	37.687%	52.693%	39.112%	40.524%	35.023%	50.57%	28.08%	49.54%	51.64%	49.56%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2037	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,316.210	1,880.145	1,365.995	1,299.374	1,332.574	37.687%	53.834%	39.112%	40.524%	35.023%	51.21%	27.60%	50.22%	52.26%	50.23%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2038	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,339.629	1,954.038	1,390.299	1,320.023	1,358.627	37.687%	54.972%	39.112%	40.524%	35.023%	51.90%	27.26%	50.96%	52.92%	50.96%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2039	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,363.133	2,029.535	1,414.693	1,340.706	1,384.818	37.687%	56.111%	39.112%	40.524%	35.023%	52.65%	27.07%	51.75%	53.63%	51.75%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2040	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,387.071	2,107.405	1,439.536	1,361.804	1,411.464	37.687%	57.259%	39.112%	40.524%	35.023%	53.45%	27.03%	52.60%	54.39%	52.60%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2041	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,411.775	2,188.549	1,465.174	1,383.680	1,438.868	37.687%	58.423%	39.112%	40.524%	35.023%	54.31%	27.13%	53.52%	55.20%	53.52%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2042	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,436.879	2,272.915	1,491.228	1,405.958	1,466.676	37.687%	59.615%	39.112%	40.524%	35.023%	55.25%	27.39%	54.50%	56.07%	54.51%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2043	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,463.100	2,362.042	1,518.441	1,429.423	1,495.536	37.687%	60.842%	39.112%	40.524%	35.023%	56.25%	27.81%	55.56%	57.02%	55.59%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2044	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,490.484	2,456.714	1,546.861	1,454.163	1,525.459	37.687%	62.118%	39.112%	40.524%	35.023%	57.35%	28.40%	56.70%	58.04%	56.75%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2045	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,518.867	2,557.559	1,576.317	1,480.035	1,556.254	37.687%	63.460%	39.112%	40.524%	35.023%	58.53%	29.20%	57.94%	59.15%	58.01%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2046	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,548.479	2,665.617	1,607.049	1,507.320	1,588.105	37.687%	64.876%	39.112%	40.524%	35.023%	59.82%	30.21%	59.29%	60.37%	59.38%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2047	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,578.995	2,782.027	1,638.719	1,535.688	1,620.690	37.687%	66.401%	39.112%	40.524%	35.023%	61.23%	31.46%	60.74%	61.69%	60.87%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2048	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,610.690	2,908.381	1,671.613	1,565.433	1,654.265	37.687%	68.050%	39.112%	40.524%	35.023%	62.76%	32.98%	62.33%	63.14%	62.48%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2049	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,642.994	3,045.742	1,705.140	1,595.964	1,688.280	37.687%	69.863%	39.112%	40.524%	35.023%	64.42%	34.80%	64.04%	64.73%	64.22%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2050	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,675.691	3,196.412	1,739.073	1,627.034	1,722.548	37.687%	71.889%	39.112%	40.524%	35.023%	66.22%	36.95%	65.90%	66.45%	66.09%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2051	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,708.392	3,362.813	1,773.011	1,658.212	1,750.720	37.687%	74.183%	39.112%	40.524%	35.023%	68.18%	39.47%	67.90%	68.33%	68.11%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2052	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,741.211	3,550.490	1,807.071	1,689.614	1,750.911	37.687%	76.847%	39.112%	40.524%	35.023%	70.28%	42.39%	70.05%	70.37%	70.28%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2053	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,773.956	3,765.255	1,841.054	1,721.020	1,824.950	37.687%	79.991%	39.112%	40.524%	35.023%	72.54%	45.78%	72.36%	72.57%	72.59%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2054	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,807.304	4,018.813	1,875.664	1,753.151	1,859.478	37.687%	83.803%	39.112%	40.524%	35.023%	74.98%	49.73%	74.84%	74.95%	75.06%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2055	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,841.306	4,328.086	1,910.952	1,786.064	1,894.538	37.687%	88.585%	39.112%	40.524%	35.023%	77.58%	54.37%	77.48%	77.53%	77.70%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2056	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,875.732	4,721.313	1,946.680	1,819.508	1,929.919	37.687%	94.860%	39.112%	40.524%	35.023%	80.38%	59.88%	80.31%	80.33%	80.70%	46.67%	46.67%	46.67%	46.67%	46.67%	46.67%
2057	6.50%	0.00%	6.25%	31,601	28,579	34,907	1,910.617	5,252.445	1,982.885	1,853.521	1,965.659	37.687%	103.605%	39.112%	40.524%	35											

Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 1 (8.50% Return in FY 2023, 6.50% Thereafter)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 1						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	6.50%	6.50%	1,022.547	47.39%	45.99%	18.86%	0.72%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	6.50%	6.50%	1,033.795	46.08%	46.17%	1.10%	-1.31%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	6.50%	6.50%	1,057.870	46.44%	46.38%	2.33%	0.36%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	6.50%	6.50%	1,081.856	46.65%	46.63%	2.27%	0.22%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	6.50%	6.50%	1,105.538	46.92%	46.92%	2.19%	0.26%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	6.50%	6.50%	1,128.934	47.24%	47.23%	2.12%	0.32%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	6.50%	6.50%	1,152.282	47.58%	47.58%	2.07%	0.35%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	6.50%	6.50%	1,175.628	47.97%	47.97%	2.03%	0.38%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	6.50%	6.50%	1,199.070	48.39%	48.39%	1.99%	0.42%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	6.50%	6.50%	1,222.752	48.88%	48.88%	1.97%	0.49%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	6.50%	6.50%	1,246.244	49.40%	49.40%	1.92%	0.53%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	6.50%	6.50%	1,269.568	49.96%	49.96%	1.87%	0.56%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	6.50%	6.50%	1,292.952	50.57%	50.57%	1.84%	0.60%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	6.50%	6.50%	1,316.210	51.21%	51.21%	1.80%	0.64%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	6.50%	6.50%	1,339.629	51.90%	51.90%	1.78%	0.69%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	6.50%	6.50%	1,363.133	52.65%	52.65%	1.75%	0.75%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	6.50%	6.50%	1,387.071	53.45%	53.45%	1.76%	0.80%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	6.50%	6.50%	1,411.775	54.31%	54.31%	1.78%	0.86%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	6.50%	6.50%	1,436.879	55.25%	55.25%	1.78%	0.93%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	6.50%	6.50%	1,463.104	56.25%	56.25%	1.82%	1.01%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	6.50%	6.50%	1,490.484	57.35%	57.35%	1.87%	1.09%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	6.50%	6.50%	1,518.867	58.53%	58.53%	1.90%	1.19%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	6.50%	6.50%	1,548.479	59.82%	59.82%	1.95%	1.29%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	6.50%	6.50%	1,578.995	61.23%	61.23%	1.97%	1.40%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	6.50%	6.50%	1,610.690	62.76%	62.76%	2.01%	1.53%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	6.50%	6.50%	1,642.994	64.42%	64.42%	2.01%	1.66%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	6.50%	6.50%	1,675.691	66.22%	66.22%	1.99%	1.80%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	6.50%	6.50%	1,708.392	68.18%	68.18%	1.95%	1.95%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	6.50%	6.50%	1,741.211	70.28%	70.28%	1.92%	2.10%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	6.50%	6.50%	1,773.956	72.54%	72.54%	1.88%	2.26%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	6.50%	6.50%	1,807.304	74.98%	74.98%	1.88%	2.43%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	6.50%	6.50%	1,841.306	77.58%	77.58%	1.88%	2.61%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	6.50%	6.50%	1,875.732	80.38%	80.38%	1.87%	2.79%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	6.50%	6.50%	1,910.617	83.37%	83.37%	1.86%	2.99%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	6.50%	6.50%	1,945.746	86.57%	86.57%	1.84%	3.20%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	6.50%	6.50%	1,981.165	90.00%	90.00%	1.82%	3.43%
Total Contributions FY 2023-2059		\$53,909.391							\$53,218.785				
Total Present Value FY 2023-2059¹		\$18,258.959							\$18,040.004				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$ -690.606				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ -218.955				
Maximum Annual Increase					18.86%	3.49%						18.86%	3.43%
Maximum Annual Decrease					-8.93%	-1.51%						-8.93%	-1.31%

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a discount rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 1 (8.50% Return in FY 2023, 6.50% Thereafter)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2022 Valuation Baseline					Stress Test Scenario 1					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.307	15.528	14.564	308.147	1,022.547	0.000	0.000	0.000	0.000	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	690.922	15.910	14.923	312.040	1,033.795	-13.907	0.000	0.000	0.000	-13.907
2026	725.432	16.281	15.270	315.119	1,072.101	711.201	16.281	15.270	315.119	1,057.870	-14.231	0.000	0.000	0.000	-14.231
2027	746.904	16.650	15.616	317.239	1,096.409	732.350	16.650	15.616	317.239	1,081.856	-14.554	0.000	0.000	0.000	-14.554
2028	768.955	17.014	15.958	318.483	1,120.410	754.083	17.014	15.958	318.483	1,105.538	-14.872	0.000	0.000	0.000	-14.872
2029	791.592	17.374	16.296	318.859	1,144.121	776.404	17.374	16.296	318.859	1,128.934	-15.187	0.000	0.000	0.000	-15.187
2030	814.956	17.734	16.633	318.461	1,167.783	799.455	17.734	16.633	318.461	1,152.282	-15.501	0.000	0.000	0.000	-15.501
2031	838.952	18.093	16.970	317.428	1,191.443	823.137	18.093	16.970	317.428	1,175.628	-15.815	0.000	0.000	0.000	-15.815
2032	863.635	18.454	17.308	315.804	1,215.201	847.504	18.454	17.308	315.804	1,199.070	-16.131	0.000	0.000	0.000	-16.131
2033	889.250	18.818	17.650	313.483	1,239.201	872.801	18.818	17.650	313.483	1,222.752	-16.449	0.000	0.000	0.000	-16.449
2034	915.386	19.180	17.989	310.455	1,263.009	898.620	19.180	17.989	310.455	1,246.244	-16.765	0.000	0.000	0.000	-16.765
2035	942.000	19.539	18.326	306.783	1,286.647	924.921	19.539	18.326	306.783	1,269.568	-17.079	0.000	0.000	0.000	-17.079
2036	969.324	19.898	18.663	302.459	1,310.345	951.931	19.898	18.663	302.459	1,292.952	-17.394	0.000	0.000	0.000	-17.394
2037	997.098	20.256	18.999	297.564	1,333.917	979.391	20.256	18.999	297.564	1,316.210	-17.707	0.000	0.000	0.000	-17.707
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,009.632	20.617	19.337	290.042	1,339.629	-18.022	0.000	0.000	0.000	-18.022
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,040.452	20.979	19.676	282.027	1,363.133	-18.338	0.000	0.000	0.000	-18.338
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,072.007	21.347	20.022	273.696	1,387.071	-18.660	0.000	0.000	0.000	-18.660
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,104.896	21.727	20.379	264.773	1,411.775	-18.992	0.000	0.000	0.000	-18.992
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,138.403	22.113	20.741	255.621	1,436.879	-19.330	0.000	0.000	0.000	-19.330
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,172.501	22.517	21.119	246.962	1,463.100	-19.683	0.000	0.000	0.000	-19.683
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,207.041	22.938	21.515	238.990	1,490.484	-20.051	0.000	0.000	0.000	-20.051
2045	1,261.790	23.375	21.924	232.210	1,539.300	1,241.357	23.375	21.924	232.210	1,518.867	-20.433	0.000	0.000	0.000	-20.433
2046	1,296.255	23.831	22.352	226.872	1,569.310	1,275.424	23.831	22.352	226.872	1,548.479	-20.831	0.000	0.000	0.000	-20.831
2047	1,329.888	24.301	22.792	223.256	1,600.237	1,308.646	24.301	22.792	223.256	1,578.995	-21.242	0.000	0.000	0.000	-21.242
2048	1,362.911	24.788	23.250	221.409	1,632.358	1,341.243	24.788	23.250	221.409	1,610.690	-21.668	0.000	0.000	0.000	-21.668
2049	1,395.129	25.286	23.716	220.966	1,665.097	1,373.027	25.286	23.716	220.966	1,642.994	-22.103	0.000	0.000	0.000	-22.103
2050	1,426.858	25.789	24.188	221.399	1,698.234	1,404.315	25.789	24.188	221.399	1,675.691	-22.543	0.000	0.000	0.000	-22.543
2051	1,458.049	26.292	24.660	222.373	1,731.375	1,435.067	26.292	24.660	222.373	1,708.392	-22.982	0.000	0.000	0.000	-22.982
2052	1,489.082	26.797	25.134	223.623	1,764.635	1,465.658	26.797	25.134	223.623	1,741.211	-23.424	0.000	0.000	0.000	-23.424
2053	1,519.389	27.301	25.607	225.524	1,797.820	1,495.524	27.301	25.607	225.524	1,773.956	-23.864	0.000	0.000	0.000	-23.864
2054	1,549.605	27.814	26.088	228.110	1,831.617	1,525.292	27.814	26.088	228.110	1,807.304	-24.313	0.000	0.000	0.000	-24.313
2055	1,580.015	28.338	26.579	231.145	1,866.076	1,555.245	28.338	26.579	231.145	1,841.306	-24.771	0.000	0.000	0.000	-24.771
2056	1,610.383	28.867	27.076	234.639	1,900.965	1,585.149	28.867	27.076	234.639	1,875.732	-25.234	0.000	0.000	0.000	-25.234
2057	1,640.837	29.404	27.579	238.500	1,936.320	1,615.134	29.404	27.579	238.500	1,910.617	-25.703	0.000	0.000	0.000	-25.703
2058	1,671.167	29.945	28.086	242.723	1,971.921	1,644.992	29.945	28.086	242.723	1,945.746	-26.176	0.000	0.000	0.000	-26.176
2059	1,701.533	30.490	28.598	247.196	2,007.817	1,674.881	30.490	28.598	247.196	1,981.165	-26.652	0.000	0.000	0.000	-26.652
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$41,670.308	\$819.840	\$768.954	\$9,959.683	\$53,218.785	-\$690.606	\$0.000	\$0.000	\$0.000	-\$690.606
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$13,339.453	\$278.429	\$261.147	\$4,160.975	\$18,040.004	-\$218.955	\$0.000	\$0.000	\$0.000	-\$218.955

