CTPF

Chicago Teachers' Pension Fund

124TH Comprehensive Annual Financial Report

2019

For the years ended June 30, 2019 and 2018

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, 2019 AND 2018

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, 2019


Jeffery Blackwell


Mary Sharon Reilly


Gregory Redfeairn


Jacquelyn Price Ward


James Cavallero


Gervaise Clay


Tina Padilla


Robert F. "Bob" Bures


Maria J. Rodriguez


Jerry Travlos

OFFICERS

Jeffery Blackwell, *President*
Mary Sharon Reilly, *Vice President*
Gregory Redfeairn, *Financial Secretary*
Jacquelyn Price Ward, *Recording Secretary*

MEMBERS

REPRESENTING THE CONTRIBUTORS

Jeffery Blackwell
James Cavallero
Gervaise Clay
Tina Padilla
Gregory Redfeairn
Jacquelyn Price Ward

REPRESENTING THE ANNUITANTS

Robert F. "Bob" Bures*****
Mary Sharon Reilly
Maria J. Rodriguez

REPRESENTING THE ADMINISTRATORS/ PRINCIPALS

Jerry Travlos

REPRESENTING THE BOARD OF EDUCATION ^

EXECUTIVE DIRECTOR

Charles A. Burbridge

* In Memoriam. Robert F. "Bob" Bures passed away on October 21, 2019.

^ At June 30, 2019, the two representatives of the Board of Education had resigned. Their replacements were sworn in the following July.

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, 2018

Christopher P. Morrill

Executive Director/CEO

CONSULTANTS
AS OF JUNE 30, 2019

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

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

Bank of New York Mellon
500 Grant Street
Pittsburgh, Pennsylvania 15258

AUDITOR

Plante Moran, PLLC
27400 Northwestern Highway
Southfield, Michigan 48034

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, 2019*

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

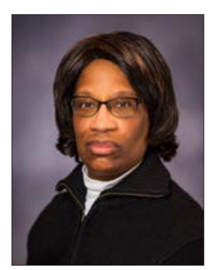
Angela Miller-May
Chief Investment Officer

Daniel Hurtado
Chief Legal Officer

Tracey L. Schroeder
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 66.

Chicago Teachers' Pension Fund

March 31, 2020

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 124th Comprehensive Annual Financial Report (CAFR) of the Public School Teachers' Pension and Retirement Fund of Chicago (CTPF or Fund) that covers the fiscal year ended June 30, 2019.

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.

The financial statements and their content are the responsibility of the Fund's management. This report 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.

OVERVIEW

The Fund's membership increased to 67,538 total members including 29,295 active members, 28,317 beneficiaries, and 9,926 vested terminated members as of June 30, 2019, reflecting a 0.9% increase over the prior year's total membership of 66,905.

The 124th year of continuous operations ended with the Fund's operational condition substantially unchanged from the previous fiscal year. The June 30, 2019, value of net assets held in trust for pension and health benefits amounted to $11.0 billion, a (0.6)% decrease from the $11.1 billion of the previous year.

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FISCAL YEAR 2019 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 2019 audit and Gabriel, Roeder, Smith & Company Holdings, Inc., produced the fiscal year 2019 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 CAFR for the period ended June 30, 2018. This was the 28th year that the Fund received this prestigious award. The award recognizes CTPF's readable and efficiently organized CAFR, which satisfies generally accepted accounting principles and applicable legal requirements.

Throughout the year, the Finance Department worked to update systems and processes and to streamline and improve expense reporting and budgeting. Finance partnered with the Benefits department staff to define requirements for enhancements to the Employer Reporting System, designed to improve the contribution and late-fee billing process. The department also issued a request for proposal for banking services and evaluated responses to ensure services and fees align with the Fund's goals and initiatives.

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.

The Board's current policy targets are:

- Global equity at 66.0% (comprised of domestic equity at 30.5%,
- 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, 2019, investments at fair value plus cash totaled $10.8 billion, reflecting a (0.1)% decrease from the $10.9 billion value of June 30, 2018. The Fund's rate of return for the year ended June 30, 2019, was 5.51% as performance of the portfolio was reflective of the equity market's low growth and increased volatility as well as the fourth quarter 2018 market correction. CTPF maintained a diversified portfolio consisting of equities (domestic and international), fixed income, real assets, and alternative investments. 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 10.02% over the past 10 years, and 8.37% for the 25-year period ending June 30, 2019.

During the year ended June 30, 2019, 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 four non-core real estate managers: one African-American-owned firm, two Latino-owned firms, and one majority-owned firm.
- Initiated investments with four private equity managers: two woman-owned firms and two African-American owned firms.
- Initiated investments with two infrastructure managers: one existing majority-owned firm and one new majority-owned firm.
- Initiated investments with one majority-owned fixed income core passive firm.
- Initiated investments with one majority-owned fixed income core active firm.

CTPF continues to be committed to diversity in all aspects of investing. As of June 30, 2019, approximately 44.4% ($4.8 billion) of the Fund's investment portfolio was managed by qualified minority, women, and disabled-person owned investment managers. Additionally, the Fund directed approximately $1.10 million in commissions to qualified minority, women, and disabled-person owned brokers/dealers in calendar year 2018.

CTPF also has a strong commitment to the economy of the State of Illinois. As of June 30, 2019, CTPF employed 18 Illinois-based investment managers who managed assets with a market value of $3.3 billion. These assets represented 31.5% 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 2019 was 5.51% (vs. benchmark of 6.37%) following fiscal year 2018's return of 8.96% and fiscal year 2017's return of 13.59%. Five and ten-year annualized returns were 6.33% (vs. benchmark of 6.08%) and 10.02% (vs. benchmark of 9.53%), respectively. Domestic, international, and private equity as well as real estate and infrastructure generated positive returns. Fixed Income posted negative returns but still outperformed the fixed income benchmark. The Fund's portfolio of domestic equity reported a 7.62% return, international equity reported a 0.72% return, fixed income reported a 8.37% return, private equity reported a 11.73% return, real estate reported a 6.33% return, and infrastructure reported a 10.16% 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, pensions and refunds, health insurance, compliance, employer audits, process improvement and analysis.

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

Highlights from 2019 include:

- Launch of dedicated employer audit team for continuous full payroll audit of all Employer data. The audits are structured to collaborate with Employers to identify and mitigate contribution and participant reporting deficiencies.
- Continued enhancement of functionality of our web-based Employer Reporting System that improves data transparency, offers workflow efficiencies to both employers and administrative staff, and supports improved accountability to avoid and reduce the number of incoming data discrepancies.
- Continuation of work on a data quality initiative which continues to identify and remediate existing account data discrepancies. Completion of the initiative will decrease benefit processing turnaround times as well as support enhanced member self-service capabilities.
- Improvements to the death-matching process to mitigate the overpayment of pension benefits after the death of a member.

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 the 12 regular meetings of the Board of Trustees, and facilitated more than 50 individual committee meetings providing minutes and support for committee members and their staff liaisons.

During fiscal year 2019, Administrative staff 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 enterprise-wide project started with the signing of a lease in February 2019, and involved a full-scale build out of the 14th floor and a portion of the 15th floor at the new location.

Starting with the 2019 election, Administrative Services staff took responsibility for the Trustee Election process which is now a year-round project involving all aspects of the organization.

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.

Day-to-day the team collaborates with all departments to produce internal and public-facing communications with four major areas of responsibility: digital publications, media/community relations, social media engagement, and website management. The team also produces informational materials for employees. The Director of Communications served as the Election Coordinator for the three Trustee Elections in 2018.

Major annual projects completed in 2019 included CTPF's *Health Insurance Handbook* and Open Enrollment materials, all Trustee Election communications, the *Comprehensive Annual Financial Report*, *Popular Annual Financial Report*, *Economic Impact Statement* and individual information sheets, *Pension News*, and Retirement Seminar materials. At the beginning of the 2019 fiscal year, the department coordinated the enterprise-wide launch of a new website at *www.ctpf.org* ahead of schedule and on budget. Communications manages the daily operations of the website, and the site supported more than 84,000 new users in its first year.

The department manages the distribution of electronic content including E-News 12 times each year and timely E-lerts. CTPF offers a robust social media presence on Facebook, LinkedIn, and Twitter, posting regularly and providing an opportunity to engage thousands of 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 2019 Human Resources worked to hire for several strategic positions and partnered with an external consulting firm (CBIZ) to conduct a competitive market review of base salary and total cash compensation. As a result of the study, new salary bands were proposed. The Board of Trustees approved one-time adjustments to staff who were paid below the minimum of their band to keep them in alignment with the market.

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 2019 include:

- Entering into a memorandum of understanding with the Chicago Board of Education regarding the development of agreed upon procedures for the conduct of a payroll audit.
- Negotiating a use and custody agreement with the Board of Education relating to Fund expenditures.

- Achieving a favorable settlement in securities fraud litigation.
- Continuing to create and refine processes and procedures for a newly centralized procurement function.
- Preparing and conducting Board of Trustee and staff training in contract administration and procurement policy.
- Finalizing the Fund's record retention policy.
- Drafting and finalizing a disability policy.
- Overseeing the conduct of administrative hearings relating to return to work matters.

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 2019, IT members served on the CTPF Moving Team and managed the Fund's technology needs during the preparation for relocation to 425 S. Financial Place in November 2019. In conjunction with the move, CTPF's information systems were overhauled by an internal Enterprise Risk Management Team to address risks, provide infrastructure modernization, and audit remediation. The result of these efforts included increased accuracy, timeliness, security, and sustainability of the system. Savings were recognized and of note, organizational printers were centralized saving the Fund 47% of printer maintenance cost.

Highlights for fiscal year 2019 include:

- Implementing an upgraded cloud-based Disaster Recovery and Backup strategy with a quarterly testing of Disaster Recovery (DR) process, and established a Disaster Recovery (DR) Run Book.
- Upgrading phone and voicemail systems, door security software, database technology, and telephony software solutions. Also implemented anti-virus/anti-malware and printer security software.
- Executing an IT Digitization Strategy including Technology Modernization program along with digitizing and loading all member-related microfiche and microfilm images for quick access. Continued upgrades of significant technology initiatives that enable better member service, including further development of the recently launched Employer Reporting System.
- Completing an enterprise data and system gap-fit analysis and defined current state of Enterprise Pension Administration and all auxiliary applications to help determine the future path for development of new features and improved functionality.
- Partnering across the organization to improve Annual Member Statement availability and established an automated Estimate Request Process.

- Realizing improvements in several areas including Requirement Minimum Distribution processing, automation of health insurance premium coding, completing the daily CPS employment status reporting project, managing stale checks, and tax withholding.
- Acquiring cybersecurity insurance for the Fund.

LEGISLATION IMPACTING CTPF

Public Act 100-0902 enacted August 17, 2018, amends the General Provisions Article of the Illinois Pension Code. In provisions concerning the allocation and delegation of fiduciary duties, provides that each retirement system, pension fund, or investment board shall make its best efforts to ensure that the racial and ethnic makeup of its senior administrative staff represents the racial and ethnic makeup of its membership.

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%.

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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 2015, 2016, 2017, 2018, and 2019, the required contributions from the Board of Education and the State of Illinois were $709 million, $700 million, $745 million, $784 million, and $809 million, respectively. For fiscal years 2020 and 2021, the required contributions are $855 million and $886 million.

CONCLUDING COMMENTS

Three Board of Trustees elections were held in Fiscal Year 2019. Pensioners elected Robert F. “Bob” Bures to a one-year term to fill a vacancy through November 2019. Teachers held two elections. Gervaise Clay and James Cavallero were elected to three-year terms from November 2018–November 2021. Jacquelyn Price Ward was elected to a one-year term to fill a vacancy ending November 2019.

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; Robert F. “Bob” Bures, 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.

Charles A. Burbridge
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.

Plante & Moran, PLLC
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P.O. Box 307
Southfield, MI 48037-0307
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Fax: 248.352.0018
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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, 2019 and 2018 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, 2019 and 2018 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 $1,417,894,785 (12.8 percent of net position) at June 30, 2019 and at $1,396,303,882 (12.6 percent of net position) at June 30, 2018 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 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

March 24, 2020

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

JUNE 30, 2019 AND 2018

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, 2019 and 2018. This information is intended to supplement the financial statements, which begin on page 28 of this report. We encourage readers to consider additional information and data in the Fund's 2019 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 5.5% (time-weighted return) in fiscal year 2019. 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 10.0%. This is higher than the actuarial assumption of 7.00%.

The Fund's consulting actuary has certified the total actuarial accrued liability of the Pension Fund to be $23.3 billion as of June 30, 2019. This represents an increase in the total actuarial accrued liability of $0.4 billion when compared to the actuarial accrued liability of $22.9 billion as of June 30, 2018. The unfunded actuarial accrued liability increased from $12.0 billion to $12.2 billion. The total pension liability, under GASB 67, for fiscal years 2019 and 2018, was $25.2 billion and $24.5 billion, respectively.

FINANCIAL HIGHLIGHTS

- Investment returns in fiscal year 2019 did not meet the benchmark. This was a departure from the longer-term experience. The investment rate of return for fiscal year 2019 on a time weighted basis was 5.5% (benchmark of 6.4%) following fiscal year 2018's return of 9.0%. Five and ten-year annualized returns were 6.3% (benchmark of 6.1%) and 10.0% (benchmark of 9.5%), respectively.

- Total plan fiduciary net position decreased during the fiscal year to $11.0 billion at June 30, 2019, from $11.1 billion at June 30, 2018.

- The Fund paid members $1.5 billion in service retirement, disability, refunds, and survivor benefits, an additional $58.6 million for health care benefits, and administrative expenses of $26.1 million, a 1.7% increase of the total paid to members, health care benefits and administrative expenses for fiscal year 2018.

- Total additions to plan fiduciary net position were $1.5 billion for fiscal year 2019, including total contributions of $999.1 million and net investment income of $513.6 million.

- The funded ratio for pension benefits, based on the actuarial value of assets, decreased to 47.4% as of June 30, 2019, from 47.9% 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 2019, the Fund's total investment performance resulted in a 5.5% gain, based on time-weighted returns. Domestic, international and private equity, fixed income, real estate and infrastructure generated positive returns. The Fund's portfolio of domestic equity reported a 7.6% return, international equity reported 0.7%, fixed income reported an 8.4% return, private equity reported an 11.7% return, real estate reported a 6.3% return and infrastructure reported a 10.2% return.

The Fund's net money-weighted rate of return for the fiscal year ended June 30, 2019, was 5.04%.

1-YEAR RETURNS (2019)

Asset Category	Fund Return	Index Name	Index Return
Total Fund	5.5%	Fund Benchmark Index	6.4%
Domestic Equity	7.6%	Domestic Equity Benchmark	9.0%
International Equity	0.7%	International Equity Benchmark	0.3%
Fixed Income	8.4%	Bloomberg Aggregate Index	7.9%
Private Equity	11.7%	N/A	—
Real Estate	6.3%	NFI-ODCE Value Weight Net Only	5.5%
Infrastructure	10.2%	FTSE Core Developed Infrastructure 50/50 Index*	14.3%

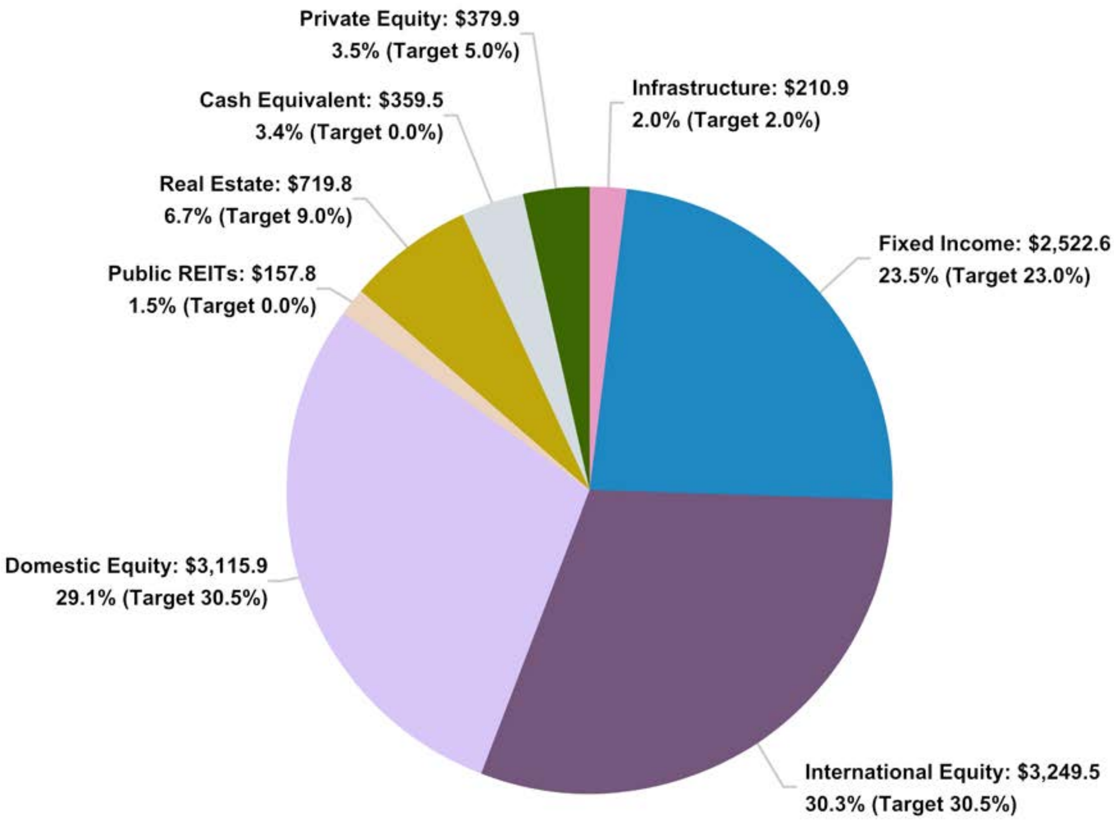
* New Infrastructure benchmark (FTSE Core Developed Infrastructure 50/50/Index) adopted September 21, 2017.

5-YEAR RETURNS (2019)

Asset Category	Fund Return	Index Name	Index Return
Total Fund	6.3%	Fund Benchmark Index	6.1%
Domestic Equity	9.8%	Domestic Equity Benchmark	10.2%
International Equity	3.3%	International Equity Benchmark	2.0%
Fixed Income	3.3%	Bloomberg Aggregate Index	3.0%
Private Equity	11.6%	N/A	—
Real Estate	10.1%	NFI-ODCE Value Weight Net Only	8.8%
Infrastructure	7.2%	Absolute Benchmark	8.0%

ASSET ALLOCATION SUMMARY AS OF JUNE 30, 2019

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 $(65.9) million, (0.6)%, during fiscal year 2019 after increasing by $311.6 million, 2.9%, in fiscal year 2018. The decrease reflects expenditures exceeding contributions and net investment income during fiscal year 2019.

Cash and cash equivalents decreased by $11.5 million during fiscal year 2019 and decreased by $330.7 million in fiscal year 2018. 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, decreased by $88.2 million in 2019 after increasing by $18.0 million in 2018. 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, 2019 and 2018, approximately $186.6 million and $253.0 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 normal cost for that fiscal year, plus the retiree health insurance subsidy which totaled $226.8 million for fiscal year 2019. As of June 30, 2019, there was an outstanding receivable of $37.8 million for normal cost contributions.

Receivables due from brokers (proceeds from investment sales) increased by $75.7 million in fiscal year 2019, and decreased by $50.5 million in fiscal year 2018, 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 2019 and 2018. Within the securities lending program, both collateral and collateral payable decreased by $386.8 million during fiscal year 2019 and increased by $6.4 million and $6.1 million, respectively, during fiscal year 2018. 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 increased by $3.3 million during fiscal year 2019 after increasing by $0.5 million during fiscal year 2018. The increase in fiscal year 2019 was primarily the result of increase investment manager fees.

Liabilities due to brokers (the cash due for investment purchases) increased by $34.4 million in fiscal year 2019 and decreased by $12.9 million in fiscal year 2018 due to the timing of investment purchases at year-end.

The following is a summary of the fiduciary net position at June 30, 2019, 2018, and 2017:

	Fiscal Year (*In Millions*)		
	2019	**2018**	**2017**
Cash and cash equivalents	$ 122.0	$ 133.5	$ 464.2
Prepaid expenses	0.3	0.1	0.1
Receivables	292.9	381.1	363.1
Due from brokers	162.4	86.6	137.2
Investments, at fair value	10,715.9	10,729.7	10,070.3
Securities lending collateral	560.6	947.4	941.0
Capital assets, net	0.7	1.2	1.2
Total assets	**11,854.8**	**12,279.6**	**11,977.1**
Benefits and refunds payable	20.9	20.2	23.0
Accounts and administrative expenses payable	15.0	11.7	11.2
Employer required contribution payable	—	10.4	10.4
Securities lending collateral payable	559.6	946.4	940.3
Due to brokers	220.5	186.1	199.0
Total liabilities	**816.0**	**1,174.8**	**1,183.9**
Fiduciary net position restricted for pensions	$ 11,038.8	$ 11,104.8	$ 10,793.2

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, 2019, additions totaled $1.5 billion compared to $1.9 billion for the year ended June 30, 2018.

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 2019 and 2018, the Employer and State were required to pay $808.6 million and $784.4 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 in the amount of $226.8 million to cover the employer normal cost and health insurance costs, which reduced the required contribution from the Employer by the same amount. As of June 30, 2019 and 2018, the Employer and State paid $584.2 million and $762.4 million, of the respective year's required minimum contribution.

Investment returns in fiscal year 2019 were modest in comparison to fiscal year 2018 and trailed the benchmark. Net investment income decreased primarily due to equity market fluctuations in fiscal year 2019. The money-weighted rates of return, net of investment expenses were 5.04% and 8.93% for fiscal years 2019 and 2018, respectively.

The Fund recorded interest receivable totaling $1.4 million for fiscal year 2019 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 2019.

The following is a summary of additions to plan fiduciary net position for the years ended June 30, 2019, 2018, and 2017:

	Fiscal Year *(In Millions)*		
	2019	**2018**	**2017**
Employee contributions	$ 190.6	$ 183.7	$ 187.5
Minimum funding requirement (Employer)	569.7	551.4	734.7
Minimum funding requirement (State)	238.9	233.0	12.2
Net investment income (loss)	513.6	896.7	1,233.0
Interest on late required contribution payments	1.4	1.1	—
Miscellaneous	0.2	0.4	0.2
Total additions	**$ 1,514.4**	**$ 1,866.3**	**$ 2,167.6**

DEDUCTIONS FROM PLAN ASSETS

Pension benefits increased during fiscal years 2019 and 2018, as new pensioners were added to the pension benefit. Additionally, the automatic annual increase (AAI) of 3% was granted to existing retirees during these fiscal years.

