AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

DIVERSE ASSET MANAGERS: CHALLENGES, SOLUTIONS, AND OPPORTUNITIES FOR INCLUSION

HEARING

BEFORE THE

SUBCOMMITTEE ON DIVERSITY AND INCLUSION

OF THE

COMMITTEE ON FINANCIAL SERVICES

U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

JUNE 25, 2019

Printed for the use of the Committee on Financial Services

Serial No. 116–35

U.S. GOVERNMENT PUBLISHING OFFICE

39–496 PDF WASHINGTON : 2020

HOUSE COMMITTEE ON FINANCIAL SERVICES

MAXINE WATERS, California, *Chairwoman*

CAROLYN B. MALONEY, New York
NYDIA M. VELÁZQUEZ, New York
BRAD SHERMAN, California
GREGORY W. MEEKS, New York
WM. LACY CLAY, Missouri
DAVID SCOTT, Georgia
AL GREEN, Texas
EMANUEL CLEAVER, Missouri
ED PERLMUTTER, Colorado
JIM A. HIMES, Connecticut
BILL FOSTER, Illinois
JOYCE BEATTY, Ohio
DENNY HECK, Washington
JUAN VARGAS, California
JOSH GOTTHEIMER, New Jersey
VICENTE GONZALEZ, Texas
AL LAWSON, Florida
MICHAEL SAN NICOLAS, Guam
RASHIDA TLAIB, Michigan
KATIE PORTER, California
CINDY AXNE, Iowa
SEAN CASTEN, Illinois
AYANNA PRESSLEY, Massachusetts
BEN McADAMS, Utah
ALEXANDRIA OCASIO-CORTEZ, New York
JENNIFER WEXTON, Virginia
STEPHEN F. LYNCH, Massachusetts
TULSI GABBARD, Hawaii
ALMA ADAMS, North Carolina
MADELEINE DEAN, Pennsylvania
JESÚS "CHUY" GARCIA, Illinois
SYLVIA GARCIA, Texas
DEAN PHILLIPS, Minnesota

PATRICK McHENRY, North Carolina, *Ranking Member*
PETER T. KING, New York
FRANK D. LUCAS, Oklahoma
BILL POSEY, Florida
BLAINE LUETKEMEYER, Missouri
BILL HUIZENGA, Michigan
SEAN P. DUFFY, Wisconsin
STEVE STIVERS, Ohio
ANN WAGNER, Missouri
ANDY BARR, Kentucky
SCOTT TIPTON, Colorado
ROGER WILLIAMS, Texas
FRENCH HILL, Arkansas
TOM EMMER, Minnesota
LEE M. ZELDIN, New York
BARRY LOUDERMILK, Georgia
ALEXANDER X. MOONEY, West Virginia
WARREN DAVIDSON, Ohio
TED BUDD, North Carolina
DAVID KUSTOFF, Tennessee
TREY HOLLINGSWORTH, Indiana
ANTHONY GONZALEZ, Ohio
JOHN ROSE, Tennessee
BRYAN STEIL, Wisconsin
LANCE GOODEN, Texas
DENVER RIGGLEMAN, Virginia

CHARLA OUERTATANI, *Staff Director*

SUBCOMMITTEE ON DIVERSITY AND INCLUSION

JOYCE BEATTY, Ohio, *Chairwoman*

WM. LACY CLAY, Missouri
AL GREEN, Texas
JOSH GOTTHEIMER, New Jersey
VICENTE GONZALEZ, Texas
AL LAWSON, Florida
AYANNA PRESSLEY, Massachusetts
TULSI GABBARD, Hawaii
ALMA ADAMS, North Carolina
MADELEINE DEAN, Pennsylvania
SYLVIA GARCIA, Texas
DEAN PHILLIPS, Minnesota

ANN WAGNER, Missouri, *Ranking Member*
FRANK D. LUCAS, Oklahoma
ALEXANDER X. MOONEY, West Virginia
TED BUDD, North Carolina
DAVID KUSTOFF, Tennessee
TREY HOLLINGSWORTH, Indiana
ANTHONY GONZALEZ, Ohio, *Vice Ranking Member*
BRYAN STEIL, Wisconsin
LANCE GOODEN, Texas

CONTENTS

	Page
Hearing held on:	
June 25, 2019	1
Appendix:	
June 25, 2019	29

WITNESSES

TUESDAY, JUNE 25, 2019

Chia, Brenda, Founding Board Member and Co-Chair, Association of Asian American Investment Managers (AAAIM)	8
Jones, Meredith A., Investment Researcher and Author	11
Martinez, Juan, Vice President/Chief Financial Officer, and Treasurer, Knight Foundation	5
Miller-May, Angela, Chief Investment Officer, Chicago Teachers' Pension Fund (CTPF)	9
Rogers, John W., Jr., Chairman, CEO, and Chief Investment Officer, Ariel Investments	6

APPENDIX

Prepared statements:	
Chia, Brenda	30
Jones, Meredith A.	33
Martinez, Juan	38
Miller-May, Angela	43
Rogers, John W., Jr.	75

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Beatty, Hon. Joyce:	
ABFE Magazine December 2015 Edition	77
Written statement of Altrius Capital Management	80
Written statement of Cabrera Capital Markets, LLC	81
November 2015 issue of Emerging Manager Monthly	83
Written statement of Garcia Hamilton & Associates	85
Metropolitan Transit Authority of Harris County press release entitled, "METRO Pension plans Adopt 'Garcia Rule' for Investment Managers," dated October 19, 2015	87
Written statement of the National Association of Investment Companies	88
Written statement of the National Association of Securities Professionals	91
Written statement of New York City Comptroller Scott M. Stringer	94
Procurement Guideline for Investment Management Services	98
Steil, Hon. Bryan:	
Chicago Teachers' Pension Fund 123rd Comprehensive Annual Financial Report 2018	99

DIVERSE ASSET MANAGERS: CHALLENGES, SOLUTIONS, AND OPPORTUNITIES FOR INCLUSION

Tuesday, June 25, 2019

U.S. HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON DIVERSITY AND INCLUSION,
COMMITTEE ON FINANCIAL SERVICES,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:06 a.m., in room 2128, Rayburn House Office Building, Hon. Joyce Beatty [chairwoman of the subcommittee] presiding.

Members present: Representatives Beatty, Clay, Green of Texas, Gottheimer, Lawson, Adams, Dean, Garcia of Texas, Phillips; Wagner, Budd, Kustoff, Hollingsworth, Gonzalez of Ohio, Steil, and Gooden.

Ex officio present: Representatives Waters and McHenry.

Chairwoman BEATTY. The Subcommittee on Diversity and Inclusion will come to order. I note that a quorum is present. Without objection, the Chair is authorized to declare a recess of the subcommittee at any time. Also, without objection, members of the full Financial Services Committee who are not members of this subcommittee are authorized to participate in today's hearing.

Today's hearing is entitled, "Diverse Asset Managers: Challenges, Solutions, and Opportunities for Inclusion."

I now recognize myself for 4 minutes to give an opening statement.

Thank you, everyone, for joining us for this hearing entitled, "Diverse Asset Managers: Challenges, Solutions, and Opportunities for Inclusion." This hearing addresses an often overlooked problem in the investment sector: the stark lack of diversity among money managers in the vast $71 trillion asset management industry. While affluence continues to accumulate for many, access opportunity remains unattainable for an entire group of financial professionals who are left out of the system.

In fact, according to a report by the Harvard Business School and the Bella Research Group, entitled, "Diversifying Investment", major diverse-owned firms represent less than 1 percent of assets under management across four asset classes: mutual funds; hedge funds; private equity; and real estate. Yet, empirical research shows that there is no statistical difference in performance between diverse-owned firms and their peers, even when adjusted for risk and compared to public market returns.

Today's hearing seeks to highlight solutions and opportunities for greater inclusion to increase the participation of minority- and women-owned firms in the asset management industry. This hearing also seeks to address the fallacy that diverse-owned firms are low-return social investments. We need to look closer into this mischaracterization, which oftentimes leaves diverse firms underutilized by institutional investors.

According to an analysis by Morningstar, Inc., only 2 percent of the assets in the ever-growing $12 trillion U.S. open-end mutual fund universe were managed exclusively by women, and just 2.5 percent of the funds had a woman as the sole manager.

Women are also less likely to manage active funds and more likely to run funds of funds, which own other funds, rather than individual securities. In this case, diversity is present, but inclusion is still a far reality. Unfortunately, wealth is still concentrated in the hands of a few financial entities with very little opportunity for diverse-owned firms.

If the criteria established to enter the market and succeed in this industry is devised arbitrarily, only a handful of firms will be able to participate. It is also important to remember that so much of the asset management is relation-driven. This country is serious about closing the ever-widening wealth gap, and I am proud to have today's hearing to help establish new solutions for addressing the challenges of asset managers.

I reserve the balance of my time for the Chair of the full Financial Services Committee, Chairwoman Waters.

The Chair now recognizes the ranking member of the subcommittee, Mrs. Wagner, for 4 minutes for an opening statement.

Mrs. WAGNER. Thank you, Madam Chairwoman, for holding this hearing today to address the underrepresentation of women- and minority-owned firms in the asset management industry.

Asset management is one of the country's most profitable industries, with over $100 billion in annual profits. Despite massive growth in this sector, women and minorities are underrepresented. The underrepresentation of minority- and women-owned asset management firms is a trend across all major asset categories including mutual fund management, hedge fund ownership, and private equity management.

In 2016, only 1.1 percent of the $74 trillion in U.S. assets was managed by minority- and women-owned firms. By 2018, that number had slightly increased to 1.3 percent. We can and should do better. We know that, on average, firms with diverse managers or owners have equal or better returns compared to their less diverse competitors.

A 2017 GAO study found that minority- and women-owned asset managers face various challenges when competing for investment management opportunities with institutional investors, including retirement plans and foundations. Specifically, GAO found that such firms must overcome investor and consultant brand bias, perception of weaker performance, and a lack of infrastructure.

The GAO report identified four ways to increase access to funds for minority- and women-owned firms: leadership commitment; removal of potential barriers; outreach to women- and minority-owned firms; and clear communication about priorities and expec-

tations to increase diversity. We have seen large firms in the industry demonstrating their commitment to initiatives that focus on finding women and minority managers such as the Emerging Managers Program, which has proven to be very successful.

Additionally, large firms have assigned assets to smaller women- and minority-led funds. But this issue goes beyond lack of access to funds. Diversifying the talent pool is also key to diversifying the asset management industry. The lack of female and minority students enrolled in STEM programs at the high school and university levels has led to a pipeline problem that creates major barriers to increasing diversity among asset managers. Programs to increase participation in STEM disciplines are critical to fostering meaningful diversification of the industry.

Meredith Jones, who is testifying today, is an alternative investment consultant, and author of, "Women of The Street: Why Female Money Managers Generate Higher Returns." Ms. Jones has written numerous articles on diverse asset managers, including a Rothstein Kass Institute study entitled, "Women in Alternative Investments: A Marathon, Not a Sprint."

They include things like educating investors on the benefits of diverse asset managers, educating firms on how the diversity dividend can better directly impact their bottom line, and providing financial investment literacy education to girls and people of color at a young, young age.

Like all firms, minority- and women-owned firms should have an equal opportunity to manage funds for institutional investors. Today's hearing should focus on discussing strategies that have proven successful for removing those barriers and leveling the playing field.

I thank the witnesses for being here, and I look forward to discussing the key practices. I reserve the balance of my time.

Chairwoman BEATTY. The Chair now recognizes the ranking member of the full Financial Services Committee, the Honorable Patrick McHenry, for one minute.

Mr. MCHENRY. Thank you, Chairwoman Beatty, and I thank you and Ranking Member Wagner for your commitment to this very important discussion on diversity and inclusion.

Like all industries, when it comes to the asset management industry, everyone who participates deserves an equal playing field. But the statistics suggest that for minority- and women-owned firms, that is not the case.

In 2016, only 1.1 percent of the $74 trillion in U.S. assets was managed by minority- and women-owned firms. By 2018, that number had risen slightly, to 1.3 percent—significant dollar figures but not significant in percentage. We need to identify the obstacles that are causing women and minorities to be underrepresented in this key industry and figure out strategies to address that.

I think this hearing is an important one, and I look forward to hearing the testimony from our witnesses, and the broader discussion outside of the jurisdiction of this committee on how we can actually further diversity and inclusion in a comprehensive way.

And I yield back.

Chairwoman BEATTY. I am very pleased to announce that we have a couple of special guests in the audience today. I am pleased

to acknowledge Skip Springs III, President and CEO of the Executive Leadership Council, and with him, Libby Rice. I am also very pleased to acknowledge Ronald Reeves, the Chief Diversity and Inclusion Officer from AIG, who is in attendance in this hearing today. They are both experts in this field. Ron leads the extraordinary efforts of fostering the culture of inclusion at AIG, which has been successful in attracting and retaining talent.

I would like to thank the witnesses for being here, and we welcome the testimony of a very diverse and distinguished panel of witnesses.

First, I would like to welcome the testimony of Juan Martinez, vice president and chief financial officer of the John S. and James L. Knight Foundation. Mr. Martinez is responsible for the Foundation's financial management, reporting, and regulatory compliance, overseeing the management of its $2.4 billion investment portfolio, and partnering with the program staff in development of grants and program-related investment. He is an alumni of Florida International University, Miami Dade College, and the Wharton School of Business.

Second, we welcome the testimony of John Rogers, Jr., chairman, CEO, and chief investment officer of Arial Investments. He is a member of the board of directors of McDonald's, Nike, and the New York Times company, and he serves as Vice Chair of the Board of Trustees of the University of Chicago. He served as the Co-Chair for the Presidential Inaugural Committee in 2009, and more recently, he joined the Barack Obama Foundation's board of directors.

He is also the founder of Ariel Community Academy, which works throughout the Chicago community to provide world-class educational opportunities with a focus on financial literacy, and I thank him for that. In 2008, John was awarded the Princeton University's highest honor, the Woodrow Wilson Award, presented each year to an alumni whose career embodies the commitment to national services.

Third, we welcome the testimony of Brenda Chia, Founding Board Member and Co-Chair, Association of Asian American Investment Managers (AAAIM). From 2007 until 2012, Brenda was the first president of the Association of Asian American Investment Managers, an organization that brings together institutional capital and qualified Asian American investors across major asset classes to conduct business and build alliances. She holds a bachelors of science degree in computer science and an MBA from Harvard Business School.

Brenda, it is nice to see you again, and thank you for attending our Members' Roundtable on June 4th and providing insight into the challenges within the industry.

Fourth, we welcome the testimony of Angela Miller-May, chief investment officer of the Chicago Teachers' Pension Fund. Angela Miller-May directs a $10 billion pension fund that services a membership of over 63,000 retired Chicago public school teachers. She earned a BA in economics from Northwestern University and holds an MBA in accounting from DePaul University.

And finally. we welcome the testimony of Meredith Jones, an alternative investment consultant and author whose research focuses

on emerging managers. Until the acquisition of Rothstein Kass by KPMG, Meredith served as director of the Rothstein Kass Institute, an alternative investment think tank. At the Institute, she created the first Women in Alternative Investment Hedge Fund Index to measure performances of female hedge funds and provide equity managers.

The witnesses are reminded their oral testimony will be limited to 5 minutes. And without objection, your written testimony will be made a part of the record.

Thank you for indulging me. I have had swollen vocal cords for 5 days, and it is getting better.

Mr. Martinez, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF JUAN MARTINEZ, VICE PRSIDENT/CHIEF FINANCIAL OFFICER, AND TREASURER, THE KNIGHT FOUNDATION

Mr. MARTINEZ. Chairwoman Beatty, Ranking Member Wagner, and members of the subcommittee, thank you for the opportunity to testify about the Knight Foundation's experience and the research Knight has sponsored on the state of ownership diversity in the investment management industry.

First, let me provide a little background on the Knight Foundation for context. The John S. and James L. Knight Foundation supports informed and engaged communities through its funding of charitable programs in 26 U.S. communities, the arts, and journalism. Since its inception in 1950, Knight has spent $2.5 billion on its important mission, an average of 6.1 percent of assets annually. That spending is funded from our endowment.

Because of our investing, Knight has also been able to grow our endowment from the original $660 million contributed by the Knights and their mother, Clara, to $2.3 billion, meaning that our impact will be able to continue into the future.

So, how Knight invests is vital to us. We believed that the results demonstrated that we have done a good job, except when it came to diversity. We assumed that because diversity adds value, and we had done well, our investment program must contain it. We were wrong.

When we were asked, in 2010, how much of our portfolio was invested by minority- and women-owned firms, we found that only $7.5 million was being managed by an African American-owned firm. That was, to say the least, a surprise. With the support of our board of trustees, we became intentional in searching out opportunities to invest with women- and diverse-owned firms.

Today, about 34 percent, or $749 million, of our endowment is being managed by 14 women- or diverse-owned firms, and that portfolio is meeting our return expectations.

As our investments with diverse firms grew, we heard that Knight was unique. As a foundation built on the values of fact-based journalism and its positive impacts on communities, we saw the need for solid research and objective facts to inform the discussion. We engaged Bella Private Markets, led by recognized industry experts Dr. Josh Lernes from Harvard Business School and Ann Leamon, to conduct a rigorous study on the state of diversity in the

investment industry. To ensure that their work was based on the highest-quality data available, Bella used several leading commercial data providers that were already used in academic research.

Among the study's major findings was that women- and diverse-owned firms managed a very small percentage, about 1.3 percent, of assets managed by U.S.-based firms, with their median fund size typically smaller than non-diverse peers.

Bella found no statistical differences in investment performance either, and certain investors, like public funds, represented a disproportionately larger percentage of the investments in diverse-owned funds.

Because the question of potential differences in investment performance is so important, Bella examined it in two ways: by performing a variety of statistical analyses; and by examining the distribution of investment performance. They found no statistical evidence that women or minority ownership negatively impacts performance and that women- and diverse-owned firms were over-represented in the top quartile investment performance for all funds. This contradicts the long-held belief that investing with women- and diverse-owned firms results in lower returns.

Bella's research also found that the penalty for underperformance is larger for diverse-owned managers.

Certainly, these studies provide new insights and raise new questions for future research. But the reports highlight the difficulty in obtaining data on ownership and investing diversity in the industry as an impediment for future research.

Knight, and a growing number of other investors, see an investment opportunity here. We hope that the continuing research spurs others to join us and to pursue this conversation further.

Thank you, Madam Chairwoman.

[The prepared statement of Mr. Martinez can be found on page 38 of the appendix.]

Chairwoman BEATTY. Thank you.

Mr. John Rogers, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF JOHN W. ROGERS, JR., CHAIRMAN, CEO, AND CHIEF INVESTMENT OFFICER, ARIEL INVESTMENTS

Mr. ROGERS. Chairwoman Beatty, Ranking Member Wagner, Chairwoman Waters, and members of the subcommittee, thank you for inviting me to speak with you. I would also like to thank the excellent staff for their thoughtful work.

My name is John Rogers. I am the Chairman and CEO of Chicago-based Ariel Investments, founded in 1983, the first African-American-owned asset management firm in the country. I am the product of two pioneering parents. My father was an original Tuskegee Airman and my mom was the first African-American woman to graduate from the University of Chicago Law School in 1946.

Fast forward to today. The economic prospects of the black community have stalled or even gone backwards. For example, Ray Boshara of the St. Louis Fed reports that between 1992 and 2016, college-educated whites saw their wealth soar 96 percent while college-educated blacks saw theirs fall 10 percent.

We are here to discuss asset management, one of the largest sources of wealth, power, and jobs in today's economy. Of the wealthiest Americans on the Forbes 400 list, over 30 percent generated their wealth in financial services or real estate. The top 3 private equity firms control over 2 million jobs.

Asset management offers a stark reminder of the obstacles preventing people of color from fully participating in our capitalist democracy. Your committee oversees the country's largest banks. The 4 largest banks hire hundreds of asset management firms to invest nearly $1 trillion across 3 distinct pools of assets: their own corporate pension plans; their own 401k plans; and externally managed wealth management platforms. You can essentially "round down to 0" the assets managed by diverse firms across those 3 buckets.

But there is no shortage of high-performing diverse-owned firms. For example, Vista Equity Partners is one of the best performing private equity funds in recent years, Brown Capital was named Morningstar Manager of the Year in 2015, and our Ariel Fund is the top performing fund in its category since the financial crisis ended. Yet, when compared to the largest asset management firms, we are all essentially rounding errors. Vista, the largest black-owned private equity firm, according to Black Enterprise, is less than 1 percent the size of BlackRock, which manages over $6.5 trillion.

As Reverend Jackson often says, "Baseball became a better sport when Jackie Robinson was allowed to play." The financial services industry is well-served by dynamic leaders such as Eddie Brown, Mellody Hobson, Gilbert Garcia, and Robert Smith. These folks are job creators, philanthropists, and vitally important role models in our community. Recently, of course, we all saw Robert commit to erase the student loan debt of the entire 2019 graduating class of Morehouse College.

I offer three thoughts on why barriers persist in the asset management industry. First, there is a tendency to work with people you know, grew up with, and with whom you are comfortable. Second, due to implicit or unconscious bias, many do not think of black and brown leaders as top-performing money managers.

Third, many banks, corporations, and nonprofits have embraced well-intentioned supplier diversity programs emphasizing construction, catering, janitorial services, and other commodity-related fields. However, this approach too often excludes us from the parts of the economy where the actual wealth, power, and jobs are created today. I would go as far as calling it a "modern-day Jim Crow."

I would recommend directing institutions under the purview of this committee to implement three solutions. First, I support the proposed legislation creating a "Rooney Rule" for banks and other entities. Second, measure all spending by specific category, including asset management and professional services, and replace the term "supplier diversity" with "business diversity." Third, CEOs and their management teams can be held accountable by this committee for providing meaningful transparency and making measurable progress year by year.

In closing, tackling economic inequality through business opportunity is more important than ever. As Dr. King predicted, African Americans could only be liberated from the "crushing weight of poor education, squalid housing, and economic strangulation" by being "integrated with power into every level of American life."

Thank you.

[The prepared statement of Mr. Rogers can be found on page 75 of the appendix.]

Chairwoman BEATTY. Thank you.

Ms. Chia, you will now be recognized for 5 minutes for an oral presentation of your testimony.

STATEMENT OF BRENDA CHIA, FOUNDING BOARD MEMBER AND CO-CHAIR, ASSOCIATION OF ASIAN AMERICAN INVESTMENT MANAGERS (AAAIM)

Ms. CHIA. Chairwoman Beatty, Ranking Member Wagner, Chairwoman Waters, and members of the subcommittee, thank you for the opportunity to discuss the experience of Asian Americans and Pacific Islanders in the investment industry.

I am Brenda Chia, a founding board member and current Board Co-Chair of the Association of Asian American Investment Managers. That is a mouthful, so we acronym it to AAAIM. The organization was founded in 2006 as a national nonprofit dedicated to the advancement of Asian Americans and Pacific Islanders, also known as AAPIs, in the field of investment management. AAAIM provides a platform for professionals in the industry to meet, network, and create business opportunities. We deliver our work through educational events, face-to-face and online networking, and advocating for the AAPI community through opportunities such as this hearing. The current network comprises over 3,000 institutional investors and fund managers.

I would like to highlight a specific challenge faced by AAPIs, which is the model minority stereotype. It is broadly defined as the perception that AAPIs are successful and do not need help in any field. AAPIs are 5.6 percent of this country's population. As you have heard, minority- and women-owned firms manage around 1 percent of assets in the aggregate.

Clearly, the model minority stereotype does not hold here. It is not about enriching specific investment managers; it is about the impact on our community. Studies have shown that minority- and women-led firms invest in more diverse entrepreneurs and businesses. We look "outside the box" for opportunities. This in turn benefits our communities and creates more jobs, without sacrificing the returns that institutional investors need to meet their funding obligations.

The investment business is one that thrives on scale. The start-up costs and fixed costs associated with smaller firms are such that they do not generate impact until they reach threshold sizes, which varies by asset class. For example, a public equity fund that manages $1 billion may generate around $5 million in annual fees. This may sound significant but the costs of running a small fund are high due to compliance, salaries for qualified staff, and client service. Therefore, to impact one's community, total fund size needs to be an order of magnitude larger. Without broader access to capital,

minority- and women-led funds continue to be marginalized because their assets are restricted.

Several large State pension funds have come to the conclusion that they need to create a farm system by which they can invest with smaller firms, many of which also happen to be ethnically and gender diverse. This creates an environment where the small firms today could become the next generation of successful firms with trillions of dollars under management.

Taking this one step further, in order to achieve a level playing field, we propose that minority and women managers not be limited to "set aside" allocations where we compete against each other for a small slice of the pie. We would like to compete for the whole pie.

AAAIM stands ready for AAPIs to have open and fair access. Congress can play a critical role in this. While you cannot legislate quotas or mandate criteria selection, Congress can create opportunity. The Federal Government has trillions of dollars of pension funds and other capital under management. Congress could mandate that funds under Federal management be subject to regular and periodic open competition.

Congress could also recommend that Federal agencies ensure that qualified minority- and women-led funds are considered as part of the RFP evaluation process. We urge Congress to consider adopting a Rooney Rule for the investment industry. By creating opportunities, Congress can take some small steps towards ensuring a more diverse pool of fund managers. It would be a meaningful step toward opening doors and creating greater transparency.

Thank you for your leadership on this issue of diversity and inclusion, Chairwoman Beatty, and thank you to all the committee members.

[The prepared statement of Ms. Chia can be found on page 30 of the appendix.]

Chairwoman BEATTY. Thank you.

Ms. Miller-May, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF ANGELA MILLER-MAY, CHIEF INVESTMENT OFFICER, CHICAGO TEACHERS' PENSION FUND (CTPF)

Ms. MILLER-MAY. Chairwoman Beatty, Ranking Member Wagner, Chairwoman Waters, and members of the subcommittee, I am honored to be here today, and I thank you for the opportunity to testify.

My name is Angela Miller-May and I am the chief investment officer for the Chicago Teachers' Pension Fund (CTPF). I would like to recognize our board of trustee president, Mr. Jeffery Blackwell, remaining trustees, and our executive director, Mr. Charles A. Burbridge, who support and drive the diversity and inclusion goals and the culture of the Chicago Teachers' Pension Fund.

CTPF serves a membership base of over 66,000 members. It is important to our members that we demonstrate diversity by hiring asset managers, brokers, and vendors who reflect the diversity of the membership. In my testimony, I will demonstrate how the Chicago Teachers' Pension Fund embraces diversity and inclusion.

CTPF is a $10.8 billion fund and remains at the forefront of pension and retirement systems throughout the U.S., ensuring that investment firms owned by minorities, women, and persons with disabilities have access to the many opportunities to conduct business with CTPF.

Per Illinois Pension Code, an aspirational goal of not less than 20 percent of investment advisors shall be minorities, women, and persons with disabilities. We have far exceeded that goal by investing 44 percent, or $4.6 billion of total assets, with minority-, women- and persons with disabilities-owned firms as of March 31, 2019.