¹In calculating the present value of contributions, total required contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 2 (Volatile Returns Averaging 6.50%)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 2						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	13.54%	13.54%	1,022.547	48.15%	49.03%	18.86%	1.48%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	24.62%	18.95%	1,033.795	49.76%	57.76%	1.10%	1.61%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	8.31%	15.29%	1,006.673	53.31%	59.32%	-2.62%	3.55%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	-1.06%	10.97%	882.995	55.33%	55.20%	-12.29%	2.02%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	9.02%	10.57%	884.379	57.00%	56.43%	0.16%	1.66%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	-2.11%	8.35%	982.765	55.86%	52.08%	11.12%	-1.13%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	13.59%	9.08%	977.596	55.10%	55.57%	-0.53%	-0.76%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	3.67%	8.39%	1,089.865	55.18%	54.56%	11.48%	0.08%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	14.01%	9.00%	1,038.855	55.71%	58.67%	-4.68%	0.53%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	4.05%	8.50%	1,091.507	57.20%	57.86%	5.07%	1.49%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	12.62%	8.87%	1,025.351	58.58%	61.49%	-6.06%	1.38%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	-5.87%	7.55%	1,076.355	58.69%	54.79%	4.97%	0.11%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	17.35%	8.28%	1,014.712	59.03%	60.44%	-5.73%	0.34%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	12.52%	8.58%	1,215.219	61.11%	64.74%	19.76%	2.08%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	20.99%	9.36%	1,088.854	64.37%	74.34%	-10.40%	3.25%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	-2.58%	8.57%	1,013.147	67.69%	68.72%	-6.95%	3.33%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	-10.22%	7.37%	775.062	66.43%	57.59%	-23.50%	-1.26%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	4.76%	7.22%	982.148	64.47%	56.51%	26.72%	-1.97%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	19.80%	7.85%	1,343.431	62.89%	64.46%	36.79%	-1.58%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	9.04%	7.91%	1,399.285	63.18%	67.35%	4.16%	0.29%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	2.84%	7.66%	1,177.084	64.94%	65.83%	-15.88%	1.76%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	10.58%	7.79%	1,141.945	67.69%	69.04%	-2.99%	2.75%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	-7.50%	7.08%	1,256.142	66.95%	60.85%	10.00%	-0.74%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	7.19%	7.08%	1,173.958	65.54%	61.64%	-6.54%	-1.41%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	0.37%	6.81%	1,610.274	64.72%	59.57%	37.17%	-0.81%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	19.28%	7.26%	1,623.407	64.99%	68.30%	0.82%	0.27%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	26.90%	7.93%	1,844.729	71.45%	84.16%	13.63%	6.45%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	1.06%	7.68%	1,461.850	76.30%	82.06%	-20.76%	4.86%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	9.73%	7.75%	632.686	80.93%	84.70%	-56.72%	4.63%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	-10.71%	7.08%	964.049	81.46%	71.65%	52.37%	0.53%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	-6.63%	6.60%	768.574	75.79%	62.39%	-20.28%	-5.67%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	-19.12%	5.69%	2,169.747	70.13%	49.79%	182.31%	-5.67%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	26.02%	6.25%	3,305.339	68.22%	63.78%	52.34%	-1.91%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	13.79%	6.47%	5,775.174	76.59%	79.69%	74.72%	8.37%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	21.68%	6.87%	3,770.069	85.83%	98.80%	-34.72%	9.24%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	-5.82%	6.50%	2,306.556	93.19%	91.89%	-38.82%	7.35%
Total Contributions FY 2023-2059		\$53,909.391							\$52,786.448				
Total Present Value FY 2023-2059¹		\$18,258.959							\$16,434.591				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$ -1,122.943				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ -1,824.368				
Maximum Annual Increase					18.86%	3.49%						182.31%	9.24%
Maximum Annual Decrease					-8.93%	-1.51%						-56.72%	-5.67%

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 2 (Volatile Returns Averaging 6.50%)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2022 Valuation Baseline					Stress Test Scenario 2					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.307	15.528	14.564	308.147	1,022.547	0.000	0.000	0.000	0.000	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	690.922	15.910	14.923	312.040	1,033.795	-13.907	0.000	0.000	0.000	-13.907
2026	725.432	16.281	15.270	315.119	1,072.101	660.003	16.281	15.270	315.119	1,006.673	-65.429	0.000	0.000	0.000	-65.429
2027	746.904	16.650	15.616	317.239	1,096.409	533.489	16.650	15.616	317.239	882.995	-213.415	0.000	0.000	0.000	-213.415
2028	768.955	17.014	15.958	318.483	1,120.410	532.923	17.014	15.958	318.483	884.379	-236.032	0.000	0.000	0.000	-236.032
2029	791.592	17.374	16.296	318.859	1,144.121	630.235	17.374	16.296	318.859	982.765	-161.356	0.000	0.000	0.000	-161.356
2030	814.956	17.734	16.633	318.461	1,167.783	624.769	17.734	16.633	318.461	977.596	-190.187	0.000	0.000	0.000	-190.187
2031	838.952	18.093	16.970	317.428	1,191.443	737.375	18.093	16.970	317.428	1,089.865	-101.578	0.000	0.000	0.000	-101.578
2032	863.635	18.454	17.308	315.804	1,215.201	687.289	18.454	17.308	315.804	1,038.855	-176.345	0.000	0.000	0.000	-176.345
2033	889.250	18.818	17.650	313.483	1,239.201	741.556	18.818	17.650	313.483	1,091.507	-147.694	0.000	0.000	0.000	-147.694
2034	915.386	19.180	17.989	310.455	1,263.009	677.728	19.180	17.989	310.455	1,025.351	-237.658	0.000	0.000	0.000	-237.658
2035	942.000	19.539	18.326	306.783	1,286.647	731.708	19.539	18.326	306.783	1,076.355	-210.292	0.000	0.000	0.000	-210.292
2036	969.324	19.898	18.663	302.459	1,310.345	673.691	19.898	18.663	302.459	1,014.712	-295.634	0.000	0.000	0.000	-295.634
2037	997.098	20.256	18.999	297.564	1,333.917	878.400	20.256	18.999	297.564	1,215.219	-118.698	0.000	0.000	0.000	-118.698
2038	1,027.654	20.617	19.337	290.042	1,357.650	758.858	20.617	19.337	290.042	1,088.854	-268.796	0.000	0.000	0.000	-268.796
2039	1,058.789	20.979	19.676	282.027	1,381.471	690.466	20.979	19.676	282.027	1,013.147	-368.324	0.000	0.000	0.000	-368.324
2040	1,090.666	21.347	20.022	273.696	1,405.731	459.997	21.347	20.022	273.696	775.062	-630.669	0.000	0.000	0.000	-630.669
2041	1,123.888	21.727	20.379	264.773	1,430.767	675.269	21.727	20.379	264.773	982.148	-448.619	0.000	0.000	0.000	-448.619
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,044.955	22.113	20.741	255.621	1,343.431	-112.778	0.000	0.000	0.000	-112.778
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,108.686	22.517	21.119	246.962	1,399.285	-83.497	0.000	0.000	0.000	-83.497
2044	1,227.092	22.938	21.515	238.990	1,510.535	893.641	22.938	21.515	238.990	1,177.084	-333.451	0.000	0.000	0.000	-333.451
2045	1,261.790	23.375	21.924	232.210	1,539.300	864.435	23.375	21.924	232.210	1,141.945	-397.355	0.000	0.000	0.000	-397.355
2046	1,296.255	23.831	22.352	226.872	1,569.310	983.087	23.831	22.352	226.872	1,256.142	-313.168	0.000	0.000	0.000	-313.168
2047	1,329.888	24.301	22.792	223.256	1,600.237	903.609	24.301	22.792	223.256	1,173.958	-426.279	0.000	0.000	0.000	-426.279
2048	1,362.911	24.788	23.250	221.409	1,632.358	1,340.827	24.788	23.250	221.409	1,610.274	-22.084	0.000	0.000	0.000	-22.084
2049	1,395.129	25.286	23.716	220.966	1,665.097	1,353.439	25.286	23.716	220.966	1,623.407	-41.690	0.000	0.000	0.000	-41.690
2050	1,426.858	25.789	24.188	221.399	1,698.234	1,573.353	25.789	24.188	221.399	1,844.729	146.495	0.000	0.000	0.000	146.495
2051	1,458.049	26.292	24.660	222.373	1,731.375	1,188.525	26.292	24.660	222.373	1,461.850	-269.524	0.000	0.000	0.000	-269.524
2052	1,489.082	26.797	25.134	223.623	1,764.635	357.132	26.797	25.134	223.623	632.686	-1,131.950	0.000	0.000	0.000	-1,131.950
2053	1,519.389	27.301	25.607	225.524	1,797.820	685.617	27.301	25.607	225.524	964.049	-833.772	0.000	0.000	0.000	-833.772
2054	1,549.605	27.814	26.088	228.110	1,831.617	486.562	27.814	26.088	228.110	768.574	-1,063.042	0.000	0.000	0.000	-1,063.042
2055	1,580.015	28.338	26.579	231.145	1,866.076	1,883.685	28.338	26.579	231.145	2,169.747	303.670	0.000	0.000	0.000	303.670
2056	1,610.383	28.867	27.076	234.639	1,900.965	3,014.757	28.867	27.076	234.639	3,305.339	1,404.374	0.000	0.000	0.000	1,404.374
2057	1,640.837	29.404	27.579	238.500	1,936.320	5,479.690	29.404	27.579	238.500	5,775.174	3,838.853	0.000	0.000	0.000	3,838.853
2058	1,671.167	29.945	28.086	242.723	1,971.921	3,469.314	29.945	28.086	242.723	3,770.069	1,798.147	0.000	0.000	0.000	1,798.147
2059	1,701.533	30.490	28.598	247.196	2,007.817	2,000.272	30.490	28.598	247.196	2,306.556	298.739	0.000	0.000	0.000	298.739
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$41,237.971	\$819.840	\$768.954	\$9,959.683	\$52,786.448	-\$1,122.943	\$0.000	\$0.000	\$0.000	-\$1,122.943
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$11,734.041	\$278.429	\$261.147	\$4,160.975	\$16,434.591	-\$1,824.368	\$0.000	\$0.000	\$0.000	-\$1,824.368

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 3 (Static Returns of 2.58%)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 3						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	2.58%	2.58%	1,022.547	46.97%	44.30%	18.86%	0.30%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	2.58%	2.58%	1,033.795	44.79%	42.76%	1.10%	-2.18%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	2.58%	2.58%	1,086.358	43.93%	41.35%	5.08%	-0.86%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	2.58%	2.58%	1,139.464	42.58%	40.04%	4.89%	-1.35%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	2.58%	2.58%	1,192.826	41.32%	38.85%	4.68%	-1.26%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	2.58%	2.58%	1,246.442	40.17%	37.77%	4.49%	-1.15%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	2.58%	2.58%	1,300.667	39.12%	36.79%	4.35%	-1.05%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	2.58%	2.58%	1,355.572	38.17%	35.91%	4.22%	-0.94%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	2.58%	2.58%	1,411.322	37.33%	35.13%	4.11%	-0.84%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	2.58%	2.58%	1,468.181	36.64%	34.50%	4.03%	-0.69%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	2.58%	2.58%	1,525.713	36.05%	33.95%	3.92%	-0.59%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	2.58%	2.58%	1,584.099	35.56%	33.50%	3.83%	-0.49%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	2.58%	2.58%	1,643.655	35.18%	33.15%	3.76%	-0.39%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	2.58%	2.58%	1,704.276	34.89%	32.89%	3.69%	-0.29%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	2.58%	2.58%	1,766.580	34.71%	32.73%	3.66%	-0.18%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	2.58%	2.58%	1,830.475	34.64%	32.68%	3.62%	-0.07%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	2.58%	2.58%	1,896.722	34.69%	32.73%	3.62%	0.05%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	2.58%	2.58%	1,965.964	34.86%	32.90%	3.65%	0.17%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	2.58%	2.58%	2,038.018	35.15%	33.19%	3.67%	0.30%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	2.58%	2.58%	2,114.352	35.59%	33.61%	3.75%	0.44%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	2.58%	2.58%	2,195.347	36.18%	34.19%	3.83%	0.59%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	2.58%	2.58%	2,281.282	36.95%	34.92%	3.91%	0.77%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	2.58%	2.58%	2,373.308	37.92%	35.85%	4.03%	0.97%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	2.58%	2.58%	2,471.774	39.10%	36.98%	4.15%	1.18%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	2.58%	2.58%	2,578.177	40.53%	38.35%	4.30%	1.43%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	2.58%	2.58%	2,693.005	42.24%	39.98%	4.45%	1.70%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	2.58%	2.58%	2,817.394	44.24%	41.89%	4.62%	2.01%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	2.58%	2.58%	2,953.210	46.58%	44.12%	4.82%	2.34%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	2.58%	2.58%	3,104.153	49.28%	46.70%	5.11%	2.71%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	2.58%	2.58%	3,274.150	52.41%	49.68%	5.48%	3.12%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	2.58%	2.58%	3,471.954	56.02%	53.12%	6.04%	3.61%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	2.58%	2.58%	3,707.771	60.22%	57.12%	6.79%	4.20%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	2.58%	2.58%	4,000.955	65.15%	61.82%	7.91%	4.93%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	2.58%	2.58%	4,387.393	71.05%	67.45%	9.66%	5.90%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	2.58%	2.58%	4,955.556	78.39%	74.47%	12.95%	7.33%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	2.58%	2.58%	5,842.660	87.96%	83.65%	17.90%	9.57%
Total Contributions FY 2023-2059		\$53,909.391							\$84,295.441				
Total Present Value FY 2023-2059¹		\$18,258.959							\$23,993.267				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$30,386.050				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ 5,734.308				
Maximum Annual Increase					18.86%	3.49%					18.86%	9.57%	
Maximum Annual Decrease					-8.93%	-1.51%					-8.93%	-2.18%	

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 3 (Static Returns of 2.58%)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2022 Valuation Baseline					Stress Test Scenario 3					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.307	15.528	14.564	308.147	1,022.547	0.000	0.000	0.000	0.000	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	690.922	15.910	14.923	312.040	1,033.795	-13.907	0.000	0.000	0.000	-13.907
2026	725.432	16.281	15.270	315.119	1,072.101	739.688	16.281	15.270	315.119	1,086.358	14.257	0.000	0.000	0.000	14.257
2027	746.904	16.650	15.616	317.239	1,096.409	789.959	16.650	15.616	317.239	1,139.464	43.055	0.000	0.000	0.000	43.055
2028	768.955	17.014	15.958	318.483	1,120.410	841.371	17.014	15.958	318.483	1,192.826	72.416	0.000	0.000	0.000	72.416
2029	791.592	17.374	16.296	318.859	1,144.121	893.913	17.374	16.296	318.859	1,246.442	102.321	0.000	0.000	0.000	102.321
2030	814.956	17.734	16.633	318.461	1,167.783	947.840	17.734	16.633	318.461	1,300.667	132.884	0.000	0.000	0.000	132.884
2031	838.952	18.093	16.970	317.428	1,191.443	1,003.081	18.093	16.970	317.428	1,355.572	164.129	0.000	0.000	0.000	164.129
2032	863.635	18.454	17.308	315.804	1,215.201	1,059.756	18.454	17.308	315.804	1,411.322	196.121	0.000	0.000	0.000	196.121
2033	889.250	18.818	17.650	313.483	1,239.201	1,118.230	18.818	17.650	313.483	1,468.181	228.981	0.000	0.000	0.000	228.981
2034	915.386	19.180	17.989	310.455	1,263.009	1,178.090	19.180	17.989	310.455	1,525.713	262.705	0.000	0.000	0.000	262.705
2035	942.000	19.539	18.326	306.783	1,286.647	1,239.451	19.539	18.326	306.783	1,584.099	297.451	0.000	0.000	0.000	297.451
2036	969.324	19.898	18.663	302.459	1,310.345	1,302.633	19.898	18.663	302.459	1,643.655	333.309	0.000	0.000	0.000	333.309
2037	997.098	20.256	18.999	297.564	1,333.917	1,367.456	20.256	18.999	297.564	1,704.276	370.359	0.000	0.000	0.000	370.359
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,436.584	20.617	19.337	290.042	1,766.580	408.930	0.000	0.000	0.000	408.930
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,507.793	20.979	19.676	282.027	1,830.475	449.004	0.000	0.000	0.000	449.004
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,581.657	21.347	20.022	273.696	1,896.722	490.991	0.000	0.000	0.000	490.991
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,659.085	21.727	20.379	264.773	1,965.964	535.196	0.000	0.000	0.000	535.196
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,739.543	22.113	20.741	255.621	2,038.018	581.809	0.000	0.000	0.000	581.809
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,823.753	22.517	21.119	246.962	2,114.352	631.569	0.000	0.000	0.000	631.569
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,911.904	22.938	21.515	238.990	2,195.347	684.812	0.000	0.000	0.000	684.812
2045	1,261.790	23.375	21.924	232.210	1,539.300	2,003.773	23.375	21.924	232.210	2,281.282	741.982	0.000	0.000	0.000	741.982
2046	1,296.255	23.831	22.352	226.872	1,569.310	2,100.254	23.831	22.352	226.872	2,373.308	803.998	0.000	0.000	0.000	803.998
2047	1,329.888	24.301	22.792	223.256	1,600.237	2,201.425	24.301	22.792	223.256	2,471.774	871.537	0.000	0.000	0.000	871.537
2048	1,362.911	24.788	23.250	221.409	1,632.358	2,308.730	24.788	23.250	221.409	2,578.177	945.819	0.000	0.000	0.000	945.819
2049	1,395.129	25.286	23.716	220.966	1,665.097	2,423.037	25.286	23.716	220.966	2,693.005	1,027.908	0.000	0.000	0.000	1,027.908
2050	1,426.858	25.789	24.188	221.399	1,698.234	2,546.018	25.789	24.188	221.399	2,817.394	1,119.160	0.000	0.000	0.000	1,119.160
2051	1,458.049	26.292	24.660	222.373	1,731.375	2,679.885	26.292	24.660	222.373	2,953.210	1,221.836	0.000	0.000	0.000	1,221.836
2052	1,489.082	26.797	25.134	223.623	1,764.635	2,828.599	26.797	25.134	223.623	3,104.153	1,339.518	0.000	0.000	0.000	1,339.518
2053	1,519.389	27.301	25.607	225.524	1,797.820	2,995.718	27.301	25.607	225.524	3,274.150	1,476.329	0.000	0.000	0.000	1,476.329
2054	1,549.605	27.814	26.088	228.110	1,831.617	3,189.942	27.814	26.088	228.110	3,471.954	1,640.337	0.000	0.000	0.000	1,640.337
2055	1,580.015	28.338	26.579	231.145	1,866.076	3,421.709	28.338	26.579	231.145	3,707.771	1,841.694	0.000	0.000	0.000	1,841.694
2056	1,610.383	28.867	27.076	234.639	1,900.965	3,710.373	28.867	27.076	234.639	4,000.955	2,099.989	0.000	0.000	0.000	2,099.989
2057	1,640.837	29.404	27.579	238.500	1,936.320	4,091.909	29.404	27.579	238.500	4,387.393	2,451.072	0.000	0.000	0.000	2,451.072
2058	1,671.167	29.945	28.086	242.723	1,971.921	4,654.802	29.945	28.086	242.723	4,955.556	2,983.634	0.000	0.000	0.000	2,983.634
2059	1,701.533	30.490	28.598	247.196	2,007.817	5,536.377	30.490	28.598	247.196	5,842.660	3,834.844	0.000	0.000	0.000	3,834.844
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$72,746.964	\$819.840	\$768.954	\$9,959.683	\$84,295.441	\$30,386.050	\$0.000	\$0.000	\$0.000	\$30,386.050
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$19,292.717	\$278.429	\$261.147	\$4,160.975	\$23,993.267	\$5,734.308	\$0.000	\$0.000	\$0.000	\$5,734.308