Health insurance premium subsidies decreased by $(7.7) million during fiscal year 2019 after increasing by $17.8 million in fiscal year 2018. This reflects a return to expected health insurance premium subsidy expenses for fiscal year 2019 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 increased by $4.0 million during fiscal year 2019 as the members over payment receivables were deemed uncollectible. Administrative expenses increased by $7.8 million during fiscal year 2018 as the Fund recognized adjustments related to previous fiscal years.

The following is a summary of deductions from plan fiduciary net position for the years ended June 30, 2019, 2018, and 2017:

	Fiscal Year *(In Millions)*		
	2019	**2018**	**2017**
Pension benefits	$ 1,467.5	$ 1,437.3	$ 1,389.4
Refunds	24.7	25.1	32.2
Death benefits	3.4	3.9	3.3
Health insurance premium subsidies	58.6	66.3	48.5
Administrative and miscellaneous expenses	26.1	22.1	14.3
Total deductions	**$ 1,580.3**	**$ 1,554.7**	**$ 1,487.7**

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 are 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, $733 million in fiscal year 2017, and $551 million in fiscal year 2018. 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 90-0582. For fiscal year 2018, the additional required contribution was $12 million. Beginning in fiscal year 2018, P.A. 100-0465 amended state law and required the State of Illinois to contribute the employer normal cost and health insurance portions of the required contribution, which totaled $221 million for fiscal year 2018. During fiscal year 2018, the Employer paid $125 million and the State of Illinois contributed $203 million, pursuant to P.A. 100-0465. The Fund received a total of $423 million in contributions during fiscal year 2018 as a result of the special pension property tax levy. Accordingly, $250 million was applied toward the outstanding fiscal year 2017 Employer required contribution and the remaining $173 million was applied toward the Employer's fiscal year 2018 required contribution. Additionally, contributions of $36 million, related to previous years, remain due from the Employer as of June 30, 2018 and 2017. In FY2019 the contributions due of $36 million from previous years was settled as a result of a settlement agreement between the employer and CTPF which resulted in a net write off of $11 million by CTPF.

State law also requires state contributions and other employer contributions to provide for benefit increases when the funding level drops below 90%. Accordingly, the State of Illinois was required to remit $12.1 million and $11.7 million for fiscal years 2019 and 2018, respectively. During fiscal year 2018, the State paid $11.2 million while the remaining $11.7 million was paid during fiscal year 2019.

The fiscal year 2020 Board of Education and State of Illinois required contributions are $597.2 million and $257.3 million, respectively, for a total of $854.5 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 and other Board of Education revenues and by the State of Illinois.

Based upon an actuarial valuation, the total pension liability and plan fiduciary net position are $25.2 billion and $11.0 billion, respectively. This resulted in net pension liability of $14.1 billion as of June 30, 2019.

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 47.4% in fiscal year 2019 from 47.9% in fiscal year 2018, 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, 2019.

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, 2019 AND 2018

	JUNE 30, 2019			JUNE 30, 2018		
	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	$ 121,996,481	$ —	$ 121,996,481	$ 133,497,617	$ —	$ 133,497,617
Prepaid expense	324,753	—	324,753	90,787	—	90,787
Receivables:						
Minimum funding requirement (Employer)	186,608,225	—	186,608,225	289,191,260	—	289,191,260
Minimum funding requirement (State)	37,797,000	—	37,797,000	30,133,667	—	30,133,667
Employee	11,247,826	—	11,247,826	9,304,638	—	9,304,638
Accrued investment income	39,268,564	—	39,268,564	37,521,126	—	37,521,126
Due from brokers	162,389,723	—	162,389,723	86,639,726	—	86,639,726
Participating teachers' accounts for contributions	4,681,191	—	4,681,191	4,636,522	—	4,636,522
Other receivables	8,364,555	4,915,284	13,279,839	5,627,642	4,688,184	10,315,826
Total receivables	**$ 450,357,084**	**$ 4,915,284**	**$ 455,272,368**	**$ 463,054,581**	**$ 4,688,184**	**$ 467,742,765**
Investments, at fair value:						
U.S. government and agency fixed income	1,381,549,632	—	1,381,549,632	1,299,056,547	—	1,299,056,547
U.S. corporate fixed income	1,080,629,549	—	1,080,629,549	1,060,376,104	—	1,060,376,104
Foreign fixed income securities	60,378,150	—	60,378,150	58,787,954	—	58,787,954
U.S. equities	3,115,916,532	—	3,115,916,532	3,108,323,201	—	3,108,323,201
Foreign equities	3,249,511,598	—	3,249,511,598	3,336,876,903	—	3,336,876,903
Public REITs	157,753,245	—	157,753,245	144,771,014	—	144,771,014
Pooled short-term investment funds	359,473,153	—	359,473,153	447,399,457	—	447,399,457
Real estate	719,817,831	—	719,817,831	746,521,607	—	746,521,607
Infrastructure	210,950,505	—	210,950,505	227,364,041	—	227,364,041
Private equity	379,931,583	—	379,931,583	300,228,413	—	300,228,413
Total investments	**$ 10,715,911,778**	**$ —**	**$ 10,715,911,778**	**$ 10,729,705,241**	**$ —**	**$ 10,729,705,241**
Securities lending collateral	560,663,605	—	560,663,605	947,417,427	—	947,417,427
Capital assets, net of accumulated depreciation	705,360	—	705,360	1,190,580	—	1,190,580
Total assets	**$ 11,849,959,061**	**$ 4,915,284**	**$ 11,854,874,345**	**$ 12,274,956,233**	**$ 4,688,184**	**$ 12,279,644,417**
Liabilities:						
Benefits payable	4,510,886	4,902,177	9,413,063	4,681,391	4,624,300	9,305,691
Refunds payable	11,502,175	—	11,502,175	10,860,495	—	10,860,495
Accounts and administrative expenses payable	14,953,962	13,107	14,967,069	11,694,890	63,884	11,758,774
Employer required contribution payable	—	—	—	10,449,000	—	10,449,000
Securities lending collateral payable	559,602,193	—	559,602,193	946,404,347	—	946,404,347
Due to brokers	220,552,386	—	220,552,386	186,100,596	—	186,100,596
Total liabilities	**$ 811,121,602**	**$ 4,915,284**	**$ 816,036,886**	**$ 1,170,190,719**	**$ 4,688,184**	**$ 1,174,878,903**
Net position restricted for pension benefits	$ 11,038,837,459	$ —	$ 11,038,837,459	$ 11,104,765,514	$ —	$ 11,104,765,514

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

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

FOR FISCAL YEAR ENDED JUNE 30, 2019 AND 2018

	JUNE 30, 2019			JUNE 30, 2018		
	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	$ 190,565,220	$ —	$ 190,565,220	$ 183,679,205	$ —	$ 183,679,205
Minimum funding requirement (Employer)	569,701,000	—	569,701,000	551,410,000	—	551,410,000
Minimum funding requirement (State)	238,869,000	—	238,869,000	232,992,000	—	232,992,000
Allocation to health insurance fund	(59,089,369)	59,089,369	—	(66,867,696)	66,867,696	—
Total contributions	**$ 940,045,851**	**$ 59,089,369**	**$ 999,135,220**	**$ 901,213,509**	**$ 66,867,696**	**$ 968,081,205**
Investment income:						
Net appreciation in fair value	255,501,019	—	255,501,019	660,578,461	—	660,578,461
Interest	92,918,909	—	92,918,909	86,397,678	—	86,397,678
Dividends	199,555,823	—	199,555,823	182,949,696	—	182,949,696
Miscellaneous	1,253,766	—	1,253,766	1,081,966	—	1,081,966
Securities lending income, net	4,845,062	—	4,845,062	4,500,198	—	4,500,198
Less investment expenses:						
Investment advisory and custodial fees	(40,498,179)	—	(40,498,179)	(38,803,455)	—	(38,803,455)
Net investment income	**$ 513,576,400**	**$ —**	**$ 513,576,400**	**$ 896,704,544**	**$ —**	**$ 896,704,544**
Interest on late required contribution payments	1,449,709	—	1,449,709	1,123,915	—	1,123,915
Miscellaneous	238,261	—	238,261	351,361	—	351,361
Total additions	**$ 1,455,310,221**	**$ 59,089,369**	**$ 1,514,399,590**	**$ 1,799,393,329**	**$ 66,867,696**	**$ 1,866,261,025**
Deductions:						
Pension benefits	1,467,513,811	—	1,467,513,811	1,437,264,031	—	1,437,264,031
Refunds	24,133,854	—	24,133,854	24,323,083	—	24,323,083
2.2 Legislative refunds	562,230	—	562,230	742,315	—	742,315
Refunds of insurance premiums	—	58,611,532	58,611,532	—	66,333,655	66,333,655
Death benefits	3,406,487	—	3,406,487	3,951,010	—	3,951,010
Total benefit payments	**$ 1,495,616,382**	**$ 58,611,532**	**$ 1,554,227,914**	**$ 1,466,280,439**	**$ 66,333,655**	**$ 1,532,614,094**
Administrative and miscellaneous expenses	25,621,894	477,837	26,099,731	21,521,303	534,041	22,055,344
Total deductions	**$ 1,521,238,276**	**$ 59,089,369**	**$ 1,580,327,645**	**$ 1,487,801,742**	**$ 66,867,696**	**$ 1,554,669,438**
Net increase (decrease)	(65,928,055)	—	(65,928,055)	311,591,587	—	311,591,587
Net position restricted for pension benefits						
Beginning of year	11,104,765,514	—	11,104,765,514	10,793,173,927	—	10,793,173,927
End of year	**$11,038,837,459**	**$ —**	**$ 11,038,837,459**	**$11,104,765,514**	**$ —**	**$ 11,104,765,514**

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, 2019, the Fund had 45 participating employers consisting of the primary employer, Chicago Public Schools, 41 charter employers comprising 128 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, 2019 and 2018, Fund membership consisted of the following:

	2019	2018
Retirees and beneficiaries currently receiving benefits	28,317	28,549
Terminated members entitled to benefits but not yet receiving them	9,926	9,398
Current members:		
Vested	16,655	17,065
Nonvested	12,640	11,893
	67,538	**66,905**

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 33.95 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 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 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 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 years of service to the final average salary earned (4 highest consecutive years) or (2) applying a flat 2.2% to the average salary earned for each year of service. A duty disability benefit is provided upon the total incapacity for further teaching 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 structure 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.

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 2019, the Department determined that the maximum earnings, salary, or wages that can be used in calculating pension is approximately $114,952.

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 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 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 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 67^{th} 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 67^{th} 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 2019 and 2018 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, 2019 and 2018 are $40,271,956 and $34,361,325, 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 $1,417,894,785 (12.8% of fund net position) at June 30, 2019 and at $1,396,303,882 (12.6% of fund net position) at June 30, 2018, 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, 2019 & 2018 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 two fiscal years due, in part, to more equitable state funding and the State of Illinois passing its budget.

For fiscal year 2018, 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 32* for health insurance amounts authorized but not expended as of June 30, 2019 and 2018.

(3) RECEIVABLES AND PAYABLES

Required contributions from the Board of Education and State of Illinois are included in the receivables as of June 30, 2019 and 2018.

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 total early September 2019. All receivables outstanding as of June 30, 2019, related to the fiscal year 2019 Employer and State of Illinois required contributions, were received prior to September 30, 2019.

As of June 30, 2018, the outstanding Employer receivable included $253.0 million of the Board of Education's required contribution for fiscal year 2018, which was received by the end of August, 2018. The remaining $36.2 million due to the Fund from the Employer consists of contributions related to fiscal years 2016, 2015, and 2014. The State of Illinois owed the Fund $11.7 million as of June 30, 2018, which was received early in July, 2018, prior to the end of the lapse period. All receivables outstanding as of June 30, 2018, related to the fiscal year 2018 Employer and State of Illinois required contributions, were received prior to August, 2018.

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 $9,134,946 and $7,103,397 on behalf of the employees at June 30, 2019 and 2018, respectively. Employees owed the Fund $2,097,460 and $2,179,917 for the 2.2 pension formula upgrade at June 30, 2019 and 2018, respectively. As of June 30, 2019 and 2018, there were other miscellaneous contributions of $15,420 and $21,324, 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, 2019 and 2018:

Asset Class	Target Allocation	
	2019	2018
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, 2019 and 2018, the annual money-weighted rate of return on plan investments, net of investment expenses, were 5.04% and 8.93%, 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	2019	2018
Bank balance	$ 110,844,258	$ 693,850
Amount exposed to custodial credit risk	110,344,258	332,277

INVESTMENTS

The following table presents a summary of the Fund's investments at fair values at June 30, 2019 and 2018:

Category	Fair Value	
	2019	2018
U.S. Government and Agency Fixed Income	$ 1,381,549,632	$ 1,299,056,547
U.S. Corporate Fixed Income	1,043,456,226	1,001,801,816
Foreign Fixed Income	60,378,150	58,787,954
Commingled Common Stock	194,421,572	220,506,365
Commingled Emerging Markets	160,327,597	155,214,389
Commingled Corporate Bonds	37,173,323	58,574,288
Commingled Infrastructure	92,237,539	98,529,258
Commingled Real Estate	527,703,726	589,294,692
U.S. Equities	3,115,916,532	3,108,323,201
Foreign Equities	2,894,762,428	2,961,156,149
Public REITs	144,326,400	133,137,562
Foreign Public REITs	13,426,845	11,633,452
Pooled Short-Term Investment Funds	359,473,153	447,399,457
U.S. Real Estate	192,114,105	147,094,211
Foreign Real Estate	—	10,132,704
U.S. Infrastructure	80,301,189	100,172,213
Foreign Infrastructure	38,411,777	28,662,570
Private Equity	379,931,584	300,228,413
Total Investments	**$ 10,715,911,778**	**$ 10,729,705,241**

(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, 2019 and 2018, 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	2019	2018
Margin Cash	$ 7,938,591	$ 3,701,978

(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, 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	—	—	3,657,438	4,204,619	—	—	—
CCC	213,953	—	—	—	—	—	—
CC	828	—	—	—	—	—	—
C	—	—	—	—	—	—	—
D	—	—	—	—	—	—	—
Not Rated	49,732,850	37,173,323	57,345,055	8,863,251	126,898,131	82,172,481	689,700
Total	**$ 72,569,307**	**$ 37,173,323**	**$ 988,694,040**	**$ 73,751,932**	**$ 906,002,134**	**$ 427,166,650**	**$ 17,199,944**

As of June 30, 2019, 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, 2018

S&P Credit Rating	Commercial Mortgage Backed	Commingled Fixed Income	Corporate Bonds	Government Agencies	Government Bonds	Government Mortgage Backed	Municipal Bonds
AAA	$ 12,404,925	$ —	$ 43,188,009	$ 982,600	$ 245,862	$ —	$ 2,372,825
AA	16,083,978	—	69,013,494	5,401,407	857,283,897	282,003,387	9,802,713
A	552,283	—	310,836,094	20,276,577	—	—	2,965,877
BBB	1,891,447	—	412,000,111	19,340,023	—	—	1,615,061
BB	1,002,500	—	35,464,132	11,818,569	—	—	—
B	—	—	3,993,325	4,161,937	—	—	—
CCC	1,120,450	—	—	—	—	—	—
CC	1,003	—	—	—	—	—	—
C	—	—	—	—	—	—	486,118
D	27,288	—	—	—	—	—	—
Not Rated	61,334,777	58,574,288	61,677,041	4,715,275	9,398,691	96,002,480	182,161
Total	**$ 94,418,651**	**$ 58,574,288**	**$ 936,172,206**	**$ 66,696,388**	**$ 866,928,450**	**$ 378,005,867**	**$ 17,424,755**

As of June 30, 2018, 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, 2019 or 2018.

(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, 2019 and 2018

Investment Type	Fair Value		Effective Duration (Years)	Fair Value		Effective Duration (Years)
	June 30, 2019			June 30, 2018		
Commercial Mortgage Backed	$	72,569,307	0.11	$	94,418,651	0.14
Commingled Fixed Income Funds		37,173,323	0.01		58,574,288	0.02
Corporate Bonds		988,694,040	3.05		936,172,206	2.89
Government Agencies		73,751,932	0.17		66,696,388	0.15
Government Bonds		906,002,133	2.46		866,928,450	2.35
Government Mortgage Backed		427,166,650	0.75		378,005,867	0.66
Municipal Bonds		17,199,944	0.05		17,424,755	0.05
Total	**$**	**2,522,557,331**		**$**	**2,418,220,605**	

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, 2019 and 2018

Currency	Base Market Value		Percentage	Base Market Value		Percentage
Foreign Equities:	**June 30, 2019**			**June 30, 2018**		
Australian Dollar	$	32,238,260	1.11%	$	27,315,680	0.92%
Brazilian Real		31,710,545	1.10		23,393,397	0.79
British Pound		437,706,884	15.12		500,513,957	16.90
Canadian Dollar		113,713,655	3.93		94,377,681	3.19
Chilean Peso		334,699	0.01		451,375	0.02
Colombian Peso		522,957	0.02		3,584,970	0.12
Czech Koruna		8,330,784	0.29		8,476,923	0.29
Danish Krone		43,242,027	1.49		45,878,149	1.55
Euro		817,944,083	28.26		820,187,063	27.70
Hong Kong Dollar		168,536,440	5.82		163,527,603	5.52
Hungarian Forint		3,492,723	0.12		3,348,096	0.11
Indian Rupee		15,580,490	0.54		41,602,782	1.41
Indonesian Rupiah		15,990,812	0.55		16,613,871	0.56
Israeli Shekel		10,853,783	0.38		5,367,616	0.18
Japanese Yen		326,963,351	11.29		379,449,014	12.81
Malaysian Ringgit		1,716,750	0.06		1,439,723	0.05
Mexican Peso		13,739,052	0.48		11,712,763	0.40
New Taiwan Dollar		71,684,105	2.48		85,246,668	2.88
New Zealand Dollar		5,846,504	0.20		1,763,720	0.06
Nigerian Naira		135,663	—		196,146	0.01
Norwegian Krone		33,664,372	1.16		45,278,070	1.53
Pakistani Rupee		189,065	0.01		209,060	0.01
Philippine Peso		977,590	0.03		734,473	0.02

Currency	Base Market Value	Percentage	Base Market Value	Percentage
Foreign Equities (continued):	**June 30, 2019**		**June 30, 2018**	
Polish Zloty	$ 704,730	0.02%	$ 542,300	0.02%
Qatari Riyal	77,741	0.00	107,757	0.00
Russian Ruble	73,119	0.00	85,488	0.00
Singapore Dollar	35,904,939	1.24	25,534,214	0.86
South African Rand	20,197,567	0.70	20,229,409	0.68
South Korean Won	40,926,285	1.41	71,025,874	2.40
Swedish Krona	55,260,795	1.91	52,717,801	1.78
Swiss Franc	134,095,518	4.63	103,762,416	3.50
Thai Baht	16,694,819	0.58	15,095,732	0.51
Turkish Lira	606,418	0.02	6,529,898	0.22
U.S. Dollar	434,941,437	15.03	384,619,315	12.99
U.A.E. Dirham	164,468	0.01	237,145	0.01
Total	**$ 2,894,762,428**	**115.12%**	**$ 2,961,156,149**	**100.00%**
Foreign Fixed Income:	**June 30, 2019**		**June 30, 2018**	
Argentine Peso	$ 759,549	1.45%	$ 1,175,306	2.01%
Australian Dollar	348,048	0.67	151,876	0.26
Brazilian Real	9,617,520	18.40	8,317,647	14.22
British Pound	1,178,238	2.25	2,269,207	3.88
Canadian Dollar	247,087	0.47	245,862	0.42
Danish Krone	—	—	—	—
Euro	3,141,530	6.01	2,989,641	5.11
Japanese Yen	—	—	—	—
Mexican Peso	18,301,734	35.02	14,540,048	24.86
New Zealand Dollar	436,395	0.84	5,555,017	9.50
Norwegian Krone	147,515	0.28	1,968,643	3.37
Russian Ruble (NEW)	133,436	0.26%		
South African Rand	144,255	0.28	21,265,381	36.37
U.S. Dollar	17,807,122	34.07%		
Total	**$ 52,262,429**	**100.00%**	**$ 58,478,628**	**100.00%**
Foreign Public REITs:	**June 30, 2019**		**June 30, 2018**	
British Pound	$ 10,293,509	76.66%	$ 9,670,776	83.13%
Euro	3,133,336	23.34	1,447,614	12.44
Singapore Dollar	—	—	237,340	2.04
South African Rand	—	—	277,722	2.39
Total	**$ 13,426,845**	**100.00%**	**$ 11,633,452**	**100.00%**
Foreign Infrastructure:	**June 30, 2019**		**June 30, 2018**	
Euro	$ —	—%	$ 28,662,570	100.00%
Total	**$ —**	**—%**	**$ 28,662,570**	**100.00%**
Foreign Real Estate:	**June 30, 2019**		**June 30, 2018**	
Euro			$ 2,926,617	28.88%
Japanese Yen	—	—	3,955,779	39.04
U.S. Dollar	—	—	3,250,308	32.08
Total	**$ 10,293,509**	**76.66%**	**$ 10,132,704**	**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, 2019 and 2018, the collateral provided was 102.11% and 102.33% 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, 2019 and 2018 was 30.8 days and 43.7 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, 2019 and 2018, 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, 2019, were $559,602,193 and $548,019,165, 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, 2018, were $946,404,347 and $924,851,487, respectively.