Of the 44 percent, 58.2 percent is invested with women-owned firms, 25.3 percent is invested with African-American-owned firms, 12 percent is invested with Latino-owned firms, 3.3 percent is invested with Asian-American-owned firms, 0.6 percent is invested with persons with disabilities-owned firms, and 0.3 percent is invested with multiple minority-owned firms.

From an asset class standpoint, CTPF has exceeded its diversity policy goals in the equities, fixed income, and alternative spaces. Our policies are simply guidelines that establish minimum targets.

It is a part of our fiduciary duty to invest the Fund's assets in a prudent manner, and investing with diverse asset managers that demonstrate outperformance and deliver strong returns is more than prudent. It is wise.

Having diverse managers in your portfolio brings diverse thoughts, improved decision-making, and solutions in a current market environment that is challenged. The risk managers perform the same, if not better, than non-diverse managers. They are a key source of diversification as they complement large managers that seek larger assets and deals. There is room for all.

As a prudent investor, it does not make sense to not take advantage of the unique opportunity that investing with diverse managers presents. As an underfunded pension fund, we simply cannot afford to forego investing with diverse managers. Diverse managers exhibit strong returns but they are dramatically underrepresented in every asset class. They face many challenges such as investor and consultant brand bias, perception of weaker performance, size and infrastructure, and industry trends.

Key practices that CTPF has used to increase opportunities for diverse managers include the following:

We have secured the commitment of our legislators, trustees, and senior management. We have removed barriers. We have implemented policies. We have tracked our performance in reference to our policy goals. By establishing a process of outreach and engaging with organizations that promote diversity, like NASP, NAIC, ILPA, New American Alliance, and Accelerate Investors, just to name a few.

Investors have the greatest power to effect change in the asset management industry. In the Illinois Pension Code, it is declared to be a public policy of the State of Illinois to encourage diversity and inclusion.

While we take baby steps, Congress can move the needle and create opportunities for diverse managers on a much larger scale. If

only to listen to my testimony, I hope that I have played a small part in expressing the importance of diversity and inclusion.

Thank you, Madam Chairwoman.

[The prepared statement of Ms. Miller-May can be found on page 43 of the appendix.]

Chairwoman BEATTY. Thank you.

Ms. Jones, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF MEREDITH A. JONES, INVESTMENT RESEARCHER AND AUTHOR

Ms. JONES. Thank you very much, Chairwoman Beatty, Ranking Member Wagner, and Chairwoman Waters. I appreciate the invitation to be here. I recognize that I submitted an enormously dense written testimony with a lot of facts and figures, so I am not even going to attempt to read that. I just would like to give you a few highlights.

I have been in this industry for about 20 years. I have been researching diverse asset managers for almost a decade. During that period of time I have come to one very positive conclusion, and that conclusions is, without reservation, that every single person, from Wall Street to Main Street, is poorer because we don't have more diverse asset managers in the investment management and asset management business. And I know that is a bold statement but I want to say that because of three primary things.

Number one, we have discussed some about the performance of diverse asset managers. Most studies that are available show that their performance is either comparable to or higher than a non-diverse cohort. It doesn't matter where you look. If you look at diverse asset manager outperformance, if you look at the addition of diverse asset management members to non-diverse firms, you see a boost in performance. And if you look at the representation of diverse firms in the top quartile, again you see an overrepresentation. Even if you look at firms that are managed by people who grew up poor, they outperform.

So what does this tell me? This tells me that every investor out there, from the wealthiest individual to the firemen, policemen, and teachers who depend on well-funded pensions to be able to ensure their retirement, are not achieving the returns that they should be achieving.

Number two, we know that minorities and women have a tendency to have different cognitive and behavioral preferences. These preferences lead to differentiated investment behavior, and differentiated deal flow, and that can actually have pretty big impacts, again, for all investors. It can provide liquidity when markets are melting down, because it has been shown, for example, that women sell into downwardly trending markets less than men. It can provide differentiated returns when it comes to private equity, which is sitting on a mountain of dry powder it needs to invest, and yet diverse private equity managers actually tend to find different deals with lower valuations, with better returns.

So, we could actually mitigate market bubbles and bursts and we could actually provide additional diversification within portfolios if we had more diverse members in the industry.

And then, finally, because we have so few diverse individuals within the asset management spectrum, we see investment not coming into certain parts of the world. If you look at venture capital, for example, two-thirds of venture capital is concentrated on the East Coast and the West Coast, and the vast majority of it is focused with white male founders. In fact, if you look at the amount of venture capital that goes to female founders, that is 2.2 percent over the course of the last 2 years. If you look at the percent of venture capital that went to minority founders, including blacks and Latinos, over history, that has been about 1 percent.

That is not acceptable. Why is that not acceptable? It is not acceptable because we are ignoring an enormously powerful consumer group. Women, right now, control 51.3 percent of the investable wealth. That is going up to 66 percent. Blacks actually saw an increase in income over the $200,000 mark of 138 percent. Latinos are the fastest-growing economic demographic out there. So by not funding and meeting their needs, we are in dire trouble of not having a robust economy, and we are also not creating jobs in these underserved areas.

And so if you take all of that as truth, and believe that you are poor, then obviously we need to fix it, because I think no one here wants to know that firemen, policemen, and teachers, and you, yourselves, may be less well off. There are a couple of different ways, I think, to address that. The primary way is education, making sure that investors know that they are missing out if they do not encourage diversity within their asset management firms. My experience is that if investors demand it, Wall Street will respond.

The second thing is to educate asset managers about the benefits of having diverse members on their teams, and then also the risks that they face if they don't, not being able to capture the assets under management, having investors choose other firms.

And then finally, we have to choose to educate women and people of color at a very early age. They are not getting access to education that shows this is a robust career opportunity for them, and they are also not getting the experience and the knowledge to be able to do that, and I think that we could make huge strides in that area.

Thank you very much.

[The prepared statement of Ms. Jones can be found on page 33 of the appendix.]

Chairwoman BEATTY. Thank you. I now recognize myself for 5 minutes for questions.

Let me again just say thank you to all of you for your testimony. You gave us a lot to digest this morning. We have heard a lot about the shortage, that there is no shortage of high-performing, diverse firms. From Wall Street to Main Street, we are getting poorer if we don't make a change. That, in part, is why we are here.

I will start out with you, Mr. Rogers. We have heard a lot of terms used today, for example, the "Rooney Rule", but we have also heard, "emerging managers." We have heard "business diversity", and I want to thank you for sharing that with us earlier and I assure you that we are now saying, to all of the financial institutions, tech companies, and everyone who comes before us or meets with us, that our top priority is business diversity.

Tell me, when you hear the term "emerging managers", which was once characterized as a term used for women- and minority-owned firms who were traditionally underrepresented in asset management, what are your thoughts? Do you think there are any unintended consequences as a result of that term?

Mr. ROGERS. Thank you so much for following up on these important issues. I really, really appreciate it.

I think there are a couple of unintended consequences. I think, number one, if Melanie Hobson was here, she would tell you that when you go to conferences on emerging managers and you talk to leaders in the industry, because it was always focused on the size of your firm, now 80 percent of emerging managers are typically white male firms, people who have left majority firms, started their own firms, and now, all of a sudden, they qualify under emerging. And a lot of well-meaning, progressive decision-makers think they have hired minority firms when, in reality, they haven't. So, I think that is the number one concern.

The second concern is that when I started in 1983, people always said, "You need to get to size, and develop a performance track record so they will hire you." Now what has happened is once you got over the magical $2 billion or $3 billion in a lot of States, people said, "Now you are too big. We are looking for the next John Rogers. We don't want to hire you." And I think that has been a problem in our industry, is whenever we get to that $2 billion or $3 billion, people stop being interested, and I think it is the reason so many small minority firms, as they got toward that level, actually never get above it and then fall apart and actually close because of that issue.

So I think that is very critical, and we have to make sure that we understand that to be successful, as we said, these big firms have trillions of dollars under management. We can't compete unless we get to $20 billion, $30 billion, $40 billion, where we can hire the best people, have the best compliance officers, the best technology officers, to really be able to be on the even playing field. So, that is another big unintended consequence of emerging.

Chairwoman BEATTY. Thank you. The next question is for you, Mr. Martinez, and you, Ms. Chia.

Empirical research found that funds managed by diverse-owned firms were actually overrepresented in the top-performing quartile of mutual funds, hedge funds, and private equity, and yet consultants are sometimes seen as the gatekeepers for assets, are often biased against diverse-owned firms because they have all these preconceived notions.

Tell me your thoughts. Are consultants providing equitable access in this field, or not?

Mr. MARTINEZ. Thank you, Madam Chairwoman. I think that there is an incredible power to incumbency. Consultants favor the firms they know extremely well and that they have extremely long relationships with, and as a result, it is incumbent on us, as customers, to be able to say to a consultant, "We care about diversity."

Chairwoman BEATTY. I am going to rush you only because I have 39 seconds, and I want her to also answer. And you can also answer in short answers, like yes or no.

Ms. CHIA. I agree with Mr. Martinez on the importance of incumbency. Most consultants, when they do a new fund, 70 percent go to current investment managers.

I would also like to add the personal risk of making a decision with an unknown manager. There is bias against voting against yourself or with someone you know.

Chairwoman BEATTY. Okay. Thank you. I only have 8 seconds. Would you all support a version of a Rooney Rule? Yes or no?

Mr. Martinez?

Mr. MARTINEZ. Yes.

Chairwoman BEATTY. Ms. Jones?

Ms. JONES. Yes.

Chairwoman BEATTY. Ms. Miller-May?

Ms. MILLER-MAY. Yes.

Chairwoman BEATTY. Ms. Chia?

Ms. CHIA. Yes.

Chairwoman BEATTY. Mr. Rogers?

Mr. ROGERS. Yes.

Chairwoman BEATTY. Thank you.

It is now my honor to yield 1½ minutes to the honorable chairwoman of the full Financial Services Committee, Chairwoman Maxine Waters.

Chairwoman WATERS. Thank you, Congresswoman Beatty, for all of the work that you are doing dealing with this issue, and I thank all of our witnesses who are here today.

I want you to know that I established this subcommittee of the Financial Services Committee because it is time for Members of Congress to get serious about diversity and inclusion. I have been working on this for 30 years now. I started in California with the pension funds there, and we were able to get started in that time with the emerging managers, as you have described, and I understand the limitations with that.

But it is extremely important that we open up these avenues for involvement, because I saw what it was able to do with individuals like Victor MacFarlane, who was one of the beneficiaries of the emerging fund, and also Mr. Marx Cazenave, and all of those who came forward back in 1990-whatever, 1991, when we got involved. And also, I have seen when we have comptrollers around the country like you had in New York at one point, who was able to open up these opportunities.

So, establishing this subcommittee gives focus to this issue. And now all that we need is a commitment from the Congress of the United States, the Members of Congress, to do the right thing. We are going to move forward, very aggressively, and we are not going to act in some of the ways that we have acted since I have been here in Congress, where we get turned down when we have had some meetings, by those who should be opening up opportunities, and we let it go. It won't be that way anymore.

I thank you for being here today. We are honored. We are going to be aggressive, we are going to be persistent, and I thank all of those who have been struggling and who have been helping out with this issue for so many years.

I yield back. Thank you.

Chairwoman BEATTY. Thank you very much to our Chair. Now, I have the distinct honor of going to the ranking member of the subcommittee, and my good friend, the distinguished ranking member, Ann Wagner, for 5 minutes for questions.

Mrs. WAGNER. Thank you, Madam Chairwoman, and thank you all for your testimony and presence here today.

Like all asset managers, minority- and women-owned asset managers deserve an equal opportunity to manage funds for institutional investors. Firms should not be disadvantaged due to the composition of their ownership.

Ms. Jones, from your work in this area, what are some of the most effective ways to remove obstacles for diverse asset managers and increase their access to funds? You may want to also finish your answer to the chairwoman's previous question.

Ms. JONES. I think I can incorporate that into my answer.

I look at this as being a three-pronged process. I don't think that—because this is a complicated issue, I don't see that there is a simple solution, unfortunately. So the way that I look at it, we really have to consider three different avenues of solution here, the first being education, as I mentioned. We have to educate investors about what they are missing out on. We have to educate asset managers on how do a better job with diversity and inclusion and what they may be missing out on. And then we really have to educate girls and people of color at an early age so that we have an effective pipeline.

I am a member of the board of directors for a nonprofit called Rock the Street, Wall Street. We provide year-long financial and investment literacy education to high school girls. Ninety-seven percent of them have a higher understanding, a better understanding of asset management and investment by the time they are done. Sixty-seven percent say that they would actually opt into an asset management major or minor going forward. So, that is pretty huge. And 69 percent of our girls are people of color. So we are trying to build the pipeline. That is number one.

Number two, we have to engage, and part of that engagement is encouraging firms to disclose things like their diversity statistics. That way, consumers can make an informed decision about which firms offer the best chance at getting cognitive and behavioral alpha. So it also allows us to be able to track progress.

The third thing would be, I think, mandates, and that is where the Rooney Rule comes in. Without those first two, we risk not having a great pipeline, and we also risk a fair amount of gamesmanship when it comes to people trying to take advantage of these types of mandates.

I have seen this happen already, where people who are—where firms are giving ownership to diverse individuals in order to disqualify for these mandates, but it doesn't create long-term change. It doesn't help build the next generation. So I think we need the full enchilada in order to be successful.

Mrs. WAGNER. And in fact, I will say, Ms. Jones, we have had panelists and witnesses who have talked about how important it is, not just for the candidates who are being interviewed but for the interviewers and those who are making those decisions to also be people of color and women and a more diverse panel.

Asset management is a $74 trillion industry and it continues to grow every year, but the diversity of asset managers in the industry has obviously remained low, both in terms of the number of diverse-owned firms and funds as well as the number of assets under management.

Ms. Jones, what are some of the ways to increase the number of women and minorities in this industry, if you want to elaborate some more?

Ms. JONES. Yes. I think that one of the important things we have to remember is it is not just the ownership that is the problem; it is the actual participants in the industry. If you look, for example, at private equity, only 11.7 percent of private equity executives are women. If you look at venture capital, only about 8 percent of investment professionals in venture capital are women. Eighty-two percent of venture capital firms don't have a single black investment partner with them.

These are where the next generation of fund managers come from. This is where the next generation of people of color and women who are going to own a business come from. So, we actually have to address that problem.

Mrs. WAGNER. And I know that you have done a great deal of work, and in my limited time here, related to increasing the participation among women and minorities in the STEM program, and it is something that I also talk about a great deal, how can we increase the number of women and minorities who are enrolling in STEM courses and other programs that could lead to a career in asset management? It is not just through financial services.

Ms. JONES. Right.

Mrs. WAGNER. It is across-the-board. Business courses have remained low in terms of their enrollment. I know you may not have time to answer, but—

Ms. JONES. We have to start much earlier than we think. Unfortunately, right now, most of the intervention is focused around the college and MBA level.

Mrs. WAGNER. Right.

Ms. JONES. We have to start earlier. People start opting out at age 11, so unless we can get public-private partnerships to intervene and provide education and inspiration for women and people of color at that stage, then a lot of people have already opted out.

Mrs. WAGNER. Thank you so much. I yield back.

Chairwoman BEATTY. Thank you. The gentlewoman from North Carolina, Ms. Adams, is recognized for 5 minutes.

Ms. ADAMS. Thank you, Chairwoman Beatty, and thank you for convening this timely hearing, and to all of the witnesses, thank you very much for being here today to discuss the importance of diversifying our asset managers.

We have said time and time again here in this committee and in the larger committee that making an investment in diversity and inclusion is not only the right thing or the moral thing to do, the data shows us it makes good business sense. Organizations make smarter decisions, they function more effectively, and they experience increased productivity and greater profitability. But yet, minorities and women continue to be underrepresented.

Let me begin my questioning by indicating that investors do rely on the advice from investment consultant firms about which management firms are best qualified to manage their investments, but if the investment consultant firms are biased against diverse-owned firms because of preconceived notions that they are too small or risky, they may not be getting the same opportunities as other firms.

Mr. Rogers and Ms. Chia, what challenges have you faced as a diverse asset manager being contacted by, or getting meetings with investment consultants about managing funds?

Mr. ROGERS. Over the 36 years, we have had varying results with different consultants. There are some extraordinarily open consultants who want to work with diverse firms, who believe in it. Early in our career, we would not have been able to make it to the next level without those types of consultants. And I know with the Knight Foundation, a lot of their work, they have worked very carefully with their consultant, Cambridge Associates, to be able to get the job done.

At the same time, there are a lot of consultants who, as I came along, had never had an African-American professional or a woman in a leadership role in their organizations. They weren't used to interacting with people of color and diverse communities. So, of course, when they were being pushed by their clients to do it, they got resistance, because as we all know in this country, there is a lot of anti-Affirmative Action sentiment, and it shows up in lots of different ways, whether it is through college admissions to, again, the business world. And so I think that is a real challenge.

Ms. ADAMS. Okay.

Mr. ROGERS. The way to overcome that is you have to have—the customer has to demand that the consultant live up to the values of the institution that has hired them.

Ms. ADAMS. Okay. Great.

Ms. Chia?

Ms. CHIA. I will second that, and we have seen some State pension funds be the real leaders in this area, and AAAIM would like to see more pension funds and more endowments and foundations step up. And as Mr. Rogers said, "deliver on the values of not just institutional investors but the pensioners they serve." We want to reflect that in the investment mandates.

Ms. ADAMS. Okay. Thanks very much.

Ms. Miller-May, what more could diverse asset managers do to make themselves more competitive as well as to build relationships and confidence with fund investment officers?

Ms. MILLER-MAY. I tell diverse managers the RFP should not be the first time that I am meeting you. They need to build relationships way before we get to the point where we are searching for a manager. It is paramount that we know who we are investing with, we understand their track record, we understand how they invest, how they source deals, how they execute deals.

We have what we call a First Friday where we see managers every first Friday of the month and we have them present to us so that when we do a search we know the managers who are out there in the universe of managers.

Ms. ADAMS. Okay.

Ms. MILLER-MAY. We are a trustee-led firm and a staff-led firm, not a consultant-led firm.

Ms. ADAMS. Thanks very much.

Mr. Martinez, your research indicates that funds are managed by diverse-owned firms who are overrepresented in the top-performing quartile of mutual funds, hedge funds, and private equity, despite being underrepresented in asset under management for each asset class, so what do you conclude about the notion that diverse asset managers perform poorly?

Mr. MARTINEZ. That is certainly false. There are managers who perform well and there are managers who perform poorly. That is across all gender and racial sectors.

Ms. ADAMS. Okay. Let me ask a yes-or-no question to everyone. Should companies be required to share their diversity data, including their use of diverse asset managers? Chairwoman Waters and Chairwoman Beatty sent requests and we didn't get what we thought we would get. Could you just tell me yes or no, should they be required to share their diversity data?

Mr. MARTINEZ. Yes.

Mr. ROGERS. Yes.

Ms. CHIA. Yes.

Ms. MILLER-MAY. Yes.

Ms. JONES. Yes.

Ms. ADAMS. All right. Thank you very much, Madam Chairwoman. I yield back.

Chairwoman BEATTY. The gentlelady yields back.

The gentleman from Wisconsin, Mr. Steil, is recognized for 5 minutes.

Mr. STEIL. Thank you very much, and thank you for holding today's hearing as to how we can further diversity and inclusion on what is a very important topic. In particular, we know that women- and minority-owned firms should not be disadvantaged.

But where I want to look is to the discussion about what kind of burdens we are placing out there a little bit, and Ms. Miller-May, I want to ask you a question. As you know, my district sits on the Illinois-Wisconsin border, and as I look south we see some real struggling with pensions kind of across-the-board, and so we naturally watch what happens, very likely out of these 66,000 members, some of them would live north in my district, which is part of the Census-designated Chicago metro area, in some areas.

Could you note what the actuarial accrued liability of your pension fund would be off of the 2018 annual report?

Ms. MILLER-MAY. It is 7 percent.

Mr. STEIL. I would ask unanimous consent to submit the Chicago Teachers' Pension Fund 2018 Comprehensive Annual Report to the record.

Chairwoman BEATTY. Without objection, it is so ordered.

Mr. STEIL. Because in there you will note that the actuarial accrued liability of the pension fund is $22.9 billion, as of June 30, 2018, which was in increase of $1.1 billion from the previous year.

So of that amount, do you know how much of the accrued liability is underfunded?

Ms. MILLER-MAY. We are 49 percent funded, so we are just at 51 percent.

Mr. STEIL. About $12 billion underfunded, with total assets in the fund in the neighborhood of $10.7 billion as of the last annual report.

And if we look at what those rates of return are for 2018, the 5-year rate of return, do you know what that was?

Ms. MILLER-MAY. For 2018—

Mr. STEIL. Nine percent. And so, 9 percent for 2018, 8.8 percent over the last 5 years, which is roughly in line with the S&P 500, depending on exactly how you calculate that out, and you guys are balancing things out, not purely in equities.

But if you look at the unfunded liability that is going to increase, as noted in the report, it will continually increase through 2039, and it will never be fully amortized. It will never be fully amortized under the current structure, which means that eventually these liabilities are going to be held by taxpayers in Chicago and in the State of Illinois.

Do you know what percentage of your assets are held in U.S. equities?

Ms. MILLER-MAY. Right now, 30 percent.

Mr. STEIL. Right. So, 29 percent, and if you looked at total equities across-the-board, including in the foreign, it is about 59, 60 percent.

And so as I look at some of the proposals that we have in front of us, from a legislative perspective, to continue to put burdens on publicly traded U.S. equities, and we have seen this kind of across-the-board, not only from this committee but kind of this growing trend across the board to continually put burdens and reporting restrictions specifically on U.S. publicly traded equities, which is exactly what your pension beneficiary is relying on, which is currently underfunded by about 50 percent.

And so out of your 66,000 members, they need to see that growth, and we have seen this trend in Congress to continue to put burdens on publicly traded companies for reporting requirements and other requirements, and I get concerned about the overall fund's investment performance and how we are going to have U.S. publicly traded companies performing in the United States against the burden that we are placing them on the SEC. Pension beneficiaries and retirees are reliant upon these returns, and their futures depend on it.

I couldn't speak more to the importance of making sure that we are not allowing women- and minority-owned firms, in any way, shape, or form, to be disadvantaged, but as we look at the policy solutions to address that, I think we have to be cognizant of the burdens that we continually put, from a reporting perspective, on publicly traded companies for the SEC to manage, and look for my colleagues across the aisle, and on this side, to continually be cognizant of the fact that we continually place burdens or propose burdens, in this case, on the SEC for reporting requirements, which continually build, and the impact that is having on pension funds in the United States, on retirees' assets in the United States. I think that is just terribly, terribly important.

I appreciate the time, and I yield back the remainder of my time. Thank you.

Chairwoman BEATTY. The gentleman yields back.

The gentlewoman from Pennsylvania, Ms. Dean, is recognized for 5 minutes.

Ms. DEAN. Thank you, Madam Chairwoman, and I am delighted that you are holding this subcommittee hearing today.

Just recently, about a week ago, in my office, we had a hearing on diversity and inclusion among business leaders, government leaders, and people in law, and it was a very stunningly, striking similar conversation. From Mr. Martinez, where you actually decided that you thought you were doing well in terms of diversity, but when you looked around, you weren't. That was one of the recognitions among the people, the leaders who were in my office, who said, "We actually looked at our organization, thought we were doing well with diversity, and we are just not."

The other thing that I noticed each of you said was to be intentional, to be deliberate, that if you recognize you have a problem, you have to deliberately do something about it.

I will start with you, Mr. Rogers. I was particularly struck by your testimony. You very quickly ticked through three of the areas that are a part of the problem, that notion of sort of birds of a feather flock together. We seem to just gather with the same type of folks, and one of my questions is, how do we break through that? And I think one of the answers is going to be education, as Ms. Jones will say.

The second one I thought was very interesting. There is an implicit and unconscious bias. Again, how do we break through that African American-owned, minority-owned, or women-owned money managers?

But one that I really want you to take a look at is the third notion. You say that many banks, corporations, and nonprofits have embraced well-intentioned supplier diversity programs, and that maybe gives us a skewed picture of diversity. Could you just speak to that third aspect first, Mr. Rogers?

Mr. ROGERS. I will try to put both of them together. A quick story, when I was president of the Chicago Park District 25 years ago, there were 9 museums on park land, so I was ex-officio on all of those boards. And I said to those folks that we wanted to be living the values of the City of Chicago and that the museums on park land should be using minority-owned firms, the same way the City of Chicago was doing it, under the leadership of Richard Daley. and before that, Harold Washington.

And what they did is they came up with an idea of a symposium, and the symposium was a one-day. We brought minority vendors together with the decision-makers from the museums. And they ended up with an invitation that was a man in a hard hat with a shovel, and the tagline was, "Digging Up Business." So when they thought of minority business leaders, they thought of us as people with a shovel, with a hard hat. Those are very honorable fields, those are very, very important, but they didn't think about us being their lawyer, their accountant, their money manager, their asset manager, or their investment banker, where again, the profit margins are so high today, and it is such an important part of today's economy.

So, it ties together this implicit bias, unconscious bias, this idea that we have looked at supplier diversity, which needs to be

changed because it really is 40 years out of date. The economy has moved to a financial services, professional services, and technology-based economy so we have to move with it if we want all of us to be included in our economy.

Ms. DEAN. Okay. Mr. Martinez, if you would go back on what you were talking about in terms of recognizing there was a problem and then you began this study, what are some of the other things that you learned as a result of your study?

Mr. MARTINEZ. One of the things to this idea of data and capturing data is how difficult it is to actually be able to do these studies and what that implies for governance. So, to be intentional is partly to hold people accountable, to get data on a regular basis and look at the portfolio and how that occurs.

To the point of performance, when you combine the issue of sort of smaller sizes of funds, but overrepresentation of performance, our belief is that there is overperformance, there is alpha, as we would say in the investment field, being left on the table, because you have managers who could be outperforming with greater assets and generating greater returns, who are not getting access to that.

Ms. DEAN. Okay. And finally on the issue of education, and maybe I will go to you, Ms. Jones, I represent suburban Philadelphia, Montgomery and Berks Counties. It is a robust, diverse area, but the thing I try to connect my schools districts to are people like you. So, I love the idea that you are talking to young people, particularly young girls, and opening their eyes to other opportunities. I invite you to come to my district. What are some of the ways that you actually—can you sort of describe to us that educational program?

Ms. JONES. The educational program that I work with is both formal and informal. So, we have a year-long educational program that goes into high schools for one year. The first part of the semester is based on classroom learning and the second part is on mentoring and having interactions.

We start out with very basic financial concepts like budgeting and things like that, making sure that people understand money, which, because a lot of our students are disadvantaged and in disadvantaged areas, they may not, and then we move on to more advanced concepts. So, if a school stays in the program for a long time—let's say a girl goes through the program for 4 years—she could learn about things like how to trade options by the fourth year, which means that they can go into any kind of economics or finance program they want to, in college or in graduate school.

But it is also important—

Chairwoman BEATTY. The gentlelady's time has expired.

Ms. DEAN. I'm sorry. My time has expired. Again, I invite you to come help me and my young people. Thank you.

Chairwoman BEATTY. Thank you. The gentlewoman from Texas, Ms. Garcia, is recognized for 5 minutes.

