

Public School Teachers' Pension and Retirement Fund of Chicago

Actuarial Valuation Report as of June 30, 2022





October 19, 2022

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, 2022**

Dear Members of the Board:

The results of the June 30, 2022 Annual Actuarial Valuation of the Public School Teachers' Pension and Retirement Fund of Chicago (commonly known as the Chicago Teachers' Pension Fund, "CTPF" or "Fund") are presented in this report.

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 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, 2023, and ending June 30, 2024. 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.

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, 2022. 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, 2022 actuarial valuation are based on an experience study for the five-year period from July 1, 2012 through June 30, 2017, and the 2022 Actuarial Assumption Study, performed by GRS. There have been no changes in actuarial assumptions since the last actuarial valuation. 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." We recommend an experience study covering the five-year period July 1, 2017 through June 30, 2022 prior to the June 30, 2023 actuarial valuation.

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 (21 years remaining as of July 1, 2022, which determines the fiscal year 2023 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 reflects the impact of COVID-19 through June 30, 2022. However, this report does not reflect the longer-term and still developing future impact of COVID-19, which is likely to further influence demographic experience and economic expectations. We will continue to monitor these developments and



their impact on the Fund and the actuarial assumptions. Actual experience will be reflected in each subsequent annual valuation, as experience emerges.

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.

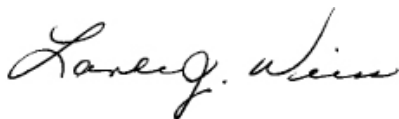
Lance J. Weiss and Amy Williams are Members of the American Academy of Actuaries and meet the American Academy of Actuaries Qualification Standards to render the actuarial opinions contained herein.

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



Amy Williams, ASA, MAAA, FCA
Senior Consultant

Table of Contents

<u>Page</u>	
1	<u>Section A — Executive Summary</u>
	<u>Section B — Summary of the Actuarial Valuation</u>
2-5	Summary of the Actuarial Valuation
6	Appropriation Requirements under P.A. 90-0655, P.A. 91-0357, P.A. 96-0889 and P.A. 100-0465
7-9	Employer Contribution Requirement for Fiscal Year 2024
10-11	Method of Calculation for Appropriation Requirements
12-17	Recommendations and Future Considerations
18-20	Risks Associated with Measuring the Accrued Liability and Total Required Employer Contribution
	<u>Section C — Actuarial Determinations</u>
21-22	Table 1 — Results of Actuarial Valuation as of June 30, 2022
23	Table 2 — Components of Actuarial Accrued Liability and Normal Cost by Tier
24	Table 3a — Analysis of Change in Total Required Employer Contribution
25	Table 3b — Analysis of Change in Unfunded Actuarial Accrued Liability
26	Table 4 — Analysis of Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability for Fiscal Year Ending June 30, 2022
27	Graph 1 — Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability for Fiscal Year Ending June 30, 2022, by Source
28	Table 5a — Historical Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability
29	Table 5b — Historical Normal Cost Amounts (\$ and % of Pay)
	<u>Section D — Actuarial Projections</u>
30-31	Table 6 — Baseline Projections
32	Graph 2 — Projected Actuarial Accrued Liabilities
33	Graph 3 — Projected Benefit Payments
34	Graph 4 — Projected Statutory Contributions vs. Contributions under Alternate Policy
35	Graph 5 — Actual and Projected Employer Contributions
	<u>Section E — Fund Assets</u>
36	Table 7 — Statement of Fiduciary Net Position for Years Ended June 30, 2022 and 2021
37	Table 8 — Statement of Changes in Fiduciary Net Position for Years Ended June 30, 2022 and 2021
38	Table 9 — Development of the Actuarial Value of Assets
39	Graph 6 — Historical Asset Values from June 30, 2013-2022
40	Table 10 — Historical Investment Returns



Table of Contents

<u>Page</u>	
	<u>Section F — Participant Data</u>
41	Graph 7 — Active Members Classified by Age and Service
42	Graph 8 — Retirees Classified by Benefit Amount and Age
43	Table 11 — Summary of Fund Membership
44	Table 12 — Member Population and Ratio of Non-Actives to Actives
45	Table 13 — Total Lives and Annual Salaries of Active Members Classified by Age and Years of Service as of June 30, 2022
46	Table 14 — Reconciliation of Member Data as of June 30, 2022
47	Table 15 — History of Retirees and Beneficiaries Added to Rolls during Fiscal Year Ended June 30, 2022
48	Table 16 — Number of Annuitants Classified by Benefit Type and Amount as of June 30, 2022
49	Table 17 — Initial Year of Retirement Analysis
50	Table 18 — Schedule of Active Member Payroll
51	Table 19 — Solvency Test
52	Table 20 — Participating Employers
53-64	<u>Section G — Actuarial Methods and Assumptions</u>
65-71	<u>Section H — Summary of Plan Provisions</u>
72-74	<u>Section I — Glossary of Terms</u>
	<u>Section J — Additional Projection Details</u>
75	Table 21 — Projection of the Actuarial Accrued Liability
76	Table 22 — Projection of Benefit Payments
77	Table 23 — Administrative Expenses and Health Insurance Subsidy
78	Table 24 — Projection of Active Population, Covered Payroll, Employee Contributions and Normal Costs
	<u>Appendix 1 — Stress Testing Scenarios</u>

SECTION A

EXECUTIVE SUMMARY

Executive Summary

Actuarial Valuation Date:	June 30, 2022	June 30, 2021
Required Employer Contributions for Fiscal Year Ending:	June 30, 2024	June 30, 2023
Estimated Required Employer Contributions:		
· Required Board of Education Contributions	\$ 684,307,000	\$ 537,396,000
· Additional Board of Education Contributions (0.58 percent of pay)	15,528,000	14,256,000
· Additional State Contributions (0.544 percent of pay)	14,564,000	13,371,000
· State Contributions Pursuant to P.A. 100-0465 (Normal Cost) ^a	308,147,000	295,302,000
· Total Required Employer Contributions	\$ 1,022,546,000	\$ 860,325,000
· Percentage of Projected Capped Payroll	38.194%	35.002%
Actuarial Valuation Date:	June 30, 2022	June 30, 2021
Actuarial Information for Fiscal Year Ending:	June 30, 2023	June 30, 2022
Actuarially Determined Contribution^b as of the Actuarial Valuation Date:		
· Annual Amount	\$ 1,369,769,492	\$ 1,278,954,307
· Percentage of Projected Capped Payroll for Upcoming Year	52.59%	53.34%
Membership:		
· Number of		
- Active Members ^c	31,261	31,215
- Members Receiving Payments	27,638	27,610
- Vested Former Members Eligible for Deferred Benefits	6,861	6,658
- Non-vested Former Members Eligible for Refunds Only	26,630	24,997
- Total	92,390	90,480
· Covered Payroll as of the Actuarial Valuation Date	\$ 2,585,653,167	\$ 2,396,432,788
· Projected Capped Payroll for Upcoming Year	\$ 2,604,858,671	\$ 2,397,752,804
· Projected Capped Payroll for Upcoming Year + 1	\$ 2,677,247,688	\$ 2,457,910,229
· Annualized Benefit Payments	\$ 1,545,032,731	\$ 1,506,016,014
Assets:		
· Market Value of Assets (MVA)	\$ 11,764,941,881	\$ 13,373,041,592
· Actuarial Value of Assets (AVA)	\$ 12,142,214,578	\$ 11,925,535,283
· Approximate Return on Market Value of Assets	-8.57%	27.47%
· Approximate Return on Actuarial Value of Assets	5.99%	10.78%
· Ratio – Actuarial Value of Assets to Market Value of Assets	103.21%	89.18%
Basic Results:		
· Total Normal Cost Amount (Including Admin. Expenses)	\$ 473,174,559	\$ 442,198,528
· Employer's Normal Cost Amount (Including Admin. Expenses)	\$ 238,737,279	\$ 226,400,776
· Employer's Normal Cost Amount (Including Admin. Expenses and Health Insurance Subsidy) ^d	\$ 303,737,279	\$ 291,400,776
· Actuarial Accrued Liability (AAL)	\$ 25,955,065,711	\$ 25,117,988,742
· Unfunded Actuarial Accrued Liability (UAAL)	\$ 13,812,851,133	\$ 13,192,453,459
· Funded Ratio based on Actuarial Value of Assets	46.78%	47.48%
· UAAL as % of Covered Payroll	534.21%	550.50%
· Funded Ratio based on Market Value of Assets	45.33%	53.24%

^a State Normal Cost contribution represents the projected employer Normal Cost for fiscal years 2023 and 2024, 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, 2022, the remaining amortization period is 21 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, 2022. 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, 2024.

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, 2022 actuarial valuation remain unchanged from the previous actuarial valuation. The price inflation and wage inflation assumptions were most recently reduced to 2.25 percent and 2.75 percent, respectively, based on the recommendations from the 2020 Actuarial Assumptions Study and were effective with the June 30, 2020 actuarial valuation. 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. The other assumptions were adopted by the Board (including CPS' requested modifications) during the September 20, 2018 Board meeting, and were based on the recommendations from the experience study for the five-year period from July 1, 2012 through June 30, 2017, and the requested modifications of Chicago Public Schools (“CPS”). We recommend an experience study covering the five-year period July 1, 2017 through June 30, 2022 prior to the June 30, 2023 actuarial valuation.

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

Report Highlights

The employer's statutory contribution requirement for FY 2024 is \$1,022.5 million. The 2021 actuarial valuation had projected the employer statutory contribution would increase from \$860.3 million for FY



Summary of the Actuarial Valuation

2023 to \$880.1 million for FY 2024. The key reason for the \$142.4 million increase in the employer's statutory contribution requirement of \$1,022.5 million over the projected amount from the prior actuarial valuation of \$880.1 million is the unfavorable investment experience on the market value of assets and larger salary increases than assumed in the prior valuation. The State's portion of the total statutory contribution increased due to the increase in projected payroll, but is unaffected by the unfavorable investment experience. Because the majority of the Board of Education's contribution is for the unfunded liability (in order to attain a funded ratio of 90 percent by 2059), both the unfavorable investment experience and the increase in projected payroll increased the Board of Education's statutory contribution requirement and resulted in a higher percentage increase in the contribution than the State's portion.

Over the past 10 years, CTPF experienced investment gains on a market value basis compared to the actuarial assumption in fiscal years 2013, 2014, 2017, 2018 and 2021 and investment losses in fiscal years 2015, 2016, 2019, 2020 and 2022. The return on market value for the year ending June 30, 2022 was approximately -8.57 percent compared to a return of 27.47 percent in FY 2021. The average market value investment return over the most recent 10 years has been approximately 7.89 percent. Table 10 on page 40 provides historical investment returns (on an MVA and AVA basis) over the past 25 years.

The funded ratio decreased from 53.2 percent as of June 30, 2021 to 45.3 percent as of June 30, 2022, based on the market value of assets, and decreased from 47.5 percent as of June 30, 2021 to 46.8 percent as of June 30, 2022, based on the actuarial value of assets. There are net deferred asset losses of \$372.5 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 2022

The Fund assets earned approximately -8.57 percent on a market value basis during FY 2022, which was less than the investment return assumption of 6.50 percent for FY 2022. The Fund assets earned approximately 5.99 percent on an actuarial value of assets basis during FY 2022 due to partial recognition of the fiscal year 2022 investment loss, losses from 2018 and 2019, and a portion of the deferred investment gain from fiscal year 2021 under the asset smoothing method. Since 5.99 percent is lower than the assumed rate of investment return of 6.50 percent for FY 2022, there was an asset loss of \$36.44 million on the actuarial value of assets.

There was also a net loss of \$391.24 million from actuarial liabilities, which is comprised of a gain of approximately \$16.73 million from demographic experience, and a loss of \$407.98 million from higher than expected pay increases.



Summary of the Actuarial Valuation

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

1. Actuarial Accrued Liability ("AAL") - Prior Year (Pensions Only)	\$	25,117.99
2. Total Normal Cost - Prior Year ^a		442.20
3. Benefits and Administrative Expenses Paid in FY 2022 ^b		(1,592.25)
4. Interest on the above items, 1, 2 and 3		1,595.88
5. Expected AAL 06/30/2022 (1+2+3+4)		25,563.82
6. Impact of Change in Actuarial Assumptions and Methods		-
7. Expected AAL 06/30/2022 After Assumption Changes (5+6)		25,563.82
8. Actual AAL 06/30/2022		25,955.07
9. Actuarial (Gain)/Loss on Liabilities (8-7) (Pensions Only)	\$	391.24

^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.

CTPF experienced an overall actuarial loss of \$427.68 million. The total net actuarial loss is the total of the loss from assets and the net loss from liabilities. The total actuarial loss for the year is as follows (dollars in millions):

1. Actuarial (Gain)/Loss on Assets	\$	36.44
2. Actuarial (Gain)/Loss on Liabilities		391.24
3. Total Actuarial (Gain)/Loss (1+2)		427.68

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 or losses on retirement, disability experience and active mortality. 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.

See Table 4 (page 26), 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 decreased from \$13,373.0 million as of June 30, 2021, to \$11,764.9 million as of June 30, 2022. The actuarial value of assets as of June 30, 2022, is \$12,142.2 million, which is \$377.3 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 \$372.5 million, which will be recognized in the actuarial value of



Summary of the Actuarial Valuation

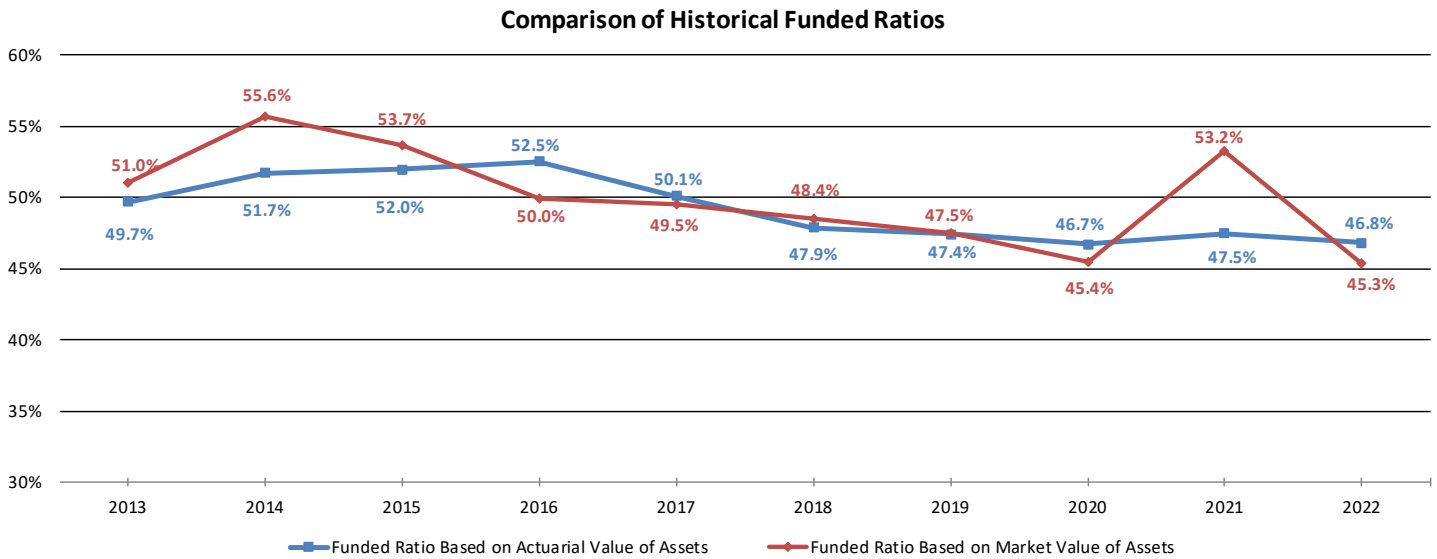
assets over the next three years (a \$10.0 million gain in FY 2023, an \$84.9 million gain in FY 2024 and a \$467.4 million loss in FY 2025).

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.



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 2024

The funded ratio as of the June 30, 2022 actuarial valuation on an actuarial value basis is 46.8 percent. Therefore, additional contributions by the Board of Education and the State will be required for fiscal year 2024. The projected payroll for fiscal year 2024 is \$2,677,247,688. Based on the projected payroll for fiscal year 2024, 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 2024 are as follows:

Development of Additional Contributions under Section 17-127 and 17-127.2 of the Illinois Pension Code	Fiscal Year 2024	Fiscal Year 2023
Projected Total Capped Payroll	\$ 2,677,247,688	\$ 2,457,910,229
Additional State Contributions under Section 17-127 of the Illinois Pension Code (% of Projected Capped Payroll)	\$ 14,564,000 0.544%	\$ 13,371,000 0.544%
Additional Board of Education Contributions under Section 17-127.2 of the Illinois Pension Code (% of Projected Capped Payroll)	\$ 15,528,000 0.580%	\$ 14,256,000 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 2024		Fiscal Year 2023*	
		% of Projected Capped Payroll		% of Projected Capped Payroll
Total Normal Cost	\$ 457,799,000	17.10%	\$ 448,304,000	17.57%
Projected Administrative Expenses	26,300,000	0.98%	24,870,000	1.01%
Total Normal Cost Including Administrative Expenses	\$ 484,099,000	18.08%	\$ 473,174,000	18.58%
Expected Employee Contributions	240,952,000	9.00%	234,437,000	9.25%
Employer Normal Cost	\$ 243,147,000	9.08%	\$ 238,737,000	9.33%
Health Insurance Subsidy	65,000,000	2.43%	65,000,000	2.50%
State Contributions under Section 17-127(d)(1) of the Illinois Pension Code	\$ 308,147,000	11.51%	\$ 303,737,000	11.83%

*The State normal cost contribution requirement for fiscal year 2023 was calculated in the actuarial valuation as of June 30, 2021 (and was projected from June 30, 2021) and differs from this amount. This amount for fiscal year 2023 is based on June 30, 2022 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 2024

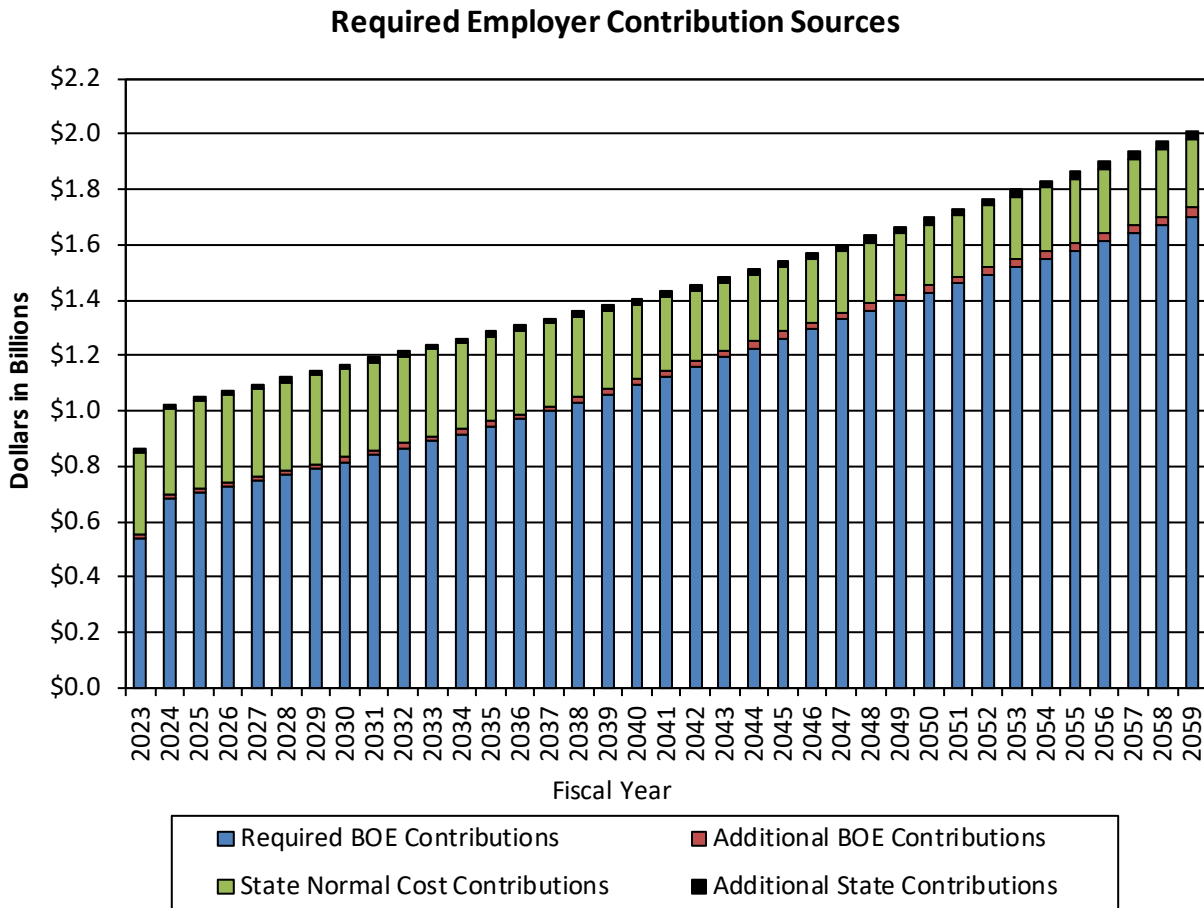
Pursuant to P.A. 96-0889, the Board of Education contribution requirement in each fiscal year shall be an amount determined by the Fund to be sufficient to bring the total assets of the Fund up to 90 percent of the total actuarial liabilities of the Fund by the end of fiscal year 2059. In making these 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 2024 is equal to \$684,307,000, (net of Additional State and Board of Education Contributions).

The fiscal year ending June 30, 2023 and June 30, 2024 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
2023	\$ 537,396,000	\$ 14,256,000	\$ 13,371,000	\$ 295,302,000	\$ 860,325,000
2024	684,307,000	15,528,000	14,564,000	308,147,000	1,022,546,000
2025	704,829,000	15,910,000	14,923,000	312,040,000	1,047,702,000
2026	725,432,000	16,281,000	15,270,000	315,119,000	1,072,102,000
2027	746,904,000	16,650,000	15,616,000	317,239,000	1,096,409,000
2028	768,955,000	17,014,000	15,958,000	318,483,000	1,120,410,000
2029	791,592,000	17,374,000	16,296,000	318,859,000	1,144,121,000
2030	814,956,000	17,734,000	16,633,000	318,461,000	1,167,784,000
2031	838,952,000	18,093,000	16,970,000	317,428,000	1,191,443,000
2032	863,635,000	18,454,000	17,308,000	315,804,000	1,215,201,000
2033	889,250,000	18,818,000	17,650,000	313,483,000	1,239,201,000

Employer Contribution Requirement for Fiscal Year 2024

The following graph details the projected employer contribution requirements by Source for fiscal years 2023 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, 2022 actuarial valuation. In order to determine projected contribution amounts, the following additional assumptions were used:

- Total employer contributions of \$860,325,000 for fiscal year 2023.
- Administrative expenses of \$22,299,258 for fiscal year 2022, as provided by the Fund. For fiscal year 2023, the budgeted administrative expense amount of \$24,870,160, as provided by Staff. Thereafter, administrative expenses are assumed to increase 5.75 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 32.44 and average capped (pensionable) pay is \$56,487 (2022 dollars).
- The active member population is assumed to remain level at 31,601 (includes 340 expected new hires to replace June retirements and terminations) for all years of the 37-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). As shown in Table 12 on page 44, the number of active members decreased by about 10 percent between 2008 and 2017, which is an average annualized decrease of about 1.0 percent. The number of actives increased in 2018 (albeit by less than one percent) and increased again in 2019, 2020, 2021 and 2022 by 1.2 percent, 2.7 percent, 3.7 percent and 0.1 percent, respectively. We will continue to review the assumption regarding the projected active member population.
- 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 \$279,728,627 in fiscal year 2022 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 37-year projection period is approximately 2.75 percent per year. It is important to note that benefits for new hires are based on



Method of Calculation for Appropriation Requirements

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, 2022 actuarial valuation is 21 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 2022 and 2023, as well as the statutory employer contribution for fiscal years 2022 and 2023, are shown below as a percentage of projected capped payroll. The ADC for 2022 and statutory employer contribution for 2023 are based on the results of the June 30, 2021, actuarial valuation.

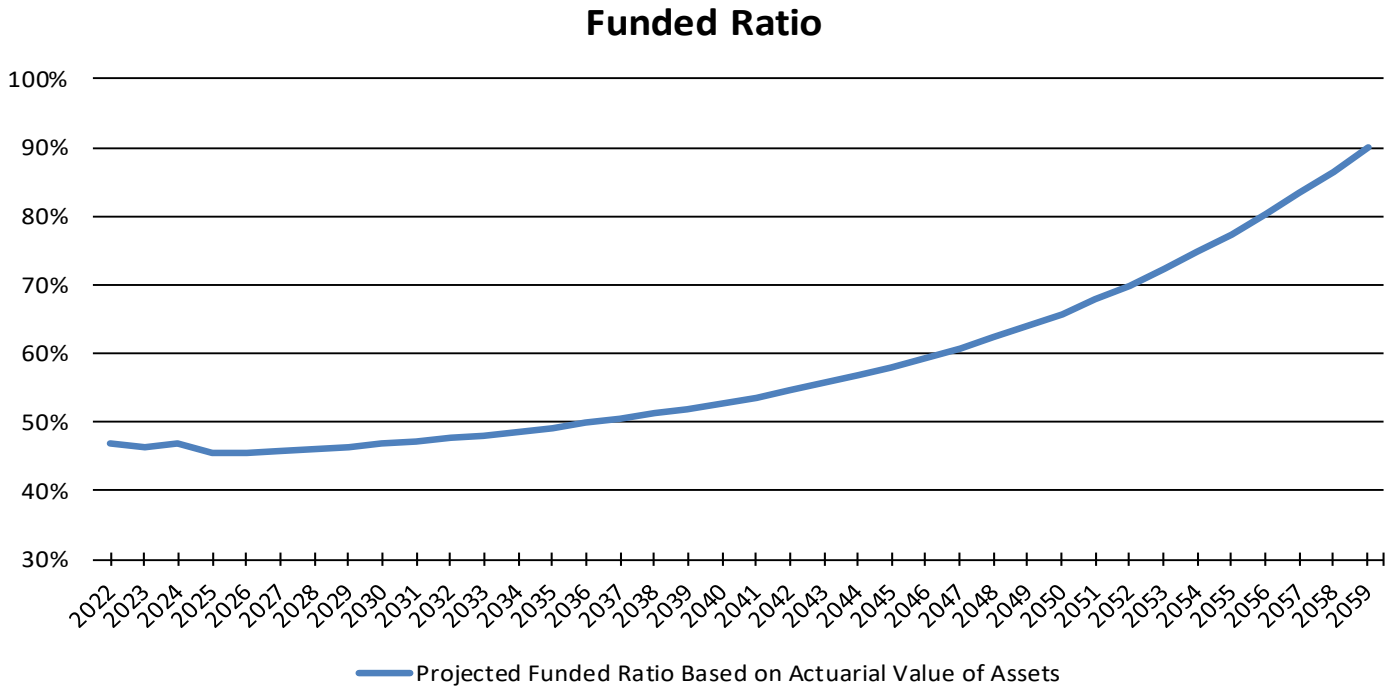
Actuarial Valuation Date:	June 30, 2022	June 30, 2021
Actuarially Determined Contributions for Fiscal Year Ending:	June 30, 2023	June 30, 2022
1. Actuarial Accrued Liability	\$ 25,955,065,711	\$ 25,117,988,742
2. Actuarial Value of Assets	\$ 12,142,214,578	\$ 11,925,535,283
3. Unfunded Actuarial Accrued Liability (1. – 2.)	\$ 13,812,851,133	\$ 13,192,453,459
4. Employer Normal Cost (Including Administrative Expenses and Health Insurance Subsidy)	\$ 303,737,279	\$ 291,400,776
5. Employer Normal Cost Adjusted for Contribution Timing	\$ 307,760,915	\$ 296,285,737
6. Amount to Amortize the Unfunded Liability over a 30-year Closed-period, Beginning July 1, 2013, as a Level Percentage of Payroll	<u>\$ 1,062,008,577</u>	<u>\$ 982,668,570</u>
7. Actuarially Determined Contribution Requirement [5. + 6.]	\$ 1,369,769,492	\$ 1,278,954,307
8. Projected Capped Payroll For Fiscal Year	\$ 2,604,858,671	\$ 2,397,752,804
9. Actuarially Determined Contribution as a Percentage of Projected Capped Payroll [7./8.]	52.59%	53.34%
10. Total Required Employer (Statutory) Contribution Including Health Insurance Subsidy	\$ 860,325,000	\$ 944,677,000
11. Total Required Employer Contribution as a Percentage of Projected Capped Payroll [10./8.]	33.03%	39.40%
12. Total Required Employer Contribution as a Percentage of Actuarially Determined Contribution [10./7.]	62.81%	73.86%

The fiscal year 2023 Actuarially Determined Contribution is based on an amortization factor which reflects 21 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 2.00 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

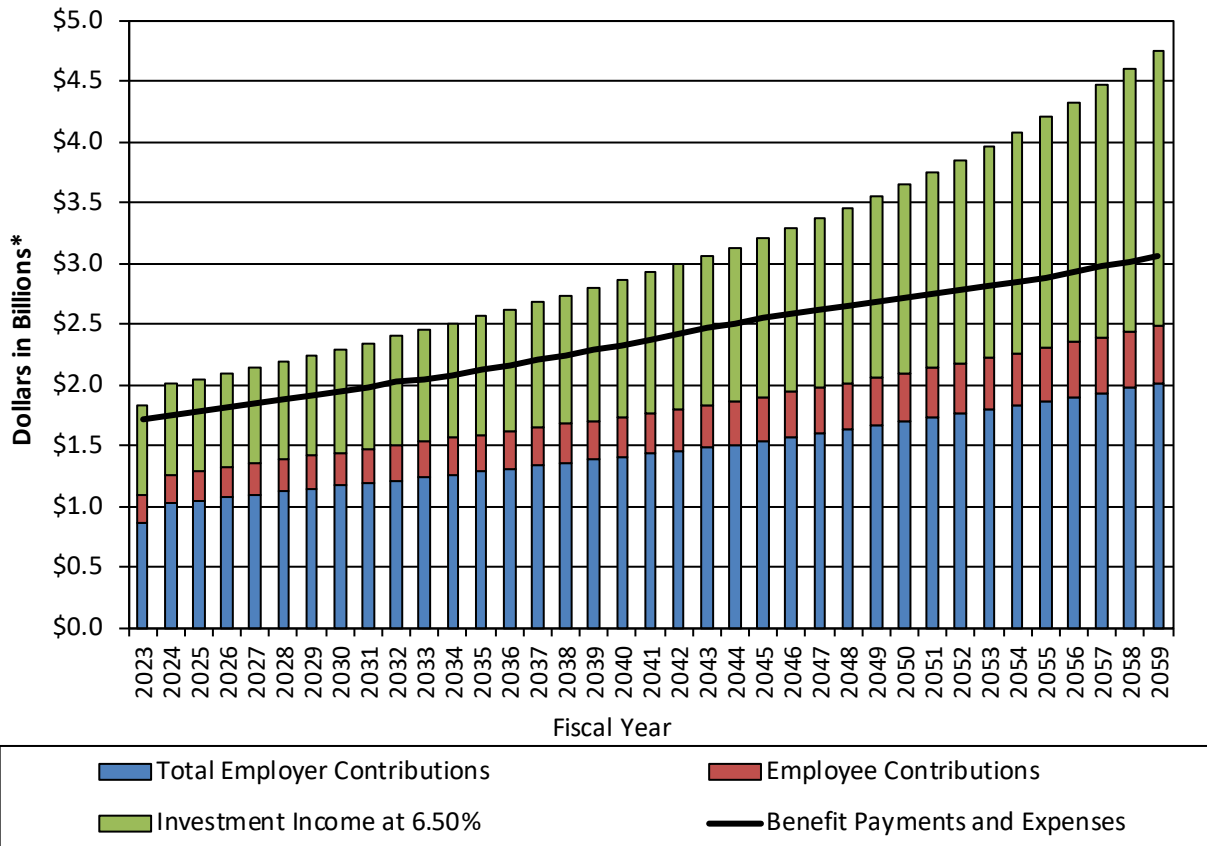
The statutory funding policy required for CTPF provides for level percent of pay funding that produces a funding target of 90 percent by 2059, assuming an open group projection. The following graph shows the projected funded ratio. A key observation is that the funded ratio does not grow markedly until 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 2023 to 2059, the percentage of investment income needed to pay ongoing benefits decreases from 84.7 percent to 25.2 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 (\$11,764.9 million on a market value basis) are not sufficient to cover current retiree liabilities (\$17,778.6 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 2023 contribution would be \$1,369.8 million under this 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 (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 46.8 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 44, the number of active members decreased by about 10 percent between 2008 and 2017, which is an average annualized decrease of about 1.0 percent. The number of actives increased in 2018 (albeit by less than one percent) and increased again in 2019, 2020, 2021 and 2022 by 1.2 percent, 2.7 percent, 3.7 percent and 0.1 percent, respectively.

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. 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;



Recommendations and Future Considerations

3. The unfunded actuarial accrued liabilities will never be fully amortized; and
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:

	2022	2021	2020
Ratio of the Market Value of Assets to Payroll	4.55	5.58	4.84
Ratio of Actuarial Accrued Liability to Payroll	10.04	10.48	10.64
Ratio of Actives to Retirees and Beneficiaries	1.13	1.13	1.07
Ratio of Net Cash Flow to Market Value of Assets	-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, stress tests and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. 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.

SECTION C

ACTUARIAL DETERMINATIONS

Table 1

Results of Actuarial Valuation as of June 30, 2022

1. Number of Members		
a. Active ^a		31,261
b. Inactive:		
i. Eligible for deferred vested pension benefits		6,861
ii. Eligible for return of contributions only		26,630
c. Current Benefit Recipients:		
i. Retirement annuities		23,859
ii. Survivor annuities		3,349
iii. Disability annuities		430
d. Total		92,390
2. Covered Payroll		
a. As of the Actuarial Valuation Date	\$	2,585,653,167
b. Projected Capped Payroll for Fiscal Year 2023		2,604,858,671
c. Projected Capped Payroll for Fiscal Year 2024		2,677,247,688
3. Annualized Benefit Payments Currently Being Made		
a. Retirement annuities	\$	1,436,243,793
b. Survivor annuities		90,407,404
c. Disability annuities		18,381,534
d. Total	\$	1,545,032,731
4. Actuarial Accrued Liability—Annuitants		
a. Current Benefit Recipients:		
i. Retirement annuities	\$	16,764,840,161
ii. Survivor annuities		804,726,567
iii. Disability annuities		208,988,462
b. Total	\$	17,778,555,190
5. Actuarial Accrued Liability—Inactive Members		
a. Eligible for Deferred Vested Pension Benefits	\$	481,900,484
b. Eligible for Return of Contributions Only		155,710,732
c. Total	\$	637,611,216

^a Active count excludes 340 members expected to be hired to replace retirements and terminations that occurred in June 2022. Active count with the 340 members is 31,601.



Table 1 (Continued)

Results of Actuarial Valuation as of June 30, 2022

	Normal Cost	Actuarial Accrued Liability
6. Active Members		
a. Retirement Benefits	\$ 343,646,846	\$ 6,452,033,614
b. Withdrawal	89,903,151	881,070,165
c. Death Benefits	6,000,309	86,440,997
d. Disability	8,754,093	119,354,529
e. Administrative Expenses	24,870,160	-
f. Total	\$ 473,174,559	\$ 7,538,899,305
7. Total Actuarial Accrued Liability (4. + 5. + 6.)		\$ 25,955,065,711
8. Market Value of Assets (MVA)		\$ 11,764,941,881
9. Unfunded Actuarial Accrued Liability Based on MVA (7. – 8.)		\$ 14,190,123,830
10. Funded Percentage Based on MVA (8. ÷ 7.) ^a		45.33%
11. Actuarial Value of Assets (AVA)		\$ 12,142,214,578
12. Unfunded Actuarial Accrued Liability Based on AVA (7. – 11.)		\$ 13,812,851,133
13. Funded Percentage Based on AVA (11. ÷ 7.) ^a		46.78%
14. Total Normal Cost	\$ 473,174,559	
15. Expected Employee Contributions	\$ 234,437,280	
16. Annual Employer Normal Cost (% of Projected Capped Payroll for Fiscal Year 2023)	\$ 238,737,279 9.17%	
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 2023 ^b	\$ 303,737,279 11.66%	

^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	16,811		14,450		31,261	
2. Covered Payroll						
a. As of the Valuation Date	\$ 1,661,357,044		\$ 924,296,123		\$ 2,585,653,167	
b. Projected Capped Payroll for Fiscal Year 2023	1,661,357,044		943,501,627		2,604,858,671	
c. Projected Capped Payroll for Fiscal Year 2024	1,621,992,581		1,055,255,107		2,677,247,688	
3. Actuarial Accrued Liability						
a. Retirement Benefits	\$ 6,274,889,403		\$ 177,144,211		\$ 6,452,033,614	
b. Withdrawal	706,942,604		174,127,561		881,070,165	
c. Death Benefits	77,251,764		9,189,233		86,440,997	
d. Disability	102,329,769		17,024,760		119,354,529	
e. Total	\$ 7,161,413,540		\$ 377,485,765		\$ 7,538,899,305	
4. Normal Cost	Amount	% of Payroll	Amount	% of Payroll	Amount	% of Payroll
a. Retirement Benefits	\$ 312,126,089	18.79%	\$ 31,520,757	3.34%	\$ 343,646,846	13.19%
b. Withdrawal	50,200,002	3.02%	39,703,149	4.21%	89,903,151	3.45%
c. Death Benefits	4,298,140	0.26%	1,702,169	0.18%	6,000,309	0.23%
d. Disability	5,849,463	0.35%	2,904,630	0.31%	8,754,093	0.34%
e. Administrative Expenses	15,861,980	0.95%	9,008,180	0.95%	24,870,160	0.95%
f. Total	\$ 388,335,674	23.37%	\$ 84,838,885	8.99%	\$ 473,174,559	18.17%
5. Expected Employee Contributions	\$ 149,522,134	9.00%	\$ 84,915,146	9.00%	\$ 234,437,280	9.00%
6. Annual Employer Normal Cost	\$ 238,813,540	14.37%	\$ (76,261)	-0.01%	\$ 238,737,279	9.17%

^aThe actuarial accrued liability, normal cost, projected capped payroll and expected employee contributions include the results for 340 members expected to be hired to replace retirements and terminations that occurred in June 2022. Active count excludes 340 members expected to be hired to replace retirements and terminations that occurred in June 2022. Active count with the 340 members is 31,601.