The following table represents the fair market value balances relating to the securities lending transactions as of June 30, 2019 and 2018:

Category	Fair Market Value of Underlying Securities Lent as of June 30	
	2019	2018
U.S. Agency	$ 4,091,187	$ 9,149,002
U.S. Equity	289,815,908	412,172,529
U.S. Government	178,992,256	401,117,975
Corporate Bond	54,734,215	75,305,699
International Equity	20,385,599	27,106,282
Total	**$ 548,019,165**	**$ 924,851,487**

The fair market value of collateral of the securities lending program at June 30, 2019 was $560,663,605, compared to $947,417,427 at June 30, 2018. 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, 2019 and 2018 as rated by S&P are as follows:

S&P Credit Rating	Collateral Amount as of June 30	
	2019	2018
A-1+	$ 25,000,000	$ 5,000,000
A-1	370,000,000	651,500,000
A-2	85,000,000	47,500,000
Not Rated	80,663,605	243,417,427
Total	**$ 560,663,605**	**$ 947,417,427**

(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, 2019 and 2018:

	Derivative Type	Notional Amounts		Fair Value	
		2019	2018	2019	2018
A.	**Foreign currency contracts purchased**	$ —	$ —	$ (129,312,399)	$ (115,001,952)
	Foreign currency contracts sold	—	—	129,411,222	114,316,681
B.	**Futures:**				
	Long equity	6,572,320	14,293,265	152,189	(274,637)
	Long fixed income	420,377,201	588,403,583	7,397,899	1,475,606
	Short fixed income	(236,789,116)	(206,956,999)	(1,815,514)	(278,150)
C.	**Options:**				
	Purchased	—	—	335,869	374,284
	Written	—	—	(964,117)	(394,289)
D.	**Rights and Warrants**	—	—	175,645	370,874
E.	**Swaps:**				
	Credit default swaps	—	—	(5,736,927)	(1,738,609)
	Interest rate swaps	—	—	740,442	34,320
	Total	**$ 190,160,405**	**$ 395,739,849**	**$ 384,310**	**$ (1,115,872)**

(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, 2019 and 2018 were as follows:

Currency	Fair Value	
Foreign currency exchange sales	**2019**	**2018**
Australian Dollar	$ (271,382)	$ (3,017,756)
Brazilian Real	(71,853)	(103,071)
British Pound		(945,536)
Canadian Dollar	(1,208,743)	(1,325,326)
Chinese Yuan Renminbi	(5,276,988)	(8,195,311)
Colombian Peso	(79,301)	—
Euro	(16,487,694)	(15,286,466)
Hungarian Forint	(156,034)	—
Hong Kong Dollar	(347,533)	(791,751)
Indian Rupee	(3,576,999)	—
Indonesian Rupiah	(7,535,169)	—
Israeli Shekel	(8,896)	—
Japanese Yen	(682,835)	(9,510,708)
Mexican Peso	(7,199,728)	(5,814,906)
New Taiwan Dollar	(51,334)	(1,394,120)

Currency	Fair Value	
New Zealand Dollar	(385,317)	—
Phillipine Peso	(12,250,129)	(5,886,055)
Pound Sterling	(692,537)	—
South African Rand	(155,164)	(9,342)
Swedish Krona	—	(92,597)
Swiss Franc	(802,739)	—
U.S. Dollar	(72,072,026)	(62,629,007)
Total	**$ (129,312,399)**	**$(115,001,952)**
Foreign currency exchange purchases		
Argentine Peso	$ 420,251	$ 638,712
Australian Dollar	5,736,482	5,939,422
Brazilian Real	5,226,425	4,529,122
British Pound	—	7,516,254
Canadian Dollar	9,696,497	6,720,967
Chinese Yuan Reniminbi	56,226	2,805,044
Danish Krone	56,742	107,100
Euro	6,834,695	9,350,084
Hong Kong Dollar	529,239	123,781
Indian Rupee	7,111,298	1,407,372
Indonesian Rupiah	12,671,330	4,292,397
Israeli Shekel	4,551	176,793
Japanese Yen	3,541,136	14,434,818
Mexican Peso	2,129,391	1,089,643
New Taiwan Dollar	84,937	
New Zealand Dollar		44,010
Norwegian Krone	480,630	479,607
Philippines Peso	6,139,068	
Polish Zloty	45,801	
Pound Sterling	6,512,146	
Singapore Dollar	1,545,332	751,753
South African Rand	1,303,836	1,341,198
Swedish Krona	2,359,939	2,052,499
Swiss Franc	1,179,267	18,352
Turkish Lira		193,264
U.S. Dollar	55,746,004	50,304,489
Total	**$ 129,411,222**	**$ 114,316,681**

(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, 2019 and 2018:

Derivative Type	Changes in Fair Value	
	2019	2018
Foreign Currency Contracts	$ (482,689)	$ (1,259,650)
Options	149,083	192,175
Rights and Warrants	139,376	171,696
Swaps	(4,168,634)	(5,501,562)
Total	**$ (4,362,863)**	**$ (6,397,341)**

(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, 2019 and 2018:

	Fair Value	Effective Duration (Years)	Fair Value	Effective Duration (Years)
Derivative Type	2019		2018	
Futures fixed income (long and short, net)	$ 5,582,386	2.13	$ 1,197,456	1.30
Options	(628,248)	(0.08)	(20,005)	(0.17)
Total	**$ 4,954,137**		**$ 1,177,451**	

(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 2019 and 2018, the Employer and the State were required to make contributions of $808.6 million and $784.4 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 $584.2 million and $762.4 million in fiscal years 2019 and 2018, 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 $186.6 million and $253.0 million were outstanding as of June 30, 2019 and 2018, 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 2019 and 2018.

As of June 30, 2018, the Employer owed $289.2 million, including a total of $36.2 million in required contributions related to fiscal years 2014 through 2016 and the State of Illinois owed $11.7 million. 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, 2019, 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 $65.0 million health insurance subsidy from the normal cost plus an additional $1.3 million from prior year health insurance amounts authorized but not expended to pay health insurance benefits for retirees. This resulted in a total subsidy amount of $59 million to fund health insurance benefits in fiscal year 2019. During the fiscal year ended June 30, 2018, the Fund did not receive state funding for the health insurance plan. As a result, the Fund allocated approximately $66.9 million of the Employer contribution to pay health benefits to Fund retirees.

Although the statutory contribution requirements were met in fiscal years 2019 and 2018, 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 $527,053 and $476,146 for the years ended June 30, 2019 and 2018, respectively, which is 100% of the employee contributions required to be made by the Fund.

(A) 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, 2019 and 2018 were as follows:

	2019	2018
Total pension liability	$ 25,166,179,329	$ 24,547,482,873
Plan fiduciary net position	11,038,837,459	11,104,765,514
Employer's net pension liability	**$ 14,127,341,870**	**$ 13,442,717,359**
Plan fiduciary net position as a percentage of the total pension liability	43.86%	45.24%

ACTUARIAL ASSUMPTIONS

The total pension liability was determined by actuarial valuations as of June 30, 2019 and 2018, using the following actuarial assumptions, applied to all periods included in the measurement:

	Pension Plan	
	2019	2018
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, 2.50% Wage inflation rate, 3.00%	General inflation rate, 2.50% Wage inflation rate, 3.00%
Investment Rate of Return	7.00%, net of investment expenses	7.00%, net of investment expenses
Salary Increases	3.00% to 12.85%, 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 to be used for the June 30, 2019, funding actuarial valuation were adopted by the Board of Trustees during the September 19, 2019, 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 actuarial assumptions to be used for the June 30, 2018, funding actuarial valuation were adopted by the Board of Trustees during the September 20, 2018, Board meeting, and were based on the recommendations from an experience review for the five-year period from July 1, 2012 through June 30, 2017.

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, 2019 and 2018, are summarized in the following table:

Asset Class	Long-Term Expected Real Rate of Return	
	2019	2018
Equities	5.30%	5.30%
Fixed Income	2.10%	2.10%
Infrastructure	4.67%	4.67%
Private Equity	7.05%	7.05%
Real Estate	6.66%	6.66%

SINGLE DISCOUNT RATE

The discount rate used to measure the total pension liability was 6.72% and 6.81%, for fiscal years 2019 and 2018, respectively

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 this Single Discount Rate 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.

For fiscal year 2018, a Single Discount Rate of 6.81% 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 3.62% as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 29, 2018.

The projection of cash flows used to determine this Single Discount Rate 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 6.81% to 6.72% was an increase in the total pension liability of approximately $260 million. The change in the discount rate was driven by the changes in municipal bond rate from 3.62% to 3.13%.

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

The following presents the net pension liability as of June 30, 2019 and 2018, calculated using a Single Discount Rate of 6.72% for fiscal year 2019 and 6.81% for fiscal year 2018. The table below also presents what the net pension liability would be if it were calculated using a Single Discount Rate for fiscal years 2019 and 2018 that is one percentage point lower (5.72% for 2019 and 5.81% for 2018) or one percentage point higher (7.72% for 2019 and 7.81% for 2018) than the current rate:

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	$11,465,802,657
Net Pension Liability	**1% Decrease (5.81%)**	**Current Discount Rate (6.81%)**	**1% Increase (7.81%)**
June 30, 2018	$16,585,702,417	$13,442,717,359	$10,849,573,702

As of June 30, 2019 and 2018, 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, 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	**$ 8,938,543,840**	**$ 7,244,832,095**	**$ 1,695,653,140**	**$ —**	**$ 7,861,908**
	Not Applicable*				
Collateral from Securities Lending	$ 560,663,605				

Investments by Fair Value Level	Fair Value Measurement 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
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	**$ 10,917,102,230**				

* *Consists of cash, interest income, 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, 2019 and 2018, short-term investment holdings were $349,669,849 and $315,908,559, respectively.

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

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, 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	41,654,332	As Needed	7 - 10 days
Private Equity	379,931,583	442,809,948	As Needed	7 - 10 days
Real Estate	192,114,105	179,783,729	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 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, 2018

For comparative purposes, the following table presents the recurring fair value measurements as of June 30, 2018:

		Fair Value Measurement			
Investments by Fair Value Level	**June 30, 2018**	**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	$ 50,743,847	$ 16,962,767	$ 33,781,080	$ —	$ —
Currency	13,333,730	—	133,341	—	13,200,389
Equity					
Commingled Funds	312,106,432	312,106,432	—	—	—
Common Stock	6,048,764,433	6,048,763,223	—	1,210	—
Preferred Stock	20,344,044	15,726,145	4,617,899	—	—
Total Equity	**$ 6,381,214,909**	**$ 6,376,595,800**	**$ 4,617,899**	**$ 1,210**	**$ —**
Fixed Income					
Corporate Bonds	937,895,912	—	937,895,912	—	—
Government Agency Bonds	66,696,387	678,240	66,018,147	—	—
Government Bonds	840,817,959	783,567,108	57,250,851	—	—
Index Linked Gov't Bonds	26,110,491	20,453,905	5,656,586	—	—
Mortgage Backed Securities	472,425,107	—	472,425,107	—	—
Municipal Bonds	17,424,754	—	17,424,754	—	—
Total Fixed Income	**$ 2,361,370,610**	**$ 804,699,253**	**$ 1,556,671,357**	**$ —**	**$ —**
Investment Derivative Instruments					
Options	(20,005)	(20,005)	—	—	—
Swaps	(1,704,289)	—	(1,704,289)	—	—
Rights and Warrants	370,873	370,848	25	—	—
Total Derivatives	**$ (1,353,421)**	**$ 350,843**	**$ (1,704,264)**	**$ —**	**$ —**
Real State Investment Trust - REIT	144,771,014	144,771,014	—	—	—
Total Investments by Fair Value Level	**$ 8,950,080,689**	**$ 7,343,379,677**	**$ 1,593,499,413**	**$ 1,210**	**$ 13,200,389**
	Not Applicable*				
Collateral from Securities Lending	$ 947,417,427				
Investments Measured at the Net Asset Value (NAV)					
Commingled					
Equity	$ 63,614,322				
Fixed Income	58,574,289				
Infrastructure	98,529,258				
Real Estate	589,294,692				
Total Commingled	**$ 810,012,561**				
Infrastructure	128,834,783				
Private Equity	300,228,413				
Real Estate	157,226,915				
Total Investments by Net Asset Value	**$ 1,396,302,672**				
Total Investments	**$ 11,293,800,788**				

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

INVESTMENTS AT NET ASSET VALUE | AS OF JUNE 30, 2018

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, 2018, 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	$ 63,614,322	$ —	N/A	N/A
Fixed Income	58,574,289	—	N/A	N/A
Infrastructure	98,529,258	—	N/A	N/A
Real Estate	589,294,692	—	N/A	N/A
Total Commingled	**$ 810,012,561**			
Infrastructure	128,834,783	34,051,289	As Needed	7 - 10 days
Private Equity	300,228,413	238,432,864	As Needed	7 - 10 days
Real Estate	157,226,915	151,930,521	As Needed	7 - 10 days
Total Investments by Net Asset Value	**$ 1,396,302,672**			

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's 203 N. LaSalle office lease provides that the lessee pay its proportionate share of the operating costs, plus a base rental amount. Included in this lease were provisions for 32 monthly periods of "free rent." In conformity with accounting requirements, the Fund will recognize the office rent expense on a straight-line basis over the

16-year lease term. As an incentive, the lessor provided the Fund an allowance of $1,971,610 which was used for leasehold improvements, fixed asset purchases, or monthly rental payments. Beginning in fiscal year 2016, the Fund expanded office space by 3,456 square feet. The minimum future rental lease payments through June 30, 2020, are as follows:

Year Ended June 30	Amount
2020	$ 683,335
Total minimum future rental payments	**$ 683,335**

The Fund relocated offices to 425 S. Financial Place in November 2019. However the Fund still retains its lease at 203 N. LaSalle pending transfer to another entity in the near future. The Fund continues to make lease payments for the 203 N. LaSalle location until February 2020. Starting March 2020 the 425 S. Financial Place landlord is anticipated will reimburse CTPF by making payments to the 203 N. LaSalle landlord on CTPF's behalf. Lease payments to the 425 S. Financial Place landlord will not commence to be paid by CTPF until 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 my owe to landlord or required under the lease. Included in revised tenant lease for the relocation to 425 S. Financial Place, Chicago lease was a provision for a credit tenant leasehold improvements to 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
2020	$ 59,010
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	**$ 12,830,466**

The total rent expense was $653,562 and $640,177 in fiscal years 2019 and 2018, respectively.

(13) SUBSEQUENT EVENTS

Subsequent to year-end, the Fund’s investment portfolio has incurred a significant decline in fair value, consistent with the general decline in financial markets. However, because the values of individual investments fluctuate with market conditions, and due to market volatility, the amount of losses that will be recognized in subsequent periods, if any, cannot be determined.

(14) FUTURE ACCOUNTING PRONOUNCEMENTS

In June 2017, the Governmental Accounting Standards Board issued GASB Statement No. 87, Leases. The objective of GASB Statement 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 this Statement; however, it is 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

	2019	2018	2017	2016	2015	2014
Total pension liability						
Service cost	$ 310,238,766	$ 303,910,267	$ 269,100,663	$ 325,992,943	$ 318,734,274	$ 332,188,481
Interest	1,631,986,193	1,609,052,853	1,603,833,232	1,576,876,771	1,547,663,416	1,509,307,860
Differences between expected and actual experience	(88,601,053)	54,943,524	48,391,475	(106,563,600)	(138,512,940)	(14,177,102)
Changes of assumptions	260,688,932	870,265,669	1,554,506,801	—	—	—
Benefit payments, including refunds of employee contributions	(1,495,616,382)	(1,466,280,439)	(1,424,938,184)	(1,384,826,398)	(1,331,567,406)	(1,306,341,856)
Net change in total pension liability	**$ 618,696,456**	**$ 1,371,891,874**	**$ 2,050,893,987**	**$ 411,479,716**	**$ 396,317,344**	**$ 520,977,383**
Total pension liability-beginning	**24,547,482,873**	**23,175,590,999**	**21,124,697,012**	**20,713,217,296**	**20,316,899,952**	**19,795,922,569**
Total pension liability-ending (a)	**$25,166,179,329**	**$24,547,482,873**	**$23,175,590,999**	**$ 21,124,697,012**	**$ 20,713,217,296**	**$20,316,899,952**
Plan fiduciary net position						
Contributions - Employer and non-contributing entity	$ 808,570,000 *	$ 784,402,000 *	$ 746,840,000 *	$ 700,070,000	$ 643,667,000	$ 585,416,141
Contributions - employee	190,565,220	183,679,205	187,538,787	191,882,430	191,233,298	187,846,065
Net investment income	513,576,400	896,704,544	1,233,003,939	(27,987,163)	381,688,430	1,685,079,840
Benefit payments, including refunds of employee contributions	(1,495,616,382)	(1,466,280,439)	(1,424,938,184)	(1,384,826,398)	(1,331,567,406)	(130)
Net transfer for OPEB	(59,089,369) *	(66,867,696) *	(49,000,701) *	(66,104,598)	—	—
Administrative expense	(25,621,894)	(21,521,303)	(13,781,343)	(12,867,490)	(11,705,562)	(11,705,562)
Other	1,687,970	1,475,276	214,119	1,463,050	943,946	943,946
Net change in plan fiduciary net position	**$ (65,928,055)**	**$ 311,591,587**	**$ 679,876,617**	**$ (598,370,169)**	**$ (125,740,294)**	**$ 2,447,580,300**
Plan fiduciary net position - beginning	**11,104,765,514**	**10,793,173,927**	**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)	**$11,038,837,459**	**$11,104,765,514**	**$10,793,173,927**	**$ 10,113,297,310**	**$ 10,689,954,320**	**$13,263,274,914**
Employer's net pension liability - ending (a)-(b)	**$14,127,341,870**	**$13,442,717,359**	**$12,382,417,072**	**$ 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 4 years will be presented in future fiscal years.

* *Prior to 2016, $65 million allocation by CTPF from the total pension contribution amount by CPS to pay OPEB was being treated as a direct OPEB contribution. Beginning in 2016, that $65 million 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

	2019	2018	2017	2016	2015	2014
Total pension liability	$ 25,166,179,329	$ 24,547,482,872	$ 24,547,482,872	$ 23,175,590,999	$ 21,124,697,012	$ 20,713,217,296
Plan fiduciary net position	$ 11,038,837,459	$ 11,104,765,514	$ 11,104,765,514	$ 10,793,173,927	$ 10,113,297,310	$ 10,689,954,320
Employer's net pension liability	$ 14,127,341,870	$ 13,442,717,358	$ 13,442,717,358	$ 12,382,417,072	$ 11,011,399,702	$ 10,023,262,976
Plan fiduciary net position as a percentage of the total pension liability	43.86%	45.24%	45.24%	46.57%	47.87%	51.61%
Covered payroll	$ 2,179,054,844	$ 2,094,830,446	$ 2,030,175,116	$ 2,281,268,890	$ 2,273,551,432	$ 2,233,280,995
Employer's net position liability as a percentage of covered payroll	648.32%	641.71%	662.15%	542.79%	484.33%	448.81%

The information above is required beginning fiscal year 2014. Information for the next 4 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
2010	$ 355,846,125	$ 290,759,950	$ 65,086,175	$ 2,107,934,080	13.79%
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%

* *Prior to 2016, $65 million allocation by CTPF from the total pension contribution amount by CPS to pay OPEB was being treated as a direct OPEB contribution. In 2016, that $65 million allocation is being shown within this schedule 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
2010	$ 323,237,000	$ 290,759,950	$ 32,477,050	$ 2,107,934,080	13.79%
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%

* *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%

* *The information above is required beginning fiscal year 2014. Information for the next 4 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, 2019 and 2018 were determined based on the actuarial valuations as of June 30, 2017 and 2016. The most recent valuation is as of June 30, 2019. 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.

	2019	2018	2017	2016
	Pension Plan	**Pension Plan**	**Pension Plan**	**Pension Plan**
Valuation Date	June 30, 2019	June 30, 2018	June 30, 2017	June 30, 2016
Contribution determined for	Fiscal Year 2021	Fiscal Year 2020	Fiscal Year 2019	Fiscal Year 2018
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 (25 years remaining)	30 years (25 years remaining)	30 years (26 years remaining)	30 years (27 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	7.00%, net of investment expense	7.00%, net of investment expense	7.25%, net of investment expense	7.75%, net of investment expense
Projected salary increases	3.00% to 12.85%, varying by age	3.00% to 12.85%, varying by age	4.00% to 15.50%, varying by age	4.25% to 15.75%, varying by age
Inflation rate	General inflation, 2.50% Wage inflation, 3.00%	General inflation, 2.50% Wage inflation, 3.00%	General inflation, 2.50% Wage inflation, 3.25%	General inflation, 2.75% Wage inflation, 3.50%
			Post-retirement benefit increase	**Post-retirement benefit increase**
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 & 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 year ended June 30, 2019:

Changes in Assumptions:	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 participants 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, 2019 AND 2018

SCHEDULE 6

	2019	2018
Depreciation	$ 693,952	$ 184,133
Disaster Recovery	99,349	64,540
Education and Training	189,790	206,312
Equipment	250,186	247,307
Memberships and Subscriptions	38,613	35,617
Personnel	10,651,451	9,800,127
Bad Debt	9,418,703	6,987,600
Professional Services	3,364,759	3,227,178
Property	1,112,494	1,100,830
Supplemental	124,962	18,825
Supplies	72,677	83,752
Utilities	70,614	67,196
Miscellaneous	12,180	31,927
Total	**$ 26,099,731**	**$ 22,055,344**

SCHEDULE OF MANAGER FEES

FOR THE YEARS ENDED JUNE 30, 2019 AND 2018

SCHEDULE 7

	2019	2018
Manager Fees	$ 38,728,671	$ 37,195,885
Consultant Fees	1,575,850	1,461,997
Banking and Foreign Exchange Fees	193,658	145,573
Total	**$ 40,498,179**	**$ 38,803,455**

See accompanying independent auditors' report.

OTHER SUPPLEMENTARY INFORMATION (UNAUDITED)

SCHEDULE OF CONSULTANT PAYMENTS

FOR THE YEARS ENDED JUNE 30, 2019 AND 2018

SCHEDULE 8

		2019	Category		2018	Category
Agile Progress, LLC	$	—		$	16,000	IT
Alper Services, LLC	$	—			11,100	Operations
Baker & McKenzie, LLP	$	—			9,711	Legal
Baker Tilly Virchow Krause, LLP	$	59,380	Audit		—	
Bogfire, Inc.	$	—			—	Operations
Bradley Consulting Group, Inc.	$	354,206	IT		339,795	IT
Callan Associates, Inc.	$	—			630,000	Investment
CBIZ	$	25,686	Operations			
ComGraphics, Inc.	$	210,926	Operations		178,075	Operations
Cohen Rosenson & Zuckerman, LLC	$	31,500	Legal Services			
Crowe LLP	$	34,452	IT			
Data Consultants Corp.	$	—			17,000	IT
Election-America	$	4,750	Legislative Consulting			
Election Service Corporation	$	137,238	Operations		44,635	Operations
Emcor Services Team Mechanical	$	4,454	IT			
Emerald Data Solutions, Inc.	$	20,000	Operations			
Foster Pepper, PLLC	$	431,410	Legal		487,410	Legal
Gabriel, Roeder, Smith & Co.	$	120,888	Actuary		152,654	Actuary
Goldstine, Skrodzki, Russian	$	15,015	Legal			
Governmental Consulting Solutions, Inc.	$	—			45,000	Lobbyist
Grant Thornton	$	79,281	Audit		354,330	Audit
Imaging Office Systems, Inc.	$	42,631	IT		14,678	IT
Impact Networking, LLC	$	90,879	IT		27,469	IT
Jacobs, Burns Orlove & Hernandez	$	525,931	Legal		405,833	Legal
Laner Muchin, LTD	$	—			39,092	Legal
KPMG Limited	$	3,455	Operations		—	Operations
Meltwater News US Inc.	$	10,000	Operations			
Michelle Holleman	$	62,020	Operations		34,385	Operations
Miller LLC-ICE	$	92,988	Investment Consultants			
Mitchell & Titus, LLP	$	—			—	Audit
North Shore Printers, Inc.	$	53,207	Operations		71,164	Operations
Partners By Design Inc.	$	69,348	Operations			
Plante & Moran, PLLC	$	248,220	Audit		184,375	Audit
Fuse	$	44,022	Operations		156,465	Operations
Segal Company	$	66,616	Operations		112,008	Operations
Sikich, LLP	$	7,680	Operations		28,097	Operations
Solomon Cloud Solutions	$	6,660	Operations			
Steptoe & Johnson, LLP	$	8,119	Legal Services		6,755	Legal
Sword & Shield Enterprise Security	$	53,350	IT		55,070	IT
Vision Mai, LLC	$	81,000	Lobbyist		77,632	Lobbyist
Zhan Governmental Solutions LLC	$	65,000	Lobbyist			
Total	**$**	**3,060,312**		**$**	**3,498,733**	

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

August 26, 2019

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, 2018 through June 30, 2019.

