Chicago Teachers' Pension Fund

125TH

Comprehensive Annual Financial Report

Chicago, Illinois

2020

For the years ended June 30, 2020 and 2019

MISSION STATEMENT

To provide, protect, and enhance the present and future economic well being of members, pensioners and beneficiaries through efficient and effective management of benefit programs, investment practices and customer service, and to commit to earning and keeping the respect and trust of the participants through quality service and by protecting retirement benefits, in compliance with applicable laws and standards.

CTPF

Chicago Teachers' Pension Fund

Trust. Integrity. Stability.

Established by the Illinois state legislature in 1895 as The Public School Teachers' Pension and Retirement Fund of Chicago, CTPF is the administrator of a defined benefit public employee retirement system providing retirement, survivor, and disability benefits for certain certified teachers and employees of the Chicago Public Schools.

COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR THE YEARS ENDED JUNE 30, 2020 AND 2019

CHICAGO, ILLINOIS

PUBLIC SCHOOL TEACHERS' PENSION AND RETIREMENT FUND OF CHICAGO

Report prepared by the staff of the Public School Teachers' Pension and Retirement Fund of Chicago

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INTRODUCTION

This section provides information regarding the Chicago Teachers' Pension Fund Board of Trustees and its consultants, an organizational chart, a Certificate of Achievement, a Letter of Transmittal, and additional administrative information.

BOARD OF TRUSTEES
AS OF JUNE 30, 2020


Jeffery Blackwell


Mary Sharon Reilly


Gregory Redfeairn


Jacquelyn Price Ward


James Cavallero


Gervaise Clay


Miguel del Valle


Lois Nelson


Tina Padilla


Maria J. Rodriguez


Jerry Travlos


Dwayne Truss

EXECUTIVE DIRECTOR*

Charles A. Burbridge

*Executive Director Charles A. Burbridge resigned in October 2020 and Deputy Executive Director Mary Cavallaro was named Interim Executive Director. Mary Cavallaro subsequently retired in January 2021 and the Fund named Jeffery Blackwell Interim Executive Director in February 2021 to provide leadership during a national search for a permanent Executive Director.

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Public School Teachers' Pension and Retirement Fund of Chicago, Illinois

For its Comprehensive Annual
Financial Report
For the Fiscal Year Ended

June 30, 2019

Christopher P. Morrill

Executive Director/CEO

CONSULTANTS
AS OF JUNE 30, 2020

LEGAL COUNSEL

Foster Pepper, PLLC
1111 Third Avenue, Suite 3400
Seattle, Washington 98101

Jacobs, Burns, Orlove and Hernandez
150 North Michigan, Suite 1000
Chicago, Illinois 60601

Ice Miller, LLP
One American Square, Suite 2900
Indianapolis, IN 46282

Goldstine, Skrodzki, Russian, Nemec and Hoff, Ltd.
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Burr Ridge, Illinois 60527-0860

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Suite 2500
Chicago, IL 60601

McDonald Hopkins LLC
Suite 2100
600 Superior Avenue,
Cleveland, Ohio 44114

Cohen Rosenson & Zuckerman, LLC
111 Wacker Drive, Suite 250
Chicago, Illinois 60601

Reinhart Boerner Van Deuren s.c.
1000 North Water Street Suite 1700
Milwaukee, WI 53202

INVESTMENT CONSULTANTS

Callan Associates, Inc.
120 North LaSalle Street, Suite 2400
Chicago, Illinois 60602

HEALTH INSURANCE CONSULTANTS

The Segal Company
101 North Wacker Drive, Suite 500
Chicago, Illinois 60606

BANK CUSTODIANS

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AUDITOR

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3000 Town Center, Suite 100
Southfield, Michigan 48075

CONSULTING ACTUARY

Gabriel, Roeder, Smith & Company Holdings, Inc.
120 North LaSalle Street, Suite 1350
Chicago, Illinois 60602

INFORMATION TECHNOLOGY CONSULTANT

Bradley Consulting Group, Inc.
P.O. Box 637
Lockport, Illinois 60441

ORGANIZATIONAL CHART

AS OF JUNE 30, 2020*^

BOARD OF TRUSTEES

Adriane D. McCoy
Internal Audit Director

Charles A. Burbridge
Executive Director

Mary Cavallaro
Deputy Executive Director

Gail Davis
Director of Administrative Services

Rosemary Ihejirika
Chief Benefits Officer

Angela Miller-May
Chief Investment Officer

Daniel Hurtado
Chief Legal Officer

Michelle Holleman
Director of Communications

Kimberly Shamley
Director of Human Resources

Vandana Vohra
Chief Technology Officer

Alise White
Chief Financial Officer

* A list of investment professionals who provide services to the Fund can be found on page 69, as well as the Manager Analysis on page 83 and the Broker Commission Reports beginning on page 84.

^ Kimberly Shamley resigned in August 2020. Executive Director Charles A. Burbridge resigned in October 2020 and Deputy Executive Director Mary Cavallaro was named Interim Executive Director. Rosemary Ihejirika resigned in December 2020. Mary Cavallaro subsequently retired in January 2021 and the Fund named Jeffery Blackwell Interim Executive Director in February 2021 to provide leadership during a national search for a permanent Executive Director.

CTPF
Chicago Teachers' Pension Fund

May 26, 2021

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

Dear Board of Trustees, Contributors, Pensioners, and Members of the Public:

We are pleased to present the 125th Comprehensive Annual Financial Report (Annual Report) of the Public School Teachers' Pension and Retirement Fund of Chicago (CTPF or Fund) that covers the fiscal year (FY) ended June 30, 2020.

The Fund is a public employee retirement system established by the State of Illinois to provide annuity, disability, survivor, death, and health benefits for certain certified teachers and other employees of the Chicago Public Schools and approved City of Chicago charter schools. It is administered in accordance with Chapter 40, Act 5, Articles 1, 17, and 20 of the Illinois Compiled Statutes.

Illinois statutes provide for a Board of Trustees to be responsible for the administration of the Fund. An important aspect of the administration is the presentation of a detailed annual report of system finances and operations. This publication is intended for all parties-of-interest as well as for the public-at-large.

This report was prepared by the Fund's Finance Department, and provides a review of the financial, investment, actuarial, and operational conditions of the Fund. It contains financial statements with comparative data, which were subject to an independent audit conducted by Illinois licensed certified public accountants, an actuarial valuation prepared by the Fund's consulting actuary, a description of benefits as specified in Illinois law, and other relevant information. Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive framework of internal controls that have been established for this purpose. Because the cost of internal controls should not exceed the anticipated benefits, the objective is to provide reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements.

OVERVIEW

The Fund's membership increased to 68,130 total members including 30,091 active members, 28,015 annuitants, and 10,024 inactive vested members as of June 30, 2020, reflecting a 0.9% increase over the prior year's total membership of 67,538.

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The 125th year of continuous operations ended with the Fund's operational condition substantially unchanged from the previous fiscal year. The June 30, 2020, value of net assets held in trust for pension and health benefits amounted to $10.9 billion, a 0.9% decrease from the $11.0 billion of the previous year.

FISCAL YEAR 2020 HIGHLIGHTS AND ACCOMPLISHMENTS

ACCOUNTING AND INTERNAL CONTROLS

This report was prepared to conform to the principles of governmental accounting and reporting as pronounced by the Governmental Accounting Standards Board (GASB) and the American Institute of Certified Public Accountants. Plante Moran, PLLC, conducted the fiscal year 2020 audit and Gabriel, Roeder, Smith & Company Holdings, Inc., produced the fiscal year 2020 actuarial valuation.

The accrual basis of accounting is used to record the assets, liabilities, revenues, and expenses of the Fund. Revenues are recognized in the accounting period in which they are earned, without regard to the date of collection, and expenses are recorded when the corresponding liabilities are incurred, regardless of when payment is made. The specific accounting treatment of transactions is described in the Summary of Accounting Policies in the Notes to the Financial Statements.

The Government Finance Officers Association (GFOA) of the United States and Canada awarded a Certificate of Achievement for Excellence in Financial Reporting to the Public School Teachers' Pension and Retirement Fund of Chicago for its Annual Report for the period ended June 30, 2019. This was the 29th year that the Fund received this prestigious award. The award recognizes CTPF's readable and efficiently organized Annual Report, which satisfies generally accepted accounting principles and applicable legal requirements.

Throughout the year, the Finance Department continued to update systems and processes and to streamline and improve expense reporting and budgeting. This effort culminated in the procurement and installation of a new ERP financial reporting system which will integrate workflow and improve Fund financial reporting and budgeting capabilities. This system will be utilized for FY 2021 financial reporting processes and FY 2022 budgeting processes. The Finance Department continued to work with the Benefits Department to refine the Agreed Upon Procedures engagement with Chicago Public Schools over census data to verify the underlying payroll records of the participating employer to determine that the payroll information provided is accurate and complete as it impacts the Fund's audited financial statements and annual actuarial valuation.

INVESTMENT AUTHORITY AND PERFORMANCE

The CTPF Board of Trustees (Board) set the Fund's investment policy, operating under the prudent person rule and with investment authority granted by the Illinois Compiled Statutes, Chapter 40, Act 5, Articles 1 and 17. Trustees seek guidance from CTPF staff and investment consultants who help select investment management firms and monitor and continuously evaluate performance. The Board approves an asset allocation program designed to obtain the highest expected return on investments with an acceptable level of risk.

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The Board's current policy targets are:

- Global equity at 66.0% (comprised of domestic equity at 30.5%, and International equity at 30.5%, and private equity at 5.0%),
- Fixed income at 23.0%, and
- Real assets at 11.0% (comprised of private real estate at 9.0% and infrastructure at 2.0%).

As of June 30, 2020, investments at fair value plus cash totaled $10.73 billion, reflecting a .14% increase from the $10.71 billion value of June 30, 2019. The Fund's rate of return for the year ending June 30, 2020, was 4.54% as performance of the portfolio was reflective of low returns and muted growth driven by the market disruption experienced in the first quarter 2020 due to the COVID-19 pandemic. The Fund continued to maximize investment performance while maintaining acceptable levels of risk. CTPF is a long-term investor and performance over time offers a broader picture of overall performance. The Fund returned 9.11% over the past 10 years, and 7.83% for the 25-year period ending June 30, 2020.

During the year ended June 30, 2020, the Board and staff performed due diligence over its investment managers in order to monitor performance and compliance in all asset classes. During the fiscal year the Fund:

- Initiated Investments with six private equity managers: one majority-owned Fund-of-Funds firm, one existing majority-owned firm, two African-American owned firms, one Latino-owned firm and one Woman-owned firm.
- Initiated Investments with one non-core real estate manager: one existing Latino-owned firm.
- Initiated Investments with two infrastructure managers: one existing majority-owned firm and one African-American owned firm.

CTPF continues to be committed to diversity in all aspects of investing. As of June 30, 2020, approximately 46.0% ($4.9 billion) of the Fund's investment portfolio was managed by qualified minority, women, and disabled-person owned investment managers. Additionally, the Fund directed approximately $730.7 thousand in commissions to qualified minority, women, and disabled-person owned brokers/dealers in calendar year 2019.

CTPF also has a strong commitment to the economy of the State of Illinois. As of June 30, 2020, CTPF employed 19 Illinois-based investment managers who managed assets with a market value of $2.4 billion. These assets represented 22.2% of CTPF's investment portfolio.

Overall, investment returns continue to outperform benchmarks similar to the previous fiscal year.

The investment rate of return for fiscal year 2020 was 4.54% (vs. benchmark of 3.48%) following fiscal year 2019's return of 5.51% and fiscal year 2018's return of 8.96%. Five and ten-year annualized returns were 6.54% (vs. benchmark of 6.28%) and 9.11% (vs. benchmark of 8.59%), respectively. Domestic, fixed income, and private equity as well as real estate and infrastructure generated positive returns. International Equity posted negative returns but still outperformed the international equity benchmark. The Fund's portfolio of domestic equity reported a 7.45% return, international equity reported a (1.88)% return, fixed income reported a 8.86% return, private equity reported a 2.87% return, real estate reported a 3.71% return, and infrastructure reported a 12.97% return.

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BENEFITS DEPARTMENT

The Benefits Department is responsible for the day-to-day operations of all benefits administration to ensure member satisfaction, compliance with statutory law, and the financial accuracy of payroll records and benefit payments. Key areas of responsibility include member services, member records, processing pensions and refunds, administering health insurance benefits, managing compliance and employer audits, along with process improvement and analysis.

The department continues to focus on strengthening operations, improving internal controls, and enhancing customer service for members.

Highlights from fiscal year 2020 include:

- Processing approximately 600 retirement applications, conducting retirement seminars for approximately 700 attendees, providing health insurance coverage for approximately 16,000+ retirees (and issuing approximately 8,000 rebates for retirees with outside coverage) and dependents.
- Responding to over 59,000 phone calls and answered more than 18,000 emails from members seeking assistance.
- Establishing the employer audit team to actively audit employers that contribute to the fund and to ensure that all licensed and certified teachers are accurately reported to the Fund.
- Leading the effort to develop *my*CTPF the Fund's Member Self-Service Portal, which upon activation will allow members to access certain information directly from a secure website.
- Providing business continuity with uninterrupted service to members when the pandemic forced the closing of the office and a switch to remote operations. The Member Services team quickly adapted to adverse circumstances, with Members initially calling into the Fund and leaving voicemails which were returned on personal cell phones, but technology upgrades made it possible to answer calls in real time.
- Innovating and finding ways to serve members during the pandemic including switch to phone and online video counseling, utilizing Zoom technology, and offering remote notarization for CTPF documents.
- Continuing work on the data quality initiative which identifies and remediates existing data discrepancies.

ADMINISTRATIVE SERVICES DEPARTMENT

The Administrative Services Team supports the work of the Board of Trustees and CTPF Leadership to ensure they are efficiently able to carry out the Fund's mission. The Team managed the agendas and prepared for 13 meetings of the Board of Trustees, and facilitated more than 30 individual committee meetings providing minutes and support for committee members and their staff liaisons. The events of 2020 involved a pivot to remote operations, and the Administrative Services team provided support across the organization and the rapid conversion from in-person to remote meetings and operations.

During fiscal year 2020, Administrative staff served on the enterprise-wide office move team, and worked with the Fund's real estate consultant, CBRE, other vendors, building management, and Fund staff to manage the Fund's relocation to 425 S. Financial Place in November 2019. The project included a full-scale build out of the 14th floor and a portion of the 15th floor at the new location, and the relocation of all employees and systems to the new office space.

The Director of Administrative Services serves as the Fund's Election Coordinator and managed the 2019 Trustee Election process which included elections for three Pensioners, two Teachers, and one Principal/Administrator. The management of the Trustee Elections is a year-round project involving all aspects of the organization.

As the Fund moved to remote operations during the pandemic, the Administrative Services team played a critical role in ensuring that staff and Trustees had the materials and resources they needed to continue operating remotely. The team worked to print and deliver materials remotely, secured and stocked the office with safety supplies and materials for on-site essential workers, and has served as liaison with the building management during remote operations.

COMMUNICATIONS DEPARTMENT

The communications team is responsible for increasing efficiency, bridging departments, and engaging members. The team manages a comprehensive, cross-platform communications plan with relevant resources for members, employees, legislators, and the public.

The Director of Communications position was filled in June 2020 following a nine-month vacancy. Day-to-day the team collaborates with all departments to produce internal and public-facing communications with four major areas of responsibility: digital and print communications, media/community relations, social media engagement, and website management. The team also produces informational materials and communications for employees, and supports the Election process.

Major annual projects completed in 2020 included CTPF's *Health Insurance Handbook* and Open Enrollment materials, all Trustee Election communications including emergency communications, a major communications and branding program for the Fund's move to 425 S. Financial Place, the Comprehensive Annual Financial Report, Popular Annual Financial Report, Economic Impact Statement and individual information sheets, *Pension News*, and Retirement Seminar and Reports for the Senate and Governor's office. Communications manages the daily operations of the website, and oversaw the transition to a new website services vendor in the 2020 fiscal year, and began the process of upgrading the website's operating system, completed in FY 2021.

The onset of COVID-19 and the pivot to work-from-home operations necessitated new communications necessary to keep members and staff informed and engaged. The team took on a new role, communicating daily with all employees. The department increased E-News from a monthly to bi-monthly publication, sent a direct mail pieces to all members, and offered a robust social media presence on Facebook, LinkedIn, and Twitter, posting regularly and providing an opportunity to engage with members. All platforms saw total followers increase by 13.6% for the fiscal year. While Facebook remains the strongest social media platform for CTPF in terms of engagement, CTPF did see a 35.7% increase in Twitter followers, and a 25.4% increase in LinkedIn followers.

HUMAN RESOURCES DEPARTMENT

The Human Resources Department serves as a resource to all staff. The Department brings new hires on board, provides staff with developmental opportunities, maintains a confidential environment, works through conflict resolution, and seeks employee engagement opportunities.

During fiscal year 2020 Human Resources hired and onboarded 16 new staff members. The HR team also assisted with the closing of the Funds' 403(b) plan and the opening of a new 457 (b) retirement plan, providing communication and education to staff regarding the change. The COVID-19 pandemic presented new challenges with the closing of the office and the move to offsite and remote operations. The HR team worked to quickly increase and ensure effective communication to employees regarding COVID-19 work-from home protocols and pandemic safety measures. The team also worked to share information and administer new benefits available under the CARES act and took steps to ensure business continuity during remote operations.

LEGAL DEPARTMENT

The Legal Department advises the Board and Fund staff on legal issues impacting the Fund, both on a day-to-day basis and at Board and Committee meetings. The Legal Department works closely with Board counsel and oversees the work of the Fund's other outside counsel, including litigation, investment, tax, and securities and class action litigation counsel.

Highlights for fiscal year 2020 include:

- Supporting trustees and staff in the preparation of Board meeting agendas, materials and minutes.
- Negotiating and entering into memoranda of understanding with the Chicago Board of Education with regard to agreed-upon procedures for reporting.
- Working with outside tax counsel regarding a successful appeal to the IRS and to develop a transition in optional retirement plans for staff.
- Achieving a favorable settlement in securities fraud litigation.
- Continuing to create and refine processes and procedures for the Fund's procurement function, and preparing and conducting Board of Trustee and staff training in contract administration and procurement policy.
- Overseeing the conduct of administrative hearings relating to return-to-work matters.
- Onboarding and training a new member of the department and advancing the roles of other members of the team.
- Conducting an RFP for Investment Counsel.
- Supporting the Fund's procurement of a consultant to assist in an RFP for a new pension administration system.
- Negotiating a contract with an outside auditor to perform a payroll audit of the Chicago Public Schools.

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- Supporting the Fund's office move in the areas of contract administration and procurement.
- Ongoing analysis and review of benefits administration documents and issues, including novel issues relating to marital assets and disability benefits.
- Assisting the Board in the resolution of member appeals.
- Supporting the Compliance department with regard to employer contributions, processing CPS/member settlement agreements, and finalization of pensions.
- Supporting the Employer Audit department with regard to related legal issues and post-audit negotiations with employers.
- Processing requests under the Freedom of Information Act.
- Responding to subpoenas, processing CPS/member settlement agreements, and assisting with Human Resources issues.

INFORMATION TECHNOLOGY DEPARTMENT

The Information Technology (IT) Department is responsible for the architecture, hardware, software, security, and networking of technology for CTPF. The Department ensures that CTPF staff have full access to a reliable and protected network system. IT staff is responsible for following industry best practices for software development standards, project management, and infrastructure and security improvements to meet the needs of various CTPF departments.

During fiscal year 2020, IT members served on the CTPF Moving Team and worked closely with the Fund's architect, technology and security consultants to manage the technology and security needs for the Fund's new workspace at 425 S. Financial Place in November 2019. In conjunction with the move, the team implemented a successful technology buildout of the data center, managed the installation of physical security technologies, planned and managed the installation of modernized workstations, and managed the installation of conferencing and Board Room Technology. A through technology asset inventory along with asset disposal reconciliation was also completed during the move.

Highlights for fiscal year 2020 include:

- Implemented business continuity plans and provided workforce mobility by distributing all needed technology for efficient remote work during the COVID-19 pandemic.
- Changed workforce arrangement from corporate office only to hybrid model of office and mobility-based options for maximum flexibility.
- Implemented technology redundancy, technology refresh, workforce mobility, business continuity, security redundancy, and data security programs.
- Shifted new application acquisition to SaaS and cloud-based computing.
- Established resilience and failover technology:
  - Fault tolerance in Hyperconverged and Infrastructure
  - Redundancy in network circuits, routers, and switches

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    - Defense-in-depth for application and data security
    - Disaster Recovery established of Data Center, Telephony, and Fax
    - Remote workforce efficiency – laptops, monitors, keyboard/mice, headsets
    - Collaboration technologies Microsoft Teams with redundancy in Zoom meetings
    - Cloud-based monitoring of physical security, environment controls and reporting for moisture, heat, etc.
- Implemented the upgrade of client computers to Windows 10 Enterprise, Exchange Online, and Office 365.
- Continued improving and upgrading existing technologies and databases ensuring security and compliance along with establishing data encryption technologies.
- Continued data quality improvements to drive member satisfaction through operational efficiencies, support of member self-service functionality, and prepare for the future pension administration system replacement.
- Partnered across the organization to bring improvement to the Employer Reporting system, Member Estimate Request automation, Annual Member Statements, along with initiating reporting and Member correspondence.
- Partnered with the Benefits and Communications teams on the development of Fund's secure Member Services Portal, *my*CTPF.
- Partnered with Finance team to plan for the Solomon Replacement project with Sage Intaact and partnered with vendor to assist with the replacement.

LEGISLATION IMPACTING CTPF

The 2020 legislative session was truncated due to the impact of the COVID-19 pandemic, but several acts passed in FY 2020 amended the Chicago Teacher Article of the Illinois Pension Code.

Public Act 101-0261 requires that an Employer or the Board of Trustees to make pension deductions each pay period on the basis of the salary earned in that period, exclusive of salaries for overtime, extracurricular activities (instead of special services), or any employment on an optional basis, such as summer school.

Public Act 101-0263 clarifies that service retirement pensions shall begin on the effective date of termination as reflected in the records of the Employer, and requires that upon certification of a members' termination and upon written application, a teacher can be paid a refund if they meet certain reporting requirements.

Public Act 101-0340 increases to 120 days from 100, the number of days a service retirement pensioner who is re-employed as a teacher may work without having his or her pension cancelled, beginning on or after July 1, 2019.

Public Act 1010-0352 repeals obsolete provisions concerning early retirement incentives.

FUNDING GOALS

The funding policy of the Fund provides for employer contributions which, when added to contributions received from employee members and earnings on investments, will be sufficient to meet the actuarially determined obligations of the Fund.

On an annual basis, an actuarial valuation is performed in order to determine the amount of required contributions in accordance with the Illinois Compiled Statutes (Public Act 89-15).

The Chicago Board of Education (Employer) is required by law to make contributions to the Fund in order to ensure the actuarial value of assets is 90% of the actuarial value of liabilities by the end of a predetermined funding period. In years where the funding ratio exceeds 90%, no employer contribution is required.

The Illinois Compiled Statutes (Public Act 90-0582) provide that the Employer and the State of Illinois (State) are required to make additional contributions as a percentage of payroll to offset a portion of the cost of benefit increases enacted under Public Act 90-0582.

Amendments to the Illinois Pension Code during fiscal year 2010 changed the funding requirements for future years. Illinois Compiled Statutes (Public Act 96-0889) limited the contributions required to be made to the Fund by the Chicago Board of Education to $187 million for fiscal year 2011, $192 million for fiscal year 2012, and $196 million for fiscal year 2013. Under the amended statute, the Chicago Board of Education was provided a 14-year extension, or until the end of 2059, to make contributions which ensure that the Fund's projected actuarial value of assets is 90% of the Fund's projected actuarial liabilities.

Legislation passed in fiscal year 2016 attempted to ease the funding burden on CPS. Public Act 99-0521, passed and enacted in fiscal year 2017, allowed CPS to levy a property tax dedicated to the Fund at a tax rate of 0.383%.

Public Act 100-0465, enacted in fiscal year 2018, provided additional funding stability. The legislation raised the property tax levy to 0.567% and required the State of Illinois to pay the normal cost portion of the CPS required contribution, including the $65 million health insurance subsidy, on an ongoing basis.

For fiscal years 2016, 2017, 2018, 2019, and 2020, the required contributions from the Board of Education and the State of Illinois were $700 million, $745 million, $784 million, $809 million, and $855 million, respectively. For fiscal years 2021 and 2022, the required contributions are $886 million and $945 million.

CONCLUDING COMMENTS

Three Board of Trustee elections were held in Fiscal Year 2020. There were two certified candidates for two positions in the Teacher Trustee election. Jeffery Blackwell and Jacquelyn Price Ward were declared elected to three-year terms from November 2019-2022. There was one certified candidate for one position in the Principal/Administrator Trustee election. Jerry Travlos was declared elected to a three-year term from November 2019-2022. There were five qualified candidates for three positions in the Pensioner Trustee election. One candidate, Robert F. "Bob" Bures, passed away after ballots had been distributed, and the election continued with the remaining candidates.

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Lois Nelson, Mary Sharon Reilly, and Maria J. Rodriguez were elected to two-year terms from November 2019-2021.

In the election of officers, Jeffery Blackwell was elected President, Mary Sharon Reilly was elected Vice President, Gregory Redfeairn was elected Financial Secretary, and Jacquelyn Price Ward was elected Recording Secretary. Chairs of standing committees included Tina Padilla, Investments; Gregory Redfeairn, Finance and Audit; Lois Nelson, Pension Laws and Administrative Rules; and Maria J. Rodriguez, Claims and Service Credits.

This annual report of the Public School Teachers' Pension and Retirement Fund of Chicago was prepared through the combined efforts of CTPF's Board of Trustees, the Fund's actuary, certified public accountants, and administrative staff. We want to express our gratitude and appreciation for the diligence of all contributors in the preparation of this publication.

Jeffery Blackwell
Board of Trustees President and
Interim Executive Director

Alise White, CPA
Chief Financial Officer

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FINANCIAL

This section contains the report of the independent public accountants, the financial statements of the Fund, along with footnotes to the financial statements, and supplemental financial information.

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Independent Auditor's Report

To the Board of Trustees
Public School Teachers' Pension and
Retirement Fund of Chicago

Report on the Financial Statements

We have audited the accompanying basic financial statements of Public School Teachers' Pension and Retirement Fund of Chicago (CTPF) as of and for the years ended June 30, 2020 and 2019 and the related notes to the financial statements, which collectively comprise CTPF's basic financial statements, as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the plan net position of Public School Teachers' Pension and Retirement Fund of Chicago as of June 30, 2020 and 2019 and the changes in plan net position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As explained in Note 2C, the financial statements include investments valued at $1,700,681,498 (15.5 percent of net position) at June 30, 2020 and $1,417,894,785 (12.8 percent of net position) at June 30, 2019 whose fair values have been estimated by management in the absence of readily determinable market values. Management's estimates are based on information provided by the fund managers of the general partners. Our opinion is not modified with respect to this matter.

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To the Board of Trustees
Public School Teachers' Pension and
Retirement Fund of Chicago

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and other required supplementary information, as identified in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, which considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise Public School Teachers' Pension and Retirement Fund of Chicago's basic financial statements. The other supplementary information, as identified in the table of contents, and introductory, investments, actuarial, and statistical sections, as identified in the table of contents, are presented for the purpose of additional analysis and are not a required part of the basic financial statements.

The other supplementary information, as identified in the table of contents, is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the other supplementary information, as identified in the table of contents, is fairly stated in all material respects in relation to the basic financial statements as a whole.

The introductory, investments, actuarial, and statistical sections, as identified in the table of contents, have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and, accordingly, we do not express an opinion or provide any assurance on them.

Plante & Moran, PLLC

May 26, 2021

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

JUNE 30, 2020 AND 2019

Management is pleased to provide this overview and analysis of the financial activities of the Public School Teachers' Pension and Retirement Fund of Chicago (the Fund) for the fiscal years ended June 30, 2020 and 2019. This information is intended to supplement the financial statements, which begin on page 30 of this report. We encourage readers to consider additional information and data in the Fund's 2020 Comprehensive Annual Financial Report.

ANNUAL FINANCIAL REVIEW

The Fund maintains a highly diversified portfolio of investments for the purpose of accumulating sufficient assets to provide benefits to members and survivors. Diversification of investments among U.S. stocks, real estate, fixed income, private equity, and international investments provides liquidity and risk-adjusted returns while allowing the Fund to "ride out" short-term fluctuations in individual asset classes. The Fund returned 4.5% (time-weighted return) in fiscal year 2020. However, since the Fund is a long-term investor, results are more significant over longer periods. The increase in value across investment classes in previous years brought the Fund's compounded rate of return over the past 10 years to 9.1%, which is greater than the actuarial assumption of 6.75%.

The Fund's consulting actuary has certified the total actuarial accrued liability of the Pension Fund to be $24.1 billion as of June 30, 2020. This represents an increase in the total actuarial accrued liability of $0.8 billion when compared to the actuarial accrued liability of $23.3 billion as of June 30, 2019. The unfunded actuarial accrued liability increased from $12.2 billion to $12.8 billion. The total pension liability, under GASB 67, for fiscal years 2020 and 2019, was $26.4 billion and $25.2 billion, respectively.

FINANCIAL HIGHLIGHTS

- Investment returns in fiscal year 2020 exceeded the benchmarks. This was reflective of the Fund's longer-term experience. The investment rate of return for fiscal year 2020 on a time weighted basis was 4.5% (benchmark of 3.5%) following fiscal year 2019's return of 5.5%. Five and ten-year annualized returns were 6.5% (benchmark of 6.3%) and 9.1% (benchmark of 8.6%), respectively.

- Total plan fiduciary net position decreased during the fiscal year to $10.9 billion at June 30, 2020, from $11.0 billion at June 30, 2019.

- The Fund paid members $1.5 billion in service retirement, disability, refunds, and survivor benefits, an additional $51.4 million for health care benefits, and administrative expenses of $18.4 million, a 0.8% increase compared to fiscal year 2019.

- Total additions to plan fiduciary net position were $1.5 billion for fiscal year 2020, including total contributions of $1,050.6 million and net investment income of $438.8 million.

- The funded ratio for pension benefits, based on the actuarial value of assets, decreased to 46.7% as of June 30, 2020, from 47.4% at the end of the previous fiscal year.

OVERVIEW OF THE FINANCIAL STATEMENTS OF THE FUND

The two basic financial statements of the Fund are the *Statement of Fiduciary Net Position* and the *Statement of Changes in Fiduciary Net Position*. Statements are shown for the most recent and previous fiscal years for comparison and analysis of changes in individual line items. The statements are prepared in conformity with U.S. generally accepted accounting principles.

The *Statement of Fiduciary Net Position* is a measure of the Fund's assets and liabilities at the close of the fiscal year. Total assets less liabilities equal net position restricted for benefits.

The *Statement of Changes in Fiduciary Net Position* shows revenues (additions) and expenses (deductions) for the fiscal year. The net increase (or decrease) is the change in net position restricted for benefits since the end of the previous fiscal year.

For financial reporting purposes, the Fund's assets are divided into two primary funds: the Pension Fund (a defined benefit plan) and the Health Insurance Fund (a post-employment health care plan). The Pension Fund includes member contributions and investment earnings used to pay service retirement benefits for participants. The Fund pays service retirement benefits using a fixed formula based on years of service and salary, subject to certain age requirements. In addition to service retirement, participants are eligible for disability and survivor benefits. The Health Insurance Fund consists of revenue used to subsidize health care premiums for members participating in the health care benefit.

The *Notes to the Financial Statements* are a fundamental part of the financial statements and provide important information to complement the understanding of the figures in the financial statements. The notes describe accounting policies along with plan membership and benefits. Supplementary disclosures of selected financial data are included in the notes.

In addition to the basic financial statements, a *Schedule of Changes in Employer's Net Pension Liability,* a *Schedule of the Employer's Net Pension Liability, Schedules of the Employer's Contributions*, and a *Schedule of Money-Weighted Rate of Return* are included as required supplementary information for the pension plan. The *Schedule of the Employer's Net Pension Liability* and the *Schedule of Changes in the Employer's Net Pension Liability* show the liability of employer and non-employer contributing entities to plan members for benefits provided through the pension plan and the changes thereof during the year. The *Schedule of Money-Weighted Rate of Return* shows the period-by-period returns on pension plan investments that adjust for the changing amounts actually invested. It represents an internal rate of return on pension plan investments, net of pension plan investment expenses.

INVESTMENT PERFORMANCE

For fiscal year 2020, the Fund's total investment performance resulted in a 4.5% gain, based on time-weighted returns. Domestic equity, private equity, fixed income, real estate and infrastructure generated positive returns while international equity reported negative returns, but still exceeded the benchmark. The Fund's portfolio of domestic equity reported a 7.5% return, international equity reported (1.9)%, fixed income reported an 8.9% return, private equity reported a 2.9% return, real estate reported a 3.7% return and infrastructure reported a 13.0% return.

The Fund's net money-weighted rate of return for the fiscal year ended June 30, 2020, was 4.14%.

1-YEAR RETURNS (2020)

Asset Category	Fund Return	Index Name	Index Return
Total Fund	4.5 %	Fund Benchmark Index	3.5 %
Domestic Equity	7.5 %	Domestic Equity Benchmark	6.5 %
International Equity	(1.9)%	International Equity Benchmark	(4.7)%
Fixed Income	8.9 %	Bloomberg Aggregate Index	8.7 %
Private Equity	2.9 %	N/A	—
Real Estate	3.7 %	NFI-ODCE Value Weight Net Only	1.3 %
Infrastructure	13.0 %	FTSE Core Developed Infrastructure 50/50 Index*	(9.0)%

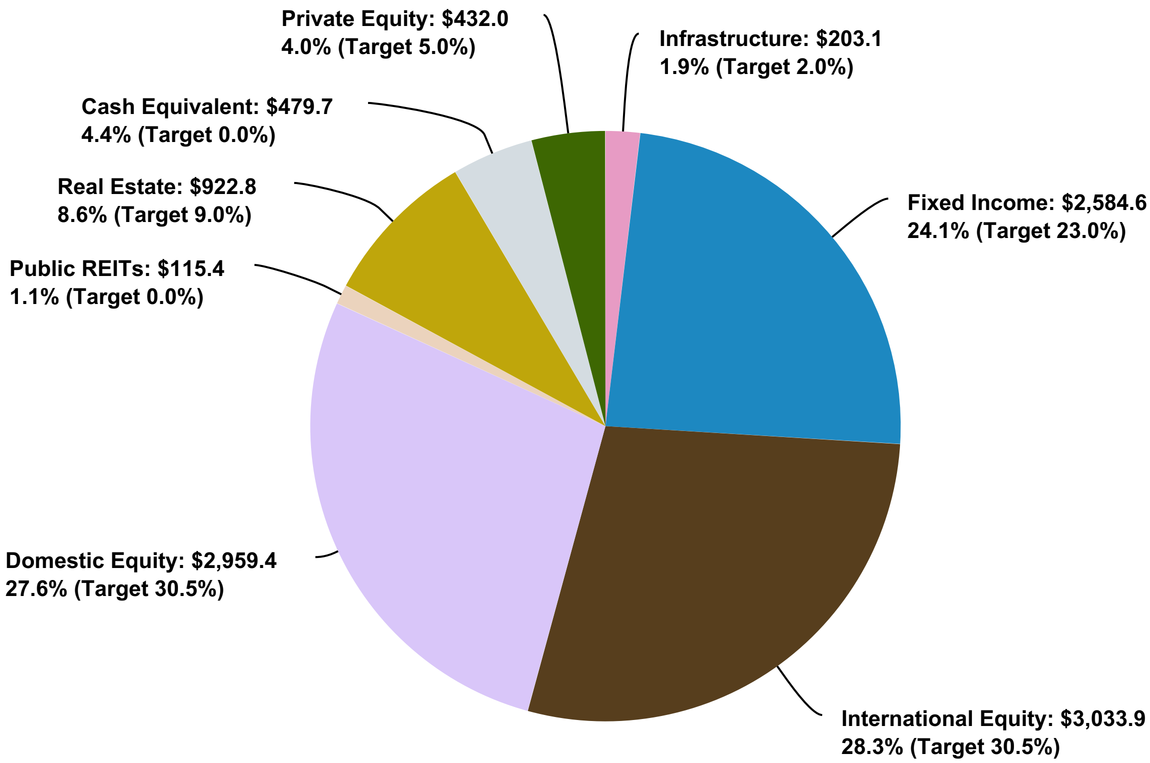
* New Infrastructure benchmark (FTSE Core Developed Infrastructure 50/50/Index) adopted September 21, 2017.