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 2023 Statutory Contribution	\$ 860,325,000	\$ 551,652,000	\$ 308,673,000
2. Contributions projected from 6/30/2021			
a. Based on Normal Cost plus interest on the UAAL	\$ 868,395,000	\$ 555,655,000	\$ 312,740,000
b. Based on Statutory Funding Policy	\$ 880,122,000	\$ 567,382,000	\$ 312,740,000
3. Change from			
a. investment experience	\$ 117,991,000	\$ 117,991,000	\$ -
b. salary, demographic, and other	24,433,000	14,462,000	9,971,000
c. total	\$ 142,424,000	\$ 132,453,000	\$ 9,971,000
4. FY 2024 Statutory Contribution	\$ 1,022,546,000	\$ 699,835,000	\$ 322,711,000

2.a. is the total required employer contribution for fiscal year 2024 if normal cost plus interest on the UAAL had been contributed during fiscal year 2022.

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 increase in the unfunded actuarial accrued liability (UAAL) of \$620,397,674 was due to the following:

1. Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2021	\$ 13,192,453,459
2. Contributions	
a. Contributions due (Normal Cost plus interest on the UAAL)	
i interest on item 1.	\$ 857,509,475
ii members contributions	221,641,463
iii employer normal cost (middle of year)	285,557,065
iv interest on ii and iii	16,224,455
v total due	\$ 1,380,932,458
b. Contributions paid (Actual)	
i member contributions	\$ 221,641,463
ii employer	944,677,000
iii interest on i and ii ^a	21,900,643
iv total paid	\$ 1,188,219,106
c. Expected increase in Unfunded Actuarial Accrued Liability	
	\$ 192,713,352
3. Expected Unfunded Actuarial Accrued Liability at 06/30/2022	\$ 13,385,166,811
4. (Gains)/Losses	
a. investment income	\$ 40,273,676
b. retiree health insurance cash flows	(3,832,677)
c. salary increases	407,976,795
d. demographic	(16,733,472)
e. total	\$ 427,684,322
5. Plan Provision Changes	\$ -
6. Assumption Changes	\$ -
7. Total Change in UAAL	\$ 620,397,674
8. UAAL at 06/30/2022	\$ 13,812,851,133

^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, 2022

Activity	(Gain)/Loss	% of 06/30/2021 AAL
1. Actuarial (Gain)/Loss		
a. Retirements	\$ 58,489,465	0.23%
b. Incidence of Disability	(1,954,503)	-0.01%
c. In-Service Mortality	(694,179)	0.00%
d. Retiree and Deferred Experience	(22,702,211)	-0.09%
e. Salary Increases	407,976,795	1.62%
f. Terminations	(78,134,732)	-0.31%
g. Investment Return	40,273,676	0.16%
h. Retiree Health Insurance Cash Flows	(3,832,677)	-0.02%
i. New Entrant Liability	40,167,927	0.16%
j. Other	(11,905,239)	-0.05%
k. Total Actuarial (Gain)/Loss	\$ 427,684,322	1.69%
2. Plan Provision Changes	\$ -	0.00%
3. Assumption Changes	\$ -	0.00%
4. Contribution (Excess)/Shortfall ^a	\$ 192,713,352	0.77%
5. Total Financial (Gain)/Loss (1.k.+2.+3.+4.)	\$ 620,397,674	2.46%

^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, 2022, by Source

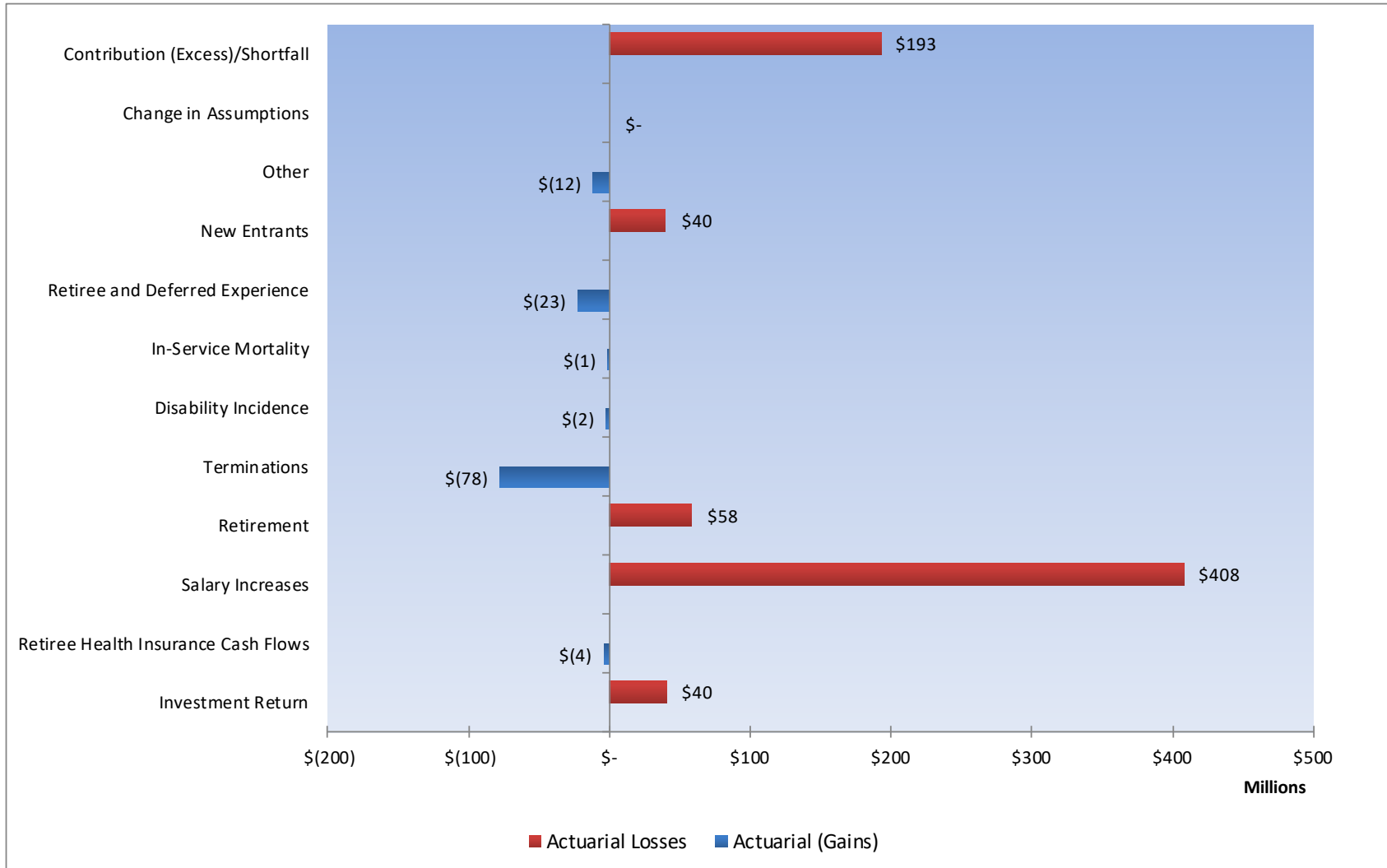


Table 5a

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

	Amount of (Gain) or Loss					Total Five-year Change
	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
Investment Return (AVA Basis)	\$ 131,839,730	\$ 98,317,079	\$ (22,146,029)	\$ (460,056,077)	\$ 40,273,676	\$ (211,771,621)
Retiree Health Insurance Cash Flows	1,381,154	(6,608,283)	(14,032,804)	(14,758,285)	(3,832,677)	(37,850,895)
Salary Increases	6,927,266	(62,859,630)	(118,074,777)	(46,401,560)	407,976,795	187,568,094
Retirements	27,778,569	1,996,977	6,878,558	(4,923,996)	58,489,465	90,219,573
Terminations	(39,625,292)	(46,251,276)	(19,358,722)	(15,640,541)	(78,134,732)	(199,010,563)
Disability Incidence	(1,010,548)	(966,542)	(1,131,160)	(1,469,401)	(1,954,503)	(6,532,154)
In-Service Mortality	1,253,670	123,792	(70,494)	981,677	(694,179)	1,594,466
Retiree and Deferred Experience	70,809,472	5,854,235	(55,588,659)	(97,252,780)	(22,702,211)	(98,879,943)
New Entrants	38,467,726	44,926,283	45,481,403	39,611,532	40,167,927	208,654,871
Other ^a	(28,017,087)	(22,939,305)	(31,564,992)	7,363,260	(11,905,239)	(87,063,363)
Total Actuarial (Gain)/Loss	\$ 209,804,660	\$ 11,593,330	\$ (209,607,676)	\$ (592,546,171)	\$ 427,684,322	\$ (153,071,535)
(Gain)/Loss as a % of BOY AAL	1.0%	0.1%	(0.9)%	(2.5)%	1.7%	
Total Non-Investment (Gain)/Loss	\$ 77,964,930	\$ (86,723,749)	\$ (187,461,647)	\$ (132,490,094)	\$ 387,410,646	\$ 58,700,086
(Gain)/Loss as a % of BOY AAL	0.4%	(0.4)%	(0.8)%	(0.6)%	1.5%	
(Gain)/Loss Due to Plan Provisions Changes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(Gain)/Loss as a % of BOY AAL	-	-	-	-	-	
(Gain)/Loss Due to Assumption Changes	\$ 621,772,494	\$ -	\$ 565,206,537	\$ 727,707,442	\$ -	\$ 1,914,686,473
(Gain)/Loss as a % of BOY AAL	2.8%	0.0%	2.4%	3.0%	0.0%	
(Gain)/Loss Due to Contribution (Excess)/Shortfall	\$ 233,351,269	\$ 264,851,308	\$ 247,324,028	\$ 224,017,626	\$ 192,713,352	\$ 1,162,257,583
(Gain)/Loss as a % of BOY AAL	1.1%	1.2%	1.1%	0.9%	0.8%	
Total Financial (Gain)/Loss	\$ 1,064,928,423	\$ 276,444,638	\$ 602,922,889	\$ 359,178,897	\$ 620,397,674	\$ 2,923,872,521
(Gain)/Loss as a % of BOY AAL	4.9%	1.2%	2.6%	1.5%	2.5%	
BOY Actuarial Accrued Liability (AAL)	\$ 21,822,010,297	\$ 22,922,992,558	\$ 23,252,163,307	\$ 24,073,482,607	\$ 25,117,988,742	

^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, 2021 June 30, 2022		June 30, 2022 June 30, 2023		Projected from June 30, 2022 June 30, 2024	
1. Projected Capped Payroll for the Fiscal Year	\$ 2,397,752,804		\$ 2,604,858,671		\$ 2,677,247,688	
2. Normal Cost	Amount	% of Payroll	Amount	% of Payroll	Amount	% of Payroll
a. Retirement Benefits	\$ 321,209,145	13.40%	\$ 343,646,846	13.19%	\$ 353,109,651	13.19%
b. Withdrawal	83,943,873	3.50%	89,903,151	3.45%	89,764,031	3.35%
c. Death Benefits	5,643,769	0.24%	6,000,309	0.23%	6,033,314	0.23%
d. Disability	8,114,261	0.34%	8,754,093	0.34%	8,892,422	0.33%
e. Administrative Expenses	23,287,480	0.97%	24,870,160	0.95%	26,300,000	0.98%
f. Total	\$ 442,198,528	18.44%	\$ 473,174,559	18.17%	\$ 484,099,418	18.08%
3. Expected Employee Contributions	\$ 215,797,752 9.00%		\$ 234,437,280 9.00%		\$ 240,952,292 9.00%	
4. Annual Employer Normal Cost	\$ 226,400,776 9.44%		\$ 238,737,279 9.17%		\$ 243,147,126 9.08%	

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							
2023	\$26,426.7	\$12,278.0	\$14,148.7	46.46%	\$2,604.9	\$538.2	\$234.4	\$303.8	11.66%	\$860.3	\$13.4	\$295.3	\$14.3	\$537.4	33.03%	\$1,715.9
2024	26,908.4	12,633.4	14,275.0	46.95%	2,677.2	549.1	241.0	308.1	11.51%	1,022.5	14.6	308.1	15.5	684.3	38.19%	1,746.8
2025	27,399.5	12,451.1	14,948.4	45.44%	2,743.1	558.9	246.9	312.0	11.37%	1,047.7	14.9	312.0	15.9	704.8	38.19%	1,777.9
2026	27,898.6	12,721.3	15,177.3	45.60%	2,807.0	567.7	252.6	315.1	11.23%	1,072.1	15.3	315.1	16.3	725.4	38.19%	1,809.8
2027	28,404.3	13,011.2	15,393.1	45.81%	2,870.6	575.6	258.4	317.2	11.05%	1,096.4	15.6	317.2	16.6	746.9	38.19%	1,842.8
2028	28,915.4	13,321.9	15,593.5	46.07%	2,933.5	582.5	264.0	318.5	10.86%	1,120.4	16.0	318.5	17.0	769.0	38.19%	1,876.3
2029	29,430.1	13,654.8	15,775.3	46.40%	2,995.6	588.5	269.6	318.9	10.65%	1,144.1	16.3	318.9	17.4	791.6	38.19%	1,910.9
2030	29,946.6	14,002.6	15,944.0	46.76%	3,057.5	593.6	275.2	318.5	10.42%	1,167.8	16.6	318.5	17.7	815.0	38.19%	1,946.9
2031	30,463.9	14,365.7	16,098.2	47.16%	3,119.5	598.2	280.8	317.4	10.17%	1,191.4	17.0	317.4	18.1	839.0	38.19%	1,983.1
2032	30,978.9	14,742.2	16,236.7	47.59%	3,181.7	602.2	286.3	315.8	9.93%	1,215.2	17.3	315.8	18.5	863.6	38.19%	2,021.9
2033	31,512.2	15,154.5	16,357.7	48.09%	3,244.5	605.5	292.0	313.5	9.66%	1,239.2	17.7	313.5	18.8	889.2	38.19%	2,040.0
2034	32,041.7	15,582.4	16,459.3	48.63%	3,306.8	608.1	297.6	310.5	9.39%	1,263.0	18.0	310.5	19.2	915.4	38.19%	2,079.7
2035	32,565.4	16,025.4	16,540.0	49.21%	3,368.7	610.0	303.2	306.8	9.11%	1,286.6	18.3	306.8	19.5	942.0	38.19%	2,120.7
2036	33,081.4	16,483.7	16,597.7	49.83%	3,430.8	611.2	308.8	302.5	8.82%	1,310.3	18.7	302.5	19.9	969.3	38.19%	2,162.4
2037	33,588.0	16,957.7	16,630.3	50.49%	3,492.5	611.9	314.3	297.6	8.52%	1,333.9	19.0	297.6	20.3	997.1	38.19%	2,204.6
2038	34,083.3	17,449.7	16,633.6	51.20%	3,554.6	610.0	319.9	290.0	8.16%	1,357.7	19.3	290.0	20.6	1,027.7	38.19%	2,245.6
2039	34,565.1	17,960.2	16,604.9	51.96%	3,617.0	607.6	325.5	282.0	7.80%	1,381.5	19.7	282.0	21.0	1,058.8	38.19%	2,287.4
2040	35,031.2	18,489.9	16,541.3	52.78%	3,680.5	604.9	331.2	273.7	7.44%	1,405.7	20.0	273.7	21.3	1,090.7	38.19%	2,330.3
2041	35,479.3	19,039.8	16,439.5	53.66%	3,746.1	601.9	337.1	264.8	7.07%	1,430.8	20.4	264.8	21.7	1,123.9	38.19%	2,374.1
2042	35,907.2	19,611.1	16,296.1	54.62%	3,812.7	598.8	343.1	255.6	6.70%	1,456.2	20.7	255.6	22.1	1,157.7	38.19%	2,418.9

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	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
2043	\$36,315.1	\$20,207.3	\$16,107.8	55.64%	\$3,882.2	\$596.4	\$349.4	\$247.0	6.36%	\$1,482.8	\$21.1	\$247.0	\$22.5	\$1,192.2	38.19%	\$2,462.7
2044	36,703.8	20,832.6	15,871.2	56.76%	3,954.9	594.9	355.9	239.0	6.04%	1,510.5	21.5	239.0	22.9	1,227.1	38.19%	2,505.6
2045	37,075.4	21,492.1	15,583.3	57.97%	4,030.2	594.9	362.7	232.2	5.76%	1,539.3	21.9	232.2	23.4	1,261.8	38.19%	2,546.7
2046	37,433.0	22,191.9	15,241.1	59.28%	4,108.8	596.7	369.8	226.9	5.52%	1,569.3	22.4	226.9	23.8	1,296.3	38.19%	2,585.4
2047	37,779.8	22,938.3	14,841.5	60.72%	4,189.8	600.3	377.1	223.3	5.33%	1,600.2	22.8	223.3	24.3	1,329.9	38.19%	2,622.0
2048	38,121.2	23,739.4	14,381.8	62.27%	4,273.9	606.1	384.6	221.4	5.18%	1,632.4	23.2	221.4	24.8	1,362.9	38.19%	2,654.8
2049	38,460.9	24,602.4	13,858.5	63.97%	4,359.6	613.3	392.4	221.0	5.07%	1,665.1	23.7	221.0	25.3	1,395.1	38.19%	2,685.2
2050	38,800.7	25,532.6	13,268.1	65.80%	4,446.3	621.6	400.2	221.4	4.98%	1,698.2	24.2	221.4	25.8	1,426.9	38.19%	2,714.8
2051	39,140.6	26,533.8	12,606.8	67.79%	4,533.1	630.4	408.0	222.4	4.91%	1,731.4	24.7	222.4	26.3	1,458.0	38.19%	2,744.9
2052	39,478.9	27,608.9	11,870.0	69.93%	4,620.2	639.4	415.8	223.6	4.84%	1,764.6	25.1	223.6	26.8	1,489.1	38.19%	2,776.9
2053	39,815.0	28,761.4	11,053.6	72.24%	4,707.1	649.2	423.6	225.5	4.79%	1,797.8	25.6	225.5	27.3	1,519.4	38.19%	2,810.0
2054	40,148.1	29,995.6	10,152.5	74.71%	4,795.6	659.7	431.6	228.1	4.76%	1,831.6	26.1	228.1	27.8	1,549.6	38.19%	2,844.7
2055	40,474.3	31,313.4	9,160.9	77.37%	4,885.8	670.9	439.7	231.1	4.73%	1,866.1	26.6	231.1	28.3	1,580.0	38.19%	2,883.5
2056	40,790.1	32,717.2	8,072.9	80.21%	4,977.1	682.6	447.9	234.6	4.71%	1,901.0	27.1	234.6	28.9	1,610.4	38.19%	2,925.9
2057	41,092.8	34,210.6	6,882.2	83.25%	5,069.7	694.8	456.3	238.5	4.70%	1,936.3	27.6	238.5	29.4	1,640.8	38.19%	2,970.6
2058	41,383.6	35,801.3	5,582.3	86.51%	5,162.9	707.4	464.7	242.7	4.70%	1,971.9	28.1	242.7	29.9	1,671.2	38.19%	3,013.9
2059	41,665.3	37,499.4	4,165.9	90.00%	5,256.9	720.3	473.1	247.2	4.70%	2,007.8	28.6	247.2	30.5	1,701.5	38.19%	3,053.9

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.

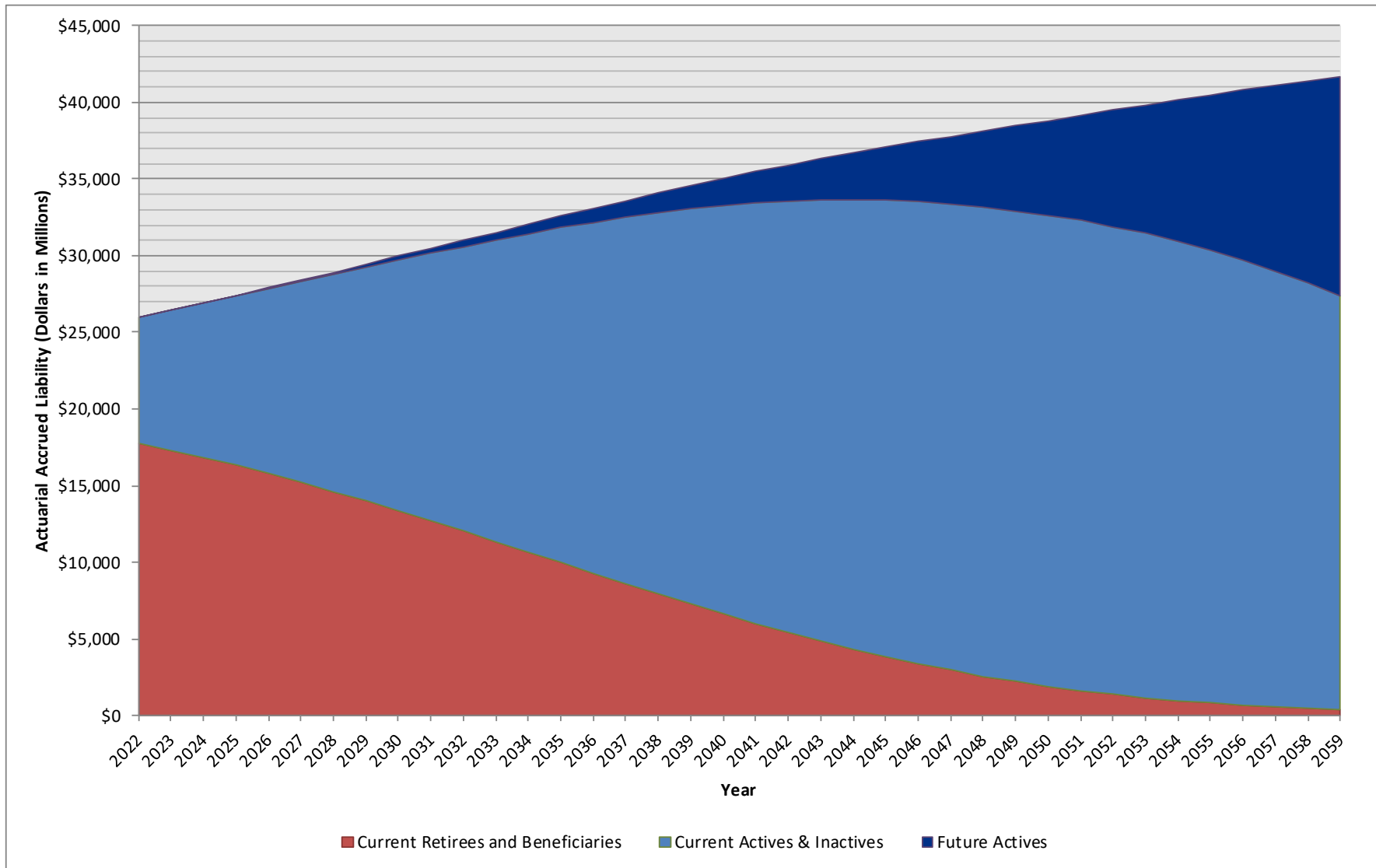
State contributions, benefit payments, refunds, administrative expenses and employee contributions are assumed to occur during the middle of the year.

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.

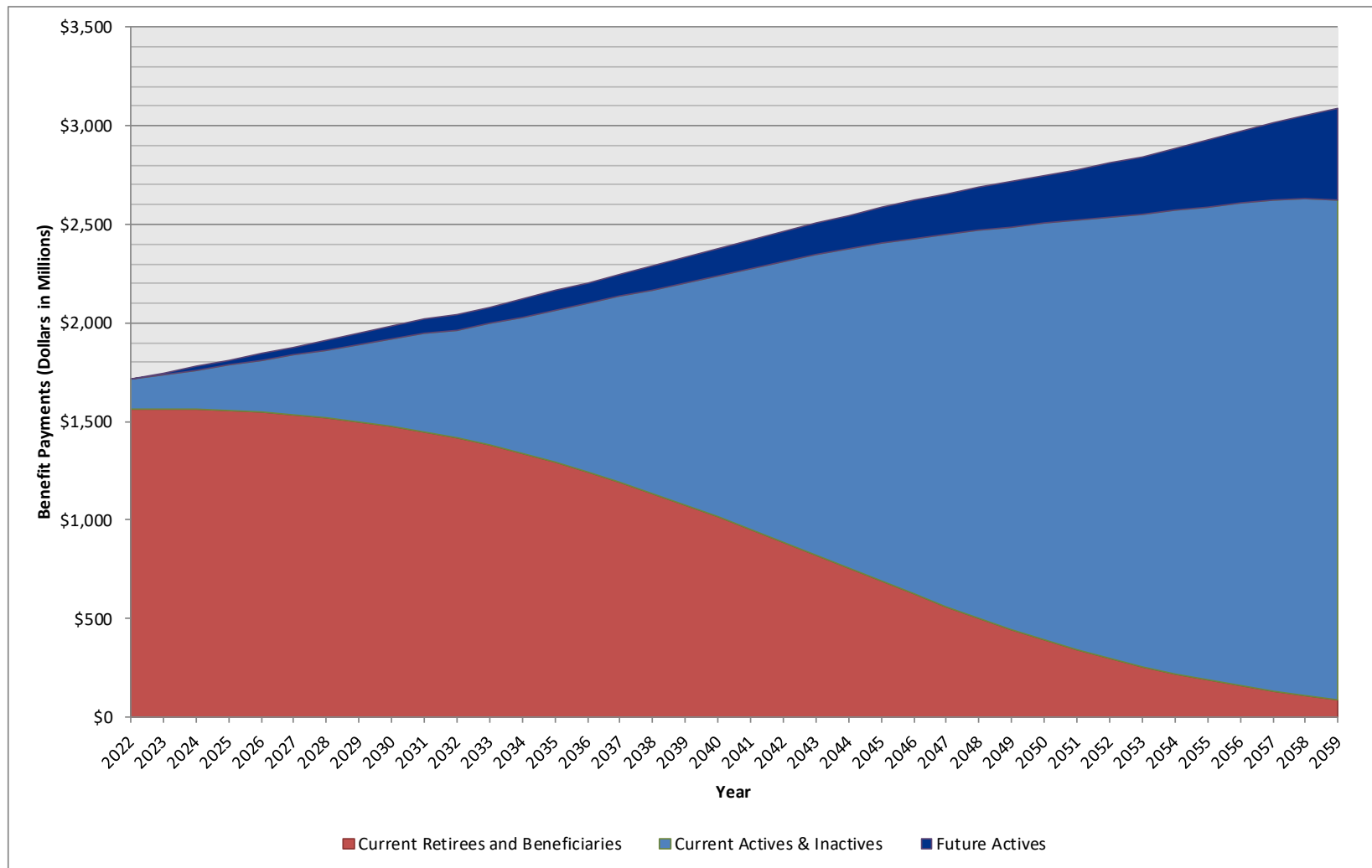
Total payroll is capped for members hired after December 31, 2010, as defined in Public Act 96-0889.



Graph 2 Projected Actuarial Accrued Liabilities Actuarial Valuation as of June 30, 2022

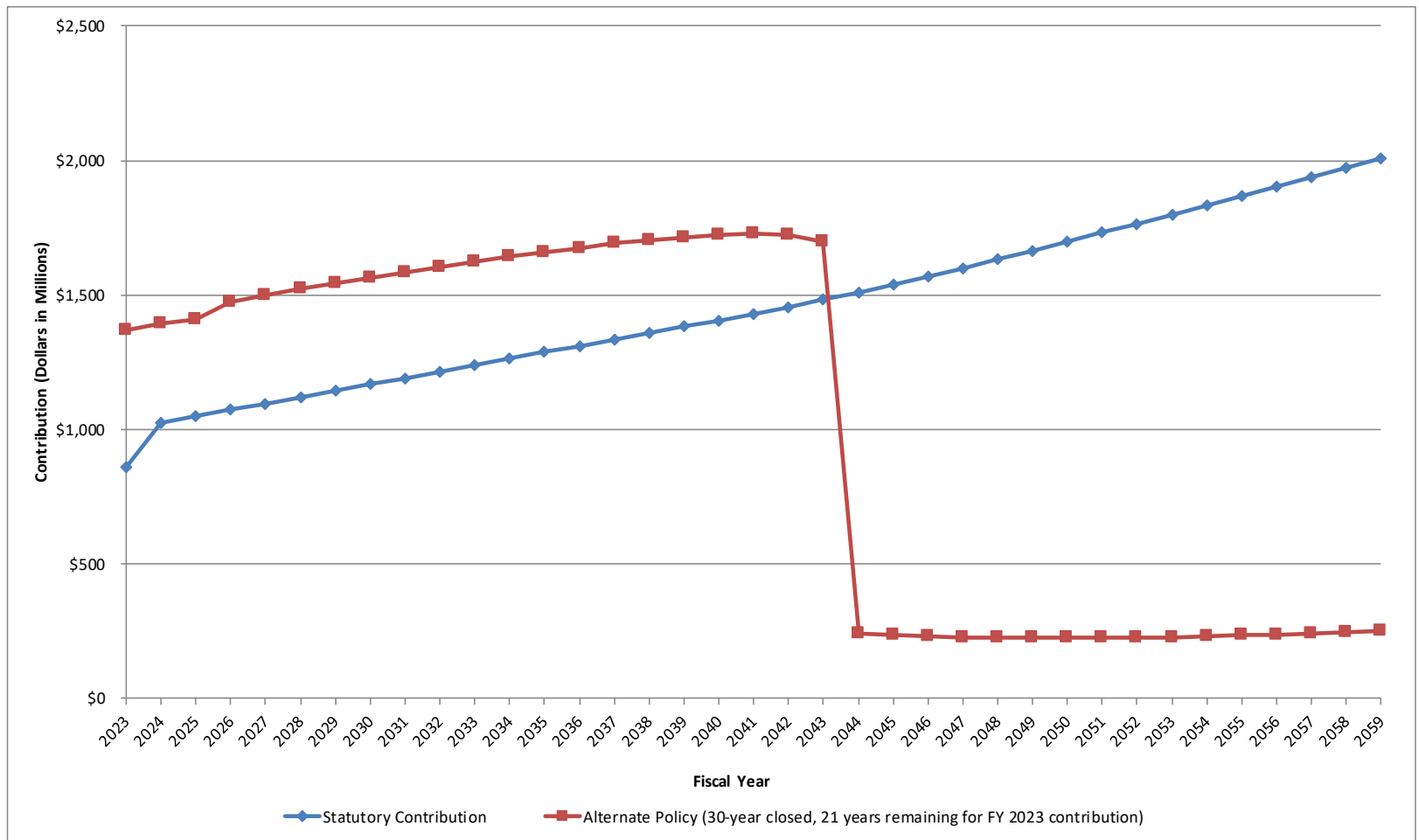


Graph 3 Projected Benefit Payments (Including Administrative Expenses and Health Insurance Subsidy) Actuarial Valuation as of June 30, 2022



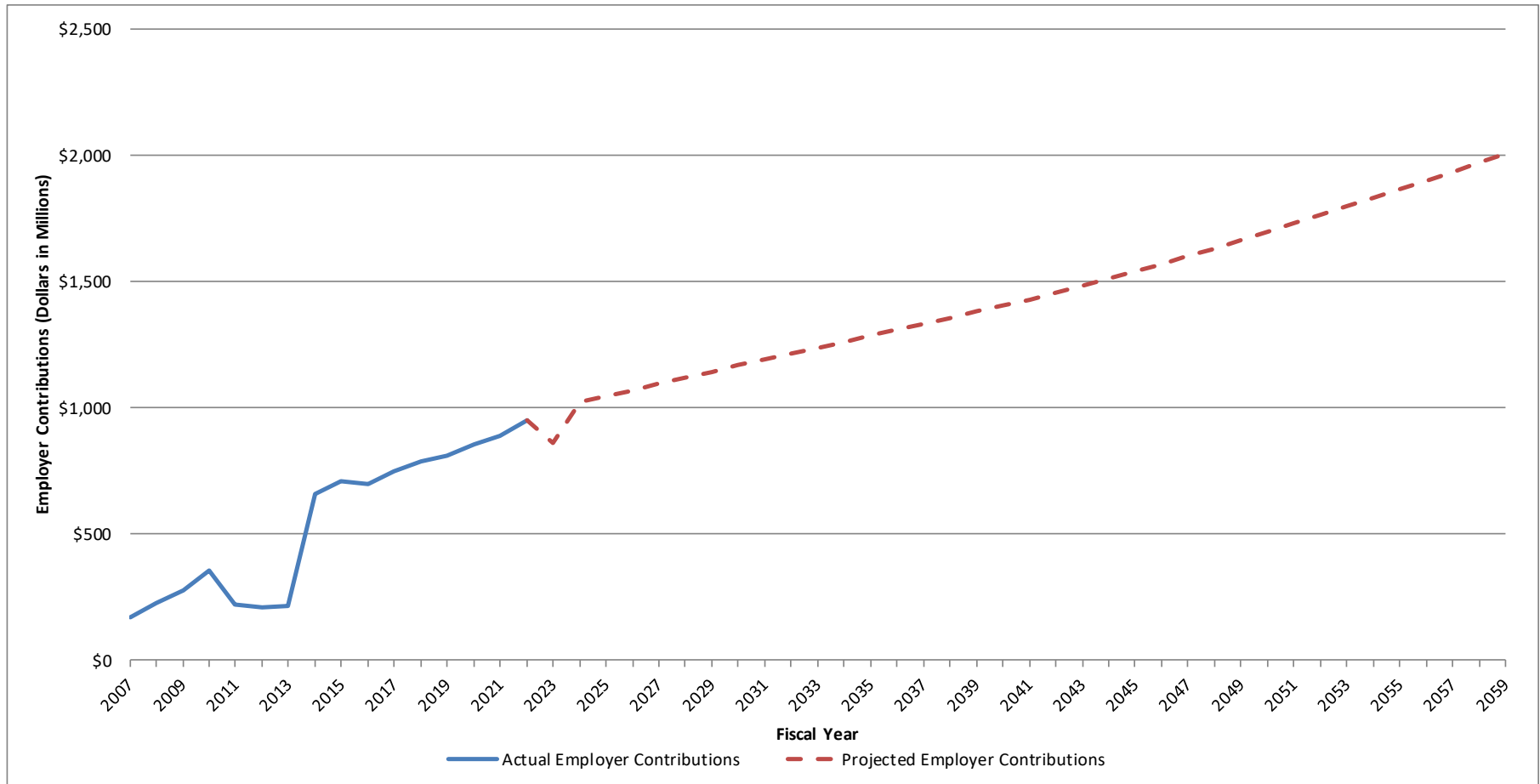
Graph 4

Projected Statutory Contributions vs. Contributions under Alternate Policy (Normal Cost Plus 30-Year Closed Period Level Percent of Pay Amortization) (21 Years Remaining in Amortization Period for FY 2023 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 21 years remaining in FY 2023.