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

Michael J. Beggy
Service Director

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

The Bank of New York Mellon

Callan

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

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Fax 312.346.1356

www.callan.com

August 20th, 2019

Board of Trustees
Chicago Teachers' Pension Fund
203 North LaSalle, Suite 2600
Chicago, IL 60601-1210

Dear Trustees:

Callan LLC is pleased to present the Chicago Teachers' Pension Fund ("Fund") results for fiscal year ended June 30, 2019. During the fiscal year ended June 30, 2019, markets continued their positive performance with many asset classes showing positive returns. Domestic equities continued positive performance, with the broad market returning 9.0%, with large capitalization companies leading versus smaller companies. Growth sectors continued to fuel performance at the expense of value sectors. International markets underperformed domestic markets with a return of 1.3% due to changing fundamentals overseas as well as the stronger dollar. Emerging markets performed in-line with developing markets. Domestic fixed income ended the fiscal year strongly positive, up 7.9%. Real estate and infrastructure continued to add appreciation and stable income to investors as well.

As of June 30, 2019, the Fund's market value totaled $10.7 billion, a decrease from assets as of June 30, 2018. 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 9.0%.

- Developed international equity markets continued their gains from last year and increased 1.3% in the trailing 12 months, as measured by the MSCI World ex-USA (Europe, Australasia, Far East, North America) Index. Similarly, emerging markets posted a gain of 1.6%, as measured by the MSCI Emerging Markets Index.

- The domestic fixed income market produced a return of 7.9% during the year, as measured by the Bloomberg Aggregate Bond Index.

- Private real estate as measured by the NCREIF Fund Index Open End Diversified Core Equity returned 5.5% on a net of fees basis.

Within this environment the Fund returned 5.3% net-of-fees (5.5% gross-of-fees) during the 12 month period ended June 30, 2019, underperforming its benchmark by 1.1%. Over the trailing three-year period the Fund underperformed its benchmark by 19 basis points net-of-fees with an annualized return of 9.0%, and by 2 basis points over the trailing five-year period with an annualized net-of-fee return of 6.1%. Since inception, the Fund has returned 8.24% net-of-fees outperforming its benchmark by 25 basis points annually.

The Fund's domestic equity managers gained 7.5% on a net-of fee basis during the fiscal year, underperforming the benchmark return of 9.0%. The Fund's international equity managers registered a positive return of 0.3% net-of-fees over the same period and outperformed the passive benchmark by 7 basis points. The Fund's active management in public equities detracted from performance for the Fund for the fiscal year ending June 30, 2019. The fixed income composite returned 8.3% net-of-fees compared to the benchmark return of 7.9% over the trailing 12 months.

Callan

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

The Fund's private real estate managers posted returns of 5.7% on a net of fee basis compared to the private real estate benchmark return of 5.5%. During the fiscal year, the infrastructure portfolio gained 10.1% on a net of fee basis compared to the infrastructure benchmark of 14.3%. Private equity contributed 11.3% to the Fund over the trailing fiscal year.

Manager changes over the past year are summarized below:

New Manager	Asset Class	Inception Date
Basis Investment Group	Real Estate	July 2018
Heitman	Real Estate	February 2019
Longpoint	Real Estate	September 2018
Long Wharf	Real Estate	June 2019
Astra Partners	Private Equity	October 2018
Farol	Private Equity	October 2018
Turning Rock	Private Equity	October 2018
Wellington Management Co.	Fixed Income	January 2019
State Street Global Advisors	Fixed Income	April 2019
IFM Infrastructure Partners	Infrastructure	May 2019
DPI Partners	Private Equity	May 2019

Terminated Manager	Asset Class	Termination Date
Fremont Realty Group	Real Estate	December 2018
Newport/DV Urban	Real Estate	December 2018

The Public School Teachers' Pension & Retirement Fund of Chicago maintains an appropriately diversified strategy, designed to maximize return with an acceptable risk level. Callan supports the Fund's ongoing efforts to enhance investment and its continued 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, 2019

Adams Street Partners, LLC

African Development Partners, LP

Ariel Capital Management, LLC

Astra Partners I, LP

Attucks Asset Management, LLC

Basis Management Group, LLC

Blackstone Group

BMO Global Asset Management

Brookfield Asset Management

Capri Capital Partners, LLC

Channing Capital Management, LLC

CityView

Clarion Partners, LLC

Conestoga Capital

Dimensional Fund Advisors, LTD

Earnest Partners, 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

ICV Capital Partners, LLC

IFM Global Infrastructure (US), LP

Industry Capital Advisors, LLC

J.P. Morgan Fleming Asset Management, Inc.

Kohlberg, Kravis, Roberts & Company, LP

LaSalle Investment Management, Inc.

Lazard Asset Management, LLC

Leading Edge Investment Advisors, LLC

LM Capital Group, LLC

Long Wharf Capital, LLC

Longpoint Realty Partners, LP

Macquarie Group

Mesirow Financial, Inc.

Morgan Stanley Investment Management, Inc.

Muller and Monroe Asset Management, LLC

New Mainstream Capital, LP

Newport Capital Partners Holdings, LLC

Oak Street Real Estate Capital, LLC

Palladium Equity Partners, LLC

Pantheon Ventures, LLP

Pharos Capital Group, LLC

Phocas Financial

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

Taplin, Canida and Habacht, Inc.

The Northern Trust Company

Turning Rock Partners, LP

UBS Realty Investors, LLC

Urban America Advisors, LP

Walton Street Capital, LLC

Wellington Management Company, LLP

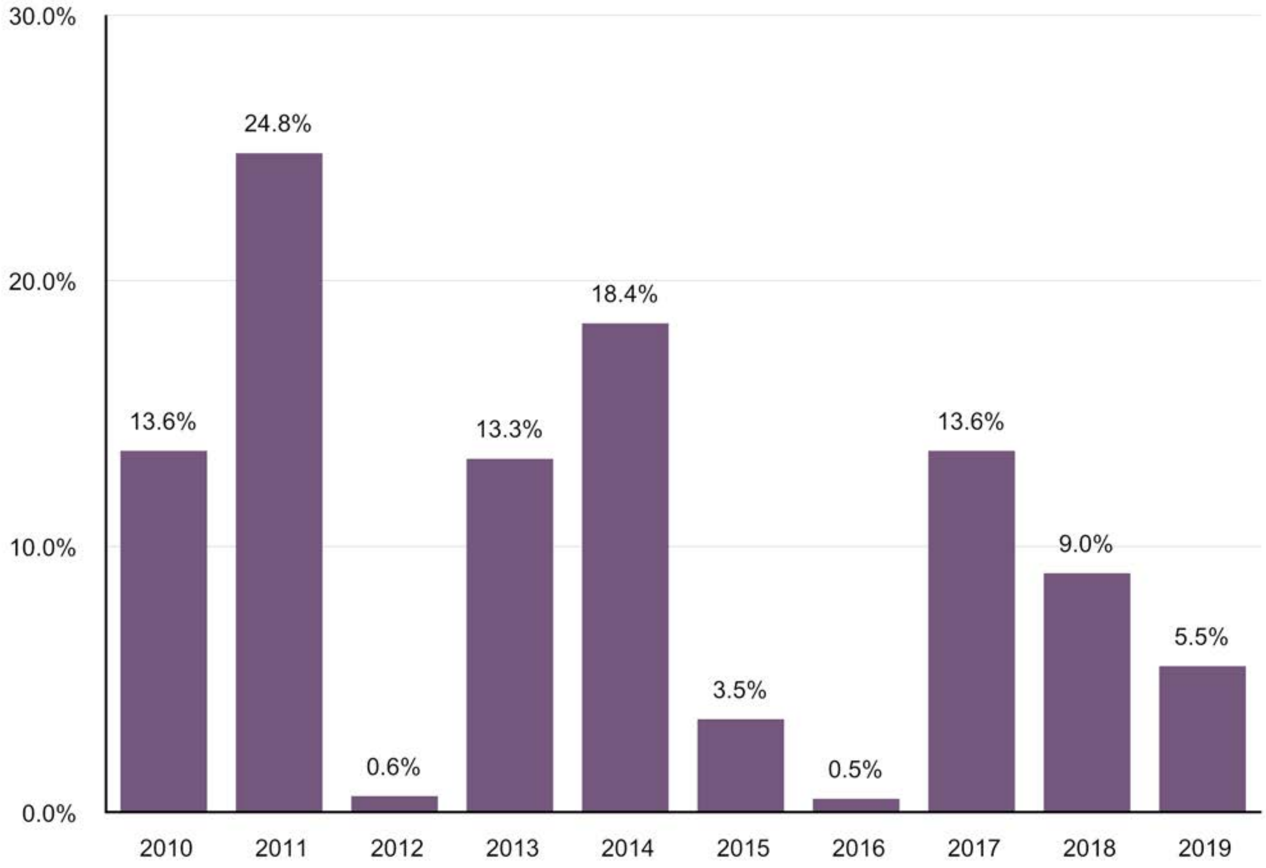
Western Asset Management Company

William Blair & Company, LLC

Zevenbergen Capital Investments, LLC

TOTAL ANNUAL FUND RATE OF RETURN*

FOR THE FISCAL YEARS ENDED JUNE 30, 2010 THROUGH 2019



* Time-weighted rate of return.

SCHEDULE OF INVESTMENT RESULTS

	As of June 30					Annualized Returns		
	2015	2016	2017	2018	2019	3 Year	5 Year	10 Year
Total Fund	**3.5 %**	**0.5 %**	**13.6 %**	**9.0 %**	**5.5 %**	**9.3%**	**6.3%**	**10.0%**
Large Cap	7.6 %	1.1 %	18.9 %	15.8 %	9.3 %	14.6%	10.3%	14.6%
Russell 1000 Index	7.4 %	2.9 %	18.1 %	14.5 %	10.0 %	14.2%	10.5%	14.8%
S&P 500	7.4 %	4.0 %	17.9 %	14.4 %	10.4 %	14.2%	10.7%	14.7%
Small Cap Equity	6.8 %	(7.7)%	21.2 %	15.4 %	(3.0)%	10.7%	6.0%	13.2%
Russell 2000 Index	6.5 %	(6.7)%	24.6 %	17.6 %	(3.3)%	12.3%	7.1%	13.5%
International Equity	(1.8)%	(8.4)%	19.8 %	8.5%	0.7 %	9.4%	3.3%	8.7%
International Equity Benchmark	(4.9)%	(10.2)%	20.5 %	7.8%	0.3 %	9.2%	2.0%	6.5%
Fixed Income	1.5 %	6.3 %	0.9%	(0.3%)	8.4 %	2.9%	3.3%	4.8%
Bloomberg Aggregate Index	1.9 %	6.0 %	(0.3%)	(0.4)%	7.9 %	2.3%	3.0%	3.9%
REITs	2.6 %	12.1 %	—	—	—	—	—	—
Custom REIT Index*	0.4%	12.6 %	—	—	—	—	—	—
Real Estate (Private)	14.6 %	14.0 %	6.7 %	8.4 %	6.3 %	7.1%	10.1%	9.1%
NFI ODCE Value Weight Net Only	14.4 %	11.8 %	6.9 %	7.6 %	5.5 %	6.6%	8.8%	8.9%
Private Equity**	11.3 %	5.1 %	15.8 %	14.6 %	11.7 %	14.0%	11.6%	12.5%
N/A	—	—	—	—	—	—	—	—
Infrastructure***	(5.3)%	9.6 %	6.8 %	17.8 %	10.2 %	11.5%	7.2%	7.5%
Absolute Benchmark	8.0 %	8.0 %	8.0 %	3.0 %	14.3 %	8.3%	8.2%	8.1%
Hedge Funds	3.2 %	(8.9)%	—	—	—	—	—	—
T-Bills+5%	5.0 %	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.*

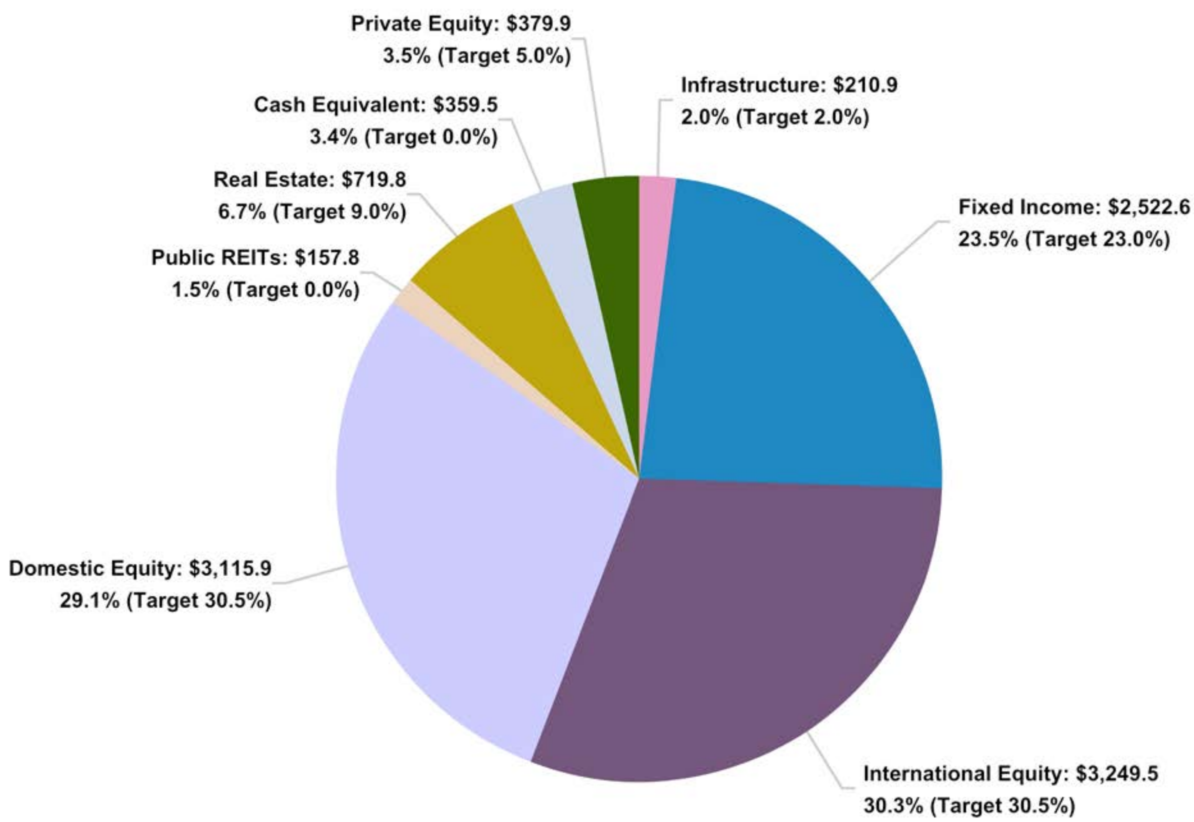
*** *New Infrastructure benchmark (FTSE Core Developed Infrastructure 50/50/Index) adopted September 21, 2017.*

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

INVESTMENT PORTFOLIO SUMMARY
DOLLARS IN MILLIONS

	June 30, 2018 Fair Value	Purchases	Sales (Fair Value)	Fair Value Adjustments	June 30, 2019 Fair Value	Percent of Total
Fixed Income	$ 2,418.2	$ 204.3	$ (193.1)	$ 93.2	$ 2,522.6	23.5%
Equity	6,445.2	193.2	(157.4)	(115.6)	6,365.4	59.4%
Public REITs	144.8	—	—	13.0	157.8	1.5%
Real Estate	746.5	4.0	0.3	(31.0)	719.8	6.7%
Infrastructure	227.4	—	—	(16.5)	210.9	2.0%
Private Equity	300.2	8.9	—	70.8	379.9	3.5%
Cash & Cash Equivalent	447.4	219.1	(272.2)	(34.8)	359.5	3.4%
Total Portfolio	**$ 10,729.7**	**$ 629.5**	**$ (622.4)**	**$ (20.9)**	**$ 10,715.9**	**100.0%**

ASSET ALLOCATION SUMMARY
IN MILLIONS OF DOLLARS*

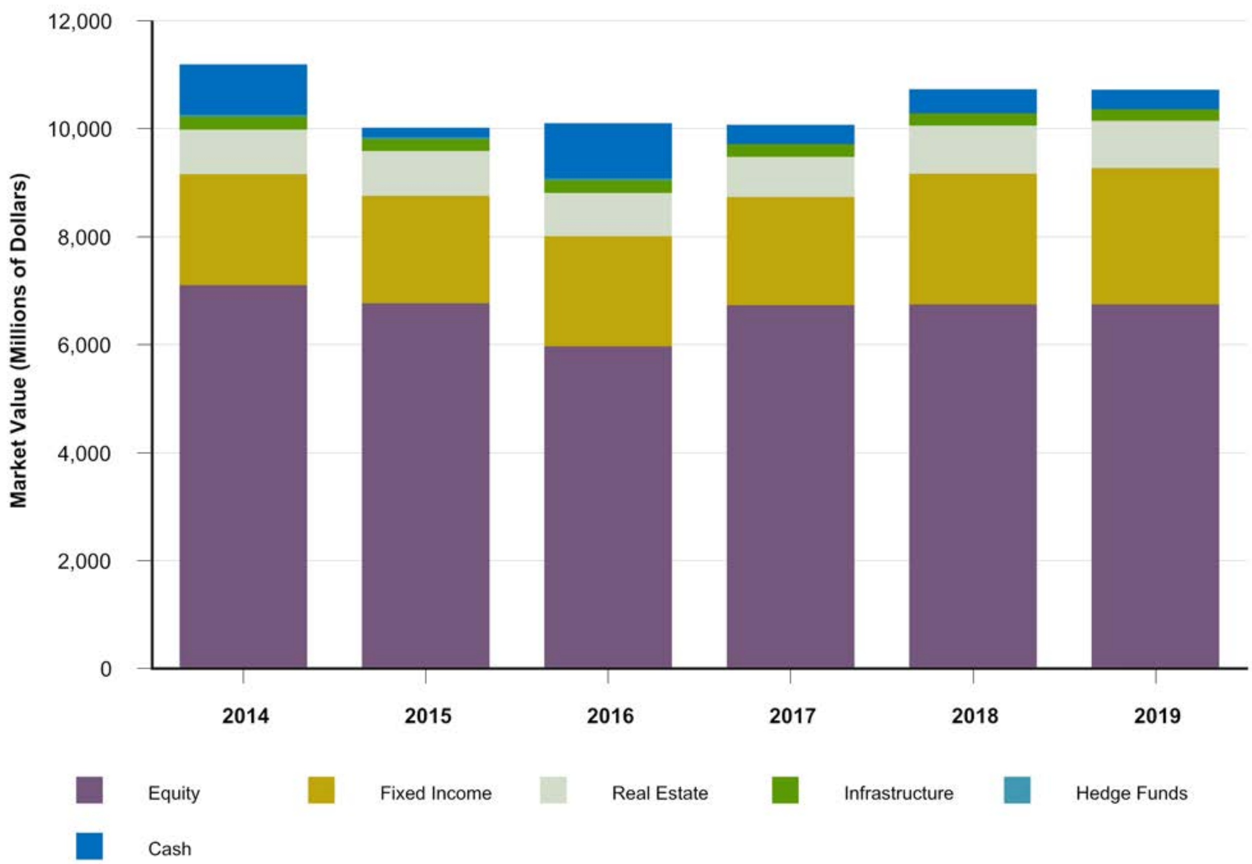


* **Note:** Percentage indicates actual category weight as a percentage of the entire portfolio.