5-YEAR RETURNS (2020)

Asset Category	Fund Return	Index Name	Index Return
Total Fund	6.5%	Fund Benchmark Index	6.3%
Domestic Equity	9.8%	Domestic Equity Benchmark	10.0%
International Equity	3.3%	International Equity Benchmark	2.2%
Fixed Income	4.7%	Bloomberg Aggregate Index	4.3%
Private Equity	9.9%	N/A	—
Real Estate	7.8%	NFI-ODCE Value Weight Net Only	6.4%
Infrastructure	11.4%	Absolute Benchmark	4.6%

ASSET ALLOCATION SUMMARY AS OF JUNE 30, 2020

DOLLARS IN MILLIONS*



* Note: Percentage indicates actual category weight as a percentage of the entire portfolio.

FINANCIAL STATEMENT ANALYSIS

PLAN FIDUCIARY NET POSITION

The plan fiduciary net position decreased by $101.8 million, 0.9%, during fiscal year 2020 after decreasing by $65.9 million, 0.6%, in fiscal year 2019. The decrease reflects expenditures exceeding contributions and net investment income during fiscal year 2020.

Cash and cash equivalents decreased by $61.8 million during fiscal year 2020 and decreased by $11.5 million in fiscal year 2019. The large fluctuation in cash and cash equivalents as of June 30 fiscal year-over-year is largely due to timing of the statutorily required contribution from the Board of Education (the Employer). Prior to fiscal year 2018, the statutorily required contribution from the Board of Education was received on the last day of the fiscal year and subsequently allocated across asset classes in the investment portfolio.

Total receivables, excluding amounts due from brokers, increased by $10.4 million in 2020 after decreasing by $88.2 million in 2019. This is primarily due to a change in the composition of the revenue sources that reduces the delay in the realization of cash contributions. As of June 30, 2020 and 2019, approximately $232.4 million and $186.6 million, respectively, was expected to be received from the property tax levy and applied toward the Employer's required contribution amount. Additionally, beginning with fiscal year 2018, pursuant to Public Act (P.A.) 100-0465, the State shall contribute for each fiscal year an amount to be determined by the Fund, equal to the Employer's normal cost for that fiscal year, plus the retiree health insurance subsidy, which totaled $245.5 million for fiscal year 2020. As of June 30, 2020, there was no outstanding receivable for normal cost contributions.

Receivables due from brokers (proceeds from investment sales) decreased by $81.2 million in fiscal year 2020, and increased by $75.7 million in fiscal year 2019, due to the timing of investment sales at fiscal year-end.

The Fund continued its Security Lending Fund Advance Agreement with Deutsche Bank during fiscal years 2020 and 2019. Within the securities lending program, collateral and collateral payable increased by $126.2 million and $127.1 million, respectively, during fiscal year 2020 and both decreased by $386.8 million during fiscal year 2019. The Fund continues to pay the collateral deficiency owed to Deutsche Bank by applying realized monthly income against the outstanding liability for the security lending program until such collateral deficiency is paid in full.

Accounts and administrative expenses payable decreased by $5.7 million during fiscal year 2020 after increasing by $3.2 million during fiscal year 2019. The decrease in fiscal year 2020 was primarily the result of a decrease of investment payables at year-end.

Liabilities due to brokers (the cash due for investment purchases) decreased by $16.2 million in fiscal year 2020 and increased by $34.5 million in fiscal year 2019 due to the timing of investment purchases at year-end.

The following is a summary of the fiduciary net position at June 30, 2020, 2019, and 2018:

	Fiscal Year (*In Millions*)		
	2020	**2019**	**2018**
Cash and cash equivalents	$ 60.2	$ 122.0	$ 133.5
Prepaid expenses	0.6	0.3	0.1
Receivables	303.3	292.9	381.1
Due from brokers	81.2	162.4	86.6
Investments, at fair value	10,730.9	10,715.9	10,729.7
Securities lending collateral	686.9	560.6	947.4
Capital assets, net	1.9	0.7	1.2
Total assets	**11,865.0**	**11,854.8**	**12,279.6**
Benefits and refunds payable	27.5	20.9	20.2
Accounts and administrative expenses payable	9.3	15.0	11.7
Employer required contribution payable	—	—	10.4
Securities lending collateral payable	686.7	559.6	946.4
Due to brokers	204.4	220.5	186.1
Total liabilities	**927.9**	**816.0**	**1,174.8**
Fiduciary net position restricted for pensions	$ 10,937.1	$ 11,038.8	$ 11,104.8

ADDITIONS TO PLAN FIDUCIARY NET POSITION

Additions to plan fiduciary net position, which are needed to finance statutory benefit obligations, come from public sources such as state appropriations, employer and employee contributions, net earnings on investments, and miscellaneous sources.

For the year ended June 30, 2020, additions totaled $1.5 billion compared to $1.5 billion for the year ended June 30, 2019.

The minimum funding requirement represents employer contributions required by state law when the funding level drops below 90%, as well as any contribution by the State to the Fund, as those represent credits against the contribution from the Employer. In fiscal years 2020 and 2019, the Employer and State were required to pay $854.5 million and $808.6 million, respectively. In fiscal year 2018, P.A. 100-0465 changed the contribution requirements outlined in state law to include a required contribution from the State to cover the Employer's normal cost, plus health insurance costs. This resulted in a normal cost contribution in the amount of $245.5 million for fiscal year 2020, which reduced the required contribution from the Employer by the same amount. As of June 30, 2020 and 2019, the Employer and State paid $622.1 million and $584.2 million of the respective year's required minimum contribution.

Investment returns in fiscal year 2020 were comparable to fiscal year 2019 and exceeded the benchmarks. Net investment income decreased minimally by 0.46% due to volatile market fluctuations driven by the unprecedented Covid-19 pandemic in fiscal year 2020. The money-weighted rates of return, net of investment expenses, were 4.14% and 5.04% for fiscal years 2020 and 2019, respectively.

The Fund received interest totaling $1.2 million in fiscal year 2020 as the result of an intergovernmental agreement with the Board of Education. The agreement stipulates that the Board of Education agrees to pay interest, at the then current actuarial rate of return, on required contribution payments that are received after June 30 of each fiscal year, beginning 2018.

The following is a summary of additions to plan fiduciary net position for the years ended June 30, 2020, 2019, and 2018:

	Fiscal Year *(In Millions)*		
	2020	**2019**	**2018**
Employee contributions	$ 196.1	$ 190.6	$ 183.7
Minimum funding requirement (Employer)	597.2	569.7	551.4
Minimum funding requirement (State)	257.3	238.9	233.0
Net investment income (loss)	438.8	513.6	896.7
Interest on late required contribution payments	1.2	1.4	1.1
Miscellaneous	0.3	0.2	0.4
Total additions	**$ 1,490.9**	**$ 1,514.4**	**$ 1,866.3**

DEDUCTIONS FROM PLAN ASSETS

Pension benefits increased during fiscal years 2020 and 2019, as the number of participants receiving benefits decreased but the average benefit paid per retiree increased. Additionally, the automatic annual increase (AAI) of 3% was granted to existing retirees during these fiscal years.

Health insurance premium subsidies decreased by $7.2 million during fiscal year 2020 after decreasing by $7.7 million in fiscal year 2019. This decrease in fiscal year 2020 was largely due to health insurance reimbursements from vendors exceeding expected amounts, while the decrease in 2019 reflected a return to expected health insurance premium subsidy expenses after reimbursements from health insurance vendors increased greatly during fiscal year 2018, largely due to the implementation of a new health insurance plan.

Administrative expenses decreased by $7.7 million during fiscal year 2020, largely due to a non-recurring write-off of uncollectible accounts in fiscal year 2019, combined with reduced personnel expenses due to unfilled positions at year-end. Administrative expenses increased by $4.0 million during fiscal year 2019 as member overpayment receivables were deemed uncollectible.

The following is a summary of deductions from plan fiduciary net position for the years ended June 30, 2020, 2019, and 2018:

	Fiscal Year *(In Millions)*		
	2020	**2019**	**2018**
Pension benefits	$ 1,499.9	$ 1,467.5	$ 1,437.3
Refunds	20.2	24.7	25.1
Death benefits	2.8	3.4	3.9
Health insurance premium subsidies	51.4	58.6	66.3
Administrative and miscellaneous expenses	18.4	26.1	22.1
Total deductions	**$ 1,592.7**	**$ 1,580.3**	**$ 1,554.7**

FUNDING ANALYSIS

Under the funding plan established by the State of Illinois, the Employer is not required to make a minimum contribution to the Fund unless the Fund's funding level falls below 90% for a fiscal year. The Employer is then required to make a minimum contribution to the Fund in order to bring the total assets of the Fund up to 90% of the total actuarial liabilities of the Fund, by the end of a predetermined funding period.

Amendments to the statute during fiscal year 2010 changed the funding requirements for future years. Minimum contributions for fiscal years 2011, 2012, and 2013 were limited to $187 million, $192 million, and $196 million, respectively. These amounts were substantially lower than the $600 million contribution in each fiscal year prior to the amendment. Additionally, under the amended statute, the funding period was extended from 2045 to 2059. The primary employer of the Fund, the Chicago Board of Education, was required to remit minimum required contributions of $612 million in fiscal year 2014, $696 million in fiscal year 2015, $688 million in fiscal year 2016, and $733 million in fiscal year 2017. The minimum required contribution amounts include the Board of Education's additional required contribution to offset a portion of the cost of benefit increases resulting from Public Act (P.A.) 90-0582.

Beginning in fiscal year 2018, P.A. 100-0465 amended state law, requiring the State of Illinois to contribute the employer normal cost and health insurance portions of the required contribution, and established a special pension property tax levy to be applied toward the Employer's required contribution. State law also requires state contributions and other employer contributions to provide for benefit increases when the funding level drops below 90%. Accordingly, the Fund has received required contributions from the Employer, State of Illinois, and the special pension property tax levy totaling $784 million, $809 million, and $855 million for fiscal years 2018, 2019, and 2020, respectively.

Additionally, beginning in fiscal year 2018, the Fund and Board of Education reached an agreement which stipulates that the Board of Education agrees to pay interest, at the then current actuarial rate of return, on required contribution payments for a fiscal year that are received after June 30th. The Fund received $1.4 million and $1.2 million in fiscal years 2019 and 2020, respectively, for fiscal year 2018 and 2019 contributions received after June 30th.

The fiscal year 2021 Board of Education and State of Illinois required contributions are $619.0 million and $266.9 million, respectively, for a total of $885.9 million. In accordance with Public Acts 099-0521 and 100-0465, portions of the Board of Education's required contribution are expected to be paid from the property tax levy, other Board of Education revenues, and the State of Illinois.

Based upon an actuarial valuation, the total pension liability and plan fiduciary net position are $26.4 billion and $10.9 billion, respectively. This resulted in net pension liability of $15.4 billion as of June 30, 2020.

Amendments to the statute which were effective during fiscal year 2011 will have a longer-term impact on funding. Public Act 96-0889, effective January 1, 2011, created a second tier of benefits for those who first participate in the system after that date. The amendment caps the salary amount that can be used in the calculation of pensions in the future, increases the minimum retirement age, and limits post-retirement increases to pensions.

The funded ratio based on actuarial value of assets decreased to 46.7% in fiscal year 2020 from 47.4% in fiscal year 2019, for funding purposes. The decrease is primarily due to the results of a recent experience study which resulted in updated actuarial assumptions used in calculating the actuarial accrued liability as of June 30, 2020.

As previously mentioned, the *Schedule of the Employer's Contribution* shows the amount of required contributions in accordance with Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans.* To partially overcome funding shortfalls, Public Act 99-0521 provides that a separate tax be levied by the Chicago Board of Education for making Employer contributions to the Fund at a rate not to exceed 0.383% beginning in fiscal year 2017. These proceeds are to be paid directly to the Fund. In addition, Public Act 100-0465 provides that the State shall contribute directly to the Fund the employer normal cost portion of the Board of Education's required contribution and health insurance subsidy, and increases the tax levy amount to 0.567% beginning fiscal year 2018.

REQUESTS FOR INFORMATION:

Questions about any information provided in this report should be addressed to:

Public School Teachers' Pension and Retirement Fund of Chicago
ATTN: Executive Director
425 South Financial Place, Suite 1400
Chicago, IL 60605-1000

STATEMENT OF FIDUCIARY NET POSITION

AS OF JUNE 30, 2020 AND 2019

	June 30, 2020			JUNE 30, 2019		
	PENSION FUND	HEALTH INSURANCE FUND	TOTAL FUND - PENSION AND HEALTH INSURANCE	PENSION FUND	HEALTH INSURANCE FUND	TOTAL FUND - PENSION AND HEALTH INSURANCE
Assets:						
Cash and cash equivalents	$ 60,193,099	$ —	$ 60,193,099	$ 121,996,481	$ —	$ 121,996,481
Prepaid expense	612,250	—	612,250	324,753	—	324,753
Receivables:						
Minimum funding requirement (Employer)	232,392,721	—	232,392,721	186,608,225	—	186,608,225
Minimum funding requirement (State)	—	—	—	37,797,000	—	37,797,000
Employee	10,783,758	—	10,783,758	11,247,826	—	11,247,826
Accrued investment income	36,255,805	—	36,255,805	39,268,564	—	39,268,564
Due from brokers	81,201,107	—	81,201,107	162,389,723	—	162,389,723
Participating teachers' accounts for contributions	4,535,674	—	4,535,674	4,681,191	—	4,681,191
Other receivables	10,590,492	8,720,656	19,311,148	8,364,555	4,915,284	13,279,839
Total receivables	**$ 375,759,557**	**$ 8,720,656**	**$ 384,480,213**	**$ 450,357,084**	**$ 4,915,284**	**$ 455,272,368**
Investments, at fair value:						
U.S. government and agency fixed income	1,307,282,631	—	1,307,282,631	1,381,549,632	—	1,381,549,632
U.S. corporate fixed income	1,227,940,708	—	1,227,940,708	1,080,629,549	—	1,080,629,549
Foreign fixed income securities	49,326,494	—	49,326,494	60,378,150	—	60,378,150
U.S. equities	2,959,380,844	—	2,959,380,844	3,115,916,532	—	3,115,916,532
Foreign equities	3,033,910,935	—	3,033,910,935	3,249,511,598	—	3,249,511,598
Public REITs	115,436,398	—	115,436,398	157,753,245	—	157,753,245
Pooled short-term investment funds	479,732,946	—	479,732,946	359,473,153	—	359,473,153
Real estate	922,797,885	—	922,797,885	719,817,831	—	719,817,831
Infrastructure	203,049,254	—	203,049,254	210,950,505	—	210,950,505
Private equity	432,031,348	—	432,031,348	379,931,583	—	379,931,583
Total investments	**$10,730,889,443**	**$ —**	**$ 10,730,889,443**	**$10,715,911,778**	**$ —**	**$ 10,715,911,778**
Securities lending collateral	686,855,566	—	686,855,566	560,663,605	—	560,663,605
Capital assets, net of accumulated depreciation	1,922,247	—	1,922,247	705,360	—	705,360
Total assets	**$11,856,232,162**	**$ 8,720,656**	**$ 11,864,952,818**	**$11,849,959,061**	**$ 4,915,284**	**$ 11,854,874,345**
Liabilities:						
Benefits payable	5,164,409	8,696,400	13,860,809	4,510,886	4,902,177	9,413,063
Refunds payable	13,681,903	—	13,681,903	11,502,175	—	11,502,175
Accounts and administrative expenses payable	9,287,445	24,256	9,311,701	14,953,962	13,107	14,967,069
Employer required contribution payable	—	—	—	—	—	—
Securities lending collateral payable	686,655,357	—	686,655,357	559,602,193	—	559,602,193
Due to brokers	204,381,027	—	204,381,027	220,552,386	—	220,552,386
Total liabilities	**$ 919,170,141**	**$ 8,720,656**	**$ 927,890,797**	**$ 811,121,602**	**$ 4,915,284**	**$ 816,036,886**
Net position restricted for pension benefits	$10,937,062,021	$ —	$ 10,937,062,021	$11,038,837,459	$ —	$ 11,038,837,459

The accompanying notes are an integral part of these financial statements.

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

FOR FISCAL YEAR ENDED JUNE 30, 2020 AND 2019

	JUNE 30, 2020			JUNE 30, 2019		
	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	$ 196,097,115	$ —	$ 196,097,115	$ 190,565,220	$ —	$ 190,565,220
Minimum funding requirement (Employer)	597,151,000	—	597,151,000	569,701,000	—	569,701,000
Minimum funding requirement (State)	257,349,000	—	257,349,000	238,869,000	—	238,869,000
Allocation to health insurance fund	(51,962,540)	51,962,540	—	(59,089,369)	59,089,369	—
Total contributions	**$ 998,634,575**	**$ 51,962,540**	**$ 1,050,597,115**	**$ 940,045,851**	**$ 59,089,369**	**$ 999,135,220**
Investment income:						
Net appreciation in fair value	98,040,345	—	98,040,345	255,501,019	—	255,501,019
Interest	160,841,176	—	160,841,176	92,918,909	—	92,918,909
Dividends	221,153,927	—	221,153,927	199,555,823	—	199,555,823
Miscellaneous	1,245,405	—	1,245,405	1,253,766	—	1,253,766
Securities lending income, net	3,675,381	—	3,675,381	4,845,062	—	4,845,062
Less investment expenses:						
Investment advisory and custodial fees	(46,143,884)	—	(46,143,884)	(40,498,179)	—	(40,498,179)
Net investment income	**$ 438,812,350**	**$ —**	**$ 438,812,350**	**$ 513,576,400**	**$ —**	**$ 513,576,400**
Interest on late required contribution payments	1,166,174	—	1,166,174	1,449,709	—	1,449,709
Miscellaneous	334,222	—	334,222	238,261	—	238,261
Total additions	**$ 1,438,947,321**	**$ 51,962,540**	**$ 1,490,909,861**	**$ 1,455,310,221**	**$ 59,089,369**	**$ 1,514,399,590**
Deductions:						
Pension benefits	1,499,920,081	—	1,499,920,081	1,467,513,811	—	1,467,513,811
Refunds	19,522,894	—	19,522,894	24,133,854	—	24,133,854
2.2 Legislative refunds	673,391	—	673,391	562,230	—	562,230
Refunds of insurance premiums	—	51,433,976	51,433,976	—	58,611,532	58,611,532
Death benefits	2,759,158	—	2,759,158	3,406,487	—	3,406,487
Total benefit payments	**$ 1,522,875,524**	**$ 51,433,976**	**$ 1,574,309,500**	**$ 1,495,616,382**	**$ 58,611,532**	**$ 1,554,227,914**
Administrative and miscellaneous expenses	17,847,235	528,564	18,375,799	25,621,894	477,837	26,099,731
Total deductions	**$ 1,540,722,759**	**$ 51,962,540**	**$ 1,592,685,299**	**$ 1,521,238,276**	**$ 59,089,369**	**$ 1,580,327,645**
Net increase (decrease)	(101,775,438)	—	(101,775,438)	(65,928,055)	—	(65,928,055)
Net position restricted for pension benefits						
Beginning of year	11,038,837,459	—	11,038,837,459	11,104,765,514	—	11,104,765,514
End of year	**$10,937,062,021**	**$ —**	**$ 10,937,062,021**	**$11,038,837,459**	**$ —**	**$ 11,038,837,459**

The accompanying notes are an integral part of these financial statements.

(1) DESCRIPTION OF PENSION AND HEALTH INSURANCE PLANS

(A) PENSION PLAN

The Public School Teachers' Pension and Retirement Fund of Chicago (the Fund) is the administrator of a multiple employer cost-sharing defined benefit public employee retirement system. The state legislature established the Fund in 1895 to provide retirement, survivor, and disability benefits for certain certified teachers and employees of the Chicago Public and Charter Schools, as well as Fund employees. The Fund is administered in accordance with Illinois Compiled Statutes (ILCS) Chapter 40, Act 5, Articles 1, 17, and 20. The Fund is governed by a twelve member Board of Trustees (six elected by the teacher contributors, three elected by the annuitants, one elected by the principal and administrator contributors, and two appointed by the primary employer, the Chicago Board of Education). The Board of Trustees is authorized by state law to make investments, pay benefits, hire staff and consultants, and carry out all necessary functions in compliance with the Illinois Pension Code. As of June 30, 2020, the Fund had 40 participating employers consisting of the primary employer, Chicago Public Schools, 36 charter employers comprising 122 campuses, the Illinois Federation of Teachers, the Chicago Teachers Union, and the Fund itself. The State of Illinois is a non-employer contributing entity.

As of June 30, 2020 and 2019, Fund membership consisted of the following:

	2020	2019
Retirees and beneficiaries currently receiving benefits	28,015	28,317
Terminated members entitled to benefits but not yet receiving them	10,024	9,926
Current members:		
Vested	16,266	16,655
Nonvested	13,825	12,640
	68,130	**67,538**

The State of Illinois Public Act (P.A.) 96-0889 created a second tier of benefits for teachers who first become participants in the Fund, or other public pension funds in the State of Illinois, after January 1, 2011. Plan provisions for the two tiers are described below:

Tier I

Eligibility

A member with at least 20 years of service and who has attained 60 years of age is entitled to an unreduced pension. A member with at least 20 years of service and who has attained 55 years of age is entitled to a reduced pension. A member with at least 5 but less than 20 years of service is entitled to a pension upon attainment of age 62. In the case of retirement prior to age 60 with less than 33.91 years of service, the retirement pension is reduced one-half of 1% for each month that the member is under age 60.

Benefit

A retirement pension is determined by either (1) applying specified percentages which vary with years of service to the average of the four highest consecutive years of salary earned and/or (2) applying a flat 2.2% to the average of the four highest consecutive years of salary earned in the 10 years preceding retirement. P.A. 90-852 increased the retirement annuity formula to 2.2% of final average salary for each year of service earned after June 30, 1998. Employees who retired with CTPF as their final retirement system and have 30 years of cumulative service credit will be upgraded to the 2.2% formula without any additional cost. Employees who retired with less than 30 years of cumulative service credit may upgrade to the 2.2% formula for years prior to July 1, 1998, by making certain additional contributions to the Fund. To qualify for the 2.2% upgrade, employees must have been employed at the time the law became effective or earned at least one year of service after the effective date. Beginning July 1, 1998, employee contributions increase from 8% to 9% of salary to account for the increased benefit.

Survivor & Death Benefits

A survivor pension may be payable upon the death of a contributor or retired member of the Fund. The survivor's pension is the greater of 50% of earned pension or an amount based on a percentage of the average of the four highest years of salary in the last 10 years of service. A single-sum death benefit and, in certain cases, a refund of contributions, is also payable upon the death of a contributor or retired member of the Fund, if certain qualifications are met.

Disability Pension

A disability pension is payable in the event of a wholly and presumably permanent disability with certain qualifications and service requirements. A disability pension (non-duty related) is payable to a member with 10 or more years of service. A non-duty disability benefit is determined by either (1) applying specified percentages which vary with age and years of service to the final average salary earned (4 highest consecutive years) and/or (2) applying a flat 2.2% to the average salary earned for each year of service. A duty disability benefit is provided as a result of an injury sustained while in teaching service. The duty disability benefit is equal to 75% of final salary or the salary at time of injury/accident, and is payable until the attainment of age 65.

Annual Increase

- Annuitants who retired after 1959 receive an annual 3% increase in the retirement pension beginning January 1 following the member's 61st birthday or the first anniversary of retirement, whichever is later.
- Survivor annuitants receive an annual 3% increase to the survivor pension beginning January 1 immediately following the effective date of the benefit. If the member was not retired upon death, the increase is granted on January 1 following the first anniversary of the member's death.
- A 3% increase is paid on non-duty disability pensions only after the first anniversary of the pension or the pensioner's 61st birthday, whichever is later. A member receiving duty disability benefits is not eligible for an automatic annual increase.

TIER II

Eligibility

The Tier II benefit is applicable to persons who first became a member or a participant under any reciprocal retirement system or pension fund established under the Illinois Pension Code on or after January 1, 2011.
A member with at least 10 years of service and who has attained 67 years of age is entitled to an unreduced pension. A member with at least 10 years of service and who has attained 62 years of age is entitled to a reduced pension. In the case of retirement prior to age 67, the retirement pension is reduced one-half of 1% for each month that the member is under age 67, regardless of service earned.

Benefit

A retirement pension is determined by applying a flat 2.2% to the average of the eight highest consecutive years of salary earned in the 10 years preceding retirement. In accordance with Public Acts 96-0889, 96-1490, 96-1495, 98-0622, and 98-641, the Department of Insurance (Department) is to annually determine certain annuity limitations for use in benefit determination by pension funds operating under the Illinois Pension Code. For calendar year 2020, the Department determined that the maximum earnings, salary, or wages that can be used in calculating pension is approximately $115,929.

Survivor & Death Benefits

A survivor pension is payable upon the death of a contributor or retired member of the Fund. The survivor's pension for an eligible survivor of a retired Tier II member is 66 $^{2}/_{3}$% of the retirement annuity at the date of death. In the case of a Tier II member who was not retired at the time of death, the survivor's pension is 66 $^{2}/_{3}$% of the earned annuity without a reduction for age. A single-sum death benefit and, in certain cases, a refund of contributions, is also payable upon the death of a contributor or retired member of the Fund, with certain qualifications.

Disability Pension

A disability pension is payable in the event of a wholly and presumably permanent disability with certain qualifications and service requirements. A non-duty disability pension is payable after 10 or more years of service, and is determined by applying a flat 2.2% to the average of the eight highest consecutive years of salary earned within the last ten years. A duty disability benefit, equal to 75% of final salary or the salary at time of injury/accident, may be payable when the teacher becomes wholly and presumably permanently incapacitated for duty as a result of an injury sustained while on duty.

Annual Increase

- Members who retire receive an automatic annual increase, equal to the lesser of 3% of the annual pension or $^1/_2$ the increase in the Consumer Price Index for all Urban Consumers (CPI-U), for the preceding year. The automatic annual increase is paid beginning January 1 following the member's 67th birthday or the first anniversary of retirement, whichever occurs later.
- An automatic annual increase, equal to the lesser of 3% of the annual pension or $^1/_2$ the annual increase in the Consumer Price Index for all Urban Consumers of the original survivor's pension amount is paid: 1) on each January 1 occurring on or after the commencement of the survivor's pension, if the deceased member died while receiving a retirement pension, or 2) on each January 1 after the first anniversary of the commencement of the survivor's pension, if the deceased member dies before retirement.
- An automatic annual increase, equal to the lesser of 3% of the annual pension or $^1/_2$ the increase in the Consumer Price Index for all Urban Consumers of the original pension amount, is paid on disability pensions after the first anniversary of the pension or the pensioner's 67th birthday, whichever is later. A member receiving duty disability benefits is not eligible for an automatic annual increase.

(B) HEALTH INSURANCE PLAN

The Fund administers a health insurance program that includes three external health insurance providers. A recipient of a retirement pension, survivor pension, or disability pension may be eligible to participate in a health insurance program and premium rebate sponsored by the Fund, provided the Fund is the member's final pension system prior to retirement. The purpose of the program is to help defray the retired member's premium cost for health insurance. The member is responsible for paying the cost of the insurance and may purchase insurance from the Fund's providers or other outside providers.

Each year, the Board of Trustees establishes a rebate percentage that is used to defray a portion of the cost of the insurance. The rebate percentage for fiscal years 2020 and 2019 was 50%. In accordance with Chapter 40, Act 5, Article 17, Section 17-142.1 of the ILCS, the total health insurance benefits provided in any one year may not exceed $65,000,000 plus any previous years' amounts authorized but not expended. Previous years' amounts authorized but not expended at June 30, 2020 and 2019 are $53,309,416 and $40,271,956, respectively. The Fund has total discretion over the program.

In fiscal year 2018, Public Act 100-0465 amends state law and requires the State of Illinois to contribute the normal cost and health insurance subsidy portions of the required contribution for each fiscal year.

(2) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(A) REPORTING ENTITY

As defined by generally accepted accounting principles established by the Governmental Accounting Standards Board (GASB), a financial reporting entity consists of a primary government, as well as its component units, which are legally separate organizations for which the elected officials of the primary government are financially accountable. Financial accountability is defined as:

1. Appointment of a voting majority of the component unit's board and either (a) the ability to impose will by the primary government, or (b) the possibility that the component unit will provide a financial benefit to or impose a financial burden on the primary government; or
2. Fiscal dependency on the primary government and financial benefit/burden relationship.

Based upon the required criteria, the Fund has no component units and is not a component unit of any other entity.

(B) BASIS OF ACCOUNTING

The Fund's financial statements are prepared using the accrual basis of accounting and the economic resources measurement focus, following standards promulgated by the GASB. Revenues are recognized in the accounting period in which they are earned and expenses are recognized in the period incurred. Employer contributions are recognized when due and the employer has a formal legal obligation to provide the contribution. Employee contributions are recognized upon receipt of contribution data for the Plan members. Benefits and refunds are recognized as deductions when due and payable, in accordance with the terms of the plan.

(C) CASH AND CASH EQUIVALENTS AND INVESTMENTS

Cash and cash equivalents include amounts in demand deposits and uninvested funds held by the Fund's investment managers.

Investments are governed by Chapter 40, Act 5, Article 17 of the ILCS. These statutes authorize the Fund to invest in accordance with the prudent person rule, which states that fiduciaries will exercise the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent man acting in a like capacity with such matters would use in the conduct of an enterprise of a like character with like aims.

Investments are reported at fair value. Where appropriate, the fair value includes estimated disposition costs. Fair value for equity securities is determined by using the closing price listed on the national securities exchanges as of June 30. Fair value for fixed income securities are determined principally by using quoted market prices provided by independent pricing services. The financial statements include investments valued at $1,700,681,498 (15.5% of fund net position) at June 30, 2020 and at $1,417,894,785 (12.8% of fund net position) at June 30, 2019, whose fair values have been estimated by management in the absence of readily determinable market values. For commingled funds, the net asset value is determined and certified by the commingled fund manager as of June 30. Alternative investments, which include private equity, real estate and infrastructure are valued based on amounts established by the fund managers or general partners which are subject to annual audit. The fair value of the derivative instruments that are not exchange traded is determined by external pricing services using various pricing methods which are based upon the type of the derivative instrument. Purchases and sales of securities are reflected on the trade date. Dividend income is recorded on the ex-dividend rate. Interest income is recorded as earned on an accrual basis.

(D) CAPITAL ASSETS

Capital assets are reported at cost. Depreciation is computed using the straight-line method based upon estimated useful lives of 50 years for building and improvements, 10 years for the benefit payment system, and 3 to 5 years for furniture and equipment.

(E) ADMINISTRATIVE EXPENSES

Administrative expenses are budgeted and approved by the Fund's Board of Trustees. Funding for these expenses is included in the employer contributions as determined by the annual actuarial valuation.

(F) RISKS AND UNCERTAINTIES

The Fund invests in various investment securities. Investment securities are exposed to various risks including interest rate, market, and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect the amounts reported in the statement of fiduciary net position.

(G) USE OF ESTIMATES

In preparing financial statements in conformity with U.S. generally accepted accounting principles, the Fund makes estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of additions and deductions during the reporting period. Actual results could differ from those estimates and assumptions.

(H) NEW ACCOUNTING PRONOUNCEMENTS ADOPTED

The Fund's management has evaluated the new accounting pronouncements first effective for the years ended June 30, 2020 and 2019 and determined there was no impact to the Fund.

(I) CPS FINANCIAL STATUS

The Chicago Public School District (CPS) has had a structurally balanced budget for the previous four fiscal years due, in part, to more equitable state funding and the State of Illinois passing its budget.

Public Act (P.A.) 100-0465, which was passed in August, 2017, allows for a rate increase in the Special Pension Property Tax Levy, which was established under P.A. 99-0521, from 0.383% to 0.567%. Beginning with fiscal year 2018, P.A. 100-0465 also requires the State of Illinois to pay the normal cost and health insurance portions of CPS' required contribution.

These are positive factors which alleviate some of the uncertainty regarding CPS' ability to meet future obligations, including pension contributions to the Fund, which remains heavily dependent on these contributions each year in order to reach 90% funding by 2059.

(J) HEALTH INSURANCE FUND

Beginning with fiscal year 2018, P.A. 100-0465 required the State of Illinois to contribute the pension normal cost portion of the annual required contribution, plus the health insurance subsidy. Each year, in accordance with Illinois State law, the Fund makes transfers from the pension fund into the health insurance fund equal to the amount of OPEB expenses for that year. Per Section 17-147.1, the OPEB payments in any year may not exceed $65 million plus any amount that was authorized to be paid in the preceding year but was not spent (carryover).

A review of the substance of the underlying transactions of the Fund and related Pension Code resulted in a conclusion by the Fund that the assets in the health insurance fund are neither in an OPEB qualifying trust as defined by GASB 74, nor are those amounts restricted legally or otherwise required to be used solely to pay OPEB benefits. While the health insurance fund assets could be used to pay OPEB, there is no limitation on their use solely for OPEB purposes. Therefore, since the health insurance fund assets are not restricted for OPEB, they are not considered assets available to offset the OPEB liability. However, because those amounts do result from restricted contributions to the Fund for pension, those residual assets are restricted for pension benefits. See Note 1B on page 34 for health insurance amounts authorized but not expended as of June 30, 2020 and 2019.

(3) RECEIVABLES AND PAYABLES

Required contributions from the Board of Education and State of Illinois are included in the receivables as of June 30, 2020 and 2019.

As of June 30, 2020, the outstanding Employer receivable included $232.4 million of the Board of Education's required contribution for fiscal year 2020. All receivables outstanding as of June 30, 2020, related to the fiscal year 2020 Employer required contributions were received prior to August 30, 2020.