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 4 (Volatile Returns Averaging 2.58%)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 4						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	-3.33%	-3.33%	1,022.547	46.33%	41.74%	18.86%	-0.34%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	10.16%	3.19%	1,033.795	44.24%	43.17%	1.10%	-2.10%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	-11.04%	-1.79%	1,129.276	42.25%	36.38%	9.24%	-1.99%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	-2.16%	-1.88%	1,129.884	39.14%	33.41%	0.05%	-3.11%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	18.65%	1.92%	1,282.805	38.27%	37.47%	13.53%	-0.87%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	13.05%	3.70%	1,364.759	37.89%	40.45%	6.39%	-0.38%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	8.04%	4.31%	1,320.010	39.14%	41.63%	-3.28%	1.25%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	21.27%	6.29%	1,300.776	42.56%	47.93%	-1.46%	3.42%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	-16.98%	3.41%	1,314.564	42.70%	38.10%	1.06%	0.14%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	2.71%	3.34%	1,215.933	41.58%	36.73%	-7.50%	-1.12%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	21.12%	4.84%	1,476.505	42.18%	42.43%	21.43%	0.60%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	-12.63%	3.26%	1,535.475	39.64%	35.85%	3.99%	-2.55%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	6.08%	3.48%	1,442.418	38.97%	36.08%	-6.06%	-0.66%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	32.63%	5.33%	1,659.877	41.42%	45.86%	15.08%	2.45%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	0.67%	5.01%	1,693.113	42.32%	44.80%	2.00%	0.90%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	3.79%	4.93%	1,481.980	44.14%	44.39%	-12.47%	1.82%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	2.70%	4.80%	1,579.983	45.95%	43.73%	6.61%	1.81%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	-11.84%	3.80%	1,642.321	43.99%	37.20%	3.95%	-1.96%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	28.02%	4.95%	1,721.221	44.41%	45.53%	4.80%	0.43%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	-7.97%	4.26%	2,000.569	44.28%	41.29%	16.23%	-0.13%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	15.73%	4.78%	1,778.143	44.71%	45.95%	-11.12%	0.43%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	-1.44%	4.49%	2,039.684	46.83%	44.48%	14.71%	2.11%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	-9.30%	3.85%	1,939.903	45.34%	39.42%	-4.89%	-1.49%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	4.70%	3.89%	2,121.066	45.43%	40.47%	9.34%	0.10%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	8.81%	4.08%	2,458.466	45.71%	43.95%	15.91%	0.28%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	4.97%	4.11%	2,539.803	46.80%	46.26%	3.31%	1.09%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	-2.84%	3.85%	2,544.230	48.53%	45.21%	0.17%	1.73%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	-8.61%	3.37%	2,630.460	49.12%	41.89%	3.39%	0.59%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	12.16%	3.67%	2,942.489	50.80%	47.81%	11.86%	1.68%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	1.94%	3.61%	3,463.090	53.44%	50.99%	17.69%	2.65%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	-3.09%	3.38%	3,342.100	55.68%	51.39%	-3.49%	2.23%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	-2.90%	3.18%	3,608.569	59.03%	52.43%	7.97%	3.35%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	4.12%	3.21%	4,237.945	63.21%	58.40%	17.44%	4.18%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	-1.06%	3.08%	5,040.110	68.93%	63.52%	18.93%	5.72%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	-1.89%	2.94%	5,403.253	75.57%	68.82%	7.21%	6.64%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	-9.15%	2.58%	6,952.868	84.73%	72.79%	28.68%	9.15%
Total Contributions FY 2023-2059		\$53,909.391							\$82,250.318				
Total Present Value FY 2023-2059¹		\$18,258.959							\$23,067.636				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$28,340.927				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ 4,808.677				
Maximum Annual Increase					18.86%	3.49%						28.68%	9.15%
Maximum Annual Decrease					-8.93%	-1.51%						-12.47%	-3.11%

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 4 (Volatile Returns Averaging 2.58%)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2022 Valuation Baseline					Stress Test Scenario 4					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.307	15.528	14.564	308.147	1,022.547	0.000	0.000	0.000	0.000	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	690.922	15.910	14.923	312.040	1,033.795	-13.907	0.000	0.000	0.000	-13.907
2026	725.432	16.281	15.270	315.119	1,072.101	782.607	16.281	15.270	315.119	1,129.276	57.175	0.000	0.000	0.000	57.175
2027	746.904	16.650	15.616	317.239	1,096.409	780.379	16.650	15.616	317.239	1,129.884	33.475	0.000	0.000	0.000	33.475
2028	768.955	17.014	15.958	318.483	1,120.410	931.350	17.014	15.958	318.483	1,282.805	162.395	0.000	0.000	0.000	162.395
2029	791.592	17.374	16.296	318.859	1,144.121	1,012.229	17.374	16.296	318.859	1,364.759	220.638	0.000	0.000	0.000	220.638
2030	814.956	17.734	16.633	318.461	1,167.783	967.183	17.734	16.633	318.461	1,320.010	152.227	0.000	0.000	0.000	152.227
2031	838.952	18.093	16.970	317.428	1,191.443	948.285	18.093	16.970	317.428	1,300.776	109.333	0.000	0.000	0.000	109.333
2032	863.635	18.454	17.308	315.804	1,215.201	962.998	18.454	17.308	315.804	1,314.564	99.363	0.000	0.000	0.000	99.363
2033	889.250	18.818	17.650	313.483	1,239.201	865.982	18.818	17.650	313.483	1,215.933	-23.268	0.000	0.000	0.000	-23.268
2034	915.386	19.180	17.989	310.455	1,263.009	1,128.881	19.180	17.989	310.455	1,476.505	213.496	0.000	0.000	0.000	213.496
2035	942.000	19.539	18.326	306.783	1,286.647	1,190.828	19.539	18.326	306.783	1,535.475	248.828	0.000	0.000	0.000	248.828
2036	969.324	19.898	18.663	302.459	1,310.345	1,101.397	19.898	18.663	302.459	1,442.418	132.073	0.000	0.000	0.000	132.073
2037	997.098	20.256	18.999	297.564	1,333.917	1,323.058	20.256	18.999	297.564	1,659.877	325.960	0.000	0.000	0.000	325.960
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,363.116	20.617	19.337	290.042	1,693.113	335.462	0.000	0.000	0.000	335.462
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,159.299	20.979	19.676	282.027	1,481.980	100.509	0.000	0.000	0.000	100.509
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,264.919	21.347	20.022	273.696	1,579.983	174.252	0.000	0.000	0.000	174.252
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,335.442	21.727	20.379	264.773	1,642.321	211.554	0.000	0.000	0.000	211.554
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,422.745	22.113	20.741	255.621	1,721.221	265.012	0.000	0.000	0.000	265.012
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,709.971	22.517	21.119	246.962	2,000.569	517.787	0.000	0.000	0.000	517.787
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,494.700	22.938	21.515	238.990	1,778.143	267.607	0.000	0.000	0.000	267.607
2045	1,261.790	23.375	21.924	232.210	1,539.300	1,762.175	23.375	21.924	232.210	2,039.684	500.385	0.000	0.000	0.000	500.385
2046	1,296.255	23.831	22.352	226.872	1,569.310	1,666.849	23.831	22.352	226.872	1,939.903	370.594	0.000	0.000	0.000	370.594
2047	1,329.888	24.301	22.792	223.256	1,600.237	1,850.718	24.301	22.792	223.256	2,121.066	520.830	0.000	0.000	0.000	520.830
2048	1,362.911	24.788	23.250	221.409	1,632.358	2,189.019	24.788	23.250	221.409	2,458.466	826.108	0.000	0.000	0.000	826.108
2049	1,395.129	25.286	23.716	220.966	1,665.097	2,269.836	25.286	23.716	220.966	2,539.803	874.706	0.000	0.000	0.000	874.706
2050	1,426.858	25.789	24.188	221.399	1,698.234	2,272.853	25.789	24.188	221.399	2,544.230	845.996	0.000	0.000	0.000	845.996
2051	1,458.049	26.292	24.660	222.373	1,731.375	2,357.135	26.292	24.660	222.373	2,630.460	899.085	0.000	0.000	0.000	899.085
2052	1,489.082	26.797	25.134	223.623	1,764.635	2,666.936	26.797	25.134	223.623	2,942.489	1,177.854	0.000	0.000	0.000	1,177.854
2053	1,519.389	27.301	25.607	225.524	1,797.820	3,184.659	27.301	25.607	225.524	3,463.090	1,665.270	0.000	0.000	0.000	1,665.270
2054	1,549.605	27.814	26.088	228.110	1,831.617	3,060.087	27.814	26.088	228.110	3,342.100	1,510.483	0.000	0.000	0.000	1,510.483
2055	1,580.015	28.338	26.579	231.145	1,866.076	3,322.508	28.338	26.579	231.145	3,608.569	1,742.493	0.000	0.000	0.000	1,742.493
2056	1,610.383	28.867	27.076	234.639	1,900.965	3,947.363	28.867	27.076	234.639	4,237.945	2,336.980	0.000	0.000	0.000	2,336.980
2057	1,640.837	29.404	27.579	238.500	1,936.320	4,744.627	29.404	27.579	238.500	5,040.110	3,103.790	0.000	0.000	0.000	3,103.790
2058	1,671.167	29.945	28.086	242.723	1,971.921	5,102.499	29.945	28.086	242.723	5,403.253	3,431.332	0.000	0.000	0.000	3,431.332
2059	1,701.533	30.490	28.598	247.196	2,007.817	6,646.585	30.490	28.598	247.196	6,952.868	4,945.052	0.000	0.000	0.000	4,945.052
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$70,701.841	\$819.840	\$768.954	\$9,959.683	\$82,250.318	\$28,340.927	\$0.000	\$0.000	\$0.000	\$28,340.927
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$18,367.086	\$278.429	\$261.147	\$4,160.975	\$23,067.636	\$4,808.677	\$0.000	\$0.000	\$0.000	\$4,808.677

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 5 (Static Returns of 4.28%)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 5						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	4.28%	4.28%	1,022.547	47.15%	45.03%	18.86%	0.48%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	4.28%	4.28%	1,033.795	45.35%	44.22%	1.10%	-1.81%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	4.28%	4.28%	1,073.997	45.00%	43.48%	3.89%	-0.34%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	4.28%	4.28%	1,114.777	44.31%	42.80%	3.80%	-0.69%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	4.28%	4.28%	1,155.829	43.67%	42.19%	3.68%	-0.64%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	4.28%	4.28%	1,197.229	43.10%	41.64%	3.58%	-0.57%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	4.28%	4.28%	1,239.271	42.59%	41.15%	3.51%	-0.51%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	4.28%	4.28%	1,282.021	42.15%	40.73%	3.45%	-0.44%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	4.28%	4.28%	1,325.623	41.77%	40.36%	3.40%	-0.38%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	4.28%	4.28%	1,370.233	41.49%	40.10%	3.37%	-0.28%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	4.28%	4.28%	1,415.563	41.28%	39.90%	3.31%	-0.21%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	4.28%	4.28%	1,461.543	41.14%	39.77%	3.25%	-0.14%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	4.28%	4.28%	1,508.645	41.07%	39.70%	3.22%	-0.07%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	4.28%	4.28%	1,556.687	41.06%	39.70%	3.18%	0.00%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	4.28%	4.28%	1,606.052	41.14%	39.78%	3.17%	0.08%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	4.28%	4.28%	1,656.755	41.30%	39.94%	3.16%	0.16%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	4.28%	4.28%	1,709.377	41.55%	40.18%	3.18%	0.25%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	4.28%	4.28%	1,764.545	41.89%	40.52%	3.23%	0.34%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	4.28%	4.28%	1,821.963	42.34%	40.96%	3.25%	0.45%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	4.28%	4.28%	1,882.728	42.91%	41.51%	3.34%	0.56%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	4.28%	4.28%	1,947.219	43.60%	42.19%	3.43%	0.70%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	4.28%	4.28%	2,015.592	44.44%	43.01%	3.51%	0.84%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	4.28%	4.28%	2,088.624	45.45%	43.99%	3.62%	1.01%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	4.28%	4.28%	2,166.188	46.65%	45.16%	3.71%	1.19%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	4.28%	4.28%	2,249.709	48.05%	46.52%	3.86%	1.40%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	4.28%	4.28%	2,339.230	49.69%	48.12%	3.98%	1.64%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	4.28%	4.28%	2,435.510	51.58%	49.96%	4.12%	1.89%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	4.28%	4.28%	2,538.989	53.76%	52.07%	4.25%	2.17%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	4.28%	4.28%	2,652.656	56.24%	54.49%	4.48%	2.48%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	4.28%	4.28%	2,778.496	59.07%	57.23%	4.74%	2.83%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	4.28%	4.28%	2,922.443	62.29%	60.37%	5.18%	3.23%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	4.28%	4.28%	3,091.037	65.98%	63.95%	5.77%	3.69%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	4.28%	4.28%	3,295.164	70.24%	68.09%	6.60%	4.25%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	4.28%	4.28%	3,559.136	75.22%	72.94%	8.01%	4.98%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	4.28%	4.28%	3,934.691	81.22%	78.78%	10.55%	6.00%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	4.28%	4.28%	4,505.436	88.76%	86.13%	14.51%	7.53%
Total Contributions FY 2023-2059		\$53,909.391							\$73,579.625				
Total Present Value FY 2023-2059¹		\$18,258.959							\$21,877.546				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$19,670.234				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ 3,618.587				
Maximum Annual Increase					18.86%	3.49%						18.86%	7.53%
Maximum Annual Decrease					-8.93%	-1.51%						-8.93%	-1.81%