HISTORICAL ASSET ALLOCATION
BY PERCENTAGE OF TOTAL PORTFOLIO

	2014		2015		2016		2017		2018		2019	
	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy
Equity:												
Domestic	32.0	31.3	33.3	30.0	28.8	30.5	32.8	30.5	29.0	30.5	29.1	30.5
International	27.0	31.2	27.1	30.0	25.1	30.5	30.0	30.5	31.1	30.5	30.3	30.5
Public REITs	1.8	2.5	2.5	2.0	2.3	—	1.3	—	1.3	—	1.5	—
Private Equity	2.7	3.0	3.1	3.0	2.8	5.0	2.8	5.0	2.8	5.0	3.5	5.0
Total Equity	**63.5**	**68.0**	**66.0**	**65.0**	**59.0**	**66.0**	**66.9**	**66.0**	**64.2**	**66.0**	**64.4**	**66.0**
Fixed Income	18.3	19.5	19.6	21.0	20.2	23.0	19.9	23.0	22.5	23.0	23.5	23.0
Real Estate	7.4	6.5	8.5	7.0	8.0	9.0	7.3	9.0	7.0	9.0	6.7	9.0
Infrastructure	2.2	2.0	2.0	3.0	2.4	2.0	2.4	2.0	2.1	2.0	2.0	2.0
Hedge Funds	0.3	2.0	0.3	2.0	0.3	—	—	—	—	—	—	—
Cash & Equiv.	8.3	2.0	3.6	2.0	10.1	—	3.5	—	4.2	—	3.4	—
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, 2019

Economic Sector Holdings

Economic Sector	Number of Shares	Market Value	Percent of Total	S&P 500 Index
Consumer Discretionary	7,097,810	$ 532,179,198	17.1%	10.2%
Consumer Staples	2,846,621	168,380,704	5.4%	7.3%
Energy	3,939,658	147,016,340	4.7%	5.0%
Financial Services	9,741,806	562,881,064	18.1%	16.2%
Health Care	6,191,299	436,476,631	14.0%	14.2%
Materials & Processing	2,479,988	104,626,019	3.3%	2.8%
Miscellaneous	5,539,066	7,832,701	0.3%	0.0%
Producer Durables	5,193,530	320,932,135	10.3%	9.4%
Technology	7,829,017	691,478,835	22.2%	21.5%
Utilities	3,082,842	144,112,905	4.6%	13.4%
Grand Total	**53,941,637**	**$ 3,115,916,532**	**100.0%**	**100.0%**

Top 10 Domestic Equity Holdings

Description	Number of Shares	Market Value	Percent of Total
Microsoft Corp.	774,640	$ 103,770,774	3.3%
Amazon, Inc.	45,754	86,641,147	2.8%
Apple, Inc.	433,263	85,751,413	2.8%
Facebook, Inc.	291,690	56,296,170	1.8%
Alphabet, Inc. - Class C	32,821	35,476,547	1.2%
Chevron Corp.	254,383	31,655,421	1.0%
Alphabet, Inc. - Class A	28,549	30,912,857	1.0%
Visa, Inc.	165,750	28,765,913	0.9%
Berkshire Hathaway, Inc.	132,499	28,562,949	0.9%
Johnson & Johnson	203,352	28,322,867	0.9%
Total Top 10 Domestic Equity	**2,362,701**	**$ 516,156,058**	**16.6%**
Grand Total	**53,941,637**	**$ 3,115,916,532**	**100.0%**

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

INTERNATIONAL EQUITY SUMMARY
AS OF JUNE 30, 2019

Country	Number of Shares	Market Value		Percent of Total	MSCI ACWI Ex-U.S. Index
South Africa	2,822,926	$	21,390,981	0.7%	1.6%
Other	5,786,819		599,272	0.0%	1.2%
Total Africa	**8,609,745**	**$**	**21,990,253**	**0.7%**	**2.8%**
Brazil	7,844,178		58,475,849	1.8%	2.0%
Canada	3,358,160		150,529,508	4.6%	6.8%
Chile	641,892		5,654,387	0.2%	0.3%
Colombia	583,078		10,983,707	0.3%	0.1%
Mexico	2,606,467		17,351,625	0.5%	0.7%
Other	41,331		4,391,760	0.2%	0.2%
Total Americas	**15,075,106**	**$**	**247,386,836**	**7.6%**	**10.1%**
Australia	3,682,450		32,985,791	1.0%	4.7%
China	38,446,124		216,152,802	6.7%	8.3%
Hong Kong	15,106,190		64,710,613	2.0%	2.7%
India	3,020,240		55,791,665	1.7%	2.4%
Japan	10,065,511		327,859,359	10.1%	15.8%
Singapore	8,368,940		36,076,443	1.1%	0.9%
South Korea	783,476		43,418,809	1.3%	3.2%
Taiwan	27,922,670		86,697,096	2.7%	2.9%
Other	62,362,558		370,573,959	11.4%	2.4%
Total Asia/Pacific Basin	**169,758,159**	**$**	**1,234,266,537**	**38.0%**	**43.3%**
Belgium	236,841		18,451,594	0.6%	0.6%
France	3,673,074		286,470,057	8.8%	7.6%
Germany	3,329,642		206,754,822	6.4%	5.9%
Ireland	1,577,198		102,813,475	3.2%	0.4%
Netherlands	2,947,229		150,256,413	4.6%	2.4%
Norway	3,187,810		42,747,606	1.3%	0.4%
Spain	1,697,747		46,641,739	1.4%	2.0%
Sweden	2,465,811		50,179,770	1.5%	1.8%
Switzerland	2,100,069		164,049,711	5.1%	6.2%
United Kingdom	41,056,593		523,930,146	16.1%	11.2%
Other	43,807,155		153,572,639	4.7%	5.3%
Total Europe	**106,079,169**	**$**	**1,745,867,972**	**53.7%**	**43.8%**
Grand Total	**299,522,179**	**$**	**3,249,511,598**	**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, 2019

Description	Number of Shares	Market Value	Percent of Total
DFA International Small Cap	8,335,557	$ 149,873,321	4.6%
Lazard Emerging Markets Equity Portfolio	7,605,996	134,854,306	4.2%
RELX, PLC	2,280,541	55,352,294	1.7%
Safran S.A.	374,795	54,995,312	1.7%
Novartis A.G.	572,802	52,373,661	1.6%
SAP SE	377,604	51,924,573	1.6%
Earnest Partners China Fund	18,778	44,548,251	1.4%
Taiwan Semiconductor Mfg. Co., Ltd.	3,053,617	35,247,174	1.1%
Diageo, PLC	776,757	34,023,502	1.0%
Roche Holding A.G.	117,984	33,232,106	1.0%
Total Top 10 International Equity	**23,514,431**	**$ 646,424,500**	**19.9%**
Grand Total	**299,522,179**	**$ 3,249,511,598**	**100.0%**

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

FIXED INCOME SUMMARY

AS OF JUNE 30, 2019

Fixed Income Holdings

Asset Category	Par Value	Market Value	Percent of Total	Barclays Aggregate Bond Index
Treasury	$ 765,400,798	$ 795,645,971	31.5 %	39.5%
Mortgage Backed Securities	411,964,155	427,166,650	16.9 %	27.2%
Corporate Bonds	901,014,695	987,851,619	39.2 %	25.0%
Government Agency	578,714,562	184,108,095	7.3 %	5.8%
Non Gov't Backed CMOs/Asset Backed	43,113,740	43,640,478	1.7 %	0.5%
Commercial Mortgage-Backed	70,912,474	72,569,307	2.9 %	2.0%
Municipal Bonds	14,138,000	17,199,944	0.7 %	0.0%
Other	(1,939)	(5,624,733)	(0.2)%	0.0%
Grand Total	**$ 2,785,256,485**	**$ 2,522,557,331**	**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, 2019

Public REITs Summary

Property Type	Number of Shares	Market Value	Percent of Total	NAREIT Property Index
Retail REITs	568,548	$ 12,082,519	7.7%	14.2%
Industrial & Office REITs	1,061,544	24,599,782	15.6%	17.0%
Residential (Apartment) REITs	569,965	24,411,195	15.5%	—%
Health Care Facilities	273,226	9,030,204	5.7%	10.3%
Hotel & Lodging REITs	621,112	12,172,216	7.7%	4.4%
Other	2,357,256	75,457,329	47.8%	54.2%
Grand Total	**5,451,651**	**$ 157,753,245**	**100.0%**	**100.0%**

Top 10 Public REITs Holdings

Holding	Number of Shares	Market Value	Percent of Total
American Tower Corp.	48,580	$ 9,932,181	6.3%
Essex Property Trust, Inc.	27,778	8,109,232	5.1%
Host Hotels & Resorts, Inc.	363,807	6,628,564	4.2%
Crown Castle International Corp.	39,196	5,109,199	3.2%
Simon Property Group, Inc.	28,447	4,544,693	2.9%
Gaming and Leisure Properties, Inc.	114,398	4,459,234	2.8%
Equinix, Inc.	8,295	4,183,086	2.7%
Camden Property Trust	39,146	4,086,451	2.6%
SEGRO, PLC	420,640	3,909,115	2.5%
EPR Properties	51,977	3,876,964	2.5%
Total Top 10 Public REITs Holdings	**1,142,264**	**$ 54,838,719**	**34.8%**
Grand Total	**5,451,651**	**$ 157,753,245**	**100.0%**

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

PRIVATE EQUITY SUMMARY
AS OF JUNE 30, 2019

Private Equity Holdings

Fund	Total Capital Called	Market Value	Percent of Total
Adams Street Partners (Multiple Funds)	$ 170,573,107	$ 170,573,107	44.9%
Astra Partners I, LP	1,898,656	1,898,656	0.5%
Brinson Partners (Multiple Funds)	4,764,558	4,783,919	1.2%
EQT Fund II, LP	3,383,245	3,852,840	1.0%
Farol Fund II, LP	10,700,777	10,700,777	2.8%
HarbourVest Partners (Multiple Funds)	36,315,031	36,315,031	9.6%
Hispania Capital Partners	2,332,489	2,332,489	0.6%
ICV Partners (Multiple Funds)	13,298,620	13,298,620	3.5%
KKR Americas Fund	10,872,981	10,872,981	2.9%
Mesirow Capital Partners (Multiple Funds)	54,640,980	54,640,980	14.4%
Muller & Monroe Private Equity Fund of Funds	2,050,249	2,050,249	0.5%
NMS Capital Fund	2,851,751	2,851,751	0.8%
Palladium Equity Partners (Multiple Funds)	11,151,460	11,151,460	2.9%
Pantheon Ventures (Multiple Funds)	21,500,886	21,908,441	5.8%
Pharos Capital Partners (Multiple Funds)	19,808,728	19,808,728	5.2%
RLJ Equity Partners Fund II, LP	3,472,603	3,472,603	0.9%
Syndicated Communications Venture Partners V, LP	204,004	204,004	0.1%
Turning Rock Fund I, LP	9,214,947	9,214,947	2.4%
Grand Total	**$ 379,035,072**	**$ 379,931,583**	**100.0%**

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

INFRASTRUCTURE SUMMARY
AS OF JUNE 30, 2019

Infrastructure Holdings

Fund	Number of Shares	Market Value	Percent of Total
JP Morgan Infrastructure Investments Fund	92,237,539	$ 92,237,539	43.7%
Total Commingled Funds	**92,237,539**	**$ 92,237,539**	**43.7%**

Fund	Total Capital Called	Market Value	Percent of Total
Brookfield Infrastructure Fund III, LP	$ 36,845,170	$ 36,845,189	17.5%
Macquarie Infrastructure Partners II US	43,456,018	43,456,018	20.6%
Macquarie European Infrastructure Fund III	33,730,030	38,411,759	18.2%
Total Closed-End Funds	**$ 114,031,218**	**$ 118,712,966**	**56.3%**
Grand Total		**$ 210,950,505**	**100.0%**

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

REAL ESTATE SUMMARY
AS OF JUNE 30, 2019

Real Estate Holdings

Fund	Number of Shares	Market Value	Percent of Total
JP Morgan Strategic Property Fund	44,934	$ 159,684,050	22.2%
LaSalle Property Fund	111,014,557	111,014,557	15.4%
PRISA I Real Estate Fund	2,298	153,190,737	21.3%
PRISA II Real Estate Fund	607	23,934,615	3.3%
UBS Trumbull Property Fund	79,879,767	79,879,767	11.1%
Total Commingled Funds	**190,942,163**	**$ 527,703,726**	**73.3%**

Fund	Total Capital Called	Market Value	Percent of Total
Big Real Estate Fund I, LP	$ 12,860,805	$ 12,860,805	1.8%
Blackstone RE Debt Strategies High Grade, LP	30,095,656	30,095,656	4.2%
Capri Select Income II, LLC	48,438	48,438	0.0%
Clarion Lion Industrial Trust	59,678,519	59,678,519	8.3%
Emerging Manager Real Estate Fund of Funds, LP	9,346,419	9,346,419	1.3%
Europa Fund III, LP	1,182,253	1,346,350	0.2%
Fortress Japan Opportunity Domestic Fund C-I, LP	210,012,525	1,949,253	0.3%
Fortress Japan Opportunity Fund II Dollar A, LP	3,378,826	3,378,826	0.5%
GreenOak US III, LP	4,665,219	4,665,219	0.6%
Heitman Value Partners IV, LP	6,696,241	6,696,241	0.9%
Hudson Realty Capital Fund V, LP	26,605	26,605	0.0%
Industry Capital Berkeley Partners	108,267	108,267	0.0%
Long Wharf Real Estate Partners VI, LP	2,401,372	2,401,372	0.3%
Longpoint Realty Fund I, LP	2,948,128	2,948,128	0.4%
MB Asia RE Fund (TE), LP	393,977	393,977	0.1%
Newport Capital Partners II, LP	16,637,752	16,637,752	2.3%
Oak Street Real Estate Capital IV, LP	8,041,652	8,041,652	1.1%
Southwest Multifamily Partners, LP	11,420,894	11,420,894	1.6%
Walton Street Capital (Multiple Funds)	20,069,732	20,069,732	2.8%
Total Closed-End Funds	**$ 400,013,280**	**$ 192,114,105**	**26.7%**
Grand Total		**$ 719,817,831**	**100.0%**

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

MANAGER ANALYSIS
AS OF JUNE 30, 2019

Asset Category	Market Value as of June 30, 2019	Percent of Total	FY 2019 Manager Fees	Percent of Market Value
Domestic Equity	$ 3,115,916,532	29.1%	$ 5,281,695	0.2%
International Equity	3,249,511,598	30.3%	13,180,990	0.4%
Public REITs	157,753,245	1.5%	—	—
Fixed Income	2,522,557,331	23.5%	2,307,774	0.1%
Real Estate	719,817,831	6.7%	8,099,869	1.1%
Infrastructure	210,950,505	2.0%	2,901,816	1.4%
Private Equity	379,931,583	3.5%	6,469,023	1.7%
Cash and Equivalent	359,473,153	3.4%	—	—
Total	**$ 10,715,911,778**	**100.0%**	**$ 38,241,167**	**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, 2019

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	5,122,116	$ 128,140	$ 0.03
Cabrera Capital Markets, LLC	2,420,697	67,675	0.03
The Williams Capital Group, LP	6,023,605	63,866	0.01
North South Capital, LLC	1,310,145	52,406	0.04
Telsey Advisory Group, LLC	1,542,457	46,274	0.03
Penserra Securities, LLC/Cheevers & Co., Inc.	2,201,927	34,907	0.02
Andes Capital Group, LLC	1,220,108	30,694	0.03
Barclays Capital, Inc.	652,651	20,757	0.03
Raymond James & Associates, Inc.	810,723	19,424	0.02
JP Morgan Securities, LLC	347,550	13,178	0.04
Cowen & Co., LLC	485,100	12,759	0.03
Goldman Sachs Execution & Clearing, LP	1,156,815	11,984	0.01
RBC Capital Markets, LLC	367,366	11,407	0.03
Cheevers & Co., Inc.	382,540	11,064	0.03
Morgan Stanley & Co., LLC	475,644	11,048	0.02
Bank of America/Merrill Lynch	838,271	10,934	0.01
Deutsche Bank Securities, Inc./Alex Brown	294,050	10,704	0.04
Investment Technology Group, Inc./ ITG, Inc.	624,823	10,505	0.02
Castleoak Securities, LP	547,535	7,712	0.01
CL King & Associates, Inc.	240,597	6,470	0.03
Vandham Securities Corp.	166,351	6,467	0.04
Instinet, LLC	2,654,554	6,218	0.00
Robert W. Baird & Co., Inc.	170,581	5,902	0.03
Citigroup Global Markets, Inc./Salomon Bros.	195,953	5,756	0.03
Stephens	272,041	5,441	0.02
Yamner & Co., Inc.	535,429	5,354	0.01
Sandler, O'Neil & Partners, LP	506,447	5,064	0.01
JMP Securities, LLC	125,140	4,628	0.04
Keybanc Capital Markets, Inc.	129,473	4,538	0.04
Liquidnet, Inc.	277,992	4,170	0.02
Drexel Hamilton, LLC	155,101	4,065	0.03
Seaport Global Securities, LLC	341,396	3,414	0.01
CIS Brokerage, Inc.	89,801	3,412	0.04
Sanford C. Bernstein & Co., LLC	155,067	3,202	0.02
Credit Suisse First Boston	148,138	2,909	0.02
William Blair & Co., LLC	72,626	2,636	0.04
Jefferies, LLC	74,074	2,623	0.04
Craig-Hallum Capital Group, LLC	60,212	2,408	0.04
Int'l FCStone Partners, LP/G. X. Clarke & Co., LP	226,889	2,269	0.01
Suntrust Robinson Humphrey, Inc.	73,061	2,219	0.03
Piper Jeffray & Co.	49,100	2,087	0.04
Oppenheimer & Co., Inc.	77,926	2,020	0.03
Wall Street Access GLP	193,401	1,934	0.01
Cantor Fitzgerald & Co.	96,302	1,926	0.02
Divine Capital Markets, LLC	78,906	1,810	0.02
Other (24 Brokers)	1,006,643	15,815	0.02
Grand Total	**34,997,324**	**$ 690,195**	**$ 0.02**

BROKER COMMISSION REPORT

MWDBE DOMESTIC AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2019

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	5,122,116	$ 128,140	$ 0.03
Cabrera Capital Markets, LLC	2,420,697	67,675	0.03
The Williams Capital Group, LP	6,023,605	63,866	0.01
North South Capital, LLC	1,310,145	52,406	0.04
Telsey Advisory Group, LLC	1,542,457	46,274	0.03
Penserra Securities, LLC/Cheevers & Co., Inc.	2,584,467	45,971	0.02
Andes Capital Group, LLC	1,220,108	30,694	0.03
Castleoak Securities, LP	547,535	7,712	0.01
CL King & Associates, Inc.	240,597	6,470	0.03
Vandham Securities Corp.	166,351	6,467	0.04
Drexel Hamilton, LLC	155,101	4,065	0.03
Divine Capital Markets, LLC	78,906	1,810	0.02
Mischler Financial Group, Inc.	32,861	982	0.03
Guzman & Co.	74,384	744	0.01
Sturdivant & Co., Inc	8,488	255	0.03
Capital Institutional Services, Inc. (CAPIS)	21,500	215	0.01
The Fig Group, LLC	3,846	115	0.03
Total Directed Domestic Commission	**21,553,164**	**$ 463,861**	**$ 0.02**
Grand Total	**34,997,324**	**$ 690,195**	**$ 0.02**

BROKER COMMISSION REPORT

INTERNATIONAL AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2019

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	21,550,700	$ 272,107	$ 0.01
Penserra Securities, LLC/Cheevers & Co., Inc.	11,235,100	174,209	0.02
Mischler Financial Group, Inc.	5,006,709	143,816	0.03
UBS Securities, LLC/UBS Warburg, LLC	17,698,194	129,510	0.01
Liquidnet, Inc.	12,797,895	101,868	0.01
Credit Suisse First Boston	7,837,680	90,423	0.01
Bank of America/Merrill Lynch	10,037,491	88,149	0.01
JP Morgan Securities, LLC	5,908,795	74,274	0.01
Citigroup Global Markets Inc./Salomon Bros.	7,633,591	73,167	0.01
Investment Technology Group, Inc./ ITG, Inc.	14,663,755	71,368	0.00
Jefferies, LLC	16,927,896	69,896	0.00
Deutsche Bank Securities, Inc./Alex Brown	14,642,569	69,220	0.00
Instinet, LLC	11,054,900	57,562	0.01
Morgan Stanley & Co., LLC	5,217,637	53,907	0.01
Credit Lyonnais Securities Ltd/CLSA	12,479,443	53,168	0.00
Goldman Sachs Execution & Clearing, LP	11,159,189	43,663	0.00
Berenberg Bank	3,005,911	37,934	0.01
Daiwa Securities Group, Inc.	2,401,211	34,968	0.01
Macquarie Capital (USA), Inc.	3,750,229	30,390	0.01
Mizuho Financial Group	2,080,654	27,698	0.01
The Fig Group, LLC	4,033,013	25,719	0.01
BTIG, LLC	1,690,615	22,788	0.01
Sanford C. Bernstein & Co., LLC	4,578,921	22,306	0.00
Exane, Inc.	558,517	21,465	0.04
BNP Paribus Brokerage Services, Inc.	1,465,798	18,412	0.01
Societe Generale Securities Corporation	4,884,402	17,996	0.00
Cowen And Company, LLC	1,621,217	17,238	0.01
HSBC Bank/Midland (LDN)	2,414,295	16,548	0.01
Barclays Capital, Inc.	1,498,805	15,967	0.01
Cabrera Capital Markets, LLC	5,448,222	14,654	0.00
Bloomberg, LP	868,057	14,360	0.02
Weeden & Co., LP	1,180,284	14,288	0.01
RBC Capital Markets, LLC	522,417	11,781	0.02
North South Capital, LLC	1,691,453	10,442	0.01
Helvea SA	13,359	9,863	0.74
Kepler Cheuvreux	112,756	9,587	0.09
SMBC Nikko Capital Markets, Ltd	382,100	9,482	0.02
Skandinaviska Enskilda Banken AB (SEB)	551,948	9,406	0.02
Capital Institutional Services, Inc. (CAPIS)	478,027	9,247	0.02
Mitsubishi Securities (USA)	282,400	8,652	0.03
Investec Henderson Crosthwaite Securities	974,995	8,559	0.01
Nomura Securities International, Inc.	419,375	8,441	0.02
Banc of America Securities, LLC	355,111	8,396	0.02
Carnegie Investment Bank AB/Carnegie, Inc.	308,480	6,993	0.02
The Williams Capital Group, LP	251,339	6,752	0.03
Jones Trading Institutional Services, LLC	331,809	5,651	0.02
Other (70 Brokers)	13,009,950	104,403	0.01
Grand Total	**247,017,214**	**$ 2,146,693**	**$ 0.01**

BROKER COMMISSION REPORT

MWDBE INTERNATIONAL AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2019

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	21,550,700	$ 272,107	$ 0.01
Penserra Securities LLC/Cheevers & Co., Inc.	11,235,100	174,209	0.02
Mischler Financial Group, Inc.	5,006,709	143,816	0.03
The Fig Group, LLC	4,033,013	25,719	0.01
Cabrera Capital Markets, LLC	5,448,222	14,654	0.00
North South Capital, LLC	1,691,453	10,442	0.01
Capital Institutional Services, Inc. (CAPIS)	478,027	9,247	0.02
The Williams Capital Group, LP	251,339	6,752	0.03
Castleoak Securities, LP	566,998	3,086	0.01
Tribal Capital Markets, LLC	21,792	911	0.04
Vandham Securities Corp.	34,110	663	0.02
Divine Capital Markets, LLC	28,110	572	0.02
Andes Capital Group, LLC	880	22	0.03
Total Directed Domestic Commission	**50,346,453**	**$ 662,200**	**$ 0.01**
Grand Total	**247,017,214**	**$ 2,146,693**	**$ 0.01**

SCHEDULE OF CASH RECEIPTS AND DISBURSEMENTS

FOR THE YEARS ENDED JUNE 30, 2019 AND 2018

	2019	2018
Cash and Cash Equivalents - Beginning of Period	$ 580,897,074	$ 818,028,637
Add Receipts:		
Member Contributions	188,577,363	189,743,551
Public Revenues	782,226,739	783,529,139
Interest and Dividends	296,826,122	268,421,943
Miscellaneous	1,687,970	—
Net Investment Sales	251,253,008	112,702,276
Total Cash Receipts	**$ 1,520,571,202**	**$ 1,354,396,909**
Less Disbursements:		
Pension Benefits	1,470,812,926	1,441,077,156
Refunds	23,492,174	27,318,770
2.2 Legislative Refunds	562,230	742,315
Refunds of Insurance Premiums	61,626,322	61,907,220
Investment and Administrative Expenses	63,504,990	60,483,011
Total Cash Disbursements	**$ 1,619,998,642**	**$ 1,591,528,472**
Net Increase (Decrease) in Cash and Cash Equivalents	(99,427,440)	(237,131,563)
Cash and Cash Equivalents - End of Period	**$ 481,469,634**	**$ 580,897,074**

Investment Authority Illinois Pension Code

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.

GRS Retirement Consulting

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October 9, 2019

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

Re: Public School Teachers' Pension and Retirement Fund of Chicago Actuarial Valuation as of June 30, 2019

Dear Members of the Board:

The results of the June 30, 2019, Annual Actuarial Valuation of the Public School Teachers' Pension and Retirement Fund of Chicago (commonly known as the Chicago Teachers' Pension Fund, "CTPF" or "Fund") are presented in this report.

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

The purposes of the actuarial valuation are to measure the Fund's funding progress, and to determine the contribution requirements for the fiscal year beginning July 1, 2020, and ending June 30, 2021. 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, 2019. 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.