As of June 30, 2019, the outstanding Employer receivable included $186.6 million of the Board of Education's required contribution for fiscal year 2019, which was received by the end of August, 2019. The State of Illinois owed the Fund $37.8 million as of June 30, 2019, which was received in September 2019, prior to the end of the lapse period. All receivables outstanding as of June 30, 2019, related to the fiscal year 2019 Employer and State of Illinois required contributions, were received by early September 2019.

Employee receivables included retirement contributions deducted from employees' compensation by the Employer during the year to be remitted to the Fund and contributions to be made by employees to upgrade to the 2.2 pension formula. The Employer owed $8,395,827 and $9,134,946 on behalf of the employees at June 30, 2020 and 2019, respectively. Employees owed the Fund $2,341,366 and $2,097,460 for the 2.2 pension formula upgrade at June 30, 2020 and 2019, respectively. As of June 30, 2020 and 2019, there were other miscellaneous contributions of $46,565 and $15,420, respectively.

(4) INVESTMENT POLICIES, ASSET ALLOCATION, AND MONEY-WEIGHTED RATE OF RETURN

INVESTMENT POLICY

The Board is responsible for prudent investment and expenditure of the Fund's assets. The Board of Trustees has the authority to establish and amend investment policy decisions.

ASSET ALLOCATION

The pension plan's policy with respect to the allocation of invested assets is established and may be amended by the Fund's Board of Trustees. The following table represents the Board's adopted asset allocation policy as of June 30, 2020 and 2019:

Asset Class	Target Allocation	
	2020	2019
Equity	61.0%	61.0%
Fixed Income	23.0%	23.0%
Infrastructure	2.0%	2.0%
Private Equity	5.0%	5.0%
Real Estate	9.0%	9.0%
Grand Total	**100.0%**	**100.0%**

MONEY-WEIGHTED RATE OF RETURN

For the years ended June 30, 2020 and 2019, the annual money-weighted rate of return on plan investments, net of investment expenses, were 4.14% and 5.04%, respectively. The money-weighted rate of return expresses investment performance, net of investment expenses, adjusted for the changing amounts actually invested.

(5) DEPOSITS AND INVESTMENTS

CUSTODIAL CREDIT RISK - DEPOSITS

Custodial credit risk for deposits is the risk that, in the event of a financial institution failure, the Fund's deposits may not be returned. All noninvestment-related bank balances at year-end are insured or collateralized by securities recorded in the Fund's name and held by the Fund's agent, its master custodian (BNY Mellon). Cash held in the investment-related bank account is neither insured nor collateralized for amounts in excess of $250,000. There is no deposit policy for custodial credit risk.

Deposit balances at June 30	2020	2019
Bank balance	$ 550,041	$ 110,844,258
Amount exposed to custodial credit risk	252,064	110,344,258

INVESTMENTS

The following table presents a summary of the Fund's investments at fair values at June 30, 2020 and 2019:

Category	Fair Value	
	2020	2019
U.S. Government and Agency Fixed Income	$ 1,307,282,631	$ 1,381,549,632
U.S. Corporate Fixed Income	1,175,584,060	1,043,456,226
Foreign Fixed Income	49,326,494	60,378,150
Commingled Common Stock	194,019,911	194,421,572
Commingled Emerging Markets	131,313,219	160,327,597
Commingled Corporate Bonds	52,356,648	37,173,323
Commingled Infrastructure	86,765,212	92,237,539
Commingled Real Estate	616,295,580	527,703,726
U.S. Equities	2,959,380,844	3,115,916,532
Foreign Equities	2,708,577,805	2,894,762,428
Public REITs	99,480,338	144,326,400
Foreign Public REITs	15,956,060	13,426,845
Pooled Short-Term Investment Funds	479,732,946	359,473,153
U.S. Real Estate	302,184,452	192,114,105
Foreign Real Estate	4,317,853	—
U.S. Infrastructure	114,957,673	80,301,189
Foreign Infrastructure	1,326,369	38,411,777
Private Equity	432,031,348	379,931,584
Total Investments	**$ 10,730,889,443**	**$ 10,715,911,778**

(A) CUSTODIAL CREDIT RISK - INVESTMENTS

The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, the Fund will not be able to recover the value of investments or collateral securities that are in the possession of an outside party. The Fund does not have a formal investment policy which limits its exposure to custodial credit risk. As of June 30, 2020 and 2019, the following investments were uninsured and unregistered, with securities held by the counterparty or by its trust department or agent but not in the Fund's name.

Balance at June 30	2020	2019
Margin Cash	$ 15,887,632	$ 7,938,591

(B) CREDIT RISK

Credit risk is the risk that the Fund will not recover its investments due to the inability of the counterparty to fulfill its obligation. The Fund does not have a formal investment policy which limits its exposure to credit risk. The following table presents the quality ratings of debt securities held by the Fund as of June 30, 2020:

S&P Credit Rating	Commercial Mortgage Backed	Commingled Fixed Income	Corporate Bonds	Government Agencies	Government Bonds	Government Mortgage Backed	Municipal Bonds
AAA	$ 42,346,290	$ —	$ 15,724,628	$ 2,580,880	$ 427,134	$ 437,640	$ 1,862,277
AA	11,974,610	—	54,386,861	12,516,739	153,202,875	466,891,484	9,024,911
A	2,224,013	—	380,611,432	5,550,250	—	—	4,278,572
BBB	3,740,752	—	504,495,446	19,662,769	—	—	905,068
BB	547,629	—	45,540,575	9,728,237	—	—	—
B	130,844	—	2,795,791	425,540	—	—	—
CCC	130,016	—	2,063,425	—	—	—	—
CC	5,319	—	—	1,867,221	—	—	—
C	—	—	—	—	—	—	—
D	1,160	—	—	171,704	—	—	—
Not Rated	102,977,647	52,626,189	16,103,905	18,748,563	489,976,341	147,430,048	435,048
Total	**$ 164,078,280**	**$ 52,626,189**	**$ 1,021,722,063**	**$ 71,251,903**	**$ 643,606,350**	**$ 614,759,172**	**$ 16,505,876**

As of June 30, 2020, there are no investments in U.S. government agencies that are only implicitly guaranteed by the U.S. government.

For comparative purposes, the following table presents the quality ratings of debt securities held by the Fund as of June 30, 2019:

S&P Credit Rating	Commercial Mortgage Backed	Commingled Fixed Income	Corporate Bonds	Government Agencies	Government Bonds	Government Mortgage Backed	Municipal Bonds
AAA	$ 7,523,807	$ —	$ 22,996,770	$ 1,170,985	$ 247,087	$ 737,140	$ 2,064,718
AA	12,312,557	—	67,112,696	8,809,040	778,856,916	344,257,029	9,392,459
A	784,151	—	348,731,281	21,194,913	—	—	3,056,204
BBB	2,001,162	—	460,688,795	16,126,842	—	—	1,996,863
BB	—	—	28,162,006	13,382,284	—	—	—
B	—	—	3,657,437	4,204,619	—	—	—
CCC	213,953	—	—	—	—	—	—
CC	827	—	—	—	—	—	—
C	—	—	—	—	—	—	—
D	—	—	—	—	—	—	—
Not Rated	49,732,850	37,173,323	57,345,055	8,863,250	126,898,131	82,172,481	689,700
Total	**$ 72,569,307**	**$ 37,173,323**	**$ 988,694,040**	**$ 73,751,933**	**$ 906,002,134**	**$ 427,166,650**	**$ 17,199,944**

As of June 30, 2019, there were no investments in U.S. government agencies that are only implicitly guaranteed by the U.S. government.

(C) CONCENTRATION OF CREDIT RISK

There are no investments in any issuer that represent 5% or more of fiduciary net position as of June 30, 2020 or 2019.

(D) INTEREST RATE RISK

Interest rate risk is the risk that the fair value of the Fund's investments will decrease as a result of an increase in interest rates. The following table presents the weighted average maturity of debt securities held by the Fund as of June 30, 2020 and 2019

Investment Type	Fair Value	Effective Duration (Years)	Fair Value	Effective Duration (Years)
	June 30, 2020		June 30, 2019	
Commercial Mortgage Backed	$ 164,078,280	0.23	$ 72,569,307	0.11
Commingled Fixed Income Funds	52,626,189	0.04	37,173,323	0.01
Corporate Bonds	1,021,722,063	2.93	988,694,040	3.05
Government Agencies	71,251,903	0.19	73,751,933	0.17
Government Bonds	643,606,350	2.06	906,002,134	2.46
Government Mortgage Backed	614,759,172	0.95	427,166,650	0.75
Municipal Bonds	16,505,876	0.05	17,199,944	0.05
Total	**$ 2,584,549,833**		**$ 2,522,557,331**	

The Fund does not have a formal investment policy that limits investment maturities as a means of managing its exposure to potential fair value losses arising from future changes in interest rates.

(E) FOREIGN CURRENCY RISK

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. The Fund does not have a formal investment policy which limits its exposure to foreign currency risk. The following table presents the foreign currency risk by type of investment as of June 30, 2020 and 2019:

Currency	Base Market Value	Percentage	Base Market Value	Percentage
Foreign Equities:	**June 30, 2020**		**June 30, 2019**	
Australian Dollar	$ 17,860,664	0.66 %	$ 32,238,260	1.11 %
Brazilian Real	22,550,928	0.83	31,710,545	1.10
British Pound	363,515,562	13.42	437,706,884	15.12
Canadian Dollar	96,982,463	3.58	113,713,655	3.92
Chilean Peso	659,324	0.02	334,699	0.01
Colombian Peso	2,242,088	0.08	522,957	0.02
Czech Koruna	2,514,707	0.09	8,330,784	0.29
Danish Krone	55,341,537	2.04	43,242,027	1.49
Euro	757,193,616	27.96	817,944,082	28.26
Hong Kong Dollar	190,379,958	7.03	168,536,440	5.82
Hungarian Forint	611,406	0.02	3,492,723	0.12
Indian Rupee	14,426,307	0.53	15,580,490	0.54
Indonesian Rupiah	14,149,547	0.52	15,990,812	0.55
Israeli Shekel	8,857,369	0.33	10,853,783	0.38
Japanese Yen	311,504,160	11.50	326,963,351	11.29
Malaysian Ringgit	545,944	0.02	1,716,750	0.06
Mexican Peso	13,699,833	0.51	13,739,052	0.48
New Taiwan Dollar	75,990,125	2.81	71,684,105	2.48
New Zealand Dollar	3,246,575	0.12	5,846,504	0.20
Nigerian Naira	127,844	0.01	135,663	0.01
Norwegian Krone	52,735,205	1.95	33,664,372	1.16
Pakistani Rupee	58,453	0.00	189,065	0.01
Philippine Peso	769,614	0.03	977,590	0.03

Currency	Base Market Value	Percentage	Base Market Value	Percentage
Foreign Equities (continued):	**June 30, 2020**		**June 30, 2019**	
Polish Zloty	$ 1,240,121	0.05 %	$ 704,730	0.02 %
Qatari Riyal	—	—	77,741	0.00
Russian Ruble	48,507	0.00	73,119	0.00
Singapore Dollar	24,336,478	0.90	35,904,939	1.24
South African Rand	13,071,554	0.48	20,197,567	0.70
South Korean Won	43,328,218	1.60	40,926,285	1.41
Swedish Krona	79,772,792	2.94	55,260,795	1.91
Swiss Franc	151,105,196	5.58	134,095,518	4.63
Thai Baht	9,413,154	0.35	16,694,819	0.58
Turkish Lira	1,714,777	0.06	606,418	0.02
U.S. Dollar	378,583,779	13.98	434,941,436	15.03
U.A.E. Dirham	—	—	164,468	0.01
Total	**$ 2,708,577,805**	**100.00%**	**$ 2,894,762,428**	**100.00%**
Foreign Fixed Income:	**June 30, 2020**		**June 30, 2019**	
Argentine Peso	$ 686,310	1.39 %	$ 759,549	1.26 %
Australian Dollar	145,878	0.30	348,048	0.58
Brazilian Real	7,780,239	15.77	9,617,520	15.93
British Pound	4,612,352	9.35	1,431,369	2.37
Canadian Dollar	427,134	0.86	247,087	0.41
Euro	11,738,434	23.80	3,141,530	5.20
Mexican Peso	16,655,477	33.77	18,301,734	30.31
New Zealand Dollar	39,076	0.08	436,395	0.72
Norwegian Krone	—	—	147,515	0.24
Peruvian Sol	130,572	0.26	—	—
Russian Ruble	—	—	133,436	0.22
South African Rand	—	—	144,255	0.24
U.S. Dollar	7,111,022	14.42	25,669,712	42.52
Total	**$ 49,326,494**	**100.00%**	**$ 60,378,150**	**100.00%**
Foreign Public REITs:	**June 30, 2020**		**June 30, 2019**	
Australian Dollar	$ 2,494,132	15.63 %	$ —	— %
British Pound	9,275,942	58.13	10,293,509	76.66
Canadian Dollar	277,059	1.74	—	—
Euro	3,739,538	23.44	3,133,336	23.34
New Zealand Dollar	169,389	1.06	—	—
Total	**$ 15,956,060**	**100.00%**	**$ 13,426,845**	**100.00%**
Foreign Infrastructure:	**June 30, 2020**		**June 30, 2019**	
Euro	$ 1,326,369	100.00 %	$ 38,411,777	100.00 %
Total	**$ 1,326,369**	**100.00%**	**$ 38,411,777**	**100.00%**
Foreign Real Estate:	**June 30, 2020**		**June 30, 2019**	
Euro	$ 1,300,523	30.12 %	$ —	— %
Japanese Yen	894,284	20.71	—	—
U.S. Dollar	2,123,046	49.17	—	—
Total	**$ 4,317,853**	**100.00%**	**$ —**	**—%**

(F) SECURITIES LENDING

As permitted by state statutes and under the provisions of a securities lending authorization agreement, the Fund lends securities to broker-dealers and banks for collateral that will be returned for the same securities in the future. Deutsche Bank AG manages the Fund's securities lending program and receives cash or government securities as collateral. Deutsche Bank AG does not have the ability to pledge or sell collateral securities unless the borrower defaults. Borrowers are required to deliver collateral for each loan equal to not less than 102% of the market value of the loaned securities.

As of June 30, 2020 and 2019, the collateral provided was 102.19% and 102.11% of the market value of the loaned securities, respectively.

The Fund did not impose any restrictions during the fiscal year on the amount of loans made on its behalf by Deutsche Bank AG. There were no failures by any borrowers to return loaned securities or pay distributions thereon during the fiscal year. Moreover, there were no losses during the fiscal year resulting from a default of the borrowers or Deutsche Bank AG.

The Fund and the borrowers maintain the right to terminate all securities lending transactions on demand. The cash collateral received on each loan was invested in indemnified repurchase agreements or maintained in segregated accounts in the name of the Chicago Teachers' Pension Fund. The average duration of this investment pool as of June 30, 2020 and 2019 was 42.2 days and 30.8 days, respectively. Because the loans are terminable on demand, their duration did not generally match the duration of the investments made with cash collateral.

As of June 30, 2020 and 2019, the Fund had no credit risk exposure to borrowers. The collateral held (at cost) and the fair market values of underlying securities on loan for the Fund as of June 30, 2020, were $686,655,357 and $671,961,433, respectively. For comparative purposes, the collateral held (at cost) and the fair market values of underlying securities on loan for the Fund as of June 30, 2019, were $559,602,193 and $548,019,165, respectively.

The following table represents the fair market value balances relating to the securities lending transactions as of June 30, 2020 and 2019:

Category	Fair Market Value of Underlying Securities Lent as of June 30	
	2020	2019
U.S. Agency	$ 5,444,080	$ 4,091,187
U.S. Equity	424,896,562	289,815,908
U.S. Government	144,533,280	178,992,256
Corporate Bond	89,702,654	54,734,215
International Equity	7,384,857	20,385,599
Total	**$ 671,961,433**	**$ 548,019,165**

The fair market value of collateral of the securities lending program at June 30, 2020 was $686,855,566, compared to $560,663,605 at June 30, 2019. The investments were in repurchase agreements. All of these securities had a duration of less than one year. There is no custodial credit risk or interest rate risk associated with the collateral pool.

The credit ratings of the securities lending collateral pool held at June 30, 2020 and 2019 as rated by S&P are as follows:

S&P Credit Rating	Collateral Amount as of June 30	
	2020	2019
A-1+	$ —	$ 25,000,000
A-1	471,500,000	370,000,000
A-2	87,500,000	85,000,000
Not Rated	127,855,566	80,663,605
Total	**$ 686,855,566**	**$ 560,663,605**

(6) DERIVATIVES

The Fund accounts for its derivative instruments in accordance with GASB Statement No. 53, *Accounting and Financial Reporting for Derivative Instruments*. A derivative instrument is an instrument or contract whose value is derived from that of other financial instruments such as stocks, bonds and commodities, interest rates or a market index. The Fund's derivatives are considered investment derivative instruments. The following table summarizes the derivatives held within the Fund's investment portfolio as of June 30, 2020 and 2019:

Derivative Type	Notional Amounts		Fair Value	
	2020	2019	2020	2019
A. Foreign currency contracts purchased	$ —	$ —	$(159,450,391)	$ (129,312,399)
Foreign currency contracts sold	—	—	159,688,701	129,411,222
B. Futures:				
Long equity	3,162,720	6,572,320	118,853	152,189
Long fixed income	437,951,506	420,377,201	2,579,191	7,397,899
Short fixed income	(452,813,616)	(236,789,116)	(1,910,896)	(1,815,514)
C. Options:				
Purchased	—	—	404,186	335,869
Written	—	—	(198,969)	(964,116)
D. Rights and Warrants	—	—	15,152	176,458
E. Swaps:				
Credit default swaps	—	—	1,302,918	(5,736,926)
Interest rate swaps	—	—	(10,502,709)	740,442
Total	**$ (11,699,390)**	**$ 190,160,405**	**$ (7,953,964)**	**$ 385,124**

(A) FORWARD CURRENCY FORWARD CONTRACTS

Forward currency contracts are two-sided contracts in the form of either forward purchases or forward sales. The Fund's use of these securities is limited to small positions in the Fund's portfolio to hedge fluctuations in foreign currency. The fair values of forward currency contracts outstanding as of June 30, 2020 and 2019 were as follows:

Currency	Fair Value	
Foreign currency exchange sales	**2020**	**2019**
Australian Dollar	$ (179,739)	$ (271,382)
Brazilian Real	(1,871,154)	(71,853)
British Pound	(12,360)	(692,537)
Canadian Dollar	(6,104,812)	(1,208,743)
Chinese Yuan Renminbi	(4,773,840)	(5,276,988)
Colombian Peso	—	(79,300)
Danish Krone	(7,544)	—
Euro	(59,243,919)	(16,487,694)
Hungarian Forint	—	(156,034)
Hong Kong Dollar	(349,746)	(347,533)
Indian Rupee	—	(3,576,999)
Indonesian Rupiah	—	(7,535,169)
Israeli Shekel	—	(8,896)
Japanese Yen	(760,319)	(682,834)
Mexican Peso	(3,797,001)	(7,199,728)

Currency	Fair Value	
New Taiwan Dollar	$ —	$ (51,334)
New Zealand Dollar	(5,150)	(385,317)
Philippine Peso	(6,317,839)	(12,250,129)
Polish Zloty	(1,840)	—
Russian Ruble	(410,316)	—
Singapore Dollar	(1,532)	—
South African Rand	(1,058,474)	(155,164)
Swedish Krona	(39,738)	—
Swiss Franc	—	(802,739)
U.S. Dollar	(74,515,068)	(72,072,026)
Total	**$ (159,450,391)**	**$(129,312,399)**
Foreign currency exchange purchases		
Argentine Peso	$ —	$ 420,251
Australian Dollar	5,401,381	5,736,482
Brazilian Real	—	5,226,425
British Pound	5,411,769	6,512,146
Canadian Dollar	12,881,986	9,696,497
Chinese Yuan Renminbi	5,618	56,226
Danish Krone	55,825	56,742
Euro	23,492,782	6,834,695
Hong Kong Dollar	1,261,498	529,239
Indian Rupee	705,480	7,111,297
Indonesian Rupiah	5,135,800	12,671,330
Israeli Shekel	—	4,551
Japanese Yen	3,319,703	3,541,136
Mexican Peso	7,739,035	2,129,391
New Taiwan Dollar	—	84937
New Zealand Dollar	5,870	—
Norwegian Krone	484,431	480,630
Philippine Peso	6,317,839	6,139,068
Polish Zloty	—	45801
Russian Ruble	209,145	—
Singapore Dollar	771,074	1,545,332
South African Rand	2,107,438	1,303,836
Swedish Krona	2,098,987	2,359,939
Swiss Franc	—	1,179,267
U.S. Dollar	82,283,040	55,746,004
Total	**$ 159,688,701**	**$ 129,411,222**

(B) OPTIONS

Options represent a financial derivative that represents a contract sold by one party to another party. The contract offers the buyer the right, but not the obligation, to buy or sell a security or other financial assets at an agreed-upon price during a certain period of time or a specific date. The Fund's use of options investment vehicle is limited to small positions in the Fund's portfolio due to the sophistication and risky nature of options.

(C) FUTURES CONTRACTS

Financial futures are agreements to purchase or sell a specific amount of an asset at a specified delivery or maturity date for an agreed-upon price. The Fund's managers use financial futures to improve yield, to adjust the duration of the fixed income portfolio, and to replicate an index.

(D) STOCK RIGHTS AND WARRANTS

A stock right is the right to the holder as a current shareholder in a company to buy additional shares at a discount over the current market price. Warrants are instruments which when purchased are priced above the current market, and allow the holder to purchase shares in a company at a specified future point in time. As a holder of warrants, the Fund bears the risk that the share price will drop below the cost of the warrant.

(E) SWAPS

Swaps are agreements to exchange currency or assets. The Fund invests in swaps to manage exposure to credit, currency, inflation, and interest rate risks. Credit default swap and synthetic default swap agreements involve one party making a stream of payments (the buyer of protection) to another party (the seller of protection) in exchange for the right to receive a specified return in the event of a default or other credit event for the referenced entity, obligation, or index.

(F) CHANGES IN FAIR VALUE

The following table summarizes the changes in fair value, which were recognized as investment income in the Fund's statement of changes in fiduciary net position at June 30, 2020 and 2019:

Derivative Type	Changes in Fair Value	
	2020	2019
Foreign Currency Contracts	$ 139,487	$ (482,689)
Options	833,464	149,083
Rights and Warrants	(161,306)	139,376
Swaps	(4,203,307)	(4,168,633)
Total	**$ (3,391,662)**	**$ (4,362,863)**

(G) CREDIT RISK

Credit risk is the risk that the Fund will not recover its investments due to the inability of the counterparty to fulfill its obligation. It is the Fund's policy to enter into netting arrangements whenever it has more than one derivative instrument transaction with a counterparty. Under the terms of these arrangements, should one party become insolvent or otherwise default on its obligations, close-out netting provisions permit the nondefaulting party to accelerate and terminate all outstanding transactions and net the transactions' fair values so that a single sum will be owed by, or owed to, the nondefaulting party.

(H) INTEREST RATE RISK

The Fund manages its exposure to fair value losses from interest rate risk for the derivatives portfolio using the effective duration contribution method on the portfolio as a whole. Duration is a weighted average of the maturity of all the income streams from the portfolio of the fixed income instruments.

The following is the effective duration of the Fund's fixed income derivatives at June 30, 2020 and 2019:

Derivative Type	2020 Fair Value	2020 Effective Duration (Years)	2019 Fair Value	2019 Effective Duration (Years)
Futures fixed income (long and short, net)	$ 668,295	1.35	$ 5,582,385	$ 2.13
Options	205,217	0.18	(628,247)	(0.08)
Total	**$ 873,512**		**$ 4,954,138**	

(7) CONTRIBUTIONS AND RESERVES

On an annual basis, an actuarial valuation is performed in order to determine the amount of required contributions on behalf of the Fund. The ILCS (Public Act 89-15) provides for an actuarially determined funding plan intended to maintain the assets of the Fund at a level equal to 90% of the liabilities of the Fund. The Chicago Board of Education (Employer) is required by law to make contributions to the Fund only to the extent that the Fund's actuarially determined funding level drops below 90% by the end of the fiscal year. The Employer is then required to make contributions to the Fund in order to ensure the actuarial value of assets is 90% of the actuarial value of liabilities by 2059. In years where the funding rate exceeds 90%, no Employer contribution is required.

In fiscal years 2020 and 2019, the Employer and the State were required to make contributions of $854.5 million and $808.6 million, respectively. These figures represent the annual required contributions per Article 17 and are not representative of the actuarially determined contributions. Accordingly, the Employer and State paid $622.1 million and $584.2 million in fiscal years 2020 and 2019, respectively, with remaining amounts being recorded as receivables as of those dates. Public Act 99-0521, enacted June, 2016, provided that a separate tax be levied by the Chicago Board of Education for the purposes of making an Employer contribution to the Fund at a rate not to exceed 0.383%. Subsequently, Public Act 100-0465, enacted August, 2017, allowed that rate to be increased to 0.567%. As a result, Employer contribution receivables of $232.4 million and $186.6 million were outstanding as of June 30, 2020 and 2019, respectively. These amounts were received via property tax levy proceeds by August of the following fiscal years, satisfying the outstanding Employer required contributions for fiscal years 2020 and 2019.

The Fund's Board of Trustees and the Chicago Board of Education executed an intergovernmental agreement early in fiscal year 2019 which resolved the total outstanding $36.2 million receivable and $10.4 million payable related to prior fiscal years. As part of this settlement, CTPF received $14.3 million in satisfaction of the net amount due of $25.8 million.

In the fiscal year ended June 30, 2020, P.A. 100-0465 required the State of Illinois to contribute the normal cost portion of the annual required contribution, including the health insurance subsidy. As a result, the Fund allocated the health insurance subsidy from the normal cost to pay health insurance benefits for retirees. This resulted in a total subsidy amount of $52.0 million to fund health insurance benefits in fiscal year 2020. During the fiscal year ended June 30, 2019, the Fund allocated $59.1 million of the health insurance subsidy from the normal cost to pay health benefits to Fund retirees.

Although the statutory contribution requirements were met in fiscal years 2020 and 2019, the statutory funding method generates a contribution requirement that is less than a reasonable actuarially determined contribution. The ability of the Fund to reach 90% funding by 2059 is heavily dependent on the State and the Board of Education contributing the statutorily required contributions each year until 2059.

(A) MEMBER CONTRIBUTIONS

Member contributions, established by the ILCS, are 9% of the total regular salary rate, of which 1% applies to survivor and child pension benefits. For employees hired prior to January 1, 2017, CPS contributes 7% of the 9% required member contributions. For employees hired after January 1, 2017, there is no employer pick-up. The non-CPS employers also pick up a portion of the required employee contribution. Fund employees also participate as members in the Fund and are included in the number of total current members. Contributions made by the Fund for Fund employees totaled $564,162 and $527,053 for the years ended June 30, 2020 and 2019, respectively, which is 100% of the employee contributions required to be made by the Fund.

(B) NONEMPLOYER CONTRIBUTIONS

As noted earlier in Note 7, the State of Illinois makes an annual contribution to the Fund to supplement any Employer contribution. Federal funds, which are included in the Employer minimum funding requirement, are actuarially-based amounts contributed to the Fund for the accruing pension cost of teachers whose salaries are paid from special trusts or federal funds.

(8) NET PENSION LIABILITY OF PARTICIPATING EMPLOYER

The components of the net pension liability at June 30, 2020 and 2019 were as follows:

	2020	2019
Total pension liability	$ 26,377,865,250	$ 25,166,179,329
Plan fiduciary net position	10,937,062,021	11,038,837,459
Employer's net pension liability	**$ 15,440,803,229**	**$ 14,127,341,870**
Plan fiduciary net position as a percentage of the total pension liability	41.46%	43.86%

ACTUARIAL ASSUMPTIONS

The total pension liability was determined by actuarial valuations as of June 30, 2020 and 2019, using the following actuarial assumptions, applied to all periods included in the measurement:

	Pension Plan	
	2020	2019
Actuarial Cost Method	Entry Age Normal	Entry Age Normal
Cost-of-Living Adjustment	3% compound for Tier I members; the lesser of 3% or 1/2 of CPI-U, simple, for Tier II Participants	3% compound for Tier I members; the lesser of 3% or 1/2 of CPI-U, simple, for Tier II Participants
Inflation	General inflation rate, 2.25% Wage inflation rate, 2.75%	General inflation rate, 2.50% Wage inflation rate, 3.00%
Investment Rate of Return	6.75%, net of investment expenses	7.00%, net of investment expenses
Salary Increases	2.75% to 12.60%, varying by age	3.00% to 12.85%, varying by age

For healthy participants, mortality rates were based on the RP-2014 White Collar Healthy Annuitant mortality table, sex distinct. For disabled participants, mortality rates were based on the RP-2014 Disabled Annuitant mortality table, sex distinct.

The actuarial assumptions used for the June 30, 2020, funding actuarial valuation were adopted by the Board of Trustees during the September 17, 2020 Board meeting and were based on the recommendations from the 2020 Actuarial Assumptions study. In fiscal year 2020, the actuary did not recommend any changes to the assumptions that were used in the fiscal year 2019 funding valuation.

The actuarial assumptions to be used for the June 30, 2019, funding actuarial valuation were adopted by the Board of Trustees during the September 19, 2020, Board meeting, and were based on a review of the fiscal year 2018 assumptions adjusted for actual experience. In fiscal year 2019, the actuary did not recommend any changes to the assumptions that were used in the fiscal year 2018 funding valuation.

The long-term expected rate of return on pension plan investments was determined under a building-block method by using the current risk free rate and historical risk premium for each major asset class to develop the best-estimate ranges of expected future real rates of return (net of pension plan investment expense and inflation) for each major asset class. Best estimates of geometrically determined real rates of return for each major asset class included in the pension plan's target asset allocation as of June 30, 2020 and 2019, are summarized in the following table:

Asset Class	Long-Term Expected Real Rate of Return	
	2020	2019
Equities	5.26%	5.33%
Fixed Income	1.52%	2.20%
Infrastructure	5.05%	4.95%
Private Equity	7.62%	7.81%
Real Estate	4.34%	4.53%

SINGLE DISCOUNT RATE

The discount rates used to measure the total pension liability were 6.37% and 6.72%, for fiscal years 2020 and 2019, respectively

For fiscal year 2020, a Single Discount Rate of 6.37% was used to measure the total pension liability. This Single Discount Rate was based on cash flows (employee contributions, employer contributions, benefits and administrative expenses) using the results of the funding actuarial valuation with an expected rate of return on pension plan investments of 6.75% and a municipal bond rate of 2.45%.

The projection of cash flows used to determine the Single Discount Rate for fiscal year 2020 assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to statutory contribution rates under the Fund's funding policy. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year 2078. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2078, and the municipal bond rate was applied to all benefit payments after that date.

For fiscal year 2019, a Single Discount Rate of 6.72% was used to measure the total pension liability. This Single Discount Rate was based on an expected rate of return on pension plan investments of 7.00%, cash flows (employee contributions, employer contributions, benefits and administrative expenses) based on the results of the funding actuarial valuation using an expected rate of return on pension plan investments of 7.00%, and a municipal bond rate of 3.13% as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 28, 2019.

The projection of cash flows used to determine the Single Discount Rate for fiscal year 2019 assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to statutory contribution rates under the Fund's funding policy. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year 2077. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2077, and the municipal bond rate was applied to all benefit payments after that date.

The impact of the change in the Single Discount Rate from 6.72% to 6.37% was an increase in the total pension liability of approximately $1.3 billion. The change in the discount rate was driven by the changes in municipal bond rate from 3.13% to 2.45%.

SENSITIVITY OF THE NET PENSION LIABILITY TO CHANGES IN THE DISCOUNT RATE

The following presents the net pension liability as of June 30, 2020 and 2019, calculated using a Single Discount Rate of 6.37% for fiscal year 2020 and 6.72% for fiscal year 2019. The table below also presents what the net pension liability would be if it were calculated using a Single Discount Rate for fiscal years 2020 and 2019 that is one percentage point lower (5.37% for 2020 and 5.72% for 2019) or one percentage point higher (7.37% for 2020 and 7.72% for 2019) than the current rate:

Net Pension Liability	1% Decrease (5.37%)	Current Discount Rate (6.37%)	1% Increase (7.37%)
June 30, 2020	$18,893,966,587	$15,440,803,229	$12,598,500,412
Net Pension Liability	**1% Decrease (5.72%)**	**Current Discount Rate (6.72%)**	**1% Increase (7.72%)**
June 30, 2019	$17,352,786,147	$14,127,341,870	$11,645,802,657

As of June 30, 2020 and 2019, the Fund was not required to maintain any legally required reserves.

(9) FAIR VALUE MEASUREMENT

The Fund categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the assets. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs.

The Fund has the following recurring fair value measurements as of June 30, 2020:

	Fair Value Measurement				
Investments by Fair Value Level	**June 30, 2020**	**Quoted Prices In Active Markets For Identical Assets (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**	**Investments Not Measured At Fair Value**
Commercial Paper	$ 55,150,081	$ 33,245,606	$ 21,904,475	$ —	$ —
Currency	13,280,873	—	(150,550)	—	13,431,423
Equity					
Commingled Funds	235,156,308	235,156,308	—	—	—
Common Stock	5,640,051,135	5,640,051,135	—	—	—
Preferred Stock	27,892,362	21,556,616	6,335,746		—
Total Equity	**$ 5,903,099,805**	**$ 5,896,764,059**	**$ 6,335,746**	**$ —**	**$ —**
Fixed income					
Corporate Bonds	1,072,743,442	—	1,072,743,442	—	—
Government Agency Bonds	71,251,902	701,400	70,550,502	—	—
Government Bonds	591,066,805	486,688,095	104,378,710	—	—
Index Linked Gov't Bonds	52,539,543	47,837,390	4,702,153	—	—
Mortgage Backed Securities	736,810,650	—	736,810,650	—	—
Municipal Bonds	16,505,876	—	16,505,876	—	—
Total Fixed Income	**$ 2,540,918,218**	**$ 535,226,885**	**$ 2,005,691,333**	**$ —**	**$ —**
Investment Derivative Instruments					
Options	205,217	205,217	—	—	—
Swaps	(9,199,791)	—	(9,199,791)	—	—
Rights and Warrants	15,152	15,152	—	—	—
Total Derivatives	**$ (8,979,422)**	**$ 220,369**	**$ (9,199,791)**	**$ —**	**$ —**
Real State Investment Trust - REIT	115,436,398	115,436,398	—	—	—
Total Investments by Fair Value Level	**$ 8,618,905,953**	**$ 6,580,893,317**	**$ 2,024,581,213**	**$ —**	**$ 13,431,423**
	Not Applicable*				
Collateral from Securities Lending	$ 686,855,566				

Investments by Fair Value Level	Fair Value Measurement					
	June 30, 2020		Quoted Prices In Active Markets For Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Investments Not Measured At Fair Value
Investments Measured at the Net Asset Value (NAV)						
Commingled						
Equity	$	90,176,822				
Fixed Income		52,626,189				
Infrastructure		86,765,212				
Real Estate		616,295,580				
Total Commingled	**$**	**845,863,803**				
Infrastructure		116,284,042				
Private Equity		432,031,348				
Real Estate		306,502,305				
Total Investments by Net Asset Value	**$**	**1,700,681,498**				
Total Investments	**$**	**11,006,443,017**				

* *Consists of cash and tri-party repos, which are not subject to leveling.*

INVESTMENTS AT FAIR VALUE

Commercial paper, equity, and fixed income securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets issued by pricing vendors. Commercial paper, currency, equity, and fixed income securities classified in Level 2 of the fair value hierarchy are valued using matrix pricing techniques maintained by the various pricing vendors. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. Equity and fixed income securities classified in Level 3 are securities whose stated market price is unobservable by the market place. Many of these securities are priced by the issuers of industry groups. Fair value is defined as the quoted market value on the last trading day of the period. These prices are obtained from various pricing sources by the Funds custodian bank.