Ms. GARCIA OF TEXAS. Thank you, Madam Chairwoman, and thank you again, as others have said, for bringing attention to this very critical issue. I think we won't be where we need to be unless we have true economic power, and it certainly comes from not only the dollars that we earn but the dollars that are invested. So, thank you for putting this together.

And thank you to all the panelists. This has been a concern of mine for many years. As some of you may know, I was the elected city comptroller in Houston back in the 1990s, in a couple of prior lives before this one, and I always made it a point to make sure that our office included, not only in the bond issues that we did, but also in the investment portfolio, to ensure that minority- and women-owned businesses got included, fully included and participated.

I think that we can't wait for more States to act like Illinois and others. We must do something here. And, Mr. Rogers, I was really struck with the example you just gave about your museum work and by your characterization of calling some of this a "modern-day Jim Crow."

If you could think of the one single thing that we could really act on to change that, to ensure that there was no Jim Crow and that there were not even remnants of Jim Crow, what would it be? And if you would, please, because of time, could you just keep it simple?

And then I want everybody else to answer the same question, like the one thing we need to do.

Mr. ROGERS. I know Bill Von Hoene from Exelon has testified here recently, and what Exelon does better than anyone is they keep track of all of the spending by categories. So, if you have transparency and you can see how much of the advertising dollars are going to minority firms, how much to the investment firms, or how much to the construction contracts, everything is exposed and everything is transparent, right-meaning people will start to give opportunities to people in all aspects of the spend. So, that is what is key, is that transparency, keeping track of every category, not the total amount, which sometimes obscures what is really happening underneath.

Ms. GARCIA OF TEXAS. Okay. Ms. Chia?

Ms. CHIA. I would like Congress to lead by example, to mandate funds under Federal management to be subject to regularly provided open competition.

Ms. GARCIA OF TEXAS. Like you said earlier, for the Rooney Rule. Okay.

Ms. Miller-May? And again, thank you for the good work in Illinois.

Ms. MILLER-MAY. Thank you. I think the first thing is to set policies, to systematically remove barriers, and to track and measure your goals and how you are performing against those, and to improve on that.

Ms. GARCIA OF TEXAS. So you mean that that needs to be transparent?

Ms. MILLER-MAY. Yes.

Ms. GARCIA OF TEXAS. Ms. Jones?

Ms. JONES. In addition to education, I think the number one thing we can do is if we do accept my premise that this is valuable information for investors to have in order to be able to maximize returns and diversification, that we have to make it where firms are transparent and they provide this non-financial data as another decision-making point for anyone who is looking to make an investment.

Ms. GARCIA OF TEXAS. Okay. Mr. Martinez?

Mr. MARTINEZ. In addition to all of these great points, I think that from a customer's perspective, we have to encourage each other as customers and hold ourselves accountable to making sure that we are asking this question and asking the question specifically. So, for example, on the question of diversity, it is not enough to ask, if you are talking to an asset manager, "What is the diversity percentage of your firm?" It is, "What is the diversity within your investment operations?", to better understand how they are building their pipeline.

Ms. GARCIA OF TEXAS. Right, and what can we be doing in the private sector? You are in a private foundation. And again, I applaud you and I know that my colleague has already mentioned you basically decided you weren't doing enough and you needed to take action. What can we do to get other private foundations and private industry to see the light as you have seen?

Mr. MARTINEZ. I do think that some of it is a little educational. I think that there is a misconception that comes from this idea of necessarily performance or underperformance, a belief that that exists, that it somehow would violate a trustee's fiduciary responsibility to continue to ask for diversity. I think to the extent that we hold ourselves accountable to understand and educate ourselves that there is overperformance to be had, and then be transparent in our own data with each other, that would go a long way.

Ms. GARCIA OF TEXAS. Thank you, and, Madam Chairwoman, I yield back.

Chairwoman BEATTY. Thank you.

The gentleman from Florida, Mr. Lawson, is recognized for 5 minutes.

Mr. LAWSON. Thank you, Madam Chairwoman, and I welcome the witnesses to the committee.

Minority-owned firms are often unable to meet what some of you all dictate as the minimum requirement to set up institutional investors, such as size, asset, and experience, length of track record. How can we level the playing field to ensure that minority-owned firms are able to meet the minimum requirement? I say that because it might have been Ms. Miller, it could have been Ms. Jones, who stated that a lot of these asset managers who maybe start up on Wall Street for a while and then they leave and start their own firms, they are still at a little bit more advantage in the marketplace than minorities and women who are not able to do that.

From that standpoint, how do you level the playing field so that you can bring more people of diversity into this area? And every one of you can take a shot at it if you would like.

Mr. Martinez?

Mr. MARTINEZ. Thank you very much. I think it is kind of twofold. One is a long-term and the other one is a short-term answer. I think in the long term, it is certainly asking asset managers to establish large institutional asset managers to increase their diversity within their investment operations, to build that pipeline.

But secondly, the question is from a customer perspective, as an asset allocator, how do we set our size guidelines? So if I say, for example, I can only write a $100 million check to a firm, then that excludes everybody beneath a certain size. The question would be, can I be on the ground floor or can I help a quality manager grow

by writing a smaller check and then increasing that over time, as I build the relationship? So, it is judging our own internal criteria.

Mr. ROGERS. I would follow up on the comments I think Ms. Jones made, and others, that one of the key things that Maynard Jackson did extraordinarily well when he was Mayor of Atlanta, and other political leaders of that generation, they insisted that all the financial services firms that did business in that City had to look like that City. And those leaders who became managing directors and partners in those investment banks in that generation ultimately were the ones who started the next generation of big companies—the Loop Capitals, the Williams Capitals, the firms like that. It came from that kind of initiative.

I think we have to get our local political leaders to make sure that the investment firms that do business in their cities look like their cities, or otherwise not do business with them.

The second thing is we have to get financial services companies in local communities to partner with urban public schools. That is what we have done with our Ariel Community Academy, teaching financial literacy to these young people. It is not only important that they are learning about the stock market and investing but they are starting to see role models who look like them, who are in the financial services industry. And so we need to encourage that to happen more and more in this country, and hopefully we will be able to inspire people to make a difference.

Mr. LAWSON. Okay. Ms. Chia?

Ms. CHIA. Organizations like AAAIM, NAIC, and NAA make it very easy for institutional investors and asset owners to come and meet diverse managers. That is what we are built for. And for any one of these asset owners seeking managers, they can come to us or come to our events and meet extremely well-qualified, highly-educated managers.

Ms. MILLER-MAY. In Illinois, we search for managers through a request for proposals. Staff has taken the ownership—or writing the language that is in those RFPs. So, we will write specifically for minority, women, and disabled managers that we are searching for a minority or diverse firm. We will lower the AUM that they need. We will shorten that track record. We will size that mandate specifically so that it is open for all diverse managers to present. And then we will ensure that any qualified minority manager is a finalist for that search.

Mr. LAWSON. Okay. Ms. Jones, I have about 27 seconds.

Ms. JONES. One of the things I think is very real and that Juan mentioned is that there are some structural barriers for people investing in some of the smaller funds. An investment policy statement, in many cases, states that you cannot be more than X percent of a fund's assets under management.

There have been a number of endeavors where people have tried to go out and create an aggregation system. You aggregate the assets of these smaller, diverse managers to make it easier for people to invest. Those have not yet been successful. So, anyone who is able to actually facilitate that will go a long way in helping these smaller managers reach critical mass.

Mr. LAWSON. I yield back, Madam Chairwoman.

Chairwoman BEATTY. Thank you.

The gentleman from Missouri, Mr. Clay, who is also the Chair of our Subcommittee on Housing, Community Development, and Insurance, is now recognized for 5 minutes.

Mr. CLAY. Thank you so much, Chairwoman Beatty, and let me also thank the panel for your participation in this hearing today. And along the same lines of questioning as my friend from Florida, I want to ask about how investors rely on advice from investment consulting firms about which asset management firms are best qualified to manage their investments. But if investment consultant firms are biased against diverse-owned firms because they have preconceived notions that they are too small or riskier, they may not be getting the same opportunity as other firms, despite their documented high performance.

Mr. Rogers and Ms. Chia, what challenges have you faced, as a diverse asset manager, in being contacted by or getting meetings with investment consultants about managing funds?

Let's start with Ms. Chia.

Ms. CHIA. Thank you for that question. Our observation at AAAIM is that incumbency is a huge issue. When consultants do searches, they tend to go with the people they know. But there is also the factor of career risk. A consultant is probably safer by recommending a known manager versus someone who is newer and less established. So, that has been our observation and we have encouraged consultants to come to our events at AAAIM and to meet extremely diverse and well-qualified managers. We have over 3,000 institutional investors and managers in our network.

Mr. CLAY. And Mr. Rogers, how do you overcome that and persevere? Go right ahead and answer the question.

Mr. ROGERS. It is a challenge, but the way you—first and foremost is performance. We have lots of diverse firms that have extraordinary performance, and the data is there. That is one of the great things about being in this industry is people can see your performance, and that overcomes the biases often that are there. But it is a challenge.

As I said earlier, there is still such an anti-Affirmative Action feeling in this country in a lot of different parts of our communities, and somebody whose kid didn't get into the school they thought they should have and they think a minority kid took their kid's place, or someone got a promotion that they thought they should have gotten and it is because they were diverse, that filters into the way they view us, and so it is a challenge.

And the final thing is that the senior people in these firms often are going to be most interested in being supportive—the CEOs, the chairmen of these firms—but the decision-makers are the 30-year-olds, who are further and further away from the Civil Rights Movement, who didn't see the sacrifices of the Dr. Kings and the John Lewises and the others. And so they are less interested and less sympathetic to seeing diversity and inclusion in all aspects of our economy, and that is a challenge.

Mr. CLAY. And along those same lines, how do you get more young people of African descent interested in pursuing careers in investment management and private equity venture capital in the industry as a whole?

Mr. ROGERS. There are two things. One is that what we have tried to do, and we talked about his earlier, The Ariel Community Academy teaching kids starting in kindergarten through eighth grade about the stock market, and giving them real money to invest, and they watch that money grow over 8 years. We take them to annual meetings to meet the CEOs and other leaders. Like when Don Thompson was the CEO of McDonald's, so they see people of color in leadership roles and start to think about being CEO and being in these top levels of the financial services industry, and that is important.

The other thing we have done is at the University of Chicago, we have created a program for minority students to work in the investment offices of major endowments throughout the United States. And we think that is a great place to start, because if you are in an endowment office, you are going to be able to learn about venture capital, private equity, and hedge funds. We have had several kids at the Knight Foundation and I know it has gone very, very well.

Mr. CLAY. And you bring up Chicago. I represent St. Louis, Missouri. Any positive experiences from anyone on the panel in the area of diversity who would say the City of St. Louis, or the State of Missouri? And anyone can go at that.

Mr. ROGERS. The only one challenge that I have faced there is we think that the universities in this country can be doing work with minority-owned asset managers. They all have multi-billion-dollar endowments, and most of them have never spent a dollar with a minority firm in the history of their institutions, even if they have hired 100 or more money managers. It kind of looks like baseball in 1940. I remember going to see Wash U and finding they had no interest in working with diverse firms.

Mr. CLAY. That is a very good point you raise. I will certainly bring it to their attention.

Thank you, and I yield back.

Chairwoman BEATTY. Thank you, Mr. Chairman.

The gentleman from Ohio, Mr. Gonzales, is recognized for 5 minutes.

Mr. GONZALEZ OF OHIO. Thank you, Madam Chairwoman, for hosting this hearing today, and thank you to our witnesses for your participation.

Prior to this hearing, I reviewed the 2017 GAO report that has been mentioned a few times throughout the hearing. I was struck by the finding that there was a bias within institutional investors and their consultants. There was a bias against minority- and women-owned firms to be even included in the asset manager searches due to bias that their portfolio's performance could suffer. This is, of course, not substantiated in any data or recent studies.

Ms. Jones, in your view, what can be done to educate the industry about the incorrect biases towards the performance of women- or minority-owned asset managers?

Ms. JONES. Number one, I think that we have to make sure that all of the information is presented in a clear and cogent and quick manner. Unfortunately, a lot of institutional investors and consultants are bombarded with information all the time, and so making sure that they have this information at their fingertips is critical.

The other thing is that they really need to be exposed to these managers, have conversations with these managers. I think when I talk to a lot of diverse managers, they lament the fact that they are unable to get a meeting with some institutional investors and consultants, and frankly, if you can't get the meeting, then it is really hard to educate someone about what type of niche investment, what type of specialized skill, what type of cognitive or behavioral alpha that you may have.

I think that those two things go quite a long way in trying to break down some of those barriers.

The other thing I think we have to do is make sure that people understand this is kind of a corollary to no one gets fired for buying IBM. It seems much safer to invest with a firm that lots of other people are invested with. But, obviously, there can be lack of reward in that too, because if everyone invests with the same people then everyone gets the same undifferentiated return.

And so I think trying to help people overcome those types of biases would also be helpful.

Mr. GONZALEZ OF OHIO. Great. Does anybody else on the panel want to comment on that specific issue?

Ms. Miller, it seems like you—

Ms. MILLER-MAY. I think that there should be checks and balances. We are hiring the consultants and, therefore, they work for us. We should have, and we do have, staff who validates or challenges the consultants on what they are bringing to us. We do our homework in-house to let them know that these are the managers that we are looking at, and we challenge their diversity. They report to us, on an annual basis, their diversity: which managers are contributing to them as a firm, and some of the fees that they are getting. So, it is about holding them accountable as well.

Mr. GONZALEZ OF OHIO. Great. Anyone else? Mr. Martinez?

Mr. MARTINEZ. I will say, one thing that has worked, and I think is important for the Knight Foundation, has been asking ourselves what level of diversity is involved in the portfolio on the management side, and then being transparent about it to the field. So, if you were to go on our website, for example, we have, in aggregate, the dollars that we have under management by diverse-owned firms. Encouraging that level of transparency, even if it is not at the individual manager, which we do as well, but at a minimum on the aggregate, I think creates an atmosphere where it is more acceptable.

Mr. GONZALEZ OF OHIO. Thank you. And I don't mean to kind of typify, but when I think of the hedge fund world and the average hedge fund manager, it is sort of a specific pipeline, more or less. It is Ivy League or equivalent, a couple of years in investment banking, an MBA from a top-tier school, and then going into the hedge fund world. I think that probably is, I don't know, 60 percent, 70 percent.

How do we, as a committee or as a country, encourage more folks from diverse backgrounds to enter into the pipeline at the earliest stages and then make sure that we are fostering an environment that allows them to progress through that kind of system, if you will, throughout their careers?

Mr. MARTINEZ. A wise man named John Rogers once told me that if a young person does not see someone that they can identify with in those spaces, then to them, even though the statistics may bear out that that is an achievable goal, it becomes an impenetrable barrier. And so the question is, as customers, do we ask and demand our asset managers to show diversity within the investment operations, and I think that is vital.

Mr. GONZALEZ OF OHIO. Great. Mr. Rogers, do you have anything?

Mr. ROGERS. The only thing I would add quickly is at the end of the day I think universities could start to do a better job of tracking how their graduates are doing at these big financial services firms, how many are becoming managing directors and partners.

Mr. GONZALEZ OF OHIO. Thank you, and I yield back.

Chairwoman BEATTY. Thank you.

I would like to thank all of our witnesses for their testimony, and I would especially like to thank Ms. Jones and Mr. Rogers for repeatedly talking about education. And it is my honor, speaking of education, to recognize in the audience Mr. Steven Miller with the United Negro College Fund, and he is the Area Director of Development, I am proud to say, from my great district in the great State of Ohio. Thank you, and hopefully you can feed into that pipeline.

The Chair notes that some Members may have additional questions for this panel, which they may wish to submit in writing. Without objection, the hearing record will remain open for 5 legislative days for Members to submit written questions to these witnesses and to place their responses in the record. Also, without objection, Members will have 5 legislative days to submit extraneous materials to the Chair for inclusion in the record.

This hearing is adjourned.

[Whereupon, at 11:36 a.m. the hearing was adjourned.]

A P P E N D I X

June 25, 2019

June 25, 2019

Testimony of Brenda Chia, Founding Board Member and Current Board Co-Chair of the Association of Asian American Investment Managers

"Diverse Asset Managers: Challenges, Solutions and Opportunities for Inclusion"

Subcommittee on Diversity and Inclusion
Committee of Financial Services
United States House of Representatives

Chairwoman Beatty and Members of the Committee, thank you for the opportunity to discuss the experience of Asian Americans and Pacific Islanders in the investment industry.

I am Brenda Chia, a founding Board member and current Board Co-Chair of the Association of Asian American Investment Managers (AAAIM). The organization was founded in 2006 as a national non-profit organization dedicated to the advancement of Asian Americans and Pacific Islanders (AAPIs) in the field of investment management. AAAIM provides a platform for professionals in the industry to meet, network and create business opportunities. We deliver value through educational events, face-to-face and online networking, and advocating for the AAPI community through opportunities such as this hearing. The current network comprises over 3,000 institutional investors and fund managers.

Observations

I would like to highlight a specific challenge faced by AAPIs, which is the model minority stereotype[1]. It is broadly defined as the perception that AAPIs are successful and do not need help in any field. In the investment business, there are diversity programs and industry gatekeepers that, through their own policies, exclude AAPI managers. However, looking at the numbers, AAPIs are 5.6% of this country's population. The 2017 Government Accountability Office reports that minority and women-owned firms manage less than 1% of all investment

[1] Harvard Business Review, "Asian Americans Are the Least Likely Group in the U.S. to Be Promoted to Management", May 31, 2018

assets valued at $70 trillion[2]. This is across the asset classes of equities, fixed income, alternative assets such as private equity and hedge funds, and cash equivalents. Each percentage point is worth $700B. Clearly the model minority stereotype does not hold here. It is not about enriching specific investment managers; it is about the impact on our community. Studies have shown that minority and women-led investment firms invest in more diverse entrepreneurs and businesses. We look "outside the box" for opportunities, often overlooked in urban and rural communities. This in turn enriches our communities and creates more jobs, without sacrificing the returns pension funds need to meet their funding obligations.

The investment business is one that thrives on scale. The start-up costs and fixed costs associated with smaller firms are such that they do not generate impact until they reach a threshold asset base which varies by asset class. For example, a $1B public equity fund may generate $5M in annual fees. It may sound significant but the costs of running a small fund are high due to the costs for compliance, salaries for qualified staff and client service. Therefore, to create impact on one's community, total fund size needs to be an order of magnitude larger. However, there is a balance between fund size and performance. Without broader access to capital, minority and women-led funds continue to be marginalized because their assets under management will restrict the types of investments that can be made.

I wish to touch briefly on the performance of smaller and mid-sized funds. Multiple research sources such as Cambridge Associates[3], Barings[4] and Bella Private Markets[5] point to the fact that small and mid-sized funds deliver at least parity performance compared to very large funds. There are some smaller funds that consistently that outperform the very large funds. For example, in private equity, the very large funds with over $10B have, over 12 years, delivered returns that are in line with market indices. There has been no premium return for illiquidity and risk. The question for institutional investors then, is how to balance allocation size while giving minority managers a chance to make a difference in their returns.

Diversifying the pool from which investment managers are able to compete and ultimately be selected makes good business sense for institutional investors. Several larger state pension plans have come to a conclusion that they need to create a farm system equivalent by which they can invest with smaller firms, many of which also happen to be ethnically and gender diverse. This creates an environment where the small firms today could, in the future, become the next

---

[2] GAO Report, "Key Practices Could Provide More Options for Federal Entities and Opportunities for Minority- and Women-Owned Asset Managers", September 2017
[3] Wall Street Journal article, "Blackstone Sets Sights on Largest Private Fund", June 19, 2019
[4] Barings Viewpoints, "Don't Judge a Private Equity fund by its Number", January 2019
[5] Bella Private Markets, "2018 Diverse Asset Management Firm Assessment", January 2019

generation of successful firms with trillions of dollars under management. Taking this one step further, in order to achieve a level playing field, we propose that minority and women managers not be limited to 'set aside' allocations where we compete against each other for a small slice of the pie. We would like to compete for the whole pie.

Conclusion

AAAIM stands ready for AAPIs to have open and fair access to institutional capital.

A critical role that Congress can play is to create the opportunities for access to capital. While one cannot legislate quotas or mandate criteria selection, Congress can create opportunity. The federal government has trillions of dollars of pension funds and other capital under management, none of which minority and women-led funds have access to bid or be considered as fund managers. Congress could mandate that funds under federal management be subject to regular and periodic open competition. Congress could also recommend that federal agencies ensure that qualified minority and women-led funds are considered as part of the RFP evaluation process. We urge Congress to consider adopting something similar to the Rooney Rule – a rule used in the NFL to ensure that diverse coaches and managers are recruited for consideration for senior positions. By creating opportunities, Congress can take some small steps toward ensuring a more diverse pool of fund managers for consideration. It would be a meaningful step toward opening doors and creating greater transparency.

Written Testimony before the
U.S. House of Representatives, Committee on Financial Services Subcommittee on Diversity and Inclusion

Hearing: "Diverse Asset Managers: Challenges, Solutions and Opportunities for Inclusion"

Meredith A. Jones
Investment researcher and author of "Women of The Street: Why Female Money Managers Generate Higher Returns (And How You Can Too)"

June 25, 2019

Chairwoman Beatty, Ranking Member Wagner and distinguished Members of the Subcommittee, it is an honor to appear before you today at this important hearing on how to achieve greater diversity in the asset and investment management industry.

By way of background, I am a 21-year veteran of the investment management industry. I began my investing career in 1998 at a small hedge fund firm in Nashville, TN when I was hired by a male CEO and financial services gender contrarian who believed that women made better financial analysts than men. While I worked my way up from my entry-level position as a hedge fund analyst to become the head of research and a member of the firm's investment committee, I never doubted my boss's hiring wisdom (although, always a fan of diverse opinions, I did eventually integrate the department to include men during my tenure).

Employed roughly 1,000 miles from Wall Street, I did not initially realize that other asset management and investment firms had far less gender diversity than mine. In fact, it wasn't until I started regularly speaking at investment industry conferences (where I was often one of few, if not the only, female speaker) that I began to recognize how little gender and racial diversity existed in my chosen profession. I began to research diversity in asset and investment management in 2010 and, over the past nine years, have come to appreciate just how unique my investment "upbringing" was, as well as how unlikely it would have been for me to be sitting here today without my original boss's unorthodox hiring preferences. However, even with that leg up, admittedly it has been a rather solitary career path, with few diverse role models, mentors, and sponsors along the way.

As challenging as the lack of diversity may have made my personal journey, that pales in the face of the systemic cost of homogeneity in asset management. In fact, nine years of research has left me with the unshakable knowledge that **the lack of women and minorities in the asset management and investment industries is making everyone, from Wall Street to Main Street, poorer.**

While this may be a bold statement, I believe a number of factors support the assertion that, as a society, we are missing out on a "diversity dividend."

1) **A wealth of investment research suggests that diverse asset managers may provide similar or even higher returns.** Studies from the NAIC[1], CityWire[2], BarCap[3], Babalos[4], Morningstar[5], Rothstein Kass[6] and others show that diverse fund manager performance (either within separate funds or in mixed gender teams) is at least equal to and, in many instances, greater than that of the total investment fund universe. A 2016 study by Oleg Chuprinin and Denis Sosyura found that hedge funds run by individuals that grew up poor (bottom 20 percent of households in terms of wealth) outperformed those managed by managers from the top 20 percent by over 1 percent per year[7]. A 2019 study from Harvard University's Bella Research Group further found that women and minority owned hedge funds, mutual funds and private equity firms had disproportionate representation in top quartile performance figures[8]. Another Harvard study found[9] that the chance of a venture capital-backed company filing for an Initial Public Offering increased by 20 percent if the backing investors were from different ethnic backgrounds, while venture capital firms that "increased their proportion of female partner hires by 10% saw, on average, a 1.5% spike in overall fund returns each year and had 9.7% more profitable exits," again per a Harvard Business Review study[10].

   These studies and others like them strongly suggest that investors, from the wealthiest of individuals to the police, firemen and teachers that depend on well-invested pension portfolios, may in fact have inadequate financial resources due to lack of access to diverse investment talent.

2) **Access to diverse asset management talent may provide another diversification tool within portfolios, and may also help mitigate volatile market behavior, which is currently dominated by a single cognitive and behavioral pattern.** At least one study has found that having more women on Wall Street could reduce market volatility[11] due to the introduction of differentiated investing behavior. Another review by investing platform Stash found men 87% more likely to sell[12] during periods of market volatility, which means diversity potentially provides both stability and liquidity in the markets.

---

[1] http://naicpe.com/wp-content/uploads/2017/10/2017-performance-report.pdf
[2] https://citywireselector.com/news/alpha-female-2018-mixed-gender-teams-produce-better-returns/a1145784
[3] https://www.managedfunds.org/industry-resources/industry-research/affirmative-investing-women-and-minority-owned-hedge-funds-a-barclays-capital-report/
[4] https://www.sciencedirect.com/science/article/pii/S0275531915000264
[5] https://www.fa-mag.com/news/morningstar--the-gender-lens-doesn-t-magnify-your-bottom-line-37579.html
[6] https://www.managedfunds.org/industry-resources/industry-research/women-alternative-investments-marathon-sprint-rothstein-kass/
[7] http://webuser.bus.umich.edu/dsosyura/Research%20Papers/FamilyDescentDec2016.pdf
[8] https://kf-site-production.s3.amazonaws.com/media_elements/files/000/000/281/original/2019_KF_DIVERSITY_REPORT-FINAL.pdf
[9] https://hbswk.hbs.edu/item/in-venture-capital-birds-of-a-feather-lose-money-together
[10] https://hbr.org/2018/07/the-other-diversity-dividend
[11] https://www.aeaweb.org/articles?id=10.1257/aer.20130683
[12] https://qz.com/work/1386775/study-of-investors-shows-differences-between-men-and-women/

Furthermore, Hedge Fund Research's Diversity Index (HFRI Diversity Index[13]) has posted a flat return (0.00%) over the last 12 months, which compares favorably to the HFRI Fund Weighted Index -1.24% loss in value over the same period, further evidence of return diversification.

In addition, according to the National Association of Investment Companies ("NAIC"), one reason for outperformance of diverse private equity managers may be differentiated deal flow. The report concludes[14] that "[m]any diverse fund managers have educational and work experience similar to investors in non-diverse funds. However, some also report having expanded, differentiated networks that allow for deal flow off the beaten path. To the extent that a fund manager has access to such deal flow and can strike deals with less competition, their returns, and investors, may benefit. For example, firms and funds focused on the EDM may have access to companies on the cusp of growth due to changing demographics and shifts in the global economy."

Despite clear advantages to cognitive and behavioral diversification, some estimates indicate that as many as 95% of those taking risk with capital on Wall Street and in the asset management industry are white males, and we certainly know from a variety of sources that asset and investment management generally lacks diverse participants in any meaningful way. For example, per the Bella Research Group study[15] referenced above, "the number of substantially or majority diverse-owned funds represented just 8.6 percent of the total in 2017" and women-owned firms managed a mere 0.8% of all assets under management while minority-owned firms controlled 1.2% of fund assets. Leaving fund ownership aside, a 2017 review of the alternative investment industry by Preqin[16] found that women comprised less than 21% of all employees in private equity, venture capital, hedge funds, real estate, infrastructure, natural resources and private debt funds, and that, of these employees, only 11% (or less depending on the asset management segment measured) occupied senior roles. And TechCrunch reported that 81%[17] of venture capital firms don't have a single black investor.