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 5 (Static Returns of 4.28%)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2022 Valuation Baseline					Stress Test Scenario 5					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.307	15.528	14.564	308.147	1,022.547	0.000	0.000	0.000	0.000	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	690.922	15.910	14.923	312.040	1,033.795	-13.907	0.000	0.000	0.000	-13.907
2026	725.432	16.281	15.270	315.119	1,072.101	727.327	16.281	15.270	315.119	1,073.997	1.896	0.000	0.000	0.000	1.896
2027	746.904	16.650	15.616	317.239	1,096.409	765.271	16.650	15.616	317.239	1,114.777	18.367	0.000	0.000	0.000	18.367
2028	768.955	17.014	15.958	318.483	1,120.410	804.374	17.014	15.958	318.483	1,155.829	35.419	0.000	0.000	0.000	35.419
2029	791.592	17.374	16.296	318.859	1,144.121	844.699	17.374	16.296	318.859	1,197.229	53.108	0.000	0.000	0.000	53.108
2030	814.956	17.734	16.633	318.461	1,167.783	886.444	17.734	16.633	318.461	1,239.271	71.488	0.000	0.000	0.000	71.488
2031	838.952	18.093	16.970	317.428	1,191.443	929.530	18.093	16.970	317.428	1,282.021	90.578	0.000	0.000	0.000	90.578
2032	863.635	18.454	17.308	315.804	1,215.201	974.057	18.454	17.308	315.804	1,325.623	110.422	0.000	0.000	0.000	110.422
2033	889.250	18.818	17.650	313.483	1,239.201	1,020.282	18.818	17.650	313.483	1,370.233	131.032	0.000	0.000	0.000	131.032
2034	915.386	19.180	17.989	310.455	1,263.009	1,067.940	19.180	17.989	310.455	1,415.563	152.555	0.000	0.000	0.000	152.555
2035	942.000	19.539	18.326	306.783	1,286.647	1,116.895	19.539	18.326	306.783	1,461.543	174.895	0.000	0.000	0.000	174.895
2036	969.324	19.898	18.663	302.459	1,310.345	1,167.623	19.898	18.663	302.459	1,508.645	198.299	0.000	0.000	0.000	198.299
2037	997.098	20.256	18.999	297.564	1,333.917	1,219.868	20.256	18.999	297.564	1,556.687	222.770	0.000	0.000	0.000	222.770
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,276.056	20.617	19.337	290.042	1,606.052	248.402	0.000	0.000	0.000	248.402
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,334.074	20.979	19.676	282.027	1,656.755	275.284	0.000	0.000	0.000	275.284
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,394.313	21.347	20.022	273.696	1,709.377	303.646	0.000	0.000	0.000	303.646
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,457.666	21.727	20.379	264.773	1,764.545	333.778	0.000	0.000	0.000	333.778
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,523.488	22.113	20.741	255.621	1,821.963	365.754	0.000	0.000	0.000	365.754
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,592.129	22.517	21.119	246.962	1,882.728	399.945	0.000	0.000	0.000	399.945
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,663.776	22.938	21.515	238.990	1,947.219	436.684	0.000	0.000	0.000	436.684
2045	1,261.790	23.375	21.924	232.210	1,539.300	1,738.082	23.375	21.924	232.210	2,015.592	476.292	0.000	0.000	0.000	476.292
2046	1,296.255	23.831	22.352	226.872	1,569.310	1,815.570	23.831	22.352	226.872	2,088.624	519.315	0.000	0.000	0.000	519.315
2047	1,329.888	24.301	22.792	223.256	1,600.237	1,895.839	24.301	22.792	223.256	2,166.188	565.951	0.000	0.000	0.000	565.951
2048	1,362.911	24.788	23.250	221.409	1,632.358	1,980.262	24.788	23.250	221.409	2,249.709	617.351	0.000	0.000	0.000	617.351
2049	1,395.129	25.286	23.716	220.966	1,665.097	2,069.262	25.286	23.716	220.966	2,339.230	674.132	0.000	0.000	0.000	674.132
2050	1,426.858	25.789	24.188	221.399	1,698.234	2,164.134	25.789	24.188	221.399	2,435.510	737.276	0.000	0.000	0.000	737.276
2051	1,458.049	26.292	24.660	222.373	1,731.375	2,265.664	26.292	24.660	222.373	2,538.989	807.615	0.000	0.000	0.000	807.615
2052	1,489.082	26.797	25.134	223.623	1,764.635	2,377.103	26.797	25.134	223.623	2,652.656	888.021	0.000	0.000	0.000	888.021
2053	1,519.389	27.301	25.607	225.524	1,797.820	2,500.064	27.301	25.607	225.524	2,778.496	980.676	0.000	0.000	0.000	980.676
2054	1,549.605	27.814	26.088	228.110	1,831.617	2,640.431	27.814	26.088	228.110	2,922.443	1,090.827	0.000	0.000	0.000	1,090.827
2055	1,580.015	28.338	26.579	231.145	1,866.076	2,804.976	28.338	26.579	231.145	3,091.037	1,224.961	0.000	0.000	0.000	1,224.961
2056	1,610.383	28.867	27.076	234.639	1,900.965	3,004.582	28.867	27.076	234.639	3,295.164	1,394.198	0.000	0.000	0.000	1,394.198
2057	1,640.837	29.404	27.579	238.500	1,936.320	3,263.653	29.404	27.579	238.500	3,559.136	1,622.816	0.000	0.000	0.000	1,622.816
2058	1,671.167	29.945	28.086	242.723	1,971.921	3,633.937	29.945	28.086	242.723	3,934.691	1,962.770	0.000	0.000	0.000	1,962.770
2059	1,701.533	30.490	28.598	247.196	2,007.817	4,199.152	30.490	28.598	247.196	4,505.436	2,497.619	0.000	0.000	0.000	2,497.619
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$62,031.148	\$819.840	\$768.954	\$9,959.683	\$73,579.625	\$19,670.234	\$0.000	\$0.000	\$0.000	\$19,670.234
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$17,176.995	\$278.429	\$261.147	\$4,160.975	\$21,877.546	\$3,618.587	\$0.000	\$0.000	\$0.000	\$3,618.587

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 6 (Volatile Returns Averaging 4.28%)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 6						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	24.02%	24.02%	1,022.547	49.29%	53.57%	18.86%	2.61%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	-8.02%	6.81%	1,033.795	48.17%	46.73%	1.10%	-1.12%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	1.96%	5.17%	930.313	47.75%	44.51%	-10.01%	-0.42%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	-4.53%	2.65%	1,079.768	46.40%	40.04%	16.07%	-1.35%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	10.78%	4.23%	1,139.443	43.72%	41.75%	5.53%	-2.68%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	-2.49%	3.08%	1,249.820	42.02%	38.71%	9.69%	-1.70%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	31.09%	6.68%	1,244.586	42.87%	47.91%	-0.42%	0.85%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	-0.58%	5.74%	1,340.328	44.40%	45.64%	7.69%	1.53%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	3.37%	5.48%	1,181.606	44.81%	44.55%	-11.84%	0.41%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	-6.17%	4.25%	1,274.000	45.02%	39.70%	7.82%	0.21%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	24.88%	5.98%	1,328.610	44.95%	46.91%	4.29%	-0.07%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	5.09%	5.90%	1,476.839	45.82%	47.36%	11.16%	0.87%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	-6.51%	4.89%	1,338.529	45.11%	42.15%	-9.37%	-0.71%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	5.44%	4.93%	1,378.292	45.55%	42.15%	2.97%	0.43%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	8.85%	5.19%	1,555.110	45.11%	43.96%	12.83%	-0.43%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	2.16%	5.00%	1,593.880	44.38%	43.18%	2.49%	-0.74%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	1.82%	4.81%	1,595.304	44.42%	42.19%	0.09%	0.05%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	-4.30%	4.28%	1,677.330	43.69%	38.94%	5.14%	-0.73%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	6.65%	4.40%	1,766.683	42.90%	40.04%	5.33%	-0.80%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	8.89%	4.62%	1,939.610	43.12%	42.45%	9.79%	0.22%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	-25.58%	2.94%	1,973.992	40.66%	31.35%	1.77%	-2.45%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	32.46%	4.12%	1,978.567	40.87%	39.91%	0.23%	0.20%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	16.72%	4.64%	2,513.873	43.47%	46.60%	27.06%	2.60%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	7.53%	4.76%	2,249.952	45.44%	49.50%	-10.50%	1.97%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	-6.08%	4.30%	2,124.620	48.81%	45.83%	-5.57%	3.37%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	6.34%	4.38%	2,145.311	50.62%	47.78%	0.97%	1.81%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	-9.82%	3.82%	2,496.756	50.59%	43.40%	16.38%	-0.03%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	24.62%	4.50%	2,549.777	52.24%	53.66%	2.12%	1.66%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	8.17%	4.62%	3,070.584	56.87%	59.18%	20.43%	4.62%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	-4.84%	4.29%	2,591.770	58.97%	56.45%	-15.59%	2.10%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	9.59%	4.46%	2,569.135	63.29%	61.54%	-0.87%	4.32%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	5.40%	4.49%	3,249.201	67.59%	66.22%	26.47%	4.30%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	19.51%	4.91%	3,108.390	73.54%	79.69%	-4.33%	5.95%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	3.75%	4.88%	3,268.809	81.23%	83.82%	5.16%	7.69%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	-14.44%	4.27%	1,439.228	80.29%	68.85%	-55.97%	-0.94%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	4.58%	4.28%	2,192.220	80.77%	70.48%	52.32%	0.48%
Total Contributions FY 2023-2059		\$53,909.391							\$67,528.902				
Total Present Value FY 2023-2059¹		\$18,258.959							\$20,899.814				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$13,619.511				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ 2,640.855				
Maximum Annual Increase					18.86%	3.49%					52.32%	7.69%	
Maximum Annual Decrease					-8.93%	-1.51%					-55.97%	-2.68%	

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 6 (Volatile Returns Averaging 4.28%)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2022 Valuation Baseline					Stress Test Scenario 6					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.307	15.528	14.564	308.147	1,022.547	0.000	0.000	0.000	0.000	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	690.922	15.910	14.923	312.040	1,033.795	-13.907	0.000	0.000	0.000	-13.907
2026	725.432	16.281	15.270	315.119	1,072.101	583.643	16.281	15.270	315.119	930.313	-141.788	0.000	0.000	0.000	-141.788
2027	746.904	16.650	15.616	317.239	1,096.409	730.263	16.650	15.616	317.239	1,079.768	-16.641	0.000	0.000	0.000	-16.641
2028	768.955	17.014	15.958	318.483	1,120.410	787.988	17.014	15.958	318.483	1,139.443	19.033	0.000	0.000	0.000	19.033
2029	791.592	17.374	16.296	318.859	1,144.121	897.290	17.374	16.296	318.859	1,249.820	105.699	0.000	0.000	0.000	105.699
2030	814.956	17.734	16.633	318.461	1,167.783	891.759	17.734	16.633	318.461	1,244.586	76.803	0.000	0.000	0.000	76.803
2031	838.952	18.093	16.970	317.428	1,191.443	987.837	18.093	16.970	317.428	1,340.328	148.885	0.000	0.000	0.000	148.885
2032	863.635	18.454	17.308	315.804	1,215.201	830.040	18.454	17.308	315.804	1,181.606	-33.594	0.000	0.000	0.000	-33.594
2033	889.250	18.818	17.650	313.483	1,239.201	924.049	18.818	17.650	313.483	1,274.000	34.799	0.000	0.000	0.000	34.799
2034	915.386	19.180	17.989	310.455	1,263.009	980.987	19.180	17.989	310.455	1,328.610	65.601	0.000	0.000	0.000	65.601
2035	942.000	19.539	18.326	306.783	1,286.647	1,132.192	19.539	18.326	306.783	1,476.839	190.192	0.000	0.000	0.000	190.192
2036	969.324	19.898	18.663	302.459	1,310.345	997.508	19.898	18.663	302.459	1,338.529	28.184	0.000	0.000	0.000	28.184
2037	997.098	20.256	18.999	297.564	1,333.917	1,041.473	20.256	18.999	297.564	1,378.292	44.375	0.000	0.000	0.000	44.375
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,225.113	20.617	19.337	290.042	1,555.110	197.459	0.000	0.000	0.000	197.459
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,271.199	20.979	19.676	282.027	1,593.880	212.409	0.000	0.000	0.000	212.409
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,280.240	21.347	20.022	273.696	1,595.304	189.573	0.000	0.000	0.000	189.573
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,370.451	21.727	20.379	264.773	1,677.330	246.563	0.000	0.000	0.000	246.563
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,468.207	22.113	20.741	255.621	1,766.683	310.473	0.000	0.000	0.000	310.473
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,649.011	22.517	21.119	246.962	1,939.610	456.827	0.000	0.000	0.000	456.827
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,690.549	22.938	21.515	238.990	1,973.992	463.457	0.000	0.000	0.000	463.457
2045	1,261.790	23.375	21.924	232.210	1,539.300	1,701.058	23.375	21.924	232.210	1,978.567	439.267	0.000	0.000	0.000	439.267
2046	1,296.255	23.831	22.352	226.872	1,569.310	2,240.819	23.831	22.352	226.872	2,513.873	944.563	0.000	0.000	0.000	944.563
2047	1,329.888	24.301	22.792	223.256	1,600.237	1,979.603	24.301	22.792	223.256	2,249.952	649.715	0.000	0.000	0.000	649.715
2048	1,362.911	24.788	23.250	221.409	1,632.358	1,855.173	24.788	23.250	221.409	2,124.620	492.262	0.000	0.000	0.000	492.262
2049	1,395.129	25.286	23.716	220.966	1,665.097	1,875.343	25.286	23.716	220.966	2,145.311	480.214	0.000	0.000	0.000	480.214
2050	1,426.858	25.789	24.188	221.399	1,698.234	2,225.380	25.789	24.188	221.399	2,496.756	798.522	0.000	0.000	0.000	798.522
2051	1,458.049	26.292	24.660	222.373	1,731.375	2,276.452	26.292	24.660	222.373	2,549.777	818.403	0.000	0.000	0.000	818.403
2052	1,489.082	26.797	25.134	223.623	1,764.635	2,795.030	26.797	25.134	223.623	3,070.584	1,305.948	0.000	0.000	0.000	1,305.948
2053	1,519.389	27.301	25.607	225.524	1,797.820	2,313.338	27.301	25.607	225.524	2,591.770	793.949	0.000	0.000	0.000	793.949
2054	1,549.605	27.814	26.088	228.110	1,831.617	2,287.123	27.814	26.088	228.110	2,569.135	737.518	0.000	0.000	0.000	737.518
2055	1,580.015	28.338	26.579	231.145	1,866.076	2,963.140	28.338	26.579	231.145	3,249.201	1,383.125	0.000	0.000	0.000	1,383.125
2056	1,610.383	28.867	27.076	234.639	1,900.965	2,817.807	28.867	27.076	234.639	3,108.390	1,207.424	0.000	0.000	0.000	1,207.424
2057	1,640.837	29.404	27.579	238.500	1,936.320	2,973.325	29.404	27.579	238.500	3,268.809	1,332.489	0.000	0.000	0.000	1,332.489
2058	1,671.167	29.945	28.086	242.723	1,971.921	1,138.474	29.945	28.086	242.723	1,439.228	-532.693	0.000	0.000	0.000	-532.693
2059	1,701.533	30.490	28.598	247.196	2,007.817	1,885.936	30.490	28.598	247.196	2,192.220	184.403	0.000	0.000	0.000	184.403
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$55,980.425	\$819.840	\$768.954	\$9,959.683	\$67,528.902	\$13,619.511	\$0.000	\$0.000	\$0.000	\$13,619.511
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$16,199.264	\$278.429	\$261.147	\$4,160.975	\$20,899.814	\$2,640.855	\$0.000	\$0.000	\$0.000	\$2,640.855