Graph 5 Actual and Projected Employer Contributions



SECTION E

FUND ASSETS

Table 7

Statement of Fiduciary Net Position for Years Ended June 30, 2022 and 2021

	June 30, 2022			June 30, 2021		
	Pension Fund	Health Insurance Fund	Total Fund - Pension and Health Insurance	Pension Fund	Health Insurance Fund	Total Fund - Pension and Health Insurance
	Assets:					
Cash	\$ 2,290,096	\$ -	\$ 2,290,096	\$ 4,198,799	\$ -	\$ 4,198,799
Prepaid expense	1,006,691	-	1,006,691	753,553	-	753,553
Receivables:						
Minimum funding requirement (Employer)	260,178,417	-	260,178,417	235,258,853	-	235,258,853
Employee	9,435,986	-	9,435,986	14,636,271	-	14,636,271
Accrued investment income	46,285,236	-	46,285,236	38,749,855	-	38,749,855
Due from brokers	64,089,704	-	64,089,704	49,271,609	-	49,271,609
Participating teachers' accounts for contributions	4,798,811	-	4,798,811	4,874,359	-	4,874,359
Other receivables	19,114,866	5,280,595	24,395,461	19,208,975	5,133,792	24,342,767
Total receivables	403,903,020	5,280,595	409,183,615	361,999,922	5,133,792	367,133,714
Investments, at fair value:						
U.S. government and agency fixed income	1,341,767,577	-	1,341,767,577	1,387,460,313	-	1,387,460,313
U.S. corporate fixed income	977,782,641	-	977,782,641	1,159,974,052	-	1,159,974,052
Foreign fixed income securities	34,063,859	-	34,063,859	58,051,391	-	58,051,391
U.S. equities	2,975,324,892	-	2,975,324,892	3,970,897,513	-	3,970,897,513
Foreign equities	3,038,474,987	-	3,038,474,987	3,980,404,709	-	3,980,404,709
Public REITs	120,644,386	-	120,644,386	153,842,910	-	153,842,910
Pooled short-term investment funds	523,199,050	-	523,199,050	477,384,615	-	477,384,615
Real estate	1,430,604,441	-	1,430,604,441	1,124,107,108	-	1,124,107,108
Infrastructure	231,525,701	-	231,525,701	207,366,935	-	207,366,935
Private equity	938,426,581	-	938,426,581	728,131,796	-	728,131,796
Total investments	11,611,814,115	-	11,611,814,115	13,247,621,342	-	13,247,621,342
Securities lending collateral	895,171,463	-	895,171,463	886,541,946	-	886,541,946
Capital assets, net of accumulated depreciation	892,772	-	892,772	1,335,968	-	1,335,968
Total assets	12,915,078,157	5,280,595	12,920,358,752	14,502,451,530	5,133,792	14,507,585,322
Liabilities:						
Benefits payable	7,231,823	5,199,548	12,431,371	4,615,207	5,065,986	9,681,193
Refunds payable	18,972,581	-	18,972,581	17,135,750	-	17,135,750
Accounts and administrative expenses payable	21,330,256	81,047	21,411,303	14,387,444	67,806	14,455,250
Securities lending collateral payable	900,151,040	-	900,151,040	896,023,737	-	896,023,737
Due to brokers	202,450,576	-	202,450,576	197,247,800	-	197,247,800
Total liabilities	1,150,136,276	5,280,595	1,155,416,871	1,129,409,938	5,133,792	1,134,543,730
Net Position Restricted for Pension Benefits	\$ 11,764,941,881	\$ -	\$ 11,764,941,881	\$ 13,373,041,592	\$ -	\$ 13,373,041,592



Table 8

Statement of Changes in Fiduciary Net Position for Years Ended June 30, 2022 and 2021

	June 30, 2022			June 30, 2021		
	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	\$ 221,641,463	\$ -	\$ 221,641,463	\$ 215,092,566	\$ -	\$ 215,092,566
Minimum funding requirement (Employer)	667,180,000	-	667,180,000	619,001,000	-	619,001,000
Minimum funding requirement (State)	277,497,000	-	277,497,000	266,893,000	-	266,893,000
Allocation to health insurance fund	(62,017,292)	62,017,292	-	(51,350,898)	51,350,898	-
Total contributions	1,104,301,171	62,017,292	1,166,318,463	1,049,635,668	51,350,898	1,100,986,566
Investment income:						
Net appreciation (depreciation) in fair value	(1,364,631,909)	-	(1,364,631,909)	2,719,441,850	-	2,719,441,850
Interest	31,294,672	-	31,294,672	78,672,576	-	78,672,576
Dividends	253,817,005	-	253,817,005	184,612,984	-	184,612,984
Miscellaneous	1,478,703	-	1,478,703	985,739	-	985,739
Securities lending income, net	4,461,024	-	4,461,024	3,398,048	-	3,398,048
Less investment expense:	(51,725,939)	-	(51,725,939)	(51,320,396)	-	(51,320,396)
Net investment income	(1,125,306,444)	-	(1,125,306,444)	2,935,790,801	-	2,935,790,801
Interest on late required contribution payments	4,082,944	-	4,082,944	1,761,509	-	1,761,509
Miscellaneous	337,453	-	337,453	64,687	-	64,687
Total additions	(16,584,876)	62,017,292	45,432,416	3,987,252,665	51,350,898	4,038,603,563
Deductions:						
Pension benefits	1,543,936,297	-	1,543,936,297	1,512,582,986	-	1,512,582,986
Refunds	21,506,750	-	21,506,750	18,056,876	-	18,056,876
2.2 Legislative refunds	349,346	-	349,346	168,585	-	168,585
Refund of insurance premiums	-	61,286,124	61,286,124	-	50,715,931	50,715,931
Death benefits	4,154,352	-	4,154,352	3,442,403	-	3,442,403
Total benefits payments	1,569,946,745	61,286,124	1,631,232,869	1,534,250,850	50,715,931	1,584,966,781
Administrative and miscellaneous expenses	21,568,090	731,168	22,299,258	17,022,244	634,967	17,657,211
Total deductions	1,591,514,835	62,017,292	1,653,532,127	1,551,273,094	51,350,898	1,602,623,992
Net increase (decrease)	(1,608,099,711)	-	(1,608,099,711)	2,435,979,571	-	2,435,979,571
Net Position Restricted for Pension Benefits						
Beginning of the Year	13,373,041,592	-	13,373,041,592	10,937,062,021	-	10,937,062,021
End of year	\$ 11,764,941,881	\$ -	\$ 11,764,941,881	\$ 13,373,041,592	\$ -	\$ 13,373,041,592



Table 9

Development of the Actuarial Value of Assets

Year Ending June 30	2022	2023	2024	2025
Beginning of Year:				
(1) Market Value of Assets	\$ 13,373,041,592			
(2) Actuarial Value of Assets	11,925,535,283			
End of Year:				
(3) Market Value of Assets	11,764,941,881			
(4) Contributions and Disbursements				
(4a) Actual Employer & Misc. Contributions	949,097,397			
(4b) Employee Contributions	221,641,463			
(4c) Benefit Payouts & Refunds	(1,631,232,869)			
(4d) Administrative Expenses	(22,299,258)			
(4e) Net of Contributions and Disbursements	(482,793,267)			
(5) Total Investment Return				
=(3)-(1)-(4e)	(1,125,306,444)			
(6) Projected Rate of Return	6.50%			
(7) Projected Investment Income ^a	744,166,635			
(8) Investment Income in Excess of Projected Income	(1,869,473,079)			
(9) Excess Investment Income Recognized This Year (4-year recognition)				
(9a) From This Year	\$ (467,368,270)			
(9b) From One Year Ago	552,220,554	\$ (467,368,270)		
(9c) From Two Years Ago	(74,881,554)	552,220,554	\$ (467,368,270)	
(9d) From Three Years Ago	(54,664,803)	(74,881,554)	552,220,552	\$ (467,368,269)
(9e) Total Recognized Investment Gain (Loss)	(44,694,073)	9,970,730	84,852,282	(467,368,269)
(10) Change in Actuarial Value of Assets				
=(4e)+(7)+(9e)	\$ 216,679,295			
End of Year:				
(3) Market Value of Assets	\$ 11,764,941,881			
(11) Actuarial Value of Assets	\$ 12,142,214,578			
= (2)+(10)				
(12) Difference between Market & Actuarial Values	\$ (377,272,697)			
(13) Estimated Actuarial Value Rate of Return	5.99%			
(14) Estimated Market Value Rate of Return	-8.57%			
(15) Ratio of Actuarial Value to Market Value	103.21%			

^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.

Graph 6 Historical Assets Values From June 30, 2013-2022

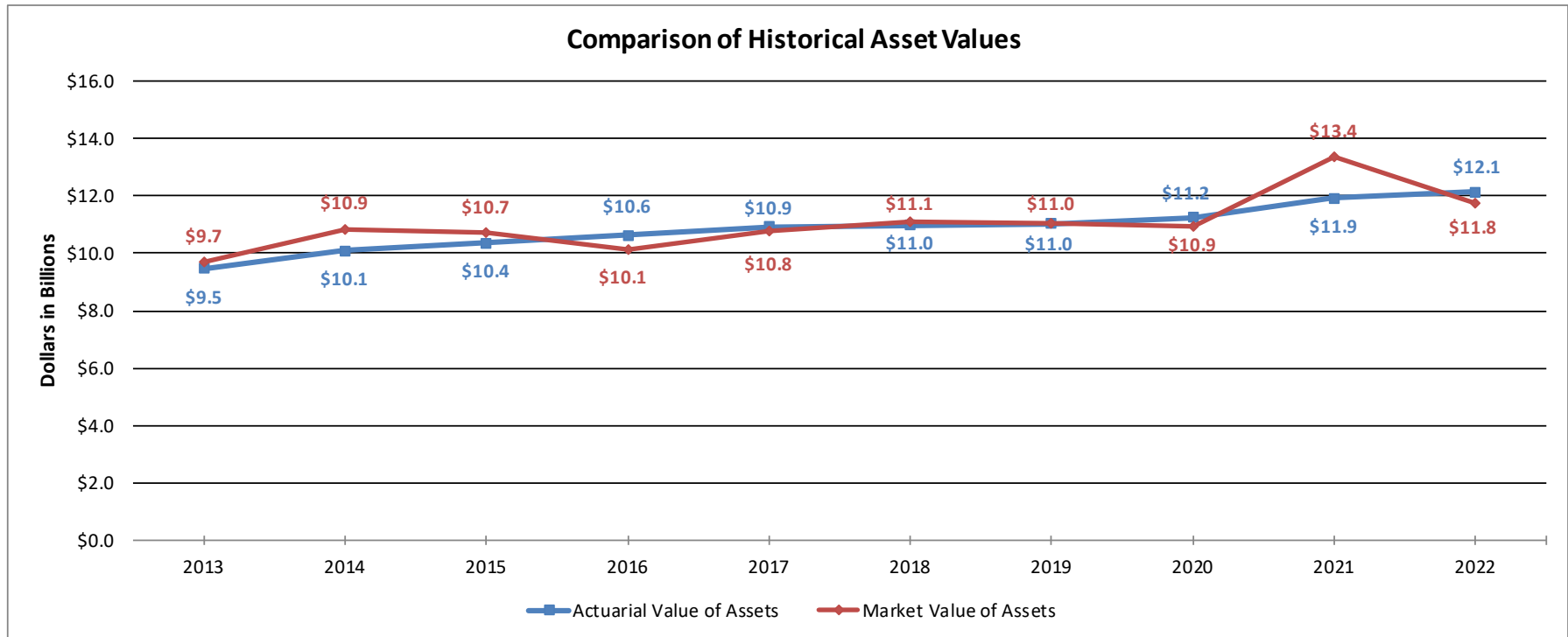
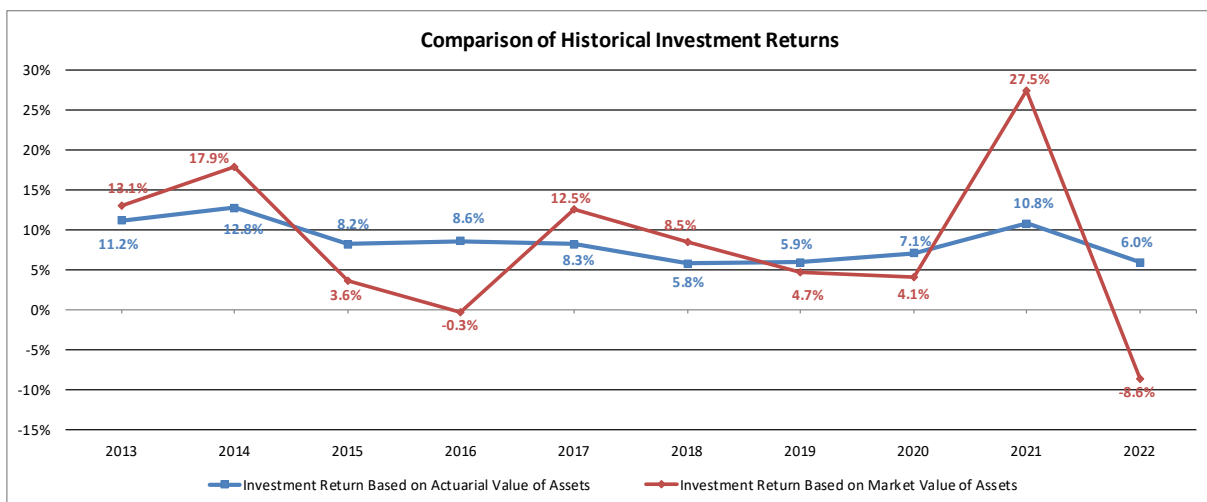


Table 10 Historical Investment Returns

Year Ended June 30,	Market Value Return	Actuarial Value Return
1998	18.2%	n/a
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%
Average Returns		
Last 10 Years:	7.9%	8.4%
Last 25 Years:	6.8%	n/a

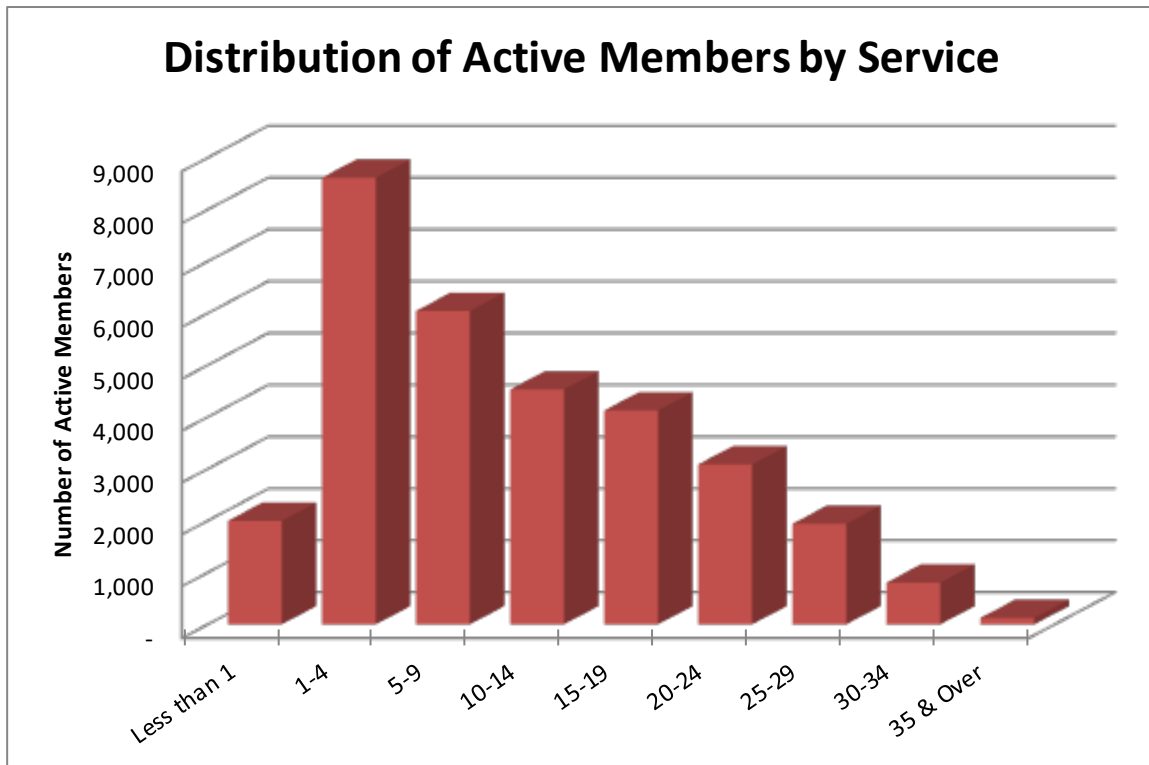
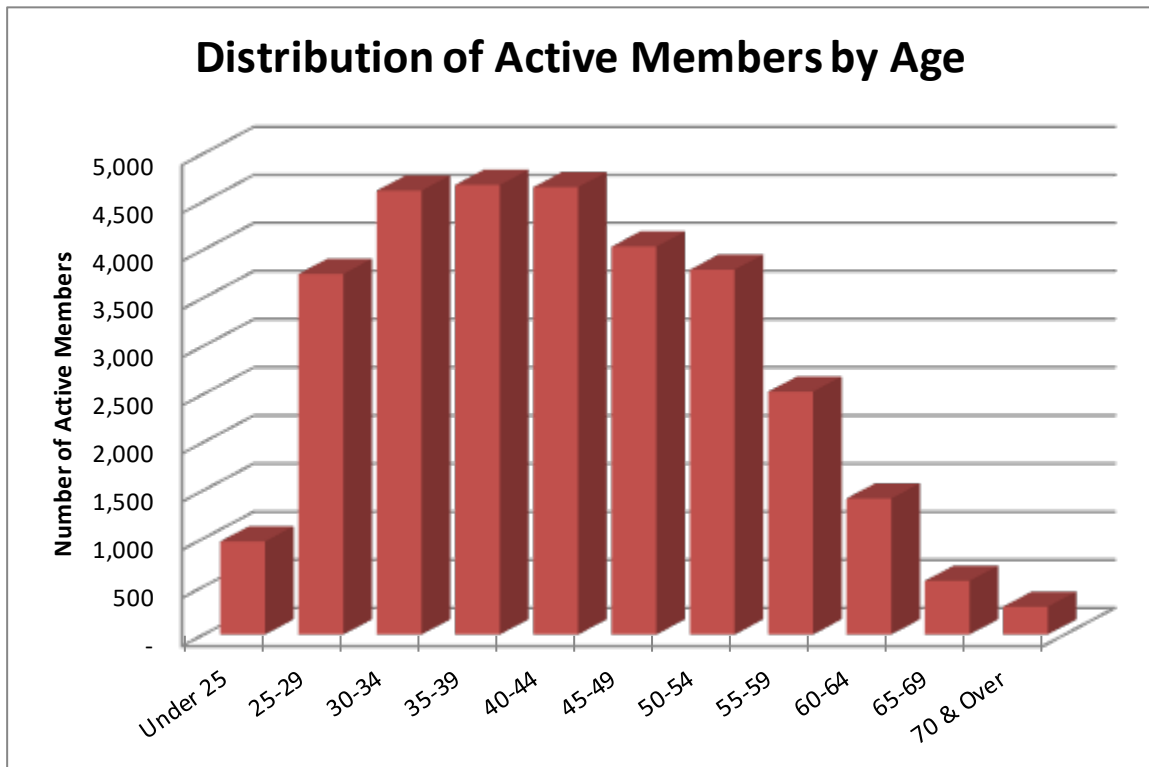


SECTION F

PARTICIPANT DATA

Graph 7

Active Members Classified by Age and Service



Graph 8 Retirees Classified by Benefit Amount and Age

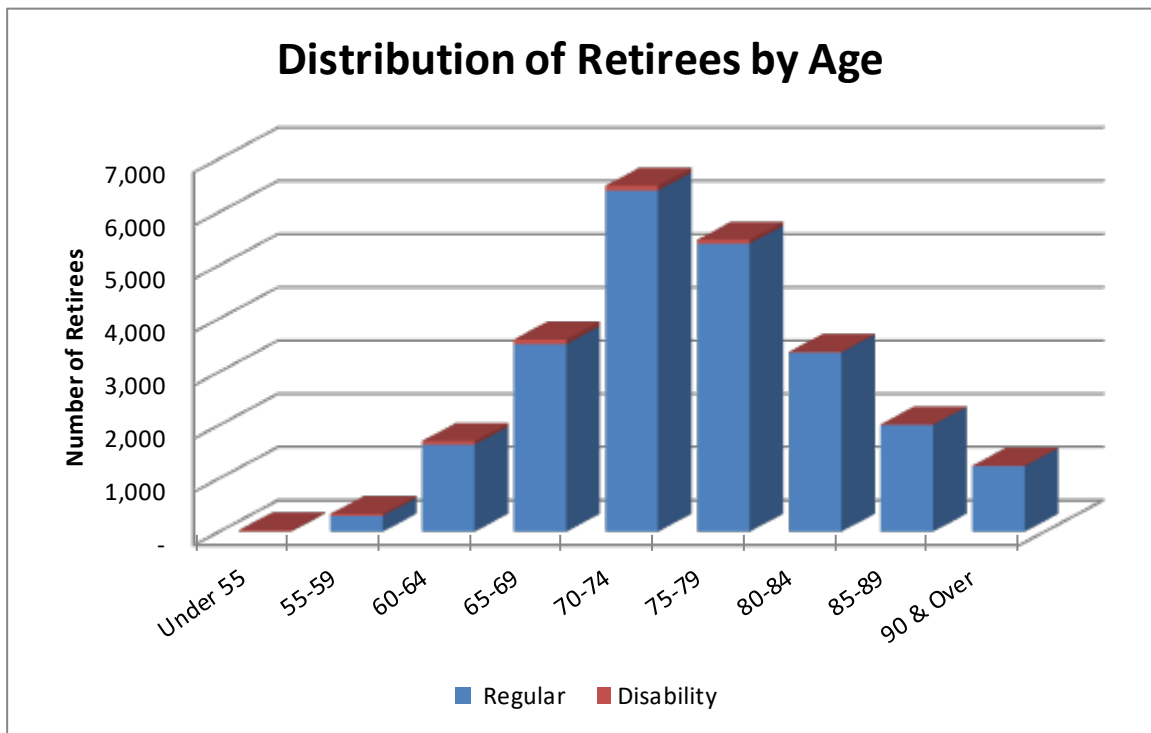
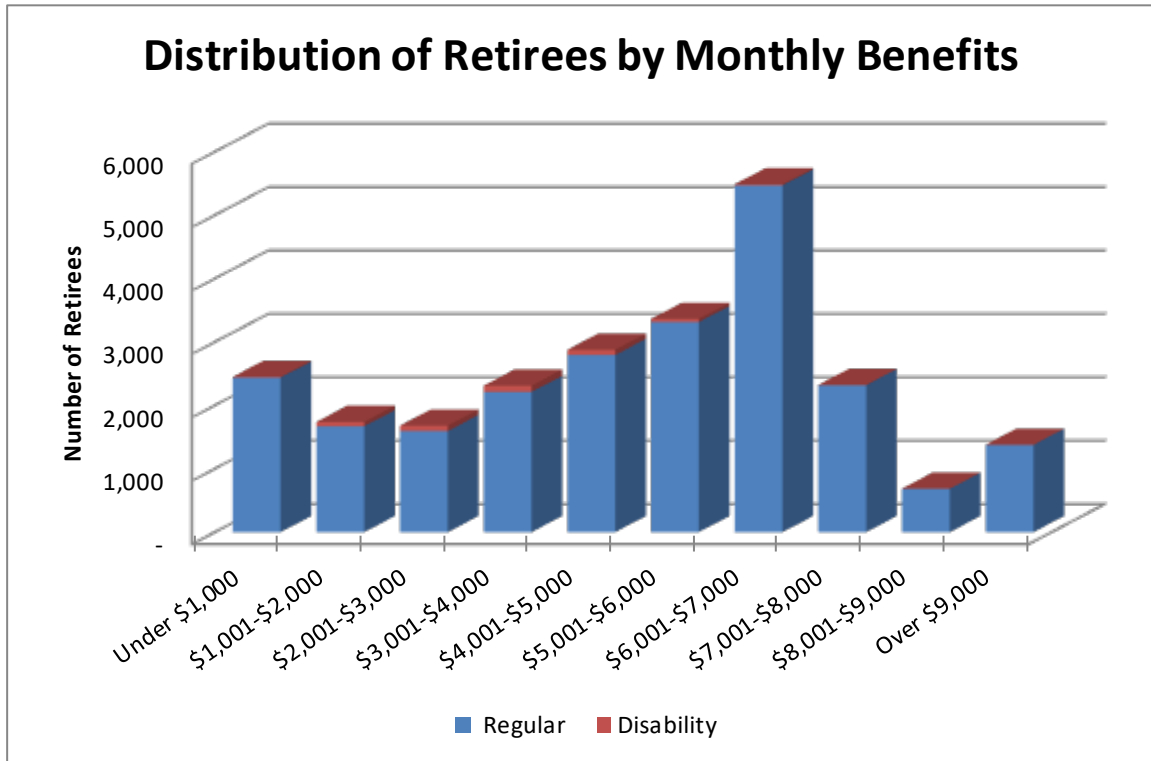


Table 11
Summary of Fund Membership

	Year Ended		Change from Prior Year
	June 30, 2022	June 30, 2021	
Active Members			
Number ^a	31,261	31,215	0.1%
Average Age	42.6	42.6	
Average Service	11.0	11.1	
Total Salary Supplied by Fund	\$2,522,166,316	\$2,372,166,562	6.3%
Average Annual Salary	\$80,681	\$75,994	6.2%
Total Active Vested Participants	16,302	16,382	-0.5%
Male Members	7,440	7,356	1.1%
Female Members	23,821	23,859	-0.2%
Tier 1 Members	16,811	17,815	-5.6%
Tier 2 Members	14,450	13,400	7.8%
Inactive Vested Members^b			
Number	6,861	6,658	3.0%
Average Age	49.4	49.0	
Average Service (Excluding Reciprocal Service)	10.8	10.6	
Inactive Non-Vested Members			
Number	26,630	24,997	6.5%
Retirees			
Number	23,859	23,877	-0.1%
Average Age	75.8	75.5	
Average Annual Benefit	\$60,197	\$58,726	2.5%
Total Annual Benefit	\$1,436,243,793	\$1,402,209,485	2.4%
Disabled Retirees			
Number	430	445	-3.4%
Average Age	69.0	68.5	
Average Annual Benefit	\$42,748	\$41,634	2.7%
Total Annual Benefit	\$18,381,534	\$18,527,052	-0.8%
Beneficiaries (Including Children)			
Number	3,349	3,288	1.9%
Average Age	78.4	77.9	
Average Annual Benefit	\$26,995	\$25,937	4.1%
Total Annual Benefit	\$90,407,404	\$85,279,477	6.0%
Total Members	92,390	90,480	2.1%

^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
2008	32,086	3,479	23,920	0.85
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

^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, 2022

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	-	-	-	-	-	-	-	-	-	-	-
	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
20-24	286	682	-	-	-	-	-	-	-	-	968
	\$ 3,547,210	\$ 39,199,924	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 42,747,134
25-29	453	2,701	594	-	-	-	-	-	-	-	3,748
	\$ 5,906,806	\$ 163,539,938	\$ 41,706,584	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 211,153,329
30-34	276	1,853	2,015	470	-	-	-	-	-	-	4,614
	\$ 4,303,491	\$ 115,284,439	\$ 151,834,992	\$ 42,079,311	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 313,502,232
35-39	225	1,072	1,384	1,564	428	-	-	-	-	-	4,673
	\$ 3,543,645	\$ 68,543,061	\$ 107,049,145	\$ 148,104,490	\$ 45,563,270	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 372,803,611
40-44	200	719	773	1,047	1,519	392	-	-	-	-	4,650
	\$ 3,303,897	\$ 44,648,333	\$ 59,371,440	\$ 100,242,688	\$ 161,984,164	\$ 44,016,492	\$ -	\$ -	\$ -	\$ -	\$ 413,567,015
45-49	165	521	451	564	962	1,116	253	-	-	-	4,032
	\$ 1,887,299	\$ 32,271,357	\$ 34,146,036	\$ 54,190,979	\$ 102,042,400	\$ 126,403,369	\$ 30,503,861	\$ -	\$ -	\$ -	\$ 381,445,301
50-54	144	428	340	411	585	828	862	194	-	-	3,792
	\$ 2,045,207	\$ 24,471,665	\$ 25,820,204	\$ 38,848,071	\$ 60,531,012	\$ 91,448,426	\$ 100,774,006	\$ 23,897,915	\$ -	\$ -	\$ 367,836,505
55-59	104	302	214	227	331	411	504	407	24	-	2,524
	\$ 1,156,705	\$ 16,432,370	\$ 15,427,121	\$ 20,406,523	\$ 34,107,873	\$ 44,470,853	\$ 57,308,810	\$ 47,455,462	\$ 3,064,054	\$ -	\$ 239,829,771
60-64	74	174	153	159	202	236	223	139	54	-	1,414
	\$ 579,649	\$ 7,545,018	\$ 9,934,718	\$ 12,264,705	\$ 20,074,714	\$ 25,218,919	\$ 24,659,925	\$ 15,804,577	\$ 6,367,699	\$ -	\$ 122,449,924
65-69	41	90	74	47	73	74	74	51	33	-	557
	\$ 199,733	\$ 2,399,503	\$ 4,102,442	\$ 3,395,818	\$ 6,712,701	\$ 7,830,230	\$ 8,193,324	\$ 5,714,210	\$ 3,962,340	\$ -	\$ 42,510,301
70 & Over	28	72	46	40	24	28	23	14	14	-	289
	\$ 217,362	\$ 1,253,179	\$ 1,431,518	\$ 1,784,917	\$ 1,637,662	\$ 2,579,967	\$ 2,370,062	\$ 1,428,606	\$ 1,617,919	\$ -	\$ 14,321,193
Total	1,996	8,614	6,044	4,529	4,124	3,085	1,939	805	125	-	31,261
	\$ 26,691,004	\$ 515,588,788	\$ 450,824,200	\$ 421,317,502	\$ 432,653,796	\$ 341,968,256	\$ 223,809,988	\$ 94,300,769	\$ 15,012,013	\$ -	\$ 2,522,166,316

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, 2022

	Actives	Deferred Vested	Expected Refunds	Retirees	Disabilities	Beneficiaries	Total
Totals as of the June 30, 2021 Actuarial Valuation	31,215	6,658	24,997	23,877	445	3,288	90,480
New Entrants	3,242	-	-	-	-	-	3,242
Rehires — Members with Service	535	(126)	(409)	-	-	-	-
Non-Vested Terminations	(2,299)	(7)	2,306	-	-	-	-
Vested Terminations	(619)	637	(18)	-	-	-	-
Service Retirements	(559)	(162)	(28)	749	-	-	-
Disabilities	(2)	(3)	-	-	5	-	-
Deaths	(30)	(10)	(14)	(775)	(20)	(198)	(1,047)
New Beneficiaries	-	-	-	-	-	258	258
Refunds and Benefit Terminations	(222)	(126)	(504)	-	-	-	(852)
Data Adjustments	-	-	300	8	-	1	309
Net Change	46	203	1,633	(18)	(15)	61	1,910
Totals as of the June 30, 2022 Actuarial Valuation	31,261	6,861	26,630	23,859	430	3,349	92,390

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, 2022

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		
2013	2,129	\$ 130,553,477	615	\$ 21,764,846	27,440	\$ 1,224,869,518	\$ 44,638	3.69%
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%

Table 16
Number of Annuitants Classified by Benefit Type and Amount as of June 30, 2022

Amount of Monthly Benefit	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
\$ 1-500	345	929	1	1	156	215	502	1,145
501-1000	328	835	3	7	148	282	479	1,124
1,001-1,500	275	631	5	16	151	199	431	846
1,501-2,000	224	539	8	41	144	189	376	769
2,001-2,500	191	568	8	36	155	221	354	825
2,501-3,000	192	643	6	36	138	227	336	906
3,001-3,500	223	839	12	45	219	407	454	1,291
3,501-4,000	250	898	9	34	54	151	313	1,083
4,001-4,500	259	1,125	10	23	18	91	287	1,239
4,501-5,000	274	1,134	11	40	21	52	306	1,226
5,001-5,500	299	1,110	3	26	6	41	308	1,177
5,501-6,000	435	1,468	5	17	8	24	448	1,509
6,001-6,500	644	2,145	3	8	5	16	652	2,169
6,501-7,000	605	2,074	2	5	2	5	609	2,084
7,001-7,500	353	1,218	-	-	-	2	353	1,220
7,501-8,000	174	573	3	1	-	-	177	574
8,001-8,500	134	240	-	-	-	-	134	240
8,501-9,000	110	199	1	2	-	-	111	201
9,001-9,500	70	179	-	-	-	1	70	180
Over \$9,500	362	765	2	-	-	1	364	766
Totals	5,747	18,112	92	338	1,225	2,124	7,064	20,574

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 2018								
Avg Monthly Annuity	\$ 336	\$ 823	\$ 1,503	\$ 2,578	\$ 3,471	\$ 4,505	\$ 5,867	\$ 3,382
Avg Monthly FAS	\$ 6,507	\$ 5,349	\$ 5,502	\$ 6,738	\$ 7,407	\$ 7,927	\$ 8,166	\$ 7,089
Number of Retirees	39	92	81	88	175	122	171	768
Average Age								63.2
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

Table 18
Schedule of Active Member Payroll

Valuation Date June 30,	Number	Covered Payroll	Average Annual Payroll	% Increase in Avg. Payroll
2013	30,969	\$2,239,347,051	\$ 72,309	
2014	30,654	2,233,280,995	72,854	0.75%
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%

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%

10 fiscal years will be built prospectively.

Table 20
Participating Employers

Participating Employer	2022		2021	
	Covered Employees	% of Total CTPF Membership	Covered Employees	% of Total CTPF Membership
Chicago Public Schools	26,380	84.39%	26,319	84.32%
Noble Network of Charter Schools	809	2.59%	787	2.52%
UNO Charter School Network	669	2.14%	693	2.22%
Learn Charter School Network	285	0.91%	268	0.86%
KIPP Chicago Schools	256	0.82%	192	0.62%
Distinctive Schools	202	0.65%	205	0.66%
Concept Schools	189	0.60%	183	0.59%
Charter Schools USA	175	0.56%	178	0.57%
Civitas Schools	164	0.52%	162	0.52%
University of Chicago Charter	135	0.43%	135	0.43%
Total, Largest 10 Employers	29,264	93.61%	29,122	93.29%
All Other Employers	1,997	6.39%	2,093	6.71%
Grand Total	31,261	100.00%	31,215	100.00%

The total number of covered employees from the largest 10 employers in 2021 was 29,142. This differs slightly from the number shown above due to a difference in the 10th largest employer in 2022 compared to 2021.

Excludes the group of 182 covered employees 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, 2018 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, 2028.

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2018 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 2018 Actuarial Experience Study issued on May 25, 2018 and the 2022 Actuarial Assumption Study issued on September 8, 2022.

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 $\frac{1}{2}$ 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 2.00 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.



Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2018 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	RP-2014 White Collar Employee, sex distinct	98%	113%
Post-retirement Disabled Mortality	RP-2014 Disabled Annuitant, sex distinct	103%	106%
Post-retirement Healthy Mortality	RP-2014 White Collar Healthy Annuitant, sex distinct	108%	94%

Future mortality improvements are reflected by projecting the base mortality tables back from the year 2014 to the year 2006 using the Society of Actuaries (SOA) MP-2014 (referred to as the RP-2006 base mortality tables) and projecting from 2006 using the MP-2017 projection scale. The assumptions are generational mortality tables and include a margin for improvement.

Age	Future Life Expectancy (years) in 2022				Future Life Expectancy (years) in 2032			
	Post-retirement Healthy		Post-retirement Disabled		Post-retirement Healthy		Post-retirement Disabled	
	Male	Female	Male	Female	Male	Female	Male	Female
35	51.34	54.59	34.59	40.95	52.33	55.52	36.23	42.43
40	46.16	49.40	30.84	36.49	47.12	50.31	32.34	37.88
45	41.07	44.27	27.52	32.37	42.00	45.16	28.88	33.67
50	36.06	39.17	24.35	28.41	36.97	40.05	25.60	29.62
55	31.18	34.12	21.24	24.63	32.06	34.98	22.39	25.76
60	26.42	29.20	18.20	21.12	27.26	30.02	19.24	22.14
65	21.84	24.47	15.32	17.73	22.62	25.25	16.22	18.62
70	17.50	19.96	12.58	14.41	18.20	20.68	13.33	15.18
75	13.49	15.70	9.98	11.30	14.12	16.36	10.61	11.98

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2018 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	30.00%	16	2.25%
1	16.00%	17	2.25%
2	13.00%	18	2.25%
3	12.00%	19	2.25%
4	9.00%	20	2.25%
5	9.00%	21	2.25%
6	8.00%	22	2.25%
7	6.00%	23	2.25%
8	5.00%	24	2.25%
9	5.00%	25	2.25%
10	4.00%	26	2.25%
11	3.00%	27	2.25%
12	3.00%	28	2.25%
13	3.00%	29	2.25%
14	3.00%	30	1.75%
15	3.00%	31+	1.75%

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, 2018 Actuarial Valuation)

Salary Increases

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

Age	Annual Increase
20	12.60%
25	7.50%
30	6.00%
35	5.25%
40	4.25%
45	3.50%
50	3.00%
55	2.75%
60	2.75%
65	2.75%
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	0.04%
25	0.04%
30	0.04%
35	0.05%
40	0.06%
45	0.08%
50	0.19%
55	0.24%
60	0.29%

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2018 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%	20.00%
56	5.00%	20.00%
57	5.00%	20.00%
58	5.00%	20.00%
59	7.00%	20.00%
60	9.00%	22.50%
61	11.00%	22.50%
62	12.00%	22.50%
63	13.00%	22.50%
64	14.00%	22.50%
65	15.00%	25.00%
66	16.00%	25.00%
67	17.00%	25.00%
68	18.00%	27.50%
69	19.00%	27.50%
70	20.00%	30.00%
71	20.00%	30.00%
72	20.00%	30.00%
73	20.00%	30.00%
74	20.00%	30.00%
75	100.00%	100.00%

Retirement Rates for Tier 2 Employees	
Age	Rate (%)
62	40.00%
63	25.00%
64	25.00%
65	30.00%
66	25.00%
67	30.00%
68	20.00%
69	20.00%
70	20.00%
71	20.00%
72	20.00%
73	20.00%
74	20.00%
75	100.00%

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2018 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, 2022, was increased by 340 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 31,601. 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	986	\$ 51,792,162
25-29	1,907	106,715,478
30-34	1,062	62,499,926
35-39	596	36,342,724
40-44	388	23,033,209
45-49	253	14,269,864
50-54	214	12,341,133
55-59	164	8,783,104
60-64	71	3,023,087
65-69	11	462,382
70 & Over		
Total	5,652	\$ 319,263,069
Avg. Salary	\$	56,487
Avg. Age	32.44	
Percent Female	76%	

Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2018 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, 2022, 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 2023 are the budgeted administrative expense amount of \$24,870,160, as provided by Staff. Future administrative expenses are assumed to increase by 5.75 percent per year for 14 years and then increase at a rate consistent with the increase in projected capped payroll thereafter.