3) **Concentration of venture capital investments into similar companies perpetuates unmet consumer needs and lack of investment and jobs into diverse and underserved communities.** It has been repeatedly shown that the East and West Coasts dominate the venture capital landscape, with the Bay Area and the New York-Washington-Boston corridor landing an astonishing two-thirds of all venture capital investment[18]. This creates a vast, unexplored economic desert throughout much of the continental United States. In addition, female founders received just 2.2%[19] of all venture

[13] https://www.hedgefundresearch.com/family-indices/hfri
[14] http://naicpe.com/wp-content/uploads/2017/10/2017-performance-report.pdf
[15] https://www.institutionalinvestor.com/article/b1cwvq3mc37xwk/Asset-Managers-Owned-by-Women-and-Minorities-Have-to-Work-10X-as-Hard-for-Assets
[16] https://docs.preqin.com/reports/Preqin-Special-Report-Women-in-Alternative-Assets-October-2017.pdf
[17] https://techcrunch.com/2018/11/08/81-of-vc-firms-dont-have-a-single-black-investor-blck-vc-plans-on-changing-that/
[18] https://www.citylab.com/life/2017/10/venture-capital-concentration/539775/
[19] http://fortune.com/2019/01/28/funding-female-founders-2018/

capital in 2017 and 2018, while from 2007 to 2012 black and Hispanic founders each received about 1%[20] each in venture capital investments. These statistics are both stark and critical for understanding lost economic opportunities.

Women influence 83% of consumer spending and $7 trillion of spending[21] in the U.S. annually, and consumer spending drives an ever-increasing percentage of the GDP, and yet women's needs currently may not be met by venture-funded companies. A study by Neilson found[22] that "African American income growth rates outstripped non-Hispanic whites at every annual household income level above $60,000 and the largest increase for African American households occurred in the number of households earning over $200,000, with an increase of 138%." Yet, their consumer needs may not be represented by current venture-capital funded companies. And "between 2016 and 2017, Hispanics increased their real median income by 3.7 percent[23], the highest of any demographic."

The lack of funding outside of traditional money centers as well as the near exclusion of diverse founders represents a tremendous lost opportunity for investment, economic expansion and job creation in diverse and underserved communities. Additionally, this compounds the lost opportunities for higher investment return generation, where less competition for portfolio companies creates more reasonable valuations for investors.

In my opinion, these three factors lead to one powerful conclusion: Diversity pays a dividend in asset management, one that, at least with the status quo, we have no hope of collecting.

To address the continuing lack of diversity in asset and investment management, I believe we need to focus on educating three primary groups:

1) **Investors** – With pension liabilities funded at only 73.7%[24] and with an astonishing 78% of Americans extremely or somewhat concerned about being able to comfortably retire[25], it is critical that the return enhancement and diversification benefits available through investment with diverse asset managers be highlighted and pursued. After all, demand from investors almost always drives innovation and change on Wall Street.
2) **Asset and Investment Management Firms** – While investors stand to reap the benefits of higher returns, asset managers and investment firms will profit as well through higher income from fee generation. In addition, firms that maximize diversity for returns and diversification may be able to capture a higher percentage of investable assets as investors seek higher return products. Companies that understand how the "diversity dividend" can directly impact their bottom line are more apt to support educational

---

[20] https://money.cnn.com/2016/04/12/smallbusiness/latino-venture-capital/index.html
[21] http://www.genderleadershipgroup.com/the-inclusionary-leadership-blog/210
[22] https://www.nielsen.com/us/en/insights/reports/2015/increasingly-affluent-educated-and-diverse--african-american-consumers.html
[23] http://hispanicwealthproject.org/resources/blog/new-hispanic-wealth-project-report-confirms-critical-role-of-hispanics-in-u-s-economic-growth/
[24] https://www.bloomberg.com/graphics/2018-state-pension-funding-ratios/
[25] https://news.northwesternmutual.com/2018-05-08-1-In-3-Americans-Have-Less-Than-5-000-In-Retirement-Savings

efforts in pre-hire cohorts, recruit diverse talent, uncover and mitigate unconscious bias in hiring and promotion decisions, and provide mentoring, sponsorship and affinity groups as part of a robust inclusion effort. Finally, given the generational wealth transfer taking place to diverse individuals (and the gains in diverse economic status cited above), failure to serve these demographic groups as a client base will almost certainly take a toll on asset and investment manager profitability in the future, further prioritizing this issue.

3) **Diverse individuals** – Providing financial and investment literacy education to girls and people of color at a young age (high school or earlier) is critical to building a pipeline of qualified diverse asset management candidates. For example, studies have shown that girls opt out of math-related subjects as early as age 11 or 12[26], meaning that it is not sufficient to intervene at the college or graduate school level, when qualified candidates have already self-selected into other academic areas. As a board member for a non-profit that provides financial education to girls (with 69% minority representation), I can say that Rock the Street Wall Street sees a 97% increase in understanding of financial concepts and, perhaps most importantly, 67% of the girls indicate they are now extremely or very likely[27] to explore a major or minor in finance and economics. This type of early intervention is therefore beneficial in building a pipeline of talent for companies and investors, and of course benefits diverse asset management talent as well.

In conclusion, I certainly recognize that diversity in asset management is a complex and costly issue. It is one that has no single, simple solution as it ultimately springs from historical and ongoing conscious and unconscious bias, as well as access to opportunity, education and capital. I do believe, however, that through robust public-private educational partnerships, common-sense transparency requirements (to both measure progress and so investors can adequately assess the level of alpha-generating diversity at asset management firms) and suitable anti-discrimination and harassment statutes, we can change the face of asset management for the future, and enhance the economic well-being of both Wall Street and Main Street in the process.

---

[26] https://techcrunch.com/2016/01/05/why-stems-future-rests-in-the-hands-of-12-year-old-girls/

[27] https://rockthestreetwallstreet.com

Juan Martinez written testimony to the Subcommittee on Diversity and Inclusion – June 25, 2019

Madame Chairwoman, Ranking Member and Members,

Thank you for the opportunity to testify about Knight Foundation's history and experience investing with diverse and women owned firms, as well as the research Knight has sponsored on the state of ownership diversity in the investment management industry and different treatment received by diverse managers.

Analyzing and exploring diversity in the asset management industry is vital given its sheer enormity and the wealth it generates. The industry manages $69.1 trillion globally and some $100 billion in profits.

Before we jump into the research, I think it will be helpful to provide a little background on Knight Foundation itself, for context.

The John S. and James L. Knight Foundation is a private foundation based in Miami, Florida. Knight supports informed and engaged communities through our grants and charitable programs in Journalism, 26 US Communities and the Arts.

Since its inception in 1950, Knight has spent $2.5 billion, or 6.1% of assets annually, on this important mission. Over the last ten years, charitable spending has averaged $116 million a year.

Those funds come primarily from the investment of the $660 million contributed by the Knight brothers and their mother, Clara. The future

grants from that investment portfolio, which has grown to $2.3 billion because of our investments, will allow us to continue Knight's impact.

So, how Knight invests is a vital concern, critical to allowing us to pursue our mission. We believe that the results demonstrate, we've done a good job. Except, we assumed that because we'd had good returns and we know that diversity adds value, that there must have been diversity in our investment program; we were wrong.

In June 2010, we were asked, "How much of our portfolio was invested by minority or women owned firms?" When we looked, it was only $7.5 million managed by one African American owned firm. That was, to say the least, a surprise.

With the support of our Board of Trustees, we became intentional in searching out opportunities to invest with women and diverse owned managers.

As of the end of the last quarter (*March 2019)*, 34% of our portfolio, or $749 million, is being managed by 14 women or diverse owned firms. And that portfolio is meeting our return expectations.

As we exceeded $100 million under diverse management, we heard from other investors that Knight's experience was unique. As a foundation built on the values of fact-based journalism, we knew we needed to study this further. There was an opportunity to add solid research and objective facts to inform the discussion.

As a first step, we engaged Bella Private Markets to conduct a rigorous study on the state of diversity in the investment industry. Both Bella and its

co-founders, Dr. Josh Lerner from Harvard Business School and Ann Leamon, are recognized industry experts.

That study was published in May 2017 and was recently updated in January of this year. The three major findings have stayed consistent;

- A very small percentage, about 1.3%, of the assets managed by US-based asset managers were managed by women- or diverse-owned firms. The median fund size of diverse owned firms was typically significantly smaller than their non-diverse peers.
- Importantly, Bella found no evidence of differences in investment performance between women and diverse owned firms and their non-diverse owned peers. And,
- Public funds and high net worth individuals and family offices, represent a disproportionately larger percentage of the investments in diverse owned funds.

While the study notes that the low level of assets under management may be impacted by several factors including the existence of several large, publicly-traded firms and privately-owned managers, as well as large investments in passive index funds that require economies of scale to set up and manage effectively. The difference in the average size of funds between women and diverse owned firms and their non-diverse peers is significant given the findings on investment performance.

Bella rigorously examined the question of investment performance in two ways;

First, they performed a statistical analysis to measure differences in performance between diverse-owned and non-diverse-owned funds while controlling for fund characteristics and risk profiles. For each asset class tested, Marketable Securities, Hedge Funds, Private Equity and Real Estate, Bella found no statistically significant evidence that women or minority ownership negatively impacts investment performance.

Next, they looked at the distribution of investment performance for women and diverse owned firms compared to all funds. And found that women and diverse owned firms were over-represented in the top quartile of all fund investment performance. That is, it is assumed that 25% of funds owned by women and minorities should be in the top quartile of performance, because that's what a quartile represents. However, here Bella found that more than 25% of women- and minority owned funds were represented in the top quartile of their asset classes.

This contradicts the long-held belief, that investing with women and diverse owned firms results in lower returns. Rather, we would argue that it supports that there are a number of top performing managers seeking investors. In effect, outperformance is being left on the table.

In a separate Knight funded study, Bella's research found that the penalty for underperformance is larger for diverse-owned managers. Looking at non-diverse-owned managers, the data suggest that an underperforming manager is 9.6% less likely to raise a new fund compared to an overperforming peer. The corresponding penalties for underperformance for women- and diverse-owned managers were almost twice as large or higher - at 27.9% and 17.3%, respectively.

While there are a number of factors that can impact whether a manager is able to raise another fund, and the study doesn't establish a causal relationship between diverse ownership and an intolerance of failure, Bella has attempted to account for many of these in their analysis.

These studies provide new insights into the state of diversity in the asset management industry, and they also raise new questions for future research such as;

Do investors see diverse owned firms as inherently riskier even though performance data don't support that?

In addition, one may ask why public pension funds and high net worth individuals make up a larger percentage of investors in women and diverse-owned firms rather than other types of institutional investors?

The data for the Bella studies came from several leading commercial data providers used in academic research, supplemented by publicly available lists of diverse-owned private equity and real estate firms. This ensured that they would have the highest quality data available on which to base their work.

Still, an important finding of the report is the difficulty in obtaining data on ownership diversity in the industry as an impediment to future research.

Knight Foundation and a growing number of other investors see an investment opportunity here. We hope that the research we and others continue to fund, and important venues such as this will spur others to join us and to pursue this conversation further.

Thank you.

Attachments;

1. **2018 Diverse Asset Management Firm Assessment, Bella Private Markets, January 2019**
2. **2018 Diverse Asset Management Enhanced Performance Analysis, Bella Private Markets, January 2019**
3. **Intolerance of Failure? Evidence from U.S. Private Equity, Bella Private Markets, January 2019**

Testimony of Angela Miller-May, Chief Investment Officer of the Chicago Teachers' Pension Fund

"Diverse Asset Managers: Challenges, Solutions and Opportunities for Inclusion"

Subcommittee on Diversity and Inclusion

Committee on Financial Services

U.S. House of Representatives

June 25, 2019

Chairwoman Beatty, Chairwoman Waters, Ranking Member McHenry and Members of the Subcommittee:

I am honored to be here today and I thank you for the opportunity to testify about the importance of diversity and inclusion within the asset management industry.

My name is Angela Miller-May and I am the Chief Investment Officer for the Chicago Teachers' Pension Fund. I joined the CTPF in 2010 and I have acted in several progressively responsible positions at Chicago Teachers' before being promoted to CIO. Before I began my testimony, I would like to recognize the Board of Trustee President, Mr. Jeffery Blackwell, the remaining Trustees and the Executive Director, Mr. Charles A. Burbridge who support and drive the Diversity and Inclusion goals and the culture of Chicago Teachers' Pension Fund.

Chicago Teachers' Pension Fund was established by the Illinois State Legislature on July 1, 1895 for the purpose of establishing a fund to be used to pension school teachers. It gave the teachers of Chicago permission to establish a self-funded pension system that provides retirement, survivor, and disability benefits for Chicago Public School teachers and employee. CTPF services a membership base

203 North LaSalle Street | Suite 2600 | Chicago, Illinois 60601-1231 | Members: 312.641.4464 | 312.641.7185 *Fax* | www.ctpf.org

of over 66,000 members. Our culture is built around putting our members first. It is important to our members that we demonstrate diversity by hiring asset managers, brokers and vendors that reflect the diversity of the membership.

In my testimony, I will demonstrate how Chicago Teachers' Pension Fund embraces Diversity and Inclusion and I will focus on just a few considerations related to the benefits of diversity and inclusion. I will also touch on some of the challenges that I believe to be roadblocks on this journey to a more inclusive asset management industry and the solutions that I feel will propel us forward.

Chicago Teachers' Pension Fund

Chicago Teachers' Pension Fund is a $10.8 billion Fund and since the early 1990s, CTPF remains at the forefront of pension and retirement systems throughout the United States, ensuring the investment firms owned by Minorities, Women, and Persons with Disabilities have access to the many opportunities to conduct business with CTPF. In addition, the Fund encourages diversity and equality among its employees, vendors and investment professionals.

Our approach to investing with Diverse Asset Managers has evolved over the last 20 years. Per Illinois Pension Code, an aspirational goal of not less than 20% of investment advisors shall be minorities, women and persons with disabilities. We have far exceeded that goal by investing **44% or $4.6 billion** of total assets with minority, women and persons with disabilities owned firms as of 3/31/19.

Of the **44% | or ($4.6B):**

- **58.2% or $2.69B is invested with Women-Owned firms**
- **25.3% or $1.17B is invested with African-American Owned firms**
- **12.0% or $555.6M is invested with Latino Owned firms**
- **3.3% or $151.0M is invested with Asian-American Owned firms**
- **.6% or $25.9M is invested with Persons with Disability Owned firms**
- **.3% or $9.7M is invested with Multiple Minority Owned firms**

Of the **CTPF's Total Assets ($10.8B):**

- **25.4% or $2.69B is invested with Women-Owned firms**
- **11.0% or $1.17B is invested with African-American Owned firms**

- **5.2% or $555.6M is invested with Latino Owned firms**
- **1.4% or $151.0M is invested with Asian-American Owned firms**
- **.2% or $25.9M is invested with Persons with Disability Owned firms**
- **.1% or $9.7M is invested with Multiple Minority Owned firms**

From an asset class standpoint, CTPF has exceeded its Diversity Policy goals in the Equities, Fixed Income and Alternative spaces.

- **With a Goal of 30% of all Equity Assets being invested with MWDBE firms, CTPF invest 58% with MWDBE firms.**
    - CTPF Exceeded the 5% goal in Women owned firms with 38%
    - But Fail short of the 25% goal in Minority owned firms with 20%

- **With a Goal of 15% of all Fixed Income assets being invested with MWDBE firms, CTPF invest 25% with MWDBE firms.**
    - Exceeding the 3% goal in Women owned firms with 8%
    - Exceeding the 12% goal in Minority owned firms with 17%

- **With a Goal of 10% of all Alternative assets being invested with MWDBE firms, CTPF invest 11% with MWDBE firms.**
    - By investing 2% in Disabled owned firms | No goal
    - By investing 1% in Women owned firms | No goal
    - By investing 8% in Minority owned firms with a goal of 10%

On the Brokerage Utilization front, CTPF expects all of its public equities and fixed income managers to comply with its MWDBE Brokerage Utilization Policy, subject to best execution.

Our policies are simply guidelines that establish minimum targets and identify areas of opportunity to extend our reach. It points to the importance of tracking the utilization of diverse asset investment firms.

Benefits of Diversity and Inclusion

Chicago Teacher's Pension Fund's philosophy on diversity and inclusion centers on a few beliefs that we think are important for success.

- Diversity and Inclusion yield positive outcomes and those who support it will benefit.
- Every stakeholder has a role to play in advancing diversity and inclusion. We are all responsible for our behavior, practices and policies. If you want to be inclusive, you can be inclusive.
- It is a part of your fiduciary duty to invest the Fund's assets in a prudent manner and investing with diverse asset managers that demonstrate outperformance and deliver strong returns is more than prudent; it is wise.

Diverse managers perform the same if not better than non- diverse managers. They are a key source of diversification as they complement large managers that seek larger assets and deals. There is room for all.

Having diverse managers in your portfolio brings diverse thoughts, improved decision making and solutions in a current market environment that is challenged by macroeconomic events, increased valuations, volatility and competition surrounding assets and deals.

With an actuarial rate of return of 7.00%, Chicago Teachers' maintains long term outperformance of policy benchmarks with an 8.66% gross return for the 35 year period and 8.16% gross return for the 25 year period. CTPF's existing diverse managers have been a positive contributor to this long term performance.

We hire diverse managers that demonstrate the ability to generate upper quartile performance, that have differentiated teams with competitive advantages and that can act nimbly and diversify our total portfolio.

There are unique opportunities for strong performance and structural alpha. Many diverse managers have strong pedigrees and attractive track records from established firms. They are open to unique structures and preferred terms. For investors, it is an opportunity to build early relationships with strong managers. It is a large untapped universe.

As a prudent investor, it does not make sense to not take advantage of the unique opportunity that investing with diverse managers present. As an underfunded

pension fund, we simply cannot afford to forego investing with diverse managers that represent a pool of keenly talented and innovative asset managers.

Challenges Faced by Allocators and Diverse Managers

We have all seen the research. From the 2017 Government Accountability Office Report, less than 1% (or $700 billion) of the $70 trillion assets managed by asset management firms were managed by Minority or Women owned asset managers.

Just looking at alternative asset managers inclusive of hedge funds, infrastructure, private equity and real estate, diverse managers continue to represent a material subset with approximately 852 funds and $160 billion of assets managed.

Diverse managers' exhibit strong returns, but they are dramatically underrepresented in every asset class. They face many challenges such as:

Investor and consultant brand bias – many institutional investors prefer to contract with larger asset managers with brand recognition or with whom they are familiar.

Perception of weaker performance – there is a perception that diverse firms do not perform as well as non-Diverse firms. However, there are many studies that find no difference in the performance of funds managed by diverse firms and the performance of those managed by non-Diverse firms.

Across Mutual Funds, Hedge Funds and Private Equity, the evidence suggests that the performance of funds managed by diverse-owned firms is statistically no different than the performance of those managed by non-diverse firms.

Size and Infrastructure – the size and limited infrastructure of smaller, newer diverse firms also may pose challenges.

Industry Trends – the market place trends can pose challenges.

It is my belief that beyond the challenges mentioned above that exposure is a key problem and it needs to be addressed before there will be true equality and inclusion.

The pipeline of minority and women candidates are tomorrow's pipeline of diverse investment asset managers. Many diverse firms are spin outs of larger majority owned firms where they receive their training and track records of investing.

We also need to increase the percentage of Minorities and Women candidates; the percentage of Minorities and Women in leadership positions; and the percentage of Minorities and Women on Boards.

I believe that this is how we can begin to impact change today for improved diversity tomorrow. This is where the opportunity and challenges exist.

Solutions to Increase Diversity

Key practices that Chicago Teachers' Pension Fund has used to increase opportunities for diverse managers include the following:

- We have secured the commitment of our legislators, trustees, senior management and have made diversity and inclusion a part of our culture.

- We have removed barriers by drafting our request for proposals with open and inclusive language, by ensuring that qualified diverse managers will be included as finalist in our manager searches, by being a trustee and staff-led fund and by driving our consultants and not turning over the wheel to our external parties.

- By implementing policies and systematically making it the responsibility of every CTPF investment professional and every CTPF employee to be inclusive and encourage diversity.

- By tracking our performance in reference to our policy goals to identify areas where improvement is needed and by tracking the performance of diverse managers.

- By establishing a process of outreach by having an open door policy, by engaging with organizations that promote diversity and inclusion such as the National Association of Security Professionals (NASP), New America

Alliance (NAA), National Association of Investment Companies (NAIC), Accelerate Investors, Institutional Limited Partner Association (ILPA) to name a few and by doing the work and making the effort to identify qualified diverse managers and build relationships.

Opportunities for Increased Diversity and Inclusion

Investors have the greatest power to effect change in the asset management industry. When those that allocate capital start to pose questions about diversity and inclusion, changes will start to happen. When legislators and boards start to challenge the industry, increasing diversity and inclusion will gain momentum.

The notion that diversity improves performance in the C-Suite or in the corporate boardroom has permeated our industry and many public pension plans like CTPF are pressuring corporations to increase the diversity of their leadership because they believe it generates greater alpha.

The same rings true for investing. When diverse professionals come together and bring the fullness of their individual experiences, their expertise, their unique perspectives and ways of evaluating opportunity, it leads to enhanced outcomes.

There's a study by Stanford professor Margaret Neale that showed that when people of similar demographics were added to a team, the satisfaction of the team was at its highest, but those teams were the worst performing on group problem solving tasks.

People, who come from same backgrounds and have shared stories, don't challenge norms, they don't challenge "the way things are done", and they tend to agree on how things should be done. Bringing together diversity in background, experience, gender, perspective, by their very definition, breeds creativity and innovation. That creativity, that innovation is what fuels the outperformance that diverse managers deliver.

Slowly but surely Investors are becoming increasingly friendlier to the notion of including diverse management in their strategies. Twenty-six states now either have legislated commitments to emerging and/or diverse investment managers, or have key entities with independent commitments.

The number of diverse funds that have had outstanding performance has increased dramatically in the last 10 years. Further since 2014, over 17 diverse owned private equity firms have raised over 24 oversubscribed funds, so there is tremendous momentum to capitalize on diversity and inclusion.

Fortunately, in the state of Illinois, we have legislators who not only support Diversity and Inclusion, but hold allocators accountable and encourage investors to improve our utilization of diverse firms.

In the Illinois Pension Code (40 ILCS 5/1-109.1), "it is declared to be the public policy of the State of Illinois to encourage the trustees of public employee retirement systems, pension funds and investment boards to use emerging investment managers in managing their system's assets, encompassing all asset classes and increase the racial, ethnic and gender diversity of its fiduciaries, to the greatest extent feasible within the bounds of financial and fiduciary prudence, and to take affirmative steps to remove any barriers to the full participation in investment opportunities afforded by those retirement systems, pension funds and investment boards".

I would love to see this Subcommittee on Diversity and Inclusion adopt similar language that could have a meaningful impact on furthering the work to have a more diverse and inclusive investment asset industry.

While we can take baby steps, Congress can move the needle and create opportunity for diverse managers on a much larger scale.

If only, to have you listen to my testimony, I hope that I have played some small part in expressing the importance of Diversity and Inclusion and encouraging this Subcommittee on Diversity and Inclusion to continue to gather knowledge and best practices in order to solve for the lack of diversity in the asset management industry.

2019

DIVERSITY REPORT

Presented to the Subcommittee on Diversity and Inclusion for the U.S. House Financial Services Committee

Chicago Teachers' Pension Fund

June 25, 2019

Charles A. Burbridge, *Executive Director*
Mary Cavallaro, *Deputy Executive Director*
Angela Miller-May, *Chief Investment Officer*

Commitment to Diversity

The Chicago Teachers' Pension Fund (CTPF) provides retirement benefits for a diverse population of approximately 28,958 active, 28,549 retired and 9,398 vested inactive Public School Teachers.

Since the early 1990s, CTPF has been at the forefront of pension and retirement systems throughout the United States ensuring that minorities, women, and persons with disabilities have access to the many opportunities to conduct business with CTPF. CTPF continues to encourage diversity and equality among our employees, vendors, and investment professionals.

On behalf of the CTPF Fund and our Board of Trustees, I present this Diversity Report to the Subcommittee on Diversity and Inclusion for the U.S. House Financial Services Committee.

CTPF Board Of Trustees

Jeffery Blackwell
President

Mary Sharon Reilly
Vice President

Greg Redfeairn
Financial Secretary

Jacquelyn Price-Ward
Recording Secretary

Robert F. Bures

James Cavallero

Gervaise Clay

Mark F. Furlong

Tina Padilla

Maria Rodriguez

Jerry Travlos

Gail D. Ward

As of 12/31/2018

Impact of Public Act 96-0006

Since Public Act 096-0006, CTPF has enhanced its MWDBE diversity goals:

- 20% of total Fund assets will be invested with MWDBE firms
- 25% of actively managed assets will be invested with MWDBE firms

Additionally

- **30% of all equity assets will be invested with MWDBE firms**
  - 25% invested with Minority-owned firms
  - 5% invested with Women-owned firms
  - Best efforts invested with Persons with Disabilities-owned firms
- **15% of all fixed income assets will be invested with MWDBE firms**
  - 12% invested with Minority-owned firms
  - 3% invested with Women-owned firms
  - Best efforts invested with Persons with Disabilities-owned firms
- **10% of all alternative assets will be invested with MWDBE firms**
  - 10% invested with Minority-owned firms
  - Best efforts invested with Women and Persons with Disabilities-owned firms

NOTES

Impact of Public Act 96-0006

continued

Trades are executed with CTPF approved MWDBE brokers.
Non-direct trading is not allowed to meet the Fund's goals.

CTPF Brokerage goals:

- **50%** of Domestic Equity trades: Active Large, All Cap, and MoMs
- **35%** of Domestic Equity trades: Active Small Cap and Passive
- **25%** of International Equity trades: Active Large, All Cap, MoMs, and Passive
- **5%** of International Equity trades: Active Small Cap
- **25%** of Fixed Income par Volume Traded: Active and Passive
- **10%** Active REIT Managers

Investment managers of pooled investment portfolios are directed to use "best efforts" to execute trades with MWDBE Brokers.