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 7 (Static Returns of 0.00%)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 7						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	0.00%	0.00%	1,022.547	46.69%	43.18%	18.86%	0.02%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	0.00%	0.00%	1,033.795	43.96%	40.59%	1.10%	-2.73%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	0.00%	0.00%	1,105.101	42.36%	38.25%	6.90%	-1.60%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	0.00%	0.00%	1,176.110	40.08%	36.13%	6.43%	-2.28%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	0.00%	0.00%	1,246.463	37.98%	34.22%	5.98%	-2.10%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	0.00%	0.00%	1,316.205	36.08%	32.52%	5.60%	-1.90%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	0.00%	0.00%	1,385.744	34.37%	31.01%	5.28%	-1.71%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	0.00%	0.00%	1,455.206	32.86%	29.67%	5.01%	-1.51%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	0.00%	0.00%	1,524.889	31.53%	28.49%	4.79%	-1.33%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	0.00%	0.00%	1,595.092	30.43%	27.53%	4.60%	-1.10%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	0.00%	0.00%	1,665.447	29.49%	26.71%	4.41%	-0.94%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	0.00%	0.00%	1,736.146	28.71%	26.03%	4.25%	-0.78%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	0.00%	0.00%	1,807.776	28.08%	25.48%	4.13%	-0.63%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	0.00%	0.00%	1,880.145	27.60%	25.07%	4.00%	-0.48%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	0.00%	0.00%	1,954.038	27.26%	24.79%	3.93%	-0.34%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	0.00%	0.00%	2,029.535	27.07%	24.64%	3.86%	-0.19%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	0.00%	0.00%	2,107.405	27.03%	24.62%	3.84%	-0.05%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	0.00%	0.00%	2,188.549	27.13%	24.74%	3.85%	0.10%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	0.00%	0.00%	2,272.915	27.39%	24.99%	3.85%	0.26%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	0.00%	0.00%	2,362.042	27.81%	25.39%	3.92%	0.42%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	0.00%	0.00%	2,456.714	28.40%	25.96%	4.01%	0.60%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	0.00%	0.00%	2,557.559	29.20%	26.71%	4.10%	0.79%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	0.00%	0.00%	2,665.617	30.21%	27.66%	4.23%	1.01%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	0.00%	0.00%	2,782.027	31.46%	28.83%	4.37%	1.25%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	0.00%	0.00%	2,908.381	32.98%	30.24%	4.54%	1.52%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	0.00%	0.00%	3,045.742	34.80%	31.93%	4.72%	1.82%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	0.00%	0.00%	3,196.412	36.95%	33.92%	4.95%	2.15%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	0.00%	0.00%	3,362.813	39.47%	36.25%	5.21%	2.51%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	0.00%	0.00%	3,550.490	42.39%	38.95%	5.58%	2.92%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	0.00%	0.00%	3,765.255	45.78%	42.09%	6.05%	3.39%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	0.00%	0.00%	4,018.813	49.73%	45.74%	6.73%	3.95%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	0.00%	0.00%	4,328.086	54.37%	50.02%	7.70%	4.63%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	0.00%	0.00%	4,721.313	59.88%	55.14%	9.09%	5.52%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	0.00%	0.00%	5,252.445	66.62%	61.39%	11.25%	6.74%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	0.00%	0.00%	6,053.603	75.24%	69.43%	15.25%	8.62%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	0.00%	0.00%	7,337.456	86.91%	80.38%	21.21%	11.67%
Total Contributions FY 2023-2059		\$53,909.391							\$95,728.202				
Total Present Value FY 2023-2059¹		\$18,258.959							\$26,340.048				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$41,818.811				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ 8,081.089				
Maximum Annual Increase					18.86%	3.49%					21.21%	11.67%	
Maximum Annual Decrease					-8.93%	-1.51%					-8.93%	-2.73%	

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 7 (Static Returns of 0.00%)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2022 Valuation Baseline					Stress Test Scenario 7					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.307	15.528	14.564	308.147	1,022.547	0.000	0.000	0.000	0.000	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	690.922	15.910	14.923	312.040	1,033.795	-13.907	0.000	0.000	0.000	-13.907
2026	725.432	16.281	15.270	315.119	1,072.101	758.431	16.281	15.270	315.119	1,105.101	32.999	0.000	0.000	0.000	32.999
2027	746.904	16.650	15.616	317.239	1,096.409	826.605	16.650	15.616	317.239	1,176.110	79.701	0.000	0.000	0.000	79.701
2028	768.955	17.014	15.958	318.483	1,120.410	895.007	17.014	15.958	318.483	1,246.463	126.052	0.000	0.000	0.000	126.052
2029	791.592	17.374	16.296	318.859	1,144.121	963.676	17.374	16.296	318.859	1,316.205	172.084	0.000	0.000	0.000	172.084
2030	814.956	17.734	16.633	318.461	1,167.783	1,032.917	17.734	16.633	318.461	1,385.744	217.961	0.000	0.000	0.000	217.961
2031	838.952	18.093	16.970	317.428	1,191.443	1,102.716	18.093	16.970	317.428	1,455.206	263.763	0.000	0.000	0.000	263.763
2032	863.635	18.454	17.308	315.804	1,215.201	1,173.323	18.454	17.308	315.804	1,524.889	309.688	0.000	0.000	0.000	309.688
2033	889.250	18.818	17.650	313.483	1,239.201	1,245.141	18.818	17.650	313.483	1,595.092	355.891	0.000	0.000	0.000	355.891
2034	915.386	19.180	17.989	310.455	1,263.009	1,317.824	19.180	17.989	310.455	1,665.447	402.438	0.000	0.000	0.000	402.438
2035	942.000	19.539	18.326	306.783	1,286.647	1,391.499	19.539	18.326	306.783	1,736.146	449.499	0.000	0.000	0.000	449.499
2036	969.324	19.898	18.663	302.459	1,310.345	1,466.755	19.898	18.663	302.459	1,807.776	497.431	0.000	0.000	0.000	497.431
2037	997.098	20.256	18.999	297.564	1,333.917	1,543.326	20.256	18.999	297.564	1,880.145	546.228	0.000	0.000	0.000	546.228
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,624.042	20.617	19.337	290.042	1,954.038	596.388	0.000	0.000	0.000	596.388
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,706.853	20.979	19.676	282.027	2,029.535	648.063	0.000	0.000	0.000	648.063
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,792.341	21.347	20.022	273.696	2,107.405	701.674	0.000	0.000	0.000	701.674
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,881.670	21.727	20.379	264.773	2,188.549	757.782	0.000	0.000	0.000	757.782
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,974.439	22.113	20.741	255.621	2,272.915	816.706	0.000	0.000	0.000	816.706
2043	1,192.184	22.517	21.119	246.962	1,482.782	2,071.443	22.517	21.119	246.962	2,362.042	879.259	0.000	0.000	0.000	879.259
2044	1,227.092	22.938	21.515	238.990	1,510.535	2,173.271	22.938	21.515	238.990	2,456.714	946.179	0.000	0.000	0.000	946.179
2045	1,261.790	23.375	21.924	232.210	1,539.300	2,280.050	23.375	21.924	232.210	2,557.559	1,018.259	0.000	0.000	0.000	1,018.259
2046	1,296.255	23.831	22.352	226.872	1,569.310	2,392.563	23.831	22.352	226.872	2,665.617	1,096.307	0.000	0.000	0.000	1,096.307
2047	1,329.888	24.301	22.792	223.256	1,600.237	2,511.678	24.301	22.792	223.256	2,782.027	1,181.790	0.000	0.000	0.000	1,181.790
2048	1,362.911	24.788	23.250	221.409	1,632.358	2,638.934	24.788	23.250	221.409	2,908.381	1,276.023	0.000	0.000	0.000	1,276.023
2049	1,395.129	25.286	23.716	220.966	1,665.097	2,775.774	25.286	23.716	220.966	3,045.742	1,380.645	0.000	0.000	0.000	1,380.645
2050	1,426.858	25.789	24.188	221.399	1,698.234	2,925.036	25.789	24.188	221.399	3,196.412	1,498.178	0.000	0.000	0.000	1,498.178
2051	1,458.049	26.292	24.660	222.373	1,731.375	3,089.488	26.292	24.660	222.373	3,362.813	1,631.439	0.000	0.000	0.000	1,631.439
2052	1,489.082	26.797	25.134	223.623	1,764.635	3,274.937	26.797	25.134	223.623	3,550.490	1,785.855	0.000	0.000	0.000	1,785.855
2053	1,519.389	27.301	25.607	225.524	1,797.820	3,486.824	27.301	25.607	225.524	3,765.255	1,967.435	0.000	0.000	0.000	1,967.435
2054	1,549.605	27.814	26.088	228.110	1,831.617	3,736.801	27.814	26.088	228.110	4,018.813	2,187.196	0.000	0.000	0.000	2,187.196
2055	1,580.015	28.338	26.579	231.145	1,866.076	4,042.024	28.338	26.579	231.145	4,328.086	2,462.009	0.000	0.000	0.000	2,462.009
2056	1,610.383	28.867	27.076	234.639	1,900.965	4,430.731	28.867	27.076	234.639	4,721.313	2,820.348	0.000	0.000	0.000	2,820.348
2057	1,640.837	29.404	27.579	238.500	1,936.320	4,956.962	29.404	27.579	238.500	5,252.445	3,316.125	0.000	0.000	0.000	3,316.125
2058	1,671.167	29.945	28.086	242.723	1,971.921	5,752.849	29.945	28.086	242.723	6,053.603	4,081.682	0.000	0.000	0.000	4,081.682
2059	1,701.533	30.490	28.598	247.196	2,007.817	7,031.172	30.490	28.598	247.196	7,337.456	5,329.639	0.000	0.000	0.000	5,329.639
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$84,179.725	\$819.840	\$768.954	\$9,959.683	\$95,728.202	\$41,818.811	\$0.000	\$0.000	\$0.000	\$41,818.811
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$21,639.498	\$278.429	\$261.147	\$4,160.975	\$26,340.048	\$8,081.089	\$0.000	\$0.000	\$0.000	\$8,081.089

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 8 (Static Returns of 6.25%; includes changing discount rate to 6.25% for determining liabilities)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 8						
Year Ending	Projected Investment Return	Total Required Employer Contribution	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
June 30 2022		\$ 944.677	46.78%	45.33%					\$ 944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	45.20%	44.43%	-8.93%	-1.58%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	6.25%	6.25%	1,022.547	45.82%	44.52%	18.86%	0.62%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	6.25%	6.25%	1,072.897	44.60%	44.73%	4.92%	-1.22%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	6.25%	6.25%	1,097.883	45.02%	44.97%	2.33%	0.41%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	6.25%	6.25%	1,122.776	45.27%	45.25%	2.27%	0.25%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	6.25%	6.25%	1,147.354	45.57%	45.57%	2.19%	0.30%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	6.25%	6.25%	1,171.635	45.92%	45.92%	2.12%	0.35%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	6.25%	6.25%	1,195.866	46.31%	46.31%	2.07%	0.39%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	6.25%	6.25%	1,220.095	46.73%	46.73%	2.03%	0.42%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	6.25%	6.25%	1,244.424	47.19%	47.19%	1.99%	0.46%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	6.25%	6.25%	1,269.001	47.72%	47.72%	1.97%	0.53%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	6.25%	6.25%	1,293.382	48.29%	48.29%	1.92%	0.57%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	6.25%	6.25%	1,317.589	48.89%	48.89%	1.87%	0.60%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	6.25%	6.25%	1,341.857	49.54%	49.54%	1.84%	0.65%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	6.25%	6.25%	1,365.995	50.22%	50.22%	1.80%	0.69%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	6.25%	6.25%	1,390.299	50.96%	50.96%	1.78%	0.74%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	6.25%	6.25%	1,414.693	51.75%	51.75%	1.75%	0.79%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	6.25%	6.25%	1,439.536	52.60%	52.60%	1.76%	0.85%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	6.25%	6.25%	1,465.174	53.52%	53.52%	1.78%	0.91%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	6.25%	6.25%	1,491.228	54.50%	54.50%	1.78%	0.98%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	6.25%	6.25%	1,518.441	55.56%	55.56%	1.82%	1.06%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	6.25%	6.25%	1,546.861	56.70%	56.70%	1.87%	1.14%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	6.25%	6.25%	1,576.317	57.94%	57.94%	1.90%	1.24%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	6.25%	6.25%	1,607.049	59.29%	59.29%	1.95%	1.34%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	6.25%	6.25%	1,638.719	60.74%	60.74%	1.97%	1.46%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	6.25%	6.25%	1,671.613	62.33%	62.33%	2.01%	1.58%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	6.25%	6.25%	1,705.140	64.04%	64.04%	2.01%	1.72%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	6.25%	6.25%	1,739.073	65.90%	65.90%	1.99%	1.86%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	6.25%	6.25%	1,773.011	67.90%	67.90%	1.95%	2.00%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	6.25%	6.25%	1,807.071	70.05%	70.05%	1.92%	2.15%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	6.25%	6.25%	1,841.054	72.36%	72.36%	1.88%	2.31%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	6.25%	6.25%	1,875.664	74.84%	74.84%	1.88%	2.47%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	6.25%	6.25%	1,910.952	77.48%	77.48%	1.88%	2.65%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	6.25%	6.25%	1,946.680	80.31%	80.31%	1.87%	2.83%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	6.25%	6.25%	1,982.885	83.33%	83.33%	1.86%	3.02%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	6.25%	6.25%	2,019.342	86.56%	86.56%	1.84%	3.22%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	6.25%	6.25%	2,056.101	90.00%	90.00%	1.82%	3.45%
Total Contributions FY 2023-2059		\$53,909.391							\$55,160.529				
Total Present Value FY 2023-2059¹		\$18,258.959							\$18,655.630				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$ 1,251.138				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ 396.671				
Maximum Annual Increase					18.86%	3.49%						18.86%	3.45%
Maximum Annual Decrease					-8.93%	-1.51%						-8.93%	-1.58%