Real Estate Investment Trusts (REITs) and rights and warrants securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets issued by pricing vendors.

Short-term investments, consisting of commingled fund cash equivalents in the Bank of New York Mellon's EB Temporary Investment Fund, are not subject to fair value leveling and have been excluded from this table. As of June 30, 2020 and 2019, short-term investment holdings were $411,301,992 and $349,669,850, respectively.

INVESTMENTS AT NET ASSET VALUE | AS OF JUNE 30, 2020

The Fund holds shares of interests in investment companies where the fair value of the investments are measured on a recurring basis using net asset value per share. At the year ended June 30, 2020, the fair value, unfunded commitments, and redemption values of those investments is as follows:

Investments Measured at Net Asset Value (NAV)	Fair Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Commingled				
Equity	$ 90,176,822	$ —	N/A	N/A
Fixed Income	52,626,189	—	N/A	N/A
Infrastructure	86,765,212	—	N/A	N/A
Real Estate	616,295,580	—	N/A	N/A
Total Commingled	**$ 845,863,803**			
Infrastructure	116,284,042	27,929,760	As Needed	7 - 10 days
Private Equity	432,031,348	441,258,178	As Needed	7 - 10 days
Real Estate	306,502,305	181,503,549	As Needed	7 - 10 days
Total Investments by Net Asset Value	**$ 1,700,681,498**			

Commingled funds (equity, fixed income, infrastructure, and real estate), infrastructure, private equity, and real estate funds, as well as short-term bill and notes, are valued at net asset value and, unlike more traditional investments, generally do not have readily attainable market values and take the form of limited partnerships. The Fund values these investments at fair value, on a recurring basis, based on the partnership's audited financial statements. If the June 30 statements are available, those values are used preferentially. However, some partnerships have fiscal years ending at other than June 30. If June 30 valuations are not available, the value is adjusted from the most recently available valuation, taking into account subsequent calls and distributions, adjustments for unrealized appreciation/deprecation, and other income and fees. Short-term bills and notes are invested in BNY Mellon's EB Temporary Investment Fund which consists primarily of instruments issued by the U.S. Government, Federal agencies, sponsored agencies or corporations, and/or various credit instruments. The maximum average maturity for the EB Temporary Investment Fund will be 60 days and the maximum weighted average life will be 120 days.

The Fund's investment strategy is to meet or exceed its performance objectives within CTPF's tolerance for risk. It invests in diversified strategies through various vehicles so that no single strategy dictates performance, thereby lowering the volatility of the portfolio.

Fixed income investments are diverse and add value across interest rate duration, sector allocation, country and currency strategies. Adequate diversification among fixed income classes is maintained. All infrastructure investments are currently within a fund structure and adhere to the partnership agreement. The overall financial objective of the Fund's infrastructure portfolios is to meet the performance standard on a net of fee basis over longer time periods. Private equity investments are made primarily through closed-end private equity funds. Adequate diversification by private equity subclass (venture capital, buyout, mezzanine, distressed debt, special situation, and non-U.S.) is maintained. Private real estate investments are made through both closed-end and open-ended real estate funds. Adequate diversification by real estate subtypes (core, non-core/enhanced return, non-core/high return) is maintained.

FAIR VALUE MEASUREMENT | AS OF JUNE 30, 2019

For comparative purposes, the following table presents the recurring fair value measurements as of June 30, 2019:

	Fair Value Measurement				
Investments by Fair Value Level	**June 30, 2019**	**Quoted Prices In Active Markets For Identical Assets (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**	**Investments Not Measured At Fair Value**
Commercial Paper	$ 1,580,874	$ 1,580,874	$ —	$ —	$ —
Currency	8,222,429	—	360,521	—	7,861,908
Equity					
Commingled Funds	284,727,627	284,727,627	—	—	—
Common Stock	5,986,409,659	5,986,409,659	—	—	—
Preferred Stock	24,092,842	18,476,478	5,616,364	—	—
Total Equity	**$ 6,295,230,128**	**$ 6,289,613,764**	**$ 5,616,364**	**$ —**	**$ —**
Fixed Income					
Corporate Bonds	991,678,773	—	991,678,773	—	—
Government Agency Bonds	73,751,932	690,030	73,061,902	—	—
Government Bonds	869,251,233	771,011,107	98,240,126	—	—
Index Linked Gov't Bonds	28,730,542	24,634,864	4,095,678	—	—
Mortgage Backed Securities	510,396,316	—	510,396,316	—	—
Municipal Bonds	17,199,944	—	17,199,944	—	—
Total Fixed Income	**$ 2,491,008,740**	**$ 796,336,001**	**$ 1,694,672,739**	**$ —**	**$ —**
Investment Derivative Instruments					
Options	(628,247)	(628,247)	—	—	—
Swaps	(4,996,484)	—	(4,996,484)	—	—
Rights and Warrants	176,458	176,458	—	—	—
Total Derivatives	**$ (5,448,273)**	**$ (451,789)**	**$ (4,996,484)**	**$ —**	**$ —**
Real State Investment Trust - REIT	157,753,245	157,753,245	—	—	—
Total Investments by Fair Value Level	**$ 8,948,347,143**	**$ 7,244,832,095**	**$ 1,695,653,140**	**$ —**	**$ 7,861,908**
	Not Applicable*				
Collateral from Securities Lending	$ 560,663,605				
Investments Measured at the Net Asset Value (NAV)					
Commingled					
Equity	$ 70,021,543				
Fixed Income	37,173,323				
Infrastructure	92,237,539				
Real Estate	527,703,726				
Total Commingled	**$ 727,136,131**				
Infrastructure	118,712,966				
Private Equity	379,931,583				
Real Estate	192,114,105				
Total Investments by Net Asset Value	**$ 1,417,894,785**				
Total Investments	**$ 10,926,905,533**				

* *Consists of cash and tri-party repos, which are not subject to leveling.*

INVESTMENTS AT NET ASSET VALUE | AS OF JUNE 30, 2019

The Fund holds shares of interests in investment companies where the fair values of investments are measured on a recurring basis using net asset value per share. At the year ended June 30, 2019, the fair value, unfunded commitments, and redemption values of those investments is as follows:

Investments Measured at Net Asset Value (NAV)	Fair Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Commingled				
Equity	$ 70,021,543	$ —	N/A	N/A
Fixed Income	37,173,323	—	N/A	N/A
Infrastructure	92,237,539	—	N/A	N/A
Real Estate	527,703,726	—	N/A	N/A
Total Commingled	**$ 727,136,131**			
Infrastructure	118,712,966	34,051,289	As Needed	7 - 10 days
Private Equity	379,931,583	238,432,864	As Needed	7 - 10 days
Real Estate	192,114,105	151,930,521	As Needed	7 - 10 days
Total Investments by Net Asset Value	**$ 1,417,894,785**			

Commingled funds (equity, fixed income, infrastructure, and real estate), infrastructure, private equity, and real estate funds, as well as short-term bills and notes, are valued at net asset value and, unlike more traditional investments, generally do not have readily attainable market values and take the form of limited partnerships. The Fund values these investments at fair value, on a recurring basis, based on the partnership's audited financial statements. If the June 30 statements are available, those values are used preferentially. However, some partnerships have fiscal years ending at other than June 30. If June 30 valuations are not available, the value is adjusted from the most recently available valuation, taking into account subsequent calls and distributions, adjusted for unrealized appreciation/deprecation, and other income and fees. Short-term bills and notes are invested in BNY Mellon's EB Temporary Investment Fund which consists primarily of instruments issued by the U.S. Government, Federal agencies, sponsored agencies or corporations, and/or various credit instruments. The maximum average maturity for the EB Temporary Investment Fund will be 60 days and the maximum weighted average life will be 120 days.

The Fund's investment strategy is to meet or exceed its performance objectives within CTPF's tolerance for risk. It invests in diversified strategies through various vehicles so that no single strategy dictates performance, thereby lowering the volatility of the portfolio.

Fixed income investments are diverse and add value across interest rate duration, sector allocation, country and currency strategies. Adequate diversification among fixed income classes is maintained. All infrastructure investments are currently within a fund structure and adhere to the partnership agreement. The overall financial objective of the Fund's infrastructure portfolios is to meet the performance standard on a net of fee basis over longer time periods. Private equity investments are made primarily through closed-end private equity funds. Adequate diversification by private equity subclass (venture capital, buyout, mezzanine, distressed debt, special situation, and non-U.S.) is maintained. Private real estate investments are made through both closed-end and open-ended real estate funds. Adequate diversification by real estate subtypes (core, non-core/enhanced return, non-core/high return) is maintained.

DERIVATIVES

Options, futures, and rights and warrants derivatives securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active market issued by pricing vendors. Swaps, rights, and warrants derivative securities classified in Level 2 of the fair value hierarchy are valued using matrix pricing techniques maintained by the various pricing vendors.

(10) INSURANCE COVERAGE

The Fund is exposed to various risks of loss related to torts; theft of, damage to, and destruction of assets; errors and omissions; injuries to employees; and natural disasters. The Fund has minimized the risk of loss through private insurance carriers with deductibles for coverage ranging up to $1,000 per occurrence. The amount of settlements has not exceeded insurance coverage in any of the previous three fiscal years.

(11) LITIGATION

There are several pending lawsuits in which the Fund is involved. Management believes that the potential claims against the Fund would not materially affect the financial position of the Fund.

(12) OPERATING LEASES

The Fund relocated offices to 425 S. Financial Place in November 2019. However, the Fund retained its lease at 203 N. LaSalle, pending transfer to another entity. The Fund continued to make lease payments for the 203 N. LaSalle location until February 2020. Beginning in March 2020, the 425 S. Financial Place landlord began to reimburse CTPF by making payments to the 203 N. LaSalle landlord on CTPF's behalf. Lease payments to the 425 S. Financial Place landlord are paid by CTPF beginning June 2020.

The Fund’s office lease provides that the lessee pay basic rent, tenant proportionate share of taxes, additional rent, storage space rent and all other sums that tenant may owe to landlord, as required under the lease. Included in the revised tenant lease for the relocation to 425 S. Financial Place was a provision for a credit for tenant leasehold improvements in the new location of $3,596,340. In conformity with accounting requirements, the Fund will recognize the office rent expense on a straight-line basis over the 15-year lease term.

The minimum future rental lease payments through June 30, 2035, are as follows:

Year Ended June 30	Amount
2021	$ 725,951
2022	744,092
2023	762,551
2024	781,647
2025 - 2029	4,108,418
2030 - 2034	4,648,187
2035	1,000,609
Total minimum future rental payments	**$ 12,771,456**

The total rent expense was $564,268 and $668,949 in fiscal years 2020 and 2019, respectively.

(13) SUBSEQUENT EVENTS

The impact of the COVID-19 pandemic to the Fund's portfolio from July 1, 2020 through May 2021 has been positive for the Fund as net returns and asset growth have continued to trend in a positive direction.

Over that span of time, there have been market corrections, pauses, and rebounds as the global pandemic recovery rates were uncertain, U.S. presidential elections took place under the veil of whether the results were valid, growing trade disputes between China and the U.S, the distribution pace of the COVID-19 vaccine, the Federal Reserve shoring up the markets with large stimulus programs and, most recently, the increase in 10-year Treasury rates threatening an increase in inflation.

(14) FUTURE ACCOUNTING PRONOUNCEMENTS

In January 2017, the Governmental Accounting Standards Board issued GASB Statement No. 84, Fiduciary Activities. The objective of GASB Statement No. 84 (Statement) is to establish criteria for identifying fiduciary activities of all state and local governments. The focus of the criteria generally is on (1) whether a government is controlling the assets of the fiduciary activity and (2) the beneficiaries with whom a fiduciary relationship exists. Separate criteria are included to identify fiduciary component units and postemployment benefit arrangements that are fiduciary activities. This Statement describes four fiduciary funds that should be reported, if applicable: (1) pension (and other employee benefit) trust funds, (2) investment trust funds, (3) private-purpose trust funds, and (4) custodial funds. Custodial funds generally should report fiduciary activities that are not held in a trust or equivalent arrangement that meets specific criteria. The provisions of this Statement will be effective for the Fund for the year ended June 30, 2021.

In June 2017, the Governmental Accounting Standards Board issued GASB Statement No. 87, Leases. The objective of GASB Statement No. 87 (Statement) is to better meet the information needs of financial statement users by improving accounting and financial reporting for leases. This Statement increases the usefulness of financial statements by requiring recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as inflows of resources or outflows of resources based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. The provisions of this Statement will be effective for the Fund for the year ended June 30, 2021.

Management has not yet completed its assessment of these Statements; however, they are not expected to have a material effect on the overall financial statement presentation.

REQUIRED SUPPLEMENTARY INFORMATION *(UNAUDITED)*

SCHEDULE OF CHANGES IN EMPLOYER'S NET PENSION LIABILITY

PENSION PLAN

SCHEDULE 1

	2020	2019	2018
Total pension liability			
Service cost	$ 326,866,131	$ 310,238,766	$ 303,910,267
Interest	1,651,634,685	1,631,986,193	1,609,052,853
Differences between expected and actual experience	(182,660,188)	(88,601,053)	54,943,524
Changes of assumptions	938,720,817	260,688,932	870,265,669
Benefit payments, including refunds of employee contributions	(1,522,875,524)	(1,495,616,382)	(1,466,280,439)
Net change in total pension liability	**$ 1,211,685,921**	**$ 618,696,456**	**$ 1,371,891,874**
Total pension liability-beginning	**25,166,179,329**	**24,547,482,873**	**23,175,590,999**
Total pension liability-ending (a)	**$ 26,377,865,250**	**$ 25,166,179,329**	**$ 24,547,482,873**
Plan fiduciary net position			
Contributions - Employer and non-contributing entity	$ 854,500,000	$ 808,570,000	$ 784,402,000
Contributions - employee	196,097,115	190,565,220	183,679,205
Net investment income	438,812,350	513,576,400	896,704,544
Benefit payments, including refunds of employee contributions	(1,522,875,524)	(1,495,616,382)	(1,466,280,439)
Net transfer for OPEB*	(51,962,540)	(59,089,369)	(66,867,696)
Administrative expense	(17,847,235)	(25,621,894)	(21,521,303)
Other	1,500,396	1,687,970	1,475,276
Net change in plan fiduciary net position	**$ (101,775,438)**	**$ (65,928,055)**	**$ 311,591,587**
Plan fiduciary net position - beginning	**11,038,837,459**	**11,104,765,514**	**10,793,173,927**
Transfer of remaining OPEB assets**	**—**	**—**	**—**
Plan fiduciary net position - ending (b)	**$ 10,937,062,021**	**$ 11,038,837,459**	**$ 11,104,765,514**
Employer's net pension liability - ending (a)-(b)	**$ 15,440,803,229**	**$ 14,127,341,870**	**$ 13,442,717,359**

The information above is required beginning fiscal year 2014. Information for the next 3 years will be presented in future fiscal years.

* *Prior to 2016, an allocation capped at $65 million from the total pension contribution amount by CPS to pay OPEB was being treated as a direct OPEB contribution. Beginning in 2016, the OPEB allocation is being displayed within this schedule first as a pension contribution and then as part of the subsequent transfer to OPEB.*

** *Prior to 2016, residual assets within the Health Insurance Fund were treated as restricted solely to pay OPEB. In 2016, a change was made with respect to treatment of residual assets within the Health Insurance Fund.*

REQUIRED SUPPLEMENTARY INFORMATION *(UNAUDITED)*

SCHEDULE OF CHANGES IN EMPLOYER'S NET PENSION LIABILITY

PENSION PLAN

SCHEDULE 1 (continued)

	2017	2016	2015	2014
Total pension liability				
Service cost	$ 269,100,663	$ 325,992,943	$ 318,734,274	$ 332,188,481
Interest	1,603,833,232	1,576,876,771	1,547,663,416	1,509,307,860
Differences between expected and actual experience	48,391,475	(106,563,600)	(138,512,940)	(14,177,102)
Changes of assumptions	1,554,506,801	—	—	—
Benefit payments, including refunds of employee contributions	(1,424,938,184)	(1,384,826,398)	(1,331,567,406)	(1,306,341,856)
Net change in total pension liability	**$ 2,050,893,987**	**$ 411,479,716**	**$ 396,317,344**	**$ 520,977,383**
Total pension liability-beginning	**21,124,697,012**	**20,713,217,296**	**20,316,899,952**	**19,795,922,569**
Total pension liability-ending (a)	**$ 23,175,590,999**	**$ 21,124,697,012**	**$ 20,713,217,296**	**$ 20,316,899,952**
Plan fiduciary net position				
Contributions - Employer and non-contributing entity	$ 746,840,000	$ 700,070,000	$ 643,667,000	$ 585,416,141
Contributions - employee	187,538,787	191,882,430	191,233,298	187,846,065
Net investment income	1,233,003,939	(27,987,163)	381,688,430	1,685,079,840
Benefit payments, including refunds of employee contributions	(1,424,938,184)	(1,384,826,398)	(1,331,567,406)	(130)
Net transfer for OPEB	(49,000,701)	(66,104,598)	—	—
Administrative expense	(13,781,343)	(12,867,490)	(11,705,562)	(11,705,562)
Other	214,119	1,463,050	943,946	943,946
Net change in plan fiduciary net position	**$ 679,876,617**	**$ (598,370,169)**	**$ (125,740,294)**	**$ 2,447,580,300**
Plan fiduciary net position - beginning	**10,113,297,310**	**10,689,954,320**	**10,815,694,614**	**10,815,694,614**
Transfer of remaining OPEB assets**	**—**	**21,713,159**	**—**	**—**
Plan fiduciary net position - ending (b)	**$ 10,793,173,927**	**$ 10,113,297,310**	**$ 10,689,954,320**	**$ 13,263,274,914**
Employer's net pension liability - ending (a)-(b)	**$ 12,382,417,072**	**$ 11,011,399,702**	**$ 10,023,262,976**	**$ 7,053,625,038**

The information above is required beginning fiscal year 2014. Information for the next 3 years will be presented in future fiscal years.

* *Prior to 2016, an allocation capped at $65 million from the total pension contribution amount by CPS to pay OPEB was being treated as a direct OPEB contribution. Beginning in 2016, the OPEB allocation is being displayed within this schedule first as a pension contribution and then as part of the subsequent transfer to OPEB.*

** *Prior to 2016, residual assets within the Health Insurance Fund were treated as restricted solely to pay OPEB. In 2016, a change was made with respect to treatment of residual assets within the Health Insurance Fund.*

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

SCHEDULE OF THE EMPLOYER'S NET PENSION LIABILITY
PENSION PLAN

SCHEDULE 2

Year Ended June 30	Total Pension Liability	Plan Net Position	Employer's Net Pension Liability	Plan Fiduciary Net Position as a Percentage of Total Pension Liability	Covered Payroll	Employer's Net Pension Liability as a Percentage of Covered Payroll
2014	$ 20,316,899,952	$ 10,815,694,614	$ 9,501,205,338	53.23 %	$ 2,233,280,995	425.44 %
2015	20,713,217,296	10,689,954,320	10,023,262,976	51.61 %	2,273,551,432	440.86 %
2016	21,124,697,012	10,113,297,310	11,011,399,702	47.87 %	2,281,268,890	482.69 %
2017	23,175,590,999	10,793,173,927	12,382,417,072	46.57 %	2,030,175,116	609.92 %
2018	24,547,482,873	11,104,765,514	13,442,717,359	45.24 %	2,094,830,446	641.71 %
2019	25,166,179,329	11,038,837,459	14,127,341,870	43.86 %	2,179,054,844	648.32 %
2020	26,377,865,250	10,937,062,021	15,440,803,229	41.46 %	2,249,491,403	686.41 %

The information above is required beginning fiscal year 2014. Information for the next 3 years will be presented in future fiscal years.

SCHEDULES OF THE EMPLOYER'S CONTRIBUTIONS
PENSION PLAN

SCHEDULE 3

Year Ended June 30	Actuarially Determined Contribution	Contribution in Relation to the Actuarially Determined Contribution	Contribution Deficiency (Excess)	Covered Payroll	Contribution as a Percentage of Covered Payroll
2011	$ 430,091,545	$ 133,140,994	$ 296,950,551	$ 2,090,131,858	6.37 %
2012	510,101,466	138,729,011	371,372,455	2,224,903,121	6.24 %
2013	585,444,539	142,654,000	442,790,539	2,239,347,051	6.37 %
2014	719,781,746	597,319,141	122,462,605	2,233,280,995	26.75 %
2015	728,488,520	643,667,000	84,821,520	2,273,551,432	28.31 %
2016	749,796,517	700,070,000 *	49,726,517	2,281,268,890	30.69 %
2017	754,764,093	745,386,000	9,378,093	2,030,175,116	36.72 %
2018	855,752,559	784,402,000	71,350,559	2,094,830,446	37.44 %
2019	1,032,170,031	808,570,000	223,600,031	2,179,054,844	37.11 %
2020	1,147,030,511	854,500,000	292,530,511	2,262,053,256	37.78 %

* *Prior to 2016, an allocation capped at $65 million from the total pension contribution amount by CPS to pay OPEB was being treated as a direct OPEB contribution. Beginning in 2016, the OPEB allocation is reported first as a pension contribution and then as part of the subsequent transfer to OPEB.*

REQUIRED SUPPLEMENTARY INFORMATION *(UNAUDITED)*

SCHEDULE OF EMPLOYER'S CONTRACTUALLY REQUIRED CONTRIBUTION
PENSION PLAN

SCHEDULE 4

Year Ended June 30	Contractually Required Contribution	Contribution in Relation to the Contractually Required Contribution	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2011	$ 209,141,000	$ 133,140,994	$ 76,000,006	$ 2,090,131,858	6.37 %
2012	214,178,000	138,729,011	75,448,989	2,224,903,121	6.24 %
2013	218,585,000	142,654,000	75,931,000	2,239,347,051	6.37 %
2014	624,603,000	597,319,141	27,283,859	2,233,280,995	26.75 %
2015	708,667,000	643,667,000	65,000,000	2,273,551,432	28.31 %
2016	700,070,000	700,070,000	—	2,281,268,890	30.69 %
2017	745,386,000	745,386,000	—	2,030,175,116	36.72 %
2018	784,402,000	784,402,000 *	—	2,094,830,446	37.44 %
2019	808,570,000	808,570,000	—	2,179,054,844	37.11 %
2020	854,500,000	854,500,000	—	2,249,491,403	37.99 %

* *The fiscal year 2017 actual payment of $484,225,078 was received by June 30, 2017. The remaining $261,160,922 consisted of receivables of $249,990,422 and $11,170,500 from the Board of Education and the State of Illinois, respectively. The Board of Education's remaining contributions of $249,990,422 were received in August, 2017 due to the timing of payments received as a result of the property tax levy. The State of Illinois satisfied the outstanding fiscal year 2017 receivable of $11,170,500 during fiscal year 2018.*

SCHEDULE OF MONEY-WEIGHTED RATE OF RETURN
PENSION PLAN

SCHEDULE 5

Year Ended June 30	Annual Money-Weighted Rate of Return, Net of Investment Expense
2014	18.01 %
2015	3.20 %
2016	0.20 %
2017	13.12 %
2018	8.93 %
2019	5.04 %
2020	4.14 %

* *The information above is required beginning fiscal year 2014. Information for the next 3 years will be presented in future fiscal years.*

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION *(UNAUDITED)*

ACTUARIAL METHODS AND ASSUMPTIONS

PENSION PLAN

Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported. Contributions for fiscal years ended June 30, 2020 and 2019 were determined based on the actuarial valuations as of June 30, 2018 and 2017. The most recent valuation is as of June 30, 2020. The following table represents the actuarial methods and assumptions per the most recent funding valuations for the Pension Plan which are used to determine the actuarially determined contributions.

	2020	2019	2018	2017
	Pension Plan	Pension Plan	Pension Plan	Pension Plan
Valuation Date	June 30, 2020	June 30, 2019	June 30, 2018	June 30, 2017
Contribution determined for	Fiscal Year 2022	Fiscal Year 2021	Fiscal Year 2020	Fiscal Year 2019
Actuarial cost method	Projected Unit Credit	Projected Unit Credit	Projected Unit Credit	Projected Unit Credit
Amortization method	Level percent of payroll	Level percent of payroll	Level percent of payroll	Level percent of payroll
Amortization approach	Closed	Closed	Closed	Closed
Amortization period	30 years (23 years remaining)	30 years (24 years remaining)	30 years (25 years remaining)	30 years (26 years remaining)
Asset valuation method	4-year smoothed market	4-year smoothed market	4-year smoothed market	4-year smoothed market
Actuarial assumptions:				
Investment rate of return	6.75%, net of investment expense	7.00%, net of investment expense	7.00%, net of investment expense	7.25%, net of investment expense
Projected salary increases	2.75% to 12.60%, varying by age	3.00% to 12.85%, varying by age	3.00% to 12.85%, varying by age	4.00% to 15.50%, varying by age
Inflation rate	General inflation, 2.25% Wage inflation, 2.75%	General inflation, 2.50% Wage inflation, 3.00%	General inflation, 2.50% Wage inflation, 3.00%	General inflation, 2.50% Wage inflation, 3.25%
	Post-retirement benefit increase	**Post-retirement benefit increase**	**Post-retirement benefit increase**	**Post-retirement benefit increase**
2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 & Later	3% compound (Tier I); lesser of CPI-U or 3% simple (Tier II)	3% compound (Tier I); lesser of CPI-U or 3% simple (Tier II)	3% compound (Tier I); lesser of CPI-U or 3% simple (Tier II)	3% compound (Tier I); lesser of CPI-U or 3% simple (Tier II)

The following assumption changes were implemented during the fiscal years ended June 30, 2020, 2019, 2018, and 2017:

Changes in Assumptions:	Changes in assumptions for fiscal year 2020 include the following: • The investment return assumption was decreased from 7.00% to 6.75%, • The price inflation assumption was decreased from 2.50% to 2.25%, • The wage inflation assumption was decreased from 3.00% to 2.75%, • The salary increase assumption was decreased based on the lower wage inflation assumption of 2.75%, • The assumed increase to the pay cap for Tier II members was decreased from 1.250% to 1.125%, and • The assumed cost of living adjustment rate for Tier II members was decreased from 1.250% to 1.125%
	Changes in assumptions for fiscal year 2019 resulted from the following: The discount rate used as of June 30, 2019 was decreased to 6.72% from 6.81%. The decrease in the single discount rate, as of June 30, 2019, was due to the decrease in the long-term municipal bond rate from 3.62% to 3.13%. The decrease in the single discount rate as of June 30, 2019 resulted in an increase in the total pension liability of approximately $260 million.
	Changes in assumptions for fiscal year 2018 resulted from the following: The discount rate used as of June 30, 2018 was decreased to 6.81% from 7.07%. As of June 30, 2017, healthy participant mortality rates were based on the RP-2000 Healthy Mortality Table for Males or Females, as appropriate, set back 2 years and adjusted for mortality improvements generationally from 2004 based on Scale AA. For disabled participants, mortality rates were based on the RP-2000 Disabled Mortality Table, set back 3 years. These tables were updated and, as of June 30, 2018, mortality rates were based on the RP-2014 White Collar Healthy Annuitant mortality table, sex distinct, for healthy partcipants, and the RP-2014 Disabled Annuitant mortality table, sex distinct, for disabled participants.
	Changes in assumptions for fiscal year 2017 resulted from a change in the discount rate assumption. The discount rate used to calculate the total pension liability as of June 30, 2017 was 7.07%. The rate decreased from 7.75% as of June 30, 2016.

OTHER SUPPLEMENTARY INFORMATION *(UNAUDITED)*

SCHEDULE OF ADMINISTRATIVE AND MISCELLANEOUS EXPENSES

FOR THE YEARS ENDED JUNE 30, 2020 AND 2019

SCHEDULE 6

	2020	2019
Depreciation	$ 530,301	$ 693,953
Disaster Recovery	83,633	99,349
Education and Training	133,422	189,790
Equipment	798,777	250,186
Memberships and Subscriptions	43,994	38,613
Personnel	11,493,425	10,651,451
Bad Debt	24,953	9,418,703
Professional Services	3,835,493	3,364,759
Property	977,929	1,112,494
Supplemental	71,434	124,962
Supplies	162,341	72,677
Utilities	103,623	70,614
Miscellaneous	116,474	12,180
Total	**$ 18,375,799**	**$ 26,099,731**

SCHEDULE OF MANAGER FEES

FOR THE YEARS ENDED JUNE 30, 2020 AND 2019

SCHEDULE 7

	2020	2019
Manager Fees	$ 44,246,041	$ 38,728,671
Consultant Fees	1,636,351	1,575,850
Banking and Foreign Exchange Fees	261,492	193,658
Total	**$ 46,143,884**	**$ 40,498,179**

See accompanying independent auditors' report.

OTHER SUPPLEMENTARY INFORMATION (UNAUDITED)

SCHEDULE OF CONSULTANT PAYMENTS

FOR THE YEARS ENDED JUNE 30, 2020 AND 2019

SCHEDULE 8

	2020	Category	2019	Category
Alper Services, LLC	$ 850	Operations	$ —	
Baker Tilly Virchow Krause, LLP	16,290	Audit	59,380	Audit
Bradley Consulting Group, Inc.	348,516	IT	354,206	IT
Callan Associates, Inc.	645,420	Investments	632,641	Investments
CBIZ	—		25,686	Operations
ComGraphics, Inc.	192,122	Operations	210,926	Operations
Cohen, Rosenson, & Zuckerman, LLC	—		31,500	Legal
Crowe, LLP	95,871	IT	34,452	IT
Data Consultants Corp.	4,000	IT	—	
Election - America, Inc.	—		4,750	Legislative
Election Service Corporation	55,739	Operations	137,238	Operations
EMCOR Facilities Services, Inc.	—		4,454	IT
Emerald Data Solutions, Inc.	—		20,000	Operations
Foster Pepper, PLLC	305,539	Legal	431,410	Legal
Gabriel, Roeder, Smith & Co.	88,328	Actuarial	120,888	Actuarial
Goldstine, Skrodzki, Russian, Nemec and Hoff, Ltd.	—		15,015	Legal
Grant Thornton	1,989	Audit	79,281	Audit
Ice Miller, LLC	68,373	Legal	92,988	Legal
Imaging Office Systems, Inc.	76,152	IT	42,631	IT
Impact Networking, LLC	24,578	IT	90,879	IT
Jacobs, Burns Orlove & Hernandez	548,022	Legal	525,931	Legal
KPMG Limited	—		3,455	Operations
Meltwater News US Inc.	10,000	Operations	10,000	Operations
Michelle Holleman	130,256	Operations	62,020	Operations
North Shore Printers, Inc.	107,082	Operations	53,207	Operations
Partners By Design Inc.	51,158	Operations	69,348	Operations
Plante & Moran, PLLC	245,750	Audit	248,220	Audit
Fuse	99,896	Operations	44,022	Operations
Segal Company	35,335	Operations	66,616	Operations
Sikich, LLP	—		7,680	Operations
Solomon Cloud Solutions	—		6,660	Operations
Steptoe & Johnson, LLP	—		8,119	Legal
Sword & Shield Enterprise Security	—		53,350	IT
Vision Mai, LLC	81,000	Lobbyist	81,000	Lobbyist
Zhan Governmental Solutions, LLC	55,000	Lobbyist	65,000	Lobbyist
Total	**$ 3,287,266**		**$ 3,692,953**	

See accompanying independent auditor's report.

INVESTMENTS

This section includes a synopsis of the Fund's investment authority, summary tables of investment data, and a digest of the current year's investment activity and performance.

BNY MELLON

Asset Servicing

Michael J. Beggy
Vice President

July 15, 2020

To the Board of Trustees and the Executive Director,

BNY Mellon as custodian of the assets of The Public School Teachers' Pension and Retirement Fund of Chicago (the "client") has agreed to perform certain obligations under the Master Custody Agreement dated November 25, 2014. In order to perform its obligations, BNY Mellon has established an "Account" which holds client property in safekeeping of the Custodian (or other custodian banks or clearing operations). BNY Mellon has provided recordkeeping of certain property of the client and completed the annual accounting certification for the year July 1, 2019 through June 30, 2020.

In addition, in accordance with the terms of the Master Custody Agreement, BNY Mellon also provides the following services as Custodian (the terms of Master Custody Agreement dictate which services require a specific direction from Authorized Person of the client prior to the provision of such service):

- Hold any Securities in registered form in the name of the Custodian or one of its nominees.
- Settle purchases and sales of Securities and process other transactions, including free receipts and deliveries.
- Take actions necessary to settle transactions in connection with futures or options contracts, short selling programs, foreign exchange or foreign exchange contracts, swaps and other derivative investments.
- Deliver Securities in the Account if an Authorized Person advises the Custodian that the Board has entered into a separate securities lending agreement, provided that the Board executes the agreements as Custodian may require.
- Invest available cash in any collective investment fund selected by the Board or deposit available cash in interest bearing accounts in the banking department of the Custodian or an affiliated banking organization.
- Utilize Subcustodians and Depositories in connection with its performance of the Agreement.
- Receive and collect income and other payments due to the Account.
- Make distributions or transfers out of an Account pursuant to Authorized Instructions.
- Carry out any exchanges of Securities or other corporate actions not requiring discretionary decisions.
- Credit the Account with the proceeds from the sale, redemption or other disposition of Securities or interest, dividends or other distributions payable on Securities.
- Facilitate access by the Board or its designee to ballots or online systems to assist in the voting of proxies received for eligible positions of Securities held in the Account.
- Report the value of the Account as agreed upon by the client and custodian.

Sincerely,

Michael J. Beggy
Service Director

Asset Servicing
Room 410 ~ One Mellon Center ~ Pittsburgh, PA 15258-0001

The Bank of New York Mellon

Callan

Callan Associates Inc.
120 North LaSalle Street
Suite 2400
Chicago, IL 60602

Main 312.346.3536
Fax 312.346.1356

www.callan.com

October 23, 2020

Board of Trustees
Chicago Teachers' Pension Fund
425 South Financial Place, Suite 1400
Chicago, IL 60605

Dear Trustees:

Callan LLC is pleased to present the Chicago Teachers' Pension Fund ("Fund") results for fiscal year ended June 30, 2020. Fiscal year 2020 was eventful. The first half of the year, ending December 31, 2019, saw favorable economic dynamics globally and continued strength in the capital markets. By contrast, investors faced extraordinary volatility and unprecedented challenges during the second half of the fiscal year given the impact of the COVID-19 pandemic, both in the capital markets and the real economy. Given the severity of the pandemic, the Fed and Congress acted quickly to provide significant monetary and fiscal support to maintain liquidity, market functioning and economic support to the most vulnerable. The markets reacted positively to these support measures and recouped most of the losses incurred during the months of March and April by the end of the fiscal year. However, the real economy will likely take some time to recover given the scope of the COVID-19 crisis.