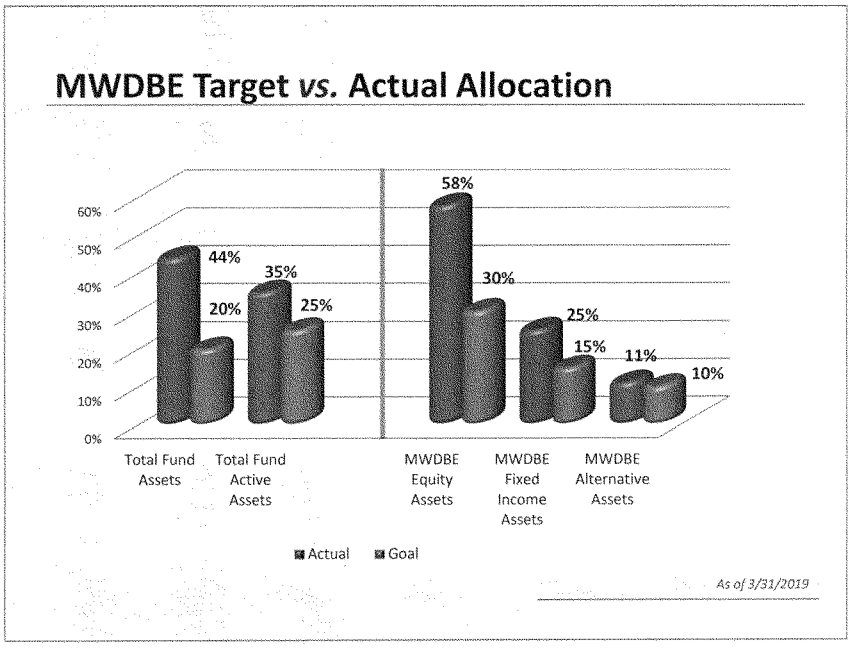
NOTES

Total MWDBE % Growth Since 1993

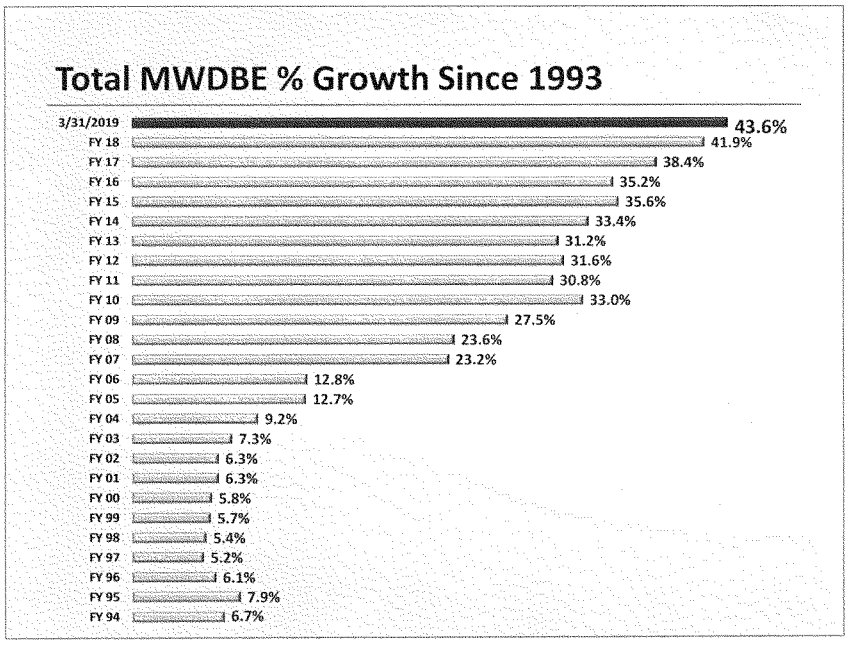
CTPF began investing with MWDBE firms in the early 1990s

- Some of CTPF's earliest MWDBE dollars were invested with firms such as Ariel Investment (African-American), Zevenbergen (Women), Taplin, Canida & Habacht (Latino(a)), Attucks (African-American), and Progress (African-American).
- As of June 30, 2018, the Fund invested $4.5B or 42% of total Fund assets with MWDBE firms.
- As of March 31, 2019, the Fund invested $4.6B or 44% of total Fund assets with MWDBE firms.
- As of March 31, 2019, the Fund invested $2.5B of 35% of all active Fund assets with MWDBE firms.

NOTES


MWDBE Target vs. Actual Allocation
60%
50%
40%
30%
20%
10%
0%
44%
20%
35%
25%
58%
30%
25%
15%
11%
10%
Total Fund Assets
Total Fund Active Assets
MWDBE Equity Assets
MWDBE Fixed Income Assets
MWDBE Alternative Assets
Actual
Goal
As of 3/31/2019

NOTES


Total MWDBE % Growth Since 1993
3/31/2019 43.6%
FY 18 41.9%
FY 17 38.4%
FY 16 35.2%
FY 15 35.6%
FY 14 33.4%
FY 13 31.2%
FY 12 31.6%
FY 11 30.8%
FY 10 33.0%
FY 09 27.5%
FY 08 23.6%
FY 07 23.2%
FY 06 12.8%
FY 05 12.7%
FY 04 9.2%
FY 03 7.3%
FY 02 6.3%
FY 01 6.3%
FY 00 5.8%
FY 99 5.7%
FY 98 5.4%
FY 97 5.2%
FY 96 6.1%
FY 95 7.9%
FY 94 6.7%

NOTES

CTPF MWDBE Investments 2018-2019

- CTPF committed $30 million to **Basis Investment Group**, African-American owned real estate firm
- CTPF committed $20 million to **Longpoint Realty Group**, Asian-American owned real estate firm
- CTPF committed $10 million to **Turning Rock Partners**, Women-owned private equity firm
- CTPF committed $12.5 million to **Farol Asset Management**, African-American owned private equity firm
- CTPF committed $12.5 million to **Astra Capital Partners**, African-American owned private equity firm
- CTPF reallocated $20 million to **ICV Partners**, African-American owned private equity firm
- CTPF reallocated $20 million to **Palladium Equity Partners**, Latino(a) owned private equity firm

NOTES

CTPF MWDBE Investments 2018-2019

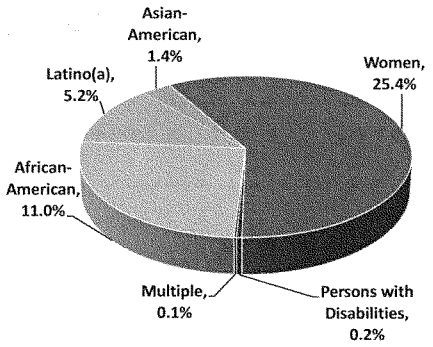
Continued

- CTPF committed $10 million to **AUA Private Equity**, Latino(a) owned private equity firm
- CTPF committed $10 million to **Estancia Capital Partners,** Latino(a) owned private equity firm
- CTPF committed $10 million to **P4G Capital Partners**, Women-owned private equity firm
- CTPF committed $10 million to **PiPV Capital**, African-American owned private equity firm
- CTPF committed $35 million to **Long Wharf Real Estate**, Latino(a) owned real estate firm
- CTPF committed $20 million to **Oak Street Seeding Real Estate**, Latino(a) owned real estate firm

NOTES

Total Fund Breakdown by MWDBE Status

- **$2.69B** was managed by Women-owned firms
- **$1.17B** was managed by African-American owned firms
- **$555.6M** was managed by Latino(a) owned firms
- **$151.0M** was managed by Asian-American owned firms
- **$25.9M** was managed by Persons with Disabilities-owned firms
- **$9.7M** was managed by Multiple Minority-owned firms



- Women
- Multiple
- Latino(a)
- Persons with Disabilities
- African-American
- Asian-American

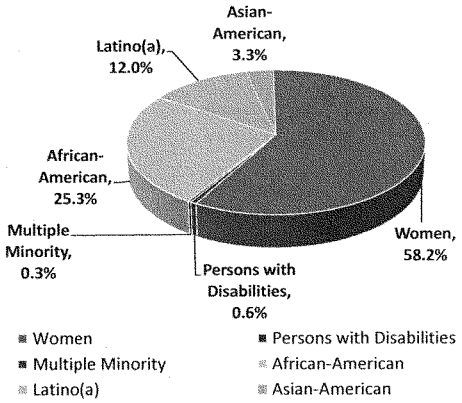
As of 3/31/2019

Percentages may not add up due to rounding

NOTES

MWDBE Breakdown by Classification

- **$2.69B** was managed by Women-owned firms
- **$1.17B** was managed by African-American owned firms
- **$555.6M** was managed by Latino(a) owned firms
- **$151.0M** was managed by Asian-American owned firms
- **$25.9M** was managed by Persons with Disabilities-owned firms
- **$9.7M** was managed by Multiple Minority-owned firms



As of 03/31/2019

NOTE: Breakdown of 44% MWDBE included in above chart

Percentages may not add up due to rounding

NOTES

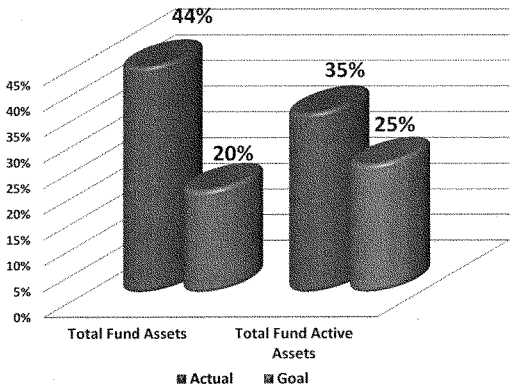
Total Fund MWDBE Assets

CTPF had $4.6B of the Fund's *total assets* invested with MWDBE firms

- **44%** of total Fund assets are managed by MWDBE firms

CTPF had $2.5B of the Fund's *active assets* invested with MWDBE firms

- **35%** of active Fund assets are managed by MWDBE firms



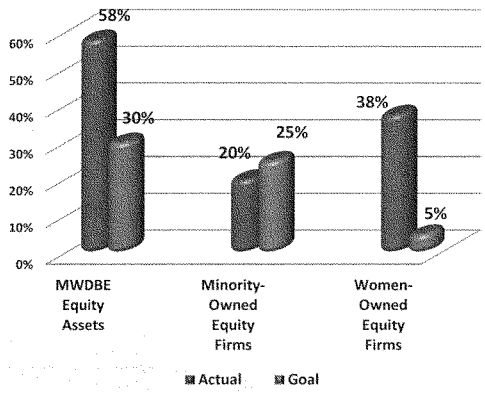
As of 03/31/2019

NOTES

MWDBE Equity Managers

For Domestic and International Equity assets, CTPF had $3.8B assets invested with MWDBE firms

- **58%** of all equity assets were managed by MWDBE firms
  - **20%** of these assets were managed by Minority-owned firms
  - **38%** of these assets were managed by Women-owned firms



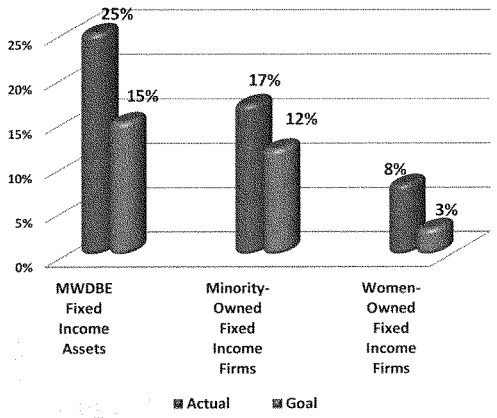
As of 3/31/2019

NOTES

MWDBE Fixed Income Managers

For Fixed Income assets, CTPF had $709.7 invested with MWDBE firms

- **25%** of all fixed income assets were managed by MWDBE firms
  - **17%** of these assets were managed by Minority-owned firms
  - **8%** of these assets were managed by Women-owned firms



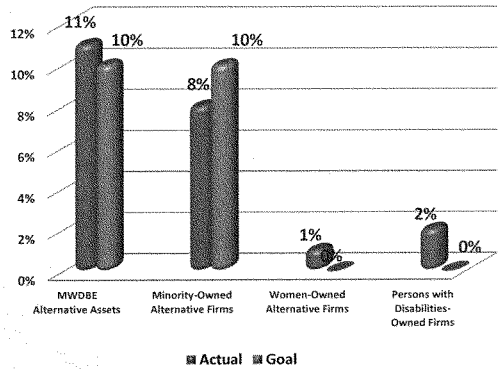
As of 3/31/2019

NOTES

MWDBE Alternative Managers

For Alternative assets, CTPF had $150.3M invested with MWDBE firms

- **11%** of all Alternative assets were managed by MWDBE firms
  - **8%** of these assets were managed by Minority-owned firms
  - **1%** of these assets were managed by Women-owned firms
  - **2%** of these assets were managed by Persons with a Disability-owned firms



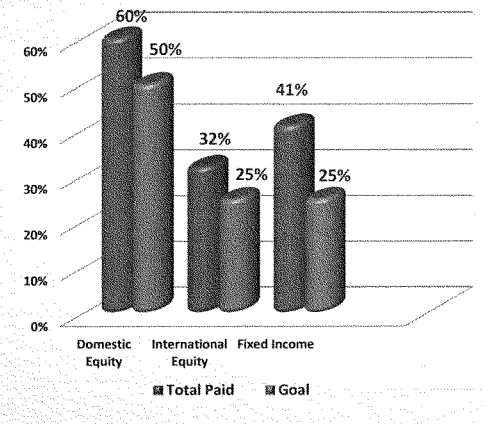
As of 3/31/2019

NOTES

Brokerage Commissions for 2018

In calendar year 2018, the Fund paid over **$2.8M** in Domestic Equity and International Equity commissions. **$1.1M** was directed to MWDBE brokers.

In 2018, the Fund had **$4.9B** in Fixed Income par volume traded and **$2.0B** was directed to MWDBE brokerage firms.



Calendar year 2018

NOTES

Table #2: Asset Managers

The special committee recognizes that not all funds/systems invest in the same assest classes and/or have completed FY 18. Therefore, please change the assest classes and years below as you see fit while maintaing the overall format of the table. NOTE: Data is as of December 31st of all years.

EMERGING/DIVERSE PLAN GOALS	2011	2012	2013	2014	2015	2016	2017	2018
Equities (Inclusive of Domestic & International)	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Fixed Income	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Private Markets (Inclusive of Real Estate, Private Equity & Infrastructure)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%

*If a goal was not set for specific private market asset classes, please input the goal for private markets in general

% OF ASSET MANAGED	2011	2012	2013	2014	2015	2016	2017	2018
African-American	21.7%	26.3%	12.0%	13.0%	12.7%	12.6%	10.7%	10.4%
Latino(a)	6.7%	27.3%	6.7%	8.3%	6.1%	4.8%	5.2%	5.5%
Asian-American	0.5%	0.7%	0.5%	0.4%	0.6%	0.1%	0.6%	0.4%
Female	4.5%	10.7%	12.7%	13.8%	15.5%	19.8%	24.6%	25.4%
Other	0.2%	0.1%	0.1%	0.1%	0.0%	0.2%	0.2%	0.3%

% OF FEES PAID TO MWBE	2011	2012	2013	2014	2015	2016	2017	2018
African-American	16.8%	21.2%	17.2%	17.8%	18.7%	18.7%	18.9%	19.2%
Latino(a)	5.6%	23.1%	6.8%	7.9%	6.0%	4.1%	3.9%	5.3%
Asian-American	1.4%	1.3%	1.5%	1.7%	2.1%	0.5%	3.2%	3.9%
Female	3.4%	3.5%	3.8%	5.0%	5.3%	5.8%	8.3%	8.3%
Other	0.2%	0.5%	0.0%	0.1%	0.4%	0.7%	0.6%	0.5%

% OF ASSET MANAGED BY ILLINOIS MWDBE FIRMS	2011	2012	2013	2014	2015	2016	2017	2018
African-American	4.5%	4.2%	5.1%	5.1%	5.2%	4.8%	2.1%	2.8%
Latino(a)	0.5%	0.5%	0.6%	0.6%	0.4%	0.4%	0.5%	0.9%
Asian-American	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Female	0.3%	0.3%	0.5%	0.6%	0.6%	0.2%	0.0%	0.8%
Other	0.0%	0.1%	0.1%	0.1%	0.0%	0.2%	0.2%	0.3%

% OF FEES PAID TO ILLINOIS MWDBE FIRMS	2011	2012	2013	2014	2015	2016	2017	2018
African-American	4.5%	4.3%	4.6%	5.6%	5.5%	5.2%	5.3%	5.2%
Latino(a)	0.9%	1.2%	1.0%	0.9%	0.6%	0.6%	0.8%	1.1%
Asian-American	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Female	0.4%	1.0%	1.1%	1.4%	5.5%	0.6%	0.0%	0.9%
Other	0.0%	0.5%	0.0%	0.1%	1.8%	0.7%	0.6%	0.5%

% OF ASSETS MANAGED BY MWDBE FIRMS	2011	2012	2013	2014	2015	2016	2017	2018
All Cap Equity	1.6%	4.8%	2.4%	2.3%	2.4%	2.5%	2.6%	2.7%
Large Cap Equity	17.8%	13.7%	13.8%	14.1%	14.2%	17.1%	18.3%	19.2%
Mid Cap Equity	0.5%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Small Cap Equity	2.7%	2.1%	2.1%	2.2%	1.8%	1.9%	1.6%	1.3%
Global Equity	0.0%	0.0%	0.0%	0.0%	0.3%	1.6%	0.3%	0.3%
International Equity All Cap	0.0%	0.0%	0.4%	0.4%	0.3%	1.3%	0.0%	0.0%
International Equity Large Cap	5.3%	6.0%	6.7%	6.6%	6.2%	5.0%	8.4%	7.8%
International Small Cap Equity	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.3%	0.3%
Emerging Markets Equity	0.0%	0.0%	0.4%	0.0%	1.7%	1.8%	2.4%	2.2%
Fixed Income	3.1%	3.1%	3.6%	5.3%	5.4%	5.2%	6.4%	6.9%
Emerging Markets Fixed Income	0.0%	0.0%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%
Real Estate	1.2%	0.6%	0.5%	0.7%	0.5%	0.5%	0.4%	0.6%
Private Equity	0.5%	0.5%	0.5%	0.6%	0.5%	0.5%	0.4%	0.6%
REITS	0.0%	0.7%	0.7%	1.0%	1.1%	0.0%	0.0%	0.0%
Hedge Funds	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.0%	0.0%
Infrastructure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table #3: Brokerage

The special committee recognizes that not all funds/systems invest in the same assest classes and/or have completed FY 18. Therefore, please change the assest classes and years below as you see fit while maintaing the overall format of the table. NOTE: Data is as of December 31st of all years.

UTILIZATION GOALS	2011	2012	2013	2014	2015	2016	2017	2018
Domestic Equity (MoM, AC,LC)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Domestic Equity (SC, Passive)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
International Equity (MoM,AC,LC, Passive)	25.0%	25.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
International Equity (SC)	25.0%	25.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Fixed Income	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
REITs	0.0%	0.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%

DOMESTIC EQUITY								
% of Commissions Paid to MWBE	2011	2012	2013	2014	2015	2016	2017	2018
African-American	33.9%	37.0%	37.7%	32.4%	41.8%	34.7%	34.5%	24.5%
Latino(a)	12.4%	8.0%	5.9%	10.6%	3.1%	4.8%	12.5%	15.8%
Asian-American	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	3.9%
Female	10.6%	8.2%	14.6%	20.1%	23.3%	18.1%	13.7%	13.6%
Other	0.4%	0.3%	0.3%	2.6%	2.2%	2.3%	3.0%	1.8%
IL Based	28.6%	31.5%	67.2%	100.0%	100.0%	97.8%	95.9%	89.9%

INTERNATIONAL EQUITY								
% of Commissions Paid to MWBE	2011	2012	2013	2014	2015	2016	2017	2018
African-American	19.9%	15.8%	14.6%	13.2%	14.6%	22.5%	16.7%	14.7%
Latino(a)	9.0%	11.1%	8.4%	5.7%	5.3%	0.2%	5.3%	8.6%
Asian-American	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Female	0.6%	1.7%	4.1%	5.5%	6.1%	9.2%	4.1%	2.4%
Other	0.0%	0.0%	2.3%	1.9%	0.0%	3.2%	8.1%	6.5%
IL Based	38.0%	27.0%	86.7%	100.0%	99.9%	98.2%	100.0%	94.4%

FIXED INCOME								
% of Commissions Paid to MWBE	2011	2012	2013	2014	2015	2016	2017	2018
African-American	28.8%	28.4%	31.2%	27.7%	33.5%	33.2%	33.6%	31.4%
Latino(a)	1.4%	0.1%	1.0%	3.1%	2.7%	1.5%	5.6%	7.4%
Asian-American	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Female	0.0%	0.0%	0.0%	0.8%	1.3%	1.1%	0.9%	0.8%
Other	0.1%	0.1%	0.4%	0.4%	1.2%	1.7%	0.7%	1.8%
IL Based	18.0%	16.0%	64.5%	100.0%	98.0%	97.4%	95.1%	97.9%

HEDGE FUNDS								
% of Commissions Paid to MWBE	2011	2012	2013	2014	2015	2016	2017	2018
African-American	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Latino(a)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Asian-American	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Female	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
IL Based	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

REITS								
% of Commissions Paid to MWBE	2011	2012	2013	2014	2015	2016	2017	2018
African-American	0.0%	0.0%	2.4%	2.3%	6.0%	8.7%	0.0%	0.0%
Latino(a)	0.0%	0.0%	1.4%	2.4%	3.1%	4.0%	0.0%	0.0%
Asian-American	0.0%	0.0%	1.7%	0.3%	0.0%	7.0%	0.0%	0.0%
Female	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	0.0%	0.0%
Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
IL Based	0.0%	0.0%	69.7%	94.4%	99.5%	95.8%	0.0%	0.0%

How we Invest in Emerging Managers

CTPF invests in MWDBE firms in four ways:

- **Direct Mandates**
  - Currently the Fund has direct relationships with **34** MWDBE firms, with **60** funds.
- **Fund of Funds (FoF)**
  - The Fund has one Real Estate (Majority-owned) and one Private Equity (African American-owned) manager in the Fund of Fund program.
  - Through the FoF programs, the Fund has relationships with **8** MWDBE firms via **8** investment funds.

As of 3/31/2019

NOTES

How we Invest in Emerging Managers

CTPF invests in MWDBE firms continued...

- **Manager of Managers (MoM)**
  - The Fund has one Domestic Equity (African American-owned) and one International Equity (Asian American-owned) manager in the Manager of Manager program.
  - Through the MoM programs, the Fund has relationships with **15** MWDBE firms via **18** investment strategies.
- **Graduation Program**
  - Since the inception of the Fund's MoM programs, **8** firms have graduated to direct mandates with the Fund.

As of 3/31/2019

NOTES

CTPF Outreach

CTPF's First Friday Meeting

- Occurs the first Friday of each month. Provides opportunities for Emerging and MWDBE manager firms to meet with CTPF's Investment Consultant, CTPF Trustees, CTPF Investment Staff, and CTPF's Executive Director to highlight their firm's products and accomplishments.

Manager of Managers (MoM) Programs

- Emerging managers have opportunities to manage CTPF assets. Due to their small size, these opportunities would not be available to them without the Manager of Managers programs.

Fund of Funds (FoF) Programs

- Emerging managers have opportunities to manage CTPF assets. Due to their small size, these opportunities would not be available to them without the Fund of Funds programs.

NOTES

CTPF Outreach

continued

Organizations and Involvement

- National Association of Security Professionals *(NASP)*
- New America Alliance *(NAA)*
- National Association of Investment Companies *(NAIC)*
- Women Investment Professionals *(WIP)*
- Women in Real Estate *(WIRE)*
- Pension Real Estate Association *(PREA)*
- Institutional Limited Partners Association *(ILPA)*

NOTES

CTPF Outreach

continued

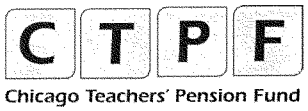
Conferences

- Emerging Manager Conferences (Opal, IMN)
- National Association of Investment Companies (NAIC)
- National Association of Securities Professionals (NASP)
- New American Alliance (NAA)
- Real Estate Emerging Manager Summit (REEM)

Publications

- Emerging Manager Monthly
- Fund Fire
- Pensions & Investments
- Financial Times
- Mandate Wire

NOTES



Office/Mailing Information:
Chicago Teachers' Pension Fund
ATTN: Investment Department
203 North LaSalle Street | Suite 2600
Chicago, Illinois 60601-1231

Office Hours: 8:00 a.m. – 5:00 p.m.
312.641.4464 main | 312.641.7185 fax
www.ctpf.org

Chicago Teachers' Pension Fund

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.

Testimony of
John W. Rogers, Jr.
Chairman, CEO, & Chief Investment Officer
Ariel Investments

Before the
Committee on Financial Services
Subcommittee on Diversity and Inclusion
U.S. House of Representatives

June 25, 2019

Chairwoman Beatty, Ranking Member Wagner, Chairwoman Waters, and members of the subcommittee, thank you for inviting me to speak with you. I would also like to thank the staff for their thoughtful work.

My name is John Rogers. I am the Chairman and CEO of Chicago-based Ariel Investments, founded in 1983, the first African American owned asset management firm in the country. I am the product of two pioneering parents – my father was an original Tuskegee Airman, and my mother was the first African American woman to graduate from the University of Chicago Law School in 1946.

Fast forward to today: the economic prospects of the black community have stalled or even gone backwards. For example, Ray Boshara of the St. Louis Fed reports that between 1992 and 2016, college-educated whites saw their wealth soar 96 percent while college-educated blacks saw theirs fall 10 percent.

We are here to discuss asset management, one of the largest sources of wealth, power, and jobs in today's economy. Of the wealthiest Americans on the 2018 Forbes 400 list, over 30 percent generated their wealth in financial services or real estate. The top three private equity firms control over two million jobs.

Asset management offers a stark reminder of the obstacles preventing people of color from fully participating in our capitalist democracy - even in 2019. Your committee oversees the country's largest banks. The four largest hire hundreds of asset management firms to invest nearly $1 trillion across three pools of assets: their own corporate pension plans, their own 401k plans, and externally managed wealth management platforms. You can essentially "round down to 0" the assets managed by diverse firms across those three buckets.

There is no shortage of high-performing diverse-owned firms. Vista Equity Partners is one of the best performing private equity funds in recent years. Brown Capital was named Morningstar Manager of the Year in 2015. And our Ariel Fund is the top performing fund in its category since the financial crisis. Yet, when compared to the largest asset management firms, we are essentially rounding errors. Vista, the largest black-owned private equity firm according to Black Enterprise, is less than 1% the size of BlackRock, which manages over $6.5 trillion.

As Reverend Jackson says, 'baseball became a better sport when Jackie Robinson was allowed to play.' The financial services industry is well-served by dynamic leaders such as Eddie Brown, Mellody Hobson, and Robert Smith who are job creators, philanthropists, and important role models in our community. Of course, we all saw Robert Smith commit to erase the student loan debt of the entire 2019 graduating class of Morehouse College.

I offer three thoughts on why barriers persist in the asset management industry. First, there is a tendency to work with people you know and with whom you are comfortable. Second, due to implicit or unconscious bias, many do not think of black leaders as successful money managers. Third, many banks, corporations and non-profits have embraced well-intentioned supplier diversity programs emphasizing construction, catering, janitorial services, and other commodity-related fields. However, this approach excludes us from the parts of the economy where wealth, power, and jobs are created today, such as asset management and other professional services. I would go as far as calling it a "modern-day Jim Crow."