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

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, 2019 actuarial valuation are based on an experience study for the five-year period from July 1, 2012 through June 30, 2017, the 2018 investment return assumption review and the 2019 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 has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the CTPF as of the actuarial valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

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

The signing actuaries are independent of the plan sponsor.

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

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

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

SECTION A: EXECUTIVE SUMMARY

Actuarial Valuation Date:		June 30, 2019		June 30, 2018
Required Employer Contributions for Fiscal Year Ending:		**June 30, 2021**		**June 30, 2020**
Estimated Required Employer Contributions:				
Required Board of Education Contributions	$	605,852,000	$	584,504,000
Additional Board of Education Contributions (0.58% of pay)		13,149,000		12,647,000
Additional State Contributions (0.544% of pay)		12,333,000		11,862,000
State Contributions Pursuant to P.A. 100-0465 (Normal Cost)[a]		254,560,000		245,487,000
Total Required Employer Contributions	$	885,894,000	$	854,500,000
Percentage of Projected Capped Payroll		39.076%		39.187%
Actuarial Valuation Date:		**June 30, 2019**		**June 30, 2018**
Actuarial Information for Fiscal Year Ending:		**June 30, 2020**		**June 30, 2019**
Actuarially Determined Contribution[b] as of the Actuarial Valuation Date:				
Annual Amount	$	1,147,030,511	$	1,097,170,031
Percentage of Projected Capped Payroll for Upcoming Year		52.07%		51.80%
Membership:				
Number of				
Active Members[c]		29,295		28,958
Members Receiving Payments		28,317		28,549
Vested Former Members Eligible for Deferred Benefits		9,926		9,398
Non-vested Former Members Eligible for Refunds Only		20,621		20,282
Total		88,159		87,187
Covered Payroll as of the Actuarial Valuation Date	$	2,196,918,127	$	2,111,982,104
Projected Capped Payroll for Upcoming Year	$	2,203,055,500	$	2,118,062,176
Projected Capped Payroll for Upcoming Year + 1	$	2,267,106,915	$	2,180,577,527
Annualized Benefit Payments	$	1,469,042,542	$	1,444,085,794
Assets:				
Market Value of Assets (MVA)	$	11,038,837,459	$	11,104,765,514
Actuarial Value of Assets (AVA)	$	11,021,811,634	$	10,969,085,523
Approximate Return on Market Value of Assets		4.75%		8.54%
Approximate Return on Actuarial Value of Assets		5.92%		5.84%
Ratio - Actuarial Value of Assets to Market Value of Assets		99.85%		98.78%
Actuarial Information as of the Actuarial Valuation Date:				
Total Normal Cost Amount (Including Admin. Expenses)	$	382,994,837	$	366,153,498
Employer's Normal Cost Amount (Including Admin. Expenses)	$	184,719,842	$	175,527,902
Employer's Normal Cost Amount (Including Admin. Expenses and Health Insurance Subsidy)[d]	$	249,719,842	$	240,527,902
Actuarial Accrued Liability (AAL)	$	23,252,163,307	$	22,922,992,558
Unfunded Actuarial Accrued Liability (UAAL)	$	12,230,351,673	$	11,953,907,035
Funded Ratio based on Actuarial Value of Assets		47.40%		47.85%
UAAL as % of Covered Payroll		556.70%		566.00%
Funded Ratio based on Market Value of Assets		47.47%		48.44%

[a] *State Normal Cost contribution represents the projected employer Normal Cost for fiscal years 2020 and 2021, 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, 2019, the remaining amortization period is 24 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, 2019. 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, 2021.

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, 2019, actuarial valuation remain unchanged from the last actuarial valuation as of June 30, 2018. The actuarial assumptions were adopted by the Board (including CPS's requested modifications) during the September 20, 2018, Board meeting, and were based on the recommendations from the experience study for the five-year period from July 1, 2012 through June 30, 2017, the 2018 investment return assumption review performed by GRS, 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 2021 is $885.9 million. The 2018 actuarial valuation had projected the statutory contribution would increase from $854.5 million for FY 2020 to $877.1 million for FY 2021. The key reason for the $8.8 million increase in the employer's contribution requirement of $885.9 million over the projected amount from the prior actuarial valuation of $877.1 million is unfavorable investment experience.

Over the past 10 years, CTPF experienced investment gains on a market value basis (compared to the actuarial assumption) in fiscal years 2010, 2011, 2013, 2014, 2017 and 2018. However, CTPF incurred investment losses (or shortfalls in return compared to the actuarial assumption) in fiscal years 2012, 2015, 2016, and 2019. The return on market value for the year ending June 30, 2019, was approximately 4.75% compared to a return of 8.54% in FY 2018. The average market value investment return over the most recent 10 years has been approximately 9.54%. Table 10 on page 38 provides historical investment returns (on an MVA and AVA basis) over the past 25 years.

The funded ratio decreased from 48.4% as of June 30, 2018, to 47.5% as of June 30, 2019, based on the market value of assets, and decreased from 47.9% as of June 30, 2018, to 47.4% as of June 30, 2019, based on the actuarial value of assets. There are net deferred asset gains of $21.8 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 2019

The Fund assets earned approximately 4.75% on a market value basis during FY 2019 which was less than the investment return assumption of 7.00% for FY 2019. The Fund assets earned approximately 5.92% on an actuarial value of assets basis during FY 2019, due to recognition of net deferred investment losses under the asset smoothing method. Since 5.92% is less than the assumed rate of investment return of 7.00% for FY 2019, there was an asset loss of $91.71 million on the actuarial value of assets.

There was also a net gain of $80.12 million from actuarial liabilities, which is comprised of a gain of approximately $17.26 million from demographic experience, and a gain of $62.86 million from lower than expected pay increases.

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

1. Actuarial Accrued Liability ("AAL") - Prior Year (Pensions Only)	$	22,922.99
2. Total Normal Cost - Prior Year[a]		366.15
3. Benefits and Administrative Expenses Paid in FY 2018[b]		(1,521.72)
4. Interest on the above items, 1, 2, and 3		1,564.85
5. Expected AAL 06/30/2018 (1+2+3+4)		23,332.28
6. Impact of Change in Actuarial Assumptions and Methods		—
7. Expected AAL 06/30/2018 After Assumption Changes (5+6)		23,332.28
8. Actual AAL 06/30/2018		23,252.16
9. Actuarial (Gain)/Loss on Liabilities (8-7) (Pensions Only)	$	(80.12)

[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 loss of $11.59 million. The total net actuarial loss is the total of the loss from assets and the net gain from liabilities. The total actuarial loss for the year is as follows (dollars in millions):

1. Actuarial (Gain)/Loss on Assets	$	91.71
2. Actuarial (Gain)/Loss on Liabilities		(80.12)
3. Total Actuarial (Gain)/Loss (1+2)	$	11.59

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 Section C, for detail of the gains and losses by source.

Asset Information

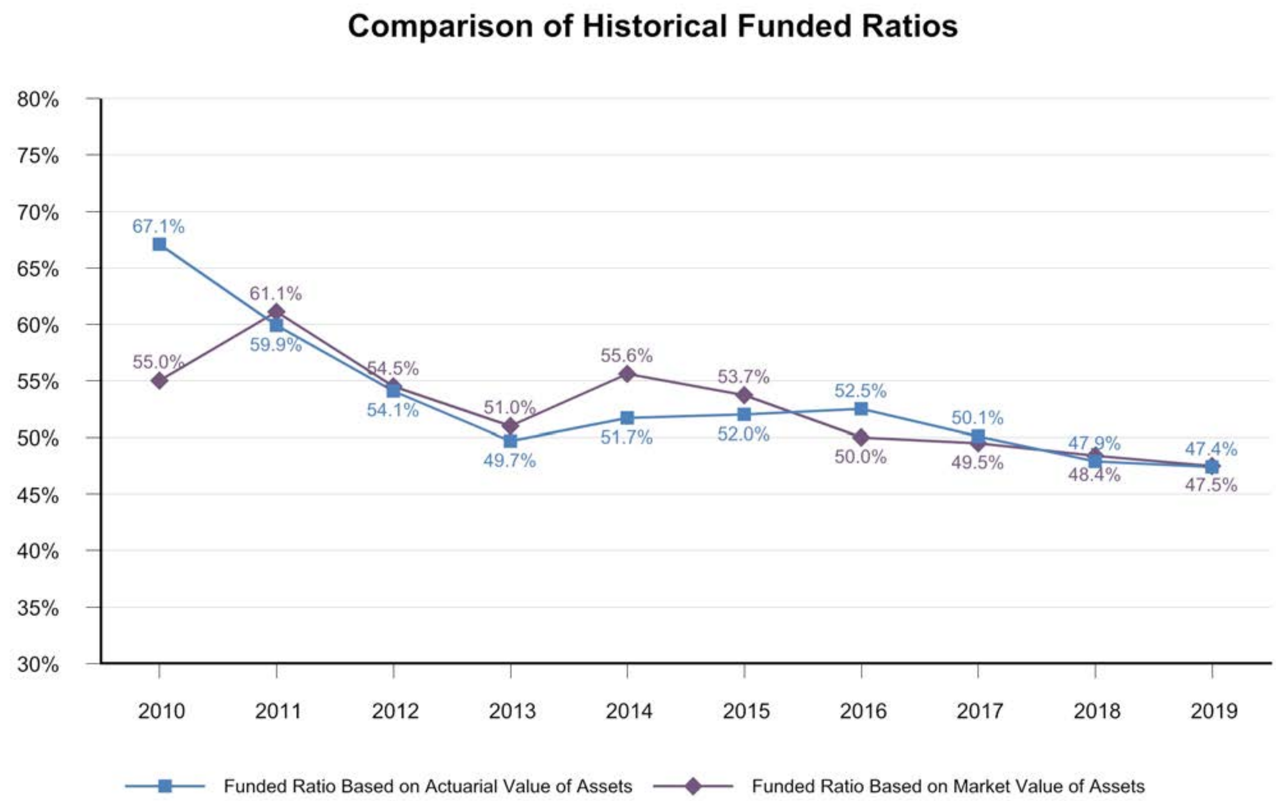
The market value of the assets of the Fund that are available for benefits decreased from $11,104.8 million as of June 30, 2018, to $11,038.8 million as of June 30, 2019. The actuarial value of assets as of June 30, 2019, is $11,021.8 million, which is $17.0 million lower than the market value of assets. 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 gains of $21.8 million which will be recognized in the actuarial value of assets over the next three years (a $95.5 million gain in FY 2020, a $19.1 million loss in FY 2021 and a $54.7 million loss in FY 2022).

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.



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 percent, with proceeds dedicated solely for CTPF.

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

Employer Contribution Requirement for Fiscal Year 2021

The funded ratio as of the June 30, 2019, actuarial valuation on an actuarial value basis is 47.4 percent. Therefore, additional contributions by the Board of Education and State will be required for fiscal year 2021. The projected payroll for fiscal year 2021 is $2,267,106,915. Based on the projected payroll for fiscal year 2021, 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 2021 are as follows:

Development of Additional Contributions under Section 17-127 and 17-127.2 of the Illinois Pension Code	Fiscal Year 2021	Fiscal Year 2020
Projected Total Capped Payroll	$ 2,267,106,915	$ 2,180,577,527
Additional State Contributions Under Section 17-127 of the Illinois Pension Code	$ 12,333,000	$ 11,862,000
(% of Projected Capped Payroll)	0.544%	0.544%
Additional Board of Education Contributions Under Section 17-127.2 of the Illinois Pension Code	$ 13,149,000	$ 12,647,000
(% 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 2021	Fiscal Year 2020*
Total Normal Cost	$ 364,412,000	$ 355,394,000
Projected Administrative Expenses	29,188,000	27,600,000
Total Normal Cost Including Administrative Expenses	$ 393,600,000	$ 382,994,000
Expected Employee Contributions	204,040,000	198,275,000
Employer Normal Cost	$ 189,560,000	$ 184,719,000
Health Insurance Subsidy	65,000,000	65,000,000
State Contributions Under Section 17-127(d)(1) of the Illinois Pension Code	**$ 254,560,000**	**$ 249,719,000**

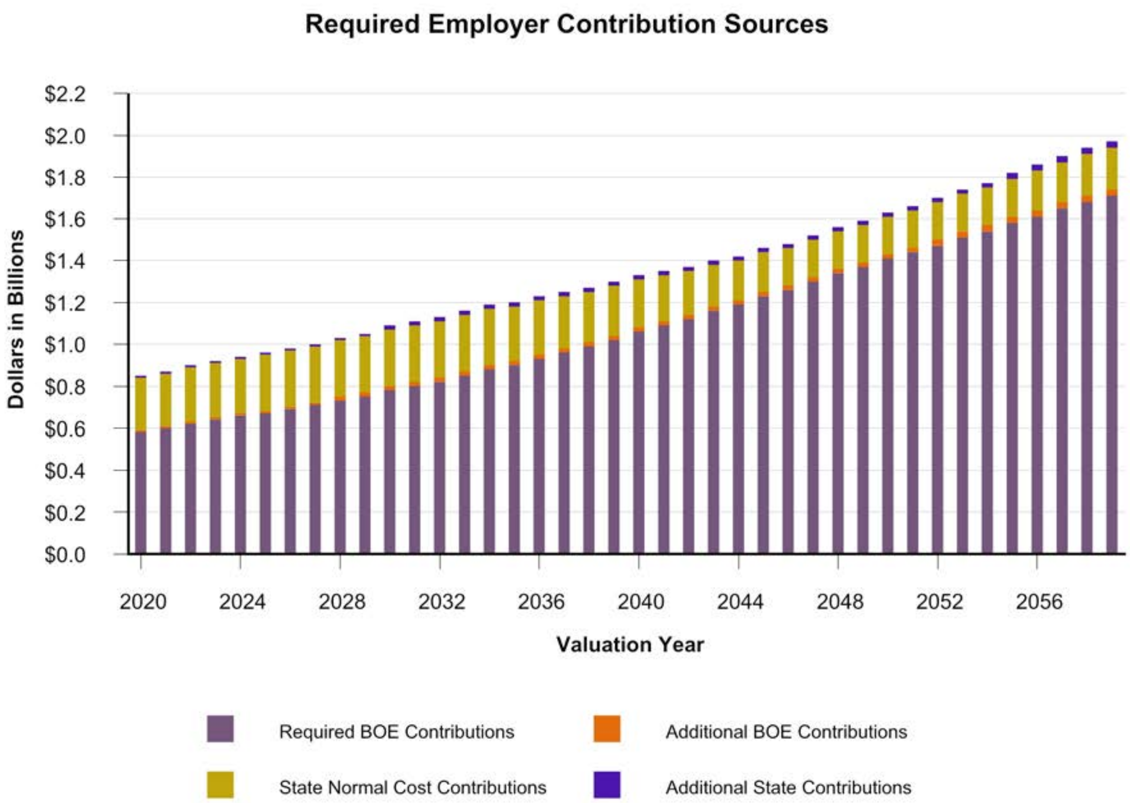
**Fiscal year 2020 numbers are presented for illustrative and comparative purposes only. They are only used to develop the Actuarially Determined Contribution (ADC).*

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 2021 is equal to $605,852,000, (net of Additional State and Board of Education Contributions).

The fiscal year ending June 30, 2020, and June 30, 2021, 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
2020	$ 584,504,000	$ 12,647,000	$ 11,862,000	$ 245,487,000	$ 854,500,000
2021	605,852,000	13,149,000	12,333,000	254,560,000	885,894,000
2022	623,477,000	13,494,000	12,656,000	259,474,000	909,101,000
2023	641,557,000	13,840,000	12,981,000	264,061,000	932,439,000
2024	660,406,000	14,189,000	13,308,000	268,032,000	955,935,000
2025	679,692,000	14,537,000	13,635,000	271,520,000	979,384,000
2026	699,333,000	14,882,000	13,959,000	274,490,000	1,002,664,000
2027	719,494,000	15,228,000	14,283,000	276,941,000	1,025,946,000
2028	740,365,000	15,575,000	14,608,000	278,746,000	1,049,294,000
2029	761,898,000	15,921,000	14,933,000	279,879,000	1,072,631,000
2030	784,639,000	16,275,000	15,265,000	280,288,000	1,096,467,000

The following graph details the projected employer contribution requirements by Source for fiscal years 2020 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, 2019 actuarial valuation. In order to determine projected contribution amounts, the following additional assumptions were used:

- Total employer contributions of $854,500,000 for fiscal year 2020.
- Administrative expenses of $26,099,731 for fiscal year 2019, as provided by the Fund. Administrative expenses are assumed to increase 5.75% annually for the first 15 years and then increase in line with projected capped payroll after 15 years.
- New entrants whose average age is 32.22 and average pay is $48,984 (2019 dollars).
- The active member population is assumed to remain level at 29,437 (includes 142 expected new hires) for all years of the 40-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 42, 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 in 2018 by less than 1.0% and increased again in 2019 by 1.2 percent. 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. This amount is equal to $180,612,283 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 40-year projection period is approximately 3.00% per year. It is important to note that benefits for new hires are based on capped payroll which is ultimately projected to grow at 1.25% 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, 2019, actuarial valuation is 24 years.

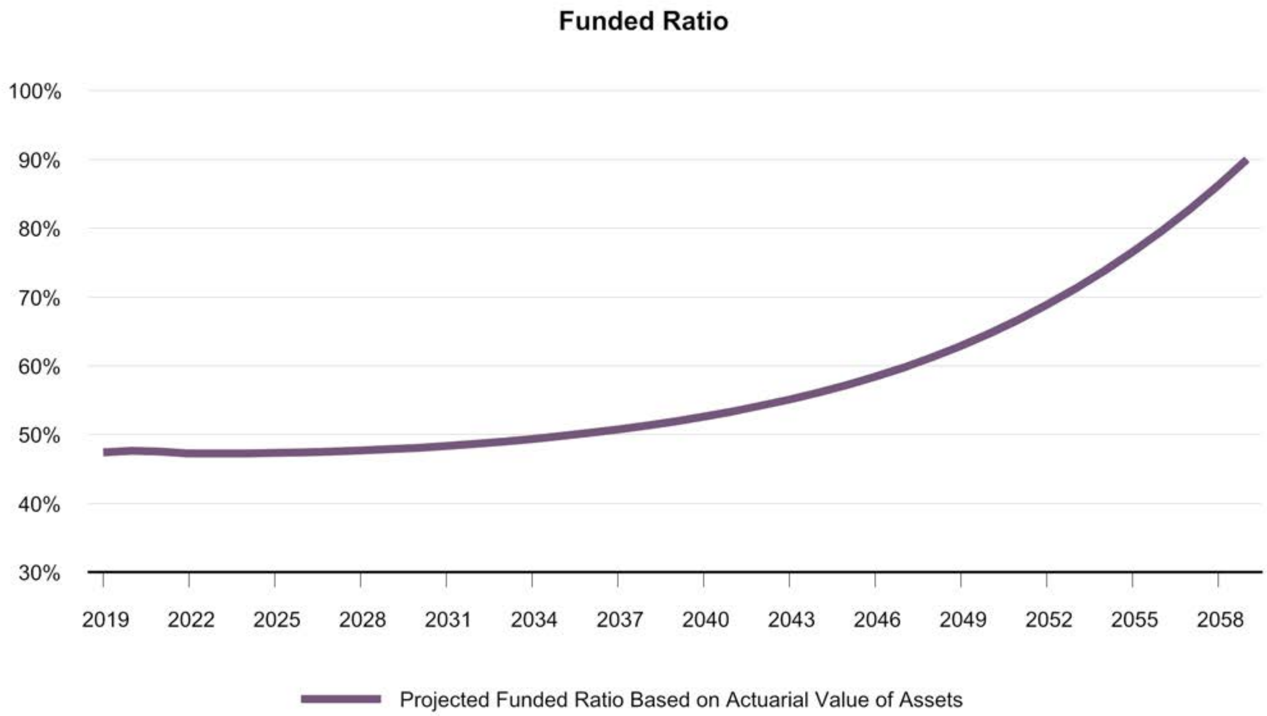
A key objective of the ADC is to accrue costs over the working lifetime of plan members to ensure that benefit obligations are satisfied and intergenerational equity is promoted. Although the ADC is solely an accounting provision, in certain circumstances it could represent a reasonable annual funding 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 2019 and 2020, as well as the statutory employer contribution for fiscal years 2019 and 2020, are shown below as a percentage of projected capped payroll. The ADC for 2019 and statutory employer contribution for 2020 are based on the results of the June 30, 2018, actuarial valuation.