Domestic equities, as defined by the Russell 3000 Index, returned 6.5% for the fiscal year, with large capitalization companies leading versus smaller companies. Growth-oriented investments continued to outperform their value counterparts. International developed and emerging markets registered a loss of 4.8% and 3.4%, as measured by the MSCI ACWI ex-US and MSCI Emerging Markets indices, respectively, underperforming the U.S. equity market. By contrast, the U.S. fixed income market registered a positive return of 8.7% for the fiscal year. The real estate and infrastructure markets posted mixed results over the period. Real estate continued to add appreciation and income to investors, while the infrastructure market, as measured by the FTSE Developed Core Infrastructure 50/50 Index, declined by 9.0%.

As of June 30, 2020, the Fund's market value totaled approximately $10.7 billion, showing a decrease of approximately $46 million from June 30, 2019. During the past twelve month period:

- Domestic equity markets advanced over the trailing 12 months. The Russell 3000 Index, an index of domestic stocks covering all capitalizations, increased 6.5%.
- Developed international equity markets decreased 5.4%, as measured by the MSCI World ex-USA Index. Similarly, emerging markets posted a loss of 3.39%, as measured by the MSCI Emerging Markets Index.
- The domestic fixed income market registered a return of 8.7% during the year, as measured by the Bloomberg Aggregate Bond Index.
- Private real estate registered a return of 1.3%, as measured by the NCREIF NFI-ODCE Value Weighted index (Net).

In this environment, the Fund returned 4.2% net-of-fees (4.6% gross-of-fees) during the 12 month period ended June 30, 2020, which outperformed its market benchmark by 0.8%. Over the trailing three-year period, the Fund's net performance matched the return of its benchmark with an annualized return of 6.0%. Over the trailing five-year period, the Fund underperformed its benchmark by 3 basis points; however, the Fund has provided favorable results relative to the market benchmark over the long-term.

The Fund's domestic equity managers gained 7.3% on a net-of fee basis during the fiscal year, which outperformed the benchmark return of 6.5%. The Fund's international equity managers registered a loss of 2.3% net-of-fees over the same period, but outperformed the passive benchmark by 2.5%. The fixed income composite returned 8.7% net-of-fees, and matched the return of the market benchmark.

The private real estate portfolio had a return of 2.9%, net of fees, over the last twelve months compared to the benchmark return of 1.3%. During the fiscal year, the infrastructure portfolio gained 11.6% on a net of fee basis compared to a 9.0% loss for the benchmark. Private equity contributed 1.6% to the Fund over the fiscal year on a time-weighted basis.

Callan

Public School Teachers' Pension and
Retirement Fund of Chicago
August 20, 2019

Manager changes over the past year are summarized below:

New Manager	Asset Class	Inception Date
Oak Street Seeding and Strategic	Real Estate	August 2019
AUA Private Equity Fund II	Private Equity	October 2019
Estancia Capital Partners II	Private Equity	December 2019
Brookfield Infra IV	Infrastructure	September 2019
Aberdeen Standard XII	Private Equity	December 2019
JLC Infrastructure Fund I	Infrastructure	January 2020
P4G Partners I	Private Equity	January 2020
AFIG Partners II	Private Equity	February 2020
TA Realty XII	Real Estate	March 2020

Terminated Manager	Asset Class	Termination Date
NTGI S&P 500 Index Fund	Domestic Equity	September 2019
NTGI Gov't/Credit Bond Index	Domestic Fixed Income	July 2019

The Public School Teachers' Pension & Retirement Fund of Chicago maintains an appropriately diversified strategy, designed to maximize return with an acceptable risk level over the long-term. Callan supports the Fund's ongoing efforts to enhance its investments and due diligence activities. Callan is working on the continued enhancement of the Fund's investment strategy.

All performance returns for the Public School Teachers' Pension & Retirement Fund of Chicago presented in this report have been calculated by Callan LLC using a time weighted rate of return calculation for accounts with daily pricing and using a modified BAI calculation for accounts without daily pricing.

Sincerely,

B. Weymouth

Brianne Weymouth, CAIA

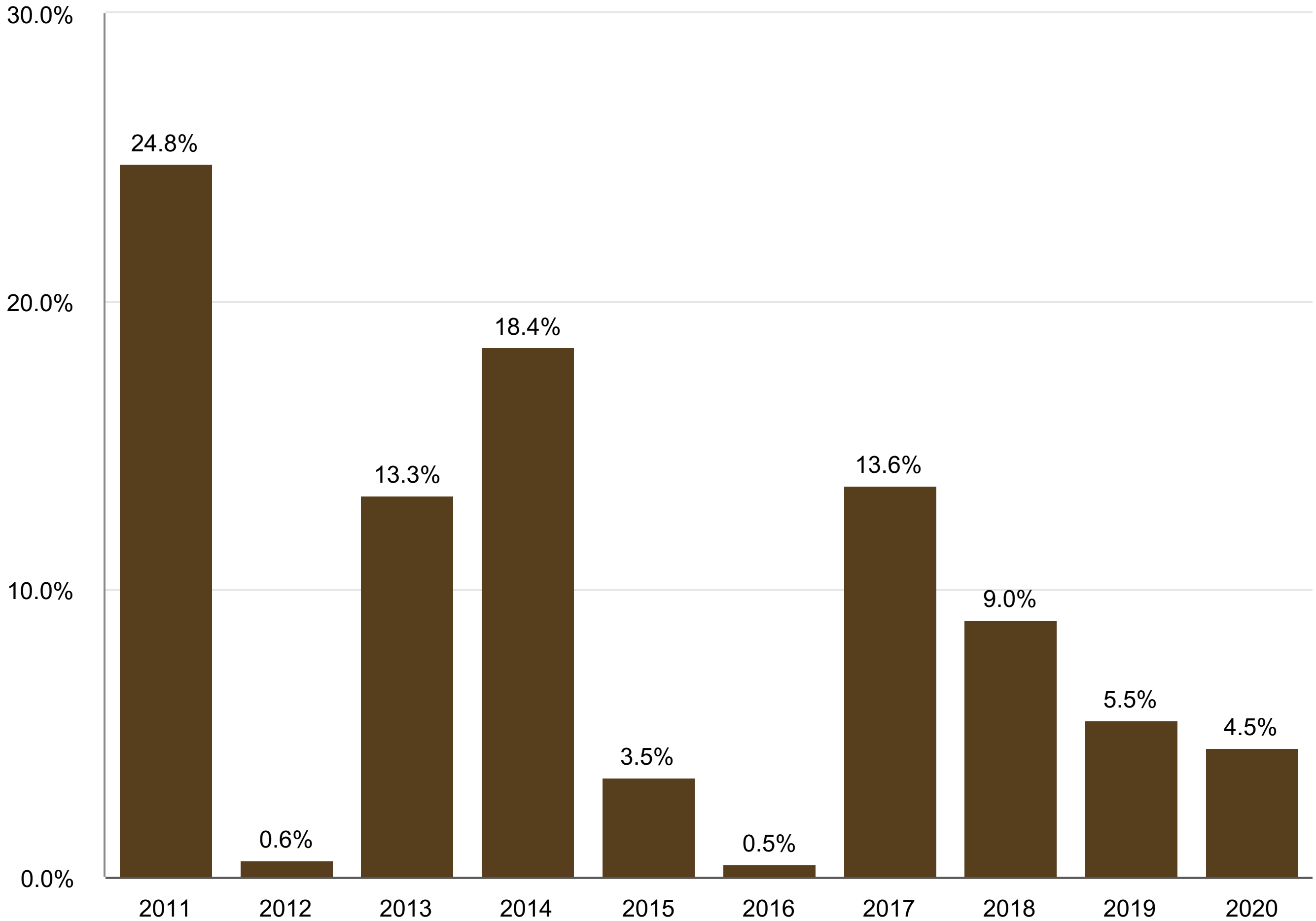
Angel Haddad

INVESTMENT MANAGERS
AS OF JUNE 30, 2020

Aberdeen Standard Investments Inc.
Adams Street Partners, LLC
Advanced Finance and Investment Group LLC
African Development Partners International, LP
Ariel Capital Management, LLC
Astra Partners I, LP
Attucks Asset Management, LLC
AUA Private Equity Partners, LLC
Basis Management Group, LLC
Blackstone Group Inc.
BMO Global Asset Management
Brookfield Asset Management
Capri Capital Partners, LLC
Channing Capital Management, LLC
CityView Investment Advisors, LP
Clarion Partners, LLC
Conestoga Capital Advisors, LLC
Dimensional Fund Advisors, LTD
Earnest Partners, LLC
Estancia Capital Management, LLC
EQT Services (UK) Limited
Europa Capital Partners, LLP
Farol Asset Management, LP
Fortress Investment Group, LLC
Franklin Templeton Real Estate Advisors, LLC
Fremont Realty Capital, LP
Garcia, Hamilton & Associates, LP
GreenOak Real Estate Advisors, LP
HarbourVest Partners, LLC
Heitman, LLC
Hispania Capital Partners, LLC
Hudson Realty Capital, LLC
IFM Global Infrastructure (US), LP
Industry Capital Advisors, LLC
ICV Capital Partners, LLC
J.P. Morgan Fleming Asset Management, Inc.
Kohlberg Kravis Roberts & Co. LP
LaSalle Investment Management, Inc.
Lazard Asset Management, LLC
Leading Edge Investment Advisors, LLC
LM Capital Group, LLC
Longpoint Realty Partners, LP
Long Wharf Capital, LLC
Macquarie Group Limited
Mesirow Financial, Inc.
MJE-Loop Capital Partners, LLC (JLC)
Morgan Stanley Investment Management, Inc.
Muller and Monroe Asset Management, LLC
Newport Capital Partners Holdings, LLC
New Mainstream Capital, LP
Oak Street Real Estate Capital, LLC
P4G Capital Management, LLC (P4G)
Palladium Equity Partners, LLC
Pantheon Ventures, LLP
Pharos Capital Group, LLC
Phocas Financial Corp.
Prudential Investment Management, Inc.
Pugh Capital Management, Inc.
RhumbLine Advisers, LP
RLJ Equity Partners
State Street Global Advisors (SSGA)
Strategic Global Advisors, LLC
Syncom Venture Partners, LLC
TA Realty, LLC
Taplin, Canida and Habacht, Inc.
The Northern Trust Co.
Turning Rock Partners, LP
UBS Realty Investors, LLC
Ullico Investment Advisors, Inc.
Walton Street Capital, LLC
Wellington Management Company, LLP
Western Asset Management Co.
William Blair & Company, LLC
Zevenbergen Capital Investments, LLC

TOTAL ANNUAL FUND RATE OF RETURN*

FOR THE FISCAL YEARS ENDED JUNE 30, 2011 THROUGH 2020



* Time-weighted rate of return.

SCHEDULE OF INVESTMENT RESULTS

	As of June 30					Annualized Returns		
	2016	2017	2018	2019	2020	3 Year	5 Year	10 Year
Total Fund	**0.5 %**	**13.6 %**	**9.0 %**	**5.5 %**	**4.5 %**	**6.3 %**	**6.5 %**	**9.1 %**
Large Cap	1.1 %	18.9 %	15.8 %	9.3 %	9.3 %	11.4 %	10.7 %	14.2 %
Russell 1000 Index	2.9 %	18.1 %	14.5 %	10.0 %	7.4 %	10.5 %	10.4 %	13.9 %
S&P 500	4.0 %	17.9 %	14.4 %	10.4 %	7.5 %	10.7 %	10.7 %	14.0 %
Small Cap Equity	(7.7)%	21.2 %	15.4 %	(3.0)%	(8.2)%	0.9 %	2.9 %	9.8 %
Russell 2000 Index	(6.7)%	24.6 %	17.6 %	(3.3)%	(6.6)%	2.0 %	4.3 %	10.5 %
International Equity	(8.4)%	19.8 %	8.5 %	0.7 %	(1.9)%	2.3 %	3.3 %	7.0 %
International Equity Benchmark	(10.2)%	20.5 %	7.8 %	0.3 %	(4.7)%	1.0 %	2.2 %	4.9 %
Fixed Income	6.3 %	0.9 %	(0.3)%	8.4 %	8.9 %	5.6 %	4.7 %	4.4 %
Bloomberg Aggregate Index	6.0 %	(0.3)%	(0.4)%	7.9 %	8.7 %	5.3 %	4.3 %	3.8 %
REITs	12.1 %	—	—	—	—	—	—	—
Custom REIT Index*	12.6 %	—	—	—	—	—	—	—
Real Estate (Private)	14.0 %	6.7 %	8.4 %	6.3 %	3.7 %	6.1 %	7.8 %	10.4 %
NFI ODCE Value Weight Net Only	11.8 %	6.9 %	7.6 %	5.5 %	1.3 %	4.7 %	6.4 %	9.8 %
Private Equity**	5.1 %	15.8 %	14.6 %	11.7 %	2.9 %	9.6 %	9.9 %	11.2 %
N/A	—	—	—	—	—	—	—	—
Infrastructure***	9.6 %	6.8 %	17.8 %	10.2 %	13.0 %	13.6 %	11.4 %	8.4 %
Absolute Benchmark	8.0 %	8.0 %	3.0 %	14.3 %	(9.0)%	2.3 %	4.6 %	6.3 %
Hedge Funds	(8.9)%	—	—	—	—	—	—	—
T-Bills+5%	5.2 %	—	—	—	—	—	—	—

* *Custom REIT Index is calculated based on a weighted average of the NAREIT domestic and NAREIT global indices to accurately reflect the changes in CTPF strategy.*

** *Returns for Private Equity are based on the custodial statements.*

*** *New Infrastructure benchmark (FTSE Core Developed Infrastructure 50/50/Index) adopted September 21, 2017.*

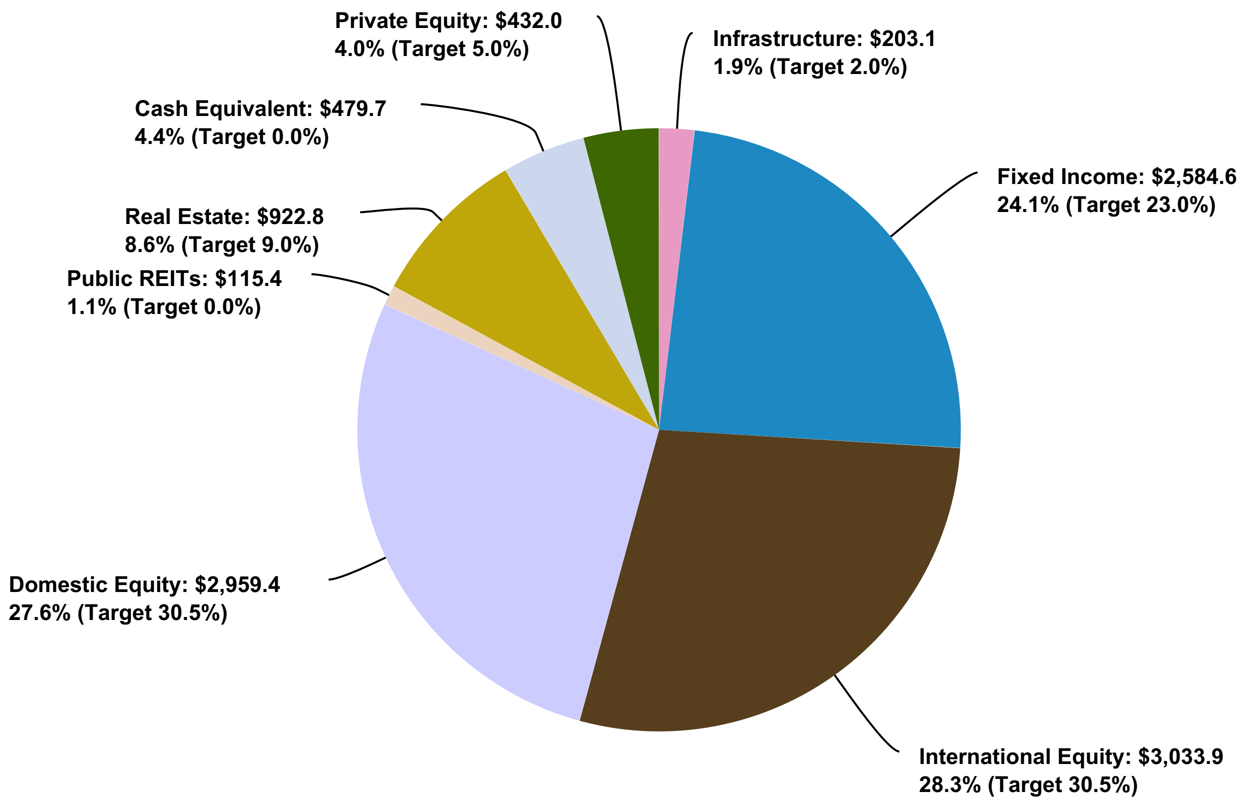
Note: *Returns are calculated based upon a time-weighted rate of return.*

INVESTMENT PORTFOLIO SUMMARY
DOLLARS IN MILLIONS

	June 30, 2019 Fair Value	Purchases	Sales (Fair Value)	Fair Value Adjustments	June 30, 2020 Fair Value	Percent of Total
Fixed Income	$ 2,522.6	$ 332.5	$ (311.3)	$ 40.8	$ 2,584.6	24.1%
Equity	6,365.4	276.9	(203.1)	(445.9)	5,993.3	55.8%
Public REITs	157.8	—	—	(42.4)	115.4	1.1%
Real Estate	719.8	9.3	(0.1)	193.8	922.8	8.6%
Infrastructure	210.9	—	—	(7.8)	203.1	1.9%
Private Equity	379.9	2.5	—	49.6	432.0	4.0%
Cash & Cash Equivalent	359.5	587.2	(418.6)	(48.4)	479.7	4.5%
Total Portfolio	**$ 10,715.9**	**$ 1,208.4**	**$ (933.1)**	**$ (260.3)**	**$ 10,730.9**	**100.0%**

ASSET ALLOCATION SUMMARY

IN MILLIONS OF DOLLARS*

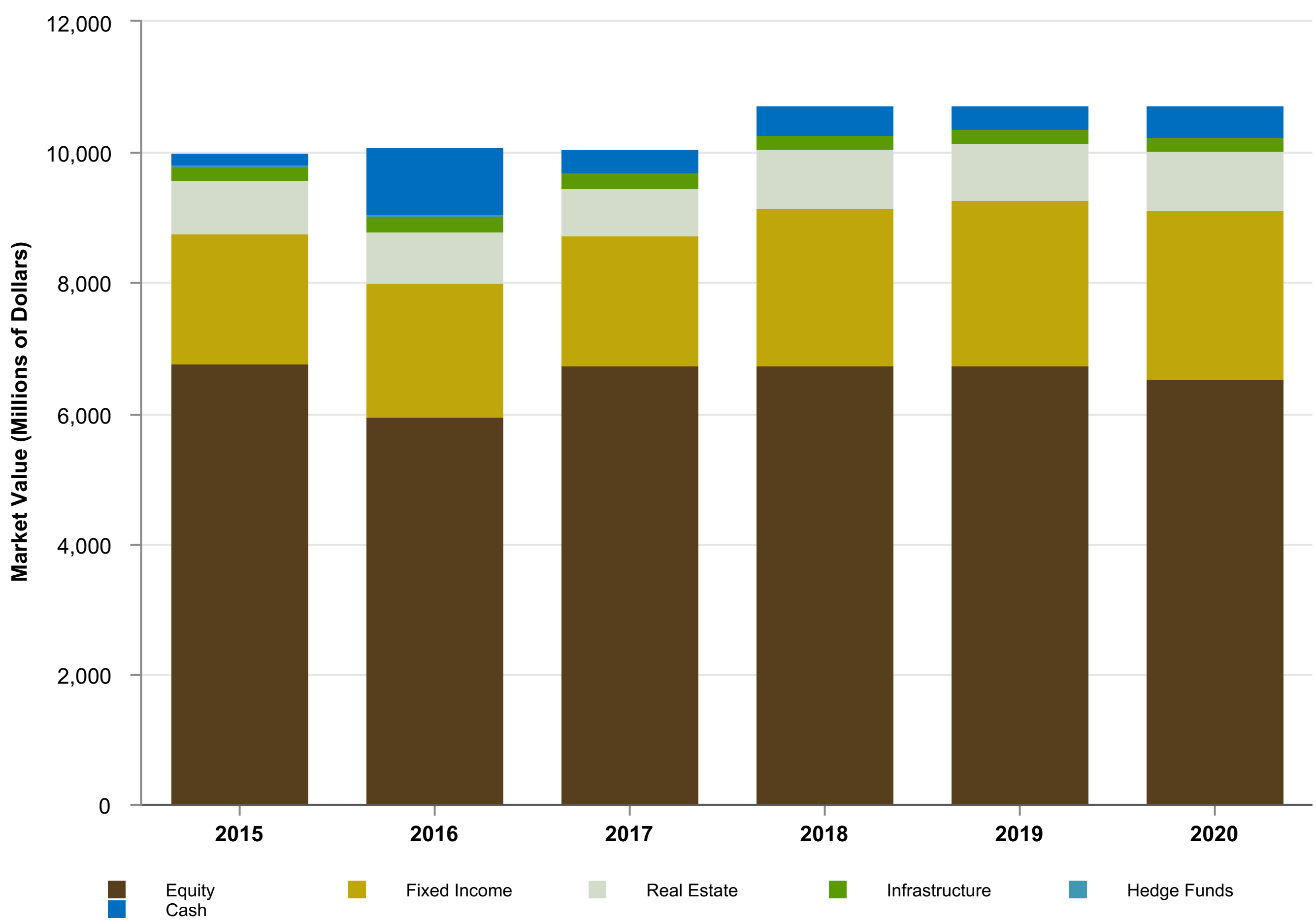


* **Note:** Percentage indicates actual category weight as a percentage of the entire portfolio.

HISTORICAL ASSET ALLOCATION
BY PERCENTAGE OF TOTAL PORTFOLIO

	2015		2016		2017		2018		2019		2020	
	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy
Equity:												
Domestic	33.3	30.0	28.8	30.5	32.8	30.5	29.0	30.5	29.1	30.5	27.6	30.5
International	27.1	30.0	25.1	30.5	30.0	30.5	31.1	30.5	30.3	30.5	28.3	30.5
Public REITs	2.5	2.0	2.3	—	1.3	—	1.3	—	1.5	—	1.1	—
Private Equity	3.1	3.0	2.8	5.0	2.8	5.0	2.8	5.0	3.5	5.0	4.0	5.0
Total Equity	**66.0**	**65.0**	**59.0**	**66.0**	**66.9**	**66.0**	**64.2**	**66.0**	**64.4**	**66.0**	**61.0**	**66.0**
Fixed Income	19.6	21.0	20.2	23.0	19.9	23.0	22.5	23.0	23.5	23.0	24.1	23.0
Real Estate	8.5	7.0	8.0	9.0	7.3	9.0	7.0	9.0	6.7	9.0	8.6	9.0
Infrastructure	2.0	3.0	2.4	2.0	2.4	2.0	2.1	2.0	2.0	2.0	1.9	2.0
Hedge Funds	0.3	2.0	0.3	—	—	—	—	—	—	—	—	—
Cash & Equiv.	3.6	2.0	10.1	—	3.5	—	4.2	—	3.4	—	4.4	—
Total Portfolio	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

HISTORICAL ASSET ALLOCATION
BY MARKET VALUE IN MILLIONS OF DOLLARS



DOMESTIC EQUITY SUMMARY
AS OF JUNE 30, 2020

Economic Sector Holdings

Economic Sector	Number of Shares	Market Value	Percent of Total	S&P 500 Index
Consumer Discretionary	6,340,804	$ 518,591,714	17.5%	10.8%
Consumer Staples	2,800,970	166,738,995	5.6%	7.0%
Energy	2,674,001	67,129,428	2.3%	2.8%
Financial Services	11,665,472	559,841,751	18.9%	12.9%
Health Care	6,054,502	448,733,906	15.2%	14.6%
Materials & Processing	2,110,116	90,114,392	3.1%	10.5%
Miscellaneous	112,116	14,326	0.0%	0.0%
Producer Durables	4,355,576	265,951,204	9.0%	10.8%
Technology	7,075,253	717,709,720	24.2%	27.5%
Utilities	3,105,556	124,555,408	4.2%	3.1%
Grand Total	**46,294,366**	**$ 2,959,380,844**	**100.0%**	**100.0%**

Top 10 Domestic Equity Holdings

Description	Number of Shares	Market Value	Percent of Total
Microsoft Corp.	678,155	$ 138,011,324	4.7%
Apple, Inc.	358,425	130,753,440	4.4%
Amazon, Inc.	42,015	115,911,822	3.9%
Facebook, Inc.	244,387	55,492,956	1.9%
Alphabet, Inc. - Class C	26,775	37,849,408	1.3%
Alphabet, Inc. - Class A	26,272	37,255,010	1.3%
Johnson & Johnson	223,879	31,484,104	1.1%
Nvidia Corporation	81,724	31,047,765	1.1%
Visa, Inc.	149,053	28,792,568	0.9%
Procter & Gamble Company	239,686	28,659,255	0.9%
Total Top 10 Domestic Equity	**2,070,371**	**$ 635,257,652**	**21.5%**
Grand Total	**46,294,366**	**$ 2,959,380,844**	**100.0%**

A complete list of the portfolio holdings is available at the pension fund office.

INTERNATIONAL EQUITY SUMMARY

AS OF JUNE 30, 2020

Country	Number of Shares	Market Value	Percent of Total	MSCI ACWI Ex-U.S. Index
South Africa	2,161,420	$ 13,714,914	0.5%	1.1%
Other	5,746,676	184,850	0.0%	0.4%
Total Africa	**7,908,096**	**$ 13,899,764**	**0.5%**	**1.5%**
Brazil	10,801,154	48,462,255	1.6%	1.5%
Canada	2,977,236	133,636,937	4.4%	6.5%
Chile	2,391,018	7,193,101	0.2%	0.2%
Colombia	3,535,028	5,170,993	0.2%	0.1%
Mexico	3,962,264	15,122,454	0.5%	0.5%
Other	13,236	330,991	—%	0.1%
Total Americas	**23,679,936**	**$ 209,916,731**	**6.9%**	**8.9%**
Australia	2,359,230	17,276,338	0.6%	4.4%
China	40,669,425	267,464,658	8.8%	11.7%
Hong Kong	17,560,321	59,201,817	1.9%	2.2%
India	2,707,672	34,437,974	1.1%	2.3%
Japan	9,091,413	312,149,999	10.3%	16.5%
Singapore	6,784,308	31,194,801	1.0%	0.7%
South Korea	740,854	45,151,544	1.5%	3.3%
Taiwan	16,928,196	90,499,348	3.0%	3.5%
Other	58,366,872	178,568,429	5.9%	3.2%
Total Asia/Pacific Basin	**155,208,291**	**$ 1,035,944,908**	**34.1%**	**47.8%**
Belgium	102,331	5,937,293	0.2%	0.6%
France	3,865,637	236,249,634	7.8%	7.1%
Germany	3,981,733	231,275,390	7.6%	6.0%
Ireland	1,597,277	125,930,541	4.1%	0.4%
Netherlands	2,542,903	124,099,208	4.1%	2.8%
Norway	5,559,259	62,928,659	2.1%	0.3%
Spain	3,564,465	33,341,004	1.1%	1.6%
Sweden	2,944,762	74,735,626	2.5%	1.9%
Switzerland	2,530,388	173,199,057	5.7%	6.7%
United Kingdom	38,484,138	401,945,454	13.3%	9.1%
Other	101,227,000	304,507,666	10.0%	5.3%
Total Europe	**166,399,893**	**$ 1,774,149,532**	**58.5%**	**41.8%**
Grand Total	**353,196,216**	**$ 3,033,910,935**	**100.0%**	**100.0%**

A complete list of the portfolio holdings is available at the pension fund office.

TOP 10 INTERNATIONAL EQUITY HOLDINGS
AS OF JUNE 30, 2020

Description	Number of Shares	Market Value	Percent of Total
DFA International Small Cap	8,335,557	$ 127,367,316	4.2%
Lazard Emerging Markets Equity Portfolio	7,418,375	107,788,992	3.6%
Earnest Partners China Fund	23,014	66,652,594	2.2%
Novartis A.G.	546,356	47,565,001	1.6%
SAP S.E.	335,679	46,872,959	1.5%
RELX, PLC	1,901,076	43,948,735	1.5%
Roche Holding A.G.	123,278	42,705,445	1.4%
Taiwan Semiconductor Mfg. Co., Ltd.	2,024,097	36,422,907	1.2%
Safran S.A.	357,850	35,859,233	1.2%
Tencent Holdings, Ltd.	543,854	34,987,082	1.1%
Total Top 10 International Equity	**21,609,136**	**$ 590,170,264**	**19.5%**
Grand Total	**353,196,216**	**$ 3,033,910,935**	**100.0%**

A complete list of the portfolio holdings is available at the pension fund office.

FIXED INCOME SUMMARY
AS OF JUNE 30, 2020

Fixed Income Holdings

Asset Category	Par Value	Market Value	Percent of Total	Barclays Aggregate Bond Index
Treasury	$ 617,047,329	$ 643,606,350	24.9%	37.2%
Mortgage Backed Securities	581,726,301	614,759,172	23.8%	26.8%
Corporate Bonds	882,016,340	1,021,722,063	39.5%	25.2%
Government Agency	422,756,793	71,251,903	2.8%	5.0%
Non Gov't Backed CMOs/Asset Backed	40,981,602	42,026,802	1.6%	2.5%
Commercial Mortgage-Backed	118,625,781	122,051,478	4.7%	2.3%
Municipal Bonds	13,440,011	16,505,876	0.6%	1.0%
Other	2,268,242	52,626,189	2.1%	0.0%
Grand Total	**$ 2,678,862,399**	**$ 2,584,549,833**	**100.0%**	**100.0%**

A complete listing of the portfolio holdings is available at the pension fund office.

PUBLIC REITS SUMMARY
AS OF JUNE 30, 2020

Public REITs Summary

Property Type	Number of Shares	Market Value	Percent of Total	NAREIT Property Index
Retail REITs	470,549	$ 7,061,622	7.7%	14.2%
Industrial & Office REITs	1,061,544	21,574,230	15.6%	17.0%
Residential (Apartment) REITs	569,965	12,421,579	15.5%	—%
Health Care Facilities	318,251	7,083,446	5.7%	10.3%
Hotel & Lodging REITs	470,549	2,493,526	7.7%	4.4%
Residential (Development) REITs	686	39,438	0.0%	—%
Other	2,357,256	64,762,557	47.8%	54.2%
Grand Total	**5,248,800**	**$ 115,436,398**	**100.0%**	**100.0%**

Top 10 Public REITs Holdings

Holding	Number of Shares	Market Value	Percent of Total
American Tower Corp.	46,152	$ 11,932,138	10.3%
Crown Castle International Corp.	35,890	6,006,192	5.2%
Equinix, Inc.	8,105	5,692,142	4.9%
Prologis, Inc.	49,359	4,606,675	4.0%
SEGRO, plc	366,167	4,049,302	3.5%
Camden Property Trust	37,149	3,388,732	2.9%
Digital Realty Trust, Inc.	22,650	3,218,792	2.8%
Warehouses De Pauw, CVA	109,016	2,975,324	2.6%
Big Yellow Group, plc	205,864	2,553,830	2.2%
Brixmor Property Group, Inc.	195,379	2,504,759	2.2%
Total Top 10 Public REITs Holdings	**1,075,731**	**$ 46,927,886**	**40.6%**
Grand Total	**5,248,800**	**$ 115,436,398**	**100.0%**

A complete listing of the portfolio holdings is available at the pension fund office.

PRIVATE EQUITY SUMMARY
AS OF JUNE 30, 2020

Private Equity Holdings

Fund	Total Capital Called	Market Value	Percent of Total
Aberdeen Venture Partners XI, LP	$ 4,905,986	$ 4,905,986	1.1%
Adams Street Partners (Multiple Funds)	174,751,585	174,751,585	40.5%
AFIG Fund II Co-Invest, LP	4,112,405	4,112,405	1.0%
African Development Partners III, LP	1,508,740	1,508,740	0.3%
Astra Partners I, LP	5,391,328	5,391,328	1.3%
AUA Private Equity Fund II, LP	2,134,487	2,134,487	0.5%
Brinson Partners (Multiple Funds)	3,857,315	3,857,315	0.9%
Estancia Capital Partners Fund II, LP	8,896,802	8,896,802	2.1%
EQT Fund II, LP	11,926,763	13,395,543	3.1%
Farol Fund II, LP	8,605,219	8,605,219	2.0%
HarbourVest Partners (Multiple Funds)	41,311,433	41,311,433	9.6%
Hispania Capital Partners	1,762,143	1,762,143	0.4%
ICV Partners (Multiple Funds)	17,123,856	17,123,856	4.0%
KKR Americas Fund XII, LP	13,484,826	13,484,826	3.1%
Mesirow Capital Partners (Multiple Funds)	48,146,160	48,146,160	11.1%
Muller & Monroe Private Equity Fund of Funds	1,917,483	1,917,483	0.4%
NMS Fund III, LP	4,510,991	4,510,991	1.0%
P4G Capital Partners I, LP	56,866	56,866	0.0%
Palladium Equity Partners (Multiple Funds)	14,114,979	14,114,979	3.3%
Pantheon Ventures (Multiple Funds)	27,261,477	27,540,176	6.4%
Pharos Capital Partners (Multiple Funds)	20,839,601	20,839,601	4.8%
RLJ Equity Partners Fund II, LP	7,049,781	7,049,781	1.6%
Syndicated Communications Venture Partners V, LP	195,998	195,998	0.0%
Turning Rock Fund I, LP	6,417,645	6,417,645	1.5%
Grand Total	**$ 430,283,869**	**$ 432,031,348**	**100.0%**

A complete listing of the portfolio holdings is available at the pension fund office.

INFRASTRUCTURE SUMMARY
AS OF JUNE 30, 2020

Infrastructure Holdings

Fund	Number of Shares	Market Value	Percent of Total
JP Morgan Infrastructure Investments Fund	85,396,504	$ 85,396,504	42.1%
Total Commingled Funds	**85,396,504**	**$ 85,396,504**	**42.1%**

Fund	Total Capital Called	Market Value	Percent of Total
Brookfield Infrastructure Fund III, LP	$ 39,529,965	$ 37,487,312	18.5%
Brookfield Infrastructure Fund IV, LP	9,321,856	9,034,264	4.4%
IFM Global Infrastructure (US), LP	35,000,000	35,510,529	17.5%
JLC Infrastructure Fund I, LP	1,568,934	1,328,915	0.6%
Macquarie Infrastructure Partners II US	7,858,759	31,596,655	15.6%
Macquarie European Infrastructure Fund III	2,695,075	2,695,075	1.3%
Total Closed-End Funds	**$ 95,974,589**	**$ 117,652,750**	**57.9%**
Grand Total		**$ 203,049,254**	**100.0%**

A complete list of the portfolio holdings is available at the pension fund office.