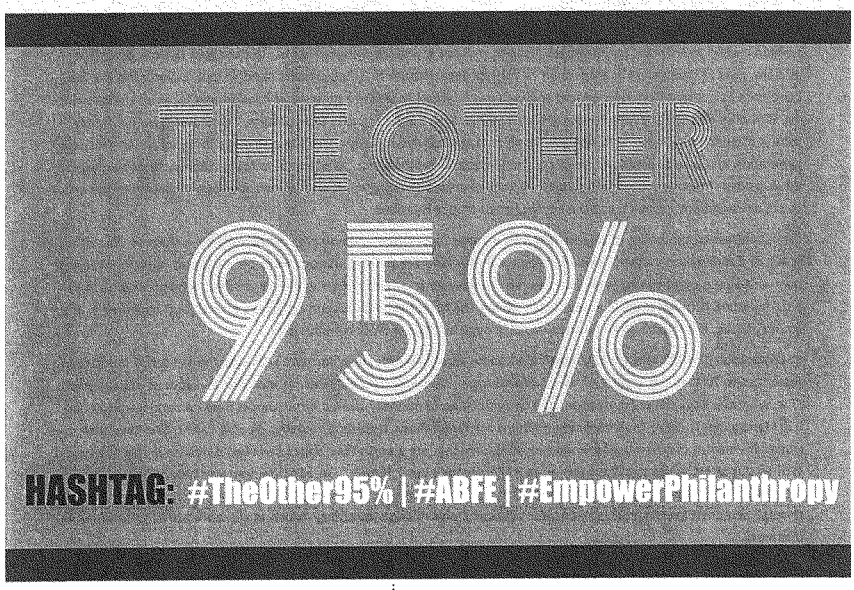
I would recommend asking institutions under the purview of this committee to implement three solutions. First, I support the proposed legislation adopting the "Rooney Rule," requiring banks and other entities to consider diverse-owned firms when aiming to fill new investment mandates. Second, measure all spending by specific category including asset management and other professional services, and replace the term 'supplier diversity' with 'business diversity.' Third, CEOs and their management teams can be held accountable by this committee for providing meaningful transparency and making measurable progress.

In closing, tackling economic inequality through business opportunity is more important than ever. As Dr. King predicted, African-Americans could only be liberated from the "crushing weight of poor education, squalid housing and economic strangulation" by being "integrated with power into every level of American life." Thank you.

December 2015 Edition
A Collection of Quarterly Editorials for ABFE Members

ABFE MAGAZINE

A Philanthropic Partnership for Black Communities



IN THIS ISSUE:

Investing in Mission: Leveraging All Our Assets (Pg. 3)
A Foundation Who Prioritizes Diversity in Hiring Asset Managers (Pg. 4)
Investment Managers on Missed Opportunities (Pg. 6)
The "Garcia Rule" (Pg. 8)
The Investment Manager Diversity Pledge (Pg. 10)
Philanthropy's Next Hurdle (Pg. 11-12)

SMART Investing

THE GARCIA RULE

Gilbert Andrew Garcia, CFA
Managing Partner
Garcia Hamilton& Associates

Mr. Garcia received a B.A. in Economics from Yale University. After graduating in 1985, he joined Salomon Brothers in New York City where he became a Vice-President specializing in mortgage-backed securities. In 1990, he joined former Mayor Henry Cisneros to build Cisneros Asset Management Company, ultimately becoming its President. In 2002, he joined Garcia Hamilton & Associates, and is the firm's Managing Partner. Under his leadership, the firm has reached approximately $6.2 billion (November 2015) in fixed income assets under management. In 2014, the firm was named Fixed Income Investment Grade Manager of the Year by Institutional Investor. In 2015, it was named Intermediate-Term Fixed Income Manager of the Year, which was the firm's second year in a row to be awarded by the magazine. Mr. Garcia has served on many boards and currently serves as Chairman of the Metropolitan Transit Authority of Harris County and as a member of the Board of Directors of Sanchez Energy [NYSE:SN]. He also serves on the Board of Directors of Sponsors for Educational Opportunity (SEO), a non-profit providing summer internships on Wall Street for minority undergraduates. At this year's Annual Awards Dinner, Mr. Garcia was awarded the SEO Alumni Leadership Award alongside other honorees, including former Mayor of New York City, Michael R. Bloomberg, and Co-Founder & Co-CEO of The Carlyle Group, David M. Rubenstein.

The "Garcia Rule" is a new investment manager search process adopted by the $231 million Metropolitan Transit Authority of Harris County (Texas) Union Pension Plan and $148 million Metropolitan Transit Authority of Harris County Non-Union Pension Plan & Trust (METRO) that will require at least one emerging investment manager* to be included in every asset class search going forward. The plans have defined emerging managers as women-, minority-, veteran- and disabled-owned firms and also firms with less than $1 billion in assets under management at the time of hiring.

The plans are calling the rule the "Garcia Rule" after its chairman Gilbert Garcia, managing partner at minority-owned asset manager Garcia Hamilton & Associates. The name borrows from the National Football League's "Rooney Rule," which requires minority candidates to be considered for head coaching and other front office positions.

ABFE Magazine: Why did your Plan decide to prioritize diversity of asset managers in the selection process? How did you go about moving that agenda?

Gilbert Andrew Garcia: At METRO (Metropolitan Transit Authority of Harris County), we are strong believers in transparency and inclusion. Furthermore, we are industry leaders in many areas. For example, METRO is the recipient of the 2015 "Outstanding Public Transportation System Achievement Award" by the American Public Transportation Association (APTA), while our pension funds recently reduced our return assumptions to 6.75%. Thus, it is natural for us to take a leadership role regarding asset managers. With the "Garcia Rule," everybody wins. The emerging firms gain valuable experience and exposure. Meanwhile, the plan might find an excellent firm that wouldn't get the exposure otherwise due to a variety of artificial barriers that presently exist. In today's low return environment, pension funds must turn over every stone possible to find quality managers who can consistently outperform their benchmarks.

ABFE Magazine: What have you learned about your Plan as you move through this process? Values alignment, hidden bias, etc.

Gilbert Andrew Garcia: The concentration of assets among the top consulting firms as well as the top managers is quite remarkable. The path of least resistance is for the same Top 10 consultants in assets under advisement to choose the same Top 10 managers in assets under management. The

"Garcia Rule" does not require emerging managers to be hired. It only requires that some emerging firms, inevitably the best firms, get exposure. We believe that excellent emerging managers exist and will begin to win more mandates if given the opportunity.

ABFE Magazine: What are your recommendations for your peers who are interested, but haven't yet moved on diversifying their asset managers?

Gilbert Andrew Garcia: They should adopt the "Garcia Rule" right away. Again, in today's low return environment, they can't afford not to adopt it. We all need the alpha! We also believe that in today's poor liquidity environment, smaller emerging firms have a competitive advantage. Compared to the industry behemoths, smaller emerging firms are more nimble, allowing them to make market movements more efficiently and to exploit smaller markets more thoroughly. Furthermore, the key players typically own their own firm. Thus, they are hungrier which brings greater intensity to how they approach the markets, how they approach client service and how they approach the running of their own businesses. ♦

**The term Emerging Manager may refer to certain characteristics of a firm including assets under management (AUM) and track record in addition to majority firm ownership by women or racial/ethnic minorities. ABFE does not use the term and encourages foundations to be explicit about engaging minority- and women-owned investment management firms.*

ADOPT "THE GARCIA" RULE

THE NEXT 45 YEARS OF ABFE INSPIRED INVESTING

- Promoting the Investment Manager Diversity Pledge in the field to encourage foundations to adopt inclusive practices in their manager selection process.
- Releasing Best Practices for Foundations & Endowments on Inclusive Investing, an instructional roadmap for foundations interested in implementing or optimizing an effective and sustainable effort to invest with women and minority-owned asset managers.
- Hosting learning and networking convenings for foundations seeking to exchange ideas and experiences with peers, engage diverse talent, and deepen their understanding of embedding an equity lens in endowment management practices.
- Launching the Foundation Working Group on Diverse Managers to support a community of practice for foundation decision makers to share ideas, experiences and useful tools to move the needle on hiring diverse managers.
- Sharing an assessment tool with the field which can be used to measure the culture and accountability of consulting firms regarding diversity, equity and inclusion in operations and manager engagement.
- Continuing to publish ABFE's Directory of Minority- and Women-Owned Investment Management Firms.

ALTRIUS
CAPITAL MANAGEMENT

June 22, 2019

The Honorable Maxine Waters
Chairwoman
House Committee on Financial Services
Washington, D.C. 20515

The Honorable Patrick McHenry
Ranking Member
House Committee on Financial Services
Washington, D.C. 20515

Dear Chairwoman Waters and Ranking Member McHenry:

I would like to express my strong support for the Diverse Asset Managers Act. As a former Marine aviator and Naval Academy graduate, I like many who chose to serve their country selected a different path than the traditional route for those who work in finance. Service men and women who make such sacrifices to serve their nation are often not afforded the connections made through more traditional routes and face significant obstacles when competing for asset management opportunities after departing their military service.

I founded my firm over twenty-two years ago and we currently manage over $300 million for private clients with each of our strategies maintaining a 4-star or 5-star Morningstar performance track record over the past decade plus. However, like many diverse managers, I have found it difficult to even be considered for a meeting or interview – and our firm has never been selected to manage the assets of a pension fund or foundation and has never been retained by a local, state or federal government entity for institutional asset management.

Research has shown that diverse managers consistently outperform industry benchmarks and have had overall stronger performance in market downturns. Though those from non-traditional finance backgrounds often face substantial barriers to entry, diverse, veteran owned businesses are strongly aligned with investors as our own net worth is correlated with our investor's success. In addition, our smaller size and diversity in background enables us to be nimble with our investment opportunities while offering a variety of insights and thinking outside of mainstream finance channels gleaned through traditional business schools and banks.

Support for the Diverse Asset Managers Act would enable the participation of more diverse asset management firms to manage institutional assets thereby benefiting our nation and their investors. I urge the Committee to pass this important measure.

With warmest regards,

James M. Russo
President

Two Hannover Square
434 Fayetteville Street
Suite 2110
Raleigh, NC 27601
(919) 746-7977 Phone
(919) 746-8169 Fax

P.O. Box 12687
1323 Commerce Drive
New Bern, NC 28561
(252) 638-7598 Phone
(252) 635-6739 Fax

toll free: 855 altrius
www.altriuscapital.com

CABRERA CAPITAL MARKETS, LLC

BOSTON • CHICAGO • HOUSTON • LOS ANGELES • NEW YORK • PHILADELPHIA • SAN ANTONIO • TAMPA

Friday, June 28, 2019

Statement for the Record From Martin Cabrera, CEO of Cabrera Capital Markets, LLC

House Financial Services Committee

Subcommittee on Diversity and Inclusion

Since 2003, I have been working on issues of inclusion of minority and women owned firms with our City, County, State, and Federal pension fund systems. There has been some progress since that time with Emerging Manager programs starting in various states, and now the initiative has grown to include Taft-Hartley pension funds and Endowments and Foundations. Although there has been some success in regions, some more than others, the number of minority and women owned firms managing assets and executing brokerage commissions for the pension fund systems has remained below 1% of the market share. Kudos go out to Congresswoman Maxine Waters for spearheading the efforts and putting forward a bill and conducting hearings to start addressing the issue at the federal level. This issue is about Minority and Women Owned firms getting a real opportunity to compete for business based on their merits not just their minority status. Diversity is good for business. Research proves that diverse-owned companies are often well situated to ascertain capital inefficiencies in the market, and as such, are primed to outperform their peers.

Several factors contribute to the low number of MWOB firms managing assets such as:

- Pension fund systems that do not see the value in smaller firms outperforming their peers and the market
- Consultants that only do business with larger firms and do not include smaller firms into their searches
- An unconscious bias towards MWOB firms.

Some of the pension funds will try to hide behind the "Fiduciary Responsibility" mantra, but staff and board members are breaching their "Fiduciary Responsibility" by not looking at all of the top performing managers when making a decision on who to manage their assets. If they looked at all of the top performing managers, they would easily find a plethora of MWOB firms. The hearings started to address some of the roots of the problem on access to capital for minority owned firms.

10 South LaSalle Street, Suite 1050, Chicago, IL 60603 phone (312) 236-8888 toll free (800) 291-2388 fax (312) 236-8936
www.cabreracapital.com

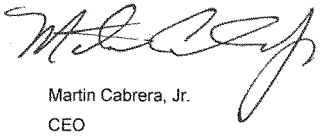
There have been several successful programs throughout the country that have allowed pension fund systems to allow minority firms to manage assets in a significant way, all based on their performance.

The State of Illinois Treasurer, Michael Frerichs has implemented several programs that have increased the opportunities and assets with MWOB that are outperforming their benchmarks. To quote Mr. Frerichs "Using diverse investment firms is not only about creating growth and opportunity in our communities, but it's integral to increasing our investment returns." Illinois State Board of Investments have implemented Emerging Manager and Emerging Brokerage programs that have increased their performance in the fund and have exceeded expectations.

This House bill is the first step to increasing MWOB participation in the pension fund systems. Smaller MWOB firms have outperformed the benchmarks more so than their counterparts year after year. Simply put, diversity is good for business, diversity is good for our clients and most importantly, diversity is good for our country. Our focus must always be geared towards outperforming benchmarks and providing the best outcome for our clients. Competition is good for our clients and the pension funds are the biggest beneficiaries. Imagine what MWOB firms will achieve when the playing field is leveled.

Thank you to Congresswoman Maxine Waters, congressional members and the House Financial Services Committee staff for your hard work and dedication to this House bill and pension fund initiative.

Respectfully submitted,



Martin Cabrera, Jr.
CEO
Cabrera Capital Markets, LLC

Emerging Manager Monthly
A Publication of Financial Investment News
November 2015 www.emergingmanagermonthly.com Vol. X, Issue 11

Texas County MTA Plans To Include Emerging Mgrs. In All Searches

A Texas-based transit authority will now require at least one emerging asset management be included in every manager search conducted by its two pension funds going forward as part of a move that its chairman hopes will spur other institutions to recognize that quality firms are being ignored by the investment consulting community.

The $231 million Metropolitan Transit Authority of Harris County (Texas) Union Pension Plan and $148 million Metropolitan Transit Authority of Harris County Non-Union Pension Plan & Trust will now require women-, minority- and disabled-owned firms or managers with less than $1 billion in assets under management to be included in every asset class search.

The new process was led by MTA Chairman Gilbert Garcia, managing partner of Houston-based investment manager Garcia Hamilton & Associates, a minority-owned firm with more than $6 billion in assets across domestic fixed-income and growth equity.

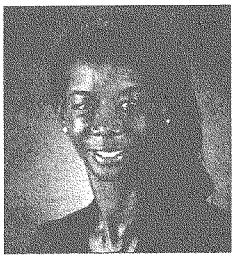
Garcia says he decided something needed to be done when he saw statistics that showed that the 20 largest consultants advised on nearly 90% of total institutional assets and in the fixed-income space, the top 20 firms manage more than 70% of total assets.

"If consultants will go the extra mile, I think everybody wins and, in today's environment, these pension funds have to go the extra mile because they need to find the alpha to meet their return assumptions in a low return environment," Garcia said.

Pension Trustee Jason Simpson said in a statement that, "Not only will we be reaching a greater depth of managers, but the opportunity given to women and minority managers is immeasurable. We know this is a positive move and hope this will lead

See GARCIA, Page 4

Teacher Retirement System of Texas Loses Emerging Manager Program Director



The $132.3 billion Teacher Retirement System of Texas has lost its second emerging manager program head in the past 18 months.

Cheryl Hines, who joined the plan last December to oversee its approximately $2 billion emerging manager program, has departed to "pursue other opportunities," the plan said, in a statement.

"I enjoyed my time at TRS. TRS is a wonderful organization but I feel it is best for me and my family to consider some outstanding opportunities on the East and West Coast," Hines said, in an interview.

Hines was hired by the plan to replace Stuart Bernstein, who left in July 2014 to join real estate firm CapRidge Partners (EMM, 7/10).

The plan also saw Analyst Andy Cronin leave earlier this year and Analyst Krista Kerr left the plan to join Oak Street Real Estate Capital last month as a senior associate. A call to Oak Street was not immediately returned.

The plan has named Sylvia Bell, managing director of investment operations, as interim director of the emerging manager program.

The remaining emerging manager investment staff includes Analysts Edgar Mayorga, Shruti Suresh and Joseph Kim. Suresh and Kim joined the plan in July.

Plan Spokeswoman Juliana Fernandez Helton did not respond to an e-mail seeking information on whether the plan will conduct a search for a new emerging manager program director.

Hillswick Posts Top Returns In Q3 As Equity Mgrs. Struggle

Fixed-income manager Hillswick Asset Management brought home the top ranking in a third quarter that was not kind to the equity markets.

The firm returned 4.92% for the quarter ending Sept. 30 in its long duration strategy to lead the way in a quarter in which just 115 out of 987 products saw positive performance.

Opus Capital Management's domestic micro-cap value strategy posted the highest 1-year return at 17.95% and Mazama Capital Management's mid- to large-cap strategy had the strongest 3-year return at 26.07%.

Overall 383 managers were included, with core fixed-income remaining the most populated strategy with 76.

Please see the disclaimer in the full report for details on how the data is collected from eVestment.

See Report, Page 1a

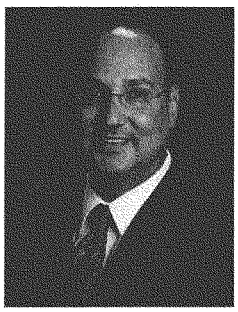
Copyright Notice: Copyright 2015 by Financial Investment News (FIN) and GRLM, LLC. All rights reserved. Photocopy permission is available solely through GRLM, LLC, Financial Investment News, 267 Fifth Avenue, Suite 1010, New York, NY 10016. Copying, photocopying or duplicating this publication in any form other than as permitted by agreement with FIN is prohibited and may constitute copyright infringement subject to liability up to $100,000 per infringement. For photocopy permission, back issues and bulk distribution needs, please contact Matthew McCue at 646-810-1075 or e-mail mmccue@fin-news.com.

GARCIA: Hope Is For Other Institutions To Adopt Rule

Continued From Page 1

to change within the industry on a national level."

The plans are calling the rule the "Garcia Rule" after Garcia, borrowing from the National Football League's Rooney Rule, which requires minority candidates to be considered for head coaching and other front office positions.



Gilbert Garcia

Ruby Dang, partner and director of marketing and client services at Garcia Hamilton and a trustee on the Harris County MTA pension board, said in the past that emerging managers have been afraid to speak up because of fear of repercussion from the investment consultant universe but that Garcia Hamilton's size has provided it with the ability to "do the right thing for the industry and have the courage to move forward."

"This is not about us at all, it is about the industry and if we have to be the first ones to step out and if that has negative repercussions, we think it is the right thing to do," Garcia said. "We are now getting found. It is really about the others that aren't critical mass yet whose performance isn't getting found."

Dang said the trustees see the importance in their role, which is to get the best return for the participants. "I think in showing how smaller firms can probably exploit markets differently and can generate alpha, the trustees were thrilled," she said.

Garcia said that it will take some time for the Garcia Rule to have an impact on the MTA plans as they move through an asset allocation review with new consultant Marquette Associates but that with time, he fully expects positive results.

Ultimately, it is the hope that other plans, particularly larger institutions, will follow the MTA's lead. "For a plan that is of substance in size, to step out and do something like this, that will really move the needle," Garcia said.

"The managers win because they get exposure to the plans, they get exposure to the consultant, the plans win because they probably see some players they would not have seen otherwise...and the consultants win too because if they also through this process find undiscovered firms that may not have hit their radar before that are firms they can bring to all their clients," Garcia added.

fin|news

We are proud to announce our recent partnership with InHub!

Providing subscribers exclusive institutional searches conducted through InHub's eRFP solution.

*Mention us to receive a discount towards an InHub subscription.

InHub™

Meet InHub: An online eRFP solution for the institutional community that provides a streamlined web-based RFP process in an open-search or invitation-only environment.

Don't issue another RFP without seeing this tool first. Go to www.erfp.us/demo to request a personal demonstration.

July 11, 2019

GH&A
GARCIA HAMILTON & ASSOCIATES, L.P.

5 HOUSTON CENTER
1401 MCKINNEY, SUITE 1600
HOUSTON, TX 77010
TEL: (713) 853-2322
FAX: (713) 853-2308
WWW.GARCIAHAMILTONASSOCIATES.COM

The Honorable Chairwoman Maxine Waters
US House Committee on Financial Services
2221 Rayburn House Office Building
Washington, D.C. 20515

Dear Congresswoman Waters:

We are writing on behalf of Garcia Hamilton & Associates (GHA) an MWBE certified investment management firm located in Houston, Texas. GHA is proud to be 100% employee-owned with 91% held by minority and women partners and 61% held by minority partners. Presently, we manage over $14 billion in fixed income assets, making us one of the largest MWBE firms in the country. We strongly support the Draft H.R. Bill, the "Diverse Asset Managers Act", which would "require the Board of Governors of the Federal Reserve System, companies registered with the Securities and Exchange Commission, and companies registering securities with the Commission, to consider diverse individual-owned and controlled asset management firms when seeking asset management services, and for other purposes."

The industry is predisposed that diverse firms are "sub-par" compared to their white-male counterparts. Our performance proves this to be false as we have received numerous performance awards over the past decade. It is further demonstrated to be false by recent studies such as the "Diversifying Investments: A Study of Ownership Diversity and Performance in the Asset Management Industry" released by Knight Foundation in 2019, which concluded that there is no difference in the quality of returns generated by diverse owned firms and non-diverse owned firms. In fact, the study noted that in some asset classes, diverse firms outperformed non-diverse firms.

Even worse, diverse managers face many barriers of entry that have been implemented in recent years to prevent new competitors including minimum asset size, track records and insurance coverage. The majority of these barriers were put in place by the consultant industry that influences trillions of dollars of assets. The consultant industry performs the asset allocation for pension funds and usually sources money managers as well. Regrettably, most large consultants have little employee diversity which negatively impacts their decision process. Furthermore, the largest 20 consultants dominate the industry and influence the vast majority of pension fund assets. In some cases, many of these large consultants receive revenue from the very same large money managers they recommend to clients without adequate disclosure. This legislation will go a long way to leveling the playing field, improving transparency and insuring that pension funds get exposure to potential alpha generating managers.

Despite our award winning performance and asset size, even we face numerous obstacles and outright racism. As an example, we previously met with one of the ten largest consulting firms on the West Coast. At that meeting, senior members of their firm rudely proclaimed they would never hire us because we had a problem with white males. They reached this conclusion because we "did not have enough white male partners in the firm."

This event had a profound impact on us, specifically our Managing Partner Gilbert Garcia. At the time, he was Chairman of the Board of the Metropolitan Transit Authority of Harris County (Metro). Ultimately, Metro's pension board adopted the "Garcia Rule" in 2014 requiring Metro's consultant to include in every manager search at least one firm that is either 51% owned by women/minority/disabled veteran partners or a small firm, defined as less than $1 billion in assets. The Rule does not mandate any hiring quota but simply requires exposure. Everybody wins! The consultants are forced to track diverse firms, trustees get exposure to diverse firms that might become the next successful mega-firm, and diverse firms get much needed exposure that can only benefit them over time.

This new legislation is virtually identical to the "Garcia Rule." Because of its national impact, it will lead to an increased pool of investment managers that can only be additive to the pension community's quest for alpha. Asset management firms registered in the United States are managing $70 Trillion in assets, of which less than 1% are managed by women and diverse firms. In 2019, with the incredible diversity among participants, this is simply not acceptable. Today's proposed legislation would do more to open this industry to healthy new competition than all efforts combined over the past 35 years.

Thank you for being an amazing change agent and champion for women and diverse focused legislation. We are available anytime to answer any of your questions or to expand on any of our comments.

Sincerely,

Gilbert A. Garcia, CFA
Managing Partner

Janna Hamilton
Partner

Ruby Munoz Dang
Partner
Director of Marketing

Stephanie J. Roberts
Partner

Kevin Lunday, CPA
Partner
Chief Operating Officer

Karen H. Tass, CFA
Partner
Portfolio Manager

Nancy Rodriguez
Partner
Portfolio Manager

Beth L. McWilliams
Partner
Chief Compliance Officer

Jeffrey D. Detwiler, CFA, AAMS
Partner
Portfolio Manager

Benjamin D. Monkiewicz
Partner
Portfolio Manager

Gary Montgomery
Partner
Systems Manager

press release

New METRO Going Places

Media Hot Line
713.739.4040

Release Date: October 19, 2015

The Metropolitan Transit Authority of Harris County (METRO) is the region's largest public transit provider, offering safe, reliable and affordable transportation services about 370,000 times per day. Besides operating more than 1,200 buses on a New Bus Network, METRORail's expanded system includes the Red Line (Main Street and Northline), Green Line (East End) and Purple Line (Southeast). METRO's services also include: STAR Vanpool, METROLift, HOV lanes, HOT lanes, Bikes-on-Buses/Trains program, Park & Ride, and road improvement projects. Learn more about METRO services at ridemetro.org where you will also find information about our T.R.I.P. app, Next Bus Arrival texting and the new digital, interactive rider tool METRO 360 [take a seat].

METRO Pension Plans Adopt "Garcia Rule" for Investment Managers

The **Union and Non-Union Pension Plans** of the Metropolitan Transit Authority of Harris County (Houston METRO) took significant action that will surely serve as a catalyst for national change. As background, the top money managers in size dominate most asset classes. Furthermore, the path of least resistance for the consultant community has been to hire these large firms which inadvertently exasperates this trend. Regrettably, as we have seen in the news, bigger firms do not always mean better and do not escape interpersonal challenges that develop during times of stress. In fact, smaller emerging firms are often more nimble, less bureaucratic and more entrepreneurial than larger firms, often leading to greater alpha. Because of historical biases and other barriers of entry, women and minority–owned firms are often overlooked and often struggle to reach critical mass and to grow beyond the emerging bucket.

Thus, borrowing from the National Football League's very successful "Rooney Rule" to insure exposure for minority candidates in head coaching and other front-office football positions, **METRO's union and non-union pensions** have adopted the "Garcia Rule" named after METRO's Chairman of the Board of Directors, Gilbert Garcia. The rule requires consultants to bring forward at least one emerging firm in every asset class search going forward.

"Not only will we be reaching a greater depth of managers, but the opportunity given to women and minority managers is immeasurable," said pension trustee Jason Simpson. "We know this is a positive move and hope this will lead to change within the industry on a national level."

METRO's union and non-union pension trustees have defined "emerging" as woman-owned, minority-owned, veteran-owned, disabled American-owned, or firms less than one billion in asset size at the time of hiring.

"Now more than ever, we need a Garcia Rule to insure that firms are fairly vetted and adequately followed by the consultant community," said Chairman Garcia. "Everybody wins. The firms get increased exposure while the plan just might find an extraordinary hidden jewel. It may be additional work, but in today's challenging environment to deliver alpha, it is more than worth the extra effort."