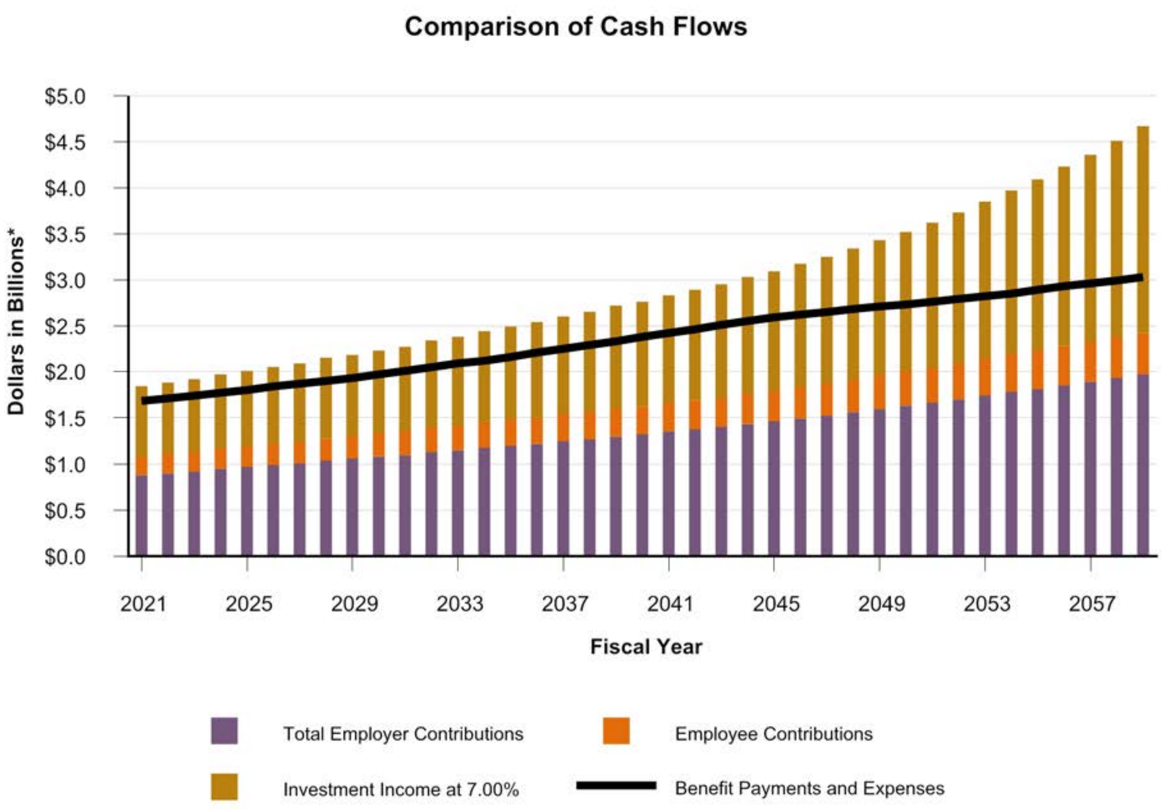
Actuarial Valuation Date:	**June 30, 2019**	**June 30, 2018**
Actuarially Determined Contributions for Fiscal Year Ending:	**June 30, 2020**	**June 30, 2019**
1. Actuarial Accrued Liability	$ 23,252,163,307	$ 22,922,992,558
2. Actuarial Value of Assets	$ 11,021,811,634	$ 10,969,085,523
3. Unfunded Actuarial Accrued Liability [1 - 2]	$ 12,230,351,673	$ 11,953,907,035
4. Employer Normal Cost (Including Administrative Expenses and Health Insurance Subsidy)	$ 249,719,842	$ 240,527,902
5. Employer Normal Cost Adjusted for Contribution Timing	$ 254,477,830	$ 245,621,046
6. Amount to Amortize the Unfunded Liability over a 30-year Closed-period, Beginning July 1, 2013, as a Level Percentage of Payroll	$ 892,552,681	$ 851,548,985
7. Actuarially Determined Contribution Requirement [5 + 6]	$ 1,147,030,511	$ 1,097,170,031
8. Projected Capped Payroll for Fiscal Year	$ 2,203,055,500	$ 2,118,062,176
9. Actuarially Determined Contribution as a Percentage of Projected Capped Payroll	52.07%	51.80%
10. Total Required Employer Contribution Including Health Insurance Subsidy	$ 854,500,000	$ 808,570,000
11. Total Required Employer Contribution as a Percentage of Projected Capped Payroll [10 / 8]	38.79%	38.17%
12. Total Required Employer Contribution as a Percentage of Actuarially Determined Contribution [10 / 7]	74.50%	73.70%

The fiscal year 2020 Actuarially Determined Contribution is based on an amortization factor which reflects 24 years remaining in the amortization period, an interest rate of 7.00 percent, an annualized assumed rate of increase in total capped payroll of 2.20 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 following graph 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 2020 to 2059, the percentage of investment income needed to pay ongoing benefits decreases from 77.8% to 24.8 percent. This implies that a lower level of investment income is projected to be available for potential asset growth in the beginning of the projection period.



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

We are concerned about potential cash flow problems for CTPF. This is because the assets in the plan ($11,038.8 million on a market value basis) are not sufficient to cover current retiree liabilities ($16,996.7 million) and the ratio of market value of assets to retiree benefit payments and expenses is approximately 7.3. 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 2020 contribution would be $1,147.03 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 7.00% investment rate of return, each year through 2059) CTPF is currently projected to have contributions sufficient to increase the funded ratio from the current level of 47.4% 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 42, 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 in 2018 by less than 1.0% and increased again in 2019 by 1.2 percent.

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 two 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 7.00% 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 2039 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 2021 shown on page 8 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:

	2019	2018
Ratio of the Market Value of Assets to Payroll	5.02	5.26
Ratio of Actuarial Accrued Liability to Payroll	10.58	10.85
Ratio of Actives to Retirees and Beneficiaries	1.03	1.01
Ratio of Net Cash Flow to Market Value of Assets	(5.25)%	(5.27)%

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% 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, 2019

1. Number of Members		
a. Active		29,295
b. Inactive:		
i. Eligible for deferred vested pension benefits		9,926
ii. Eligible for return of contributions only		20,621
c. Current Benefit Recipients:		
i. Retirement annuities		24,631
ii. Survivor annuities		3,217
iii. Disability annuities		469
d. Total		88,159
2. Covered Payroll		
a. As of the Actuarial Valuation Date	$	2,196,918,127
b. Projected Capped Payroll for Fiscal Year 2019		2,203,055,500
c. Projected Capped Payroll for Fiscal Year 2020		2,267,106,915
3. Annualized Benefit Payments Currently Being Made		
a. Retirement annuities	$	1,373,459,588
b. Survivor annuities		77,424,498
c. Disability annuities		18,158,456
d. Total	$	1,469,042,542
4. Actuarial Accrued Liability - Annuitants		
a. Current Benefit Recipients:		
i. Retirement annuities	$	16,102,437,924
ii. Survivor annuities		692,161,536
iii. Disability annuities		202,115,317
b. Total	$	16,996,714,777
5. Actuarial Accrued Liability - Inactive Members		
a. Eligible for Deferred Vested Pension Benefits	$	449,280,620
b. Eligible for Return of Contributions Only		86,869,126
c. Total	$	536,149,746

Active count excludes 142 members expected to be hired to replace retirements and terminations that occurred in June 2019.

Table 1: Results of Actuarial Valuation (Continued) as of June 30, 2019

	Normal Cost	Actuarial Accrued Liability
6. Active Members		
a. Retirement Benefits	$ 271,774,168	$ 4,852,667,787
b. Withdrawal	71,756,704	704,325,764
c. Death Benefits	4,913,776	69,468,495
d. Disability	6,949,723	92,836,738
e. Administrative Expenses	27,600,466	—
f. Total	$ 382,994,837	$ 5,719,298,784
7. Total Actuarial Accrued Liability (4 + 5 + 6)		$ 23,252,163,307
8. Market Value of Assets (MVA)		$ 11,038,837,459
9. Unfunded Actuarial Accrued Liability Based on MVA (7 - 8)		$ 12,213,325,848
10. Funded Percentage Based on MVA (8 ÷ 7)[a]		47.47%
11. Actuarial Value of Assets (AVA)		$ 11,021,811,634
12. Unfunded Actuarial Accrued Liability Based on AVA (7 - 11)		$ 12,230,351,673
13. Funded Percentage Based on AVA (11. ÷ 7.)[a]		47.40%
14. Total Normal Cost	$ 382,994,837	
15. Expected Employee Contributions	$ 198,274,995	
16. Annual Employer Normal Cost	$ 184,719,842	
(% of Projected Capped Payroll for Fiscal Year 2019)	8.38%	
17. Health Insurance Subsidy	$ 65,000,000	
18. Annual Employer Normal Cost, including Health Insurance Reimbursement (16 + 17)	$ 249,719,842	
(% of Projected Capped Payroll for Fiscal Year 2019)[b]	11.34%	

[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	18,632		10,663		29,295	
2. Covered Payroll						
a. As of the Valuation Date	$ 1,611,924,815		$ 584,993,311		$ 2,196,918,127	
b. Projected Capped Payroll for Fiscal Year 2019	1,611,924,815		591,130,684		2,203,055,500	
c. Projected Capped Payroll for Fiscal Year 2020	1,583,323,050		683,783,865		2,267,106,915	
3. Actuarial Accrued Liability						
a. Retirement Benefits	$ 4,787,616,390		$ 65,051,397		$ 4,852,667,787	
b. Withdrawal	617,643,241		86,682,523		704,325,764	
c. Death Benefits	65,535,687		3,932,808		69,468,495	
d. Disability	86,145,554		6,691,184		92,836,738	
e. Total	$ 5,556,940,872		$ 162,357,912		$ 5,719,298,784	
4. Normal Cost	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**
a. Retirement Benefits	$ 256,620,461	15.92%	$ 15,153,707	2.56 %	$ 271,774,168	12.34%
b. Withdrawal	47,573,316	2.95%	24,183,388	4.09 %	71,756,704	3.26%
c. Death Benefits	3,964,802	0.25%	948,974	0.16 %	4,913,776	0.23%
d. Disability	5,440,011	0.34%	1,509,712	0.26 %	6,949,723	0.32%
e. Administrative Expenses	20,194,623	1.25%	7,405,842	1.25 %	27,600,466	1.25%
f. Total	$ 333,793,213	20.71%	$ 49,201,623	8.32 %	$ 382,994,837	17.38%
5. Expected Employer Contributions	$ 145,073,233	9.00%	$ 53,201,763	9.00 %	$ 198,274,996	9.00%
6. Annual Employer Normal Cost	$ 188,719,981	11.71%	$ (4,000,139)	(0.68)%	$ 184,719,842	8.38%

[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 2019. Active count excludes 142 members expected to be hired to replace retirements and terminations that occurred in June 2019.*

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

1. Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2019	$	11,953,907,035
2. Contributions		
a. Contributions due (Normal Cost plus interest on the UAAL)		
i. Interest on item 1.	$	836,773,492
ii. Member contributions		190,565,220
iii. Employer normal cost (middle of year)		240,588,278
iv. Interest on ii and iii		14,835,148
v. Total due	$	1,282,762,138
b. Contributions paid (Actual)		
i. Member contributions	$	190,565,220
ii. Employer		808,570,000
iii. Interest on i and ii[a]		18,775,610
iv. Total paid	$	1,017,910,830
c. Expected increase in Unfunded Actuarial Accrued Liability	$	264,851,308
3. Expected Unfunded Actuarial Accrued Liability at 06/30/2019	$	12,218,758,343
4. (Gains)/Losses		
a. Investment income	$	98,317,079
b. Retiree health insurance cash flows		(6,608,283)
c. Salary increases		(62,859,630)
d. Demographic		(17,255,836)
e. Total	$	11,593,330
5. Plan Provision Changes	$	—
6. Assumption Changes	$	—
7. Total Change in UAAL	$	276,444,638
8. UAAL at 06/30/2019	$	12,230,351,673

[a]*Interest on employer contributions is estimated based on a weighted timing of middle of year, 8/12ths 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, 2019

Activity	(Gain)/Loss	% of June 30, 2019 AAL
1. Actuarial (Gain)/Loss		
a. Retirements	$ 1,996,977	0.01 %
b. Incidence of Disability	(966,542)	0.00 %
c. In-Service Mortality	123,792	0.00 %
d. Retiree Mortality	5,854,235	0.03 %
e. Salary Increases	(62,859,630)	(0.27)%
f. Terminations	(46,251,276)	(0.20)%
g. Investment Return	98,317,079	0.43 %
h. Retiree Health Insurance Cash Flows	(6,608,283)	(0.03)%
i. New Entrant Liability	44,926,283	0.20 %
j. Other	(22,939,305)	(0.10)%
k. Total Actuarial (Gain)/Loss	$ 11,593,330	0.07 %
2. Plan Provision Changes	$ —	— %
3. Assumption Changes	$ —	— %
4. Contribution (Excess)/Shortfall[a]	$ 264,851,308	1.16 %
5. Total Financial (Gain)/Loss	$ 276,444,638	1.23 %

[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 2015	FY 2016	FY 2017	FY 2018	FY 2019	
Investment Return (AVA Basis)	$ (45,212,951)	$ (81,129,490)	$ (80,937,857)	$ 131,839,730	$ 98,317,079	$ 22,876,511
Retiree Health Insurance Cash Flows	9,833,404	1,673,226	(17,178,251)	1,381,154	(6,608,283)	(10,898,750)
Salary Increases	(79,584,326)	(264,801,612)	(180,217,505)	6,927,266	(62,859,630)	(580,535,807)
Retirements	66,015,157	47,235,684	32,846,858	27,778,569	1,996,977	175,873,245
Terminations	(10,625,923)	(6,458,419)	(7,478,652)	(39,625,292)	(46,251,276)	(110,439,562)
Disability Incidence	—	—	(685,126)	(1,010,548)	(966,542)	(2,662,216)
In-Service Mortality	—	—	657,829	1,253,670	123,792	2,035,291
Retiree Mortality	(28,722,389)	15,811,894	14,544,206	70,809,472	5,854,235	78,297,418
New Entrants	—	—	32,961,135	38,467,726	44,926,283	116,355,144
Other[a]	9,963,968	57,480,517	(54,889,992)	(28,017,087)	(22,939,305)	(38,401,899)
Total Actuarial (Gain)/Loss	$ (78,333,060)	$ (230,188,200)	$ (260,377,355)	$ 209,804,660	$ 11,593,330	$ (347,500,625)
(Gain)/Loss as a % of BOY AAL	(0.4)%	(1.2)%	(1.3)%	1.0%	0.1 %	
Total Non-Investment (Gain)/Loss	$ (33,120,109)	$ (149,058,710)	$ (179,439,498)	$ 77,964,930	$ (86,723,749)	$ (370,377,136)
(Gain)/Loss as a % of BOY AAL	(0.2)%	(0.7)%	(0.9)%	0.4%	(0.4)%	
(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	$ —	$ 1,696,296,338
(Gain)/Loss as a % of BOY AAL	— %	— %	5.2 %	2.8%	— %	
(Gain)/Loss Due to Contribution (Excess)/Shortfall	$ 241,161,140	$ 260,150,252	$ 220,857,399	$ 233,351,269	$ 264,851,308	$ 1,220,371,368
(Gain)/Loss as a % of BOY AAL	1.2 %	1.3 %	1.1 %	1.1%	1.2 %	
Total Financial (Gain)/Loss	$ 162,828,080	$ 29,962,052	$ 1,035,003,888	$ 1,064,928,423	$ 276,444,638	$ 2,569,167,081
(Gain)/Loss as a % of BOY AAL	0.8 %	0.2 %	5.1 %	4.9%	1.2 %	
BOY Actuarial Accrued Liability (AAL)	$ 19,503,893,632	$ 19,951,289,974	$ 20,484,951,277	$ 21,822,010,297	$ 22,922,992,558	

[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.

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 7.00% 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
2020	$ 32,886.6	$ 17,301.9	$ 15,584.7	52.61%	$ 3,441.4	$ 548.4	$ 309.7	$ 238.7	6.94%
2021	33,292.3	17,766.3	15,526.0	53.36%	3,510.2	546.3	315.9	230.3	6.56%
2022	33,677.5	18,250.3	15,427.2	54.19%	3,579.4	543.8	322.1	221.7	6.19%
2023	34,042.1	18,756.7	15,285.4	55.10%	3,650.3	541.9	328.5	213.4	5.85%
2024	34,386.7	19,290.2	15,096.5	56.10%	3,724.5	540.9	335.2	205.6	5.52%
2025	34,713.2	19,855.8	14,857.4	57.20%	3,801.5	541.2	342.1	199.0	5.23%
2026	35,025.6	20,461.1	14,564.5	58.42%	3,882.6	543.3	349.4	193.8	4.99%
2027	35,326.7	21,112.4	14,214.3	59.76%	3,966.7	547.1	357.0	190.1	4.79%
2028	35,622.0	21,818.8	13,803.2	61.25%	4,053.6	552.9	364.8	188.1	4.64%
2029	35,915.3	22,587.8	13,327.5	62.89%	4,142.7	560.1	372.8	187.3	4.52%

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 2019 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 7.00% 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
2020	$ 1,344.8	$ 18.7	$ 238.7	$ 20.0	$ 1,067.4	39.08%	$ 2,335.7
2021	1,371.6	19.1	230.3	20.4	1,101.8	39.08%	2,379.5
2022	1,398.7	19.5	221.7	20.8	1,136.8	39.08%	2,424.4
2023	1,426.4	19.9	213.4	21.2	1,172.0	39.08%	2,468.5
2024	1,455.4	20.3	205.6	21.6	1,207.9	39.08%	2,511.3
2025	1,485.5	20.7	199.0	22.0	1,243.7	39.08%	2,552.5
2026	1,517.2	21.1	193.8	22.5	1,279.7	39.08%	2,590.4
2027	1,550.0	21.6	190.1	23.0	1,315.3	39.08%	2,626.3
2028	1,584.0	22.1	188.1	23.5	1,350.3	39.08%	2,658.0
2029	1,618.8	22.5	187.3	24.0	1,384.9	39.08%	2,687.2

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 2018 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%	—%

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	2019	2019	2020	2021
Beginning of Year:				
1. Market Value of Assets	$ 11,104,765,514			
2. Actuarial Value of Assets	$ 10,969,085,523			
End of Year				
3. Market Value of Assets	$ 11,038,837,459			
4. Contributions and Disbursements				
a. Actual Employer & Misc. Contributions	$ 810,257,970			
b. Employee Contributions	190,565,220			
c. Benefit Payouts & Refunds	(1,554,227,914)			
d. Administrative Expenses	(26,099,731)			
e. Net of Contributions and Disbursements	$ (579,504,455)			
5. Total Investment Income = (3)-(1)-(4e)	$ 513,576,400			
6. Projected Rate of Return	7.00%			
7. Projected Investment Income[a]	$ 732,235,615			
8. Investment Income in Excess of Projected Income	$ (218,659,215)			
9. Excess Investment Income Recognized				
This Year (4-year recognition)				
a. Year Ended June 30, 2018	$ (54,664,804)			
b. Year Ended June 30, 2017	35,555,686	$ (54,664,804)		
c. Year Ended June 30, 2016	114,636,306	35,555,686	$ (54,664,804)	
d. Year Ended June 30, 2015	(195,532,237)	114,636,305	35,555,685	$ (54,664,803)
e. Total Recognized Investment Gain	$ (100,005,049)	95,527,187	(19,109,119)	(54,664,803)
10. Change in Actuarial Value of Assets = (4e)+(7)+(9e)	$ 52,726,111			
End of Year:				
3. Market Value of Assets	$ 11,038,837,459			
11. Actuarial Value of Assets	$ 11,021,811,634			
12. Difference Between Market & Actuarial Values	$ 17,025,825			
13. Estimated Actuarial Value Rate of Return	5.92%			
14. Estimated Market Value Rate of Return	4.75%			
15. Ratio of Actuarial Value to Market Value	99.85%			

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

Table 9: Historical Investment Returns*

Year Ended June 30	Market Value Return	Actuarial Value Return
2010	13.6 %	(0.4)%
2011	24.8 %	(0.5)%
2012	(0.4)%	1.0 %
2013	13.1 %	11.2 %
2014	17.9 %	12.8 %
2015	3.6 %	8.2 %
2016	(0.3)%	8.6 %
2017	12.5 %	8.3 %
2018	8.5 %	5.8 %
2019	4.7 %	5.9 %
Average Returns		
Last 10 Years:	**9.5 %**	**6.0 %**

* *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 2019 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, 2019	June 30, 2018	
Active Members			
Number	29,295	28,958	1.2 %
Average Age	42.3	42.0	
Average Service	10.8	10.7	
Total Salary Supplied by Fund	$ 2,179,054,844	$ 2,094,830,446	4.0 %
Average Annual Salary	$ 74,383	$ 72,340	2.8 %
Total Active Vested Participants	16,655	17,065	(2.4)%
Male Members	6,903	6,954	(0.7)%
Female Members	22,392	22,004	1.8 %
Tier 1 Members	18,632	19,389	(3.9)%
Tier 2 Members	10,663	9,569	11.4 %
Inactive Vested Members[a]			
Number	9,926	9,398	5.6 %
Average Age	47.2	46.6	
Average Service (Excluding Reciprocal Service)	7.7	7.8	
Inactive Non-Vested Members			
Number	20,621	20,282	1.7 %
Retirees			
Number	24,631	24,897	(1.1)%
Average Age	74.6	74.1	
Average Annual Benefit	$ 55,761	$ 54,355	2.6 %
Total Annual Benefit	$ 1,373,459,588	$ 1,353,269,577	1.5 %
Disabled Retirees			
Number	469	464	1.1 %
Average Age	67.8	67.7	
Average Annual Benefit	$ 38,717	$ 37,682	2.7 %
Total Annual Benefit	$ 18,158,456	$ 17,484,671	3.9 %
Beneficiaries (Including Children)			
Number	3,217	3,188	0.9 %
Average Age	77.0	76.6	
Average Annual Benefit	$ 24,067	$ 23,002	4.6 %
Total Annual Benefit	$ 77,424,498	$ 73,331,546	5.6 %
Total Members	**88,159**	**87,187**	**1.1 %**

[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*
2010	31,012	$ 2,107,934,080	$ 67,972		38
2011	30,133	2,090,131,858	69,364	2.05 %	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

* *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	Vested Terminated Participants[a]	Retirees and Beneficiaries	Ratio of Non-Actives to Actives
2010	31,012	3,554	24,600	0.91
2011	30,133	4,253	25,199	0.98
2012	30,366	4,245	25,926	0.99
2013	30,969	4,502	27,440	1.03
2014	30,654	4,818	27,722	1.06
2015	29,706	5,464	28,114	1.13
2016	29,543	5,715	28,298	1.15
2017	28,855	6,062	28,439	1.20
2018	28,958	9,398	28,549	1.31
2019	29,295	9,926	28,317	1.31

[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, 2019

	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	182	627	—	—	—	—	—	—	—	809
	$ 2,272,208	$ 33,287,968	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ 35,560,176
25-29	388	2,625	717	—	—	—	—	—	—	3,730
	$ 4,761,166	$ 145,504,054	$ 46,732,744	$ —	$ —	$ —	$ —	$ —	$ —	$ 196,997,964
30-34	235	1,690	2,204	389	—	—	—	—	—	4,518
	$ 3,012,984	$ 96,455,717	$154,608,262	$ 33,659,422	$ —	$ —	$ —	$ —	$ —	$ 287,736,385
35-39	206	952	1,476	1,633	467	1	—	—	—	4,735
	$ 2,407,981	$ 53,437,005	$106,823,525	$147,890,284	$ 45,941,730	$ 99,102	$ —	$ —	$ —	$ 356,599,627
40-44	160	544	702	1,096	1,338	252	—	—	—	4,092
	$ 1,895,693	$ 29,134,798	$ 50,296,115	$100,197,447	$132,024,310	$ 26,678,337	$ —	$ —	$ —	$ 340,226,700
45-49	165	421	491	586	977	1,034	214	1	—	3,889
	$ 1,788,202	$ 22,426,253	$ 35,598,382	$ 52,965,272	$ 95,611,867	$107,254,686	$ 23,397,466	$ 101,907	$ —	$ 339,144,035
50-54	115	286	293	364	539	654	690	99	1	3,041
	$ 1,321,504	$ 13,764,842	$ 21,057,252	$ 31,147,021	$ 51,460,276	$ 65,857,402	$ 73,289,876	$ 10,488,226	$ 101,579	$ 268,487,978
55-59	102	251	190	254	377	435	429	246	32	2,316
	$ 913,415	$ 11,021,930	$ 12,184,947	$ 21,570,273	$ 34,912,590	$ 42,587,832	$ 44,067,970	$ 26,608,058	$ 3,732,730	$ 197,599,745
60-64	87	159	131	159	258	233	212	107	51	1,397
	$ 527,269	$ 5,943,308	$ 8,025,798	$ 11,641,840	$ 23,401,674	$ 22,967,785	$ 21,422,518	$ 11,161,600	$ 5,727,548	$ 110,819,339
65-69	48	75	67	68	82	63	64	33	25	525
	$ 314,607	$ 1,846,272	$ 2,803,116	$ 4,398,636	$ 7,193,897	$ 6,005,580	$ 6,554,992	$ 3,315,175	$ 2,591,002	$ 35,023,277
70 & Over	37	54	34	29	28	19	21	5	16	243
	$ 205,836	$ 844,554	$ 795,191	$ 1,254,802	$ 1,969,111	$ 1,546,443	$ 1,780,536	$ 479,719	$ 1,983,426	$ 10,859,618
Total	1,725	7,684	6,305	4,578	4,066	2,691	1,630	491	125	29,295
	$ 19,420,865	$ 413,666,701	$438,925,332	$404,724,997	$392,515,455	$272,997,167	$170,513,358	$ 52,154,685	$ 14,136,285	$ 2,179,054,844

Total lives and annual salaries exclude 142 members expected to be hired to replace retirements and terminations that occurred in June 2019.