REAL ESTATE SUMMARY
AS OF JUNE 30, 2020

Real Estate Holdings

Fund	Number of Shares	Market Value	Percent of Total
JP Morgan Strategic Property Fund	15,899,496	$ 165,685,464	18.0%
LaSalle Property Fund	209,607,812	209,607,812	22.7%
PRISA I Real Estate Fund	2,289	157,177,626	17.0%
PRISA II Real Estate Fund	603	24,296,229	2.6%
UBS Trumbull Property Fund	59,528,449	59,528,449	6.5%
Total Commingled Funds	**285,038,649**	**$ 616,295,580**	**66.8%**

Fund	Total Capital Called	Market Value	Percent of Total
Big Real Estate Fund I, LP	$ 17,473,661	$ 17,473,661	1.9%
Blackstone RE Debt Strategies High Grade, LP	31,438,309	31,438,309	3.4%
Capri Select Income II, LLC	11,842	11,842	0.0%
Clarion Lion Industrial Trust	125,581,814	125,581,814	13.6%
Emerging Manager Real Estate Fund of Funds, LP	4,274,414	4,274,414	0.5%
Europa Fund III, LP	1,157,924	1,300,523	0.1%
Fortress Japan Opportunity Domestic Fund C-I, LP	894,284	894,284	0.1%
Fortress Japan Opportunity Fund II Dollar A, LP	2,123,046	2,123,046	0.2%
GreenOak US III, LP	9,792,928	9,792,928	1.1%
Heitman Value Partners IV, LP	15,704,060	15,704,060	1.7%
Industry Capital Berkeley Partners	45,316	45,316	0.0%
Long Wharf Real Estate Partners VI, LP	3,941,259	3,941,259	0.4%
Longpoint Realty Fund I, LP	15,715,118	15,715,118	1.7%
MB Asia RE Fund (TE), LP	311,853	311,853	0.0%
Newport Capital Partners II, LP	16,407,431	16,407,431	1.8%
Oak Street Real Estate Capital IV, LP	22,380,321	22,380,321	2.4%
Realty Associates Fund XII, LP	2,940,966	2,940,966	0.3%
Seeding and Strategic Capital Fund II, LP	8,771,545	8,771,545	1.0%
Southwest Multifamily Partners, LP	13,485,982	13,485,982	1.5%
Walton Street Capital (Multiple Funds)	13,907,633	13,907,633	1.5%
Total Closed-End Funds	**$ 306,359,706**	**$ 306,502,305**	**33.2%**
Grand Total		**$ 922,797,885**	**100.0%**

A complete list of the portfolio holdings is available at the pension fund office.

MANAGER ANALYSIS
AS OF JUNE 30, 2020

Asset Category	Market Value as of June 30, 2020	Percent of Total	FY 2020 Manager Fees	Percent of Market Value
Domestic Equity	$ 2,959,380,844	27.6%	$ 5,049,252	0.2%
International Equity	3,033,910,935	28.3%	12,963,857	0.4%
Public REITs	115,436,398	1.1%	—	—
Fixed Income	2,584,549,833	24.1%	3,168,853	0.1%
Real Estate	922,797,885	8.6%	11,631,390	1.3%
Infrastructure	203,049,254	1.9%	3,433,524	1.7%
Private Equity	432,031,348	4.0%	7,631,627	1.8%
Cash and Equivalent	479,732,946	4.4%	—	—
Total	**$ 10,730,889,443**	**100.0%**	**$ 43,878,503**	**0.4%**

A complete list of the portfolio holdings is available at the pension fund office.

BROKER COMMISSION REPORT

DOMESTIC AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2020

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets LLC	6,242,624	$ 127,673	$ 0.02
Penserra Securities LLC/Cheevers & Company	4,860,043	60,126	0.01
Cabrera Capital Markets, LLC	2,820,051	57,866	0.02
Siebert Willams Shank & Co., LLC	2,254,942	44,420	0.02
North South Capital, LLC	1,515,083	30,302	0.02
Barclays Capital Inc.	1,231,835	27,766	0.02
Wall Street Access GLP	1,201,021	23,473	0.02
Cowen And Company, LLC	728,520	21,171	0.03
Bank of America/Merrill Lynch/BofA Securities Inc.	1,338,349	20,202	0.02
Investment Technology Group Inc./ ITG Inc.	1,342,972	16,561	0.01
Morgan Stanley & Co., LLC	597,010	16,313	0.03
Instinet, LLC	3,230,658	15,286	0.00
RBC Capital Markets, LLC	521,918	14,513	0.03
Raymond James & Associates, Inc.	1,050,674	12,303	0.01
Divine Capital Markets LLC	603,712	12,074	0.02
Sanford C. Bernstein & CO., LLC	540,727	12,050	0.02
Mischler Financial Group, Inc.	961,477	9,896	0.01
Goldman Sachs Execution & Clearing, L.P.	491,520	9,894	0.02
Citigroup Global Markets Inc./Salomon Bros.	858,449	8,371	0.01
Virtu Financial Inc.	428,670	7,968	0.02
CL King & Associates, Inc.	407,624	7,393	0.02
Liquidnet, Inc.	573,669	6,796	0.01
MKM Partners LLC	221,922	6,658	0.03
CIS Brokerage Inc.	182,204	6,184	0.03
Piper Sandler Companies	534,467	8,048	0.02
Sturdivant & Co. Inc	244,529	4,974	0.02
Academy Securities, Inc.	184,321	4,749	0.03
Keybanc Capital Markets Inc.	101,820	4,582	0.05
JMP Securities LLC	91,276	3,886	0.04
Stifel, Nicolaus & Company, Incorporated	78,625	3,531	0.04
J.P. Morgan Securities LLC	214,384	3,433	0.02
Robert W. Baird & Co. Incorporated	86,447	3,006	0.03
National Securities Corporation	72,342	2,894	0.04
Credit Suisse First Boston	112,247	2,463	0.02
Sandler, O'Neil & Partners, L.P.	238,769	2,388	0.01
Seaport Global Securities LLC	233,439	2,334	0.01
Telsey Advisory Group LLC	92,813	2,186	0.02
Jefferies LLC	106,858	2,122	0.02
Stephens	76,139	1,523	0.02
Capital Institutional Services, Inc. (CAPIS)	139,032	1,404	0.01
Luminex Trading & Analytics, LLC	103,799	1,215	0.01
BMO Capital Markets Corp.	54,759	1,111	0.02
The Benchmark Company, LLC	110,556	1,106	0.01
Needham & Company, LLC	24,625	1,084	0.04
Suntrust Robinson Humphrey, Inc.	48,232	992	0.02
Other (17 Brokers)	276,665	5,028	0.02
Grand Total	**37,431,818**	**$ 639,318**	**$ 0.02**

BROKER COMMISSION REPORT

MWDBE DOMESTIC AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2020

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets LLC	6,242,624	$ 127,673	$ 0.02
Penserra Securities LLC/Cheevers & Company	4,860,043	60,126	0.01
Cabrera Capital Markets, LLC	2,820,051	57,866	0.02
Siebert Willams Shank & Co., LLC	2,254,942	44,420	0.02
North South Capital, LLC	1,515,083	30,302	0.02
Divine Capital Markets LLC	603,712	12,074	0.02
Mischler Financial Group, Inc.	961,477	9,896	0.01
CL King & Associates, Inc.	407,624	7,393	0.02
Sturdivant & Co., Inc.	244,529	4,974	0.02
Academy Securities, Inc.	184,321	4,749	0.03
Telsey Advisory Group LLC	92,813	2,186	0.02
Capital Institutional Services, Inc. (CAPIS)	139,032	1,404	0.01
Ivy Securities, Inc.	7,799	156	0.02
Andes Capital Group, LLC	4,295	86	0.02
Total Directed Domestic Commission	**20,338,345**	**$ 363,305**	**$ 0.02**
Grand Total	**37,431,818**	**$ 639,318**	**$ 0.02**

BROKER COMMISSION REPORT

INTERNATIONAL AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2020

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets LLC	56,186,150	$ 336,906	$ 0.01
Mischler Financial Group, Inc.	12,652,236	116,824	0.01
Morgan Stanley & Co., LLC	30,649,669	110,546	0.00
Liquidnet, Inc.	14,556,429	101,830	0.01
UBS Securities, LLC/UBS Warburg, LLC	21,431,138	92,609	0.00
J.P. Morgan Securities, LLC	20,666,204	74,929	0.00
Jefferies, LLC	14,262,112	70,723	0.00
Bank of America/Merrill Lynch/BofA Securities Inc.	7,385,964	71,453	0.01
Credit Suisse First Boston	6,986,181	52,265	0.01
Cowen And Company, LLC	9,667,306	46,972	0.00
Penserra Securities, LLC/Cheevers & Company	8,641,744	44,515	0.01
Instinet, LLC	11,515,487	40,414	0.00
Capital Institutional Services, Inc. (CAPIS)	3,351,463	37,953	0.01
Goldman Sachs Execution & Clearing, LP	3,633,095	33,823	0.01
Jones Trading Institutional Services, LLC	9,044,529	32,444	0.00
Cabrera Capital Markets, LLC	6,480,710	31,354	0.00
Bass Trading International Group/BTIG, LLC	5,163,760	28,044	0.01
Berenberg Bank	1,038,084	26,867	0.03
Citigroup Global Markets Inc./Salomon Bros.	2,281,008	26,395	0.01
North South Capital, LLC	6,843,043	22,425	0.00
Macquarie Capital (USA) Inc.	13,719,511	21,924	0.00
Virtu Financial Inc.	6,289,710	21,748	0.00
Barclays Capital Inc.	1,686,546	21,064	0.01
Investment Technology Group Inc./ ITG Inc.	5,586,743	20,123	0.00
Castleoak Securities, LP	1,710,463	17,917	0.01
Credit Lyonnais Securities Ltd./CLSA	5,836,658	17,180	0.00
Sanford C. Bernstein & Co., LLC	78,215,671	14,414	0.00
RBC Capital Markets, LLC	1,188,754	11,998	0.01
Daiwa Securities Group Inc.	625,365	10,851	0.02
Siebert Willams Shank & Co., LLC	962,247	19,257	0.02
Robert W. Baird & Co., Inc.	269,073	9,438	0.04
Exane Inc.	208,510	9,362	0.04
Stifel, Nicolaus & Co., Inc.	219,471	7,928	0.04
Piper Sandler Companies	732,369	13,332	0.02
The Fig Group, LLC	3,232,680	10,200	0.00
Carnegie Investment Bank AB/Carnegie Inc.	260,936	7,266	0.03
Societe Generale Securities Corporation	2,980,975	6,939	0.00
MKM Partners, LLC	1,928,138	6,117	0.00
Pavilion Financial Corporation	5,789,629	5,544	0.00
Raymond James & Associates, Inc.	200,196	5,357	0.03
Davy Group	190,998	5,150	0.03
Keefe, Bruyette & Woods, Inc.	137,912	4,827	0.04
HSBC Bank/Midland (LDN)	1,259,075	4,631	0.00
Wedbush Securities Inc.	117,120	4,099	0.03
SMBC Nikko Capital Markets, Ltd	212,700	4,045	0.02
Other (60 Brokers)	136,841,613	84,826	0.00
Grand Total	**522,839,375**	**$ 1,764,828**	**$ 0.00**

BROKER COMMISSION REPORT

MWDBE INTERNATIONAL AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2020

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	56,186,150	$ 336,906	$ 0.01
Mischler Financial Group, Inc.	12,652,236	116,824	0.01
Penserra Securities, LLC/Cheevers & Company	8,641,744	44,515	0.01
Capital Institutional Services, Inc. (CAPIS)	3,351,463	37,953	0.01
Cabrera Capital Markets, LLC	6,480,710	31,354	0.00
North South Capital, LLC	6,843,043	22,425	0.00
Castleoak Securities, LP	1,710,463	17,917	0.01
Siebert Willams Shank & Co., LLC	962,247	19,257	0.02
The Fig Group, LLC	3,232,680	10,200	0.00
Divine Capital Markets, LLC	7,279	146	0.02
Total Directed Domestic Commission	**100,068,015**	**$ 637,497**	**$ 0.01**
Grand Total	**522,839,375**	**$ 1,764,828**	**$ 0.00**

SCHEDULE OF CASH RECEIPTS AND DISBURSEMENTS

FOR THE YEARS ENDED JUNE 30, 2020 AND 2019

	2020	2019
Cash and Cash Equivalents - Beginning of Period	$ 481,469,634	$ 580,897,074
Add Receipts:		
Member Contributions	196,706,700	188,577,363
Public Revenues	891,962,778	782,226,739
Interest and Dividends	389,928,648	296,826,122
Miscellaneous	1,500,396	1,687,970
Net Investment Sales	222,246,275	251,253,008
Total Cash Receipts	**$ 1,702,344,797**	**$ 1,520,571,202**
Less Disbursements:		
Pension Benefits	1,498,231,493	1,470,812,926
Refunds	17,343,166	23,492,174
2.2 Legislative Refunds	673,391	562,230
Refunds of Insurance Premiums	57,454,136	61,626,322
Investment and Administrative Expenses	70,186,200	63,504,990
Total Cash Disbursements	**$ 1,643,888,386**	**$ 1,619,998,642**
Net Increase (Decrease) in Cash and Cash Equivalents	58,456,411	(99,427,440)
Cash and Cash Equivalents - End of Period	**$ 539,926,045**	**$ 481,469,634**

SECTION 5/17-146. TO MAKE INVESTMENTS

To make investments. To invest the monies of the Fund, subject to the requirements and restrictions set forth in this Article and in **Sections 1-109**, **1-109.1**, **1-109.2**, **1-110**, **1-111**, **1-114** and **1-115**. No bank or savings and loan association shall receive investment funds as permitted by this Section, unless it has complied with the requirements established pursuant to Section 6 of the Public Funds Investment Act. Those requirements shall be applicable only at the time of investment and shall not require the liquidation of any investment at any time.

The Board of Trustees shall have the authority to enter into any agreements and to execute any documents that it determines to be necessary to complete any investment transaction.

All investments shall be clearly held and accounted for to indicate ownership by the Fund. The Board of Trustees may direct the registration of securities or the holding of interests in real property in the name of the Fund or in the name of a nominee created for the express purpose of registering securities or holding interests in real property by a national or state bank or trust company authorized to conduct a trust business in the State of Illinois. The Board of Trustees may hold title to interests in real property in the name of the Fund or in the name of a title holding corporation created for the express purpose of holding title to interests in real property.

Investments shall be carried at cost or at a value determined in accordance with generally accepted accounting principles and accounting procedures approved by the Board of Trustees.

The value of investments held by the Fund in one or more commingled investment accounts shall be determined in accordance with generally accepted accounting principles.

The Board of Trustees of any Fund established under this Article may not transfer its investment authority, nor transfer the assets of the Fund to any other person or entity for the purpose of consolidating or merging its assets and management with any other pension fund or public investment authority, unless the Board of Trustees resolution authorizing such transfer is submitted for approval to the contributors and pensioners of the Fund at elections held not less than 30 days after the adoption of such resolution by the Board of Trustees, and such resolution is approved by a majority of the votes cast on the question in both the contributors election and the pensioners election.

The election procedures and qualifications governing the election of trustees shall govern the submission of resolutions for approval under this paragraph, insofar as they may be made applicable.

SECTION 5/17-146.2. TO LEND SECURITIES

To lend securities. The Board of Trustees may lend securities owned by the Fund to a borrower upon such written terms and conditions as may be mutually agreed. The agreement shall provide that during the period of the loan the Fund (or the custodian of the Fund, or agent thereof, as applicable) shall retain the right to receive or collect from the borrower all dividends, interest and distributions to which the Fund would have otherwise been entitled.

The borrower shall deposit with the Fund collateral for the loan equal to the market value of the securities at the time the loan is made, and shall increase the amount of collateral if the Board of Trustees requests an additional amount because of subsequent increased market value of the securities. The Board of Trustees may accept from the borrower cash collateral or collateral consisting of assets described in Section 1-113 of this Act.

To the extent that the Fund participates in a securities lending program established and maintained by (1) a national or State bank which is authorized to do business in the State of Illinois, or (2) an investment manager, the Board of Trustees may accept collateral consisting of an undivided interest in a pool of commingled collateral that has been established by the bank or investment manager for the purpose of pooling collateral received for the loans of securities owned by substantially all of the participants in such bank's or investment manager's securities lending program. Nothing in Sections 1-109, 1-110 or 1-113 of this Act shall be construed to prohibit the Fund's lending of securities in accordance with this Section.

SECTION 5/17-147. CUSTODY OF FUND-BONDS-LEGAL PROCEEDINGS

Custody of Fund-Bonds-Legal proceedings. The city treasurer, ex-officio, shall be the custodian of the Fund, and shall secure and safely keep it, subject to the control and direction of the Board of Trustees. He shall keep his books and accounts concerning the Fund in the manner prescribed by the Board of Trustees.

The books and accounts shall always be subject to the inspection of the Board of Trustees or any member thereof. The city treasurer shall be liable on his official bond for the proper performance of his duties and the conservation of the Fund.

Payments from the Fund shall be made upon warrants signed by the president and the secretary of the Board of Education, the president of the Board of Trustees, and countersigned by the executive director or by such person as the Board of Trustees may designate from time to time by appropriate resolution.

Neither the treasurer nor any other officer having the custody of the Fund is entitled to retain any interest accruing thereon, but such interest shall accrue and inure to the benefit of such Fund, become a part thereof, subject to the purposes of this Article.

Any legal proceedings necessary for the enforcement of the provisions of this Article shall be brought by and in the name of the Board of Trustees of the Fund.

ACTUARIAL

This section includes the actuarial reports and summarizes actuarial liability and unfunded actuarial liability. Schedules of data summarizing information about members and beneficiaries, actuarial assumptions, and a glossary of terms are also included.

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October 12, 2020

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, 2020

Dear Members of the Board:

The results of the June 30, 2020 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.

We prepared the following supporting schedules for the Comprehensive Annual Financial Report for the System's use in the Actuarial Section:

- Executive Summary
- Actuarial Gain/Loss Analysis
- Comparison of Historical Funded Ratios
- Employer Contribution Requirement
    - Development of Additional Contributions under Section 17-127 and 17-127.2 of the Illinois Pension Code
    - Development of Normal Cost State Contributions under Section 17-127(d)(1) of the Illinois Pension Code
    - Projected Future Year Contribution Amounts
- Required Employer Contribution Sources
- Schedule of Actuarially Determined Contributions
- Funded Ratio
- Comparison of Cash Flows
- Plan Maturity Measures
- Results of Actuarial Valuation as of June 30, 2020

120 North LaSalle Street | Suite 1350 | Chicago, Illinois 60602-3495

- Components of Actuarial Accrued Liability and Normal Cost by Tier
- Analysis of Change in Unfunded Actuarial Accrued Liability
- Analysis of Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability for Fiscal Year Ending June 30, 2020
- Historical Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability
- Baseline Projections – Employer Contributions Determined Under Public Act 90-0655, Public Act 91-0357, Public Act 96-0889, and Public Act 100-0465
- Solvency Test
- Development of the Actuarial Value of Assets
- Historical Investment Returns
- Summary of Fund Membership
- Schedule of Active Member Data
- Member Population and Ratio of Non-Actives to Actives
- Total Lives and Annual Salaries of Active Members Classified by Age and Years of Service as of June 30, 2020
- Reconciliation of Member Data as of June 30, 2020
- History of Retirees and Beneficiaries Added to Rolls during the Fiscal Year Ended June 30, 2020
- Annuitants Classified by Benefit Type and Amount as of June 30, 2020
- Initial Year Retirement Analysis
- Summary of Actuarial Methods and Assumptions
    - Mortality and Future Life Expectancy
    - Percent Separating within Next Year
    - Employee Salary Increases
    - Probabilities of Becoming Disabled within Next Year
    - Percent Retiring within Next Year
    - New Entrant Profile
- Summary of Plan Provisions
    - Salary and COLA Development for Members Hired on or after January 1, 2011
- Additional Projection Details – Actuarial Accrued Liability (Dollars in Millions)
- Additional Projection Details – Present Value of Future Benefits (Dollars in Millions)
- Additional Projection Details – Benefit Payments Including Administrative Expenses and Health Insurance Subsidy (Dollars in Millions)
- Additional Projection Details - Active Population, Covered Payroll, Employee Contributions and Normal Costs (Dollars in Millions)

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, 2021 and ending June 30, 2022. 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 17, 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 our scope of expertise and was not performed.

The findings in this report are based on data and other information through June 30, 2020. 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, 2020 actuarial valuation are based on an experience study for the five-year period from July 1, 2012 through June 30, 2017, and the 2020 Actuarial Assumption Study, performed by GRS. All actuarial assumptions used in this report are reasonable for the purposes of this actuarial valuation. Additional information about the actuarial assumptions is included in Section G of this report entitled Actuarial Methods and Assumptions.

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

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

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.

Board of Trustees
Public School Teachers' Pension and Retirement Fund of Chicago
Page 4

This report reflects the impact of COVID-19 through June 30, 2020. 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.

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

Amy Williams

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

Amy Williams, ASA, MAAA, FCA
Senior Consultant

GRS

SECTION A: EXECUTIVE SUMMARY

Actuarial Valuation Date:	June 30, 2020	June 30, 2019
Required Employer Contributions for Fiscal Year Ending:	**June 30, 2022**	**June 30, 2021**
Estimated Required Employer Contributions:		
Required Board of Education Contributions	$ 653,694,000	$ 605,852,000
Additional Board of Education Contributions (0.58% of pay)	13,486,000	13,149,000
Additional State Contributions (0.544% of pay)	12,649,000	12,333,000
State Contributions Pursuant to P.A. 100-0465 (Normal Cost)[a]	264,848,000	254,560,000
Total Required Employer Contributions	$ 944,677,000	$ 885,894,000
Percentage of Projected Capped Payroll	40.629%	39.076%
Actuarial Valuation Date:	**June 30, 2020**	**June 30, 2019**
Actuarial Information for Fiscal Year Ending:	**June 30, 2021**	**June 30, 2020**
Actuarially Determined Contribution[b] as of the Actuarial Valuation Date:		
Annual Amount	$ 1,219,857,317	$ 1,147,030,511
Percentage of Projected Capped Payroll for Upcoming Year	53.80%	52.07%
Membership:		
Number of		
Active Members[c]	30,091	29,295
Members Receiving Payments	28,015	28,317
Vested Former Members Eligible for Deferred Benefits	10,024	9,926
Non-vested Former Members Eligible for Refunds Only	21,260	20,621
Total	89,390	88,159
Covered Payroll as of the Actuarial Valuation Date	$ 2,262,053,256	$ 2,196,918,127
Projected Capped Payroll for Upcoming Year	$ 2,267,288,286	$ 2,203,055,500
Projected Capped Payroll for Upcoming Year + 1	$ 2,325,129,719	$ 2,267,106,915
Annualized Benefit Payments	$ 1,488,748,930	$ 1,469,042,542
Assets:		
Market Value of Assets (MVA)	$ 10,937,062,021	$ 11,038,837,459
Actuarial Value of Assets (AVA)	$ 11,240,208,045	$ 11,021,811,634
Approximate Return on Market Value of Assets	4.07%	4.75%
Approximate Return on Actuarial Value of Assets	7.06%	5.92%
Ratio - Actuarial Value of Assets to Market Value of Assets	102.77%	99.85%
Actuarial Information as of the Actuarial Valuation Date:		
Total Normal Cost Amount (Including Admin. Expenses)	$ 399,729,564	$ 382,994,837
Employer's Normal Cost Amount (Including Admin. Expenses)	$ 195,673,618	$ 184,719,842
Employer's Normal Cost Amount (Including Admin. Expenses and Health Insurance Subsidy)[d]	$ 260,673,618	$ 249,719,842
Actuarial Accrued Liability (AAL)	$ 24,073,482,607	$ 23,252,163,307
Unfunded Actuarial Accrued Liability (UAAL)	$ 12,833,274,562	$ 12,230,351,673
Funded Ratio based on Actuarial Value of Assets	46.69%	47.40%
UAAL as % of Covered Payroll	567.33%	556.70%
Funded Ratio based on Market Value of Assets	45.43%	47.47%

[a] State Normal Cost contribution represents the projected employer Normal Cost for fiscal years 2021 and 2022, 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, 2020, the remaining amortization period is 23 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

Introduction

The law governing the Public School Teachers' Pension and Retirement Fund of Chicago requires the Actuary, as the technical adviser 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, 2020. 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, 2022.

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, 2020, actuarial valuation were adopted by the Board during the September 17, 2020, Board meeting, and were based on the recommendations from the 2020 Actuarial Assumptions Study. The changes in actuarial assumptions include:

- Decreased the investment return assumption from 7.00% to 6.75%;
- Decreased the price inflation assumption from 2.50% to 2.25%;
- Decreased the wage inflation assumption from 3.00% to 2.75%;
- Decreased the salary increase assumption based on the lower wage inflation assumption of 2.75%;
- Decreased the assumed increase to the pay cap for members hired on and after January 1, 2011 from 1.250% to 1.125%; and
- Decreased the assumed cost of living adjustment rate from 1.250% to 1.125% for members hired on and after January 1, 2011.

All other assumptions remain unchanged from the previous actuarial valuation and were adopted by the Board (including CPS's requested modifications) during the September 30, 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").

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

Report Highlights

The employer's contribution requirement for FY 2022 is $944.7 million. The 2019 actuarial valuation had projected the statutory contribution would increase from $885.9 million for FY 2021 to $909.1 million for FY 2022. The key reason for the $29.6 million increase in the employer's contribution requirement of $944.7 million over the projected amount from the prior actuarial valuation of $909.1 million are the change in the actuarial assumptions and unfavorable investment experience on the market value of assets.

Over the past 10 years, CTPF experienced investment gains on a market value basis compared to the actuarial assumption in fiscal years 2011, 2013, 2014, 2017, and 2018 and investment losses in fiscal years 2012, 2015, 2016, 2019, and 2020. The return on market value for the year ending June 30, 2020, was approximately 4.07% compared to a return of 4.75% in FY 2019. The average market value investment return over the most recent 10 years has been approximately 8.59%. Table 9 on page 119 provides historical investment returns (on an MVA and AVA basis) over the past 25 years.

The funded ratio decreased from 47.5% as of June 30, 2019, to 45.4% as of June 30, 2020, based on the market value of assets, and decreased from 47.4% as of June 30, 2019, to 46.7% as of June 30, 2020, based on the actuarial value of assets. There are net deferred asset losses of $298.4 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 2020

The Fund assets earned approximately 4.07% on a market value basis during FY 2020 which was less than the investment return assumption of 7.00% for FY 2020. The Fund assets earned approximately 7.06% on an actuarial value of assets basis during FY 2020, due to recognition of net deferred investment gains under the asset smoothing method. Since 7.06% is greater than the assumed rate of investment return of 7.00% for FY 2020, there was an asset gain of $36.18 million on the actuarial value of assets.

There was also a net gain of $173.43 million from actuarial liabilities, which is comprised of a gain of approximately $55.35 million from demographic experience, and a gain of $118.08 million from lower than expected pay increases.

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

1. Actuarial Accrued Liability ("AAL") - Prior Year (Pensions Only)	$	23,252.16
2. Total Normal Cost - Prior Year[a]		382.99
3. Benefits and Administrative Expenses Paid in FY 2020[b]		(1,541.25)
4. Interest on the above items, 1, 2, and 3		1,587.80
5. Expected AAL 06/30/2020 (1+2+3+4)		23,681.70
6. Impact of Change in Actuarial Assumptions and Methods		565.21
7. Expected AAL 06/30/2020 After Assumption Changes (5+6)		24,246.91
8. Actual AAL 06/30/2020		24,073.48
9. Actuarial (Gain)/Loss on Liabilities (8-7) (Pensions Only)	$	(173.43)

[a] *Total Normal Cost from the previous actuarial valuation includes both employee and employer portion. The employee portion is based on actual contributions.*

[b] *Includes refund of insurance premiums.*

Numbers may not add due to rounding.

CTPF experienced an overall actuarial gain of $209.61 million. The total net actuarial gain is the total of the gain from assets and the net gain from liabilities. The total actuarial gain for the year is as follows (dollars in millions):

1. Actuarial (Gain)/Loss on Assets	$	(36.18)
2. Actuarial (Gain)/Loss on Liabilities		(173.43)
3. Total Actuarial (Gain)/Loss (1+2)	$	(209.61)

The experience of the population determines the liability gain or loss for the year. There was a gain on salaries, due to lower salary increases than assumed. From the last year to this year, there were small gains or losses on retirement, disability experience, active mortality and retiree mortality. There was a gain due to termination 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 an actuarial gain.

See Table 4 on page 114, 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 $11,038.8 million as of June 30, 2019, to $10,937.1 million as of June 30, 2020. The actuarial value of assets as of June 30, 2020, is $11,240.2 million, which is $303.1 million greater than the market value of assets. This difference is due to the continuing recognition of deferred investment gains and losses. Twenty-five percent of these gains and losses are recognized each year. There are net deferred asset losses of $298.4 million which will be recognized in the actuarial value of assets over the next three years (a $94.0 million loss in FY 2021, a $129.5 million loss in FY 2022 and a $74.9 million loss in FY 2023).

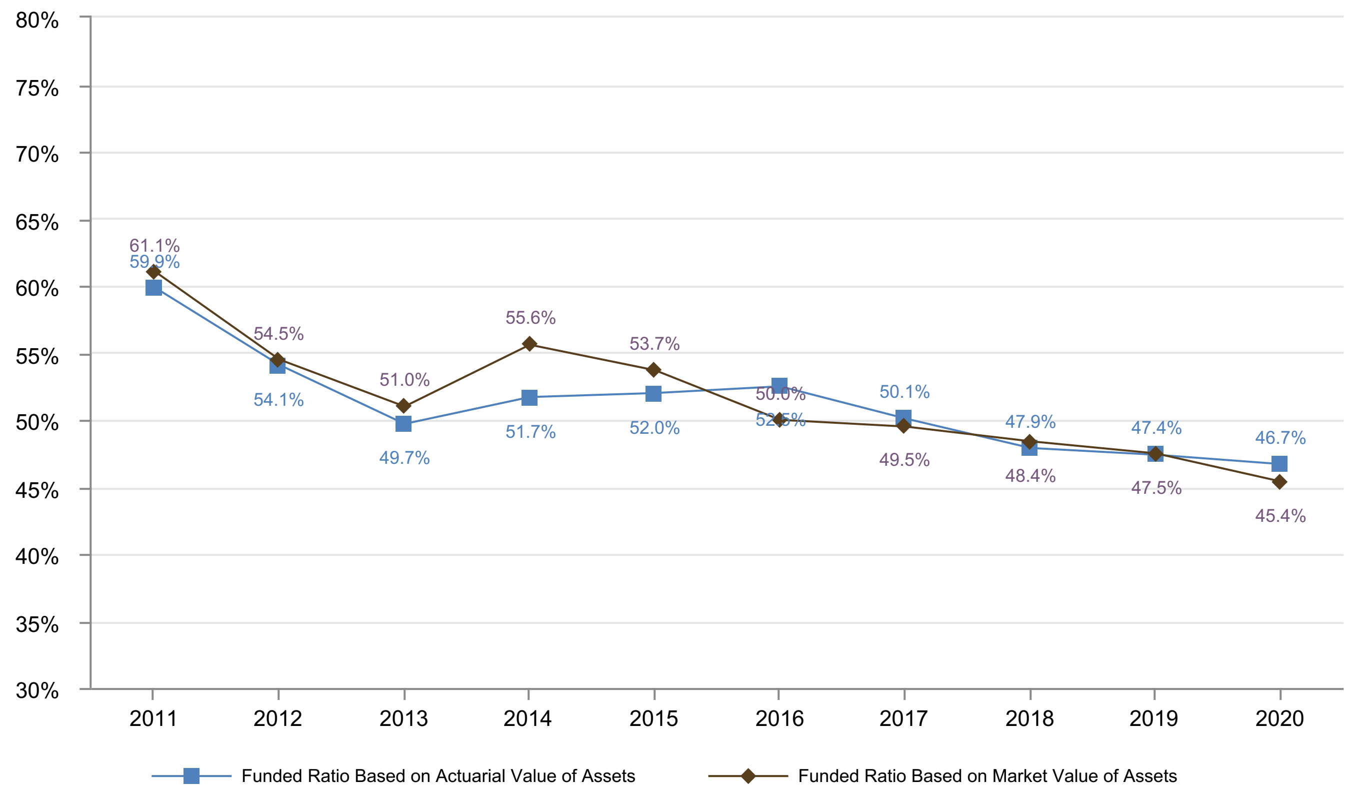
The detailed determinations of asset values utilized in this valuation and the change in assets in the last year are set out in Section E.

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% 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.