The Largest Network of Diverse-Owned
Private Equity Firms and Hedge Funds

1300 Pennsylvania Avenue, NW, Suite 700
Washington, DC 20004

June 14, 2019

Chairwoman Maxine Waters (D-CA)
U.S. House Committee on Financial Services Committee
2221 Rayburn House Office Building
Washington, DC 20515

Dear Chairwoman Maxine Waters,

I am writing to you on behalf of the members of the National Association of Investment Companies (NAIC), the industry association which represents diverse-owned private equity and hedge funds with over US$110 billion under management in the aggregate. We would like to provide the statement below for the hearing to be convened on June 26, 2019 by the Subcommittee on Diversity and Inclusion entitled, "Diverse Asset Managers: Challenges, Solutions and Opportunities for Inclusion."

The National Association of Investment Companies (NAIC) continues to be concerned about the disproportionately lower level of federal, public, and private assets allocated to diverse managers versus their peers despite their documented outperformance. We believe diverse-owned firms lack access to manage funds for the U.S. federal government, state and local pension plans, and other institutional investors (endowments, foundations, corporate pension plans, insurance companies, banks, etc.), at a time when these managers collectively represent the best performing segments of the asset management industry.

The lack of investment with diverse firms is not because of a dearth of established diverse managers or because diverse managers have not demonstrated superior performance. Successful investing tends to come from manager selection, and today there are many diverse-managed firms that are generating top quartile and decile returns. The enclosed 2017 performance study by KPMG and Aon Hewitt, *Examining the Returns*, reported that Diverse Private Equity funds outperformed the median Cambridge U.S. Private Equity funds benchmark during a majority of vintage years by over five percent. The total assets for all federal pension plans exceeds one trillion dollars. Despite the high performance of diverse-owned managers, the federal government invests less than one quarter of one percent of its assets with diverse- and women-owned firms.

Over the last several decades, there has been significant growth in the number of diverse investment managers. There are nearly 900 diverse-owned private equity, real estate, hedge, and infrastructure funds, and there has been an emergence of large, established diverse managers. Seven NAIC members – Advent Capital Management, Brightwood Capital, Clearlake Capital Group, Palladium Equity Partners, Siris Capital Group, Sycamore Partners, and Vista Equity

Partners – each have billions of dollars of assets under management and over $90 billion of private equity and hedge fund assets in the aggregate.

In 2014, the #1 ranked private equity firm in the global HEC-Dow Jones Private Equity Performance Ranking was Vista Equity Partners. Additionally, since 2014, 17 diverse-owned firms set out to raise capital for funds and managed to reach oversubscribed levels for 26 funds, which we believe signals changes in the way institutions invest their money while demonstrating the strong returns many of these managers are providing their investors.

For the last five years, we have enjoyed working with Congresswoman Maxine Waters and Congressman Gregory W. Meeks, to address the disparity diverse-owned funds have in managing federal and public assets. In July 2014, NAIC, along with the National Association of Securities Professionals (NASP) and the New America Alliance (NAA), hosted the first-ever Federal Chief Investment Officer (CIO) Briefing, where we provided an introduction to the emerging and diverse manager marketplace and explored the topic of the underutilization of emerging and diverse managers. Although we invited each of the 11 major Federal agency Chief Investment Officers (CIOs) to participate, only two attended: William G. Clark, SVP and CIO of the Federal Reserve System's Office of Employee Benefits; and John F. Greenberg, CIO of the Pension Benefit Guaranty Corporation (PBGC).

Following that briefing, in September 2014, I attended a meeting held at The White House, along with Secretaries Jack Lew and Thomas Perez, Senators Elizabeth Warren and Cory Booker, Representatives Maxine Waters and Gregory W. Meeks, Jeffrey Zients, the National Economic Council Director; and others where the topic of how the federal government could increase the returns of its pension plans by addressing the underutilization of diverse and emerging managers was discussed.

In July 2015, Senator Cory Booker, Congressman Gregory W. Meeks, Senator Elizabeth Warren, and Congresswoman Maxine Waters hosted a Federal CIO briefing to discuss the utilization of diverse-owned asset managers by the various federal pension plans and pools of investment capital, which NAIC supported. Broderick Johnson, Assistant to President Obama and Cabinet Secretary, spoke during the briefing, and expressed President Obama's and his cabinet's continuing support on the issue. Johnson also reflected on actions taken by President Obama's administration, including the prior year's summit, the creation of a pilot program for smaller managers at PBGC, outreach to the various plans regarding their exposure and efforts, and finally the consideration of the inclusion of diverse firms in the Thrift Savings Plan open window enrollment.

Several representatives from federal agency plans attended the July 2015 meeting, and spoke on the Federal CIO panel, including William Clarke, Federal Reserve Employee Benefits System; Ravindra Deo, Federal Thrift Investment Board; Renee Wilder, Federal Thrift Investment Board; and Joseph Jordan, Army Navy Exchange. Michael Kennedy, Chairman of the Federal Thrift, provided additional comments, and John Greenberg, CIO of the PBGC, had committed to participate but was unable to due to an active RFP for the PBGC pilot program. We were disappointed that many of the Federal agency CIOs declined the Congressional members' invitation to participate. A key finding from the Federal CIO panel was that continued education, advocacy, and outreach are needed to eradicate the lack of investment with diverse asset managers.

Following the briefing, NAIC received notice that the Government Accountability Office (GAO) would be conducting a study on "The Barriers to Utilization for Diverse Managers," with an objective to establish a definitive set of facts, outlining the lack of use of diverse managers, the

inapplicability of the Federal Acquisition Regulation (FAR), the barriers to entry, and data on utilization, etc. NAIC had several discussions with the GAO to facilitate the study. The September 2017 GAO study, *Investment Management: Key Practices Could Provide More Options for Federal Entities and Opportunities for Minority- and Women-Owned Asset Managers*, highlighted that diverse- and women-owned asset managers face challenges when competing for investment management opportunities with institutional investors and raised questions about how often federal entities use diverse asset managers and the transparency of their selection processes.

The White House summit in 2014, the Federal CIO briefings in 2014 and 2015, and the 2017 GAO study have helped to foster a dialogue regarding the lack of diversity across the federal agency pension plans and other public pools of capital, but we believe more actions can and should be taken to provide diverse investment managers with fair and equal consideration for access to manage capital. We propose the following actions for the federal and public pension investment plans:

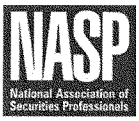
- **Legislative Action**: Legislation should be enacted that requires all pools of capital to become more inclusive; from the composition of their board of trustees, investment staff, as well as the capital allocated to diverse-owned firms.
- **Targeted Allocation**: On a best efforts basis, there should be requirements that at least 10% of all capital must be invested with diverse managers.
- **Appointments**: When there is an opportunity to appoint trustees and board members, consideration should be given to those with a more inclusive approach.
- **Congressional hearings**: On an annual basis, all of the CIOs should be required to brief the respective Senate and House Finance Committees on their investment with diverse-owned managers.
- **The Rooney Rule**: The Rooney Rule should be required establishing that all investment mandates must consider at least one diverse-owned manager before placing capital.
- **What Gets Measured Gets Done**: Each plan should publish a list of diverse managers that they met with on a quarterly basis and the resulting outcome of the meeting (hire/non-hire and why).
- **Data Requests**: Investment consultants and advisors to the federal and public plans should be required to report on the diversity of their management and investment staff and the diversity of the managers they have approved for their clients' investments.

Sincerely,

Robert L. Greene

President & CEO

July 11, 2019



The National Association of Securities Professionals (NASP) is a professional services organization formed in 1985 that serves as a resource for the diverse community at large. NASP is also a trade organization for diverse professionals within the securities and investments industry. NASP serves its constituents by providing opportunities to share information about the securities markets, and by functioning as a repository for data regarding current trends, facilitating industry-focused educational seminars, and hosting networking events. With over 500 members and eleven chapters across the United States, NASP's mission and objectives are:

- To pursue the highest standards of professionalism and excellence among NASP members
- To achieve equal opportunity for diverse populations in the securities industry
- To foster the growth and development of diverse professionals of diverse owned and controlled institutions in the securities industry
- To enhance communication among members
- To increase public awareness, especially among diverse populations, of public and private career opportunities in finance.

To pursue progressive and balanced policies affecting public and private finance
Our members include diverse asset managers in traditional and alternative asset classes. These include (i) firms with assets over $2 billion; (ii) firms with assets under $2 billion; and (iii) firms that are managers of managers that allocate pension dollars to provide funding opportunities to smaller firms while also providing investors with ongoing due diligence, monitoring and risk controls. Among our members, and of importance to the traditional and alternative asset management ecosystem, are minority-and women-owned (diverse owned) investment banks and broker dealers, that provide advisory and securities sales and trading services to asset managers. In addition, our members include other professionals who serve the financial services industry such as lawyers and accountants.

NASP supported the Dodd Frank Wall Street Reform and Consumer Protection Act of 2008 (Dodd Frank), including its strong advocacy for Section 342 of Dodd Frank that resulted in the creation of the Offices of Minority and Women Inclusion for the GSEs and the federal agencies that regulate the financial services industry.

In keeping with our mission, and the spirit of Section 342 of Dodd Frank, NASP strongly supports the proposed Diverse Asset Managers Act, especially its requirement that "the Board of Governors of the Federal Reserve System, companies registered with the Securities and Exchange Commission, and companies registering securities with the Commission...consider diverse individual owned and controlled asset management firms when seeking asset management services, and for other purposes"[1].

---

[1]Discussion Draft HR____to the 116th Congress, 1st Session.

NASP supports this legislation because:

- Research demonstrates that diverse asset managers generate the same level (or better) of positive excess investment returns across all major asset classes as non-diverse owned firms.

- Diversity and inclusion will allow the Federal Reserve System, companies registered with the Securities and Exchange Commission, and companies registering securities with the Commission to meet their fiduciary duties.

- Diversity and inclusion in the hiring of diverse asset managers for the Federal Reserve System will allow the System to reflect the diversity of its beneficiaries and the nation as a whole.

The global asset management industry is vast: $69.1 trillion in assets under management and $99 billion in profits in 2016. Diverse owned asset management firms manage less than 1% of these assets. Yet, research has consistently shown that diverse firms offer competitive returns. A recent study authored by Harvard Business School Professor Josh Lerner, and released by the Knight Foundation, which examined four major asset classes (mutual funds, hedge funds, private equity and real estate), concluded that there is no difference in the quality of returns generated by diverse owned firms and non-diverse owned firms. The study noted that in some asset classes, diverse firms outperformed non-diverse firms.[2]

Fiduciaries, including the Board of Governors of the Federal Reserve System and other entities targeted by the proposed legislation, have a duty to source and consider qualified investment managers from the larger pool of asset managers available, which include underrepresented diverse firms. How else can they ensure that their beneficiaries have the opportunity to receive attractive risk adjusted returns? NASP believes that the duty of fiduciaries is to seek outpaced returns wherever they exist. The exclusion of diverse owned firms represents a failure to source from an emerging pool of talented professionals who have earned their seats at the table and who perform at the same level or better than their peers.

Given the research that substantiates the performance of diverse firms, their continued exclusion is an indication that the legacy of discrimination persists and that these firms still face barriers to entry that are not related to performance. These barriers are anti-competitive forces that present a challenge to a plan sponsor's fiduciary duty. The proposed legislation represents an intentional effort to address these impediments to free market competition, especially for small businesses. The removal of these blocks would aid the Federal Reserve System in sourcing investment managers from a truly comprehensive universe of available talent. The legislation would also provide a new channel of significant opportunities for diverse owned firms, which are more likely to hire, retain and promote minorities and women, and to do business with other minority owned firms.

---

[2] Source: Diversifying Investments: A Study of Ownership Diversity and Performance in The Asset Management Industry, January 2019; Professor Josh Lerner, Harvard Business School, Bella Research Group, Knight Foundation.

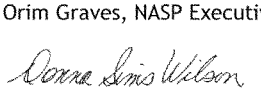
The inclusion of diverse owned investment management firms would have the additional benefit of creating investment options that reflect the diverse demographics of the annuitants and participants in the Federal Reserve Pension System. For example, according to the Office of Personnel Management (OPM), in 2017 36.7% of all Executive branch employees were minorities.[3]

Traditional and alternative asset managers utilize trading and advisory services offered by broker dealers and investment banks, respectively. Likewise, ensuring that all investment managers hired by the Federal Reserve Pension System, companies registered with the SEC, and companies registering securities with the SEC utilize diverse owned investment banks and broker dealers would be an important additional element to this legislation.

As a professional and trade organization, NASP emphatically supports this legislation on behalf of our members! NASP would be honored to provide additional data to Congress upon request.

Sincerely,

Orim Graves, NASP Executive Director



NASP Board Chair

901 K Street, NW, Suite 310 ▪ Washington, DC 20001 ▪ 202-371-5535 - www.nasphq.org

[3] Source: OPM Executive Branch Employment by Gender and Race/National Origin; https://www.opm.gov/policy-data-oversight/data-analysis-documentation/federal-employment-reports/reports-publications/executive-branch-employment-by-gender-and-racenational-origin/

THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
SCOTT M. STRINGER

Submitted to the U.S. House Financial Services Committee
"Diverse Asset Managers: Challenges, Solutions and Opportunities for Inclusion"
July 11, 2019

Office of the New York City Comptroller Scott M. Stringer
Emerging Manager Programs

Background

It is well-known that the finance industry is dominated by white men. As of 2018, women- and minority-owned investment firms managed just over one percent of the total $70 trillion in industry-wide assets under management.[1] While this statistic has improved over time, women and other underrepresented communities are still dramatically far behind in number and share of wallet. Since becoming New York City Comptroller in 2014, Scott M. Stringer has been a staunch advocate for addressing this inequity by putting diversity front and center in the office's mission. To uphold its responsibility as advisor and custodian of the nation's fourth largest pension system, the Office of the New York City Comptroller Scott M. Stringer ("the Comptroller's Office") has implemented policies and initiatives to expand opportunities for diverse managers to do business with New York City and has built a pipeline to deliver lasting, industry-wide change.

The Comptroller's Office's commitment to expanding investment with diverse managers dates back to the early 1990s, when the office launched its first initiatives focused on increasing the number of emerging managers working in our public equity, public fixed income, and private equity asset classes. At that time, the Bureau of Asset Management ("BAM") of the Comptroller's Office used a mix of direct investment and partnerships with fund-of-fund managers to assist in sourcing top-notch managers globally, including newer funds and those with diverse leadership. These efforts have delivered solid and tangible results over time, as Comptroller Stringer recognized an opportunity to do more to achieve better risk-adjusted returns and safeguard the retirement security of the over 700,000 New York City pensioners he serves.

Expanding opportunity for diverse managers and incorporating a framework of increasing diversity goes hand-in-hand with maximizing pension returns, in accordance with the fiduciary

[1] John S. and James L. Knight Foundation (led by Josh Lerner, Chair of the Entrepreneurial Management Unit and the Jacob H. Schiff Professor at Harvard Business School and the Bella Research Group). (2019). Diversifying Investments: A Study of Ownership Diversity and Performance in the Asset Management Industry. Retrieved from https://kf-site-production.s3.amazonaws.com/media_elements/files/000/000/282/original/2019_KF_DIVERSITY_REPORT-FINAL-3.pdf

duty of the Comptroller's Office, by promoting competition and ensuring BAM has access to the best investment talent available. In fact, research demonstrates that diverse teams and investment managers produce greater results – and diversity is correlated with stronger economic performance, better risk management, and long-term success. As such, through a number of new initiatives, the Comptroller's Office continues to seek the best and brightest next generation of investment managers of all genders and ethnicities to manage the over $200 billion in assets under management across the five pension funds in the New York City Retirement Systems ("the Systems").

Increasing Access through Focus, Momentum and Results

Focus. Soon after Comptroller Stringer first took office in 2014, the Comptroller's Office sharpened its focus on the issue of asset manager diversity by identifying opportunities for increased risk, adjusted returns, and allocating an additional $1 billion with Emerging Managers – generally defined as all managers (including minority- and women-owned enterprises or "MWBEs") with less than $2 billion in assets under management and raising Funds I through III – interested in doing business with the Systems. That expansion brought the Systems' total amount of assets invested with MWBEs to nearly $10 billion and – for the first time – expanded overall Emerging Manager investments to each of the Systems' major asset classes.

In 2015, Comptroller Stringer launched an initiative to incorporate diversity into the process of hiring investment managers, putting New York City on the map as the first major pension system in the nation to formally consider diversity as a criterion in manager evaluation and selection. Through the initiative, BAM started systematically asking current and prospective money managers about the diversity of their investment professionals. Further, BAM asked managers to show a commitment to diversity *and* inclusion – not just through their hiring and retention practices, but more importantly, their compensation structures – recognizing that the "pipeline problem" in the asset management industry is more accurately a problem of restricted opportunity and lack of promotion. The goal of this new selection criteria was to incentivize managers to build teams that reflected the diversity of New York City, up and down their employment structure, to enhance the pipeline for diverse investment professionals, and to advance minorities and women to lead firms or possibly open firms of their own.

In 2017, Comptroller Stringer proposed an internal goal to reach a 10 percent allocation to MWBE managers across each asset class: public equities, public fixed income, private equity, real estate, alternative credit, hedge funds, and infrastructure. By 2019, BAM has reached that goal in two of its seven major assets classes.

Momentum. Through BAM, the Comptroller's Office is building momentum by continuing to explore creative ways to increase opportunity for minority- and women-owned asset managers.

The Comptroller's Office recognizes sustained success can only be realized through intense and continuous focus on manager diversity. In June 2018, Comptroller Stringer appointed an investment professional as its first Director of Diversity & Inclusion, a newly created position focused exclusively on improving asset manager diversity. Reporting directly to the BAM Chief

Investment Officer and working closely with BAM's investment staff, she is setting the strategy and building an infrastructure that employs a portfolio approach to utilizing more MWBEs.

In October 2018, Comptroller Stringer announced a series of new nation-leading initiatives to encourage greater diversity among investment managers hired by the Systems, including the launch of an initiative to source partners across alternative asset classes – private equity, real estate, infrastructure, hedge funds, and alternative credit – to invest in best-in-class, first-time funds and early-stage investment firms managed by emerging managers, including MWBEs. Subject to the System trustees' approval, the Comptroller's Office will have the most robust multi-asset class programs dedicated to early-stage investment managers in the nation.

Most recently, the Systems approved a $600 million expansion of BAM's successful in-house Private Equity Emerging Managers program, bringing the total assets committed through the program to over $1.5 billion, of which more than 57 percent is allocated to MWBE managers. Through each of these most recent steps, the Comptroller's Office is expanding and executing its utilization goals, while fostering greater cross-asset class collaboration in engaging with, sourcing, and hiring minority- and women owned managers for the Systems.

Results. Since 2014, investment with minority- and women-owned firms has increased 40 percent to over $12.0 billion in assets. As of the second quarter of 2019, two of the seven asset classes in which the Systems invest have met or exceeded the goal of having 10 percent of actively managed assets managed by MWBEs. Private equity, one of the longest running emerging manager programs, boasts nearly 17 percent invested with MWBEs and active public equities is 12 percent allocated to MWBEs.

While tremendous strides in the area of asset manager diversity have been made, there is much more to do to *institutionalize* this change. To that end, the office is building *sustained access* for minority- and women-owned asset management firms by:

- Expanding emerging manager programs across asset classes, leveraging the blueprint of the legacy emerging manager programs;
- Refining criteria in RFPs to be more inclusive, eliminating inadvertent hurdles in manager searches and asking consultants to do more to source and track diverse managers;
- Strengthening and expanding our relationships with existing fund-of-fund managers to ensure greater transparency and frequency of managers transitioning from emerging manager programs to direct mandates with the Systems; and
- Enhancing our outreach to better educate managers about our emerging manager program requirements and processes

The Comptroller's Office aims to be a leader in changing the face of asset management – and by demonstrating that a commitment to expanding diversity is a strategy for economic success – because the opportunities of tomorrow will not be captured using the business practices of yesterday. Diversity is not a box to be checked – it is a living, breathing commitment to fairness.

Metropolitan Transit Authority Transport Workers Union Pension Plan, Local 260, AFL-CIO
Metropolitan Transit Authority Non-Union Pension Plan

Procurement Guideline for Investment Management Services "Garcia Rule" – Emerging Managers

In order to promote full and equal business opportunities for all businesses and to include as broad a range as possible of businesses to ensure the best qualifications and skills in the marketplace and to exploit market inefficiencies to maximize returns in contracting for investment management services with the Metropolitan Transit Authority Transport Workers Union Pension Plan, Local 260, AFL-CIO (the "Union Plan") and the Metropolitan Transit Authority Non-Union Pension Plan (the "Non-Union Plan"), the Board of Trustees of the Union Plan and the Committee of the Non-Union Plan shall solicit bids, proposals, offers or other applicable expressions of interest regarding any prospective investment management contract with the plans or provision of services to the plans, from at least one (1) Emerging Manager.

An Emerging Manager must be certified as a MBE/MWBE or Texas HUB and must have ownership of a minimum of 51% of the following groups:

1. African Americans, which includes persons having origins in any of the Black racial groups of Africa;

2. Hispanic Americans, which includes persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

3. Asian Pacific Americans, which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, the Northern Marianas, and Subcontinent Asian Americans which includes persons whose origins are from India, Pakistan, Bangladesh, Sri Lanka, Bhutan or Nepal;

4. Native Americans, which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

5. American Women, which includes all women of any ethnicity except those specified above; and

6. Veterans of the United States Armed Forces, which includes persons who (i) served in the active United States Army, Navy, Marine Corps, Air Force or Coast Guard (including their Reserve components), (ii) have been discharged or released therefrom under conditions other than dishonorable and (iii) are not otherwise described above; and

7. Disabled Americans, which includes persons (i) with a disability as defined in the Americans with Disabilities Act of 1990 (ADA) and (ii) who are not otherwise described above.

8. Or, if said ownership of the groups above (1-7) is below 51% then firm assets must total no more than $1 billion at the inception of the contract.

CTPF

Chicago Teachers' Pension Fund

123RD Comprehensive Annual Financial Report

2018

For the years ended June 30, 2018 and 2017

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

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, 2018 AND 2017
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

TABLE OF CONTENTS

INTRODUCTORY *(UNAUDITED)* 3

4 Board of Trustees
5 Certificate of Achievement for Excellence in Financial Reporting
6 Consultants
7 Organizational Chart
8 Letter of Transmittal

FINANCIAL 15

16 Independent Auditor's Report
18 Management's Discussion and Analysis (Unaudited)
BASIC FINANCIAL STATEMENTS
27 Statement of Fiduciary Net Position
28 Statement of Changes in Fiduciary Net Position
29 Notes to Financial Statements
REQUIRED SUPPLEMENTARY INFORMATION *(UNAUDITED)*
53 Schedule 1: Schedule of Changes in Employer's Net Pension Liability – Pension Plan
54 Schedule 2: Schedule of the Employer's Net Pension Liability – Pension Plan
54 Schedule 3: Schedule of the Employer's Contribution – Pension Plan
55 Schedule 4: Schedule of Employer's Contractually Required Contribution
55 Schedule 5: Schedule of Money-Weighted Rate of Return – Pension Plan
NOTES TO REQUIRED SUPPLEMENTARY INFORMATION *(UNAUDITED)*
56 Actuarial Methods and Assumptions – Pension Plan
56 Changes in Assumptions
OTHER SUPPLEMENTARY INFORMATION *(UNAUDITED)*
57 Schedule 6: Administrative and Miscellaneous Expenses
57 Schedule 7: Schedule of Manager Fees
58 Schedule 8: Schedule of Consultant Payments

INVESTMENTS *(UNAUDITED)* 59

60 Master Custodian Reports
61 Investment Consultant Report
63 Investment Managers
64 Total Annual Fund Rate of Return
65 Schedule of Investment Results
66 Investment Portfolio Summary
67 Asset Allocation Summary
68 Historical Asset Allocation
69 Domestic Equity Summary
70 International Equity Summary
71 International Equity Holdings
72 Fixed Income Summary
73 Public REITs Summary
74 Private Equity Summary
75 Infrastructure Summary
76 Real Estate Summary
77 Manager Analysis
78 Broker Commission Reports
82 Cash Receipts and Disbursements
83 Investment Authority

ACTUARIAL *(UNAUDITED)* 85

86 Actuarial Certification Pension Fund
88 Actuarial Report
88 SECTION A: EXECUTIVE SUMMARY
89 SECTION B: SUMMARY OF THE ACTUARIAL VALUATION
101 SECTION C: ACTUARIAL DETERMINATIONS
101 Table 1: Results of Actuarial Valuation
103 Table 2: Components of Actuarial Accrued Liability and Normal Cost by Tier
104 Table 3: Analysis of Change in Unfunded Actuarial Accrued Liability
105 Table 4: Analysis of Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability
106 Table 5: Historical Financial (Gains) and Losses in Unfunded Actuarial Accrued Liability
107 SECTION D: ACTUARIAL PROJECTIONS
108 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
108 Table 7: Solvency Test
109 SECTION E: FUND ASSETS
109 Table 8: Development of the Actuarial Value of Assets
110 Table 9: Historical Investment Returns
111 SECTION F: PARTICIPANT DATA
111 Table 10: Summary of Fund Membership
112 Table 11: Schedule of Active Member Data
112 Table 12: Member Population and Ratio of Non-Actives to Actives
113 Table 13: Total Lives and Annual Salaries of Active Members Classified by Age and Years of Service
114 Table 14: Reconciliation of Member Data
114 Table 15: History of Retirees and Beneficiaries Added to Rolls
115 Table 16: Annuitants Classified by Benefit type and Amount
116 Table 17: Initial Year Retirement Analysis
117 SECTION G: ACTUARIAL METHODS AND ASSUMPTIONS
117 Actuarial Cost Method as Mandated by 40 ILCS 5/17-129
125 SECTION H: SUMMARY OF PLAN PROVISIONS
129 SECTION I: ADDITIONAL PROJECTION DETAILS
129 Table 18: Actuarial Accrued Liability
129 Table 19: Present Value of Future Benefits
130 Table 20: Benefit Payments Including Administrative Expenses and Health Insurance Subsidy
130 Table 21: Active Population, Covered Payroll, Employee Contributions and Normal Costs

STATISTICAL *(UNAUDITED)* 131

132 Statement of Changes in Fiduciary Net Position, Pension Fund
134 Statement of Changes in Fiduciary Net Position, Health Insurance Fund
136 Distribution of Current Annuitants by Benefit Type
137 Distribution of Pensioners with Health Insurance Reimbursements by Size of Annuity
138 Schedule of Average Benefit Payments
139 Participating Members: Number of Active Members

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, 2018

Jay C. Rehak

Lois W. Ashford

Gregory Redfeairn

Bernice Eshoo

Jeffery Blackwell

Mark F. Furlong

Lois Nelson

Tina Padilla

Mary Sharon Reilly

Maria J. Rodriguez

Jerry Travlos

Gail D. Ward

OFFICERS

Jay C. Rehak, President
Lois W. Ashford, Vice President
Gregory Redfeairn, Financial Secretary
Bernice Eshoo, Recording Secretary

MEMBERS

REPRESENTING THE CONTRIBUTORS
Lois W. Ashford
Jeffery Blackwell
Bernice Eshoo
Tina Padilla
Gregory Redfeairn
Jay C. Rehak

REPRESENTING THE ANNUITANTS
Lois Nelson*
Mary Sharon Reilly
Maria J. Rodriguez

REPRESENTING THE ADMINISTRATORS/ PRINCIPALS
Jerry Travlos

REPRESENTING THE BOARD OF EDUCATION
Mark F. Furlong
Gail D. Ward

EXECUTIVE DIRECTOR

Charles A. Burbridge

* Dr. Walter E. Pilditch passed on December 24, 2017. The Board appointed Lois Nelson to fill the vacancy until the next election in November 2018.