Marriage Assumption

75.0 percent of active male participants and 65.0 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, 2018 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 2022 and the adjusted pay used in the 2021 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 \$279,728,627 for fiscal year 2022 and is assumed to increase three percent per year.
5. Remaining Board of Education Contribution — June 30 (End of 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.

Eligibility Testing

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



Actuarial Methods and Assumptions (Most Adopted Effective with the June 30, 2018 Actuarial Valuation)

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 \$119,892 for fiscal year 2022 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, 2022)

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, 2022)

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, 2022)

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, 2022)

Survivors Annuity

Qualification of Survivor

A surviving spouse or unmarried minor children is 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, 2022)

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, 2022)

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, 2022)

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

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
2022	\$17,778.56	\$637.61	\$7,161.41	\$377.49	\$0.00	\$18,416.17	\$7,538.90	\$25,955.07
2023	17,325.04	654.24	7,991.82	455.62	0.00	17,979.28	8,447.43	26,426.71
2024	16,839.26	671.29	8,850.04	537.43	10.39	17,510.56	9,397.86	26,908.41
2025	16,322.91	688.55	9,733.21	625.25	29.54	17,011.46	10,388.01	27,399.47
2026	15,777.75	705.74	10,637.44	720.93	56.78	16,483.49	11,415.15	27,898.65
2027	15,205.72	722.84	11,558.37	825.76	91.61	15,928.57	12,475.75	28,404.32
2028	14,608.96	739.64	12,490.64	941.30	134.86	15,348.60	13,566.80	28,915.41
2029	13,989.89	755.95	13,428.87	1,068.87	186.57	14,745.84	14,684.31	29,430.15
2030	13,351.13	771.57	14,367.82	1,208.71	247.36	14,122.71	15,823.89	29,946.60
2031	12,695.60	786.22	15,302.09	1,361.29	318.70	13,481.82	16,982.08	30,463.89
2032	12,026.47	799.70	16,225.44	1,525.39	401.92	12,826.17	18,152.76	30,978.93
2033	11,347.19	832.97	17,130.94	1,700.33	500.77	12,180.15	19,332.03	31,512.18
2034	10,661.44	865.74	18,011.32	1,886.74	616.48	11,527.19	20,514.54	32,041.73
2035	9,973.17	897.63	18,858.92	2,085.23	750.44	10,870.79	21,694.60	32,565.39
2036	9,286.45	928.47	19,665.99	2,296.38	904.10	10,214.92	22,866.47	33,081.38
2037	8,605.51	958.17	20,424.64	2,520.63	1,079.02	9,563.68	24,024.29	33,587.97
2038	7,934.64	986.56	21,126.78	2,758.40	1,276.88	8,921.21	25,162.06	34,083.26
2039	7,278.11	1,012.95	21,764.71	3,009.87	1,499.43	8,291.06	26,274.01	34,565.07
2040	6,640.03	1,036.64	22,330.63	3,275.35	1,748.56	7,676.67	27,354.55	35,031.21
2041	6,024.34	1,057.38	22,816.43	3,554.95	2,026.24	7,081.72	28,397.62	35,479.34
2042	5,434.61	1,074.92	23,214.83	3,848.21	2,334.62	6,509.53	29,397.65	35,907.18
2043	4,874.00	1,089.26	23,521.51	4,154.46	2,675.84	5,963.26	30,351.82	36,315.08
2044	4,345.19	1,099.95	23,734.10	4,472.53	3,052.03	5,445.13	31,258.66	36,703.80
2045	3,850.27	1,106.71	23,851.79	4,801.22	3,465.40	4,956.98	32,118.40	37,075.39
2046	3,390.78	1,109.37	23,876.58	5,138.20	3,918.05	4,500.15	32,932.82	37,432.97
2047	2,967.64	1,107.42	23,812.07	5,480.50	4,412.19	4,075.07	33,704.76	37,779.83
2048	2,581.17	1,101.53	23,663.04	5,825.49	4,949.97	3,682.71	34,438.50	38,121.20
2049	2,231.10	1,092.12	23,435.02	6,169.22	5,533.44	3,323.22	35,137.68	38,460.90
2050	1,916.63	1,079.65	23,133.95	6,505.74	6,164.75	2,996.28	35,804.44	38,800.72
2051	1,636.47	1,064.47	22,765.92	6,827.65	6,846.11	2,700.94	36,439.68	39,140.62
2052	1,388.92	1,046.94	22,336.12	7,127.28	7,579.65	2,435.86	37,043.05	39,478.91
2053	1,171.97	1,027.01	21,848.52	7,400.23	8,367.31	2,198.98	37,616.06	39,815.03
2054	983.37	1,004.93	21,306.54	7,642.71	9,210.52	1,988.31	38,159.77	40,148.08
2055	820.73	980.65	20,713.55	7,849.05	10,110.34	1,801.38	38,672.94	40,474.32
2056	681.59	954.15	20,073.01	8,013.85	11,067.48	1,635.74	39,154.34	40,790.09
2057	563.49	925.51	19,388.52	8,133.15	12,082.17	1,489.00	39,603.84	41,092.84
2058	464.03	894.94	18,663.80	8,206.79	13,154.01	1,358.97	40,024.61	41,383.58
2059	380.92	862.56	17,902.83	8,237.21	14,281.79	1,243.48	40,421.82	41,665.30



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
2022	\$17,778.56	\$637.61	\$11,094.83	\$1,668.37	\$0.00	\$18,416.17	\$12,763.19	\$31,179.36
2023	17,325.04	654.24	11,780.14	1,742.85	133.89	17,979.28	13,656.89	31,636.17
2024	16,839.26	671.29	12,484.18	1,823.69	282.29	17,510.56	14,590.15	32,100.71
2025	16,322.91	688.55	13,204.43	1,911.56	442.24	17,011.46	15,558.23	32,569.69
2026	15,777.75	705.74	13,937.84	2,007.37	612.66	16,483.49	16,557.86	33,041.35
2027	15,205.72	722.84	14,680.94	2,111.67	795.36	15,928.57	17,587.97	33,516.54
2028	14,608.96	739.64	15,429.52	2,225.48	990.62	15,348.60	18,645.63	33,994.23
2029	13,989.89	755.95	16,179.46	2,349.57	1,198.71	14,745.84	19,727.73	34,473.57
2030	13,351.13	771.57	16,926.68	2,483.69	1,421.13	14,122.71	20,831.50	34,954.21
2031	12,695.60	786.22	17,666.92	2,628.01	1,659.48	13,481.82	21,954.41	35,436.23
2032	12,026.47	799.70	18,395.13	2,781.08	1,915.20	12,826.17	23,091.41	35,917.58
2033	11,347.19	832.97	19,105.70	2,941.97	2,191.83	12,180.15	24,239.50	36,419.65
2034	10,661.44	865.74	19,792.88	3,111.00	2,491.01	11,527.19	25,394.89	36,922.08
2035	9,973.17	897.63	20,450.62	3,288.51	2,813.84	10,870.79	26,552.97	37,423.77
2036	9,286.45	928.47	21,072.85	3,474.82	3,161.59	10,214.92	27,709.26	37,924.17
2037	8,605.51	958.17	21,653.45	3,670.14	3,535.82	9,563.68	28,859.41	38,423.09
2038	7,934.64	986.56	22,186.54	3,875.19	3,937.68	8,921.21	29,999.42	38,920.63
2039	7,278.11	1,012.95	22,665.97	4,090.06	4,369.04	8,291.06	31,125.08	39,416.13
2040	6,640.03	1,036.64	23,085.37	4,314.96	4,830.75	7,676.67	32,231.08	39,907.75
2041	6,024.34	1,057.38	23,438.28	4,549.93	5,325.30	7,081.72	33,313.50	40,395.22
2042	5,434.61	1,074.92	23,718.84	4,794.60	5,853.66	6,509.53	34,367.11	40,876.64
2043	4,874.00	1,089.26	23,923.18	5,048.48	6,416.05	5,963.26	35,387.71	41,350.97
2044	4,345.19	1,099.95	24,048.92	5,310.60	7,013.79	5,445.13	36,373.31	41,818.45
2045	3,850.27	1,106.71	24,094.73	5,580.07	7,646.60	4,956.98	37,321.39	42,278.38
2046	3,390.78	1,109.37	24,061.28	5,855.08	8,316.45	4,500.15	38,232.81	42,732.96
2047	2,967.64	1,107.42	23,950.51	6,133.36	9,023.76	4,075.07	39,107.64	43,182.70
2048	2,581.17	1,101.53	23,765.32	6,412.81	9,768.99	3,682.71	39,947.12	43,629.83
2049	2,231.10	1,092.12	23,509.49	6,690.21	10,554.98	3,323.22	40,754.68	44,077.90
2050	1,916.63	1,079.65	23,187.29	6,960.92	11,385.26	2,996.28	41,533.47	44,529.76
2051	1,636.47	1,064.47	22,803.44	7,219.17	12,262.49	2,700.94	42,285.10	44,986.04
2052	1,388.92	1,046.94	22,361.98	7,458.94	13,188.74	2,435.86	43,009.66	45,445.52
2053	1,171.97	1,027.01	21,865.95	7,676.95	14,162.97	2,198.98	43,705.87	45,904.85
2054	983.37	1,004.93	21,317.99	7,869.75	15,185.87	1,988.31	44,373.61	46,361.92
2055	820.73	980.65	20,720.86	8,031.99	16,258.66	1,801.38	45,011.51	46,812.89
2056	681.59	954.15	20,077.52	8,158.45	17,381.56	1,635.74	45,617.54	47,253.28
2057	563.49	925.51	19,391.19	8,245.18	18,554.99	1,489.00	46,191.37	47,680.37
2058	464.03	894.94	18,665.30	8,291.86	19,778.27	1,358.97	46,735.43	48,094.41
2059	380.92	862.56	17,903.62	8,300.54	21,050.75	1,243.48	47,254.91	48,498.39



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
2023	\$1,559.24	\$24.05	\$76.19	\$56.45	\$0.00	\$1,583.29	\$132.64	\$1,715.93
2024	1,561.94	24.68	99.14	53.06	7.99	1,586.62	160.20	1,746.82
2025	1,560.97	25.56	125.96	50.07	15.36	1,586.53	191.39	1,777.92
2026	1,556.37	26.71	156.81	46.96	22.96	1,583.07	226.73	1,809.80
2027	1,548.06	27.88	191.88	44.02	30.97	1,575.94	266.86	1,842.80
2028	1,536.00	29.25	231.66	40.77	38.62	1,565.25	311.05	1,876.30
2029	1,520.03	30.78	275.76	37.49	46.84	1,550.82	360.10	1,910.92
2030	1,500.12	32.47	323.90	35.19	55.19	1,532.59	414.27	1,946.86
2031	1,476.14	34.41	376.01	33.42	63.14	1,510.55	472.57	1,983.12
2032	1,448.02	36.46	432.58	33.69	71.11	1,484.48	537.38	2,021.86
2033	1,415.72	18.13	493.81	35.44	76.87	1,433.85	606.12	2,039.97
2034	1,379.19	20.70	559.53	37.36	82.95	1,399.90	679.85	2,079.74
2035	1,338.45	23.63	629.65	39.46	89.49	1,362.09	758.60	2,120.69
2036	1,293.60	26.65	703.79	41.77	96.56	1,320.25	842.12	2,162.37
2037	1,244.74	29.70	781.66	44.40	104.15	1,274.44	930.21	2,204.64
2038	1,192.09	32.84	862.62	46.86	111.15	1,224.93	1,020.63	2,245.56
2039	1,135.95	36.56	946.57	49.85	118.48	1,172.52	1,114.91	2,287.43
2040	1,076.71	40.85	1,033.37	53.22	126.19	1,117.56	1,212.77	2,330.33
2041	1,014.83	45.19	1,122.69	57.17	134.24	1,060.03	1,314.10	2,374.13
2042	950.89	49.60	1,213.53	62.09	142.74	1,000.49	1,418.36	2,418.85
2043	885.53	53.81	1,303.66	68.08	151.65	939.34	1,523.39	2,462.73
2044	819.42	58.25	1,391.39	75.57	160.94	877.67	1,627.91	2,505.58
2045	753.26	62.73	1,475.59	84.42	170.67	815.98	1,730.67	2,546.66
2046	687.76	67.13	1,554.23	95.46	180.79	754.89	1,830.47	2,585.36
2047	623.59	71.76	1,626.17	109.01	191.42	695.35	1,926.60	2,621.95
2048	561.41	75.46	1,690.57	124.78	202.61	636.87	2,017.96	2,654.83
2049	501.79	78.50	1,746.75	143.74	214.44	580.30	2,104.93	2,685.23
2050	445.25	80.87	1,794.47	167.02	227.14	526.12	2,188.63	2,714.75
2051	392.20	82.71	1,833.53	195.43	240.99	474.91	2,269.95	2,744.86
2052	342.95	84.03	1,864.89	228.82	256.23	426.98	2,349.94	2,776.92
2053	297.71	85.25	1,889.74	264.20	273.14	382.96	2,427.08	2,810.04
2054	256.57	86.08	1,908.63	301.58	291.89	342.65	2,502.10	2,844.75
2055	219.53	86.83	1,921.64	342.63	312.84	306.36	2,577.11	2,883.47
2056	186.52	87.45	1,928.71	386.83	336.38	273.97	2,651.92	2,925.89
2057	157.37	87.85	1,929.78	432.69	362.88	245.22	2,725.35	2,970.57
2058	131.87	87.91	1,924.83	476.41	392.88	219.78	2,794.12	3,013.90
2059	109.77	87.75	1,913.76	515.67	426.94	197.51	2,856.37	3,053.88



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
2022	16,811	\$1,661.36	\$149.52	\$429.79	14,790	\$943.50	\$84.92	\$108.38	0	\$0.00	\$0.00	\$0.00
2023	15,750	1,621.99	145.98	427.39	13,012	890.51	80.15	103.64	2,839	164.75	14.83	18.06
2024	14,833	1,585.27	142.67	424.34	11,824	859.12	77.32	101.33	4,944	298.71	26.88	33.25
2025	13,969	1,546.09	139.15	419.96	10,896	837.49	75.37	100.29	6,736	423.41	38.11	47.50
2026	13,141	1,504.72	135.42	414.26	10,165	823.79	74.14	100.19	8,295	542.13	48.79	61.14
2027	12,339	1,460.14	131.41	407.03	9,558	814.55	73.31	100.72	9,703	658.78	59.29	74.75
2028	11,557	1,411.34	127.02	398.19	9,050	809.26	72.83	101.82	10,994	774.96	69.75	88.45
2029	10,795	1,359.27	122.33	387.92	8,627	807.44	72.67	103.37	12,179	890.80	80.17	102.34
2030	10,051	1,304.06	117.37	376.35	8,259	807.34	72.66	105.13	13,291	1,008.05	90.72	116.69
2031	9,328	1,246.12	112.15	363.51	7,920	807.27	72.65	106.96	14,352	1,128.26	101.54	131.69
2032	8,620	1,184.97	106.65	349.28	7,604	807.12	72.64	108.88	15,377	1,252.40	112.72	147.33
2033	7,926	1,120.96	100.89	333.63	7,325	806.54	72.59	110.90	16,350	1,379.33	124.14	163.54
2034	7,247	1,053.96	94.86	316.53	7,065	804.52	72.41	112.96	17,289	1,510.24	135.92	180.47
2035	6,586	984.44	88.60	298.01	6,818	800.81	72.07	115.03	18,197	1,645.51	148.10	198.19
2036	5,941	912.41	82.12	278.12	6,585	795.09	71.56	117.06	19,075	1,784.99	160.65	216.71
2037	5,318	838.79	75.49	256.54	6,358	787.17	70.85	118.50	19,925	1,928.66	173.58	234.91
2038	4,716	763.40	68.71	234.06	6,142	777.79	70.00	119.79	20,743	2,075.80	186.82	253.71
2039	4,141	687.75	61.90	210.90	5,927	766.21	68.96	120.89	21,533	2,226.54	200.39	273.16
2040	3,594	612.17	55.09	186.92	5,717	753.78	67.84	121.81	22,290	2,380.11	214.21	293.18
2041	3,071	535.66	48.21	162.49	5,504	739.39	66.54	122.34	23,026	2,537.62	228.39	313.93
2042	2,584	461.47	41.53	138.65	5,287	722.98	65.07	122.47	23,729	2,697.79	242.80	335.25
2043	2,143	391.28	35.22	115.88	5,068	704.96	63.45	122.11	24,390	2,858.67	257.28	356.94
2044	1,745	325.51	29.30	94.73	4,840	684.57	61.61	121.21	25,016	3,020.14	271.81	378.99
2045	1,398	266.37	23.97	75.94	4,610	662.56	59.63	119.59	25,593	3,179.85	286.19	401.14
2046	1,102	214.43	19.30	59.80	4,361	636.70	57.30	117.07	26,138	3,338.63	300.48	423.47
2047	857	170.38	15.33	46.35	4,106	608.57	54.77	113.89	26,638	3,494.91	314.54	445.82
2048	656	133.43	12.01	35.39	3,848	578.59	52.07	109.89	27,096	3,647.56	328.28	468.05
2049	497	103.25	9.29	26.67	3,571	544.59	49.01	104.54	27,533	3,798.50	341.87	490.36
2050	370	78.77	7.09	19.82	3,266	504.60	45.41	97.60	27,965	3,949.74	355.48	512.94
2051	272	59.26	5.33	14.50	2,933	459.20	41.33	89.12	28,396	4,101.74	369.16	535.83
2052	196	43.80	3.94	10.41	2,580	408.77	36.79	79.77	28,825	4,254.52	382.91	558.98
2053	139	31.72	2.85	7.32	2,244	359.46	32.35	70.44	29,219	4,404.39	396.40	581.95
2054	96	22.53	2.03	5.03	1,927	312.23	28.10	61.19	29,578	4,551.02	409.59	604.64
2055	64	15.53	1.40	3.37	1,627	266.67	24.00	52.16	29,909	4,694.93	422.54	627.06
2056	42	10.48	0.94	2.20	1,350	223.80	20.14	43.54	30,209	4,835.43	435.19	649.03
2057	27	6.84	0.62	1.39	1,095	183.56	16.52	35.50	30,479	4,972.51	447.53	670.49
2058	16	4.23	0.38	0.84	869	147.38	13.26	28.23	30,716	5,105.28	459.48	691.25
2059	9	2.52	0.23	0.48	671	115.01	10.35	21.78	30,921	5,233.70	471.03	711.18

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, 2022 includes 340 members expected to be hired to replace retirements and terminations that occurred in June 2022.



APPENDIX 1: STRESS TESTING SCENARIOS



July 26, 2022

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, 2021

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, 2021 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 a significant and/or sustained market downturn, significant volatility in investment returns, no future investment income, investment returns that are 0.25 percent lower than the current actuarial assumption or 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. Due to market volatility and uncertainty, and to reflect the potential adverse impact on near-term contribution requirements and funded ratios, we used a return of -10.00 percent in 2022 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 2023 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 (2.86 percent) from the GRS 2021 Actuarial Assumptions Study; 3) earning the 40th percentile return (4.56 percent) from the GRS 2021 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) 6.25 percent (earning 25 basis points lower than the actuarial assumption of 6.50 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 from the GRS 2021 Actuarial Assumptions Study dated September 14, 2021. 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, 2.86 percent and 4.56 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 2022	Returns in FY 2023 through 2059	Basis for Returns
Baseline	6.50%	Static return of 6.50%	June 30, 2021 actuarial valuation results
1	-10.00%	Static return of 6.50%	Valuation assumption
2	-10.00%	Volatile returns, 37-year average of 6.50% from 2023 through 2059	Valuation assumption
3	-10.00%	Static return of 2.86%	25 th percentile return
4	-10.00%	Volatile returns, 37-year average of 2.86% from 2023 through 2059	25 th percentile return
5	-10.00%	Static return of 4.56%	40 th percentile return
6	-10.00%	Volatile returns, 37-year average of 4.56% from 2023 through 2059	40 th percentile return
7	-10.00%	Static return of 0.00%	Senate Pension Chairman Martwick's proposal in February 2021
8	-10.00%	Static return of 6.25%	Recommendation from 2021 State Actuary's Report

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 and 2017 and increases between 2017 to 2018, 2018 to 2019, 2019 to 2020, and 2020 to 2021. 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 2022	Returns in FY 2023 through 2059
9	1.0 percent reduction in the number of active members per year for the next 10 years, then remains constant	-10.00%	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	-10.00%	Static return of 6.50%

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

In each scenario, 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 future active population remains constant at 31,241 (31,215 active members as of June 30, 2021 plus 26 members assumed to be hired after June 30 to replace recent retirees) in the investment return stress testing scenarios.

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 2037 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 37-year geometric average of actual returns from fiscal year 2023 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, 2021, 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 47.5 percent as of June 30, 2021, to 90 percent as of June 30, 2059, with a significant portion of the increase occurring after 2049. The funded ratio increases from about 47.5 percent to 67.2 percent between 2021 and 2049, and then to 90.0 percent by 2059.

The following table 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 2022 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 2022-2059 (\$ 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)	\$47,391.250	\$15,710.380	6.64%	-8.93%	49.32%	53.62%	3.10%	0.14%
Scenario 1 (6.50% Static, -10.00% for FY 2022)	54,081.846	17,766.922	17.32%	-8.93%	45.39%	44.94%	3.72%	-1.73%
Scenario 2 (6.50% Volatile)	49,826.678	17,375.499	401.83%	-82.99%	43.40%	39.55%	10.55%	-2.74%
Scenario 3 (2.86% Static)	82,345.778	22,972.428	17.32%	-8.93%	33.43%	31.67%	9.52%	-2.84%
Scenario 4 (2.86% Volatile)	87,426.829	24,071.756	30.65%	-22.67%	27.18%	23.40%	14.68%	-4.12%
Scenario 5 (4.56% Static)	71,639.727	20,943.095	17.32%	-8.93%	40.10%	38.93%	7.40%	-2.34%
Scenario 6 (4.56% Volatile)	63,770.011	21,843.642	17.32%	-84.88%	23.91%	21.17%	8.85%	-4.80%
Scenario 7 (0.00% Static)	94,533.880	25,389.435	20.93%	-8.93%	24.95%	22.73%	11.85%	-3.66%
Scenario 8 (6.25% Static)	55,927.794	18,334.326	21.46%	-8.93%	44.00%	43.51%	3.73%	-1.72%
Scenario 9 (1% Population Decrease)	53,289.755	17,767.448	24.32%	-8.93%	45.81%	44.94%	3.77%	-1.53%
Scenario 10 (1% Population Increase)	54,847.277	17,766.083	10.62%	-8.93%	44.89%	44.80%	3.65%	-1.93%

	Total Contributions* FY 2022-2059 (\$ in Millions)			PV Contributions* FY 2022-2059 (\$ in Millions)		
	Static/ Decrease	Volatile/ Increase	Difference	Static/ Decrease	Volatile/ Increase	Difference
Baseline/Scenario 1 (6.50%)	\$47,391.250	\$ 54,081.846	\$ 6,690.596	\$15,710.380	\$ 17,766.922	\$ 2,056.542
Scenario 1/Scenario 2 (6.50%)	54,081.846	49,826.678	-4,255.168	17,766.922	17,375.499	-391.423
Scenario 3/Scenario 4 (2.86%)	82,345.778	87,426.829	5,081.051	22,972.428	24,071.756	1,099.328
Scenario 5/Scenario 6 (4.56%)	71,639.727	63,770.011	-7,869.716	20,943.095	21,843.642	900.547
Scenario 7 (0.00%)	94,533.880	N/A	N/A	25,389.435	N/A	N/A
Scenario 8 (6.25%)	55,927.794	N/A	N/A	18,334.326	N/A	N/A
Scenario 9/Scenario 10 (Decrease/Increase)	53,289.755	54,847.277	1,557.522	17,767.448	17,766.083	-1.365
	Difference from		Difference from	Difference from		Difference from
	Scenario	Baseline	Scenario 1	Scenario	Baseline	Scenario 1
Scenario 1 (6.50% Static, -10.00% for FY 2022)	\$54,081.846	\$ 6,690.596	\$ 0.000	\$17,766.922	\$ 2,056.542	\$ 0.000
Scenario 2 (6.50% Volatile)	49,826.678	2,435.428	-4,255.168	17,375.499	1,665.119	-391.423
Scenario 3 (2.86% Static)	82,345.778	34,954.528	28,263.932	22,972.428	7,262.048	5,205.506
Scenario 4 (2.86% Volatile)	87,426.829	40,035.579	33,344.983	24,071.756	8,361.376	6,304.834
Scenario 5 (4.56% Static)	71,639.727	24,248.477	17,557.881	20,943.095	5,232.715	3,176.173
Scenario 6 (4.56% Volatile)	63,770.011	16,378.761	9,688.165	21,843.642	6,133.262	4,076.720
Scenario 7 (0.00% Static)	94,533.880	47,142.630	40,452.034	25,389.435	9,679.055	7,622.513
Scenario 8 (6.25% Static)	55,927.794	8,536.544	1,845.948	18,334.326	2,623.946	567.404
Scenario 9 (1% Population Decrease)	53,289.755	5,898.505	-792.091	17,767.448	2,057.068	0.526
Scenario 10 (1% Population Increase)	54,847.277	7,456.027	765.431	17,766.083	2,055.703	-0.839

* 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 the 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 \$2.4 billion higher under Scenario 2 compared to the Baseline, with the present value of contributions about \$1.7 billion higher 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 2022 return (6.50 percent in the Baseline and -10.00 percent in Scenario 1), the total required employer contributions are approximately \$6.7 billion higher under Scenario 1 compared to the Baseline, with the present value of contributions about \$2.1 billion higher under Scenario 1. Under Scenarios 3 and 4, in which the average annualized return is 2.86 percent, the volatile returns result in higher total nominal contributions and higher contributions on a present value basis, when compared to the static return results. Under Scenarios 5 and 6, in which the average annualized return is 4.56 percent, the volatile returns result in lower total nominal contributions and higher 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 \$47.1 billion higher compared to the Baseline, with the present value of contributions about \$9.7 billion higher compared to the Baseline. Under Scenario 8, in which the annual return is 6.25 percent, the total required employer contributions are approximately \$8.5 billion higher compared to the Baseline, with the present value of contributions about \$2.6 billion higher compared to the Baseline.

For the period 2023 through 2059, an average annualized return approximately equal to 4.56 percent would result in higher required employer contributions (on a present value basis) of about \$5 billion (Scenario 5) to higher required employer contributions of about \$6 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 2.86 percent would result in higher required employer contributions (on a present value basis) of about \$7 billion (Scenario 3), to higher required employer contributions of about \$8 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, 5, 6, and 7, the funded ratio is less than 90 percent in 2059 and in Scenarios 2 and 4, 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 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 2031 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 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 Scenarios 4, 6, and 7, less than 40 percent in Scenarios 2, 3, and 5, and less than 50 percent in Scenarios 1 and 8. (The minimum funded ratio is also less than 50 percent in Scenarios 9 and 10 and less than 60 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 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 2022-2059
 (\$ 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	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250
Scenario 1 (6.50% Static, -10.00% for FY 2022)	42,591.817	783.122	734.514	9,972.394	54,081.846
Scenario 2 (6.50% Volatile)	38,448.261	725.528	680.495	9,972.394	49,826.678
Scenario 3 (2.86% Static)	70,855.748	783.122	734.514	9,972.394	82,345.778
Scenario 4 (2.86% Volatile)	75,936.800	783.122	734.514	9,972.394	87,426.829
Scenario 5 (4.56% Static)	60,149.698	783.122	734.514	9,972.394	71,639.727
Scenario 6 (4.56% Volatile)	52,445.784	697.565	654.268	9,972.394	63,770.011
Scenario 7 (0.00% Static)	83,043.850	783.122	734.514	9,972.394	94,533.880
Scenario 8 (6.25% Static)	43,472.465	783.122	734.514	10,937.693	55,927.794
Scenario 9 (1% Population Decrease)	42,070.670	720.267	675.561	9,823.260	53,289.755
Scenario 10 (1% Population Increase)	43,066.693	851.657	798.796	10,130.129	54,847.277
Maximum Difference from Baseline	47,142.629	-85.557	-80.246	965.299	47,142.630

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, is 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, 2021 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, 2021, 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, 2021, 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.

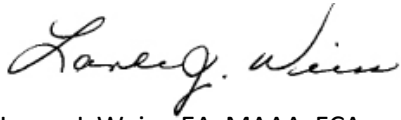
Lance Weiss and Amy Williams are Members of the American Academy of Actuaries ("MAAA") and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.



Board of Trustees
Public School Teachers' Pension and Retirement Fund of Chicago
July 26, 2022
Page 9

Sincerely,

Gabriel, Roeder, Smith & Company



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



Amy Williams, ASA, MAAA, FCA
Senior Consultant

LJW/AW:sc
Enclosure

cc: Kristen Brundirks, GRS
Cassie Rapoport, GRS



**Public School Teachers’ Pension and Retirement Fund of Chicago
Comparison of Assumed Investment Returns Used in Stress Testing Scenarios
and Total Required Employer Contributions and Funded Ratio
Based on Actuarial Valuation as of June 30, 2021**