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 8 (Static Returns of 6.25%; includes changing discount rate to 6.25% for determining liabilities)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2021 Valuation Baseline					Stress Test Scenario 8					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	657.340	15.528	14.564	335.114	1,022.547	-26.967	0.000	0.000	0.000	26.967
2025	704.829	15.910	14.923	312.040	1,047.702	702.990	15.910	14.923	339.075	1,072.897	-1.839	0.000	0.000	0.000	27.034
2026	725.432	16.281	15.270	315.119	1,072.101	724.148	16.281	15.270	342.185	1,097.883	-1.284	0.000	0.000	0.000	27.066
2027	746.904	16.650	15.616	317.239	1,096.409	746.207	16.650	15.616	344.303	1,122.776	-0.697	0.000	0.000	0.000	27.064
2028	768.955	17.014	15.958	318.483	1,120.410	768.868	17.014	15.958	345.514	1,147.354	-0.088	0.000	0.000	0.000	27.031
2029	791.592	17.374	16.296	318.859	1,144.121	792.134	17.374	16.296	345.831	1,171.635	0.543	0.000	0.000	0.000	26.971
2030	814.956	17.734	16.633	318.461	1,167.783	816.151	17.734	16.633	345.349	1,195.866	1.195	0.000	0.000	0.000	26.888
2031	838.952	18.093	16.970	317.428	1,191.443	840.813	18.093	16.970	344.219	1,220.095	1.861	0.000	0.000	0.000	26.791
2032	863.635	18.454	17.308	315.804	1,215.201	866.169	18.454	17.308	342.494	1,244.424	2.534	0.000	0.000	0.000	26.689
2033	889.250	18.818	17.650	313.483	1,239.201	892.467	18.818	17.650	340.066	1,269.001	3.217	0.000	0.000	0.000	26.583
2034	915.386	19.180	17.989	310.455	1,263.009	919.296	19.180	17.989	336.917	1,293.382	3.911	0.000	0.000	0.000	26.462
2035	942.000	19.539	18.326	306.783	1,286.647	946.609	19.539	18.326	333.116	1,317.589	4.609	0.000	0.000	0.000	26.333
2036	969.324	19.898	18.663	302.459	1,310.345	974.635	19.898	18.663	328.660	1,341.857	5.311	0.000	0.000	0.000	26.200
2037	997.098	20.256	18.999	297.564	1,333.917	1,003.110	20.256	18.999	323.629	1,365.995	6.013	0.000	0.000	0.000	26.065
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,034.362	20.617	19.337	315.983	1,390.299	6.708	0.000	0.000	0.000	25.941
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,066.182	20.979	19.676	307.856	1,414.693	7.393	0.000	0.000	0.000	25.829
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,098.730	21.347	20.022	299.438	1,439.536	8.063	0.000	0.000	0.000	25.742
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,132.623	21.727	20.379	290.445	1,465.174	8.735	0.000	0.000	0.000	25.672
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,167.120	22.113	20.741	281.254	1,491.228	9.386	0.000	0.000	0.000	25.633
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,202.186	22.517	21.119	272.619	1,518.441	10.002	0.000	0.000	0.000	25.656
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,237.676	22.938	21.515	264.732	1,546.861	10.584	0.000	0.000	0.000	25.742
2045	1,261.790	23.375	21.924	232.210	1,539.300	1,272.901	23.375	21.924	258.117	1,576.317	11.110	0.000	0.000	0.000	25.907
2046	1,296.255	23.831	22.352	226.872	1,569.310	1,307.839	23.831	22.352	253.027	1,607.049	11.584	0.000	0.000	0.000	26.155
2047	1,329.888	24.301	22.792	223.256	1,600.237	1,341.883	24.301	22.792	249.743	1,638.719	11.995	0.000	0.000	0.000	26.488
2048	1,362.911	24.788	23.250	221.409	1,632.358	1,375.265	24.788	23.250	248.310	1,671.613	12.354	0.000	0.000	0.000	26.901
2049	1,395.129	25.286	23.716	220.966	1,665.097	1,407.799	25.286	23.716	248.339	1,705.140	12.670	0.000	0.000	0.000	27.373
2050	1,426.858	25.789	24.188	221.399	1,698.234	1,439.813	25.789	24.188	249.283	1,739.073	12.955	0.000	0.000	0.000	27.884
2051	1,458.049	26.292	24.660	222.373	1,731.375	1,471.267	26.292	24.660	250.792	1,773.011	13.217	0.000	0.000	0.000	28.419
2052	1,489.082	26.797	25.134	223.623	1,764.635	1,502.543	26.797	25.134	252.597	1,807.071	13.462	0.000	0.000	0.000	28.975
2053	1,519.389	27.301	25.607	225.524	1,797.820	1,533.067	27.301	25.607	255.080	1,841.054	13.678	0.000	0.000	0.000	29.556
2054	1,549.605	27.814	26.088	228.110	1,831.617	1,563.487	27.814	26.088	258.275	1,875.664	13.882	0.000	0.000	0.000	30.165
2055	1,580.015	28.338	26.579	231.145	1,866.076	1,594.102	28.338	26.579	261.934	1,910.952	14.087	0.000	0.000	0.000	30.789
2056	1,610.383	28.867	27.076	234.639	1,900.965	1,624.672	28.867	27.076	266.065	1,946.680	14.289	0.000	0.000	0.000	31.426
2057	1,640.837	29.404	27.579	238.500	1,936.320	1,655.327	29.404	27.579	270.574	1,982.885	14.491	0.000	0.000	0.000	32.074
2058	1,671.167	29.945	28.086	242.723	1,971.921	1,685.861	29.945	28.086	275.451	2,019.342	14.693	0.000	0.000	0.000	32.728
2059	1,701.533	30.490	28.598	247.196	2,007.817	1,716.433	30.490	28.598	280.581	2,056.101	14.900	0.000	0.000	0.000	33.384
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$42,619.471	\$819.840	\$768.954	\$10,952.267	\$55,160.529	\$258.557	\$0.000	\$0.000	\$992.584	\$1,251.138
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$13,594.922	\$278.429	\$261.147	\$4,521.134	\$18,655.630	\$36.513	\$0.000	\$0.000	\$360.159	\$396.671

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 9 (Population Decreases 1% Per Year for 10 Years)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 9						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	6.50%	6.50%	1,022.547	47.39%	45.98%	18.86%	0.72%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	6.50%	6.50%	1,096.239	46.30%	46.39%	7.21%	-1.09%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	6.50%	6.50%	1,113.659	46.85%	46.80%	1.59%	0.56%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	6.50%	6.50%	1,130.477	47.25%	47.23%	1.51%	0.40%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	6.50%	6.50%	1,146.409	47.67%	47.67%	1.41%	0.42%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	6.50%	6.50%	1,161.506	48.12%	48.11%	1.32%	0.45%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	6.50%	6.50%	1,175.963	48.57%	48.57%	1.24%	0.45%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	6.50%	6.50%	1,189.870	49.02%	49.02%	1.18%	0.46%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	6.50%	6.50%	1,203.256	49.48%	49.48%	1.12%	0.46%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	6.50%	6.50%	1,216.280	49.97%	49.97%	1.08%	0.49%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	6.50%	6.50%	1,237.289	50.50%	50.50%	1.73%	0.52%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	6.50%	6.50%	1,258.056	51.05%	51.05%	1.68%	0.55%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	6.50%	6.50%	1,278.819	51.64%	51.64%	1.65%	0.59%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	6.50%	6.50%	1,299.374	52.26%	52.26%	1.61%	0.62%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	6.50%	6.50%	1,320.023	52.92%	52.92%	1.59%	0.66%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	6.50%	6.50%	1,340.706	53.63%	53.63%	1.57%	0.71%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	6.50%	6.50%	1,361.804	54.39%	54.39%	1.57%	0.76%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	6.50%	6.50%	1,383.680	55.20%	55.20%	1.61%	0.81%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	6.50%	6.50%	1,405.958	56.07%	56.07%	1.61%	0.87%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	6.50%	6.50%	1,429.423	57.02%	57.02%	1.67%	0.94%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	6.50%	6.50%	1,454.163	58.04%	58.04%	1.73%	1.02%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	6.50%	6.50%	1,480.035	59.15%	59.15%	1.78%	1.11%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	6.50%	6.50%	1,507.320	60.37%	60.37%	1.84%	1.21%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	6.50%	6.50%	1,535.688	61.69%	61.69%	1.88%	1.33%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	6.50%	6.50%	1,565.433	63.14%	63.14%	1.94%	1.45%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	6.50%	6.50%	1,595.964	64.73%	64.73%	1.95%	1.58%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	6.50%	6.50%	1,627.034	66.45%	66.45%	1.95%	1.73%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	6.50%	6.50%	1,658.212	68.33%	68.33%	1.92%	1.88%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	6.50%	6.50%	1,689.614	70.37%	70.37%	1.89%	2.04%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	6.50%	6.50%	1,721.020	72.57%	72.57%	1.86%	2.20%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	6.50%	6.50%	1,753.151	74.95%	74.95%	1.87%	2.38%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	6.50%	6.50%	1,786.064	77.53%	77.53%	1.88%	2.57%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	6.50%	6.50%	1,819.508	80.30%	80.30%	1.87%	2.77%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	6.50%	6.50%	1,853.521	83.29%	83.29%	1.87%	2.99%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	6.50%	6.50%	1,887.870	86.51%	86.51%	1.85%	3.23%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	6.50%	6.50%	1,922.610	90.00%	90.00%	1.84%	3.48%
Total Contributions FY 2023-2059		\$53,909.391							\$52,488.870				
Total Present Value FY 2023-2059¹		\$18,258.959							\$18,046.065				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$ -1,420.521				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ -212.894				
Maximum Annual Increase					18.86%	3.49%						18.86%	3.48%
Maximum Annual Decrease					-8.93%	-1.51%						-8.93%	-1.09%

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 9 (Population Decreases 1% Per Year for 10 Years)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions					Stress Test Scenario 9					Difference				
	June 30, 2022 Valuation Baseline					Stress Test Scenario 9					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.248	15.422	14.464	308.413	1,022.547	-0.059	-0.106	-0.100	0.265	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	753.309	15.690	14.716	312.524	1,096.239	48.480	-0.220	-0.206	0.484	48.537
2026	725.432	16.281	15.270	315.119	1,072.101	766.959	15.939	14.950	315.811	1,113.659	41.527	-0.341	-0.320	0.692	41.558
2027	746.904	16.650	15.616	317.239	1,096.409	780.986	16.180	15.176	318.135	1,130.477	34.082	-0.470	-0.441	0.896	34.068
2028	768.955	17.014	15.958	318.483	1,120.410	795.045	16.408	15.390	319.567	1,146.409	26.090	-0.606	-0.568	1.084	25.999
2029	791.592	17.374	16.296	318.859	1,144.121	809.172	16.624	15.592	320.118	1,161.506	17.580	-0.750	-0.704	1.258	17.385
2030	814.956	17.734	16.633	318.461	1,167.783	823.472	16.831	15.786	319.873	1,175.963	8.516	-0.903	-0.847	1.413	8.180
2031	838.952	18.093	16.970	317.428	1,191.443	837.904	17.030	15.973	318.963	1,189.870	-1.048	-1.063	-0.997	1.535	-1.573
2032	863.635	18.454	17.308	315.804	1,215.201	852.456	17.222	16.153	317.426	1,203.256	-11.179	-1.232	-1.155	1.622	-11.945
2033	889.250	18.818	17.650	313.483	1,239.201	867.380	17.408	16.328	315.165	1,216.280	-21.870	-1.410	-1.322	1.682	-22.921
2034	915.386	19.180	17.989	310.455	1,263.009	891.115	17.709	16.610	311.855	1,237.289	-24.270	-1.471	-1.380	1.401	-25.720
2035	942.000	19.539	18.326	306.783	1,286.647	915.233	18.006	16.888	307.928	1,258.056	-26.767	-1.533	-1.437	1.146	-28.591
2036	969.324	19.898	18.663	302.459	1,310.345	940.017	18.303	17.167	303.332	1,278.819	-29.307	-1.595	-1.496	0.872	-31.526
2037	997.098	20.256	18.999	297.564	1,333.917	965.200	18.597	17.443	298.134	1,299.374	-31.897	-1.659	-1.556	0.570	-34.543
2038	1,027.654	20.617	19.337	290.042	1,357.650	993.223	18.893	17.720	290.187	1,320.023	-34.431	-1.724	-1.617	0.144	-37.627
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,021.806	19.189	17.998	281.713	1,340.706	-36.983	-1.790	-1.679	-0.314	-40.765
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,051.139	19.491	18.281	272.893	1,361.804	-39.528	-1.856	-1.741	-0.803	-43.927
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,081.843	19.804	18.575	263.458	1,383.680	-42.045	-1.923	-1.804	-1.315	-47.087
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,113.192	20.123	18.874	253.769	1,405.958	-44.542	-1.991	-1.867	-1.852	-50.251
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,145.240	20.459	19.189	244.536	1,429.423	-46.944	-2.058	-1.931	-2.426	-53.359
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,177.883	20.813	19.521	235.947	1,454.163	-49.210	-2.126	-1.994	-3.043	-56.372
2045	1,261.790	23.375	21.924	232.210	1,539.300	1,210.477	21.183	19.868	228.507	1,480.035	-51.313	-2.192	-2.056	-3.703	-59.265
2046	1,296.255	23.831	22.352	226.872	1,569.310	1,243.047	21.574	20.235	222.465	1,507.320	-53.208	-2.257	-2.117	-4.407	-61.990
2047	1,329.888	24.301	22.792	223.256	1,600.237	1,274.992	21.980	20.615	218.101	1,535.688	-54.896	-2.321	-2.177	-5.155	-64.549
2048	1,362.911	24.788	23.250	221.409	1,632.358	1,306.545	22.405	21.015	215.468	1,565.433	-56.366	-2.383	-2.235	-5.941	-66.925
2049	1,395.129	25.286	23.716	220.966	1,665.097	1,337.494	22.842	21.425	214.204	1,595.964	-57.636	-2.443	-2.292	-6.762	-69.133
2050	1,426.858	25.789	24.188	221.399	1,698.234	1,368.115	23.287	21.842	213.791	1,627.034	-58.743	-2.502	-2.346	-7.608	-71.200
2051	1,458.049	26.292	24.660	222.373	1,731.375	1,398.319	23.733	22.260	213.900	1,658.212	-59.731	-2.559	-2.400	-8.473	-73.163
2052	1,489.082	26.797	25.134	223.623	1,764.635	1,428.474	24.183	22.682	214.275	1,689.614	-60.608	-2.614	-2.452	-9.347	-75.021
2053	1,519.389	27.301	25.607	225.524	1,797.820	1,457.983	24.632	23.103	215.301	1,721.020	-61.405	-2.669	-2.503	-10.223	-76.800
2054	1,549.605	27.814	26.088	228.110	1,831.617	1,487.501	25.092	23.535	217.023	1,753.151	-62.104	-2.722	-2.553	-11.087	-78.466
2055	1,580.015	28.338	26.579	231.145	1,866.076	1,517.308	25.563	23.976	219.216	1,786.064	-62.707	-2.774	-2.602	-11.929	-80.012
2056	1,610.383	28.867	27.076	234.639	1,900.965	1,547.139	26.042	24.425	221.902	1,819.508	-63.244	-2.826	-2.650	-12.737	-81.457
2057	1,640.837	29.404	27.579	238.500	1,936.320	1,577.106	26.529	24.882	225.004	1,853.521	-63.731	-2.876	-2.697	-13.496	-82.799
2058	1,671.167	29.945	28.086	242.723	1,971.921	1,606.974	27.020	25.343	228.532	1,887.870	-64.193	-2.925	-2.743	-14.191	-84.051
2059	1,701.533	30.490	28.598	247.196	2,007.817	1,636.892	27.517	25.809	232.392	1,922.610	-64.641	-2.973	-2.788	-14.805	-85.207
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$41,202.583	\$753.978	\$707.180	\$9,825.129	\$52,488.870	-\$1,158.331	-\$65.862	-\$61.774	-\$134.554	-\$1,420.521
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$13,393.750	\$260.883	\$244.690	\$4,146.743	\$18,046.065	-\$164.659	-\$17.546	-\$16.457	-\$14.232	-\$212.894

¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 10 (Population Increases 1% Per Year for 10 Years)
Based on Actuarial Valuation as of June 30, 2022

\$ in Millions													
June 30, 2022 Valuation Baseline							Stress Test Scenario 10						
Year Ending June 30	Projected Investment Return	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution \$	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Increase in	
					Total Required Employer Contribution	Increase in AVA Funded Ratio						Total Required Employer Contribution	Increase in AVA Funded Ratio
2022		944.677	46.78%	45.33%					944.677	46.78%	45.33%		
2023	6.50%	860.325	46.46%	44.94%	-8.93%	-0.32%	8.50%		860.325	46.67%	45.80%	-8.93%	-0.11%
2024	6.50%	1,022.547	46.95%	45.09%	18.86%	0.49%	6.50%	6.50%	1,022.547	47.40%	45.99%	18.86%	0.72%
2025	6.50%	1,047.702	45.44%	45.28%	2.46%	-1.51%	6.50%	6.50%	974.145	45.87%	45.96%	-4.73%	-1.52%
2026	6.50%	1,072.101	45.60%	45.51%	2.33%	0.16%	6.50%	6.50%	1,004.123	46.04%	45.98%	3.08%	0.16%
2027	6.50%	1,096.409	45.81%	45.77%	2.27%	0.21%	6.50%	6.50%	1,034.608	46.08%	46.06%	3.04%	0.05%
2028	6.50%	1,120.410	46.07%	46.06%	2.19%	0.26%	6.50%	6.50%	1,065.464	46.20%	46.19%	2.98%	0.11%
2029	6.50%	1,144.121	46.40%	46.39%	2.12%	0.33%	6.50%	6.50%	1,096.717	46.39%	46.39%	2.93%	0.19%
2030	6.50%	1,167.783	46.76%	46.76%	2.07%	0.36%	6.50%	6.50%	1,128.637	46.64%	46.64%	2.91%	0.25%
2031	6.50%	1,191.443	47.16%	47.16%	2.03%	0.40%	6.50%	6.50%	1,161.247	46.96%	46.96%	2.89%	0.32%
2032	6.50%	1,215.201	47.59%	47.59%	1.99%	0.43%	6.50%	6.50%	1,194.750	47.34%	47.34%	2.89%	0.38%
2033	6.50%	1,239.201	48.09%	48.09%	1.97%	0.50%	6.50%	6.50%	1,229.241	47.83%	47.83%	2.89%	0.49%
2034	6.50%	1,263.009	48.63%	48.63%	1.92%	0.54%	6.50%	6.50%	1,255.103	48.36%	48.36%	2.10%	0.53%
2035	6.50%	1,286.647	49.21%	49.21%	1.87%	0.58%	6.50%	6.50%	1,280.865	48.94%	48.94%	2.05%	0.58%
2036	6.50%	1,310.345	49.83%	49.83%	1.84%	0.62%	6.50%	6.50%	1,306.744	49.56%	49.56%	2.02%	0.62%
2037	6.50%	1,333.917	50.49%	50.49%	1.80%	0.66%	6.50%	6.50%	1,332.574	50.23%	50.23%	1.98%	0.67%
2038	6.50%	1,357.650	51.20%	51.20%	1.78%	0.71%	6.50%	6.50%	1,358.627	50.96%	50.96%	1.96%	0.73%
2039	6.50%	1,381.471	51.96%	51.96%	1.75%	0.76%	6.50%	6.50%	1,384.818	51.75%	51.75%	1.93%	0.79%
2040	6.50%	1,405.731	52.78%	52.78%	1.76%	0.82%	6.50%	6.50%	1,411.464	52.60%	52.60%	1.92%	0.85%
2041	6.50%	1,430.767	53.66%	53.66%	1.78%	0.88%	6.50%	6.50%	1,438.868	53.52%	53.52%	1.94%	0.92%
2042	6.50%	1,456.209	54.62%	54.62%	1.78%	0.95%	6.50%	6.50%	1,466.676	54.51%	54.51%	1.93%	0.99%
2043	6.50%	1,482.782	55.64%	55.64%	1.82%	1.03%	6.50%	6.50%	1,495.536	55.59%	55.59%	1.97%	1.07%
2044	6.50%	1,510.535	56.76%	56.76%	1.87%	1.11%	6.50%	6.50%	1,525.459	56.75%	56.75%	2.00%	1.16%
2045	6.50%	1,539.300	57.97%	57.97%	1.90%	1.21%	6.50%	6.50%	1,556.254	58.01%	58.01%	2.02%	1.26%
2046	6.50%	1,569.310	59.28%	59.28%	1.95%	1.32%	6.50%	6.50%	1,588.105	59.38%	59.38%	2.05%	1.37%
2047	6.50%	1,600.237	60.72%	60.72%	1.97%	1.43%	6.50%	6.50%	1,620.690	60.87%	60.87%	2.05%	1.48%
2048	6.50%	1,632.358	62.27%	62.27%	2.01%	1.56%	6.50%	6.50%	1,654.265	62.48%	62.48%	2.07%	1.61%
2049	6.50%	1,665.097	63.97%	63.97%	2.01%	1.69%	6.50%	6.50%	1,688.280	64.22%	64.22%	2.06%	1.74%
2050	6.50%	1,698.234	65.80%	65.80%	1.99%	1.84%	6.50%	6.50%	1,722.548	66.09%	66.09%	2.03%	1.88%
2051	6.50%	1,731.375	67.79%	67.79%	1.95%	1.99%	6.50%	6.50%	1,756.720	68.11%	68.11%	1.98%	2.02%
2052	6.50%	1,764.635	69.93%	69.93%	1.92%	2.14%	6.50%	6.50%	1,790.911	70.28%	70.28%	1.95%	2.16%
2053	6.50%	1,797.820	72.24%	72.24%	1.88%	2.30%	6.50%	6.50%	1,824.950	72.59%	72.59%	1.90%	2.31%
2054	6.50%	1,831.617	74.71%	74.71%	1.88%	2.47%	6.50%	6.50%	1,859.478	75.06%	75.06%	1.89%	2.47%
2055	6.50%	1,866.076	77.37%	77.37%	1.88%	2.65%	6.50%	6.50%	1,894.538	77.70%	77.70%	1.89%	2.63%
2056	6.50%	1,900.965	80.21%	80.21%	1.87%	2.84%	6.50%	6.50%	1,929.919	80.50%	80.50%	1.87%	2.80%
2057	6.50%	1,936.320	83.25%	83.25%	1.86%	3.04%	6.50%	6.50%	1,965.659	83.47%	83.47%	1.85%	2.98%
2058	6.50%	1,971.921	86.51%	86.51%	1.84%	3.26%	6.50%	6.50%	2,001.551	86.64%	86.64%	1.83%	3.16%
2059	6.50%	2,007.817	90.00%	90.00%	1.82%	3.49%	6.50%	6.50%	2,037.639	90.00%	90.00%	1.80%	3.37%
Total Contributions FY 2023-2059		\$53,909.391							\$53,920.045				
Total Present Value FY 2023-2059¹		\$18,258.959							\$18,032.727				
Difference from June 30, 2022 Valuation													
Total Contributions FY 2023-2059		\$ 0.000							\$ 10.654				
Total Present Value FY 2023-2059¹		\$ 0.000							\$ -226.232				
Maximum Annual Increase					18.86%	3.49%					18.86%	3.37%	
Maximum Annual Decrease					-8.93%	-1.51%					-8.93%	-1.52%	

¹In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



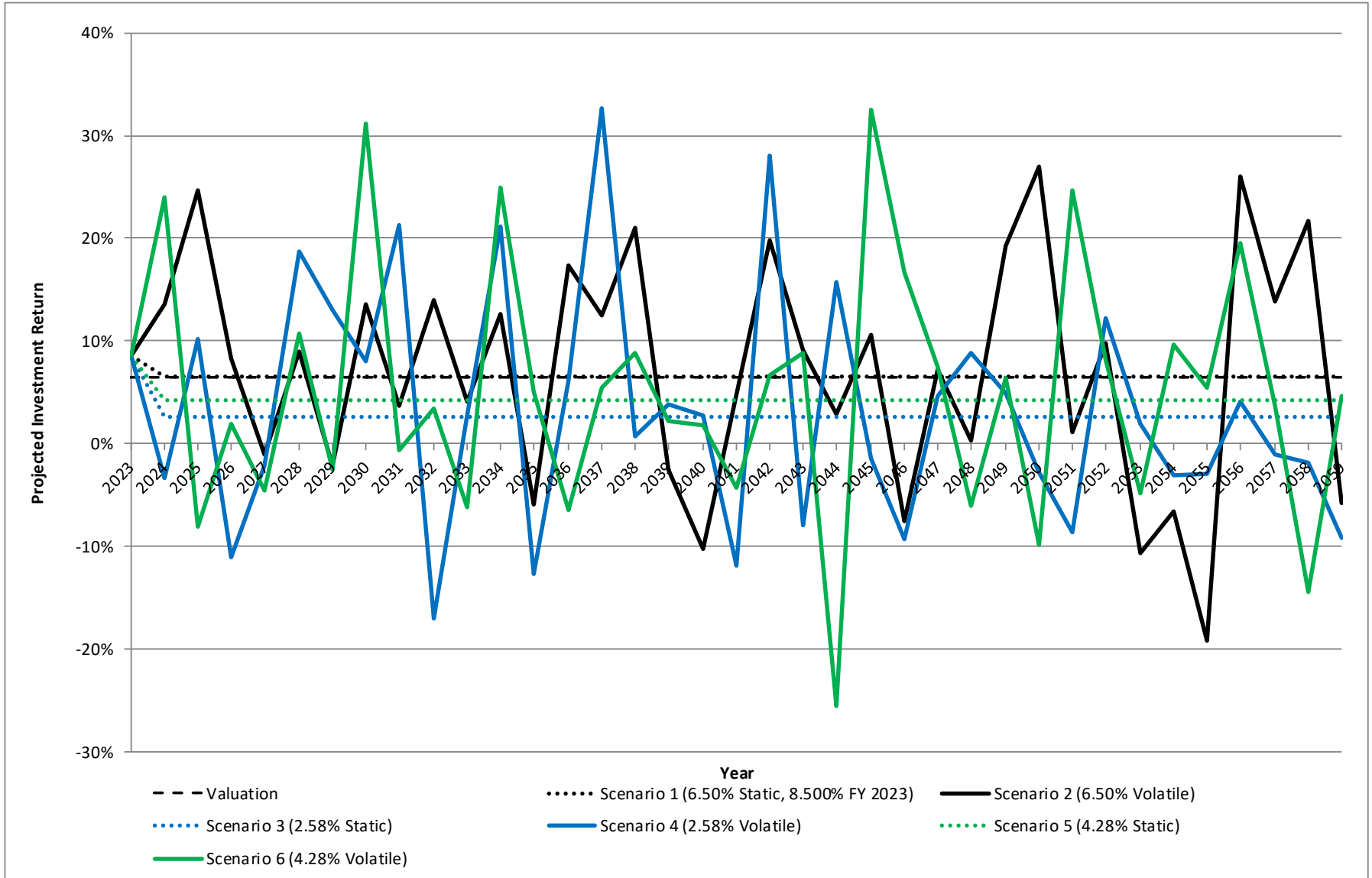
Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 10 (Population Increases 1% Per Year for 10 Years)
Based on Actuarial Valuation as of June 30, 2022
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions					Stress Test Scenario 10					Difference				
	June 30, 2022 Valuation Baseline					Stress Test Scenario 10					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	Additional State Contributions	State Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2022					\$944.677					\$944.677					\$0.000
2023	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$537.396	\$14.256	\$13.371	\$295.302	860.325	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2024	684.307	15.528	14.564	308.147	1,022.547	684.367	15.634	14.664	307.882	1,022.547	0.059	0.106	0.100	-0.265	0.000
2025	704.829	15.910	14.923	312.040	1,047.702	631.331	16.132	15.131	311.551	974.145	-73.498	0.222	0.208	-0.489	-73.557
2026	725.432	16.281	15.270	315.119	1,072.101	657.487	16.629	15.596	314.411	1,004.123	-67.945	0.348	0.326	-0.708	-67.978
2027	746.904	16.650	15.616	317.239	1,096.409	685.091	17.133	16.070	316.313	1,034.608	-61.813	0.484	0.454	-0.926	-61.801
2028	768.955	17.014	15.958	318.483	1,120.410	713.921	17.644	16.549	317.349	1,065.464	-55.034	0.630	0.591	-1.134	-54.946
2029	791.592	17.374	16.296	318.859	1,144.121	743.994	18.162	17.035	317.527	1,096.717	-47.598	0.788	0.739	-1.333	-47.404
2030	814.956	17.734	16.633	318.461	1,167.783	775.471	18.691	17.530	316.945	1,128.637	-39.485	0.957	0.898	-1.516	-39.146
2031	838.952	18.093	16.970	317.428	1,191.443	808.222	19.231	18.037	315.758	1,161.247	-30.730	1.138	1.067	-1.670	-30.196
2032	863.635	18.454	17.308	315.804	1,215.201	842.397	19.785	18.557	314.010	1,194.750	-21.238	1.332	1.249	-1.795	-20.451
2033	889.250	18.818	17.650	313.483	1,239.201	878.202	20.357	19.093	311.590	1,229.241	-11.048	1.539	1.443	-1.893	-9.960
2034	915.386	19.180	17.989	310.455	1,263.009	905.954	20.785	19.495	308.869	1,255.103	-9.431	1.605	1.506	-1.585	-7.906
2035	942.000	19.539	18.326	306.783	1,286.647	934.286	21.212	19.895	305.473	1,280.865	-7.714	1.673	1.569	-1.310	-5.782
2036	969.324	19.898	18.663	302.459	1,310.345	963.361	21.640	20.297	301.446	1,306.744	-5.963	1.742	1.634	-1.014	-3.601
2037	997.098	20.256	18.999	297.564	1,333.917	992.929	22.068	20.698	296.880	1,332.574	-4.169	1.811	1.699	-0.684	-1.343
2038	1,027.654	20.617	19.337	290.042	1,357.650	1,025.220	22.499	21.103	289.805	1,358.627	-2.434	1.883	1.766	-0.237	0.977
2039	1,058.789	20.979	19.676	282.027	1,381.471	1,058.103	22.933	21.510	282.272	1,384.818	-0.686	1.955	1.833	0.246	3.347
2040	1,090.666	21.347	20.022	273.696	1,405.731	1,091.709	23.374	21.923	274.458	1,411.464	1.042	2.027	1.902	0.762	5.733
2041	1,123.888	21.727	20.379	264.773	1,430.767	1,126.616	23.828	22.349	266.075	1,438.868	2.728	2.101	1.971	1.302	8.101
2042	1,157.733	22.113	20.741	255.621	1,456.209	1,162.119	24.289	22.781	257.488	1,466.676	4.385	2.175	2.040	1.866	10.467
2043	1,192.184	22.517	21.119	246.962	1,482.782	1,198.107	24.767	23.229	249.433	1,495.536	5.923	2.250	2.110	2.471	12.754
2044	1,227.092	22.938	21.515	238.990	1,510.535	1,234.389	25.262	23.694	242.113	1,525.459	7.297	2.324	2.179	3.123	14.924
2045	1,261.790	23.375	21.924	232.210	1,539.300	1,270.276	25.772	24.172	236.033	1,556.254	8.486	2.397	2.248	3.823	16.954
2046	1,296.255	23.831	22.352	226.872	1,569.310	1,305.693	26.300	24.667	231.445	1,588.105	9.438	2.469	2.315	4.574	18.795
2047	1,329.888	24.301	22.792	223.256	1,600.237	1,340.047	26.839	25.173	228.630	1,620.690	10.159	2.539	2.381	5.375	20.453
2048	1,362.911	24.788	23.250	221.409	1,632.358	1,373.545	27.395	25.695	227.630	1,654.265	10.634	2.607	2.445	6.221	21.907
2049	1,395.129	25.286	23.716	220.966	1,665.097	1,406.024	27.958	26.223	228.075	1,688.280	10.895	2.673	2.507	7.108	23.183
2050	1,426.858	25.789	24.188	221.399	1,698.234	1,437.843	28.526	26.755	229.424	1,722.548	10.985	2.737	2.567	8.025	24.314
2051	1,458.049	26.292	24.660	222.373	1,731.375	1,469.005	29.092	27.286	231.337	1,756.720	10.955	2.800	2.626	8.964	25.345
2052	1,489.082	26.797	25.134	223.623	1,764.635	1,499.896	29.658	27.817	233.539	1,790.911	10.814	2.861	2.683	9.917	26.276
2053	1,519.389	27.301	25.607	225.524	1,797.820	1,529.985	30.222	28.346	236.397	1,824.950	10.597	2.921	2.739	10.873	27.130
2054	1,549.605	27.814	26.088	228.110	1,831.617	1,559.872	30.794	28.882	239.930	1,859.478	10.268	2.979	2.794	11.820	27.861
2055	1,580.015	28.338	26.579	231.145	1,866.076	1,589.847	31.374	29.427	243.889	1,894.538	9.832	3.037	2.848	12.744	28.462
2056	1,610.383	28.867	27.076	234.639	1,900.965	1,619.709	31.960	29.976	248.274	1,929.919	9.326	3.093	2.901	13.635	28.954
2057	1,640.837	29.404	27.579	238.500	1,936.320	1,649.600	32.552	30.531	252.975	1,965.659	8.763	3.148	2.952	14.475	29.339
2058	1,671.167	29.945	28.086	242.723	1,971.921	1,679.345	33.146	31.089	257.911	2,001.551	8.178	3.201	3.003	15.248	29.630
2059	1,701.533	30.490	28.598	247.196	2,007.817	1,709.113	33.744	31.650	263.132	2,037.639	7.580	3.254	3.052	15.936	29.822
Total Contributions FY 2023-2059	\$42,360.914	\$819.840	\$768.954	\$9,959.683	\$53,909.391	\$42,090.471	\$891.643	\$836.300	\$10,101.632	\$53,920.045	-\$270.443	\$71.803	\$67.346	\$141.949	\$10.654
Total Present Value FY 2023-2059¹	\$13,558.409	\$278.429	\$261.147	\$4,160.975	\$18,258.959	\$13,280.629	\$297.454	\$278.991	\$4,175.653	\$18,032.727	-\$277.780	\$19.026	\$17.845	\$14.678	-\$226.232