Comparison of Historical Funded Ratios



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

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

> For fiscal years 2014 through 2059, the minimum contribution to the Fund to be made by the Board of Education in each fiscal year shall be an amount determined by the Fund to be sufficient to bring the total assets of the Fund up to 90% 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% 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% 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% 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% 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% 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% to 0.567%, 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 2022

The funded ratio as of the June 30, 2020, actuarial valuation on an actuarial value basis is 46.7%. Therefore, additional contributions by the Board of Education and State will be required for fiscal year 2022. The projected payroll for fiscal year 2022 is $2,325,129,719. Based on the projected payroll for fiscal year 2022, and the additional State and Board of Education contribution rates of 0.544% and 0.58% of payroll, respectively, the additional State and Board of Education contributions for fiscal year 2022 are as follows:

Development of Additional Contributions under Section 17-127 and 17-127.2 of the Illinois Pension Code	Fiscal Year 2022	Fiscal Year 2021
Projected Total Capped Payroll	$ 2,325,129,719	$ 2,267,106,915
Additional State Contributions Under Section 17-127 of the Illinois Pension Code	$ 12,649,000	$ 12,333,000
(% of Projected Capped Payroll)	0.544%	0.544%
Additional Board of Education Contributions Under Section 17-127.2 of the Illinois Pension Code	$ 13,486,000	$ 13,149,000
(% of Projected Capped Payroll)	0.580%	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 2022	Fiscal Year 2021*
Total Normal Cost	$ 384,449,000	$ 376,410,000
Projected Administrative Expenses	24,661,000	23,320,000
Total Normal Cost Including Administrative Expenses	$ 409,110,000	$ 399,730,000
Expected Employee Contributions	209,262,000	204,056,000
Employer Normal Cost	$ 199,848,000	$ 195,674,000
Health Insurance Subsidy	65,000,000	65,000,000
State Contributions Under Section 17-127(d)(1) of the Illinois Pension Code	**$ 264,848,000**	**$ 260,674,000**

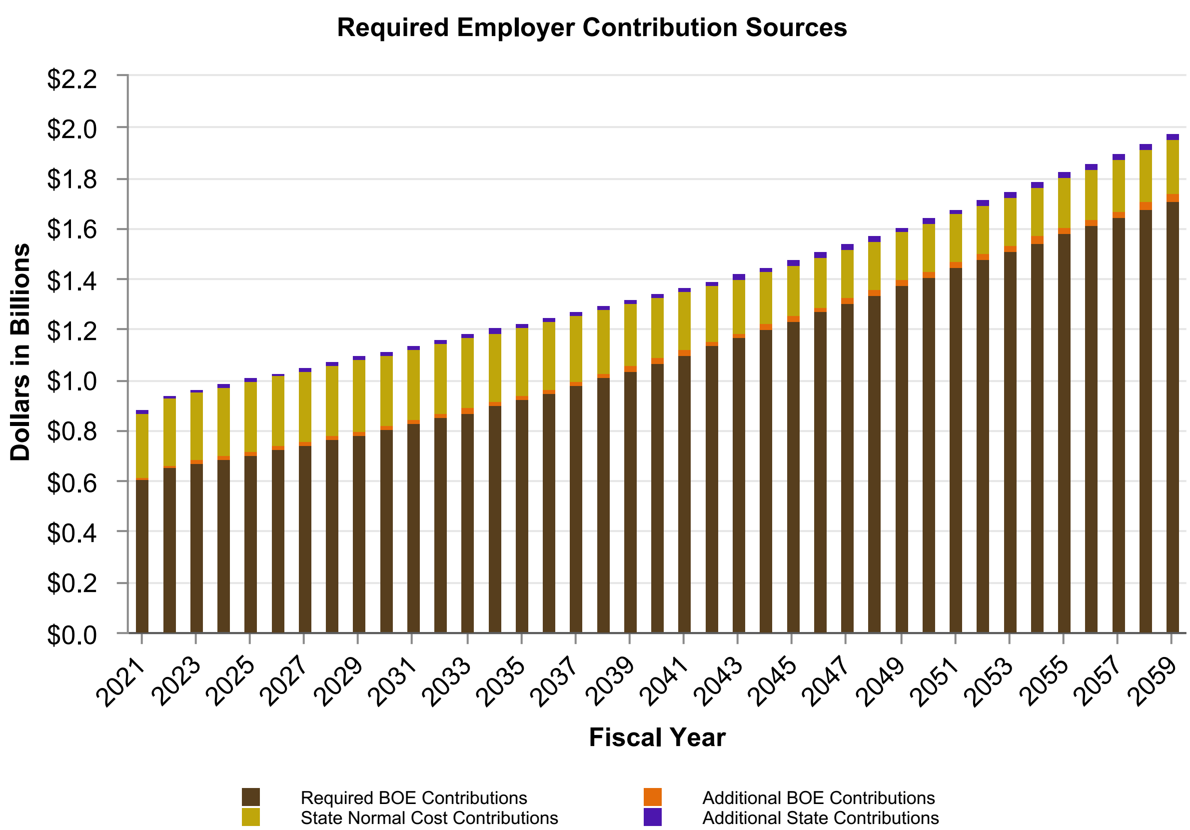
**Based on June 30, 2020 actuarial valuation results. Fiscal year 2021 numbers are presented for illustrative and comparative purposes only. They are only used to develop the Actuarially Determined Contribution (ADC).*

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% 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 2022 is equal to $653,694,000, (net of Additional State and Board of Education Contributions).

The fiscal year ending June 30, 2021, and June 30, 2022, 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
2021	$ 605,852,000	$ 13,149,000	$ 12,333,000	$ 254,560,000	$ 885,894,000
2022	653,694,000	13,486,000	12,649,000	264,848,000	944,677,000
2023	671,117,000	13,803,000	12,946,000	269,005,000	966,871,000
2024	689,059,000	14,118,000	13,242,000	272,577,000	988,996,000
2025	707,478,000	14,431,000	13,535,000	275,424,000	1,010,868,000
2026	726,144,000	14,741,000	13,826,000	277,863,000	1,032,574,000
2027	745,310,000	15,050,000	14,116,000	279,767,000	1,054,243,000
2028	765,039,000	15,357,000	14,404,000	280,936,000	1,075,736,000
2029	785,207,000	15,660,000	14,688,000	281,453,000	1,097,008,000
2030	806,268,000	15,968,000	14,977,000	281,347,000	1,118,560,000
2031	828,304,000	16,282,000	15,271,000	280,673,000	1,140,530,000

The following graph details the projected employer contribution requirements by Source for fiscal years 2021 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, 2020 actuarial valuation. In order to determine projected contribution amounts, the following additional assumptions were used:

- Total employer contributions of $885,894,000 for fiscal year 2021.
- Administrative expenses of $18,375,799 for fiscal year 2020, as provided by the Fund. For fiscal year 2021, the budgeted administrative expense amount of $23,219,842, as provided by Staff. Thereafter, administrative expenses are assumed to increase 5.75% annually for the first 14 years and then increase in line with projected capped payroll after 14 years.
- New entrants whose average age is 32.69 and average pay is $49,385 (2020 dollars).
- The active member population is assumed to remain level at 30,197 (includes 106 expected new hires) for all years of the 39-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 121, the number of active members decreased by about 10% between 2008 and 2017, which is an average annualized decrease of about 1.0 percent. The number of actives increased by less than 1.0% in 2018, by 1.2% in 2019 and by 2.7% in 2020. We will continue to review the assumption regarding the projected active member population annually.
- 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% 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% of pay are assumed to occur end of year.
- 55% of the Board of Education's previous year's special tax levy is assumed to occur March 1st each year. The March 1st payment as provided by CTPF is equal to $263,523,630 in fiscal year 2020 and is assumed to increase 3% per year.
- The remaining Board of Education required contribution is assumed to occur end of year.

The average increase in total uncapped payroll for the 39-year projection period is approximately 2.75% per year. It is important to note that benefits for new hires are based on capped payroll which is ultimately projected to grow at 1.125% 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. The remaining amortization period as of June 30, 2020, actuarial valuation is 23 years.

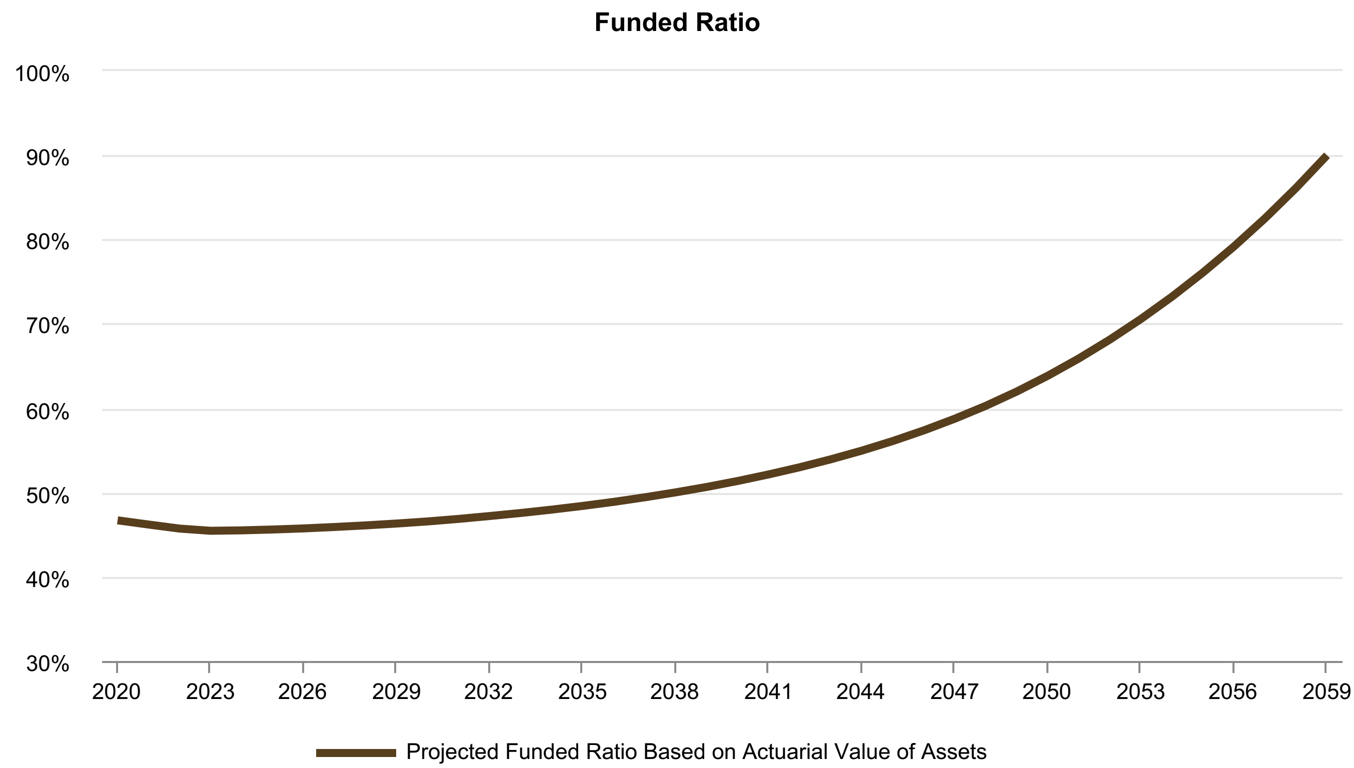
A key objective of the ADC is to accrue costs over the working lifetime of plan members to ensure that benefit obligations are satisfied and intergenerational equity is promoted. Although the ADC is solely an accounting provision, in certain circumstances it could represent a reasonable annual funding 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 2020 and 2021, as well as the statutory employer contribution for fiscal years 2020 and 2021, are shown below as a percentage of projected capped payroll. The ADC for 2020 and statutory employer contribution for 2021 are based on the results of the June 30, 2019, actuarial valuation.

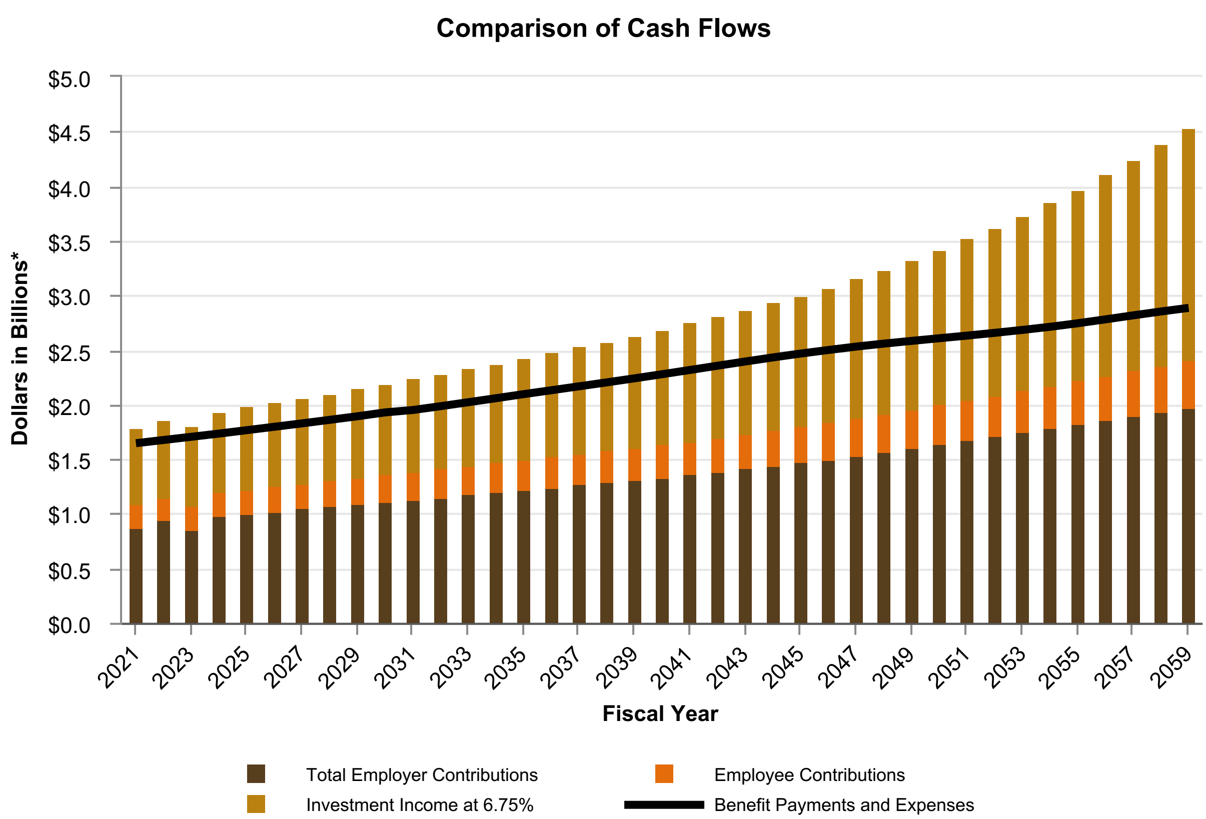
Actuarial Valuation Date:	June 30, 2020	June 30, 2019
Actuarially Determined Contributions for Fiscal Year Ending:	**June 30, 2021**	**June 30, 2020**
1. Actuarial Accrued Liability	$ 24,073,482,607	$ 23,252,163,307
2. Actuarial Value of Assets	$ 11,240,208,045	$ 11,021,811,634
3. Unfunded Actuarial Accrued Liability [1 - 2]	$ 12,833,274,562	$ 12,230,351,673
4. Employer Normal Cost (Including Administrative Expenses and Health Insurance Subsidy)	$ 260,673,618	$ 249,719,842
5. Employer Normal Cost Adjusted for Contribution Timing	$ 264,917,480	$ 254,477,830
6. Amount to Amortize the Unfunded Liability over a 30-year Closed-period, Beginning July 1, 2013, as a Level Percentage of Payroll	$ 954,939,837	$ 892,552,681
7. Actuarially Determined Contribution Requirement [5 + 6]	$ 1,219,857,317	$ 1,147,030,511
8. Projected Capped Payroll for Fiscal Year	$ 2,267,288,286	$ 2,203,055,500
9. Actuarially Determined Contribution as a Percentage of Projected Capped Payroll	53.80 %	52.07 %
10. Total Required Employer Contribution Including Health Insurance Subsidy	$ 885,894,000	$ 854,500,000
11. Total Required Employer Contribution as a Percentage of Projected Capped Payroll [10 / 8]	39.07 %	38.79 %
12. Total Required Employer Contribution as a Percentage of Actuarially Determined Contribution [10 / 7]	72.62 %	74.50 %

The fiscal year 2021 Actuarially Determined Contribution is based on an amortization factor which reflects 23 years remaining in the amortization period, an interest rate of 6.75 percent, 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.

The statutory funding policy required for CTPF provides for level percent of pay funding that produces a funding target of 90% by 2059, assuming an open group projection. The graph on the next page shows the projected funded ratio. A key observation is that the funded ratio does not grow markedly until after 2039. That is, a majority of the funding occurs between 2040 and 2059. This illustrates how significantly the current funding policy defers or back loads contributions into the future.



The following graph compares the projected benefits and expenses against employer contributions, employee contributions and investment income. From 2021 to 2059, the percentage of investment income needed to pay ongoing benefits decreases from 78.7% to 22.0%. 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.



** 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 ($10,937.1 million on a market value basis) are not sufficient to cover current retiree liabilities ($17,300.9 million) and the ratio of market value of assets to retiree benefit payments and expenses is approximately 7.1. 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.

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% 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 2021 contribution would be $1,219.9 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 his/her 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.

Future Considerations

Changes (such as the addition of a new benefit tier and delaying the 90% 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 6.75% 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 46.7% to 90.0% by 2059.

This is a severely underfunded plan and the ability of the plan to reach 90% 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. Such an evaluation was not within the scope of this project and is not within the actuary’s domain of expertise. Consequently, we are not able to assess the ability of the State and/or the Board of Education to make contributions when due.

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 121, the number of active members decreased by about 10% between 2008 and 2017, which is an average annualized decrease of about 1.0%. The number of actives increased by less than 1.0% in 2018, by 1.2% in 2019, and by 2.7% in 2020.

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. Although there is only three years of experience where the number of active members has increased, we believe that it is reasonable to maintain the current level future active member population assumption, but continue to annually monitor the number of active members in the coming years. Given the decrease in the number of active members between 2008 and 2017, if future valuations show additional declines in the active population, the Board may want to consider an update to the population projection assumption to include a decreasing population in the near term before reaching an equilibrium number of active members long term.

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 6.75% 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 in dollar amount through 2038 before it begins to decrease;
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% 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% 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 and is not within the actuary's domain of expertise. 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 2022 shown on page 100 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 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:

	2020	2019
Ratio of the Market Value of Assets to Payroll	4.84	5.02
Ratio of Actuarial Accrued Liability to Payroll	10.64	10.58
Ratio of Actives to Retirees and Beneficiaries	1.07	1.03
Ratio of Net Cash Flow to Market Value of Assets	(4.94)%	(5.25)%

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% different than assumed would equal 25% 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% 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% other than assumed would equal 22% 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.

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, 2020

1. Number of Members		
a. Active		30,091
b. Inactive:		
i. Eligible for deferred vested pension benefits		10,024
ii. Eligible for return of contributions only		21,260
c. Current Benefit Recipients:		
i. Retirement annuities		24,293
ii. Survivor annuities		3,262
iii. Disability annuities		460
d. Total		89,390
2. Covered Payroll		
a. As of the Actuarial Valuation Date	$	2,262,053,256
b. Projected Capped Payroll for Fiscal Year 2021		2,267,288,286
c. Projected Capped Payroll for Fiscal Year 2022		2,325,129,719
3. Annualized Benefit Payments Currently Being Made		
a. Retirement annuities	$	1,388,627,977
b. Survivor annuities		81,549,497
c. Disability annuities		18,571,456
d. Total	$	1,488,748,930
4. Actuarial Accrued Liability - Annuitants		
a. Current Benefit Recipients:		
i. Retirement annuities	$	16,360,652,738
ii. Survivor annuities		730,552,004
iii. Disability annuities		209,701,712
b. Total	$	17,300,906,454
5. Actuarial Accrued Liability - Inactive Members		
a. Eligible for Deferred Vested Pension Benefits	$	470,202,661
b. Eligible for Return of Contributions Only		95,083,036
c. Total	$	565,285,697

Active count excludes 106 members expected to be hired to replace retirements and terminations that occurred in June 2020.

Table 1: Results of Actuarial Valuation (Continued) as of June 30, 2020

	Normal Cost	Actuarial Accrued Liability
6. Active Members		
a. Retirement Benefits	$ 288,007,934	$ 5,280,438,137
b. Withdrawal	75,911,356	753,862,767
c. Death Benefits	5,149,501	73,822,566
d. Disability	7,340,931	99,166,986
e. Administrative Expenses	23,319,842	—
f. Total	$ 399,729,564	$ 6,207,290,456
7. Total Actuarial Accrued Liability (4 + 5 + 6)		$ 24,073,482,607
8. Market Value of Assets (MVA)		$ 10,937,062,021
9. Unfunded Actuarial Accrued Liability Based on MVA (7 - 8)		$ 13,136,420,586
10. Funded Percentage Based on MVA (8 ÷ 7)[a]		45.43%
11. Actuarial Value of Assets (AVA)		$ 11,240,208,045
12. Unfunded Actuarial Accrued Liability Based on AVA (7 - 11)		$ 12,833,274,562
13. Funded Percentage Based on AVA (11. ÷ 7.)[a]		46.69%
14. Total Normal Cost	$ 399,729,564	
15. Expected Employee Contributions	$ 204,055,946	
16. Annual Employer Normal Cost	$ 195,673,618	
(% of Projected Capped Payroll for Fiscal Year 2021)	8.63%	
17. Health Insurance Subsidy	$ 65,000,000	
18. Annual Employer Normal Cost, including Health Insurance Reimbursement (16 + 17)	$ 260,673,618	
(% of Projected Capped Payroll for Fiscal Year 2021)[b]	11.50%	

[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	18,118		11,973		30,091	
2. Covered Payroll						
a. As of the Valuation Date	$ 1,589,735,140		$ 672,318,116		$ 2,262,053,256	
b. Projected Capped Payroll for Fiscal Year 2021	1,589,735,140		677,553,146		2,267,288,286	
c. Projected Capped Payroll for Fiscal Year 2022	1,554,881,677		770,248,042		2,325,129,719	
3. Actuarial Accrued Liability						
a. Retirement Benefits	$ 5,187,619,984		$ 92,818,153		$ 5,280,438,137	
b. Withdrawal	643,691,979		110,170,788		753,862,767	
c. Death Benefits	68,498,453		5,324,113		73,822,566	
d. Disability	89,770,423		9,396,563		99,166,986	
e. Total	$ 5,989,580,839		$ 217,709,617		$ 6,207,290,456	
4. Normal Cost	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**
a. Retirement Benefits	$ 268,702,361	16.90%	$ 19,305,573	2.85%	$ 288,007,934	12.70%
b. Withdrawal	47,944,261	3.02%	27,967,095	4.13%	75,911,356	3.35%
c. Death Benefits	4,000,352	0.25%	1,149,149	0.17%	5,149,501	0.24%
d. Disability	5,457,272	0.34%	1,883,659	0.28%	7,340,931	0.32%
e. Administrative Expenses	16,350,974	1.03%	6,968,868	1.03%	23,319,842	1.03%
f. Total	$ 342,455,220	21.54%	$ 57,274,344	8.45%	$ 399,729,564	17.63%
5. Expected Employer Contributions	$ 143,076,163	9.00%	$ 60,979,783	9.00%	$ 204,055,946	9.00%
6. Annual Employer Normal Cost	$ 199,379,057	12.54%	$ (3,705,439)	(0.55)%	$ 195,673,618	8.63%

[a] *The actuarial accrued liability, normal cost, projected capped payroll and expected employee contributions include the results for 142 members expected to be hired to replace retirements and terminations that occurred in June 2020. Active count excludes 106 members expected to be hired to replace retirements and terminations that occurred in June 2020.*

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 3: Analysis of Change in Unfunded Actuarial Accrued Liability

In addition to the expected change in the unfunded accrued liability, changes in membership demographics and fund assets have affected the actuarial valuation results. The increase in the unfunded actuarial accrued liability (UAAL) of $602,922,889 was due to the following:

1. Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2020	$	12,230,351,673
2. Contributions		
a. Contributions due (Normal Cost plus interest on the UAAL)		
i. Interest on item 1.	$	856,124,617
ii. Member contributions		196,097,115
iii. Employer normal cost (middle of year)		251,897,722
iv. Interest on ii and iii		15,414,626
v. Total due	$	1,319,534,080
b. Contributions paid (Actual)		
i. Member contributions	$	196,097,115
ii. Employer		854,500,000
iii. Interest on i and ii[a]		21,612,937
iv. Total paid	$	1,072,210,052
c. Expected increase in Unfunded Actuarial Accrued Liability	$	247,324,028
3. Expected Unfunded Actuarial Accrued Liability at 06/30/2020	$	12,477,675,701
4. (Gains)/Losses		
a. Investment income	$	(22,146,029)
b. Retiree health insurance cash flows		(14,032,804)
c. Salary increases		(118,074,777)
d. Demographic		(55,354,066)
e. Total	$	(209,607,676)
5. Plan Provision Changes	$	—
6. Assumption Changes	$	565,206,537
7. Total Change in UAAL	$	602,922,889
8. UAAL at 06/30/2020	$	12,833,274,562

[a] *Interest 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, 2020

Activity	(Gain)/Loss	% of June 30, 2019 AAL
1. Actuarial (Gain)/Loss		
a. Retirements	$ 6,878,558	0.03%
b. Incidence of Disability	(1,131,160)	0.00%
c. In-Service Mortality	(70,494)	0.00%
d. Retiree Mortality	(55,588,659)	(0.24)%
e. Salary Increases	(118,074,777)	(0.51)%
f. Terminations	(19,358,722)	(0.08)%
g. Investment Return	(22,146,029)	(0.10)%
h. Retiree Health Insurance Cash Flows	(14,032,804)	(0.06)%
i. New Entrant Liability	45,481,403	0.20%
j. Other	(31,564,992)	(0.14)%
k. Total Actuarial (Gain)/Loss	$ (209,607,676)	(0.90)%
2. Plan Provision Changes	$ —	—%
3. Assumption Changes	$ 565,206,537	2.43%
4. Contribution (Excess)/Shortfall[a]	$ 247,324,028	1.06%
5. Total Financial (Gain)/Loss	$ 602,922,889	2.59%

[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.*

Table 5: Historical Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability

	Amount of (Gain) or Loss					Total Five-Year Change
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	
Investment Return (AVA Basis)	$ (81,129,490)	$ (80,937,857)	$ 131,839,730	$ 98,317,079	$ (22,146,029)	$ 45,943,433
Retiree Health Insurance Cash Flows	1,673,226	(17,178,251)	1,381,154	(6,608,283)	(14,032,804)	(34,764,958)
Salary Increases	(264,801,612)	(180,217,505)	6,927,266	(62,859,630)	(118,074,777)	(619,026,258)
Retirements	47,235,684	32,846,858	27,778,569	1,996,977	6,878,558	116,736,646
Terminations	(6,458,419)	(7,478,652)	(39,625,292)	(46,251,276)	(19,358,722)	(119,172,361)
Disability Incidence	—	(685,126)	(1,010,548)	(966,542)	(1,131,160)	(3,793,376)
In-Service Mortality	—	657,829	1,253,670	123,792	(70,494)	1,964,797
Retiree Mortality	15,811,894	14,544,206	70,809,472	5,854,235	(55,588,659)	51,431,148
New Entrants	—	32,961,135	38,467,726	44,926,283	45,481,403	161,836,547
Other[a]	57,480,517	(54,889,992)	(28,017,087)	(22,939,305)	(31,564,992)	(79,930,859)
Total Actuarial (Gain)/Loss	$ (230,188,200)	$ (260,377,355)	$ 209,804,660	$ 11,593,330	$ (209,607,676)	$ (478,775,241)
(Gain)/Loss as a % of BOY AAL	(1.2)%	(1.3)%	1.0%	0.1%	(0.9)%	
Total Non-Investment (Gain)/ Loss	$ (149,058,710)	$ (179,439,498)	$ 77,964,930	$ (86,723,749)	$ (187,461,647)	$ (524,718,674)
(Gain)/Loss as a % of BOY AAL	(0.7)%	(0.9)%	0.4%	(0.4)%	(0.8)%	
(Gain)/Loss Due to Plan Provision Changes	$ —	$ —	$ —	$ —	$ —	$ —
(Gain)/Loss as a % of BOY AAL	—%	—%	—%	—%	— %	
(Gain)/Loss Due to Assumption Changes	$ —	$ 1,074,523,844	$ 621,772,494	$ —	$ 565,206,537	$ 2,261,502,875
(Gain)/Loss as a % of BOY AAL	—%	5.2%	2.8%	—%	2.4 %	
(Gain)/Loss Due to Contribution (Excess)/Shortfall	$ 260,150,252	$ 220,857,399	$ 233,351,269	$ 264,851,308	$ 247,324,028	$ 1,226,534,256
(Gain)/Loss as a % of BOY AAL	1.3%	1.1%	1.1%	1.2%	1.1 %	
Total Financial (Gain)/Loss	$ 29,962,052	$ 1,035,003,888	$ 1,064,928,423	$ 276,444,638	$ 602,922,889	$ 3,009,261,890
(Gain)/Loss as a % of BOY AAL	0.2%	5.1%	4.9%	1.2%	2.6 %	
BOY Actuarial Accrued Liability (AAL)	$ 19,951,289,974	$ 20,484,951,277	$ 21,822,010,297	$ 22,922,992,558	$ 23,252,163,307	

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

Results prior to fiscal year 2017 were obtained from the prior Actuary's actuarial valuation reports.

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 6.75% Each Year
(Dollars in Millions)*

						Annual Normal Cost			
Fiscal Year	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Liability	Funded Ratio	Pensionable Payroll	Total	Employee Contribution	Employer Normal Cost	Percent of Pay
2021	$ 24,479.0	$ 11,307.1	$ 13,172.0	46.19%	$ 2,267.3	$ 464.7	$ 204.1	$ 260.6	11.49%
2022	24,891.0	11,378.0	13,513.0	45.71%	2,325.1	474.1	209.3	264.8	11.39%
2023	25,310.1	11,504.3	13,805.8	45.45%	2,379.8	483.2	214.2	269.0	11.30%
2024	25,735.9	11,710.8	14,025.1	45.50%	2,434.2	491.7	219.1	272.6	11.20%
2025	26,166.1	11,931.2	14,234.9	45.60%	2,488.0	499.3	223.9	275.4	11.07%
2026	26,600.7	12,164.9	14,435.8	45.73%	2,541.5	506.6	228.7	277.9	10.93%
2027	27,039.1	12,410.5	14,628.6	45.90%	2,594.8	513.3	233.5	279.8	10.78%
2028	27,479.9	12,666.3	14,813.6	46.09%	2,647.7	519.2	238.3	280.9	10.61%
2029	27,922.1	12,932.1	14,990.0	46.31%	2,700.1	524.5	243.0	281.5	10.43%
2030	28,362.3	13,206.0	15,156.3	46.56%	2,753.1	529.1	247.8	281.3	10.22%

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% of the Board of Education's dedicated property tax levy of 0.567% 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.

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2020 actuarial valuation, which can be found at www.ctpf.org.*

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 (Continued)

Investment Return of 6.75% Each Year
(Dollars in Millions)*

	Total Employer Contributions						
Fiscal Year	Required Employer Contribution	Additional State Contribution	State Normal Cost Contribution	Additional Board of Education Contribution	Required Board of Education Contribution	Percent of Pay	Total Expenses
2021	$ 885.9	$ 12.3	$ 254.6	$ 13.1	$ 605.9	39.07%	$ 1,645.0
2022	944.7	12.6	264.8	13.5	653.7	40.63%	1,674.6
2023	966.9	12.9	269.0	13.8	671.1	40.63%	1,703.7
2024	989.0	13.2	272.6	14.1	689.1	40.63%	1,733.1
2025	1,010.9	13.5	275.4	14.4	707.5	40.63%	1,764.3
2026	1,032.6	13.8	277.9	14.7	726.1	40.63%	1,795.4
2027	1,054.2	14.1	279.8	15.0	745.3	40.63%	1,826.8
2028	1,075.7	14.4	280.9	15.4	765.0	40.63%	1,859.1
2029	1,097.0	14.7	281.5	15.7	785.2	40.63%	1,891.8
2030	1,118.6	15.0	281.3	16.0	806.3	40.63%	1,927.3

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

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

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

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

55% of the Board of Education's dedicated property tax levy of 0.567% 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.

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2020 actuarial valuation, which can be found at www.ctpf.org.*

Table 7: Solvency Test

The solvency test is hypothetical and measures the CTPF's ability to cover different types of obligations if the plan were terminated. Columns are displayed in the order that assets would be allocated to cover certain types of obligations. Employee contributions would be refunded first, amounts due for retirees, vested terminated members and beneficiaries would be covered next, and the Employers' obligations for active members would be covered last. Columns (1) and (2) should be fully covered by assets while the portion of column (3) that is covered by assets should increase over time.

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%	—%
2018	$ 22,922,992,558	$ 1,659,408,813	$ 17,510,678,092	$ 3,752,905,653	$ 10,969,085,523	100%	53%	—%
2019	23,252,163,307	1,752,007,367	17,532,864,523	3,967,291,417	11,021,811,634	100%	53%	—%
2020	24,073,482,607	1,851,487,971	17,866,192,151	4,355,802,485	11,240,208,045	100%	53%	—%

Information for the next 10 fiscal years will be added as it becomes available.