Year	Baseline	25th Percentile (2.86%)									40th Percentile (4.56%)						Total Required Employer Contributions (\$ in millions)								Funded Ratio (AVA)																						
		Scenario 1			Scenario 2 (6.50% Volatile)			Scenario 3			Scenario 4			Scenario 5			Scenario 6			Baseline	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Baseline	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6														
		Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²	Nominal ¹	Geometric ²	Geometric ²																
2022	6.50%	-10.00%	-10.00%	3.77%	2.86%	-10.00%	-10.00%	3.77%	2.86%	-10.00%	-10.00%	3.77%	2.86%	-10.00%	-10.00%	3.77%	2.86%	-10.00%	-10.00%	3.77%	2.86%	-10.00%	-10.00%	3.77%	2.86%	-10.00%	-10.00%	3.77%	2.86%	-10.00%	-10.00%	3.77%	2.86%	\$944.677	\$944.677	\$944.677	\$944.677	\$944.677	\$944.677	\$944.677	49.32%	47.24%	47.24%	47.24%	47.24%	47.24%	47.24%
2023	6.50%	6.50%	3.77%	3.77%	2.86%	-5.99%	-5.99%	3.77%	2.86%	-5.99%	-5.99%	3.77%	2.86%	-5.99%	-5.99%	3.77%	2.86%	-5.99%	-5.99%	3.77%	2.86%	-5.99%	-5.99%	3.77%	2.86%	-5.99%	-5.99%	3.77%	2.86%	-5.99%	-5.99%	3.77%	2.86%	\$860.325	\$860.325	\$860.325	\$860.325	\$860.325	\$860.325	\$860.325	51.12%	46.81%	46.52%	46.42%	45.48%	46.60%	44.71%
2024	6.50%	6.50%	26.37%	14.52%	2.86%	-7.56%	-6.78%	2.86%	2.86%	-7.56%	-6.78%	2.86%	2.86%	-7.56%	-6.78%	2.86%	2.86%	-7.56%	-6.78%	2.86%	2.86%	-7.56%	-6.78%	2.86%	2.86%	-7.56%	-6.78%	2.86%	2.86%	-7.56%	-6.78%	2.86%	2.86%	\$880.122	\$1,009.296	\$1,009.296	\$1,009.296	\$1,009.296	\$1,009.296	\$1,009.296	53.33%	47.13%	48.57%	45.95%	43.06%	46.49%	42.76%
2025	6.50%	6.50%	3.87%	10.85%	2.86%	9.31%	-1.70%	2.86%	2.86%	9.31%	-1.70%	2.86%	2.86%	9.31%	-1.70%	2.86%	2.86%	9.31%	-1.70%	2.86%	2.86%	9.31%	-1.70%	2.86%	2.86%	9.31%	-1.70%	2.86%	2.86%	9.31%	-1.70%	2.86%	2.86%	\$899.774	\$1,031.832	\$1,050.546	\$1,056.768	\$1,117.269	\$1,045.117	\$1,166.668	53.58%	45.39%	48.46%	43.10%	38.94%	44.16%	37.97%
2026	6.50%	6.50%	5.31%	9.44%	2.86%	16.67%	2.60%	2.86%	2.86%	16.67%	2.60%	2.86%	2.86%	16.67%	2.60%	2.86%	2.86%	16.67%	2.60%	2.86%	2.86%	16.67%	2.60%	2.86%	2.86%	16.67%	2.60%	2.86%	2.86%	16.67%	2.60%	2.86%	2.86%	\$919.053	\$1,053.940	\$1,037.318	\$1,103.977	\$1,227.386	\$1,080.860	\$1,191.583	53.76%	45.48%	49.63%	41.76%	37.66%	43.46%	34.82%
2027	6.50%	6.50%	2.62%	8.04%	2.86%	4.02%	2.89%	2.86%	2.86%	4.02%	2.89%	2.86%	2.86%	4.02%	2.89%	2.86%	2.86%	4.02%	2.89%	2.86%	2.86%	4.02%	2.89%	2.86%	2.86%	4.02%	2.89%	2.86%	2.86%	4.02%	2.89%	2.86%	2.86%	\$938.464	\$1,076.200	\$979.270	\$1,151.787	\$1,237.998	\$1,117.182	\$1,296.017	53.92%	45.62%	50.79%	40.50%	37.38%	42.82%	31.95%
2028	6.50%	6.50%	-1.63%	6.36%	2.86%	-24.96%	-2.39%	2.86%	2.86%	-24.96%	-2.39%	2.86%	2.86%	-24.96%	-2.39%	2.86%	2.86%	-24.96%	-2.39%	2.86%	2.86%	-24.96%	-2.39%	2.86%	2.86%	-24.96%	-2.39%	2.86%	2.86%	-24.96%	-2.39%	2.86%	2.86%	\$957.746	\$1,098.313	\$1,009.577	\$1,199.889	\$1,204.742	\$1,153.870	\$1,321.656	54.06%	45.82%	49.19%	39.34%	35.43%	42.25%	28.54%
2029	6.50%	6.50%	3.28%	5.92%	2.86%	-8.69%	-3.31%	2.86%	2.86%	-8.69%	-3.31%	2.86%	2.86%	-8.69%	-3.31%	2.86%	2.86%	-8.69%	-3.31%	2.86%	2.86%	-8.69%	-3.31%	2.86%	2.86%	-8.69%	-3.31%	2.86%	2.86%	-8.69%	-3.31%	2.86%	2.86%	\$976.866	\$1,120.238	\$1,063.698	\$1,248.249	\$1,245.187	\$1,190.888	\$1,485.505	54.21%	46.07%	47.52%	38.30%	32.33%	41.76%	26.09%
2030	6.50%	6.50%	19.44%	7.52%	2.86%	25.66%	-0.09%	2.86%	2.86%	25.66%	-0.09%	2.86%	2.86%	25.66%	-0.09%	2.86%	2.86%	25.66%	-0.09%	2.86%	2.86%	25.66%	-0.09%	2.86%	2.86%	25.66%	-0.09%	2.86%	2.86%	25.66%	-0.09%	2.86%	2.86%	\$996.085	\$1,142.278	\$1,155.426	\$1,297.254	\$1,481.023	\$1,228.517	\$1,551.108	54.40%	46.36%	47.44%	37.36%	30.03%	41.32%	23.91%
2031	6.50%	6.50%	2.94%	7.00%	2.86%	-7.87%	-0.99%	2.86%	2.86%	-7.87%	-0.99%	2.86%	2.86%	-7.87%	-0.99%	2.86%	2.86%	-7.87%	-0.99%	2.86%	2.86%	-7.87%	-0.99%	2.86%	2.86%	-7.87%	-0.99%	2.86%	2.86%	-7.87%	-0.99%	2.86%	2.86%	\$1,015.560	\$1,164.612	\$1,204.745	\$1,347.123	\$1,583.860	\$1,267.048	\$1,622.730	54.60%	46.68%	47.51%	36.50%	27.18%	40.94%	24.43%
2032	6.50%	6.50%	19.91%	8.23%	2.86%	17.02%	0.68%	2.86%	2.86%	17.02%	0.68%	2.86%	2.86%	17.02%	0.68%	2.86%	2.86%	17.02%	0.68%	2.86%	2.86%	17.02%	0.68%	2.86%	2.86%	17.02%	0.68%	2.86%	2.86%	17.02%	0.68%	2.86%	2.86%	\$1,035.422	\$1,187.389	\$1,120.523	\$1,398.174	\$1,532.997	\$1,306.652	\$1,637.878	54.86%	47.06%	49.75%	35.78%	27.22%	40.65%	24.96%
2033	6.50%	6.50%	-12.65%	6.14%	2.86%	4.63%	1.03%	2.86%	2.86%	4.63%	1.03%	2.86%	2.86%	4.63%	1.03%	2.86%	2.86%	4.63%	1.03%	2.86%	2.86%	4.63%	1.03%	2.86%	2.86%	4.63%	1.03%	2.86%	2.86%	4.63%	1.03%	2.86%	2.86%	\$1,055.259	\$1,210.137	\$1,176.726	\$1,449.838	\$1,638.485	\$1,346.864	\$1,601.345	55.15%	47.48%	50.16%	35.15%	28.43%	40.42%	27.16%
2034	6.50%	6.50%	22.36%	7.40%	2.86%	-3.65%	0.63%	2.86%	2.86%	-3.65%	0.63%	2.86%	2.86%	-3.65%	0.63%	2.86%	2.86%	-3.65%	0.63%	2.86%	2.86%	-3.65%	0.63%	2.86%	2.86%	-3.65%	0.63%	2.86%	2.86%	-3.65%	0.63%	2.86%	2.86%	\$1,075.330	\$1,233.154	\$1,066.325	\$1,502.556	\$1,617.951	\$1,388.070	\$1,685.574	55.47%	47.93%	50.61%	34.62%	28.07%	40.25%	30.27%
2035	6.50%	6.50%	4.32%	7.16%	2.86%	11.44%	1.43%	2.86%	2.86%	11.44%	1.43%	2.86%	2.86%	11.44%	1.43%	2.86%	2.86%	11.44%	1.43%	2.86%	2.86%	11.44%	1.43%	2.86%	2.86%	11.44%	1.43%	2.86%	2.86%	11.44%	1.43%	2.86%	2.86%	\$1,095.465	\$1,256.245	\$1,309.404	\$1,556.296	\$1,658.992	\$1,430.054	\$1,603.093	55.83%	48.43%	51.92%	34.18%	28.91%	40.14%	32.59%
2036	6.50%	6.50%	3.56%	6.90%	2.86%	0.22%	1.34%	2.86%	2.86%	0.22%	1.34%	2.86%	2.86%	0.22%	1.34%	2.86%	2.86%	0.22%	1.34%	2.86%	2.86%	0.22%	1.34%	2.86%	2.86%	0.22%	1.34%	2.86%	2.86%	0.22%	1.34%	2.86%	2.86%	\$1,115.825	\$1,279.593	\$1,175.015	\$1,611.233	\$1,750.928	\$1,473.219	\$1,567.694	56.23%	48.97%	50.99%	33.83%	29.06%	40.10%	34.65%
2037	6.50%	6.50%	7.10%	6.92%	2.86%	18.24%	2.39%	2.86%	2.86%	18.24%	2.39%	2.86%	2.86%	18.24%	2.39%	2.86%	2.86%	18.24%	2.39%	2.86%	2.86%	18.24%	2.39%	2.86%	2.86%	18.24%	2.39%	2.86%	2.86%	18.24%	2.39%	2.86%	2.86%	\$1,136.292	\$1,303.063	\$1,222.571	\$1,667.467	\$1,754.295	\$1,517.321	\$1,586.496	56.66%	49.55%	52.48%	33.59%	29.98%	40.13%	34.40%
2038	6.50%	6.50%	-1.59%	6.36%	2.86%	7.62%	2.71%	2.86%	2.86%	7.62%	2.71%	2.86%	2.86%	7.62%	2.71%	2.86%	2.86%	7.62%	2.71%	2.86%	2.86%	7.62%	2.71%	2.86%	2.86%	7.62%	2.71%	2.86%	2.86%	7.62%	2.71%	2.86%	2.86%	\$1,156.926	\$1,326.726	\$1,281.242	\$1,725.043	\$1,827.050	\$1,562.655	\$1,691.560	57.15%	50.20%	51.62%	33.46%	31.83%	40.25%	34.37%
2039	6.50%	6.50%	-1.27%	5.90%	2.86%	10.16%	3.13%	2.86%	2.86%	10.16%	3.13%	2.86%	2.86%	10.16%	3.13%	2.86%	2.86%	10.16%	3.13%	2.86%	2.86%	10.16%	3.13%	2.86%	2.86%	10.16%	3.13%	2.86%	2.86%	10.16%	3.13%	2.86%	2.86%	\$1,177.649	\$1,350.490	\$1,296.590	\$1,784.117	\$1,871.794	\$1,609.097	\$1,843.107	57.69%	50.90%	50.02%	33.43%	33.60%	40.13%	33.81%
2040	6.50%	6.50%	-2.12%	5.44%	2.86%	18.88%	3.95%	2.86%	2.86%	18.88%	3.95%	2.86%	2.86%	18.88%	3.95%	2.86%	2.86%	18.88%	3.95%	2.86%	2.86%	18.88%	3.95%	2.86%	2.86%	18.88%	3.95%	2.86%	2.86%	18.88%	3.95%	2.86%	2.86%	\$1,198.791	\$1,374.735	\$1,427.904	\$1,845.310	\$1,804.887	\$1,657.285	\$1,794.660	58.29%	51.66%	48.07%	33.52%	36.89%	40.74%	32.96%
2041	6.50%	6.50%	-2.27%	5.02%	2.86%	0.09%	3.74%	2.86%	2.86%	0.09%	3.74%	2.86%	2.86%	0.09%	3.74%	2.86%	2.86%	0.09%	3.74%	2.86%	2.86%	0.09%	3.74%	2.86%	2.86%	0.09%	3.74%	2.86%	2.86%	0.09%	3.74%	2.86%	2.86%	\$1,220.603	\$1,399.749	\$1,555.181	\$1,909.178	\$1,805.662	\$1,707.689	\$1,912.558	58.94%	52.50%	45.33%	33.73%	39.02%	41.13%	33.08%
2042	6.50%	6.50%	11.66%	5.34%	2.86%	-4.28%	3.32%	2.86%	2.86%	-4.28%	3.32%	2.86%	2.86%	-4.28%	3.32%	2.86%	2.86%	-4.28%	3.32%	2.86%	2.86%	-4.28%	3.32%	2.86%	2.86%	-4.28%	3.32%	2.86%	2.86%	-4.28%	3.32%	2.86%	2.86%	\$1,242.733	\$1,425.126	\$1,692.941	\$1,975.551	\$1,716.579	\$1,759.829	\$2,031.439	59.66%	53.40%	44.18%	34.07%	39.84%	41.62%	33.49%
2043	6.50%	6.50%	-1.64%	5.00%	2.86%	5.44%	3.42%	2.86%	2.86%	5.44%	3.42%	2.86%	2.86%	5.44%	3.42%	2.86%	2.86%	5.44%	3.42%	2.86%	2.86%	5.44%	3.42%	2.86%	2.86%	5.44%	3.42%	2.86%	2.86%	5.44%	3.42%	2.86%	2.86%	\$1,265.861	\$1,451.649	\$1,833.275	\$2,045.663	\$1,825.112	\$1,815.407	\$2,113.087	60.46%	54.39%	43.40%	34.55%	40.52%	42.22%	34.79%
2044	6.50%	6.50%	11.26%	5.27%	2.86%	-19.11%	2.28%	2.86%	2.86%	-19.11%	2.28%	2.86%	2.86%	-19.11%	2.28%	2.86%	2.86%	-19.11%	2.28%	2.86%	2.86%	-19.11%	2.28%	2.86%	2.86%	-19.11%	2.28%	2.86%	2.86%	-19.11%	2.28%	2.86%	2.86%	\$1,290.278	\$1,479.650	\$1,805.617	\$2,120.607	\$1,992.347	\$1,873.991	\$2,062.372	61.33%	55.47%	43.83%	35.19%	38.37%	42.96%	34.60%
2045	6.50%	6.50%	11.78%	5.55%	2.86%	11.75%	2.67%	2.86%	2.86%	11.75%	2.67%	2.86%	2.86%	11.75%	2.67%	2.86%	2.86%	11.75%	2.67%	2.86%	2.86%	11.75%	2.67%	2.86%	2.86%	11.75%	2.67%	2.86%	2.86%	11.75%	2.67%	2.86%	2.86%	\$1,315.996	\$1,509.142	\$1,954.550	\$2,200.653	\$2,044.741	\$1,936.924	\$							

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, 2021

Year	Baseline	Assumed Investment Returns			Baseline - Population remains constant at 2021 level	Scenario 9 - Population decreases 1% per year for 10 years, then constant	Scenario 10 - Population increases 1% per year for 10 years, then constant	Total Required Employer Contributions (\$ in millions)					Total Required Employer Contributions (% of Payroll)					Funded Ratio (AVA)																			
		0.00% Return Scenario 7	6.25% Return Scenario 8	1% Decrease Scenario 9/ 1% Increase Scenario 10				Scenario 1	Scenario 7	Scenario 8	Scenario 9	Scenario 10	Scenario 1	Scenario 7	Scenario 8	Scenario 9	Scenario 10	Scenario 1	Scenario 7	Scenario 8	Scenario 9	Scenario 10															
2022	-10.00%	-10.00%	-10.00%	-10.00%	31,241	30,929	31,553	\$944.677	\$944.677	\$944.677	\$944.677	\$944.677	39.398%	39.398%	39.398%	39.398%	39.398%	47.24%	47.24%	45.76%	47.24%	47.24%															
2023	6.50%	0.00%	6.25%	6.50%	31,241	30,619	31,869	860.325	860.325	860.325	860.325	860.325	35.002%	35.002%	35.002%	35.236%	34.772%	46.81%	46.12%	45.26%	46.81%	46.81%															
2024	6.50%	0.00%	6.25%	6.50%	31,241	30,313	32,188	1,009.296	1,009.296	1,044.935	1,069.531	951.712	40.140%	40.140%	41.557%	43.113%	37.344%	47.13%	45.04%	45.62%	47.35%	46.92%															
2025	6.50%	0.00%	6.25%	6.50%	31,241	30,010	32,510	1,031.832	1,076.342	1,068.267	1,085.735	979.883	40.140%	41.871%	41.557%	43.113%	37.344%	45.39%	41.39%	44.00%	45.81%	44.99%															
2026	6.50%	0.00%	6.25%	6.50%	31,241	29,710	32,835	1,053.940	1,141.958	1,091.156	1,100.976	1,008.239	40.140%	43.492%	41.557%	43.113%	37.344%	45.48%	39.02%	44.12%	46.08%	44.90%															
2027	6.50%	0.00%	6.25%	6.50%	31,241	29,413	33,163	1,076.200	1,207.200	1,114.202	1,115.873	1,037.338	40.140%	45.025%	41.557%	43.113%	37.344%	45.62%	36.84%	44.30%	46.38%	44.89%															
2028	6.50%	0.00%	6.25%	6.50%	31,241	29,119	33,495	1,098.313	1,271.813	1,137.095	1,130.088	1,066.932	40.140%	46.480%	41.557%	43.113%	37.344%	45.82%	34.86%	44.53%	46.71%	44.96%															
2029	6.50%	0.00%	6.25%	6.50%	31,241	28,827	33,830	1,120.238	1,335.807	1,159.795	1,143.570	1,097.026	40.140%	47.864%	41.557%	43.113%	37.344%	46.07%	33.10%	44.82%	47.07%	45.11%															
2030	6.50%	0.00%	6.25%	6.50%	31,241	28,539	34,168	1,142.278	1,399.659	1,182.613	1,156.602	1,127.912	40.140%	49.184%	41.557%	43.113%	37.344%	46.36%	31.52%	45.14%	47.44%	45.33%															
2031	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,164.612	1,463.673	1,205.736	1,169.408	1,159.788	40.140%	50.447%	41.557%	43.113%	37.344%	46.68%	30.13%	45.49%	47.80%	45.60%															
2032	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,187.389	1,528.201	1,229.316	1,182.104	1,192.831	40.140%	51.661%	41.557%	43.113%	37.344%	47.06%	28.94%	45.91%	48.19%	45.98%															
2033	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,210.137	1,592.773	1,252.869	1,202.480	1,217.850	40.140%	52.831%	41.557%	43.113%	37.344%	47.48%	27.92%	46.37%	48.62%	46.40%															
2034	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,233.154	1,657.958	1,276.698	1,223.081	1,243.175	40.140%	53.967%	41.557%	43.113%	37.344%	47.93%	27.06%	46.87%	49.07%	46.86%															
2035	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,256.245	1,723.740	1,300.604	1,243.687	1,268.637	40.140%	55.077%	41.557%	43.113%	37.344%	48.43%	26.34%	47.40%	49.56%	47.37%															
2036	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,279.593	1,790.401	1,324.776	1,264.481	1,294.419	40.140%	56.163%	41.557%	43.113%	37.344%	48.97%	25.78%	47.98%	50.08%	47.93%															
2037	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,303.063	1,858.103	1,349.076	1,285.307	1,320.410	40.140%	57.237%	41.557%	43.113%	37.344%	49.55%	25.35%	48.61%	50.65%	48.54%															
2038	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,326.726	1,927.052	1,373.574	1,306.247	1,346.667	40.140%	58.302%	41.557%	43.113%	37.344%	50.20%	25.08%	49.30%	51.26%	49.22%															
2039	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,350.490	1,997.452	1,398.177	1,327.207	1,373.104	40.140%	59.369%	41.557%	43.113%	37.344%	50.90%	24.95%	50.05%	51.93%	49.97%															
2040	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,374.735	2,070.035	1,423.278	1,348.599	1,400.073	40.140%	60.441%	41.557%	43.113%	37.344%	51.66%	24.69%	50.86%	52.65%	50.78%															
2041	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,399.749	2,145.620	1,449.175	1,370.750	1,427.824	40.140%	61.528%	41.557%	43.113%	37.344%	52.50%	25.12%	51.74%	53.43%	51.67%															
2042	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,425.126	2,224.075	1,475.449	1,393.239	1,455.968	40.140%	62.642%	41.557%	43.113%	37.344%	53.40%	25.44%	52.70%	54.27%	52.64%															
2043	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,451.649	2,307.040	1,502.908	1,416.919	1,485.219	40.140%	63.792%	41.557%	43.113%	37.344%	54.39%	25.91%	53.73%	55.20%	53.69%															
2044	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,479.650	2,395.600	1,531.898	1,442.165	1,515.866	40.140%	64.987%	41.557%	43.113%	37.344%	55.47%	26.57%	54.86%	56.21%	54.85%															
2045	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,509.142	2,490.482	1,562.431	1,469.013	1,547.903	40.140%	66.241%	41.557%	43.113%	37.344%	56.65%	27.42%	56.10%	57.31%	56.11%															
2046	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,540.494	2,593.390	1,594.890	1,497.888	1,581.643	40.140%	67.574%	41.557%	43.113%	37.344%	57.95%	28.50%	57.45%	58.53%	57.49%															
2047	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,573.211	2,704.726	1,628.762	1,528.283	1,616.599	40.140%	69.009%	41.557%	43.113%	37.344%	59.38%	29.82%	58.93%	59.88%	59.00%															
2048	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,607.342	2,825.687	1,664.099	1,560.274	1,652.799	40.140%	70.565%	41.557%	43.113%	37.344%	60.95%	31.43%	60.55%	61.36%	60.65%															
2049	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,642.614	2,958.127	1,700.617	1,593.575	1,689.977	40.140%	72.286%	41.557%	43.113%	37.344%	62.66%	33.34%	62.33%	63.00%	62.45%															
2050	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,678.559	3,103.384	1,737.830	1,627.700	1,727.683	40.140%	74.211%	41.557%	43.113%	37.344%	64.54%	35.60%	64.26%	64.79%	64.41%															
2051	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,714.364	3,263.432	1,774.900	1,661.789	1,765.151	40.140%	76.409%	41.557%	43.113%	37.344%	66.59%	38.23%	66.35%	66.76%	66.53%															
2052	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,750.191	3,443.058	1,811.992	1,696.011	1,802.534	40.140%	78.964%	41.557%	43.113%	37.344%	68.81%	41.28%	68.62%	68.91%	68.81%															
2053	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,786.130	3,648.600	1,849.200	1,730.452	1,839.929	40.140%	81.995%	41.557%	43.113%	37.344%	71.21%	44.80%	71.06%	71.25%	71.27%															
2054	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,822.615	3,890.960	1,886.973	1,765.564	1,877.748	40.140%	85.691%	41.557%	43.113%	37.344%	73.80%	48.90%	73.69%	73.79%	73.90%															
2055	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,859.626	4,185.975	1,925.291	1,801.325	1,915.977	40.140%	90.353%	41.557%	43.113%	37.344%	76.59%	53.69%	76.52%	76.54%	76.72%															
2056	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,897.128	4,559.731	1,964.117	1,837.698	1,954.581	40.140%	96.475%	41.557%	43.113%	37.344%	79.59%	59.37%	79.55%	79.52%	79.72%															
2057	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,935.176	5,064.927	2,003.509	1,874.741	1,993.616	40.140%	105.057%	41.557%	43.113%	37.344%	82.82%	66.27%	82.79%	82.74%	82.93%															
2058	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	1,973.556	5,826.624	2,043.245	1,912.225	2,032.878	40.140%	118.506%	41.557%	43.113%	37.344%	86.28%	75.06%	86.27%	86.23%	86.35%															
2059	6.50%	0.00%	6.25%	6.50%	31,241	28,254	34,509	2,012.284	7,045.979	2,083.339	1,950.166	2,072.384	40.140%	140.548%	41.557%	43.113%	37.344%	90.00%	86.92%	90.00%	90.00%	90.00%															
																		Minimum Funded Ratio																			
																		45.39%	24.95%	44.00%	45.81%	44.89%															
								Total Contributions FY 2022-2030					\$ 9,337.099					\$ 10,247.076					\$ 9,603.065					\$ 9,607.377					\$ 9,074.044				
								Total Contributions FY 2031-2059					\$ 44,744.748					\$ 84,286.803					\$ 46,324.729					\$ 43,682.378					\$ 45,773.233				
								Total Contributions FY 2022-2059					\$ 54,081.846					\$ 94,533.880					\$ 55,927.794					\$ 53,289.755					\$ 54,847.277				
								Total Present Value FY 2022-2059					\$ 17,766.922					\$ 25,389.435					\$ 18,334.326					\$ 17,767.448					\$ 17,766.083				

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

Funded ratios lower than 30% are highlighted in red and funded ratios between 30% and 40% are highlighted in yellow.

There were 31,215 active members as of June 30, 2021, plus 26 members assumed to be hired after June 30 to replace recent June retirees.



Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 1 (-10.00% Return in FY 2022, 6.50% Thereafter)
Based on Actuarial Valuation as of June 30, 2021

\$ in Millions													
June 30, 2021 Valuation Baseline							Stress Test Scenario 1						
Year Ending June 30 2021	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
		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%		
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	6.50%	6.50%	860.325	46.81%	44.94%	-8.93%	-0.43%
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	6.50%	6.50%	1,009.296	47.13%	45.06%	17.32%	0.32%
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	6.50%	6.50%	1,031.832	45.39%	45.20%	2.23%	-1.73%
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	6.50%	6.50%	1,053.940	45.48%	45.38%	2.14%	0.09%
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	6.50%	6.50%	1,076.200	45.62%	45.58%	2.11%	0.14%
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	6.50%	6.50%	1,098.313	45.82%	45.81%	2.05%	0.20%
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	6.50%	6.50%	1,120.238	46.07%	46.07%	2.00%	0.25%
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	6.50%	6.50%	1,142.278	46.36%	46.36%	1.97%	0.29%
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	6.50%	6.50%	1,164.612	46.68%	46.68%	1.96%	0.32%
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	6.50%	6.50%	1,187.389	47.06%	47.06%	1.96%	0.38%
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	6.50%	6.50%	1,210.137	47.48%	47.48%	1.92%	0.42%
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	6.50%	6.50%	1,233.154	47.93%	47.93%	1.90%	0.46%
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	6.50%	6.50%	1,256.245	48.43%	48.43%	1.87%	0.49%
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	6.50%	6.50%	1,279.593	48.97%	48.97%	1.86%	0.54%
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	6.50%	6.50%	1,303.063	49.55%	49.55%	1.83%	0.59%
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	6.50%	6.50%	1,326.726	50.20%	50.20%	1.82%	0.64%
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	6.50%	6.50%	1,350.490	50.90%	50.90%	1.79%	0.70%
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	6.50%	6.50%	1,374.735	51.66%	51.66%	1.80%	0.76%
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	6.50%	6.50%	1,399.749	52.50%	52.50%	1.82%	0.83%
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	6.50%	6.50%	1,425.126	53.40%	53.40%	1.81%	0.91%
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	6.50%	6.50%	1,451.649	54.39%	54.39%	1.86%	0.99%
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	6.50%	6.50%	1,479.650	55.47%	55.47%	1.93%	1.08%
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	6.50%	6.50%	1,509.142	56.65%	56.65%	1.99%	1.18%
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	6.50%	6.50%	1,540.494	57.95%	57.95%	2.08%	1.30%
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	6.50%	6.50%	1,573.211	59.38%	59.38%	2.12%	1.43%
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	6.50%	6.50%	1,607.342	60.95%	60.95%	2.17%	1.57%
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	6.50%	6.50%	1,642.614	62.66%	62.66%	2.19%	1.72%
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	6.50%	6.50%	1,678.559	64.54%	64.54%	2.19%	1.88%
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	6.50%	6.50%	1,714.364	66.59%	66.59%	2.13%	2.05%
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	6.50%	6.50%	1,750.191	68.81%	68.81%	2.09%	2.22%
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	6.50%	6.50%	1,786.130	71.21%	71.21%	2.05%	2.40%
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	6.50%	6.50%	1,822.615	73.80%	73.80%	2.04%	2.59%
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	6.50%	6.50%	1,859.626	76.59%	76.59%	2.03%	2.79%
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	6.50%	6.50%	1,897.128	79.59%	79.59%	2.02%	3.00%
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	6.50%	6.50%	1,935.176	82.82%	82.82%	2.01%	3.22%
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	6.50%	6.50%	1,973.556	86.28%	86.28%	1.98%	3.46%
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	6.50%	6.50%	2,012.284	90.00%	90.00%	1.96%	3.72%
Total Contributions FY 2022-2059		\$47,391.250							\$54,081.846				
Total Present Value FY 2022-2059¹		\$15,710.380							\$17,766.922				
Difference from June 30, 2021 Valuation													
Total Contributions FY 2022-2059		\$0.000							\$6,690.596				
Total Present Value FY 2022-2059¹		\$0.000							\$2,056.542				
Maximum Annual Increase					6.64%	3.10%					17.32%	3.72%	
Maximum Annual Decrease					-8.93%	0.14%					-8.93%	-1.73%	

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 (-10.00% Return in FY 2022, 6.50% Thereafter)
Based on Actuarial Valuation as of June 30, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions					Stress Test Scenario 1					Difference				
	June 30, 2021 Valuation Baseline														
	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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	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	552.798	14.584	13.679	299.061	880.122	681.972	14.584	13.679	299.061	1,009.296	129.174	0.000	0.000	0.000	129.174
2025	568.814	14.910	13.984	302.067	899.774	700.872	14.910	13.984	302.067	1,031.832	132.058	0.000	0.000	0.000	132.058
2026	585.156	15.229	14.284	304.384	919.053	720.043	15.229	14.284	304.384	1,053.940	134.887	0.000	0.000	0.000	134.887
2027	602.081	15.551	14.585	306.247	938.464	739.817	15.551	14.585	306.247	1,076.200	137.736	0.000	0.000	0.000	137.736
2028	619.576	15.870	14.885	307.415	957.746	760.142	15.870	14.885	307.415	1,098.313	140.566	0.000	0.000	0.000	140.566
2029	637.626	16.187	15.182	307.870	976.866	780.998	16.187	15.182	307.870	1,120.238	143.372	0.000	0.000	0.000	143.372
2030	656.397	16.505	15.481	307.701	996.085	802.591	16.505	15.481	307.701	1,142.278	146.193	0.000	0.000	0.000	146.193
2031	675.917	16.828	15.784	307.032	1,015.560	824.969	16.828	15.784	307.032	1,164.612	149.052	0.000	0.000	0.000	149.052
2032	696.351	17.157	16.092	305.822	1,035.422	848.317	17.157	16.092	305.822	1,187.389	151.967	0.000	0.000	0.000	151.967
2033	717.381	17.486	16.401	303.992	1,055.259	872.259	17.486	16.401	303.992	1,210.137	154.878	0.000	0.000	0.000	154.878
2034	739.322	17.819	16.713	301.477	1,075.330	897.146	17.819	16.713	301.477	1,233.154	157.824	0.000	0.000	0.000	157.824
2035	761.950	18.152	17.026	298.338	1,095.465	922.729	18.152	17.026	298.338	1,256.245	160.779	0.000	0.000	0.000	160.779
2036	785.382	18.490	17.342	294.612	1,115.825	949.149	18.490	17.342	294.612	1,279.593	163.767	0.000	0.000	0.000	163.767
2037	811.479	18.829	17.660	288.324	1,136.292	978.251	18.829	17.660	288.324	1,303.063	166.771	0.000	0.000	0.000	166.771
2038	838.354	19.171	17.981	281.420	1,156.926	1,008.154	19.171	17.981	281.420	1,326.726	169.800	0.000	0.000	0.000	169.800
2039	865.764	19.514	18.303	274.068	1,177.649	1,038.605	19.514	18.303	274.068	1,350.490	172.841	0.000	0.000	0.000	172.841
2040	893.911	19.864	18.631	266.385	1,198.791	1,069.855	19.864	18.631	266.385	1,374.735	175.944	0.000	0.000	0.000	175.944
2041	923.296	20.226	18.970	258.112	1,220.603	1,102.441	20.226	18.970	258.112	1,399.749	179.145	0.000	0.000	0.000	179.145
2042	953.230	20.593	19.314	249.596	1,242.733	1,135.624	20.593	19.314	249.596	1,425.126	182.393	0.000	0.000	0.000	182.393
2043	983.732	20.976	19.674	241.480	1,265.861	1,169.520	20.976	19.674	241.480	1,451.649	185.788	0.000	0.000	0.000	185.788
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,204.259	21.380	20.053	233.957	1,479.650	189.371	0.000	0.000	0.000	189.371
2045	1,046.170	21.807	20.453	227.567	1,315.996	1,239.316	21.807	20.453	227.567	1,509.142	193.146	0.000	0.000	0.000	193.146
2046	1,077.632	22.260	20.878	222.566	1,343.336	1,274.790	22.260	20.878	222.566	1,540.494	197.158	0.000	0.000	0.000	197.158
2047	1,108.669	22.732	21.321	219.143	1,371.865	1,310.014	22.732	21.321	219.143	1,573.211	201.346	0.000	0.000	0.000	201.346
2048	1,139.272	23.225	21.784	217.347	1,401.628	1,344.986	23.225	21.784	217.347	1,607.342	205.714	0.000	0.000	0.000	205.714
2049	1,169.510	23.735	22.262	216.879	1,432.386	1,379.738	23.735	22.262	216.879	1,642.614	210.228	0.000	0.000	0.000	210.228
2050	1,199.551	24.255	22.749	217.176	1,463.730	1,414.379	24.255	22.749	217.176	1,678.559	214.829	0.000	0.000	0.000	214.829
2051	1,228.907	24.772	23.234	218.039	1,494.953	1,448.318	24.772	23.234	218.039	1,714.364	219.411	0.000	0.000	0.000	219.411
2052	1,257.820	25.290	23.720	219.365	1,526.194	1,481.816	25.290	23.720	219.365	1,750.191	223.996	0.000	0.000	0.000	223.996
2053	1,286.293	25.809	24.207	221.226	1,557.534	1,514.889	25.809	24.207	221.226	1,786.130	228.596	0.000	0.000	0.000	228.596
2054	1,314.686	26.336	24.701	223.626	1,589.350	1,547.952	26.336	24.701	223.626	1,822.615	233.265	0.000	0.000	0.000	233.265
2055	1,343.052	26.871	25.203	226.498	1,621.624	1,581.054	26.871	25.203	226.498	1,859.626	238.002	0.000	0.000	0.000	238.002
2056	1,371.332	27.413	25.711	229.870	1,654.326	1,614.134	27.413	25.711	229.870	1,897.128	242.802	0.000	0.000	0.000	242.802
2057	1,399.685	27.963	26.227	233.631	1,687.505	1,647.356	27.963	26.227	233.631	1,935.176	247.671	0.000	0.000	0.000	247.671
2058	1,427.950	28.517	26.747	237.758	1,720.973	1,680.534	28.517	26.747	237.758	1,973.556	252.584	0.000	0.000	0.000	252.584
2059	1,456.198	29.077	27.272	242.197	1,754.744	1,713.738	29.077	27.272	242.197	2,012.284	257.540	0.000	0.000	0.000	257.540
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$42,591.817	\$783.122	\$734.514	\$9,972.394	\$54,081.846	\$6,690.596	\$0.000	\$0.000	\$0.000	\$6,690.596
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$13,209.041	\$258.226	\$242.198	\$4,057.457	\$17,766.922	\$2,056.542	\$0.000	\$0.000	\$0.000	\$2,056.542

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, 2021

\$ in Millions															
	June 30, 2021 Valuation Baseline							Stress Test Scenario 2							
	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 Total Required Employer Contribution	Increase in AVA Funded Ratio	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	
June 30 2021		\$885.894	47.48%	53.24%						\$885.894	47.48%	53.24%			
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%		
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	3.77%	3.77%	860.325	46.52%	43.77%	-8.93%	-0.72%		
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	26.37%	14.52%	1,009.296	48.57%	52.04%	17.32%	2.05%		
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	3.87%	10.85%	1,050.546	48.46%	51.29%	4.09%	-0.11%		
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	5.31%	9.44%	937.318	49.63%	50.74%	-10.78%	1.17%		
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	2.62%	8.04%	979.270	50.79%	48.99%	4.48%	1.16%		
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	-1.63%	6.36%	1,009.577	49.19%	45.30%	3.09%	-1.60%		
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	3.28%	5.92%	1,063.698	47.52%	43.96%	5.36%	-1.66%		
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	19.44%	7.52%	1,155.426	47.44%	49.56%	8.62%	-0.08%		
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	2.94%	7.00%	1,204.745	47.51%	48.50%	4.27%	0.07%		
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	19.91%	8.23%	1,120.523	49.75%	54.90%	-6.99%	2.24%		
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	-12.65%	6.14%	1,176.726	50.16%	45.62%	5.02%	0.41%		
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	22.36%	7.40%	1,066.325	50.61%	52.28%	-9.38%	0.45%		
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	4.32%	7.16%	1,309.404	51.92%	52.08%	22.80%	1.31%		
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	3.56%	6.90%	1,175.015	50.99%	51.02%	-10.26%	-0.93%		
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	7.10%	6.92%	1,222.571	52.48%	51.75%	4.05%	1.49%		
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	-1.59%	6.36%	1,281.242	51.62%	48.40%	4.80%	-0.86%		
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	-1.27%	5.90%	1,296.590	50.02%	45.29%	1.20%	-1.59%		
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	-2.12%	5.44%	1,427.904	48.07%	42.24%	10.13%	-1.96%		
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	-2.27%	5.02%	1,555.181	45.33%	39.55%	8.91%	-2.74%		
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	11.66%	5.34%	1,692.941	44.18%	42.46%	8.86%	-1.15%		
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	-1.64%	5.00%	1,833.275	43.40%	40.70%	8.29%	-0.78%		
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	11.26%	5.27%	1,805.617	43.83%	43.78%	-1.51%	0.43%		
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	11.78%	5.55%	1,954.550	46.13%	47.75%	8.25%	2.30%		
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	19.23%	6.08%	1,927.999	49.52%	55.40%	-1.36%	3.39%		
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	-9.09%	5.43%	1,883.140	51.76%	49.33%	-2.33%	2.24%		
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	10.01%	5.60%	1,680.667	53.50%	52.17%	-10.75%	1.74%		
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	-12.05%	4.89%	2,092.312	53.58%	45.44%	24.49%	0.08%		
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	29.80%	5.69%	2,056.362	54.50%	57.40%	-1.72%	0.92%		
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	25.25%	6.31%	2,601.459	61.42%	71.72%	26.51%	6.92%		
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	18.11%	6.69%	2,047.339	68.99%	83.04%	-21.30%	7.57%		
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	16.05%	6.98%	1,384.170	79.54%	92.86%	-32.39%	10.55%		
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	-4.14%	6.61%	779.306	84.51%	84.37%	-43.70%	4.98%		
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	4.54%	6.55%	226.498	85.34%	81.92%	-70.94%	0.83%		
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	16.98%	6.84%	1,136.641	88.45%	91.57%	401.83%	3.11%		
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	5.03%	6.79%	1,398.088	90.01%	92.80%	23.00%	1.56%		
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	6.92%	6.79%	237.758	90.94%	92.80%	-82.99%	0.93%		
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	-3.49%	6.50%	242.197	90.08%	83.43%	1.87%	-0.86%		
Total Contributions FY 2022-2059		\$47,391.250									\$49,826.678				
Total Present Value FY 2022-2059¹		\$15,710.380									\$17,375.499				
Difference from June 30, 2021 Valuation															
Total Contributions FY 2022-2059		\$0.000									\$2,435.428				
Total Present Value FY 2022-2059¹		\$0.000									\$1,665.119				
Maximum Annual Increase					6.64%	3.10%						401.83%	10.55%		
Maximum Annual Decrease					-8.93%	0.14%						-82.99%	-2.74%		