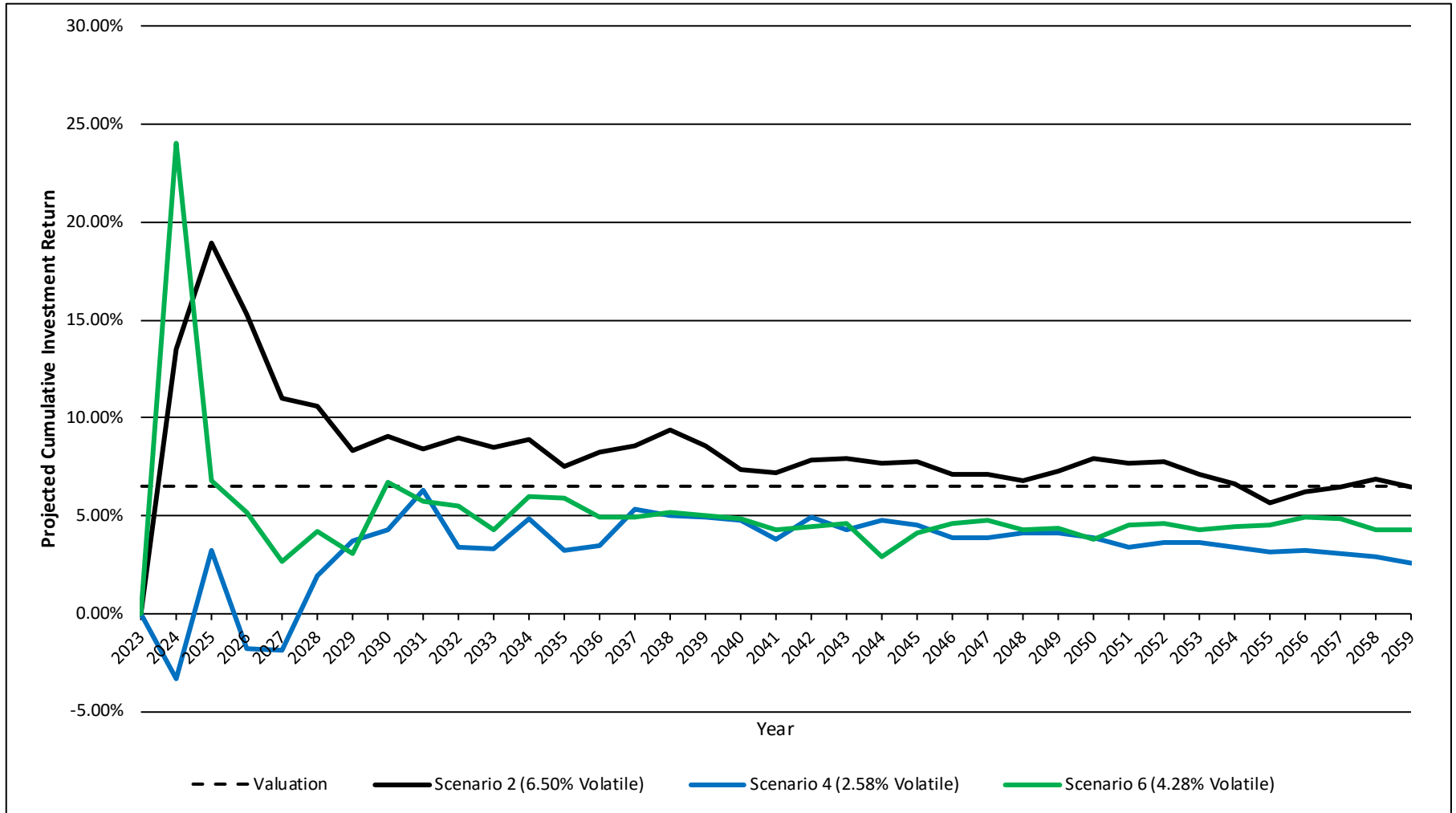
¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



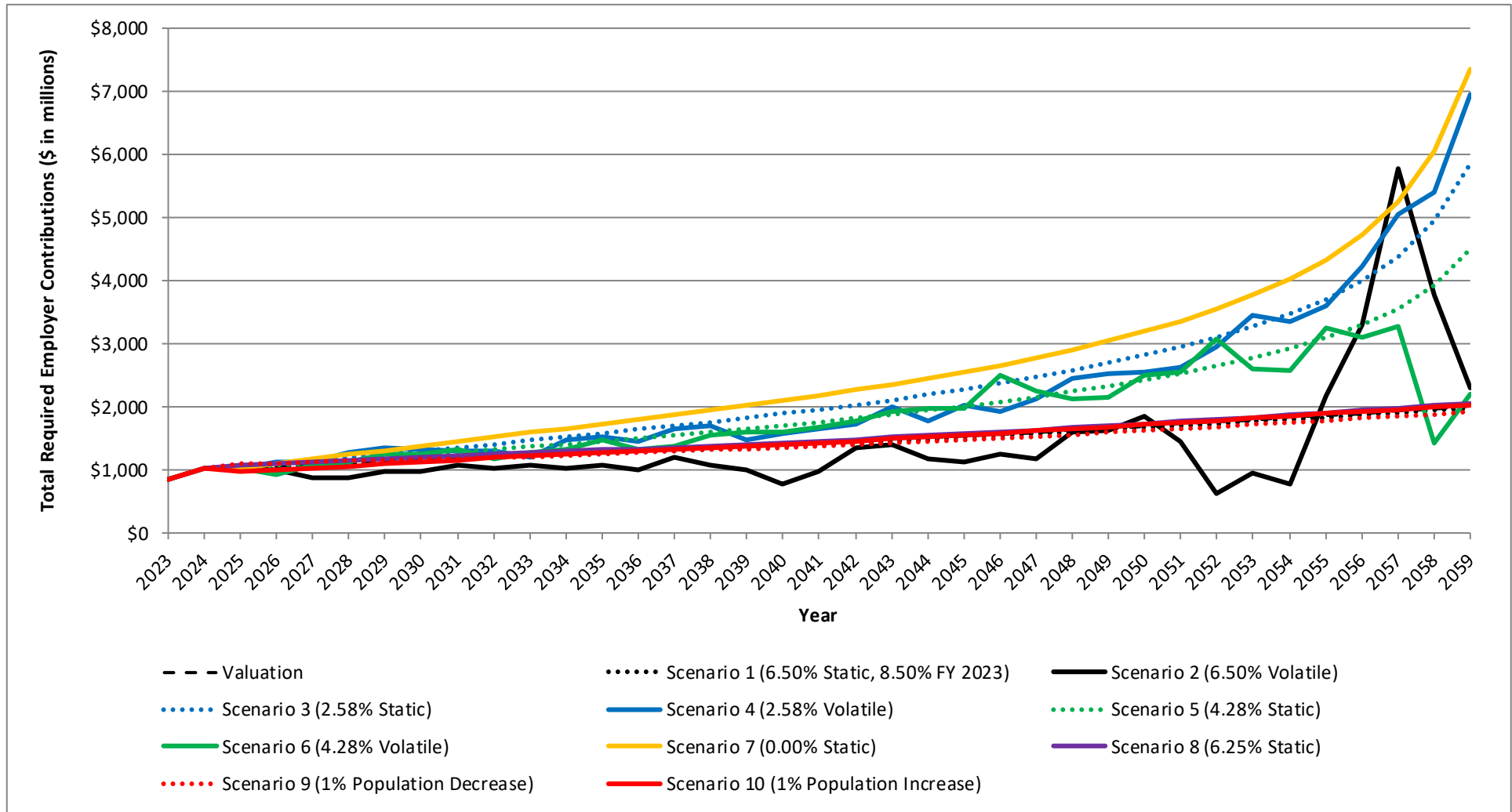
**Public School Teachers' Pension and Retirement Fund of Chicago
 Comparison of Projected Rates of Investment Return
 Assuming Valuation Assumptions (Annual Return of 6.50% and Constant Active Population)
 and Alternate Rates of Return and Active Population Changes under the Stress Testing Scenarios**



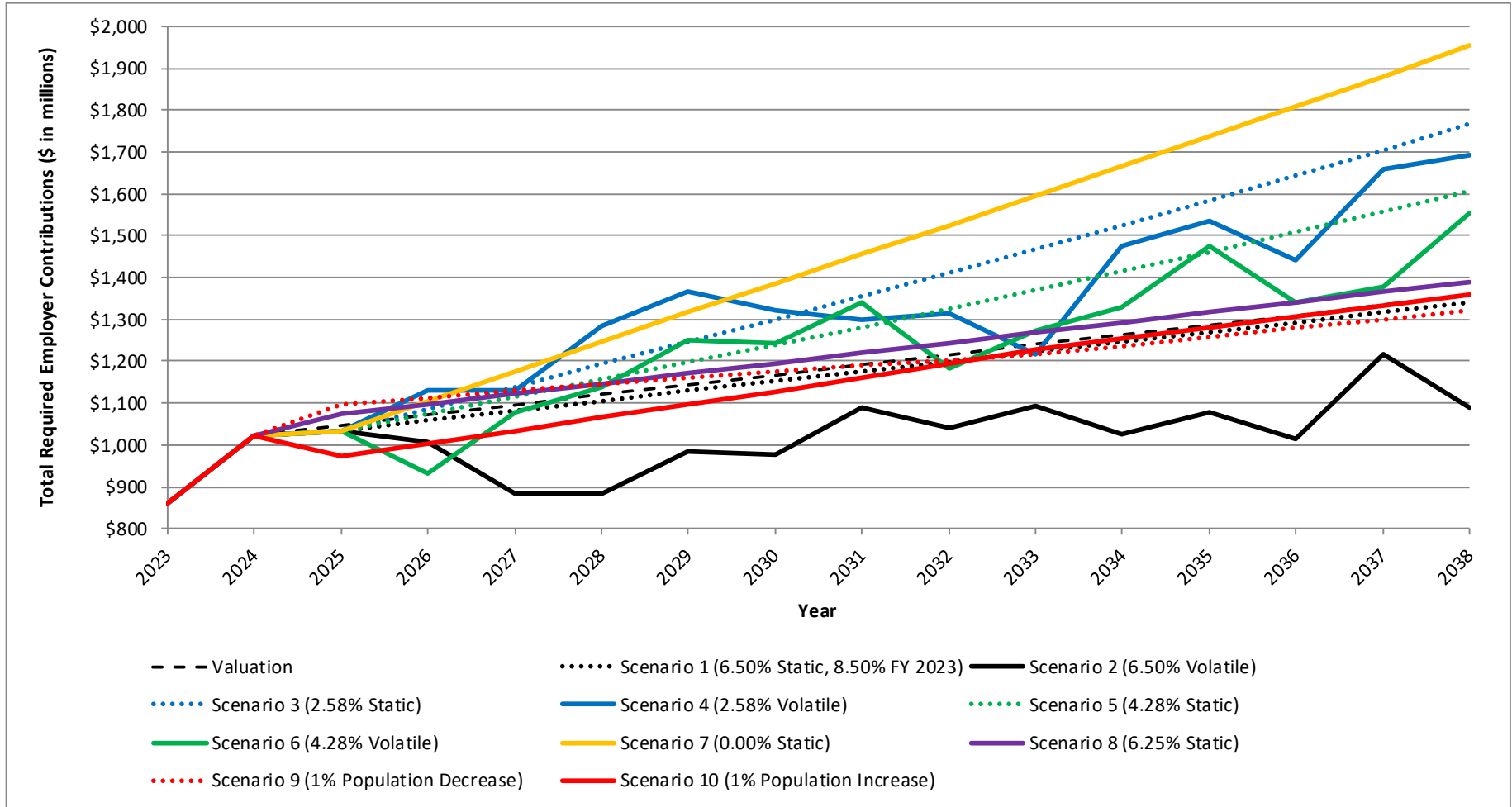
**Public School Teachers' Pension and Retirement Fund of Chicago
 Comparison of Projected Cumulative Rates of Investment Return
 Assuming Valuation Assumptions (Annual Return of 6.50% and Constant Active Population)
 and Alternate Rates of Return and Active Population Changes under the Stress Testing Scenarios**



**Public School Teachers' Pension and Retirement Fund of Chicago
 Comparison of Total Required Employer Contributions
 Assuming Valuation Assumptions (Annual Return of 6.50% and Constant Active Population)
 and Alternate Rates of Return and Active Population Changes under the Stress Testing Scenarios**



**Public School Teachers' Pension and Retirement Fund of Chicago
 Comparison of Total Required Employer Contributions – 15 Years through 2038
 Assuming Valuation Assumptions (Annual Return of 6.50% and Constant Active Population)
 and Alternate Rates of Return and Active Population Changes under the Stress Testing Scenarios**



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Funded Ratio
 Assuming Valuation Assumptions (Annual Return of 6.50% and Constant Active Population)
 and Alternate Rates of Return and Active Population Changes under the Stress Testing Scenarios