Table 14: Reconciliation of Member Data as of June 30, 2019

	Actives	Deferred Vested	Expected Refunds	Retirees	Disabilities	Beneficiaries	Total
Totals as of the June 30, 2019, Actuarial Valuation	28,958	9,398	20,282	24,897	464	3,188	87,187
New Entrants	2,773	—	—	—	—	—	2,773
Rehires - Members with Service	609	(220)	(389)	—	—	—	—
Non-Vested Terminations	(1,671)	(15)	1,686	—	—	—	—
Vested Terminations	(767)	1,105	(338)	—	—	—	—
Service Retirements	(275)	(178)	(5)	458	—	—	—
Disabilities	(12)	(9)	—	—	21	—	—
Deaths	(29)	(17)	(36)	(731)	(16)	(193)	(1,022)
New Beneficiaries	—	—	—	—	—	219	219
Refunds and Benefit Terminations	(291)	(149)	(798)	—	—	—	(1,238)
Data Adjustments	—	11	219	7	—	3	240
Net Change	337	528	339	(266)	5	29	972
Totals as of the June 30, 2019, Actuarial Valuation	29,295	9,926	20,621	24,631	469	3,217	88,159

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, 2019

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		
2009	957	$ 57,109,256	659	$ 19,557,718	24,218	$ 942,388,371	$ 38,913	2.87%
2010	1,080	67,630,266	698	21,855,794	24,600	988,162,843	40,169	3.23%
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%

Table 16: Annuitants Classified by Benefit Type and Amount as of June 30, 2019

Monthly Pension Amount	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
$ 1 - 500	374	985	1	1	156	244	531	1,230
501 - 1,000	367	851	4	10	189	339	560	1,200
1,001 - 1,500	307	679	12	29	149	176	468	884
1,501 - 2,000	225	588	7	39	156	208	388	835
2,001 - 2,500	220	639	13	45	149	241	382	925
2,501 - 3,000	248	802	8	53	210	325	466	1,180
3,001 - 3,500	262	946	14	44	108	252	384	1,242
3,501 - 4,000	301	1,171	11	35	25	96	337	1,302
4,001 - 4,500	302	1,280	12	37	13	64	327	1,381
4,501 - 5,000	328	1,232	8	37	11	47	347	1,316
5,001 - 5,500	513	1,609	5	19	7	23	525	1,651
5,501 - 6,000	764	2,481	4	5	5	15	773	2,501
6,001 - 6,500	728	2,269	1	6	2	5	731	2,280
6,501 - 7,000	307	1,123	1	1	—	1	308	1,125
7,001 - 7,500	206	487	1	1	—	—	207	488
7,501 - 8,000	174	257	2	1	—	—	176	258
8,001 - 8,500	95	209	—	1	—	—	95	210
8,501 - 9,000	95	207	1	—	—	—	96	207
9,001 - 9,500	75	149	—	—	—	—	75	149
Over $9,500	265	511	—	—	—	1	265	512
Total	**6,156**	**18,475**	**105**	**364**	**1,180**	**2,037**	**7,441**	**20,876**

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 2015								
Average Monthly Pension	$ 275	$ 877	$ 1,606	$ 2,621	$ 3,530	$ 4,254	$ 5,561	$ 3,398
Average Monthly FAS	$ 6,587	$ 5,377	$ 5,891	$ 6,851	$ 7,555	$ 7,483	$ 7,762	$ 7,077
Number of Retired Members	47	104	117	107	269	172	240	1,056
Average Age								63.2
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 Benefit	$ 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 Persons	42	64	64	62	77	62	94	465
Average Age								63.7

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.

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, the 2018 Investment Return Assumption Review issued on July 25, 2018 and the 2019 Actuarial Assumption Study issued on September 10, 2019.

Rate of Investment Return

7.00% per year, compounded annually, net of investment expenses.

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

2.50% per annum, compounded annually.

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 1.25% for members hired on and after January 1, 2011, based on the benefit provision of increases equal to ½ of the increase in CPI-U with a maximum increase of 3.00 percent.

Wage Inflation

3.00% per annum, compounded annually.

Calculation of the Actuarially Determined Contribution

The amortization factor used to calculate the ADC is based on the Fund’s assumed interest rate of 7.00% and an annualized assumed rate of increase in total capped payroll of 2.20% (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 2019				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	51.05	54.32	34.14	40.53	52.13	55.34	35.90	42.14
40	45.88	49.13	30.45	36.10	46.93	50.13	32.03	37.60
45	40.79	44.00	27.16	32.01	41.81	44.98	28.60	33.41
50	35.79	38.91	23.98	28.05	36.79	39.87	25.34	29.37
55	30.91	33.87	20.89	24.30	31.88	34.81	22.16	25.53
60	26.17	28.96	17.90	20.84	27.09	29.86	19.03	21.93
65	21.62	24.25	15.09	17.50	22.46	25.09	16.03	18.44
70	17.31	19.75	12.39	14.19	18.06	20.53	13.18	15.02
75	13.32	15.50	9.80	11.09	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	12.85%
25	7.75%
30	6.25%
35	5.50%
40	4.50%
45	3.75%
50	3.25%
55	3.00%
60	3.00%
65	3.00%
70	3.00%

The underlying salary increase assumption is based on a wage inflation assumption of 3.00% per year.

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, 2019, was increased by 142 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 29,437. 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. The average increase in uncapped payroll for the projection period is 3.00% per year.

New Entrant Profile		
Age Group	**Number**	**Salary**
Under 20	—	$ —
20 - 24	1,063	51,493,871
25 - 29	1,500	75,145,249
30 - 34	785	40,666,028
35 - 39	457	23,069,777
40 - 44	294	14,606,436
45 - 49	250	12,373,168
50 - 54	169	7,184,922
55 - 59	149	6,104,574
60 - 64	82	2,358,889
65 - 69	11	158,700
70 & Over	—	—
Total	**4,760**	**$ 233,161,614**
Avg. Salary		**$ 48,984**
Avg. Age		**32.22**
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, 2019, 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 are based on the previous year's administrative expenses increased by 5.75%. Future administrative expenses are assumed to increase by 5.75% per year for 15 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 percent.

Assumption for Missing Data

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

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. This amount is assumed to be $180,612,283 for fiscal year 2020 and increased each year by three percent.
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 $114,952 for fiscal year 2019 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 2.50% for all years.

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.

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
2012			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	—%	—%	—%	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

SECTION I: ADDITIONAL PROJECTION DETAILS

Table 18: Additional Projection Details - Actuarial Accrued Liability (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
2019	$ 16,996.71	$ 536.15	$ 5,556.94	$ 162.36	$ 0.00	$ 17,532.86	$ 5,719.30	$ 23,252.16
2020	16,650.69	558.89	6,254.11	197.97	0.00	17,209.58	6,452.07	23,661.65
2021	16,272.90	582.67	6,981.60	234.38	7.63	16,855.57	7,223.61	24,079.18
2022	15,864.29	607.32	7,739.00	274.24	21.73	16,471.61	8,034.97	24,506.58
2023	15,425.83	632.71	8,524.96	318.80	41.74	16,058.54	8,885.49	24,944.03
2024	14,958.59	658.85	9,336.53	368.71	67.22	15,617.45	9,772.47	25,389.91
2025	14,463.92	685.58	10,170.48	425.19	98.77	15,149.50	10,694.44	25,843.94
2026	13,943.43	712.77	11,023.40	488.83	136.37	14,656.20	11,648.60	26,304.80
2027	13,398.90	740.33	11,892.00	560.09	180.45	14,139.23	12,632.54	26,771.77
2028	12,832.37	768.17	12,771.85	639.47	232.15	13,600.54	13,643.48	27,244.02

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2019 actuarial valuation, which can be found at www.ctpf.org.*

Table 19: Additional Projection Details - Present Value of Future Benefits (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	Totals
2019	$ 16,996.71	$ 536.15	$ 9,218.14	$ 893.73	$ 0.00	$ 17,532.86	$ 10,111.87	$ 27,644.74
2020	16,650.69	558.89	9,826.31	929.64	98.21	17,209.58	10,854.16	28,063.74
2021	16,272.90	582.67	10,456.31	968.93	208.88	16,855.57	11,634.12	28,489.70
2022	15,864.29	607.32	11,107.37	1,013.12	328.66	16,471.61	12,449.16	28,920.77
2023	15,425.83	632.71	11,778.14	1,062.73	456.40	16,058.54	13,297.27	29,355.81
2024	14,958.59	658.85	12,465.99	1,117.85	593.78	15,617.44	14,177.61	29,795.05
2025	14,463.92	685.58	13,168.12	1,179.24	740.46	15,149.50	15,087.81	30,237.31
2026	13,943.43	712.77	13,881.67	1,247.09	897.09	14,656.20	16,025.85	30,682.06
2027	13,398.90	740.33	14,603.88	1,321.52	1,065.21	14,139.23	16,990.61	31,129.84
2028	12,832.37	768.17	15,331.13	1,402.80	1,246.59	13,600.54	17,980.52	31,581.06

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2019 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
2020	$ 1,484.71	$ 14.30	$ 83.42	$ 43.21	$ 0.00	$ 1,499.00	$ 126.63	$ 1,625.64
2021	1,492.01	14.83	101.31	40.85	7.19	1,506.83	149.35	1,656.19
2022	1,496.23	15.61	121.70	37.76	13.86	1,511.83	173.32	1,685.15
2023	1,497.44	16.55	144.90	34.74	20.68	1,513.99	200.32	1,714.32
2024	1,495.58	17.54	172.04	32.19	27.80	1,513.13	232.03	1,745.16
2025	1,490.49	18.75	203.03	29.41	34.67	1,509.24	267.11	1,776.34
2026	1,481.98	20.10	237.78	26.96	41.97	1,502.08	306.71	1,808.79
2027	1,469.99	21.59	275.97	24.93	49.41	1,491.59	350.31	1,841.89
2028	1,454.40	23.19	318.25	23.11	56.61	1,477.59	397.97	1,875.57
2029	1,435.08	24.92	364.86	23.16	63.92	1,460.00	451.94	1,911.94

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2019 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
2019	18,632	$1,611.92	$ 145.07	$381.35	10,805	$ 591.13	$ 53.20	$ 66.64	0	$ 0.00	$ 0.00	$ 0.00
2020	17,469	1,583.32	142.50	381.38	9,426	555.53	50.00	62.66	2,542	128.26	11.54	14.57
2021	16,473	1,557.27	140.15	381.45	8,494	533.68	48.03	60.44	4,469	235.55	21.20	26.97
2022	15,553	1,531.15	137.80	381.01	7,775	518.96	46.71	59.26	6,109	336.11	30.25	38.56
2023	14,688	1,503.76	135.34	379.72	7,219	510.41	45.94	58.88	7,530	432.18	38.90	49.61
2024	13,855	1,473.63	132.63	377.42	6,765	505.43	45.49	59.05	8,816	527.30	47.46	60.62
2025	13,062	1,440.46	129.64	374.08	6,393	503.61	45.33	59.71	9,982	621.87	55.97	71.63
2026	12,295	1,404.25	126.38	369.70	6,088	504.51	45.41	60.74	11,054	716.76	64.51	82.79
2027	11,552	1,365.09	122.86	364.09	5,821	506.45	45.58	61.96	12,064	813.73	73.24	94.37
2028	10,818	1,321.63	118.95	357.04	5,576	508.85	45.80	63.30	13,043	914.51	82.31	106.59

* *This table has been adjusted to display information for the next 10 fiscal years. For the full table, please see the fiscal year 2019 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, 2019, includes 142 members expected to be hired to replace retirements and terminations that occurred in June 2019.

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, 2019, with Comparative Totals for 9 Years

Additions:	2019	2018	2017	2016	2015
Contributions:					
Intergovernmental, net (Employer)	$ 808,570,000	$ 784,402,000	$ 746,840,000	$ 635,070,000	$ 643,667,000
Employee contributions	190,565,220	183,679,205	187,538,787	191,882,430	191,233,298
Allocation to Health Insurance Fund	(59,089,369)	(66,867,696)	(49,000,701)	—	—
	$ 940,045,851	$ 901,213,509	$ 885,378,086	$ 826,952,430	$ 834,900,298
Investment Income					
Net investment income (loss)	513,576,400	896,704,544	1,233,003,939	(28,176,952)	381,688,431
Interest on late required contribution payments	1,449,709	1,123,915	—	—	—
Miscellaneous	238,261	351,361	214,119	1,463,050	943,946
Total Additions (Losses)	**$ 1,455,310,221**	**$ 1,799,393,329**	**$ 2,118,596,144**	**$ 800,238,528**	**$ 1,217,532,675**
Deductions:					
Pension Benefits:					
Retirement	1,394,127,707	1,367,547,495	1,322,061,148	1,282,078,958	1,242,868,398
Survivors	58,934,966	55,729,685	53,004,333	50,082,015	47,403,198
Disability	14,451,137	13,986,851	14,382,691	14,372,308	14,223,383
Refunds:					
Separation	17,335,189	17,679,787	22,718,240	23,077,014	17,504,508
Death	4,164,327	2,311,835	4,095,450	4,581,068	2,009,495
Other	2,968,783	5,073,775	5,395,680	5,917,518	4,365,794
Death Benefits:					
Heirs of Active Teachers	227,786	465,729	755,675	1,158,629	161,214
Heirs of Annuitants	3,406,487	3,485,282	2,524,967	3,558,888	3,031,417
	$ 1,495,616,382	$ 1,466,280,439	$ 1,424,938,184	$ 1,384,826,398	$ 1,331,567,407
Administrative and Miscellaneous Expenses	25,621,894	21,521,303	13,781,343	12,298,862	11,705,562
Total Deductions	**$ 1,521,238,276**	**$ 1,487,801,742**	**$ 1,438,719,527**	**$ 1,397,125,260**	**$ 1,343,272,969**
Net increase (decrease)	(65,928,055)	311,591,587	679,876,617	(596,886,732)	(125,740,294)
Net assets held in trust for benefits:					
Beginning of period	11,104,765,514	10,793,173,927	10,093,067,588	10,689,954,320	10,815,694,614
Transfer of residual assets to Pension Plan	—	—	20,229,722 *	—	—
End of period	**$ 11,038,837,459**	**$ 11,104,765,514**	**$ 10,793,173,927**	**$ 10,093,067,588**	**$ 10,689,954,320**

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

Continued from previous page

Additions:	2014	2013	2012	2011	2010
Contributions:					
Intergovernmental, net (Employer)	$ 585,416,141	$ 142,654,000	$ 138,729,011	$ 143,589,994	$ 290,759,950
Employee contributions	187,846,065	188,356,294	187,141,384	185,882,636	194,621,551
Allocation to Health Insurance Fund	—	—	—	—	—
	$ 773,262,206	$ 331,010,294	$ 325,870,395	$ 329,472,630	$ 485,381,501
Investment Income					
Net investment income (loss)	1,685,079,840	1,174,500,001	(38,124,125)	2,123,272,170	1,107,453,898
Interest on late required contribution payments	—	—	—	—	—
Miscellaneous	—	—	431,790	55,307	—
Total Additions (Losses)	**$ 2,458,342,046**	**$ 1,505,510,295**	**$ 288,178,060**	**$ 2,452,800,107**	**$ 1,592,835,399**
Deductions:					
Pension Benefits:					
Retirement	1,211,523,930	1,173,343,019	1,062,373,677	999,323,111	943,252,537
Survivors	44,428,213	41,503,227	38,812,556	36,196,804	33,738,810
Disability	13,882,921	13,472,748	12,698,514	12,019,044	11,512,123
Refunds:					
Separation	22,332,203	12,948,597	17,521,737	13,135,132	9,334,950
Death	3,598,338	3,284,366	4,139,266	3,373,836	4,253,510
Other	6,901,631	8,554,098	14,633,633	10,671,550	7,495,834
Death Benefits:					
Heirs of Active Teachers	194,115	441,036	387,047	419,861	496,832
Heirs of Annuitants	3,480,505	3,553,273	2,937,334	2,840,999	2,449,315
	$ 1,306,341,856	$ 1,257,100,364	$ 1,153,503,764	$ 1,077,980,337	$ 1,012,533,911
Administrative and Miscellaneous Expenses	10,494,139	11,537,394	10,120,434	9,527,938	8,800,848
Total Deductions	**$ 1,316,835,995**	**$ 1,268,637,758**	**$ 1,163,624,198**	**$ 1,087,508,275**	**$ 1,021,334,759**
Net increase (decrease)	1,141,506,051	236,872,537	(875,446,138)	1,365,291,832	571,500,640
Net assets held in trust for benefits:					
Beginning of period	9,674,188,563	9,437,316,026	10,312,762,164	8,947,470,332	8,375,969,692
Transfer of residual assets to Pension Plan	—	—	—	—	—
End of period	**$ 10,815,694,614**	**$ 9,674,188,563**	**$ 9,437,316,026**	**$ 10,312,762,164**	**$ 8,947,470,332**

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
HEALTH INSURANCE FUND

For the Year Ended June 30, 2019, with Comparative Totals for 9 Years

Additions:	2019	2018	2017	2016	2015
Contributions:					
Allocation of Employer Contribution plus Allocations from Prior Years	$ 58,611,532	$ 66,333,655	$ 49,000,701	$ 65,000,000	$ 65,000,000
Investment Income:					
Net investment income	—	—	—	189,789	51,868
Miscellaneous	—	—	—	—	—
Total Additions	**$ 58,611,532**	**$ 66,333,655**	**$ 49,000,701**	**$ 65,189,789**	**$ 65,051,868**
Deductions:					
Health Insurance Premium Subsidy	58,611,532	66,333,655	49,000,701	66,673,226	79,316,153
Total Deductions	**$ 58,611,532**	**$ 66,333,655**	**$ 49,000,701**	**$ 66,673,226**	**$ 79,316,153**
Net increase (decrease)	—	—	—	(1,483,437)	(14,264,285)
Fiduciary Net Position Held in Trust for Pension Benefits:					
Beginning of period	—	—	20,229,722	21,713,159	35,977,444
Transfer of residual assets to Pension Plan	—	—	(20,229,722)	—	—
End of period	**$ —**	**$ —**	**$ —**	**$ 20,229,722**	**$ 21,713,159**

Continued from previous page

Additions:	2014	2013	2012	2011	2010
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	55,134	82,822	41,058	20,471	119,855
Miscellaneous	8,000,000	8,352,647	6,770,651	10,338,661	—
Total Additions	**$ 73,055,134**	**$ 73,435,469**	**$ 71,811,709**	**$ 75,359,132**	**$ 65,119,855**
Deductions:					
Health Insurance Premium Subsidy	72,874,594	71,763,523	69,011,323	78,892,292	79,953,873
Total Deductions	**$ 72,874,594**	**$ 71,763,523**	**$ 69,011,323**	**$ 78,892,292**	**$ 79,953,873**
Net increase (decrease)	180,540	1,671,946	2,800,386	(3,533,160)	(14,834,018)
Fiduciary Net Position Held in Trust for Pension Benefits:					
Beginning of period	35,796,904	34,124,958	31,324,572	34,857,732	49,691,750
Transfer of residual assets to Pension Plan	—	—	—	—	—
End of period	**$ 35,977,444**	**$ 35,796,904**	**$ 34,124,958**	**$ 31,324,572**	**$ 34,857,732**

ANNUITANTS

Distribution of Current Annuitants by Benefit Type
As of June 30, 2019

Monthly Pension Amount	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
$ 1 - 500	374	985	1	1	156	244	531	1,230
501 - 1,000	367	851	4	10	189	339	560	1,200
1,001 - 1,500	307	679	12	29	149	176	468	884
1,501 - 2,000	225	588	7	39	156	208	388	835
2,001 - 2,500	220	639	13	45	149	241	382	925
2,501 - 3,000	248	802	8	53	210	325	466	1,180
3.001 - 3,500	262	946	14	44	108	252	384	1,242
3,501 - 4,000	301	1,171	11	35	25	96	337	1,302
4,001 - 4,500	302	1,280	12	37	13	64	327	1,381
4,501 - 5,000	328	1,232	8	37	11	47	347	1,316
5,001 - 5,500	513	1,609	5	19	7	23	525	1,651
5,501 - 6,000	764	2,481	4	5	5	15	773	2,501
6,001 - 6,500	728	2,269	1	6	2	5	731	2,280
6,501 - 7,000	307	1,123	1	1	—	1	308	1,125
7,001 - 7,500	206	487	1	1	—	—	207	488
7,501 - 8,000	174	257	2	1	—	—	176	258
8,001 - 8,500	95	209	—	1	—	—	95	210
8,501 - 9,000	95	207	1	—	—	—	96	207
9,001 - 9,500	75	149	—	—	—	—	75	149
$ 9,500 & Over	265	511	—	—	—	1	265	512
Total	**6,156**	**18,475**	**105**	**364**	**1,180**	**2,037**	**7,441**	**20,876**

ANNUITANTS

Distribution of Pensioners with Health Insurance Reimbursements by Size of Annuity
As of June 30, 2019

Monthly Pension Amount	Health Insurance	
	Male	Female
$ 0 - 499	903	1,956
500 - 999	692	1,416
1,000 - 1,499	567	1,397
1,500 - 1,999	553	1,537
2,000 - 2,499	640	1,724
2,500 - 2,999	782	2,206
3,000 - 3,499	724	2,025
3,500 - 3,999	772	2,208
4,000 - 4,499	745	2,270
4,500 - 4,999	428	1,510
5,000 - 5,499	351	1,069
5,500 - 5,999	259	982
6,000 - 6,499	119	437
6,500 - 6,999	78	205
7,000 - 7,499	53	143
7,500 - 7,999	36	123
8,000 - 8,499	46	91
8,500 - 8,999	20	90
$ 9,000 & Over	51	131
Total	**7,819**	**21,520**

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 2010							
Average Monthly Pension	$ 307	$ 803	$ 1,435	$ 2,331	$ 2,922	$ 3,672	$ 5,862
Average Final Salary*	$ 5,954	$ 4,909	$ 5,408	$ 6,139	$ 6,275	$ 6,413	$ 7,978
Number of Retired Members	33	64	52	46	63	42	160
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 Benefit	$ 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 Persons	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

* *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
2010	7,145	23,867	31,012
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

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

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