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, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2021 Valuation Baseline					Stress Test Scenario 2					Difference				
	Required Board of Education Contributions	Additional Board of Education Contributions	State Contributions	Total Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	State Contributions	Total Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution	Required Board of Education Contributions	Additional Board of Education Contributions	State Contributions	Total Contributions Pursuant to P.A. 100-0465	Total Required Employer Contribution
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	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	552.798	14.584	13.679	299.061	880.122	681.972	14.584	13.679	299.061	1,009.296	129.174	0.000	0.000	0.000	129.174
2025	568.814	14.910	13.984	302.067	899.774	719.586	14.910	13.984	302.067	1,050.546	150.773	0.000	0.000	0.000	150.773
2026	585.156	15.229	14.284	304.384	919.053	603.421	15.229	14.284	304.384	937.318	18.265	0.000	0.000	0.000	18.265
2027	602.081	15.551	14.585	306.247	938.464	642.887	15.551	14.585	306.247	979.270	40.806	0.000	0.000	0.000	40.806
2028	619.576	15.870	14.885	307.415	957.746	671.406	15.870	14.885	307.415	1,009.577	51.830	0.000	0.000	0.000	51.830
2029	637.626	16.187	15.182	307.870	976.866	724.458	16.187	15.182	307.870	1,063.698	86.832	0.000	0.000	0.000	86.832
2030	656.397	16.505	15.481	307.701	996.085	815.738	16.505	15.481	307.701	1,155.426	159.340	0.000	0.000	0.000	159.340
2031	675.917	16.828	15.784	307.032	1,015.560	865.102	16.828	15.784	307.032	1,204.745	189.185	0.000	0.000	0.000	189.185
2032	696.351	17.157	16.092	305.822	1,035.422	781.452	17.157	16.092	305.822	1,120.523	85.101	0.000	0.000	0.000	85.101
2033	717.381	17.486	16.401	303.992	1,055.259	838.848	17.486	16.401	303.992	1,176.726	121.467	0.000	0.000	0.000	121.467
2034	739.322	17.819	16.713	301.477	1,075.330	730.317	17.819	16.713	301.477	1,066.325	-9.005	0.000	0.000	0.000	-9.005
2035	761.950	18.152	17.026	298.338	1,095.465	975.888	18.152	17.026	298.338	1,309.404	213.938	0.000	0.000	0.000	213.938
2036	785.382	18.490	17.342	294.612	1,115.825	844.571	18.490	17.342	294.612	1,175.015	59.190	0.000	0.000	0.000	59.190
2037	811.479	18.829	17.660	288.324	1,136.292	897.759	18.829	17.660	288.324	1,222.571	86.279	0.000	0.000	0.000	86.279
2038	838.354	19.171	17.981	281.420	1,156.926	962.670	19.171	17.981	281.420	1,281.242	124.316	0.000	0.000	0.000	124.316
2039	865.764	19.514	18.303	274.068	1,177.649	984.705	19.514	18.303	274.068	1,296.590	118.941	0.000	0.000	0.000	118.941
2040	893.911	19.864	18.631	266.385	1,198.791	1,123.024	19.864	18.631	266.385	1,427.904	229.114	0.000	0.000	0.000	229.114
2041	923.296	20.226	18.970	258.112	1,220.603	1,257.873	20.226	18.970	258.112	1,555.181	334.578	0.000	0.000	0.000	334.578
2042	953.230	20.593	19.314	249.596	1,242.733	1,403.438	20.593	19.314	249.596	1,692.941	450.208	0.000	0.000	0.000	450.208
2043	983.732	20.976	19.674	241.480	1,265.861	1,551.146	20.976	19.674	241.480	1,833.275	567.414	0.000	0.000	0.000	567.414
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,530.226	21.380	20.053	233.957	1,805.617	515.339	0.000	0.000	0.000	515.339
2045	1,046.170	21.807	20.453	227.567	1,315.996	1,684.724	21.807	20.453	227.567	1,954.550	638.554	0.000	0.000	0.000	638.554
2046	1,077.632	22.260	20.878	222.566	1,343.336	1,662.295	22.260	20.878	222.566	1,927.999	584.663	0.000	0.000	0.000	584.663
2047	1,108.669	22.732	21.321	219.143	1,371.865	1,619.944	22.732	21.321	219.143	1,883.140	511.276	0.000	0.000	0.000	511.276
2048	1,139.272	23.225	21.784	217.347	1,401.628	1,418.311	23.225	21.784	217.347	1,680.667	279.039	0.000	0.000	0.000	279.039
2049	1,169.510	23.735	22.262	216.879	1,432.386	1,829.436	23.735	22.262	216.879	2,092.312	659.926	0.000	0.000	0.000	659.926
2050	1,199.551	24.255	22.749	217.176	1,463.730	1,792.182	24.255	22.749	217.176	2,056.362	592.632	0.000	0.000	0.000	592.632
2051	1,228.907	24.772	23.234	218.039	1,494.953	2,335.414	24.772	23.234	218.039	2,601.459	1,106.506	0.000	0.000	0.000	1,106.506
2052	1,257.820	25.290	23.720	219.365	1,526.194	1,778.964	25.290	23.720	219.365	2,047.339	521.144	0.000	0.000	0.000	521.144
2053	1,286.293	25.809	24.207	221.226	1,557.534	1,112.929	25.809	24.207	221.226	1,384.170	-173.364	0.000	0.000	0.000	-173.364
2054	1,314.686	26.336	24.701	223.626	1,589.350	504.642	26.336	24.701	223.626	779.306	-810.044	0.000	0.000	0.000	-810.044
2055	1,343.052	26.871	25.203	226.498	1,621.624	-52.074	26.871	25.203	226.498	226.498	-1,395.126	0.000	0.000	0.000	-1,395.126
2056	1,371.332	27.413	25.711	229.870	1,654.326	853.647	27.413	25.711	229.870	1,136.641	-517.685	0.000	0.000	0.000	-517.685
2057	1,399.685	27.963	26.227	233.631	1,687.505	1,110.268	27.963	26.227	233.631	1,398.088	-289.417	0.000	0.000	0.000	-289.417
2058	1,427.950	28.517	26.747	237.758	1,720.973	0.000	0.000	0.000	237.758	237.758	-1,427.950	-28.517	-26.747	0.000	-1,483.215
2059	1,456.198	29.077	27.272	242.197	1,754.744	0.000	0.000	0.000	242.197	242.197	-1,456.198	-29.077	-27.272	0.000	-1,512.547
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$38,448.261	\$725.528	\$680.495	\$9,972.394	\$49,826.678	\$2,547.040	-\$57.594	-\$54.019	\$0.000	\$2,435.427
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$12,828.479	\$252.622	\$236.942	\$4,057.457	\$17,375.499	\$1,675.980	-\$5.604	-\$5.256	\$0.000	\$1,665.119

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 2.86%)
Based on Actuarial Valuation as of June 30, 2021

\$ in Millions													
June 30, 2021 Valuation Baseline							Stress Test Scenario 3						
Year Ending June 30 2021	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
		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%		
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	2.86%	2.86%	860.325	46.42%	43.39%	-8.93%	-0.82%
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	2.86%	2.86%	1,009.296	45.95%	41.95%	17.32%	-0.47%
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	2.86%	2.86%	1,056.768	43.10%	40.61%	4.70%	-2.84%
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	2.86%	2.86%	1,103.977	41.76%	39.36%	4.47%	-1.35%
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	2.86%	2.86%	1,151.787	40.50%	38.21%	4.33%	-1.26%
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	2.86%	2.86%	1,199.889	39.34%	37.15%	4.18%	-1.16%
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	2.86%	2.86%	1,248.249	38.30%	36.18%	4.03%	-1.04%
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	2.86%	2.86%	1,297.254	37.36%	35.29%	3.93%	-0.95%
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	2.86%	2.86%	1,347.123	36.50%	34.50%	3.84%	-0.86%
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	2.86%	2.86%	1,398.174	35.78%	33.82%	3.79%	-0.72%
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	2.86%	2.86%	1,449.838	35.15%	33.24%	3.70%	-0.63%
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	2.86%	2.86%	1,502.556	34.62%	32.75%	3.64%	-0.53%
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	2.86%	2.86%	1,556.296	34.18%	32.34%	3.58%	-0.44%
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	2.86%	2.86%	1,611.233	33.83%	32.02%	3.53%	-0.35%
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	2.86%	2.86%	1,667.467	33.59%	31.80%	3.49%	-0.24%
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	2.86%	2.86%	1,725.043	33.46%	31.69%	3.45%	-0.13%
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	2.86%	2.86%	1,784.117	33.43%	31.67%	3.42%	-0.02%
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	2.86%	2.86%	1,845.310	33.52%	31.77%	3.43%	0.09%
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	2.86%	2.86%	1,909.178	33.73%	31.98%	3.46%	0.21%
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	2.86%	2.86%	1,975.551	34.07%	32.31%	3.48%	0.34%
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	2.86%	2.86%	2,045.663	34.55%	32.77%	3.55%	0.48%
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	2.86%	2.86%	2,120.607	35.19%	33.39%	3.66%	0.64%
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	2.86%	2.86%	2,200.653	36.00%	34.17%	3.77%	0.82%
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	2.86%	2.86%	2,287.097	37.02%	35.15%	3.93%	1.02%
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	2.86%	2.86%	2,380.012	38.27%	36.35%	4.06%	1.24%
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	2.86%	2.86%	2,480.487	39.77%	37.79%	4.22%	1.50%
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	2.86%	2.86%	2,589.139	41.55%	39.49%	4.38%	1.78%
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	2.86%	2.86%	2,707.081	43.64%	41.50%	4.56%	2.09%
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	2.86%	2.86%	2,834.890	46.08%	43.83%	4.72%	2.44%
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	2.86%	2.86%	2,976.198	48.89%	46.52%	4.98%	2.81%
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	2.86%	2.86%	3,134.595	52.13%	49.61%	5.32%	3.24%
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	2.86%	2.86%	3,317.511	55.86%	53.18%	5.84%	3.73%
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	2.86%	2.86%	3,534.505	60.17%	57.30%	6.54%	4.31%
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	2.86%	2.86%	3,802.426	65.21%	62.11%	7.58%	5.03%
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	2.86%	2.86%	4,155.050	71.20%	67.84%	9.27%	5.99%
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	2.86%	2.86%	4,668.990	78.58%	74.92%	12.37%	7.38%
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	2.86%	2.86%	5,466.767	88.10%	84.07%	17.09%	9.52%
Total Contributions FY 2022-2059		\$47,391.250							\$82,345.778				
Total Present Value FY 2022-2059¹		\$15,710.380							\$22,972.428				
Difference from June 30, 2021 Valuation													
Total Contributions FY 2022-2059		\$0.000							\$34,954.528				
Total Present Value FY 2022-2059¹		\$0.000							\$7,262.048				
Maximum Annual Increase					6.64%	3.10%					17.32%		9.52%
Maximum Annual Decrease					-8.93%	0.14%					-8.93%		-2.84%

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 2.86%)
Based on Actuarial Valuation as of June 30, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2021 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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	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	552.798	14.584	13.679	299.061	880.122	681.972	14.584	13.679	299.061	1,009.296	129.174	0.000	0.000	0.000	129.174
2025	568.814	14.910	13.984	302.067	899.774	725.808	14.910	13.984	302.067	1,056.768	156.994	0.000	0.000	0.000	156.994
2026	585.156	15.229	14.284	304.384	919.053	770.080	15.229	14.284	304.384	1,103.977	184.924	0.000	0.000	0.000	184.924
2027	602.081	15.551	14.585	306.247	938.464	815.405	15.551	14.585	306.247	1,151.787	213.324	0.000	0.000	0.000	213.324
2028	619.576	15.870	14.885	307.415	957.746	861.718	15.870	14.885	307.415	1,199.889	242.143	0.000	0.000	0.000	242.143
2029	637.626	16.187	15.182	307.870	976.866	909.010	16.187	15.182	307.870	1,248.249	271.384	0.000	0.000	0.000	271.384
2030	656.397	16.505	15.481	307.701	996.085	957.566	16.505	15.481	307.701	1,297.254	301.169	0.000	0.000	0.000	301.169
2031	675.917	16.828	15.784	307.032	1,015.560	1,007.479	16.828	15.784	307.032	1,347.123	331.562	0.000	0.000	0.000	331.562
2032	696.351	17.157	16.092	305.822	1,035.422	1,059.103	17.157	16.092	305.822	1,398.174	362.752	0.000	0.000	0.000	362.752
2033	717.381	17.486	16.401	303.992	1,055.259	1,111.960	17.486	16.401	303.992	1,449.838	394.579	0.000	0.000	0.000	394.579
2034	739.322	17.819	16.713	301.477	1,075.330	1,166.548	17.819	16.713	301.477	1,502.556	427.226	0.000	0.000	0.000	427.226
2035	761.950	18.152	17.026	298.338	1,095.465	1,222.781	18.152	17.026	298.338	1,556.296	460.831	0.000	0.000	0.000	460.831
2036	785.382	18.490	17.342	294.612	1,115.825	1,280.790	18.490	17.342	294.612	1,611.233	495.408	0.000	0.000	0.000	495.408
2037	811.479	18.829	17.660	288.324	1,136.292	1,342.654	18.829	17.660	288.324	1,667.467	531.175	0.000	0.000	0.000	531.175
2038	838.354	19.171	17.981	281.420	1,156.926	1,406.471	19.171	17.981	281.420	1,725.043	568.117	0.000	0.000	0.000	568.117
2039	865.764	19.514	18.303	274.068	1,177.649	1,472.232	19.514	18.303	274.068	1,784.117	606.468	0.000	0.000	0.000	606.468
2040	893.911	19.864	18.631	266.385	1,198.791	1,540.429	19.864	18.631	266.385	1,845.310	646.519	0.000	0.000	0.000	646.519
2041	923.296	20.226	18.970	258.112	1,220.603	1,611.870	20.226	18.970	258.112	1,909.178	688.574	0.000	0.000	0.000	688.574
2042	953.230	20.593	19.314	249.596	1,242.733	1,686.049	20.593	19.314	249.596	1,975.551	732.818	0.000	0.000	0.000	732.818
2043	983.732	20.976	19.674	241.480	1,265.861	1,763.534	20.976	19.674	241.480	2,045.663	779.802	0.000	0.000	0.000	779.802
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,845.216	21.380	20.053	233.957	2,120.607	830.329	0.000	0.000	0.000	830.329
2045	1,046.180	21.807	20.453	227.567	1,315.996	1,930.827	21.807	20.453	227.567	2,200.653	884.657	0.000	0.000	0.000	884.657
2046	1,077.632	22.260	20.878	222.566	1,343.336	2,021.393	22.260	20.878	222.566	2,287.097	943.761	0.000	0.000	0.000	943.761
2047	1,108.669	22.732	21.321	219.143	1,371.865	2,116.816	22.732	21.321	219.143	2,380.012	1,008.147	0.000	0.000	0.000	1,008.147
2048	1,139.272	23.225	21.784	217.347	1,401.628	2,218.131	23.225	21.784	217.347	2,480.487	1,078.859	0.000	0.000	0.000	1,078.859
2049	1,169.510	23.735	22.262	216.879	1,432.386	2,326.263	23.735	22.262	216.879	2,589.139	1,156.753	0.000	0.000	0.000	1,156.753
2050	1,199.551	24.255	22.749	217.176	1,463.730	2,442.901	24.255	22.749	217.176	2,707.081	1,243.351	0.000	0.000	0.000	1,243.351
2051	1,228.907	24.772	23.234	218.039	1,494.953	2,568.845	24.772	23.234	218.039	2,834.890	1,339.938	0.000	0.000	0.000	1,339.938
2052	1,257.820	25.290	23.720	219.365	1,526.194	2,707.823	25.290	23.720	219.365	2,976.198	1,450.004	0.000	0.000	0.000	1,450.004
2053	1,286.293	25.809	24.207	221.226	1,557.534	2,863.354	25.809	24.207	221.226	3,134.595	1,577.061	0.000	0.000	0.000	1,577.061
2054	1,314.686	26.336	24.701	223.626	1,589.350	3,042.847	26.336	24.701	223.626	3,317.511	1,728.161	0.000	0.000	0.000	1,728.161
2055	1,343.052	26.871	25.203	226.498	1,621.624	3,255.933	26.871	25.203	226.498	3,534.505	1,912.881	0.000	0.000	0.000	1,912.881
2056	1,371.332	27.413	25.711	229.870	1,654.326	3,519.432	27.413	25.711	229.870	3,802.426	2,148.100	0.000	0.000	0.000	2,148.100
2057	1,399.685	27.963	26.227	233.631	1,687.505	3,867.230	27.963	26.227	233.631	4,155.050	2,467.545	0.000	0.000	0.000	2,467.545
2058	1,427.950	28.517	26.747	237.758	1,720.973	4,375.967	28.517	26.747	237.758	4,668.990	2,948.017	0.000	0.000	0.000	2,948.017
2059	1,456.198	29.077	27.272	242.197	1,754.744	5,168.222	29.077	27.272	242.197	5,466.767	3,712.023	0.000	0.000	0.000	3,712.023
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$70,855.748	\$783.122	\$734.514	\$9,972.394	\$82,345.778	\$34,954.527	\$0.000	\$0.000	\$0.000	\$34,954.527
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$18,414.546	\$258.226	\$242.198	\$4,057.457	\$22,972.428	\$7,262.047	\$0.000	\$0.000	\$0.000	\$7,262.047

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 2.86%)
Based on Actuarial Valuation as of June 30, 2021

\$ in Millions														
Year Ending	June 30, 2021 Valuation Baseline							Stress Test Scenario 4						
	Projected Investment Return	Total Required Employer Contribution	Actuarial Value of Assets (AVA) Funded Ratio	Market Value of Assets (MVA) Funded Ratio	Total Required Employer Contribution	Increase in AVA Funded Ratio	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	Total Required Employer Contribution	Increase in AVA Funded Ratio	
June 30 2021		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%			
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%	
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	-5.99%	-5.99%	860.325	45.48%	39.62%	-8.93%	-1.76%	
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	-7.56%	-6.78%	1,009.296	43.06%	34.28%	17.32%	-2.42%	
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	9.31%	-1.70%	1,117.269	38.94%	35.13%	10.70%	-4.12%	
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	16.67%	2.60%	1,227.386	37.66%	38.79%	9.86%	-1.28%	
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	4.02%	2.89%	1,237.998	37.38%	38.36%	0.86%	-0.28%	
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	-24.96%	-2.39%	1,204.742	35.43%	27.39%	-2.69%	-1.95%	
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	-8.69%	-3.31%	1,245.187	32.33%	23.40%	3.36%	-3.10%	
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	25.66%	-0.09%	1,481.023	30.03%	27.83%	18.94%	-2.30%	
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	-7.87%	-0.99%	1,583.860	27.18%	25.01%	6.94%	-2.86%	
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	17.02%	0.68%	1,532.997	27.22%	27.89%	-3.21%	0.04%	
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	4.63%	1.03%	1,638.485	28.43%	28.30%	6.88%	1.22%	
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	-3.65%	0.63%	1,617.951	28.07%	26.42%	-1.25%	-0.36%	
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	11.44%	1.43%	1,658.992	28.91%	28.32%	2.54%	0.85%	
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	0.22%	1.34%	1,750.928	29.06%	27.70%	5.54%	0.14%	
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	18.24%	2.39%	1,754.295	29.98%	31.60%	0.19%	0.92%	
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	7.62%	2.71%	1,827.050	31.83%	33.18%	4.15%	1.85%	
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	10.16%	3.13%	1,781.794	33.60%	35.42%	-2.48%	1.77%	
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	18.88%	3.95%	1,804.887	36.89%	40.75%	1.30%	3.29%	
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	0.09%	3.74%	1,805.662	39.02%	39.75%	0.04%	2.13%	
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	-4.28%	3.32%	1,716.579	39.84%	36.80%	-4.93%	0.82%	
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	5.44%	3.42%	1,825.112	40.52%	37.60%	6.32%	0.68%	
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	-19.11%	2.28%	1,992.347	38.37%	30.26%	9.16%	-2.15%	
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	11.75%	2.67%	2,044.741	36.99%	33.02%	2.63%	-1.38%	
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	8.11%	2.89%	2,418.027	37.55%	35.95%	18.26%	0.57%	
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	3.66%	2.92%	2,411.940	37.96%	37.52%	-0.25%	0.41%	
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	2.65%	2.91%	2,443.322	40.30%	38.80%	1.30%	2.34%	
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	-2.06%	2.72%	2,540.286	41.96%	38.61%	3.97%	1.66%	
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	-19.07%	1.85%	2,663.052	41.58%	32.58%	4.83%	-0.38%	
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	7.14%	2.03%	2,889.302	41.92%	36.16%	8.50%	0.34%	
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	14.94%	2.44%	3,508.724	44.85%	44.19%	21.44%	2.93%	
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	2.56%	2.44%	3,567.673	48.39%	48.26%	1.68%	3.54%	
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	-1.47%	2.32%	3,415.691	53.04%	50.07%	-4.26%	4.65%	
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	-6.91%	2.02%	3,638.528	56.91%	49.76%	6.52%	3.87%	
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	-7.98%	1.71%	4,130.693	59.78%	50.14%	13.53%	2.86%	
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	17.19%	2.13%	5,166.380	66.93%	65.05%	25.07%	7.15%	
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	10.59%	2.35%	6,750.022	79.93%	82.19%	30.65%	13.01%	
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	22.92%	2.86%	5,219.608	94.62%	106.85%	-22.67%	14.68%	
Total Contributions FY 2022-2059		\$47,391.250							\$87,426.829					
Total Present Value FY 2022-2059¹		\$15,710.380							\$24,071.756					
Difference from June 30, 2021 Valuation														
Total Contributions FY 2022-2059		\$0.000							\$40,035.579					
Total Present Value FY 2022-2059¹		\$0.000							\$8,361.376					
Maximum Annual Increase					6.64%	3.10%						30.65%	14.68%	
Maximum Annual Decrease					-8.93%	0.14%						-22.67%	-4.12%	

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 2.86%)
Based on Actuarial Valuation as of June 30, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2021 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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	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	552.798	14.584	13.679	299.061	880.122	681.972	14.584	13.679	299.061	1,009.296	129.174	0.000	0.000	0.000	129.174
2025	568.814	14.910	13.984	302.067	899.774	786.308	14.910	13.984	302.067	1,117.269	217.495	0.000	0.000	0.000	217.495
2026	585.156	15.229	14.284	304.384	919.053	893.490	15.229	14.284	304.384	1,227.386	308.334	0.000	0.000	0.000	308.334
2027	602.081	15.551	14.585	306.247	938.464	901.615	15.551	14.585	306.247	1,237.998	299.534	0.000	0.000	0.000	299.534
2028	619.576	15.870	14.885	307.415	957.746	866.571	15.870	14.885	307.415	1,204.742	246.995	0.000	0.000	0.000	246.995
2029	637.626	16.187	15.182	307.870	976.866	905.947	16.187	15.182	307.870	1,245.187	268.321	0.000	0.000	0.000	268.321
2030	656.397	16.505	15.481	307.701	996.085	1,141.336	16.505	15.481	307.701	1,481.023	484.938	0.000	0.000	0.000	484.938
2031	675.917	16.828	15.784	307.032	1,015.560	1,244.216	16.828	15.784	307.032	1,583.860	568.299	0.000	0.000	0.000	568.299
2032	696.351	17.157	16.092	305.822	1,035.422	1,193.925	17.157	16.092	305.822	1,532.997	497.575	0.000	0.000	0.000	497.575
2033	717.381	17.486	16.401	303.992	1,055.259	1,300.606	17.486	16.401	303.992	1,638.485	583.225	0.000	0.000	0.000	583.225
2034	739.322	17.819	16.713	301.477	1,075.330	1,281.943	17.819	16.713	301.477	1,617.951	542.621	0.000	0.000	0.000	542.621
2035	761.950	18.152	17.026	298.338	1,095.465	1,325.476	18.152	17.026	298.338	1,658.992	563.526	0.000	0.000	0.000	563.526
2036	785.382	18.490	17.342	294.612	1,115.825	1,420.484	18.490	17.342	294.612	1,750.928	635.103	0.000	0.000	0.000	635.103
2037	811.479	18.829	17.660	288.324	1,136.292	1,429.482	18.829	17.660	288.324	1,754.295	618.003	0.000	0.000	0.000	618.003
2038	838.354	19.171	17.981	281.420	1,156.926	1,508.479	19.171	17.981	281.420	1,827.050	670.124	0.000	0.000	0.000	670.124
2039	865.764	19.514	18.303	274.068	1,177.649	1,469.909	19.514	18.303	274.068	1,781.794	604.145	0.000	0.000	0.000	604.145
2040	893.911	19.864	18.631	266.385	1,198.791	1,500.007	19.864	18.631	266.385	1,804.887	606.096	0.000	0.000	0.000	606.096
2041	923.296	20.226	18.970	258.112	1,220.603	1,508.355	20.226	18.970	258.112	1,805.662	585.059	0.000	0.000	0.000	585.059
2042	953.230	20.593	19.314	249.596	1,242.733	1,427.076	20.593	19.314	249.596	1,716.579	473.846	0.000	0.000	0.000	473.846
2043	983.732	20.976	19.674	241.480	1,265.861	1,542.982	20.976	19.674	241.480	1,825.112	559.250	0.000	0.000	0.000	559.250
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,716.956	21.380	20.053	233.957	1,992.347	702.069	0.000	0.000	0.000	702.069
2045	1,046.180	21.807	20.453	227.567	1,315.996	1,774.915	21.807	20.453	227.567	2,044.741	728.745	0.000	0.000	0.000	728.745
2046	1,077.632	22.260	20.878	222.566	1,343.336	2,152.324	22.260	20.878	222.566	2,418.027	1,074.692	0.000	0.000	0.000	1,074.692
2047	1,108.669	22.732	21.321	219.143	1,371.865	2,148.744	22.732	21.321	219.143	2,411.940	1,040.076	0.000	0.000	0.000	1,040.076
2048	1,139.272	23.225	21.784	217.347	1,401.628	2,180.967	23.225	21.784	217.347	2,443.322	1,041.694	0.000	0.000	0.000	1,041.694
2049	1,169.510	23.735	22.262	216.879	1,432.386	2,277.410	23.735	22.262	216.879	2,540.286	1,107.900	0.000	0.000	0.000	1,107.900
2050	1,199.551	24.255	22.749	217.176	1,463.730	2,398.873	24.255	22.749	217.176	2,663.052	1,199.322	0.000	0.000	0.000	1,199.322
2051	1,228.907	24.772	23.234	218.039	1,494.953	2,623.257	24.772	23.234	218.039	2,889.302	1,394.349	0.000	0.000	0.000	1,394.349
2052	1,257.820	25.290	23.720	219.365	1,526.194	3,240.349	25.290	23.720	219.365	3,508.724	1,982.529	0.000	0.000	0.000	1,982.529
2053	1,286.293	25.809	24.207	221.226	1,557.534	3,296.432	25.809	24.207	221.226	3,567.673	2,010.139	0.000	0.000	0.000	2,010.139
2054	1,314.686	26.336	24.701	223.626	1,589.350	3,141.027	26.336	24.701	223.626	3,415.691	1,826.341	0.000	0.000	0.000	1,826.341
2055	1,343.052	26.871	25.203	226.498	1,621.624	3,359.956	26.871	25.203	226.498	3,638.528	2,016.904	0.000	0.000	0.000	2,016.904
2056	1,371.332	27.413	25.711	229.870	1,654.326	3,847.699	27.413	25.711	229.870	4,130.693	2,476.367	0.000	0.000	0.000	2,476.367
2057	1,399.685	27.963	26.227	233.631	1,687.505	4,878.560	27.963	26.227	233.631	5,166.380	3,478.875	0.000	0.000	0.000	3,478.875
2058	1,427.950	28.517	26.747	237.758	1,720.973	6,456.999	28.517	26.747	237.758	6,750.022	5,029.049	0.000	0.000	0.000	5,029.049
2059	1,456.198	29.077	27.272	242.197	1,754.744	4,921.063	29.077	27.272	242.197	5,219.608	3,464.864	0.000	0.000	0.000	3,464.864
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$75,936.800	\$783.122	\$734.514	\$9,972.394	\$87,426.829	\$40,035.579	\$0.000	\$0.000	\$0.000	\$40,035.579
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$19,513.875	\$258.226	\$242.198	\$4,057.457	\$24,071.756	\$8,361.376	\$0.000	\$0.000	\$0.000	\$8,361.376

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 4.56%)
Based on Actuarial Valuation as of June 30, 2021

\$ in Millions													
June 30, 2021 Valuation Baseline							Stress Test Scenario 5						
Year Ending June 30 2021	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
		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%		
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	4.56%	4.56%	860.325	46.60%	44.11%	-8.93%	-0.64%
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	4.56%	4.56%	1,009.296	46.49%	43.39%	17.32%	-0.11%
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	4.56%	4.56%	1,045.117	44.16%	42.71%	3.55%	-2.34%
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	4.56%	4.56%	1,080.860	43.46%	42.09%	3.42%	-0.70%
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	4.56%	4.56%	1,117.182	42.82%	41.51%	3.36%	-0.64%
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	4.56%	4.56%	1,153.870	42.25%	40.99%	3.28%	-0.57%
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	4.56%	4.56%	1,190.888	41.76%	40.52%	3.21%	-0.49%
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	4.56%	4.56%	1,228.517	41.32%	40.10%	3.16%	-0.44%
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	4.56%	4.56%	1,267.048	40.94%	39.73%	3.14%	-0.38%
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	4.56%	4.56%	1,306.652	40.65%	39.45%	3.13%	-0.29%
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	4.56%	4.56%	1,346.864	40.42%	39.23%	3.08%	-0.23%
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	4.56%	4.56%	1,388.070	40.25%	39.07%	3.06%	-0.17%
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	4.56%	4.56%	1,430.054	40.14%	38.97%	3.02%	-0.11%
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	4.56%	4.56%	1,473.219	40.10%	38.93%	3.02%	-0.04%
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	4.56%	4.56%	1,517.321	40.13%	38.97%	2.99%	0.03%
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	4.56%	4.56%	1,562.655	40.25%	39.09%	2.99%	0.12%
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	4.56%	4.56%	1,609.097	40.45%	39.28%	2.97%	0.20%
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	4.56%	4.56%	1,657.285	40.74%	39.57%	2.99%	0.29%
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	4.56%	4.56%	1,707.689	41.13%	39.95%	3.04%	0.39%
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	4.56%	4.56%	1,759.829	41.62%	40.43%	3.05%	0.49%
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	4.56%	4.56%	1,815.047	42.22%	41.02%	3.14%	0.61%
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	4.56%	4.56%	1,873.991	42.96%	41.74%	3.25%	0.74%
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	4.56%	4.56%	1,936.924	43.85%	42.61%	3.36%	0.89%
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	4.56%	4.56%	2,004.717	44.91%	43.65%	3.50%	1.06%
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	4.56%	4.56%	2,077.274	46.17%	44.88%	3.62%	1.25%
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	4.56%	4.56%	2,155.310	47.64%	46.31%	3.76%	1.47%
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	4.56%	4.56%	2,238.926	49.35%	47.98%	3.88%	1.71%
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	4.56%	4.56%	2,328.564	51.32%	49.91%	4.00%	1.97%
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	4.56%	4.56%	2,424.851	53.58%	52.12%	4.14%	2.26%
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	4.56%	4.56%	2,528.736	56.16%	54.63%	4.28%	2.57%
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	4.56%	4.56%	2,643.648	59.08%	57.48%	4.54%	2.92%
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	4.56%	4.56%	2,773.729	62.40%	60.71%	4.92%	3.32%
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	4.56%	4.56%	2,924.396	66.18%	64.40%	5.43%	3.78%
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	4.56%	4.56%	3,106.189	70.50%	68.61%	6.22%	4.33%
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	4.56%	4.56%	3,336.670	75.52%	73.51%	7.42%	5.02%
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	4.56%	4.56%	3,663.747	81.51%	79.36%	9.80%	5.99%
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	4.56%	4.56%	4,150.494	88.90%	86.59%	13.29%	7.40%
Total Contributions FY 2022-2059		\$47,391.250							\$71,639.727				
Total Present Value FY 2022-2059¹		\$15,710.380							\$20,943.095				
Difference from June 30, 2021 Valuation													
Total Contributions FY 2022-2059		\$0.000							\$24,248.477				
Total Present Value FY 2022-2059¹		\$0.000							\$5,232.715				
Maximum Annual Increase					6.64%	3.10%					17.32%	7.40%	
Maximum Annual Decrease					-8.93%	0.14%					-8.93%	-2.34%	

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 4.56%)
Based on Actuarial Valuation as of June 30, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions										Difference				
	June 30, 2021 Valuation Baseline					Stress Test Scenario 5									
	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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	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	552.798	14.584	13.679	299.061	880.122	681.972	14.584	13.679	299.061	1,009.296	129.174	0.000	0.000	0.000	129.174
2025	568.814	14.910	13.984	302.067	899.774	714.156	14.910	13.984	302.067	1,045.117	145.343	0.000	0.000	0.000	145.343
2026	585.156	15.229	14.284	304.384	919.053	746.964	15.229	14.284	304.384	1,080.860	161.808	0.000	0.000	0.000	161.808
2027	602.081	15.551	14.585	306.247	938.464	780.799	15.551	14.585	306.247	1,117.182	178.718	0.000	0.000	0.000	178.718
2028	619.576	15.870	14.885	307.415	957.746	815.699	15.870	14.885	307.415	1,153.870	196.123	0.000	0.000	0.000	196.123
2029	637.626	16.187	15.182	307.870	976.866	851.649	16.187	15.182	307.870	1,190.888	214.023	0.000	0.000	0.000	214.023
2030	656.397	16.505	15.481	307.701	996.085	888.829	16.505	15.481	307.701	1,228.517	232.432	0.000	0.000	0.000	232.432
2031	675.917	16.828	15.784	307.032	1,015.560	927.405	16.828	15.784	307.032	1,267.048	251.488	0.000	0.000	0.000	251.488
2032	696.351	17.157	16.092	305.822	1,035.422	967.581	17.157	16.092	305.822	1,306.652	271.230	0.000	0.000	0.000	271.230
2033	717.381	17.486	16.401	303.992	1,055.259	1,008.986	17.486	16.401	303.992	1,346.864	291.605	0.000	0.000	0.000	291.605
2034	739.322	17.819	16.713	301.477	1,075.330	1,052.062	17.819	16.713	301.477	1,388.070	312.740	0.000	0.000	0.000	312.740
2035	761.950	18.152	17.026	298.338	1,095.465	1,096.539	18.152	17.026	298.338	1,430.054	334.589	0.000	0.000	0.000	334.589
2036	785.382	18.490	17.342	294.612	1,115.825	1,142.775	18.490	17.342	294.612	1,473.219	357.393	0.000	0.000	0.000	357.393
2037	811.479	18.829	17.660	288.324	1,136.292	1,192.509	18.829	17.660	288.324	1,517.321	381.029	0.000	0.000	0.000	381.029
2038	838.354	19.171	17.981	281.420	1,156.926	1,244.084	19.171	17.981	281.420	1,562.655	405.729	0.000	0.000	0.000	405.729
2039	865.764	19.514	18.303	274.068	1,177.649	1,297.212	19.514	18.303	274.068	1,609.097	431.448	0.000	0.000	0.000	431.448
2040	893.911	19.864	18.631	266.385	1,198.791	1,352.404	19.864	18.631	266.385	1,657.285	458.494	0.000	0.000	0.000	458.494
2041	923.296	20.226	18.970	258.112	1,220.603	1,410.381	20.226	18.970	258.112	1,707.689	487.085	0.000	0.000	0.000	487.085
2042	953.230	20.593	19.314	249.596	1,242.733	1,470.327	20.593	19.314	249.596	1,759.829	517.096	0.000	0.000	0.000	517.096
2043	983.732	20.976	19.674	241.480	1,265.861	1,532.918	20.976	19.674	241.480	1,815.047	549.185	0.000	0.000	0.000	549.185
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,598.600	21.380	20.053	233.957	1,873.991	583.713	0.000	0.000	0.000	583.713
2045	1,046.170	21.807	20.453	227.567	1,315.996	1,667.098	21.807	20.453	227.567	1,936.924	620.928	0.000	0.000	0.000	620.928
2046	1,077.632	22.260	20.878	222.566	1,343.336	1,739.013	22.260	20.878	222.566	2,004.717	661.381	0.000	0.000	0.000	661.381
2047	1,108.669	22.732	21.321	219.143	1,371.865	1,814.077	22.732	21.321	219.143	2,077.274	705.409	0.000	0.000	0.000	705.409
2048	1,139.272	23.225	21.784	217.347	1,401.628	1,892.954	23.225	21.784	217.347	2,155.310	753.681	0.000	0.000	0.000	753.681
2049	1,169.510	23.735	22.262	216.879	1,432.386	1,976.050	23.735	22.262	216.879	2,238.926	806.540	0.000	0.000	0.000	806.540
2050	1,199.551	24.255	22.749	217.176	1,463.730	2,064.384	24.255	22.749	217.176	2,328.564	864.833	0.000	0.000	0.000	864.833
2051	1,228.907	24.772	23.234	218.039	1,494.953	2,158.806	24.772	23.234	218.039	2,424.851	929.899	0.000	0.000	0.000	929.899
2052	1,257.820	25.290	23.720	219.365	1,526.194	2,260.361	25.290	23.720	219.365	2,528.736	1,002.542	0.000	0.000	0.000	1,002.542
2053	1,286.293	25.809	24.207	221.226	1,557.534	2,372.407	25.809	24.207	221.226	2,643.648	1,086.114	0.000	0.000	0.000	1,086.114
2054	1,314.686	26.336	24.701	223.626	1,589.350	2,499.066	26.336	24.701	223.626	2,773.729	1,184.380	0.000	0.000	0.000	1,184.380
2055	1,343.052	26.871	25.203	226.498	1,621.624	2,645.824	26.871	25.203	226.498	2,924.396	1,302.772	0.000	0.000	0.000	1,302.772
2056	1,371.332	27.413	25.711	229.870	1,654.326	2,823.195	27.413	25.711	229.870	3,106.189	1,451.863	0.000	0.000	0.000	1,451.863
2057	1,399.685	27.963	26.227	233.631	1,687.505	3,048.850	27.963	26.227	233.631	3,336.670	1,649.166	0.000	0.000	0.000	1,649.166
2058	1,427.950	28.517	26.747	237.758	1,720.973	3,370.725	28.517	26.747	237.758	3,663.747	1,942.774	0.000	0.000	0.000	1,942.774
2059	1,456.198	29.077	27.272	242.197	1,754.744	3,851.949	29.077	27.272	242.197	4,150.494	2,395.750	0.000	0.000	0.000	2,395.750
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$60,149.698	\$783.122	\$734.514	\$9,972.394	\$71,639.727	\$24,248.477	\$0.000	\$0.000	\$0.000	\$24,248.477
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$16,385.213	\$258.226	\$242.198	\$4,057.457	\$20,943.095	\$5,232.714	\$0.000	\$0.000	\$0.000	\$5,232.714

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 4.56%)
Based on Actuarial Valuation as of June 30, 2021