SECTION E: FUND ASSETS

Table 8: Development of the Actuarial Value of Assets

Year Ending June 30	2020	2021	2022	2023
Beginning of Year:				
1. Market Value of Assets	$ 11,038,837,459			
2. Actuarial Value of Assets	$ 11,021,811,634			
End of Year				
3. Market Value of Assets	$ 10,937,062,021			
4. Contributions and Disbursements				
a. Actual Employer & Misc. Contributions	$ 856,000,396			
b. Employee Contributions	196,097,115			
c. Benefit Payouts & Refunds	(1,574,309,500)			
d. Administrative Expenses	(18,375,799)			
e. Net of Contributions and Disbursements	$ (540,587,788)			
5. Total Investment Income = (3)-(1)-(4e)	$ 438,812,350			
6. Projected Rate of Return	7.00%			
7. Projected Investment Income[a]	$ 738,338,566			
8. Investment Income in Excess of Projected Income	$ (299,526,216)			
9. Excess Investment Income Recognized				
This Year (4-year recognition)				
a. From This Year	$ (74,881,554)			
b. From One Year Ago	(54,664,804)	$ (74,881,554)		
c. From Two Years Ago	35,555,686	(54,664,804)	$ (74,881,554)	
d. From Three Years Ago	114,636,305	35,555,685	(54,664,803)	$ (74,881,554)
e. Total Recognized Investment Gain	$ 20,645,633	(93,990,673)	(129,546,357)	(74,881,554)
10. Change in Actuarial Value of Assets = (4e)+(7)+(9e)	$ 218,396,411			
End of Year:				
3. Market Value of Assets	$ 10,937,062,021			
11. Actuarial Value of Assets	$ 11,240,208,045			
12. Difference Between Market & Actuarial Values	$ (303,146,024)			
13. Estimated Actuarial Value Rate of Return	7.06%			
14. Estimated Market Value Rate of Return	4.07%			
15. Ratio of Actuarial Value to Market Value	102.77%			

[a] *Projected investment income is estimated based on the actuarial value of assets and weighted timing of middle of year, 8/12ths of a year, and end of year for non-investment cash flows.*

Table 9: Historical Investment Returns*

Year Ended June 30	Market Value Return	Actuarial Value Return
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%
Average Returns		
Last 10 Years:	**8.6%**	**6.8%**

* *This table has been adjusted to display information for the past 10 fiscal years using a simplified method to calculate historical investment returns. For the full table, please see the fiscal year 2020 actuarial valuation, which can be found at www.ctpf.org.*

SECTION F: PARTICIPANT DATA

Table 10: Summary of Fund Membership

	Year Ended		Change from Prior Year
	June 30, 2020	June 30, 2019	
Active Members			
Number[a]	30,091	29,295	2.7%
Average Age	42.5	42.3	
Average Service	11.0	10.8	
Total Salary Supplied by Fund	$ 2,249,491,403	$ 2,179,054,844	3.2%
Average Annual Salary	$ 74,756	$ 74,383	0.5%
Total Active Vested Participants	16,266	16,655	(2.3)%
Male Members	7,087	6,903	2.7%
Female Members	23,004	22,392	2.7%
Tier 1 Members	18,118	18,632	(2.8)%
Tier 2 Members	11,973	10,663	12.3%
Inactive Vested Members[b]			
Number	10,024	9,926	1.0%
Average Age	47.7	47.2	
Average Service (Excluding Reciprocal Service)	7.8	7.7	
Inactive Non-Vested Members			
Number	21,260	20,621	3.1%
Retirees			
Number	24,293	24,631	(1.4)%
Average Age	75.0	74.6	
Average Annual Benefit	$ 57,162	$ 55,761	2.5%
Total Annual Benefit	$ 1,388,627,977	$ 1,373,459,588	1.1%
Disabled Retirees			
Number	460	469	(1.9)%
Average Age	68.1	67.8	
Average Annual Benefit	$ 40,373	$ 38,717	4.3%
Total Annual Benefit	$ 18,571,456	$ 18,158,456	2.3%
Beneficiaries (Including Children)			
Number	3,262	3,217	1.4%
Average Age	77.4	77.0	
Average Annual Benefit	$ 25,000	$ 24,067	3.9%
Total Annual Benefit	$ 81,549,497	$ 77,424,498	5.3%
Total Members	**89,390**	**88,159**	**1.4%**

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

[b] *Includes reciprocal service*

Table 11: Schedule of Active Member Data

Year Ended June 30	Active Participants	Covered Payroll	Average Annual Payroll	% Increase in Average Payroll	Participating Employers*
2011	30,133	$ 2,090,131,858	$ 69,364		42
2012	30,366	2,224,903,121	73,270	5.63%	43
2013	30,969	2,239,347,051	72,309	(1.31)%	45
2014	30,654	2,233,280,995	72,854	0.75%	49
2015	29,706	2,273,551,432	76,535	5.05%	48
2016	29,543	2,281,268,890	77,219	0.89%	47
2017	28,855	2,030,175,116	70,358	(8.88)%	45
2018	28,958	2,094,830,446	72,340	2.82%	45
2019	29,295	2,179,054,844	74,383	2.82%	42
2020	30,091	2,249,491,403	74,756	0.50%	40

* *Participating employers are displayed at an aggregate level by charter holder.*

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
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

[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, 2020

	Completed Years of Service									
Age	**Under 1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 & Over**	**Total**
Under 20	—	—	—	—	—	—	—	—	—	—
	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
20-24	156	677	—	—	—	—	—	—	—	833
	$ 2,376,431	$ 35,906,563	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ 38,282,995
25-29	323	2,691	649	—	—	—	—	—	—	3,663
	$ 4,589,847	$ 150,746,844	$ 42,303,935	$ —	$ —	$ —	$ —	$ —	$ —	$ 197,640,626
30-34	236	1,729	2,266	342	—	—	—	—	—	4,573
	$ 3,412,642	$ 97,822,577	$158,181,194	$ 29,739,209	$ —	$ —	$ —	$ —	$ —	$ 289,155,622
35-39	170	986	1,586	1,573	426	—	—	—	—	4,741
	$ 2,359,830	$ 55,836,012	$114,125,608	$142,183,896	$ 41,117,115	$ —	$ —	$ —	$ —	$ 355,622,461
40-44	156	633	767	1,020	1,438	306	—	—	—	4,320
	$ 1,892,370	$ 35,691,764	$ 55,678,725	$ 93,347,487	$141,215,534	$ 32,450,924	$ —	$ —	$ —	$ 360,276,803
45-49	137	466	503	598	917	1,052	266	—	—	3,939
	$ 1,533,556	$ 24,196,888	$ 36,443,780	$ 53,926,866	$ 88,991,095	$109,110,547	$ 28,883,429	$ —	$ —	$ 343,086,160
50-54	119	346	318	373	538	713	763	144	1	3,315
	$ 1,589,227	$ 17,253,169	$ 23,153,277	$ 32,422,669	$ 51,645,464	$ 71,886,017	$ 81,319,243	$ 15,745,610	$ 114,613	$ 295,129,290
55-59	92	288	218	221	367	415	455	286	33	2,375
	$ 749,446	$ 12,759,193	$ 14,388,296	$ 18,699,262	$ 34,491,437	$ 40,578,653	$ 46,606,743	$ 30,714,050	$ 3,839,176	$ 202,826,255
60-64	87	190	137	149	245	236	207	140	63	1,454
	$ 528,715	$ 6,998,768	$ 8,349,432	$ 10,772,079	$ 22,130,889	$ 23,361,674	$ 20,994,797	$ 14,643,946	$ 7,212,797	$ 114,993,097
65-69	50	96	70	56	88	64	73	43	32	572
	$ 295,436	$ 2,390,751	$ 2,932,760	$ 3,534,251	$ 7,811,800	$ 5,744,775	$ 7,690,902	$ 4,379,293	$ 3,361,603	$ 38,141,572
70 & Over	42	69	35	36	42	26	29	7	20	306
	$ 219,249	$ 1,005,805	$ 1,016,780	$ 1,586,758	$ 2,814,530	$ 2,161,429	$ 2,624,231	$ 708,048	$ 2,199,692	$ 14,336,522
Total	1,568	8,171	6,549	4,368	4,061	2,812	1,793	620	149	30,091
	$ 19,546,748	$ 440,608,335	$456,573,786	$386,212,477	$390,217,864	$285,294,019	$188,119,345	$ 66,190,948	$ 16,727,882	$ 2,249,491,403

Total lives and annual salaries exclude 106 members expected to be hired to replace retirements and terminations that occurred in June 2020.

Table 14: Reconciliation of Member Data as of June 30, 2020

	Actives	Deferred Vested	Expected Refunds	Retirees	Disabilities	Beneficiaries	Total
Totals as of the June 30, 2019, Actuarial Valuation	29,295	9,926	20,621	24,631	469	3,217	88,159
New Entrants	2,848	—	—	—	—	—	2,848
Rehires - Members with Service	653	(234)	(419)	—	—	—	—
Non-Vested Terminations	(1,531)	(15)	1,546	—	—	—	—
Vested Terminations	(602)	676	(74)	—	—	—	—
Service Retirements	(332)	(203)	—	539	(4)	—	—
Disabilities	(8)	(6)	—	(2)	16	—	—
Deaths	(33)	(17)	(34)	(887)	(21)	(180)	(1,172)
New Beneficiaries	—	—	—	—	—	223	223
Refunds and Benefit Terminations	(199)	(108)	(565)	—	—	—	(872)
Data Adjustments	—	5	185	12	—	2	204
Net Change	796	98	639	(338)	(9)	45	1,231
Totals as of the June 30, 2020, Actuarial Valuation	30,091	10,024	21,260	24,293	460	3,262	89,390

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 the Fiscal Year Ended June 30, 2020

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		
2011	1,394	$ 86,404,558	795	$ 26,694,342	25,199	$ 1,047,873,059	$ 41,584	3.52%
2012	1,579	96,719,811	852	28,511,983	25,926	1,116,080,887	43,049	3.52%
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%

Table 16: Annuitants Classified by Benefit Type and Amount as of June 30, 2020

Monthly Pension Amount	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
$ 1 - 500	374	966	1	1	161	229	536	1,196
501 - 1,000	345	861	3	9	174	326	522	1,196
1,001 - 1,500	294	648	11	25	147	180	452	853
1,501 - 2,000	229	573	6	42	168	195	403	810
2,001 - 2,500	207	629	13	39	144	235	364	903
2,501 - 3,000	230	744	8	49	186	300	424	1,093
3,001 - 3,500	245	913	11	42	148	318	404	1,273
3,501 - 4,000	286	1,033	10	37	26	101	322	1,171
4,001 - 4,500	290	1,242	14	33	16	80	320	1,355
4,501 - 5,000	296	1,166	9	39	13	40	318	1,245
5,001 - 5,500	420	1,394	5	20	8	31	433	1,445
5,501 - 6,000	645	2,100	4	9	5	18	654	2,127
6,001 - 6,500	718	2,395	1	8	3	6	722	2,409
6,501 - 7,000	471	1,508	1	1	—	3	472	1,512
7,001 - 7,500	218	662	2	1	—	—	220	663
7,501 - 8,000	155	277	1	—	—	—	156	277
8,001 - 8,500	122	221	1	2	—	—	123	223
8,501 - 9,000	88	193	—	—	—	—	88	193
9,001 - 9,500	79	184	1	—	—	—	80	184
Over $9,500	293	579	1	—	—	1	294	580
Total	**6,005**	**18,288**	**103**	**357**	**1,199**	**2,063**	**7,307**	**20,708**

Table 17: Initial Year Retirement Analysis

	Years of Credited Service							
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	Total
Fiscal Year 2016								
Average Monthly Pension	$ 326	$ 840	$ 1,493	$ 2,432	$ 3,440	$ 4,294	$ 5,701	$ 3,286
Average Monthly FAS	$ 7,267	$ 5,266	$ 5,627	$ 6,515	$ 7,301	$ 7,711	$ 8,026	$ 7,054
Number of Retired Members	61	92	77	113	184	123	202	852
Average Age								63.1
Fiscal Year 2017								
Average Monthly Pension	$ 323	$ 734	$ 1,578	$ 2,516	$ 3,438	$ 4,301	$ 5,684	$ 3,466
Average Monthly FAS	$ 6,255	$ 4,332	$ 5,819	$ 6,705	$ 7,268	$ 7,612	$ 7,975	$ 6,961
Number of Retired Members	38	80	83	99	167	129	219	815
Average Age								63.7
Fiscal Year 2018								
Average Monthly Pension	$ 336	$ 823	$ 1,503	$ 2,578	$ 3,471	$ 4,505	$ 5,867	$ 3,382
Average Monthly FAS	$ 6,507	$ 5,349	$ 5,502	$ 6,738	$ 7,407	$ 7,927	$ 8,166	$ 7,089
Number of Retired Members	39	92	81	88	175	122	171	768
Average Age								63.2
Fiscal Year 2019								
Average Monthly Benefit	$ 305	$ 699	$ 1,634	$ 2,547	$ 3,672	$ 4,789	$ 6,009	$ 3,150
Average Monthly FAS	$ 6,069	$ 4,827	$ 6,098	$ 6,673	$ 7,644	$ 8,482	$ 8,446	$ 7,046
Number of Retired Members	42	64	64	62	77	62	94	465
Average Age								63.7
Fiscal Year 2020								
Average Monthly Benefit	$ 318	$ 768	$ 1,615	$ 2,578	$ 3,587	$ 4,659	$ 6,170	$ 3,211
Average Monthly FAS	$ 6,442	$ 5,315	$ 5,859	$ 6,746	$ 7,717	$ 8,076	$ 8,578	$ 7,179
Number of Retired Persons	49	76	51	72	114	98	91	551
Average Age								63.5

SECTION G: ACTUARIAL METHODS AND ASSUMPTION

(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% of the market value on and after June 30, 2025.

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 2020 Actuarial Assumption Study issued on September 10, 2020.

Rate of Investment Return

6.75% per year, compounded annually, net of investment expenses. First effective with the actuarial valuation as of June 30, 2020.

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

2.25% 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% per year for members hired before January 1, 2011, based on the benefit provision of 3.00% annual compound increases. The assumed rate is 1.125% for members hired on and after January 1, 2011, based on the benefit provision of increases equal to ½ of the increase in CPI-U with a maximum increase of 3.00%. First effective with the actuarial valuation as of June 30, 2020.

Wage Inflation

2.75% 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 6.75% and an annualized assumed rate of increase in total capped payroll of 2.00% (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.

Total Payroll

Unless stated otherwise, total payroll includes employee contributions of 7.00% 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 2020				Future Life Expectancy (years) in 2030			
	Post-retirement Healthy		Post-retirement Disabled		Post-retirement Healthy		Post-retirement Disabled	
	Male	Female	Male	Female	Male	Female	Male	Female
35	51.15	54.41	34.29	40.67	52.13	55.34	35.90	42.14
40	45.97	49.22	30.58	36.23	46.93	50.13	32.03	37.60
45	40.88	44.09	27.28	32.13	41.81	44.98	28.60	33.41
50	35.88	38.99	24.11	28.17	36.79	39.87	25.34	29.37
55	31.00	33.95	21.01	24.41	31.88	34.81	22.16	25.53
60	26.25	29.04	18.00	20.93	27.09	29.86	19.03	21.93
65	21.69	24.32	15.16	17.58	22.46	25.09	16.03	18.44
70	17.37	19.82	12.45	14.27	18.06	20.53	13.18	15.02
75	13.38	15.57	9.86	11.16	13.99	16.22	10.48	11.84

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.

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% 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%

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%

Active Member Population as of the Actuarial Valuation Date

The Tier 2 active population as of the actuarial valuation date of June 30, 2020, was increased by 106 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 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 similar demographic profile 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 30,197. 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% per year.

New Entrant Profile		
Age Group	**Number**	**Salary**
Under 20	—	$ —
20 - 24	1,103	53,724,459
25 - 29	1,644	82,971,466
30 - 34	859	44,702,997
35 - 39	529	27,506,887
40 - 44	344	17,591,104
45 - 49	295	14,300,014
50 - 54	221	10,269,141
55 - 59	165	6,304,777
60 - 64	103	2,830,616
65 - 69	13	351,188
70 & Over	—	—
Total	**5,276**	**$ 260,552,649**
Avg. Salary		**$ 49,385**
Avg. Age		**32.69**
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, 2020, 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% of the calculated gain (or loss) in the prior four years.

Expenses

Administrative expenses included in the normal cost for fiscal year 2021 are the budgeted administrative expense amount of $23,319,842, as provided by Staff. Future administrative expenses are assumed to increase by 5.75% per year for 14 years and then increase at a rate consistent with the increase in projected capped payroll thereafter.

Marriage Assumption

75.0% of active male participants and 65.0% 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% 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) with interest at the assumed investment rate of return, converted to an annuity, and then loaded by 35%.

Assumption for Missing Data

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

Benefit Option

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

Contribution Timing

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

1. Additional Board of Education Contribution (0.58% of pay) - June 30th (End of Year)
2. Additional State Contribution (0.544% 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 1st, annually
    a. 55% of prior year's tax levy is assumed to occur each March 1st
        i. The March 1st payment amount as provided by Staff is $263,523,630 for fiscal year 2020
5. Remaining Board of Education Contribution - June 30th (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.

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 $115,929 for fiscal year 2020 and increases at ½ 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% 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:
>
>> (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 (as of June 30, 2020)

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.

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% of salary consists of 7.5% towards the retirement pension, 1.0% towards the survivor pension and 0.5% towards the post-retirement increase.

As of September 1981, the Board of Education has been paying 7.0% 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% from the Board of Education.

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

Service earned before July 1, 1998, can be upgraded to the 2.2% formula through the payment of additional employee contributions of 1% 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% of final average salary or $1,500 per month, whichever is greater.

Annual Increases in Pension

Postretirement increases of 3.0% 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 ½ of 1.0% for each month the member is under age 60.

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% 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% 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 ½ of 1.0% 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.

Annual Increases in Annuity

Postretirement increases of 3.0% 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% 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% 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% of the total cost of health insurance coverage in any year.

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

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

SECTION I: ADDITIONAL PROJECTION DETAILS

Table 18: Additional Projection Details - Actuarial Accrued Liability (Dollars in Millions)

Fiscal Year	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries, & Deferreds	Actives	Total
2020	$ 17,300.91	$ 565.29	$ 5,989.58	$ 217.71	$ 0.00	$ 17,866.19	$ 6,207.29	$ 24,073.48
2021	16,914.95	587.55	6,713.01	263.50	0.00	17,502.50	6,976.51	24,479.01
2022	16,497.02	610.66	7,463.54	311.79	8.01	17,107.68	7,783.34	24,891.03
2023	16,048.21	634.57	8,240.34	364.10	22.92	16,682.78	8,627.36	25,310.14
2024	15,569.71	659.10	9,040.87	422.03	44.20	16,228.81	9,507.09	25,735.90
2025	15,062.93	684.12	9,861.42	486.27	71.37	15,747.06	10,419.06	26,166.12
2026	14,529.54	709.54	10,698.66	557.86	105.09	15,239.07	11,361.62	26,600.69
2027	13,971.37	735.32	11,549.25	637.84	145.33	14,706.69	12,332.42	27,039.11
2028	13,390.52	761.31	12,408.81	726.74	192.55	14,151.84	13,328.11	27,479.94
2029	12,789.37	787.30	13,272.50	824.94	247.96	13,576.67	14,345.40	27,922.07

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2020 actuarial valuation, which can be found at www.ctpf.org.*

Table 19: Additional Projection Details - Present Value of Future Benefits (Dollars in Millions)

Fiscal Year	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries, & Deferreds	Actives	Totals
2020	$ 17,300.91	$ 565.29	$ 9,621.91	$ 1,088.09	$ 0.00	$ 17,866.19	$ 10,710.00	$ 28,576.20
2021	16,914.95	587.55	10,236.70	1,133.46	100.57	17,502.50	11,470.73	28,973.22
2022	16,497.02	610.66	10,870.53	1,183.74	215.05	17,107.68	12,269.32	29,377.00
2023	16,048.21	634.57	11,522.35	1,239.28	339.11	16,682.78	13,100.74	29,783.52
2024	15,569.71	659.10	12,190.05	1,300.93	471.42	16,228.81	13,962.40	30,191.21
2025	15,062.93	684.12	12,870.47	1,368.81	613.75	15,747.06	14,853.03	30,600.09
2026	14,529.54	709.54	13,560.83	1,443.47	765.38	15,239.07	15,769.67	31,008.75
2027	13,971.37	735.32	14,258.32	1,525.56	927.13	14,706.69	16,711.00	31,417.69
2028	13,390.52	761.31	14,959.45	1,615.27	1,100.89	14,151.84	17,675.61	31,827.45
2029	12,789.37	787.30	15,660.44	1,712.70	1,287.69	13,576.67	18,660.84	32,237.51

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2020 actuarial valuation, which can be found at www.ctpf.org.*

Table 20: Additional Projection Details - Benefit Payments Including Administrative Expenses and Health Insurance Subsidy (Dollars in Millions)

	Current Inactives		Actives			Grand Totals		
Fiscal Year	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries, & Deferreds	Actives	Total
2021	$ 1,503.84	$ 15.38	$ 79.15	$ 46.60	$ 0.00	$ 1,519.23	$ 125.75	$ 1,644.98
2022	1,509.57	16.01	98.78	43.25	6.96	1,525.58	148.99	1,674.57
2023	1,512.16	16.76	120.91	40.36	13.51	1,528.92	174.78	1,703.70
2024	1,511.57	17.71	146.34	37.26	20.23	1,529.29	203.83	1,733.11
2025	1,507.68	18.84	175.88	34.66	27.24	1,526.52	237.79	1,764.31
2026	1,500.33	20.10	208.98	32.03	34.01	1,520.43	275.02	1,795.45
2027	1,489.46	21.40	245.45	29.33	41.17	1,510.86	315.95	1,826.82
2028	1,474.95	22.88	285.76	27.02	48.45	1,497.83	361.23	1,859.06
2029	1,456.65	24.59	329.97	25.14	55.48	1,481.24	410.59	1,891.83
2030	1,434.51	26.50	378.31	25.39	62.55	1,461.01	466.25	1,927.25

** This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2020 actuarial valuation, which can be found at www.ctpf.org.*

Table 21: Additional Projection Details - Active Population, Covered Payroll, Employee Contributions and Normal Costs (Dollars in Millions)

	Tier 1 Active Members				Current Tier 2 Active Members				Future Tier 2 Active Members			
Fiscal Year	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost
2020	18,118	$1,589.74	$ 143.08	$388.03	12,079	$ 677.55	$ 60.98	$76.70	0	$ 0.00	$ 0.00	$ 0.00
2021	16,986	1,554.88	139.94	386.63	10,625	639.01	57.51	72.77	2,586	131.24	11.81	14.71
2022	16,004	1,523.27	137.09	385.14	9,616	614.56	55.31	70.62	4,577	241.93	21.77	27.42
2023	15,087	1,490.89	134.18	382.79	8,836	598.13	53.83	69.54	6,274	345.20	31.07	39.32
2024	14,224	1,456.67	131.10	379.42	8,227	587.96	52.92	69.27	7,746	443.41	39.91	50.66
2025	13,390	1,419.72	127.77	375.07	7,723	581.38	52.32	69.55	9,084	540.38	48.63	61.98
2026	12,596	1,380.57	124.25	369.75	7,309	578.24	52.04	70.31	10,293	636.00	57.24	73.24
2027	11,829	1,338.59	120.47	363.18	6,963	577.54	51.98	71.39	11,405	731.57	65.84	84.66
2028	11,075	1,292.69	116.34	355.23	6,658	578.06	52.03	72.70	12,464	829.32	74.64	96.54
2029	10,340	1,243.93	111.95	346.01	6,379	579.33	52.14	74.16	13,478	929.85	83.69	108.97

** This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2020 actuarial valuation, which can be found at www.ctpf.org.*

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, 2020, includes 106 members expected to be hired to replace retirements and terminations that occurred in June 2020.

STATISTICAL

This section includes summaries of statistical information about participating members, annuitants, and the benefits paid to them.

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION PENSION FUND

For the Year Ended June 30, 2020, with Comparative Totals for 9 Years

Additions:	2020	2019	2018	2017	2016
Contributions:					
Intergovernmental, net (Employer)	$ 854,500,000	$ 808,570,000	$ 784,402,000	$ 746,840,000	$ 635,070,000
Employee contributions	196,097,115	190,565,220	183,679,205	187,538,787	191,882,430
Allocation to Health Insurance Fund	(51,962,540)	(59,089,369)	(66,867,696)	(49,000,701)	—
	$ 998,634,575	$ 940,045,851	$ 901,213,509	$ 885,378,086	$ 826,952,430
Investment Income					
Net investment income (loss)	438,812,350	513,576,400	896,704,544	1,233,003,939	(28,176,952)
Interest on late required contribution payments	1,166,174	1,449,709	1,123,915	—	—
Miscellaneous	334,222	238,261	351,361	214,119	1,463,050
Total Additions (Losses)	**$ 1,438,947,321**	**$ 1,455,310,221**	**$ 1,799,393,329**	**$ 2,118,596,144**	**$ 800,238,528**
Deductions:					
Pension Benefits:					
Retirement	1,422,810,020	1,394,127,707	1,367,547,495	1,322,061,148	1,282,078,958
Survivors	62,295,521	58,934,966	55,729,685	53,004,333	50,082,015
Disability	14,814,540	14,451,137	13,986,851	14,382,691	14,372,308
Refunds:					
Separation	11,490,609	17,335,189	17,679,787	22,718,240	23,077,014
Death	4,748,262	4,164,327	2,311,835	4,095,450	4,581,068
Other	3,957,414	2,968,783	5,073,775	5,395,680	5,917,518
Death Benefits:					
Heirs of Active Teachers	155,332	227,786	465,729	755,675	1,158,629
Heirs of Annuitants	2,603,826	3,406,487	3,485,282	2,524,967	3,558,888
	$ 1,522,875,524	$ 1,495,616,382	$ 1,466,280,439	$ 1,424,938,184	$ 1,384,826,398
Administrative and Miscellaneous Expenses	17,847,235	25,621,894	21,521,303	13,781,343	12,298,862
Total Deductions	**$ 1,540,722,759**	**$ 1,521,238,276**	**$ 1,487,801,742**	**$ 1,438,719,527**	**$ 1,397,125,260**
Net increase (decrease)	(101,775,438)	(65,928,055)	311,591,587	679,876,617	(596,886,732)
Net assets held in trust for benefits:					
Beginning of period	11,038,837,459	11,104,765,514	10,793,173,927	10,093,067,588	10,689,954,320
Transfer of residual assets to Pension Plan	—	—	—	20,229,722 *	—
End of period	**$ 10,937,062,021**	**$ 11,038,837,459**	**$ 11,104,765,514**	**$ 10,793,173,927**	**$ 10,093,067,588**

* *The Health Insurance Fund is not in an OPEB Trust, nor are the OPEB assets restricted solely for OPEB.*

Continued from previous page

Additions:	2015	2014	2013	2012	2011
Contributions:					
Intergovernmental, net (Employer)	$ 643,667,000	$ 585,416,141	$ 142,654,000	$ 138,729,011	$ 143,589,994
Employee contributions	191,233,298	187,846,065	188,356,294	187,141,384	185,882,636
Allocation to Health Insurance Fund	—	—	—	—	—
	$ 834,900,298	$ 773,262,206	$ 331,010,294	$ 325,870,395	$ 329,472,630
Investment Income					
Net investment income (loss)	381,688,431	1,685,079,840	1,174,500,001	(38,124,125)	2,123,272,170
Interest on late required contribution payments	—	—	—	—	—
Miscellaneous	943,946	—	—	431,790	55,307
Total Additions (Losses)	**$ 1,217,532,675**	**$ 2,458,342,046**	**$ 1,505,510,295**	**$ 288,178,060**	**$ 2,452,800,107**
Deductions:					
Pension Benefits:					
Retirement	1,242,868,398	1,211,523,930	1,173,343,019	1,062,373,677	999,323,111
Survivors	47,403,198	44,428,213	41,503,227	38,812,556	36,196,804
Disability	14,223,383	13,882,921	13,472,748	12,698,514	12,019,044
Refunds:					
Separation	17,504,508	22,332,203	12,948,597	17,521,737	13,135,132
Death	2,009,495	3,598,338	3,284,366	4,139,266	3,373,836
Other	4,365,794	6,901,631	8,554,098	14,633,633	10,671,550
Death Benefits:					
Heirs of Active Teachers	161,214	194,115	441,036	387,047	419,861
Heirs of Annuitants	3,031,417	3,480,505	3,553,273	2,937,334	2,840,999
	$ 1,331,567,407	$ 1,306,341,856	$ 1,257,100,364	$ 1,153,503,764	$ 1,077,980,337
Administrative and Miscellaneous Expenses	11,705,562	10,494,139	11,537,394	10,120,434	9,527,938
Total Deductions	**$ 1,343,272,969**	**$ 1,316,835,995**	**$ 1,268,637,758**	**$ 1,163,624,198**	**$ 1,087,508,275**
Net increase (decrease)	(125,740,294)	1,141,506,051	236,872,537	(875,446,138)	1,365,291,832
Net assets held in trust for benefits:					
Beginning of period	10,815,694,614	9,674,188,563	9,437,316,026	10,312,762,164	8,947,470,332
Transfer of residual assets to Pension Plan	—	—	—	—	—
End of period	**$ 10,689,954,320**	**$ 10,815,694,614**	**$ 9,674,188,563**	**$ 9,437,316,026**	**$ 10,312,762,164**

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
HEALTH INSURANCE FUND
For the Year Ended June 30, 2020, with Comparative Totals for 9 Years

Additions:	2020	2019	2018	2017	2016
Contributions:					
Allocation of Employer Contribution plus Allocations from Prior Years	$ 51,962,540	$ 59,089,369	$ 66,333,655	$ 49,000,701	$ 65,000,000
Investment Income:					
Net investment income	—	—	—	—	189,789
Miscellaneous	—	—	—	—	—
Total Additions	**$ 51,962,540**	**$ 59,089,369**	**$ 66,333,655**	**$ 49,000,701**	**$ 65,189,789**
Deductions:					
Health Insurance Premium Subsidy	51,962,540	59,089,369	66,333,655	49,000,701	66,673,226
Total Deductions	**$ 51,962,540**	**$ 59,089,369**	**$ 66,333,655**	**$ 49,000,701**	**$ 66,673,226**
Net increase (decrease)	—	—	—	—	(1,483,437)
Fiduciary Net Position Held in Trust for Pension Benefits:					
Beginning of period	—	—	—	20,229,722	21,713,159
Transfer of residual assets to Pension Plan	—	—	—	(20,229,722)	—
End of period	**$ —**	**$ —**	**$ —**	**$ —**	**$ 20,229,722**

Continued from previous page

Additions:	2015	2014	2013	2012	2011
Contributions:					
Allocation of Employer Contribution plus Allocations from Prior Years	$ 65,000,000	$ 65,000,000	$ 65,000,000	$ 65,000,000	$ 65,000,000
Investment Income:					
Net investment income	51,868	55,134	82,822	41,058	20,471
Miscellaneous	—	8,000,000	8,352,647	6,770,651	10,338,661
Total Additions	**$ 65,051,868**	**$ 73,055,134**	**$ 73,435,469**	**$ 71,811,709**	**$ 75,359,132**
Deductions:					
Health Insurance Premium Subsidy	79,316,153	72,874,594	71,763,523	69,011,323	78,892,292
Total Deductions	**$ 79,316,153**	**$ 72,874,594**	**$ 71,763,523**	**$ 69,011,323**	**$ 78,892,292**
Net increase (decrease)	(14,264,285)	180,540	1,671,946	2,800,386	(3,533,160)
Fiduciary Net Position Held in Trust for Pension Benefits:					
Beginning of period	35,977,444	35,796,904	34,124,958	31,324,572	34,857,732
Transfer of residual assets to Pension Plan	—	—	—	—	—
End of period	**$ 21,713,159**	**$ 35,977,444**	**$ 35,796,904**	**$ 34,124,958**	**$ 31,324,572**

ANNUITANTS

Distribution of Current Annuitants by Benefit Type
As of June 30, 2020

Monthly Pension Amount	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
$ 1 - 500	374	966	1	1	161	229	536	1,196
501 - 1,000	345	861	3	9	174	326	522	1,196
1,001 - 1,500	294	648	11	25	147	180	452	853
1,501 - 2,000	229	573	6	42	168	195	403	810
2,001 - 2,500	207	629	13	39	144	235	364	903
2,501 - 3,000	230	744	8	49	186	300	424	1,093
3.001 - 3,500	245	913	11	42	148	318	404	1,273
3,501 - 4,000	286	1,033	10	37	26	101	322	1,171
4,001 - 4,500	290	1,242	14	33	16	80	320	1,355
4,501 - 5,000	296	1,166	9	39	13	40	318	1,245
5,001 - 5,500	420	1,394	5	20	8	31	433	1,445
5,501 - 6,000	645	2,100	4	9	5	18	654	2,127
6,001 - 6,500	718	2,395	1	8	3	6	722	2,409
6,501 - 7,000	471	1,508	1	1	—	3	472	1,512
7,001 - 7,500	218	662	2	1	—	—	220	663
7,501 - 8,000	155	277	1	—	—	—	156	277
8,001 - 8,500	122	221	1	2	—	—	123	223
8,501 - 9,000	88	193	—	—	—	—	88	193
9,001 - 9,500	79	184	1	—	—	—	80	184
$ 9,500 & Over	293	579	1	—	—	1	294	580
Total	**6,005**	**18,288**	**103**	**357**	**1,199**	**2,063**	**7,307**	**20,708**

ANNUITANTS

Distribution of Pensioners with Health Insurance Reimbursements by Size of Annuity
As of June 30, 2020

Monthly Pension Amount	Health Insurance	
	Male	Female
$ 0 - 499	58	177
500 - 999	137	490
1,000 - 1,499	197	716
1,500 - 1,999	265	945
2,000 - 2,499	434	1,411
2,500 - 2,999	457	1,375
3,000 - 3,499	540	1,629
3,500 - 3,999	546	1,732
4,000 - 4,499	311	1,185
4,500 - 4,999	258	859
5,000 - 5,499	192	764
5,500 - 5,999	103	294
6,000 - 6,499	94	352
6,500 - 6,999	58	173
7,000 - 7,499	38	125
7,500 - 7,999	31	100
8,000 - 8,499	38	77
8,500 - 8,999	15	78
$ 9,000 & Over	35	100
Total	**3,807**	**12,582**

Represents only members who have purchased insurance from the Fund's providers.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS FOR PERSONS RETIRED

Within the Last 10 Years

	Years of Credited Service						
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+
Fiscal Year 2011							
Average Monthly Pension	$ 313	$ 802	$ 1,361	$ 2,363	$ 2,910	$ 3,944	$ 6,458
Average Final Salary*	$ 6,480	$ 4,994	$ 5,276	$ 6,252	$ 6,405	$ 6,936	$ 8,824
Number of Retired Members	39	59	56	60	91	49	232
Fiscal Year 2012							
Average Monthly Pension	$ 348	$ 842	$ 1,452	$ 2,522	$ 3,308	$ 4,142	$ 5,788
Average Final Salary*	$ 6,690	$ 5,457	$ 5,509	$ 6,696	$ 7,049	$ 7,173	$ 7,887
Number of Retired Members	72	114	84	134	221	157	538
Fiscal Year 2013							
Average Monthly Pension	$ 275	$ 856	$ 1,645	$ 2,761	$ 3,567	$ 4,422	$ 5,976
Average Final Salary*	$ 5,623	$ 5,491	$ 6,180	$ 7,136	$ 7,495	$ 7,688	$ 8,157
Number of Retired Members	56	114	91	186	380	256	824
Fiscal Year 2014							
Average Monthly Pension	$ 262	$ 758	$ 1,648	$ 2,581	$ 3,477	$ 4,307	$ 5,683
Average FInal Salary*	$ 6,555	$ 5,023	$ 6,309	$ 6,657	$ 7,376	$ 7,516	$ 7,823
Number of Retired Members	46	89	74	102	184	120	145
Fiscal Year 2015							
Average Monthly Pension	$ 275	$ 877	$ 1,606	$ 2,621	$ 3,530	$ 4,254	$ 5,561
Average Final Salary*	$ 6,587	$ 5,377	$ 5,891	$ 6,851	$ 7,555	$ 7,483	$ 7,762
Number of Retired Members	47	104	117	107	269	172	240
Fiscal Year 2016							
Average Monthly Pension	$ 326	$ 840	$ 1,493	$ 2,432	$ 3,440	$ 4,294	$ 5,701
Average Final Salary*	$ 7,267	$ 5,266	$ 5,627	$ 6,515	$ 7,301	$ 7,711	$ 8,026
Number of Retired Members	61	92	77	113	184	123	202
Fiscal Year 2017							
Average Monthly Pension	$ 323	$ 734	$ 1,578	$ 2,516	$ 3,438	$ 4,301	$ 5,684
Average Final Salary*	$ 6,255	$ 4,332	$ 5,819	$ 6,705	$ 7,268	$ 7,612	$ 7,975
Number of Retired Members	38	80	83	99	167	129	219
Fiscal Year 2018							
Average Monthly Pension	$ 336	$ 823	$ 1,503	$ 2,578	$ 3,471	$ 4,505	$ 5,867
Average Final Salary*	$ 6,507	$ 5,349	$ 5,502	$ 6,738	$ 7,407	$ 7,927	$ 8,166
Number of Retired Members	39	92	81	88	175	122	171
Fiscal Year 2019							
Average Monthly Benefit	$ 305	$ 699	$ 1,634	$ 2,547	$ 3,672	$ 4,789	$ 6,009
Average Final Salary*	$ 6,069	$ 4,827	$ 6,098	$ 6,673	$ 7,644	$ 8,482	$ 8,446
Number of Retired Persons	42	64	64	62	77	62	94
Fiscal Year 2020							
Average Monthly Benefit	$ 318	$ 768	$ 1,615	$ 2,578	$ 3,587	$ 4,659	$ 6,170
Average Final Salary*	$ 6,442	$ 5,315	$ 5,859	$ 6,746	$ 7,717	$ 8,076	$ 8,578
Number of Retired Persons	49	76	51	72	114	98	91

* *The higher final average salaries in the 0 - 4 years of credited service are the result of a higher concentration of members with larger salaries who have service with other reciprocal pension plans. Table does not include disabled members or surviving spouses.*

PARTICIPATING MEMBERS

Number of Active Members*

Fiscal Year	Male Participants	Female Participants	Total
2011	6,949	23,184	30,133
2012	7,048	23,318	30,366
2013	7,253	23,716	30,969
2014	7,215	23,439	30,654
2015	7,033	22,673	29,706
2016	7,077	22,466	29,543
2017	6,961	21,894	28,855
2018	6,954	22,004	28,958
2019	6,903	22,392	29,295
2020	7,087	23,004	30,091

* Active members consist of vested and non-vested employees.

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