\$ in Millions														
June 30, 2021 Valuation Baseline							Stress Test Scenario 6							
Year Ending June 30 2021	Projected Investment Return	Total Required Employer Contribution	Actuarial		Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution	Market		Increase in		
			Value of Assets (AVA) Funded Ratio	Value of Assets (MVA) Funded Ratio	Total Required Employer Contribution	Increase in AVA Funded Ratio				Value of Assets (AVA) Funded Ratio	Value of Assets (MVA) Funded Ratio	Total Required Employer Contribution	Increase in AVA Funded Ratio	
		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%			
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%	
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	-13.23%	-13.23%	860.325	44.71%	36.54%	-8.93%	-2.53%	
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	6.52%	-3.86%	1,009.296	42.76%	36.27%	17.32%	-1.95%	
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	-7.25%	-5.00%	1,166.668	37.97%	31.86%	15.59%	-4.80%	
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	6.69%	-2.21%	1,191.583	34.82%	31.96%	2.14%	-3.14%	
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	-19.14%	-5.86%	1,296.017	31.95%	24.77%	8.76%	-2.87%	
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	-2.11%	-5.24%	1,321.656	28.54%	22.86%	1.98%	-3.41%	
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	-3.82%	-5.04%	1,485.505	26.09%	21.17%	12.40%	-2.46%	
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	10.84%	-3.19%	1,551.108	23.91%	22.49%	4.42%	-2.18%	
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	22.57%	-0.62%	1,622.730	24.43%	26.46%	4.62%	0.52%	
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	-3.84%	-0.94%	1,637.878	24.96%	24.87%	0.93%	0.53%	
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	28.98%	1.46%	1,601.345	27.16%	30.59%	-2.23%	2.21%	
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	16.43%	2.63%	1,685.574	30.27%	34.48%	5.26%	3.11%	
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	7.79%	3.02%	1,603.093	32.59%	35.82%	-4.89%	2.31%	
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	-2.62%	2.61%	1,567.694	34.65%	33.59%	-2.21%	2.06%	
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	-8.42%	1.83%	1,586.496	34.40%	29.64%	1.20%	-0.24%	
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	17.45%	2.75%	1,691.560	34.37%	33.38%	6.62%	-0.03%	
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	-3.18%	2.39%	1,843.107	33.81%	31.70%	8.96%	-0.56%	
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	-3.16%	2.07%	1,794.660	32.96%	29.88%	-2.63%	-0.85%	
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	1.39%	2.03%	1,912.558	33.08%	29.67%	6.57%	0.12%	
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	16.67%	2.72%	2,031.439	33.49%	33.89%	6.22%	0.41%	
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	5.96%	2.87%	2,113.087	34.79%	35.56%	4.02%	1.30%	
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	-18.53%	1.79%	2,062.372	34.60%	29.01%	-2.40%	-0.18%	
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	2.41%	1.81%	2,109.386	34.52%	29.33%	2.28%	-0.09%	
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	9.88%	2.14%	2,457.904	34.88%	32.58%	16.52%	0.37%	
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	6.83%	2.32%	2,552.849	35.11%	35.40%	3.86%	0.63%	
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	12.95%	2.71%	2,569.829	38.69%	40.40%	0.67%	3.18%	
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	2.90%	2.72%	2,621.533	42.16%	42.26%	2.01%	3.47%	
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	16.51%	3.18%	2,573.365	46.50%	49.40%	-1.84%	4.34%	
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	9.60%	3.40%	2,702.412	51.79%	54.69%	5.01%	5.29%	
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	23.08%	4.00%	2,517.208	58.51%	66.94%	-6.85%	6.72%	
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	12.36%	4.26%	2,469.179	66.78%	74.81%	-1.91%	8.27%	
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	6.58%	4.33%	1,836.431	72.95%	77.70%	-25.63%	6.17%	
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	25.36%	4.91%	1,521.061	81.79%	94.00%	-17.17%	8.85%	
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	11.25%	5.09%	1,544.839	90.25%	101.41%	1.56%	8.46%	
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	6.46%	5.13%	233.631	94.88%	101.49%	-84.88%	4.63%	
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	-16.76%	4.45%	237.758	93.97%	78.69%	1.77%	-0.91%	
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	8.47%	4.56%	242.197	89.62%	78.99%	1.87%	-4.35%	
Total Contributions FY 2022-2059		\$47,391.250							\$63,770.011					
Total Present Value FY 2022-2059¹		\$15,710.380							\$21,843.642					
Difference from June 30, 2021 Valuation														
Total Contributions FY 2022-2059		\$0.000							\$16,378.761					
Total Present Value FY 2022-2059¹		\$0.000							\$6,133.262					
Maximum Annual Increase					6.64%	3.10%					17.32%	8.85%		
Maximum Annual Decrease					-8.93%	0.14%					-84.88%	-4.80%		

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 4.56%)
Based on Actuarial Valuation as of June 30, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2021 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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	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	552.798	14.584	13.679	299.061	880.122	681.972	14.584	13.679	299.061	1,009.296	129.174	0.000	0.000	0.000	129.174
2025	568.814	14.910	13.984	302.067	899.774	835.708	14.910	13.984	302.067	1,166.668	266.895	0.000	0.000	0.000	266.895
2026	585.156	15.229	14.284	304.384	919.053	857.687	15.229	14.284	304.384	1,191.583	272.531	0.000	0.000	0.000	272.531
2027	602.081	15.551	14.585	306.247	938.464	959.634	15.551	14.585	306.247	1,296.017	357.553	0.000	0.000	0.000	357.553
2028	619.576	15.870	14.885	307.415	957.746	983.485	15.870	14.885	307.415	1,321.656	363.909	0.000	0.000	0.000	363.909
2029	637.626	16.187	15.182	307.870	976.866	1,146.265	16.187	15.182	307.870	1,485.505	508.639	0.000	0.000	0.000	508.639
2030	656.397	16.505	15.481	307.701	996.085	1,211.420	16.505	15.481	307.701	1,551.108	555.023	0.000	0.000	0.000	555.023
2031	675.917	16.828	15.784	307.032	1,015.560	1,283.087	16.828	15.784	307.032	1,622.730	607.170	0.000	0.000	0.000	607.170
2032	696.351	17.157	16.092	305.822	1,035.422	1,298.807	17.157	16.092	305.822	1,637.878	602.456	0.000	0.000	0.000	602.456
2033	717.381	17.486	16.401	303.992	1,055.259	1,263.467	17.486	16.401	303.992	1,601.345	546.086	0.000	0.000	0.000	546.086
2034	739.322	17.819	16.713	301.477	1,075.330	1,349.566	17.819	16.713	301.477	1,685.574	610.244	0.000	0.000	0.000	610.244
2035	761.950	18.152	17.026	298.338	1,095.465	1,269.577	18.152	17.026	298.338	1,603.093	507.627	0.000	0.000	0.000	507.627
2036	785.382	18.490	17.342	294.612	1,115.825	1,237.251	18.490	17.342	294.612	1,567.694	451.869	0.000	0.000	0.000	451.869
2037	811.479	18.829	17.660	288.324	1,136.292	1,261.684	18.829	17.660	288.324	1,586.496	450.204	0.000	0.000	0.000	450.204
2038	838.354	19.171	17.981	281.420	1,156.926	1,372.989	19.171	17.981	281.420	1,691.560	534.634	0.000	0.000	0.000	534.634
2039	865.764	19.514	18.303	274.068	1,177.649	1,531.222	19.514	18.303	274.068	1,843.107	665.458	0.000	0.000	0.000	665.458
2040	893.911	19.864	18.631	266.385	1,198.791	1,489.780	19.864	18.631	266.385	1,794.660	595.869	0.000	0.000	0.000	595.869
2041	923.296	20.226	18.970	258.112	1,220.603	1,615.251	20.226	18.970	258.112	1,912.558	691.955	0.000	0.000	0.000	691.955
2042	953.230	20.593	19.314	249.596	1,242.733	1,741.937	20.593	19.314	249.596	2,031.439	788.706	0.000	0.000	0.000	788.706
2043	983.732	20.976	19.674	241.480	1,265.861	1,830.958	20.976	19.674	241.480	2,113.087	847.225	0.000	0.000	0.000	847.225
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,786.981	21.380	20.053	233.957	2,062.372	772.094	0.000	0.000	0.000	772.094
2045	1,046.170	21.807	20.453	227.567	1,315.996	1,839.560	21.807	20.453	227.567	2,109.386	793.390	0.000	0.000	0.000	793.390
2046	1,077.632	22.260	20.878	222.566	1,343.336	2,192.200	22.260	20.878	222.566	2,457.904	1,114.568	0.000	0.000	0.000	1,114.568
2047	1,108.669	22.732	21.321	219.143	1,371.865	2,289.652	22.732	21.321	219.143	2,552.849	1,180.984	0.000	0.000	0.000	1,180.984
2048	1,139.272	23.225	21.784	217.347	1,401.628	2,307.473	23.225	21.784	217.347	2,569.829	1,168.201	0.000	0.000	0.000	1,168.201
2049	1,169.510	23.735	22.262	216.879	1,432.386	2,358.657	23.735	22.262	216.879	2,621.533	1,189.147	0.000	0.000	0.000	1,189.147
2050	1,199.551	24.255	22.749	217.176	1,463.730	2,309.186	24.255	22.749	217.176	2,573.365	1,109.635	0.000	0.000	0.000	1,109.635
2051	1,228.907	24.772	23.234	218.039	1,494.953	2,436.366	24.772	23.234	218.039	2,702.412	1,207.459	0.000	0.000	0.000	1,207.459
2052	1,257.820	25.290	23.720	219.365	1,526.194	2,248.834	25.290	23.720	219.365	2,517.208	991.014	0.000	0.000	0.000	991.014
2053	1,286.293	25.809	24.207	221.226	1,557.534	2,197.938	25.809	24.207	221.226	2,469.179	911.645	0.000	0.000	0.000	911.645
2054	1,314.686	26.336	24.701	223.626	1,589.350	1,561.768	26.336	24.701	223.626	1,836.431	247.081	0.000	0.000	0.000	247.081
2055	1,343.052	26.871	25.203	226.498	1,621.624	1,242.489	26.871	25.203	226.498	1,521.061	-100.563	0.000	0.000	0.000	-100.563
2056	1,371.332	27.413	25.711	229.870	1,654.326	1,261.845	27.413	25.711	229.870	1,544.839	-109.487	0.000	0.000	0.000	-109.487
2057	1,399.685	27.963	26.227	233.631	1,687.505	0.000	0.000	0.000	233.631	233.631	-1,399.685	-27.963	-26.227	0.000	-1,453.874
2058	1,427.950	28.517	26.747	237.758	1,720.973	0.000	0.000	0.000	237.758	237.758	-1,427.950	-28.517	-26.747	0.000	-1,483.215
2059	1,456.198	29.077	27.272	242.197	1,754.744	0.000	0.000	0.000	242.197	242.197	-1,456.198	-29.077	-27.272	0.000	-1,512.547
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$52,445.784	\$697.565	\$654.268	\$9,972.394	\$63,770.011	\$16,544.563	-\$85.556	-\$80.246	\$0.000	\$16,378.761
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$17,302.416	\$249.632	\$234.137	\$4,057.457	\$21,843.642	\$6,149.917	-\$8.594	-\$8.061	\$0.000	\$6,133.262

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, 2021

\$ in Millions													
June 30, 2021 Valuation Baseline							Stress Test Scenario 7						
Year Ending June 30 2021	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
		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%		
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	0.00%	0.00%	860.325	46.12%	42.17%	-8.93%	-1.12%
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	0.00%	0.00%	1,009.296	45.04%	39.58%	17.32%	-1.07%
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	0.00%	0.00%	1,076.342	41.39%	37.23%	6.64%	-3.66%
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	0.00%	0.00%	1,141.958	39.02%	35.09%	6.10%	-2.36%
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	0.00%	0.00%	1,207.200	36.84%	33.16%	5.71%	-2.18%
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	0.00%	0.00%	1,271.813	34.86%	31.41%	5.35%	-1.98%
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	0.00%	0.00%	1,335.807	33.10%	29.85%	5.03%	-1.76%
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	0.00%	0.00%	1,399.659	31.52%	28.45%	4.78%	-1.58%
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	0.00%	0.00%	1,463.673	30.13%	27.21%	4.57%	-1.40%
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	0.00%	0.00%	1,528.201	28.94%	26.18%	4.41%	-1.18%
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	0.00%	0.00%	1,592.773	27.92%	25.28%	4.23%	-1.02%
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	0.00%	0.00%	1,657.958	27.06%	24.52%	4.09%	-0.86%
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	0.00%	0.00%	1,723.740	26.34%	23.90%	3.97%	-0.71%
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	0.00%	0.00%	1,790.401	25.78%	23.41%	3.87%	-0.57%
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	0.00%	0.00%	1,858.103	25.35%	23.05%	3.78%	-0.42%
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	0.00%	0.00%	1,927.052	25.08%	22.83%	3.71%	-0.28%
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	0.00%	0.00%	1,997.452	24.95%	22.73%	3.65%	-0.13%
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	0.00%	0.00%	2,070.035	24.96%	22.76%	3.63%	0.01%
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	0.00%	0.00%	2,145.620	25.12%	22.93%	3.65%	0.16%
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	0.00%	0.00%	2,224.075	25.44%	23.24%	3.66%	0.31%
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	0.00%	0.00%	2,307.040	25.91%	23.69%	3.73%	0.48%
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	0.00%	0.00%	2,395.600	26.57%	24.31%	3.84%	0.65%
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	0.00%	0.00%	2,490.482	27.42%	25.12%	3.96%	0.85%
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	0.00%	0.00%	2,593.390	28.50%	26.12%	4.13%	1.08%
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	0.00%	0.00%	2,704.726	29.82%	27.36%	4.29%	1.33%
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	0.00%	0.00%	2,825.687	31.43%	28.85%	4.47%	1.60%
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	0.00%	0.00%	2,958.127	33.34%	30.63%	4.69%	1.91%
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	0.00%	0.00%	3,103.384	35.60%	32.72%	4.91%	2.26%
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	0.00%	0.00%	3,263.432	38.23%	35.15%	5.16%	2.63%
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	0.00%	0.00%	3,443.058	41.28%	37.97%	5.50%	3.05%
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	0.00%	0.00%	3,648.600	44.80%	41.23%	5.97%	3.53%
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	0.00%	0.00%	3,890.960	48.90%	45.01%	6.64%	4.09%
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	0.00%	0.00%	4,185.975	53.69%	49.44%	7.58%	4.79%
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	0.00%	0.00%	4,559.731	59.37%	54.69%	8.93%	5.68%
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	0.00%	0.00%	5,064.927	66.27%	61.11%	11.08%	6.91%
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	0.00%	0.00%	5,826.624	75.06%	69.30%	15.04%	8.79%
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	0.00%	0.00%	7,045.979	86.92%	80.42%	20.93%	11.85%
Total Contributions FY 2022-2059		\$47,391.250							\$94,533.880				
Total Present Value FY 2022-2059¹		\$15,710.380							\$25,389.435				
Difference from June 30, 2021 Valuation													
Total Contributions FY 2022-2059		\$0.000							\$47,142.630				
Total Present Value FY 2022-2059¹		\$0.000							\$9,679.055				
Maximum Annual Increase					6.64%	3.10%						20.93%	11.85%
Maximum Annual Decrease					-8.93%	0.14%						-8.93%	-3.66%

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, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2021 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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	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	552.798	14.584	13.679	299.061	880.122	681.972	14.584	13.679	299.061	1,009.296	129.174	0.000	0.000	0.000	129.174
2025	568.814	14.910	13.984	302.067	899.774	745.382	14.910	13.984	302.067	1,076.342	176.568	0.000	0.000	0.000	176.568
2026	585.156	15.229	14.284	304.384	919.053	808.062	15.229	14.284	304.384	1,141.958	222.906	0.000	0.000	0.000	222.906
2027	602.081	15.551	14.585	306.247	938.464	870.817	15.551	14.585	306.247	1,207.200	268.736	0.000	0.000	0.000	268.736
2028	619.576	15.870	14.885	307.415	957.746	933.642	15.870	14.885	307.415	1,271.813	314.066	0.000	0.000	0.000	314.066
2029	637.626	16.187	15.182	307.870	976.866	996.567	16.187	15.182	307.870	1,335.807	358.941	0.000	0.000	0.000	358.941
2030	656.397	16.505	15.481	307.701	996.085	1,059.971	16.505	15.481	307.701	1,399.659	403.573	0.000	0.000	0.000	403.573
2031	675.917	16.828	15.784	307.032	1,015.560	1,124.030	16.828	15.784	307.032	1,463.673	448.113	0.000	0.000	0.000	448.113
2032	696.351	17.157	16.092	305.822	1,035.422	1,189.130	17.157	16.092	305.822	1,528.201	492.779	0.000	0.000	0.000	492.779
2033	717.381	17.486	16.401	303.992	1,055.259	1,254.894	17.486	16.401	303.992	1,592.773	537.514	0.000	0.000	0.000	537.514
2034	739.322	17.819	16.713	301.477	1,075.330	1,321.950	17.819	16.713	301.477	1,657.958	582.628	0.000	0.000	0.000	582.628
2035	761.950	18.152	17.026	298.338	1,095.465	1,390.225	18.152	17.026	298.338	1,723.740	628.275	0.000	0.000	0.000	628.275
2036	785.382	18.490	17.342	294.612	1,115.825	1,459.958	18.490	17.342	294.612	1,790.401	674.576	0.000	0.000	0.000	674.576
2037	811.479	18.829	17.660	288.324	1,136.292	1,533.291	18.829	17.660	288.324	1,858.103	721.811	0.000	0.000	0.000	721.811
2038	838.354	19.171	17.981	281.420	1,156.926	1,608.481	19.171	17.981	281.420	1,927.052	770.126	0.000	0.000	0.000	770.126
2039	865.764	19.514	18.303	274.068	1,177.649	1,685.567	19.514	18.303	274.068	1,997.452	819.803	0.000	0.000	0.000	819.803
2040	893.911	19.864	18.631	266.385	1,198.791	1,765.154	19.864	18.631	266.385	2,070.035	871.244	0.000	0.000	0.000	871.244
2041	923.296	20.226	18.970	258.112	1,220.603	1,848.312	20.226	18.970	258.112	2,145.620	925.016	0.000	0.000	0.000	925.016
2042	953.230	20.593	19.314	249.596	1,242.733	1,934.573	20.593	19.314	249.596	2,224.075	981.342	0.000	0.000	0.000	981.342
2043	983.732	20.976	19.674	241.480	1,265.861	2,024.911	20.976	19.674	241.480	2,307.040	1,041.178	0.000	0.000	0.000	1,041.178
2044	1,014.887	21.380	20.053	233.957	1,290.278	2,120.209	21.380	20.053	233.957	2,395.600	1,105.321	0.000	0.000	0.000	1,105.321
2045	1,046.187	21.807	20.453	227.567	1,315.996	2,220.656	21.807	20.453	227.567	2,490.482	1,174.485	0.000	0.000	0.000	1,174.485
2046	1,077.632	22.260	20.878	222.566	1,343.336	2,327.686	22.260	20.878	222.566	2,593.390	1,250.054	0.000	0.000	0.000	1,250.054
2047	1,108.669	22.732	21.321	219.143	1,371.865	2,441.529	22.732	21.321	219.143	2,704.726	1,332.861	0.000	0.000	0.000	1,332.861
2048	1,139.272	23.225	21.784	217.347	1,401.628	2,563.331	23.225	21.784	217.347	2,825.687	1,424.059	0.000	0.000	0.000	1,424.059
2049	1,169.510	23.735	22.262	216.879	1,432.386	2,695.250	23.735	22.262	216.879	2,958.127	1,525.740	0.000	0.000	0.000	1,525.740
2050	1,199.551	24.255	22.749	217.176	1,463.730	2,839.204	24.255	22.749	217.176	3,103.384	1,639.654	0.000	0.000	0.000	1,639.654
2051	1,228.907	24.772	23.234	218.039	1,494.953	2,997.387	24.772	23.234	218.039	3,263.432	1,768.480	0.000	0.000	0.000	1,768.480
2052	1,257.820	25.290	23.720	219.365	1,526.194	3,174.683	25.290	23.720	219.365	3,443.058	1,916.864	0.000	0.000	0.000	1,916.864
2053	1,286.293	25.809	24.207	221.226	1,557.534	3,377.359	25.809	24.207	221.226	3,648.600	2,091.066	0.000	0.000	0.000	2,091.066
2054	1,314.686	26.336	24.701	223.626	1,589.350	3,616.297	26.336	24.701	223.626	3,890.960	2,301.610	0.000	0.000	0.000	2,301.610
2055	1,343.052	26.871	25.203	226.498	1,621.624	3,907.403	26.871	25.203	226.498	4,185.975	2,564.351	0.000	0.000	0.000	2,564.351
2056	1,371.332	27.413	25.711	229.870	1,654.326	4,276.737	27.413	25.711	229.870	4,559.731	2,905.405	0.000	0.000	0.000	2,905.405
2057	1,399.685	27.963	26.227	233.631	1,687.505	4,777.107	27.963	26.227	233.631	5,064.927	3,377.422	0.000	0.000	0.000	3,377.422
2058	1,427.950	28.517	26.747	237.758	1,720.973	5,533.601	28.517	26.747	237.758	5,826.624	4,105.651	0.000	0.000	0.000	4,105.651
2059	1,456.198	29.077	27.272	242.197	1,754.744	6,747.434	29.077	27.272	242.197	7,045.979	5,291.235	0.000	0.000	0.000	5,291.235
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$83,043.850	\$783.122	\$734.514	\$9,972.394	\$94,533.880	\$47,142.629	\$0.000	\$0.000	\$0.000	\$47,142.629
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$20,831.554	\$258.226	\$242.198	\$4,057.457	\$25,389.435	\$9,679.055	\$0.000	\$0.000	\$0.000	\$9,679.055

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%)
Based on Actuarial Valuation as of June 30, 2021

\$ in Millions														
Year Ending	June 30, 2021 Valuation Baseline							Stress Test Scenario 8						
	Projected Investment Return	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	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	
June 30 2021		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%			
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	45.76%	43.97%	6.64%	-1.72%	
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	6.25%	6.25%	860.325	45.26%	43.51%	-8.93%	-0.49%	
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	6.25%	6.25%	1,044.935	45.62%	43.65%	21.46%	0.36%	
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	6.25%	6.25%	1,068.267	44.00%	43.83%	2.23%	-1.62%	
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	6.25%	6.25%	1,091.156	44.12%	44.03%	2.14%	0.13%	
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	6.25%	6.25%	1,114.202	44.30%	44.26%	2.11%	0.18%	
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	6.25%	6.25%	1,137.095	44.53%	44.52%	2.05%	0.23%	
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	6.25%	6.25%	1,159.795	44.82%	44.82%	2.00%	0.29%	
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	6.25%	6.25%	1,182.613	45.14%	45.14%	1.97%	0.32%	
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	6.25%	6.25%	1,205.736	45.49%	45.49%	1.96%	0.35%	
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	6.25%	6.25%	1,229.316	45.91%	45.91%	1.96%	0.42%	
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	6.25%	6.25%	1,252.869	46.37%	46.37%	1.92%	0.46%	
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	6.25%	6.25%	1,276.698	46.87%	46.87%	1.90%	0.50%	
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	6.25%	6.25%	1,300.604	47.40%	47.40%	1.87%	0.54%	
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	6.25%	6.25%	1,324.776	47.98%	47.98%	1.86%	0.58%	
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	6.25%	6.25%	1,349.076	48.61%	48.61%	1.83%	0.63%	
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	6.25%	6.25%	1,373.574	49.30%	49.30%	1.82%	0.69%	
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	6.25%	6.25%	1,398.177	50.05%	50.05%	1.79%	0.75%	
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	6.25%	6.25%	1,423.278	50.86%	50.86%	1.80%	0.81%	
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	6.25%	6.25%	1,449.175	51.74%	51.74%	1.82%	0.88%	
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	6.25%	6.25%	1,475.449	52.70%	52.70%	1.81%	0.95%	
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	6.25%	6.25%	1,502.908	53.73%	53.73%	1.86%	1.04%	
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	6.25%	6.25%	1,531.898	54.86%	54.86%	1.93%	1.13%	
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	6.25%	6.25%	1,562.431	56.10%	56.10%	1.99%	1.24%	
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	6.25%	6.25%	1,594.890	57.45%	57.45%	2.08%	1.35%	
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	6.25%	6.25%	1,628.762	58.93%	58.93%	2.12%	1.48%	
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	6.25%	6.25%	1,664.099	60.55%	60.55%	2.17%	1.62%	
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	6.25%	6.25%	1,700.617	62.33%	62.33%	2.19%	1.77%	
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	6.25%	6.25%	1,737.830	64.26%	64.26%	2.19%	1.93%	
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	6.25%	6.25%	1,774.900	66.35%	66.35%	2.13%	2.10%	
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	6.25%	6.25%	1,811.992	68.62%	68.62%	2.09%	2.27%	
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	6.25%	6.25%	1,849.200	71.06%	71.06%	2.05%	2.44%	
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	6.25%	6.25%	1,886.973	73.69%	73.69%	2.04%	2.63%	
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	6.25%	6.25%	1,925.291	76.52%	76.52%	2.03%	2.82%	
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	6.25%	6.25%	1,964.117	79.55%	79.55%	2.02%	3.03%	
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	6.25%	6.25%	2,003.509	82.79%	82.79%	2.01%	3.25%	
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	6.25%	6.25%	2,043.245	86.27%	86.27%	1.98%	3.48%	
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	6.25%	6.25%	2,083.339	90.00%	90.00%	1.96%	3.73%	
Total Contributions FY 2022-2059		\$47,391.250							\$55,927.794					
Total Present Value FY 2022-2059¹		\$15,710.380							\$18,334.326					
Difference from June 30, 2021 Valuation														
Total Contributions FY 2022-2059		\$0.000							\$8,536.544					
Total Present Value FY 2022-2059¹		\$0.000							\$2,623.946					
Maximum Annual Increase					6.64%	3.10%						21.46%	3.73%	
Maximum Annual Decrease					-8.93%	0.14%						-8.93%	-1.72%	

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%)
Based on Actuarial Valuation as of June 30, 2021
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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2023	537.396	14.256	13.371	295.302	860.325	511.956	14.256	13.371	320.743	860.325	-25.440	0.000	0.000	0.000	25.440
2024	552.798	14.584	13.679	299.061	880.122	692.119	14.584	13.679	324.553	1,044.935	139.321	0.000	0.000	25.492	164.813
2025	568.814	14.910	13.984	302.067	899.774	711.795	14.910	13.984	327.578	1,068.267	142.982	0.000	0.000	25.511	168.493
2026	585.156	15.229	14.284	304.384	919.053	731.755	15.229	14.284	329.888	1,091.156	146.599	0.000	0.000	25.504	172.103
2027	602.081	15.551	14.585	306.247	938.464	752.333	15.551	14.585	331.733	1,114.202	150.252	0.000	0.000	25.486	175.738
2028	619.576	15.870	14.885	307.415	957.746	773.480	15.870	14.885	332.860	1,137.095	153.905	0.000	0.000	25.444	179.349
2029	637.626	16.187	15.182	307.870	976.866	795.178	16.187	15.182	333.248	1,159.795	157.552	0.000	0.000	25.377	182.929
2030	656.397	16.505	15.481	307.701	996.085	817.632	16.505	15.481	332.995	1,182.613	161.235	0.000	0.000	25.293	186.528
2031	675.917	16.828	15.784	307.032	1,015.560	840.884	16.828	15.784	332.239	1,205.736	164.967	0.000	0.000	25.208	190.176
2032	696.351	17.157	16.092	305.822	1,035.422	865.122	17.157	16.092	330.944	1,229.316	168.772	0.000	0.000	25.123	193.894
2033	717.381	17.486	16.401	303.992	1,055.259	889.967	17.486	16.401	329.015	1,252.869	172.586	0.000	0.000	25.023	197.610
2034	739.322	17.819	16.713	301.477	1,075.330	915.777	17.819	16.713	326.389	1,276.698	176.455	0.000	0.000	24.913	201.368
2035	761.950	18.152	17.026	298.338	1,095.465	942.293	18.152	17.026	323.133	1,300.604	180.343	0.000	0.000	24.795	205.139
2036	785.382	18.490	17.342	294.612	1,115.825	969.657	18.490	17.342	319.288	1,324.776	184.275	0.000	0.000	24.676	208.951
2037	811.479	18.829	17.660	288.324	1,136.292	999.706	18.829	17.660	312.881	1,349.076	188.226	0.000	0.000	24.557	212.784
2038	838.354	19.171	17.981	281.420	1,156.926	1,030.558	19.171	17.981	305.864	1,373.574	192.204	0.000	0.000	24.444	216.648
2039	865.764	19.514	18.303	274.068	1,177.649	1,061.947	19.514	18.303	298.413	1,398.177	196.183	0.000	0.000	24.345	220.528
2040	893.911	19.864	18.631	266.385	1,198.791	1,094.130	19.864	18.631	290.652	1,423.278	200.220	0.000	0.000	24.268	224.487
2041	923.296	20.226	18.970	258.112	1,220.603	1,127.661	20.226	18.970	282.318	1,449.175	204.365	0.000	0.000	24.207	228.572
2042	953.230	20.593	19.314	249.596	1,242.733	1,161.771	20.593	19.314	273.771	1,475.449	208.541	0.000	0.000	24.175	232.716
2043	983.732	20.976	19.674	241.480	1,265.861	1,196.580	20.976	19.674	265.678	1,502.908	212.848	0.000	0.000	24.199	237.047
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,232.223	21.380	20.053	258.241	1,531.898	217.335	0.000	0.000	24.284	241.620
2045	1,046.170	21.807	20.453	227.567	1,315.996	1,268.156	21.807	20.453	252.016	1,562.431	221.986	0.000	0.000	24.449	246.435
2046	1,077.632	22.260	20.878	222.566	1,343.336	1,304.486	22.260	20.878	247.267	1,594.890	226.854	0.000	0.000	24.701	251.554
2047	1,108.669	22.732	21.321	219.143	1,371.865	1,340.528	22.732	21.321	244.180	1,628.762	231.860	0.000	0.000	25.038	256.897
2048	1,139.272	23.225	21.784	217.347	1,401.628	1,376.289	23.225	21.784	242.801	1,664.099	237.016	0.000	0.000	25.454	262.471
2049	1,169.510	23.735	22.262	216.879	1,432.386	1,411.806	23.735	22.262	242.813	1,700.617	242.296	0.000	0.000	25.934	268.231
2050	1,199.551	24.255	22.749	217.176	1,463.730	1,447.195	24.255	22.749	243.631	1,737.830	247.645	0.000	0.000	26.455	274.100
2051	1,228.907	24.772	23.234	218.039	1,494.953	1,481.849	24.772	23.234	245.044	1,774.900	252.942	0.000	0.000	27.005	279.947
2052	1,257.820	25.290	23.720	219.365	1,526.194	1,516.036	25.290	23.720	246.947	1,811.992	258.216	0.000	0.000	27.581	285.798
2053	1,286.293	25.809	24.207	221.226	1,557.534	1,549.777	25.809	24.207	249.407	1,849.200	263.485	0.000	0.000	28.181	291.666
2054	1,314.686	26.336	24.701	223.626	1,589.350	1,583.504	26.336	24.701	252.431	1,886.973	268.818	0.000	0.000	28.806	297.623
2055	1,343.052	26.871	25.203	226.498	1,621.624	1,617.271	26.871	25.203	255.947	1,925.291	274.219	0.000	0.000	29.449	303.667
2056	1,371.332	27.413	25.711	229.870	1,654.326	1,651.014	27.413	25.711	259.979	1,964.117	279.683	0.000	0.000	30.109	309.791
2057	1,399.685	27.963	26.227	233.631	1,687.505	1,684.911	27.963	26.227	264.409	2,003.509	285.226	0.000	0.000	30.778	316.004
2058	1,427.950	28.517	26.747	237.758	1,720.973	1,718.766	28.517	26.747	269.215	2,043.245	290.815	0.000	0.000	31.456	322.272
2059	1,456.198	29.077	27.272	242.197	1,754.744	1,752.655	29.077	27.272	274.336	2,083.339	296.456	0.000	0.000	32.140	328.595
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$43,472.465	\$783.122	\$734.514	\$10,937.693	\$55,927.794	\$7,571.244	\$0.000	\$0.000	\$965.299	\$8,536.544
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$13,434.080	\$258.226	\$242.198	\$4,399.821	\$18,334.326	\$2,281.581	\$0.000	\$0.000	\$342.364	\$2,623.946

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, 2021

\$ in Millions														
June 30, 2021 Valuation Baseline							Stress Test Scenario 9							
Year Ending June 30 2021	Projected Investment Return	Total Required Employer Contribution	Actuarial		Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution	Market		Increase in		
			Value of Assets (AVA) Funded Ratio	Value of Assets (MVA) Funded Ratio	Total Required Employer Contribution	Increase in AVA Funded Ratio				Value of Assets (AVA) Funded Ratio	Value of Assets (MVA) Funded Ratio	Total Required Employer Contribution	Increase in AVA Funded Ratio	
		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%			
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%	
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	6.50%	6.50%	860.325	46.81%	44.94%	-8.93%	-0.43%	
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	6.50%	6.50%	1,069.531	47.35%	45.28%	24.32%	0.54%	
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	6.50%	6.50%	1,085.735	45.81%	45.63%	1.52%	-1.53%	
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	6.50%	6.50%	1,100.976	46.08%	45.98%	1.40%	0.27%	
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	6.50%	6.50%	1,115.873	46.38%	46.34%	1.35%	0.30%	
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	6.50%	6.50%	1,130.088	46.71%	46.70%	1.27%	0.33%	
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	6.50%	6.50%	1,143.570	47.07%	47.07%	1.19%	0.36%	
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	6.50%	6.50%	1,156.602	47.44%	47.44%	1.14%	0.36%	
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	6.50%	6.50%	1,169.408	47.80%	47.80%	1.11%	0.36%	
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	6.50%	6.50%	1,182.104	48.19%	48.19%	1.09%	0.40%	
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	6.50%	6.50%	1,202.480	48.62%	48.62%	1.72%	0.42%	
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	6.50%	6.50%	1,223.081	49.07%	49.07%	1.71%	0.45%	
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	6.50%	6.50%	1,243.687	49.56%	49.56%	1.68%	0.49%	
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	6.50%	6.50%	1,264.481	50.08%	50.08%	1.67%	0.52%	
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	6.50%	6.50%	1,285.307	50.65%	50.65%	1.65%	0.57%	
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	6.50%	6.50%	1,306.247	51.26%	51.26%	1.63%	0.61%	
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	6.50%	6.50%	1,327.207	51.93%	51.93%	1.60%	0.67%	
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	6.50%	6.50%	1,348.599	52.65%	52.65%	1.61%	0.72%	
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	6.50%	6.50%	1,370.750	53.43%	53.43%	1.64%	0.78%	
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	6.50%	6.50%	1,393.239	54.27%	54.27%	1.64%	0.85%	
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	6.50%	6.50%	1,416.919	55.20%	55.20%	1.70%	0.92%	
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	6.50%	6.50%	1,442.165	56.21%	56.21%	1.78%	1.01%	
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	6.50%	6.50%	1,469.013	57.31%	57.31%	1.86%	1.11%	
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	6.50%	6.50%	1,497.888	58.53%	58.53%	1.97%	1.22%	
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	6.50%	6.50%	1,528.283	59.88%	59.88%	2.03%	1.34%	
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	6.50%	6.50%	1,560.274	61.36%	61.36%	2.09%	1.48%	
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	6.50%	6.50%	1,593.575	63.00%	63.00%	2.13%	1.64%	
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	6.50%	6.50%	1,627.700	64.79%	64.79%	2.14%	1.80%	
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	6.50%	6.50%	1,661.789	66.76%	66.76%	2.09%	1.97%	
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	6.50%	6.50%	1,696.011	68.91%	68.91%	2.06%	2.15%	
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	6.50%	6.50%	1,730.452	71.25%	71.25%	2.03%	2.34%	
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	6.50%	6.50%	1,765.564	73.79%	73.79%	2.03%	2.54%	
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	6.50%	6.50%	1,801.325	76.54%	76.54%	2.03%	2.75%	
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	6.50%	6.50%	1,837.698	79.52%	79.52%	2.02%	2.98%	
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	6.50%	6.50%	1,874.741	82.74%	82.74%	2.02%	3.22%	
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	6.50%	6.50%	1,912.225	86.23%	86.23%	2.00%	3.49%	
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	6.50%	6.50%	1,950.166	90.00%	90.00%	1.98%	3.77%	
Total Contributions FY 2022-2059		\$47,391.250							\$53,289.755					
Total Present Value FY 2022-2059¹		\$15,710.380							\$17,767.448					
Difference from June 30, 2021 Valuation														
Total Contributions FY 2022-2059		\$0.000							\$5,898.505					
Total Present Value FY 2022-2059¹		\$0.000							\$2,057.068					
Maximum Annual Increase					6.64%	3.10%						24.32%	3.77%	
Maximum Annual Decrease					-8.93%	0.14%						-8.93%	-1.53%	

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, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions					Stress Test Scenario 9					Difference				
	June 30, 2021 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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2023	537.396	14.256	13.371	295.302	860.325	537.361	14.162	13.283	295.520	860.325	-0.035	-0.094	-0.089	0.218	0.000
2024	552.798	14.584	13.679	299.061	880.122	742.196	14.388	13.495	299.452	1,069.531	189.398	-0.196	-0.183	0.390	189.409
2025	568.814	14.910	13.984	302.067	899.774	754.814	14.606	13.700	302.615	1,085.735	186.000	-0.303	-0.284	0.549	185.961
2026	585.156	15.229	14.284	304.384	919.053	767.189	14.811	13.892	305.083	1,100.976	182.033	-0.418	-0.392	0.699	181.923
2027	602.081	15.551	14.585	306.247	938.464	779.705	15.012	14.080	307.077	1,115.873	177.624	-0.539	-0.505	0.830	177.409
2028	619.576	15.870	14.885	307.415	957.746	792.266	15.203	14.259	308.360	1,130.088	172.690	-0.667	-0.626	0.945	172.342
2029	637.626	16.187	15.182	307.870	976.866	804.850	15.384	14.429	308.905	1,143.570	167.224	-0.803	-0.753	1.035	166.704
2030	656.397	16.505	15.481	307.701	996.085	817.654	15.560	14.594	308.794	1,156.602	161.257	-0.946	-0.887	1.093	160.517
2031	675.917	16.828	15.784	307.032	1,015.560	830.777	15.732	14.755	308.144	1,169.408	154.860	-1.096	-1.028	1.113	153.848
2032	696.351	17.157	16.092	305.822	1,035.422	844.360	15.903	14.916	306.925	1,182.104	148.010	-1.255	-1.177	1.104	146.682
2033	717.381	17.486	16.401	303.992	1,055.259	866.329	16.177	15.173	304.802	1,202.480	148.948	-1.309	-1.228	0.810	147.221
2034	739.322	17.819	16.713	301.477	1,075.330	889.175	16.454	15.433	302.019	1,223.081	149.853	-1.365	-1.280	0.543	147.751
2035	761.950	18.152	17.026	298.338	1,095.465	912.662	16.731	15.693	298.601	1,243.687	150.712	-1.421	-1.333	0.263	148.222
2036	785.382	18.490	17.342	294.612	1,115.825	936.941	17.011	15.955	294.574	1,264.481	151.559	-1.479	-1.387	-0.038	148.656
2037	811.479	18.829	17.660	288.324	1,136.292	963.919	17.291	16.218	287.879	1,285.307	152.439	-1.538	-1.442	-0.445	149.015
2038	838.354	19.171	17.981	281.420	1,156.926	991.645	17.573	16.482	280.547	1,306.247	153.290	-1.598	-1.499	-0.873	149.321
2039	865.764	19.514	18.303	274.068	1,177.649	1,019.861	17.855	16.747	275.745	1,327.207	154.096	-1.659	-1.552	-1.323	149.558
2040	893.911	19.864	18.631	266.385	1,198.791	1,048.841	18.143	17.016	264.600	1,348.599	154.930	-1.722	-1.615	-1.785	149.808
2041	923.296	20.226	18.970	258.112	1,220.603	1,079.161	18.441	17.296	255.853	1,370.750	155.865	-1.785	-1.674	-2.259	150.147
2042	953.230	20.593	19.314	249.596	1,242.733	1,110.082	18.743	17.580	246.834	1,393.239	156.851	-1.849	-1.735	-2.761	150.506
2043	983.732	20.976	19.674	241.480	1,265.861	1,141.796	19.062	17.879	238.183	1,416.919	158.063	-1.914	-1.795	-3.297	151.058
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,174.474	19.401	18.197	230.092	1,442.165	159.587	-1.979	-1.856	-3.865	151.887
2045	1,046.170	21.807	20.453	227.567	1,315.996	1,207.618	19.762	18.536	223.097	1,469.013	161.448	-2.044	-1.917	-4.470	153.017
2046	1,077.632	22.260	20.878	222.566	1,343.336	1,241.380	20.151	18.900	217.456	1,497.888	163.749	-2.109	-1.978	-5.110	154.552
2047	1,108.669	22.732	21.321	219.143	1,371.865	1,275.083	20.560	19.284	213.357	1,528.283	166.414	-2.172	-2.038	-5.786	156.418
2048	1,139.272	23.225	21.784	217.347	1,401.628	1,308.742	20.990	19.687	210.854	1,560.274	169.470	-2.235	-2.097	-6.493	158.646
2049	1,169.510	23.735	22.262	216.879	1,432.386	1,342.373	21.438	20.108	209.656	1,593.575	172.864	-2.297	-2.154	-7.223	161.189
2050	1,199.551	24.255	22.749	217.176	1,463.730	1,376.062	21.897	20.538	209.203	1,627.700	176.511	-2.357	-2.211	-7.973	163.970
2051	1,228.907	24.772	23.234	218.039	1,494.953	1,409.165	22.356	20.968	209.300	1,661.789	180.258	-2.416	-2.266	-8.739	166.836
2052	1,257.820	25.290	23.720	219.365	1,526.194	1,441.943	22.816	21.400	209.853	1,696.011	184.123	-2.473	-2.320	-9.513	169.817
2053	1,286.293	25.809	24.207	221.226	1,557.534	1,474.398	23.280	21.835	210.939	1,730.452	188.106	-2.529	-2.372	-10.287	172.918
2054	1,314.686	26.336	24.701	223.626	1,589.350	1,506.958	23.752	22.278	212.577	1,765.564	192.271	-2.584	-2.424	-11.049	176.214
2055	1,343.052	26.871	25.203	226.498	1,621.624	1,539.654	24.233	22.729	214.709	1,801.325	196.602	-2.638	-2.474	-11.789	179.701
2056	1,371.332	27.413	25.711	229.870	1,654.326	1,572.411	24.722	23.188	217.377	1,837.698	201.079	-2.690	-2.523	-12.493	183.372
2057	1,399.685	27.963	26.227	233.631	1,687.505	1,605.382	25.221	23.655	220.483	1,874.741	205.697	-2.742	-2.572	-13.148	187.236
2058	1,427.950	28.517	26.747	237.758	1,720.973	1,638.356	25.725	24.128	224.016	1,912.225	210.406	-2.792	-2.619	-13.743	191.252
2059	1,456.198	29.077	27.272	242.197	1,754.744	1,671.394	26.235	24.607	227.930	1,950.166	215.195	-2.841	-2.665	-14.267	195.422
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$42,070.670	\$720.267	\$675.561	\$9,823.260	\$53,289.755	\$6,169.449	-\$62.855	-\$58.953	-\$149.134	\$5,898.505
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$13,259.202	\$242.131	\$227.103	\$4,039.012	\$17,767.448	\$2,106.703	-\$16.095	-\$15.096	-\$18.445	\$2,057.068

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, 2021

\$ in Millions													
June 30, 2021 Valuation Baseline							Stress Test Scenario 10						
Year Ending June 30 2021	Projected Investment Return	Total Required Employer Contribution	Actuarial		Increase in		Annual Rate of Investment Return	Cumulative Geometric Return (from 2023)	Total Required Employer Contribution	Market		Increase in	
			Value of Assets (AVA) Funded Ratio	Value of Assets (MVA) Funded Ratio	Total Required Employer Contribution	Increase in AVA Funded Ratio				Value of Assets (AVA) Funded Ratio	Value of Assets (MVA) Funded Ratio	Total Required Employer Contribution	Increase in AVA Funded Ratio
		\$885.894	47.48%	53.24%					\$885.894	47.48%	53.24%		
2022	6.50%	944.677	49.32%	53.62%	6.64%	1.84%	-10.00%		944.677	47.24%	45.31%	6.64%	-0.24%
2023	6.50%	860.325	51.12%	53.64%	-8.93%	1.81%	6.50%	6.50%	860.325	46.81%	44.94%	-8.93%	-0.43%
2024	6.50%	880.122	53.33%	53.68%	2.30%	2.21%	6.50%	6.50%	951.712	46.92%	44.85%	10.62%	0.11%
2025	6.50%	899.774	53.58%	53.74%	2.23%	0.25%	6.50%	6.50%	979.883	44.99%	44.80%	2.96%	-1.93%
2026	6.50%	919.053	53.76%	53.82%	2.14%	0.19%	6.50%	6.50%	1,008.239	44.90%	44.80%	2.89%	-0.09%
2027	6.50%	938.464	53.92%	53.93%	2.11%	0.15%	6.50%	6.50%	1,037.338	44.89%	44.85%	2.89%	-0.01%
2028	6.50%	957.746	54.06%	54.06%	2.05%	0.14%	6.50%	6.50%	1,066.932	44.96%	44.95%	2.85%	0.07%
2029	6.50%	976.866	54.21%	54.22%	2.00%	0.16%	6.50%	6.50%	1,097.026	45.11%	45.11%	2.82%	0.15%
2030	6.50%	996.085	54.40%	54.40%	1.97%	0.18%	6.50%	6.50%	1,127.912	45.33%	45.33%	2.82%	0.21%
2031	6.50%	1,015.560	54.60%	54.60%	1.96%	0.20%	6.50%	6.50%	1,159.788	45.60%	45.60%	2.83%	0.28%
2032	6.50%	1,035.422	54.86%	54.86%	1.96%	0.26%	6.50%	6.50%	1,192.831	45.98%	45.98%	2.85%	0.38%
2033	6.50%	1,055.259	55.15%	55.15%	1.92%	0.29%	6.50%	6.50%	1,217.850	46.40%	46.40%	2.10%	0.42%
2034	6.50%	1,075.330	55.47%	55.47%	1.90%	0.32%	6.50%	6.50%	1,243.175	46.86%	46.86%	2.08%	0.46%
2035	6.50%	1,095.465	55.83%	55.83%	1.87%	0.36%	6.50%	6.50%	1,268.637	47.37%	47.37%	2.05%	0.51%
2036	6.50%	1,115.825	56.23%	56.23%	1.86%	0.39%	6.50%	6.50%	1,294.419	47.93%	47.93%	2.03%	0.56%
2037	6.50%	1,136.292	56.66%	56.66%	1.83%	0.44%	6.50%	6.50%	1,320.410	48.54%	48.54%	2.01%	0.62%
2038	6.50%	1,156.926	57.15%	57.15%	1.82%	0.49%	6.50%	6.50%	1,346.667	49.22%	49.22%	1.99%	0.68%
2039	6.50%	1,177.649	57.69%	57.69%	1.79%	0.54%	6.50%	6.50%	1,373.104	49.97%	49.97%	1.96%	0.74%
2040	6.50%	1,198.791	58.29%	58.29%	1.80%	0.59%	6.50%	6.50%	1,400.073	50.78%	50.78%	1.96%	0.81%
2041	6.50%	1,220.603	58.94%	58.94%	1.82%	0.66%	6.50%	6.50%	1,427.824	51.67%	51.67%	1.98%	0.89%
2042	6.50%	1,242.733	59.66%	59.66%	1.81%	0.72%	6.50%	6.50%	1,455.968	52.64%	52.64%	1.97%	0.97%
2043	6.50%	1,265.861	60.46%	60.46%	1.86%	0.79%	6.50%	6.50%	1,485.219	53.69%	53.69%	2.01%	1.06%
2044	6.50%	1,290.278	61.33%	61.33%	1.93%	0.87%	6.50%	6.50%	1,515.866	54.85%	54.85%	2.06%	1.15%
2045	6.50%	1,315.996	62.29%	62.29%	1.99%	0.96%	6.50%	6.50%	1,547.903	56.11%	56.11%	2.11%	1.26%
2046	6.50%	1,343.336	63.35%	63.35%	2.08%	1.06%	6.50%	6.50%	1,581.643	57.49%	57.49%	2.18%	1.38%
2047	6.50%	1,371.865	64.53%	64.53%	2.12%	1.17%	6.50%	6.50%	1,616.599	59.00%	59.00%	2.21%	1.51%
2048	6.50%	1,401.628	65.82%	65.82%	2.17%	1.29%	6.50%	6.50%	1,652.799	60.65%	60.65%	2.24%	1.65%
2049	6.50%	1,432.386	67.24%	67.24%	2.19%	1.42%	6.50%	6.50%	1,689.977	62.45%	62.45%	2.25%	1.80%
2050	6.50%	1,463.730	68.80%	68.80%	2.19%	1.56%	6.50%	6.50%	1,727.683	64.41%	64.41%	2.23%	1.96%
2051	6.50%	1,494.953	70.50%	70.50%	2.13%	1.70%	6.50%	6.50%	1,765.151	66.53%	66.53%	2.17%	2.12%
2052	6.50%	1,526.194	72.34%	72.34%	2.09%	1.85%	6.50%	6.50%	1,802.534	68.81%	68.81%	2.12%	2.29%
2053	6.50%	1,557.534	74.34%	74.34%	2.05%	2.00%	6.50%	6.50%	1,839.929	71.27%	71.27%	2.07%	2.46%
2054	6.50%	1,589.350	76.50%	76.50%	2.04%	2.16%	6.50%	6.50%	1,877.748	73.90%	73.90%	2.06%	2.63%
2055	6.50%	1,621.624	78.82%	78.82%	2.03%	2.32%	6.50%	6.50%	1,915.977	76.72%	76.72%	2.04%	2.82%
2056	6.50%	1,654.326	81.32%	81.32%	2.02%	2.50%	6.50%	6.50%	1,954.581	79.72%	79.72%	2.01%	3.01%
2057	6.50%	1,687.505	84.01%	84.01%	2.01%	2.69%	6.50%	6.50%	1,993.616	82.93%	82.93%	2.00%	3.21%
2058	6.50%	1,720.973	86.90%	86.90%	1.98%	2.89%	6.50%	6.50%	2,032.878	86.35%	86.35%	1.97%	3.42%
2059	6.50%	1,754.744	90.00%	90.00%	1.96%	3.10%	6.50%	6.50%	2,072.384	90.00%	90.00%	1.94%	3.65%
Total Contributions FY 2022-2059		\$47,391.250							\$54,847.277				
Total Present Value FY 2022-2059¹		\$15,710.380							\$17,766.083				
Difference from June 30, 2021 Valuation													
Total Contributions FY 2022-2059		\$0.000							\$7,456.027				
Total Present Value FY 2022-2059¹		\$0.000							\$2,055.703				
Maximum Annual Increase					6.64%	3.10%					10.62%	3.65%	
Maximum Annual Decrease					-8.93%	0.14%					-8.93%	-1.93%	

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



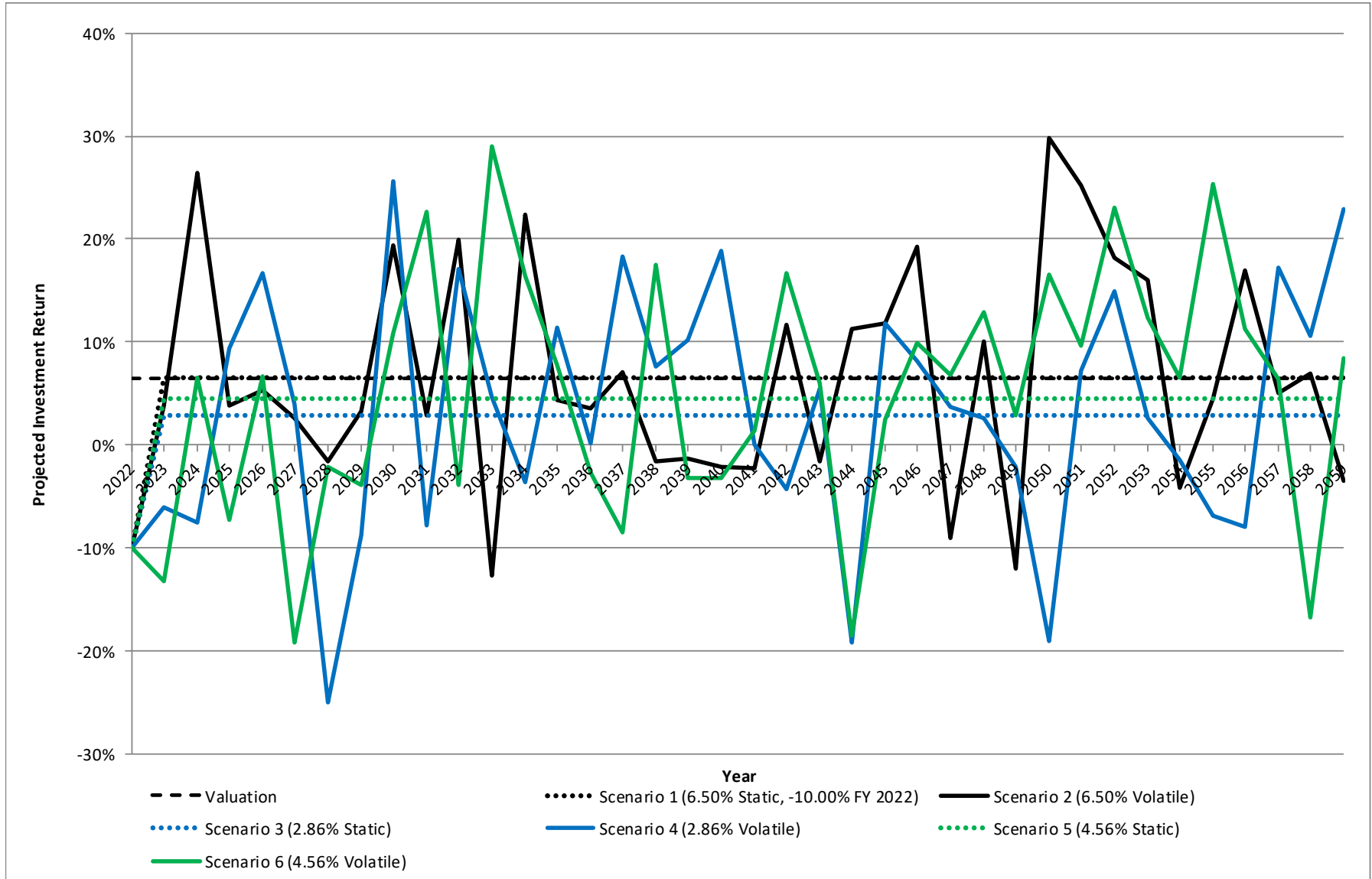
Public School Teachers' Pension and Retirement Fund of Chicago
Comparison of Actuarial Valuation Results and Stress Testing Scenario 10 (Population Increases 1% Per Year for 10 Years)
Based on Actuarial Valuation as of June 30, 2021
Breakout of Contribution Requirements

Year Ending June 30	\$ in Millions														
	June 30, 2021 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
2021					\$885.894					\$885.894					\$0.000
2022	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$653.694	\$13.486	\$12.649	\$264.848	944.677	\$0.000	\$0.000	\$0.000	\$0.000	0.000
2023	537.396	14.256	13.371	295.302	860.325	537.431	14.350	13.460	295.084	860.325	0.035	0.094	0.089	-0.218	0.000
2024	552.798	14.584	13.679	299.061	880.122	624.400	14.781	13.864	298.667	951.712	71.602	0.197	0.185	-0.395	71.590
2025	568.814	14.910	13.984	302.067	899.774	648.884	15.219	14.274	301.505	979.883	80.071	0.309	0.290	-0.562	80.109
2026	585.156	15.229	14.284	304.384	919.053	674.233	15.659	14.687	303.660	1,008.239	89.077	0.430	0.404	-0.724	89.186
2027	602.081	15.551	14.585	306.247	938.464	700.739	16.111	15.111	305.377	1,037.338	98.658	0.561	0.526	-0.870	98.874
2028	619.576	15.870	14.885	307.415	957.746	728.406	16.571	15.542	306.412	1,066.932	108.830	0.701	0.657	-1.003	109.186
2029	637.626	16.187	15.182	307.870	976.866	757.252	17.038	15.981	306.755	1,097.026	119.627	0.851	0.799	-1.116	120.160
2030	656.397	16.505	15.481	307.701	996.085	787.459	17.518	16.431	306.504	1,127.912	131.061	1.013	0.950	-1.197	131.827
2031	675.917	16.828	15.784	307.032	1,015.560	819.091	18.013	16.895	305.789	1,159.788	143.174	1.185	1.111	-1.243	144.228
2032	696.351	17.157	16.092	305.822	1,035.422	852.368	18.526	17.376	304.560	1,192.831	156.017	1.369	1.284	-1.262	157.409
2033	717.381	17.486	16.401	303.992	1,055.259	878.142	18.915	17.741	303.053	1,217.850	160.761	1.429	1.340	-0.939	162.591
2034	739.322	17.819	16.713	301.477	1,075.330	904.930	19.308	18.110	300.827	1,243.175	165.608	1.490	1.397	-0.650	167.845
2035	761.950	18.152	17.026	298.338	1,095.465	932.460	19.704	18.481	297.992	1,268.637	170.510	1.551	1.455	-0.345	173.172
2036	785.382	18.490	17.342	294.612	1,115.825	960.862	20.104	18.856	294.596	1,294.419	175.481	1.615	1.514	-0.016	178.594
2037	811.479	18.829	17.660	288.324	1,136.292	991.930	20.508	19.235	288.738	1,320.410	180.450	1.679	1.575	0.414	184.118
2038	838.354	19.171	17.981	281.420	1,156.926	1,023.845	20.916	19.617	282.288	1,346.667	185.491	1.745	1.637	0.868	189.741
2039	865.764	19.514	18.303	274.068	1,177.649	1,056.364	21.326	20.003	275.412	1,373.104	190.599	1.812	1.700	1.344	195.455
2040	893.911	19.864	18.631	266.385	1,198.791	1,089.716	21.745	20.395	268.217	1,400.073	195.805	1.881	1.764	1.832	201.282
2041	923.296	20.226	18.970	258.112	1,220.603	1,124.407	22.176	20.800	260.442	1,427.824	201.111	1.950	1.829	2.330	207.221
2042	953.230	20.593	19.314	249.596	1,242.733	1,159.691	22.613	21.210	252.455	1,455.968	206.460	2.021	1.895	2.859	213.235
2043	983.732	20.976	19.674	241.480	1,265.861	1,195.613	23.068	21.636	244.903	1,485.219	211.880	2.092	1.962	3.423	219.358
2044	1,014.887	21.380	20.053	233.957	1,290.278	1,232.260	23.544	22.082	237.981	1,515.866	217.372	2.163	2.029	4.023	225.588
2045	1,046.170	21.807	20.453	227.567	1,315.996	1,269.082	24.041	22.549	232.231	1,547.903	222.911	2.235	2.096	4.665	231.907
2046	1,077.632	22.260	20.878	222.566	1,343.336	1,306.124	24.565	23.040	227.913	1,581.643	228.492	2.306	2.162	5.347	238.307
2047	1,108.669	22.732	21.321	219.143	1,371.865	1,342.729	25.108	23.550	225.212	1,616.599	234.060	2.376	2.228	6.069	244.734
2048	1,139.272	23.225	21.784	217.347	1,401.628	1,378.876	25.670	24.077	224.175	1,652.799	239.604	2.445	2.293	6.829	251.171
2049	1,169.510	23.735	22.262	216.879	1,432.386	1,414.615	26.248	24.619	224.496	1,689.977	245.105	2.513	2.357	7.617	257.591
2050	1,199.551	24.255	22.749	217.176	1,463.730	1,450.078	26.833	25.168	225.604	1,727.683	250.527	2.579	2.419	8.428	263.953
2051	1,228.907	24.772	23.234	218.039	1,494.953	1,484.723	27.415	25.714	227.299	1,765.151	255.816	2.643	2.479	9.259	270.198
2052	1,257.820	25.290	23.720	219.365	1,526.194	1,518.813	27.996	26.258	229.466	1,802.534	260.994	2.706	2.538	10.101	276.340
2053	1,286.293	25.809	24.207	221.226	1,557.534	1,552.378	28.577	26.803	232.171	1,839.929	266.086	2.768	2.596	10.945	282.395
2054	1,314.686	26.336	24.701	223.626	1,589.350	1,585.826	29.164	27.354	235.405	1,877.748	271.139	2.828	2.652	11.779	288.398
2055	1,343.052	26.871	25.203	226.498	1,621.624	1,619.220	29.758	27.911	239.088	1,915.977	276.168	2.887	2.708	12.591	294.353
2056	1,371.332	27.413	25.711	229.870	1,654.326	1,652.515	30.357	28.473	243.236	1,954.581	281.183	2.945	2.762	13.366	300.255
2057	1,399.685	27.963	26.227	233.631	1,687.505	1,685.889	30.964	29.042	247.721	1,993.616	286.205	3.001	2.815	14.091	306.111
2058	1,427.950	28.517	26.747	237.758	1,720.973	1,719.180	31.573	29.614	252.511	2,032.878	291.229	3.056	2.867	14.753	311.905
2059	1,456.198	29.077	27.272	242.197	1,754.744	1,752.470	32.187	30.189	257.537	2,072.384	296.272	3.110	2.917	15.340	317.640
Total Contributions FY 2022-2059	\$35,901.221	\$783.122	\$734.514	\$9,972.394	\$47,391.250	\$43,066.693	\$851.657	\$798.796	\$10,130.129	\$54,847.277	\$7,165.472	\$68.535	\$64.281	\$157.735	\$7,456.027
Total Present Value FY 2022-2059¹	\$11,152.499	\$258.226	\$242.198	\$4,057.457	\$15,710.380	\$13,155.118	\$275.682	\$258.571	\$4,076.711	\$17,766.083	\$2,002.620	\$17.456	\$16.372	\$19.253	\$2,055.702

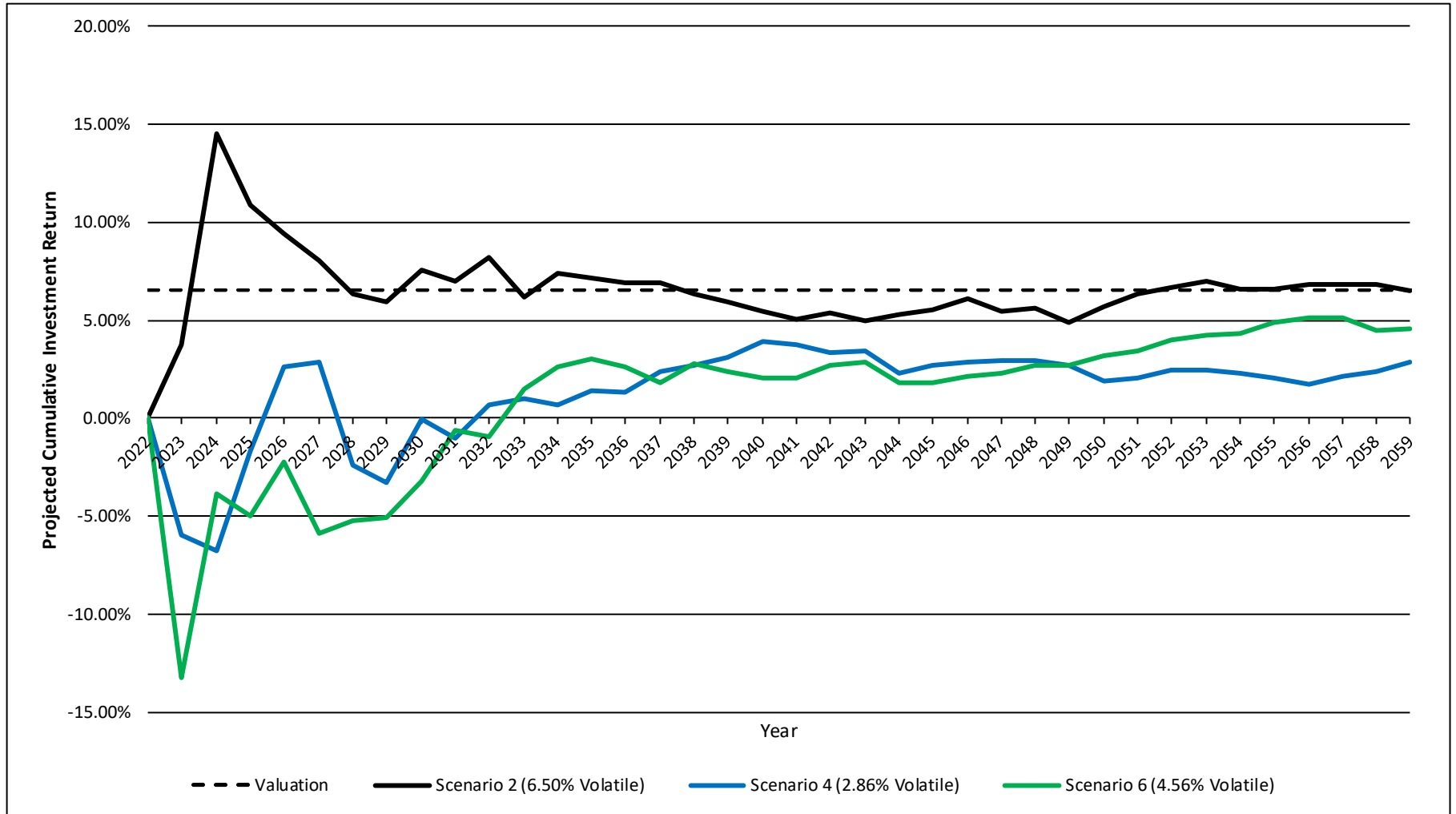
¹ In calculating the present value of contributions, total required employer contributions were assumed to occur mid-year, using a rate of 6.50 percent.



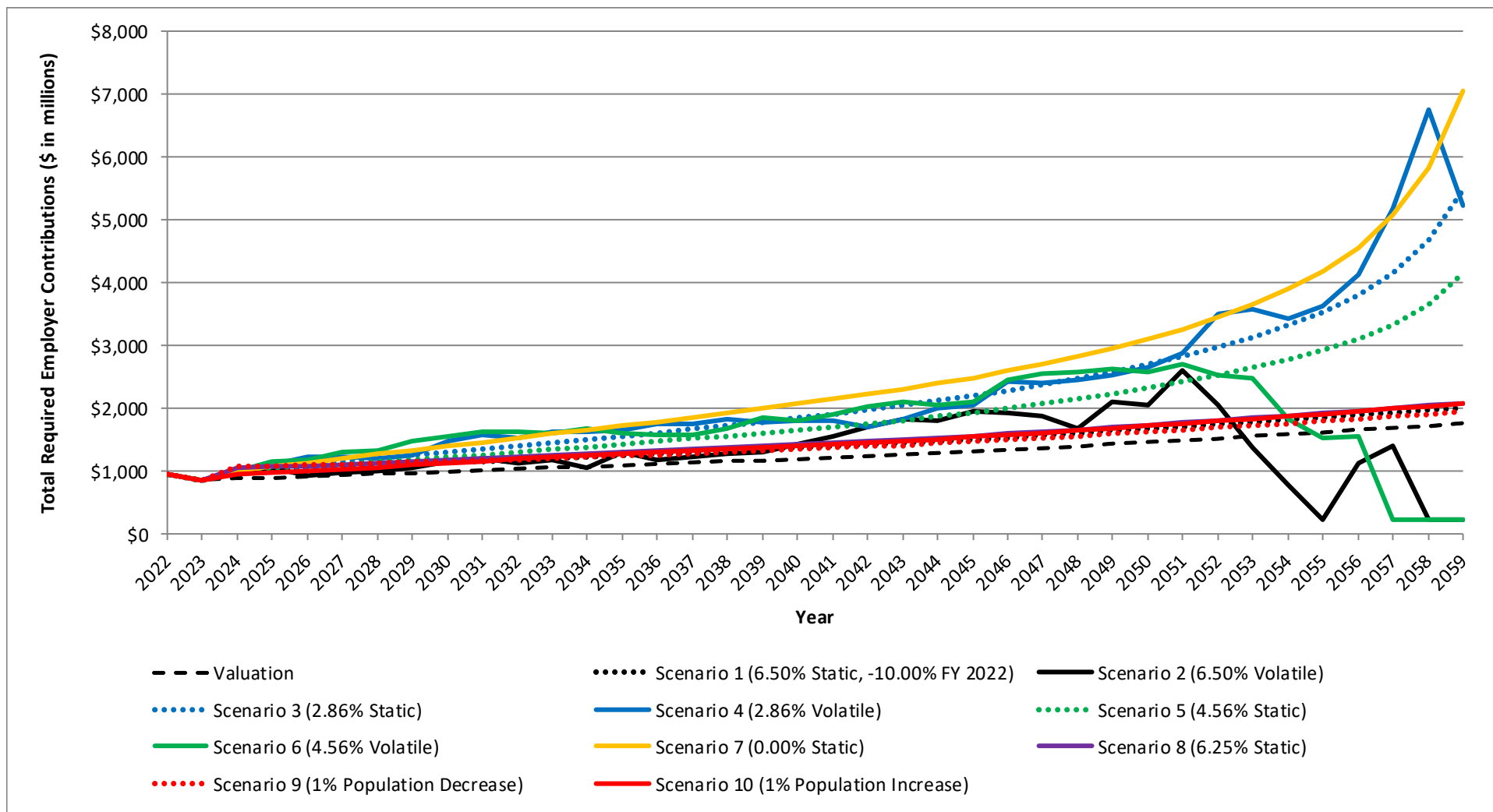
**Public School Teachers' Pension and Retirement Fund of Chicago
 Comparison of Projected Rates of Investment Return
 Assuming Valuation Assumptions (Annual Return of 6.50% and Constant Active Population)
 and Alternate Rates of Return and Active Population Changes under the Stress Testing Scenarios**



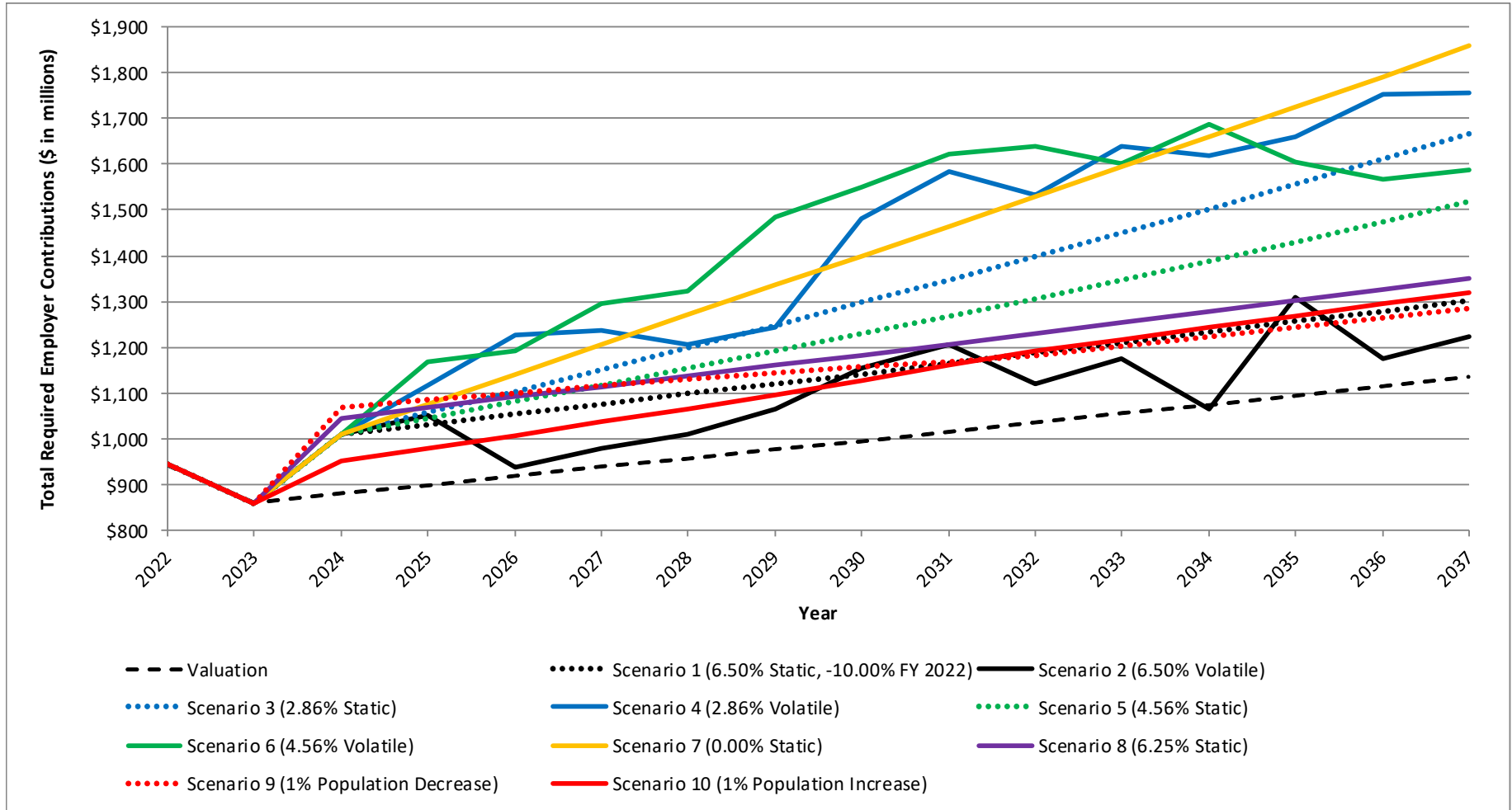
**Public School Teachers' Pension and Retirement Fund of Chicago
 Comparison of Projected Cumulative Rates of Investment Return
 Assuming Valuation Assumptions (Annual Return of 6.50% and Constant Active Population)
 and Alternate Rates of Return and Active Population Changes under the Stress Testing 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 2037
 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