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, 2017

Christopher P. Morrill

Executive Director/CEO

CONSULTANTS
AS OF JUNE 30, 2018

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

Steptoe and Johnson, LLP
115 South LaSalle Street, Suite 3100
Chicago, Illinois 60603

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, 2018*

BOARD OF TRUSTEES

Adriane D. McCoy
Internal Audit Director

Charles A. Burbridge
Executive Director

Mary Cavallaro
Deputy Executive Director

Gail Davis
Manager of Administrative Services

Rosemary Ihejirika
Chief Benefits Officer

Angela Miller-May
Chief Investment Officer

John Schomberg
Chief Legal Officer

Tracey L. Schroeder
Director of Communications

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 63.

LETTER OF TRANSMITTAL

January 17, 2019

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

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

This is the 123rd 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, 2018. 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.

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.

OVERVIEW

The Fund's membership increased to 66,905 total members including 28,958 active members, 28,549 beneficiaries, and 9,398 vested terminated members as of June 30, 2018, reflecting a 5.6% increase over the prior year's total membership of 63,356. The 123rd year of continuous operations ended with the Fund's operational condition improving compared to the previous fiscal year. The June 30, 2018, value of net assets held in trust for pension and health benefits amounted to $11.1 billion, a 2.9% increase from the $10.8 billion of the previous year.

CTPF • 203 North LaSalle Street, Suite 2600 • Chicago, Illinois 60601-1231 • 312.641.4464 phone • 312.641.7185 fax • www.ctpf.org

FISCAL YEAR 2018 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 2018 audit and Gabriel, Roeder, Smith & Company Holdings, Inc., produced the fiscal year 2018 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 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, 2017. This was the 27th 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 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, 2018, investments at fair value plus cash totaled $10.9 billion, reflecting a 3.1% increase from the $10.5 billion value of June 30, 2017. The Fund's rate of return for the year ended June 30, 2018, was 8.96% as performance of the portfolio was

reflective of the equity market's steady growth. 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 6.70% over the past 10 years and 8.16% for the 25-year period ending June 30, 2018.

During the year ended June 30, 2018, 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:

- Increased its commitment to one majority-owned fixed income manager.
- Initiated investments with two U.S. domestic equity small-cap growth managers.
- Initiated investments with two existing private equity fund-of-funds managers and two existing private-equity managers: one African-American owned firm and one Latino-owned firm.
- Initiated investments with two new private equity managers: one Latino-owned firm and one majority-owned firm.
- Initiated investments with one non-core real estate Asian-American owned firm and one non-core real estate debt majority-owned firm.

CTPF continues to be committed to diversity and, as of June 30, 2018, approximately 41.9% ($4.5 billion) of the Fund's investment portfolio was managed by qualified minority, women, and disabled-person owned investment managers. Additionally, the Fund directed approximately $1.25 million in commissions to qualified minority, women, and disabled-person owned brokers/dealers in calendar year 2017. CTPF also has a strong commitment to the economy of the State of Illinois. As of June 30, 2018, CTPF employed 17 Illinois-based Investment managers who managed assets with a market value of $3.3 billion. These assets represented 30.8% 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 2018 was 8.96% (vs. benchmark of 8.36%) following fiscal year 2017's return of 13.59% and fiscal year 2016's return of 0.54%. Five and ten-year annualized returns were 8.80% (vs. benchmark of 8.22%) and 6.70% (vs. benchmark of 6.42%), 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 15.75% return, international equity reported an 8.45% return, fixed income reported a (0.30)% return, private equity reported a 14.57% return, real estate reported an 8.35% return, and infrastructure reported a 17.79% return.

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 compliance, health insurance, member records, member services, pensions and refunds, process and improvement analysis.

The department continues to focus on strengthening operations, improving internal controls, and enhancing customer service for our members. Highlights from 2018 include:

- Launch of a full payroll audit of all charter schools within the next three years. The audit followed a pilot program which identified contribution and participant reporting deficiencies.
- Development of a web-based Employer Reporting System with enhanced functionality 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

Administrative Services supports the work of the Board of Trustees and CTPF Leadership to ensure they are efficiently able to carry out the Fund's mission. During fiscal year 2018, Administrative staff worked with the Fund's real estate consultant, CBRE, to assess the commercial real estate market and identify potential opportunities in anticipation of the Fund's lease expiration in 2021. Administrative Services staff also began implementation of BoardDocs software, a system designed to streamline production and content of Board meeting materials.

COMMUNICATIONS DEPARTMENT

The Communications team manages and produces public-facing communications focusing on three major areas of responsibility: printed and online publications, media/community relations, and social media/website outreach. The Director of Communications also serves as the Fund's official Election Coordinator and serves as the primary contact for members of the media seeking information about CTPF.

The department coordinated the enterprise-wide launch of a new website at *www.ctpf.org* in 2018. The Fund's original site was launched in 2006 and had not undergone a major update since that time. The relaunch modernized CTPF communications, expanding services and information available to members with a clean, easy to navigate design, a newsfeed for sharing urgent news, updates, and information, and easily accessible forms, visible alerts and a search bar.

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 a 10% increase in 2018 with growth in users and impressions progressing steadily across all platforms.

HUMAN RESOURCES DEPARTMENT

The Human Resources Department serves as a resource to all staff, bringing new hires on board, providing staff with developmental opportunities, maintaining a confidential environment, working through conflict resolution, and seeking employee engagement opportunities.

During fiscal year 2018 Human Resources worked to hire for several strategic positions and implemented new performance management tools and self-service modules for employee open enrollment, promoting a paperless environment.

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 2018 include:

- Entering into an agreement with the Chicago Board of Education, addressing the timing of the new tax levy payments and statutory requirements.
- Reaching an agreement with the Illinois Network of Charter Schools to further ensure employer compliance with payroll record and pension contribution submission requirements.
- Continuing to build out a centralized procurement function.
- Drafting and updating the Fund's record retention policy.
- Testifying before the Illinois General Assembly regarding the proposed Tier 3.
- Presenting information about Pension Obligation Bonds at the National Association of Public Pension Attorneys conference.

INFORMATION TECHNOLOGY DEPARTMENT

The Information Technology (IT) Department is responsible for ensuring the quality, security, and availability of data and information, software, and hardware. The IT Department is responsible for following industry best practices for software development standards, project management, and infrastructure improvements.

During fiscal year 2018 the department worked to:

- Reduce data security risks by replacing members' social security numbers with a new member ID number in all reporting, internal and external communications.
- Support the data quality initiative with increased controls and functionality improvements for the Fund's main database.
- Enhance accuracy and visibility of information in Member Statements and improve functionality and work flow for member estimates to provide CTPF staff with additional options and members more accurate and robust pension estimates.

- Support the development of the Employer Reporting System.
- Complete hardware and software upgrades to several critical systems and databases.
- Improve database backup strategy and improve restore capabilities from 90 minutes to 5 minutes.

LEGISLATION IMPACTING CTPF

Legislation enacted and implemented during fiscal year 2018 had a major impact on CTPF and future funding.

Public Act 100-0465 (SB 1947) enacted August 31, 2017, amongst other actions (e.g., an evidence-based funding formula for Illinois schools) provides for the State to cover CTPF's normal pension costs and to defray retiree healthcare costs ($221.3 million for fiscal year 2018), as a continuing appropriation going forward. This is the first time in the history of the Fund that the State has assumed responsibility for normal cost payments, alleviating the burden on the Chicago Public Schools.

Public Act 100-0023 (SB 42), enacted July 6, 2017, contains language that allows the Chicago Board of Education to adopt a new Tier 3 retirement plan by resolution or ordinance. The new Tier 3 plan is a hybrid plan with elements from a traditional defined benefit plan and a defined-contribution plan. No action has been taken by the Chicago Board of Education to adopt this plan.

Public Act 100-0334 (HB 350), enacted August 25, 2017, amends several articles of the Illinois Pension Code. The bill eliminates benefits for survivors of members convicted of a felony relating to or arising out of or in connection with the member's service as a teacher.

FUNDING GOALS

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

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

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

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

Amendments to the Illinois Pension Code during fiscal year 2010 changed the funding requirements for future years. Illinois Compiled Statutes (Public Act 96-0889) limited the contributions required to be made to the Fund by the Chicago Board of Education to $187 million for fiscal year 2011, $192 million for fiscal year 2012, and $196 million

for fiscal year 2013. Under the amended statute, the Chicago Board of Education was provided a 14-year extension, or until the end of 2059, to make contributions which ensure that the Fund's projected actuarial value of assets is 90% of the Fund's projected actuarial liabilities.

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

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

For fiscal years 2014, 2015, 2016, 2017, and 2018, the required contributions from the Board of Education and the State of Illinois were $625 million, $709 million, $700 million, $745 million, and $784 million, respectively. For fiscal years 2019 and 2020, the required contributions are $809 million and $855 million.

CONCLUDING COMMENTS

Gregory Redfeairn was appointed to the Board on July 20, 2017, to fill a vacancy through the next election in November 2017.

Two candidates submitted petitions for two positions in the November 2017 Teacher Trustee election. Tina Padilla and Gregory Redfeairn were declared elected for three-year terms since the number of candidates did not exceed the number of open positions.

Dr. Walter E. Pilditch, Mary Sharon Reilly, and Maria J. Rodriguez were elected Pensioner Trustees for two-year terms in November 2017. Dr. Pilditch subsequently passed on December 24, 2017. The Board declared a vacancy and appointed Lois Nelson to fill the position until the next election in November 2018.

There was no Administrator Trustee Election in 2017. One candidate submitted petitions to fill the remaining term ending November 2019. Jerry Travlos was declared elected since the number of candidates did not exceed the number of open positions.

In the election of officers, Jay C. Rehak was elected President; Lois W. Ashford, Vice President; Gregory Redfeairn, Financial Secretary; and Bernice Eshoo, Recording Secretary. Chairs of standing committees included Tina Padilla, Investments; Gregory Redfeairn, Finance and Audit; Lois W. Ashford, Pension Laws and Administrative Rules, and Jeffery Blackwell, 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 the Pension 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

CTPF • 203 North LaSalle Street, Suite 2600 • Chicago, Illinois 60601-1231 • 312.641.4464 phone • 312.641.7185 fax • www.ctpf.org

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
27600 Northwestern Highway
P.O. Box 307
Southfield, MI 48037-0307
Tel 248.352.2500
Fax 248.352.0018
plantemoran.com

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, 2018 and 2017 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, 2018 and 2017 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.

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

Emphasis of Matter

As explained in Note 2C, the financial statements include investments valued at $1,396,303,882 (12.6 percent of net position) at June 30, 2018 and at $1,352,510,860 (12.5 percent of net position) at June 30, 2017 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.

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 the 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

January 17, 2019

2

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)
JUNE 30, 2018 AND 2017

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, 2018 and 2017. This information is intended to supplement the financial statements, which begin on page 27 of this report. We encourage readers to consider additional information and data in the Fund's 2018 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 risk-adjusted returns while allowing the Fund to "ride out" short-term fluctuations in individual asset classes. Due to a stable financial market, the Fund returned 9.0% (time-weighted return) in fiscal year 2018. Although the Fund is a long-term investor and results are more significant over longer periods, the sharp decline in value across investment classes in previous years brought the Fund's compounded rate of return over the past 10 years to 6.7%, lower 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 $22.9 billion as of June 30, 2018. This represents an increase in the total actuarial accrued liability of $1.1 billion when compared to the actuarial accrued liability of $21.8 billion as of June 30, 2017. The unfunded actuarial accrued liability increased from $10.9 billion to $12.0 billion. The total pension liability, under GASB 67, for fiscal year 2018 and 2017, was $24.5 billion and $23.2 billion, respectively.

FINANCIAL HIGHLIGHTS

- Investment returns continue to outperform benchmarks, similar to the previous fiscal year. The investment rate of return for fiscal year 2018 was 9.0% (benchmark of 8.4%) following fiscal year 2017's return of 13.6% and fiscal year 2016's return of 0.5%. Five and ten-year annualized returns were 8.8% (benchmark of 8.2%) and 6.7% (benchmark of 6.4%), respectively.

- Total plan fiduciary net position increased during the fiscal year to $11.1 billion at June 30, 2018, from $10.8 billion at June 30, 2017.

- The Fund paid members $1.5 billion in service retirement, disability, refunds, and survivor benefits, an additional $66.3 million for health care benefits, and administrative expenses of $22.1 million, a 4.5% increase over fiscal year 2017.

- Total additions to plan fiduciary net position were $1.9 billion for fiscal year 2018, including total contributions of $968.1 million and net investment income of $896.7 million.

- The funded ratio for pension benefits, based on the actuarial value of assets, decreased to 47.9% as of June 30, 2018, from 50.1% 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 benefits to subsidize health care premiums for members receiving pension benefits.

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*, a *Schedule of the Employer's Contribution*, 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 2018, the Fund's total investment performance resulted in a 9.0% gain, based on time-weighted returns. Domestic, international and private equity, as well as real estate and infrastructure generated positive returns. Fixed income, while posting negative returns, still outperformed the fixed income benchmark. The Fund's portfolio of domestic equity reported a 15.8% return, international equity reported 8.5%, fixed income reported (0.3)%, private equity reported a 14.6% return, real estate reported an 8.4% return and infrastructure reported a 17.8% return.

The Fund's net money-weighted rate of return for the fiscal year ended June 30, 2018, was 8.9%.

1-YEAR RETURNS (2018)

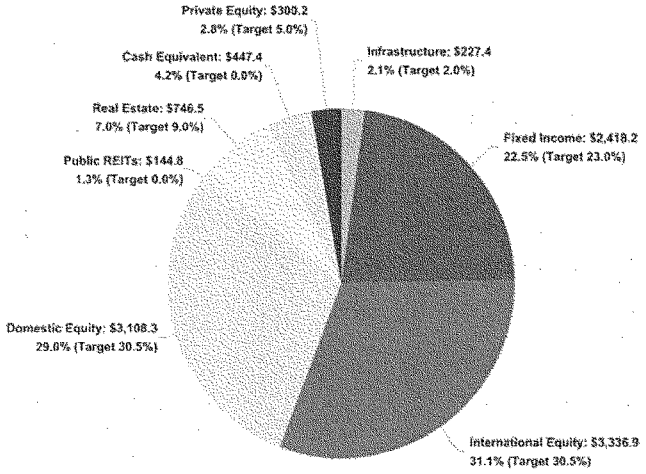
Asset Category	Fund Return	Index Name	Index Return
Total Fund	9.0 %	Fund Benchmark Index	8.4 %
Domestic Equity	15.8 %	Domestic Equity Benchmark	14.8 %
International Equity	8.5 %	International Equity Benchmark	7.8 %
Fixed Income	(0.3)%	Bloomberg Aggregate Index	(0.4)%
Private Equity	14.6 %	N/A	—
Real Estate	8.4 %	NFI-ODCE Value Weight Net Only	7.6 %
Infrastructure	17.8 %	Absolute Benchmark*	3.0 %

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

5-YEAR RETURNS (2018)

Asset Category	Fund Return	Index Name	Index Return
Total Fund	8.8%	Fund Benchmark Index	8.2%
Domestic Equity	13.3%	Domestic Equity Benchmark	13.3%
International Equity	7.5%	International Equity Benchmark	6.1%
Fixed Income	2.7%	Bloomberg Aggregate Index	2.3%
Private Equity	13.3%	N/A	—
Real Estate	11.3%	NFI-ODCE Value Weight Net Only	10.1%
Infrastructure	6.8%	Absolute Benchmark	7.0%

ASSET ALLOCATION SUMMARY AS OF JUNE 30, 2018
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 increased by $311.6 million, 2.9%, during fiscal year 2018 after increasing by $679.9 million, 6.7%, in fiscal year 2017. The increase reflects revenues exceeding expenditures and is driven by net investment income during fiscal year 2018.

Cash and cash equivalents decreased by $330.7 million during fiscal year 2018 and increased by $444.5 million in fiscal year 2017. 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). In some years, such as fiscal year 2018, the statutorily required contribution from the Board of Education is received prior to the last day of the fiscal year and is subsequently transferred to the investment portfolio by fiscal year-end. In other years, such as fiscal year 2017, the statutorily required contribution is received on the last day of the fiscal year and funds are deposited into a cash account which increases the cash balance at fiscal year-end.

Total receivables, excluding amounts due from brokers, increased by $18.0 million in 2018 after increasing by $292.0 million in 2017. These increases are primarily due to legislation which allowed the Employer to levy a special pension property tax to pay a portion of the required contribution, beginning in 2017. As of June 30, 2018 and 2017, approximately $253.0 million and $250.0 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 $221.3 million for fiscal year 2018. As of June 30, 2018, there was an outstanding receivable of $18.4 million for normal cost contributions.

Receivables due from brokers (proceeds from investment sales) decreased by $50.5 million in fiscal year 2018, and increased by $38.1 million in fiscal year 2017, 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 2018 and 2017. Within the securities lending program, collateral and collateral payable increased by $6.4 million and $6.1 million, respectively, during fiscal year 2018 and increased by $161.8 million and $165.6 million, respectively, during fiscal year 2017. 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 remained relatively unchanged during fiscal year 2018 after decreasing by $11.2 million during fiscal year 2017. The decrease in fiscal year 2017 was primarily the result of resolution of the judgment resulting from the Fund's transition of the securities lending program from the Northern Trust Company.

During fiscal year 2017, the Fund recognized a liability for an overpayment of the statutorily required contribution by the Board of Education pertaining to fiscal year 2015. This resulted in an additional payable of $10.4 million.

Liabilities due to brokers (the cash due for investment purchases) decreased by $12.8 million in fiscal year 2018 and increased by $69.7 million in fiscal year 2017 due to the timing of investment purchases at year-end.

The following is a summary of the fiduciary net position at June 30, 2018, 2017, and 2016:

	Fiscal Year (In Millions)		
	2018	**2017**	**2016**
Cash and cash equivalents	$ 133.5	$ 464.2	$ 19.7
Prepaid expenses	0.1	0.1	0.1
Receivables	381.1	363.1	71.1
Due from brokers	86.6	137.2	99.0
Investments, at fair value	10,729.7	10,070.3	10,092.3
Securities lending collateral	947.4	941.0	779.2
Capital assets, net	1.2	1.2	1.1
Total assets	**12,279.6**	**11,977.1**	**11,062.5**
Benefits and refunds payable	20.2	23.0	23.0
Accounts and administrative expenses payable	11.7	11.2	22.3
Employer required contribution payable	10.4	10.4	—
Securities lending collateral payable	946.4	940.3	774.7
Due to brokers	186.1	199.0	129.2
Total liabilities	**1,174.8**	**1,183.9**	**949.2**
Fiduciary net position restricted for pensions	$ 11,104.8	$ 10,793.2	$ 10,113.3

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, 2018, additions totaled $1.9 billion compared to $2.2 billion for the year ended June 30, 2017.

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 2018 and 2017, the Employer and State were required to pay $784.4 million and $745.4 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 $221.3 million to cover the employer normal cost and health insurance costs, which reduced the required contribution from the Employer by the same amount. In fiscal year 2017, the Fund recorded an additional contribution receivable in the amount of $11.9 million related to fiscal year 2014 and an additional payable in the amount of $10.4 million related to fiscal year 2011, which resulted in net revenue of $1.5 million from the Employer. As of June 30, 2018 and 2017, the Employer and State paid $501.2 million and $484.2 million, of the respective year's required minimum contribution.

Investment returns in fiscal year 2018 were modest in comparison to fiscal year 2017 but still above benchmarks. Net investment income increased primarily due to the equity market's rally in fiscal year 2017 after a volatile and underperforming year in fiscal year 2016. The money-weighted rates of return, net of investment expenses were 8.9% and 13.1% for fiscal years 2018 and 2017, respectively.

The Fund recorded interest receivable totaling $1.1 million for fiscal year 2018 as the result of an intergovernmental agreement with the Board of Education. The agreement stipulates that the Board of Education agrees to pay interest, at the then current actuarial rate of return, on required contribution payments that are received after June 30 of each fiscal year, beginning 2018.

The following is a summary of additions to plan fiduciary net position for the years ended June 30, 2018, 2017, and 2016:

	Fiscal Year *(In Millions)*		
	2018	**2017**	**2016**
Employee contributions	$ 183.7	$ 187.5	$ 191.9
Minimum funding requirement (Employer)	551.4	734.7	688.0
Minimum funding requirement (State)	233.0	12.2	12.1
Net investment income (loss)	896.7	1,233.0	(28.1)
Interest on late required contribution payments	1.1	—	—
Miscellaneous	0.4	0.2	1.5
Total additions	**$ 1,866.3**	**$ 2,167.6**	**$ 865.4**

DEDUCTIONS FROM PLAN ASSETS

Pension benefits increased during fiscal years 2018 and 2017, 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 increased by $17.9 million during fiscal year 2018 after decreasing by $17.7 million in fiscal year 2017. This reflects a return to expected health insurance premium subsidy expenses for fiscal year 2018 after reimbursements from health insurance vendors increased greatly during fiscal year 2017, largely due to the implementation of a new health insurance plan.

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, 2018, 2017, and 2016:

	Fiscal Year *(In Millions)*		
	2018	**2017**	**2016**
Pension benefits	$ 1,437.3	$ 1,389.4	$ 1,346.5
Refunds	25.1	32.2	33.6
Death benefits	3.9	3.3	4.7
Health insurance premium subsidies	66.3	48.5	66.1
Administrative and miscellaneous expenses	22.1	14.3	12.9
Total deductions	**$ 1,554.7**	**$ 1,487.7**	**$ 1,463.8**

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.

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 $11.7 million and $12.2 million for fiscal years 2018 and 2017, respectively. During fiscal year 2017, the State paid $1.0 million while the remaining $11.2 million was paid during fiscal year 2018. As of June 30, 2018, the fiscal year 2018 State of Illinois required contribution of $11.7 million was outstanding but was received during the first week of July, 2018.

The fiscal year 2019 Board of Education and State of Illinois required contributions are $569.7 million and $238.9 million, respectively, for a total of $808.6 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 by the State of Illinois.

Based upon an actuarial valuation, the total pension liability and plan fiduciary net position are $24.5 billion and $11.1 billion, respectively. This resulted in net pension liability of $13.4 billion as of June 30, 2018.

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 47.9% in fiscal year 2018 from 50.1% in fiscal year 2017, 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, 2018.

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
203 North LaSalle Street, Suite 2600
Chicago, IL 60601-1231

STATEMENT OF FIDUCIARY NET POSITION
AS OF JUNE 30, 2018 AND 2017

	JUNE 30, 2018			JUNE 30, 2017		
	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	$ 133,497,617	$ —	$ 133,497,617	$ 464,196,412	$ —	$ 464,196,412
Prepaid expense	90,787	—	90,787	118,703	—	118,703
Receivables:						
Minimum funding requirement (Employer)	289,191,260	—	289,191,260	286,143,422	—	286,143,422
Minimum funding requirement (State)	30,133,667	—	30,133,667	11,170,500	—	11,170,500
Employee	9,304,638	—	9,304,638	15,659,656	—	15,659,656
Accrued investment income	37,521,126	—	37,521,126	31,013,531	—	31,013,531
Due from brokers	86,639,726	—	86,639,726	137,159,828	—	137,159,828
Participating teachers' accounts for contributions	4,636,522	—	4,636,522	4,345,850	—	4,345,850
Other receivables	5,627,642	4,688,184	10,315,826	10,046,636	4,688,003	14,734,639
Total receivables	**$ 463,054,581**	**$ 4,688,184**	**$ 467,742,765**	**$ 495,539,423**	**$ 4,688,003**	**$ 500,227,426**
Investments, at fair value:						
U.S. government and agency fixed income	1,299,056,547	—	1,299,056,547	1,161,296,835	—	1,161,296,835
U.S. corporate fixed income	1,060,376,104	—	1,060,376,104	804,984,477	—	804,984,477
Foreign fixed income securities	58,787,954	—	58,787,954	42,077,396	—	42,077,396
U.S. equities	3,108,323,201	—	3,108,323,201	3,299,443,380	—	3,299,443,380
Foreign equities	3,336,876,903	—	3,336,876,903	3,018,577,197	—	3,018,577,197
Public REITs	144,771,014	—	144,771,014	128,631,513	—	128,631,513
Pooled short-term investment funds	447,399,457	—	447,399,457	353,942,206	—	353,942,206
Real estate	746,521,607	—	746,521,607	738,933,811	—	738,933,811
Infrastructure	227,364,041	—	227,364,041	241,328,735	—	241,328,735
Private equity	300,228,413	—	300,228,413	281,130,643	—	281,130,643
Total investments	**$ 10,729,705,241**	**$ —**	**$ 10,729,705,241**	**$ 10,070,346,193**	**$ —**	**$ 10,070,346,193**
Securities lending collateral	947,417,427	—	947,417,427	941,037,933	—	941,037,933
Capital assets, net of accumulated depreciation	1,190,580	—	1,190,580	1,176,457	—	1,176,457
Total assets	**$ 12,274,956,233**	**$ 4,688,184**	**$ 12,279,644,417**	**$ 11,972,415,121**	**$ 4,688,003**	**$ 11,977,103,124**
Liabilities:						
Benefits payable	4,681,391	4,624,300	9,305,691	4,536,065	4,631,741	9,167,806
Refunds payable	10,860,495	—	10,860,495	13,856,182	—	13,856,182
Accounts and administrative expenses payable	11,694,890	63,884	11,758,774	11,120,845	56,262	11,177,107
Employer required contribution payable	10,449,000	—	10,449,000	10,449,000	—	10,449,000
Securities lending collateral payable	946,404,347	—	946,404,347	940,349,072	—	940,349,072
Due to brokers	186,100,596	—	186,100,596	198,930,030	—	198,930,030
Total liabilities	**$ 1,170,190,719**	**$ 4,688,184**	**$ 1,174,878,903**	**$ 1,179,241,194**	**$ 4,688,003**	**$ 1,183,929,197**
Net position restricted for pension benefits	$ 11,104,765,514	$ —	$ 11,104,765,514	$ 10,793,173,927	$ —	$ 10,793,173,927

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

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR FISCAL YEAR ENDED JUNE 30, 2018 AND 2017

	JUNE 30, 2018			JUNE 30, 2017		
	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	$ 183,679,205	$ —	$ 183,679,205	$ 187,538,787	$ —	$ 187,538,787
Minimum funding requirement (Employer)	551,410,000	—	551,410,000	734,654,000	—	734,654,000
Minimum funding requirement (State)	232,992,000	—	232,992,000	12,186,000	—	12,186,000
Allocation to health insurance fund	(66,867,696)	66,867,696	—	(49,000,701)	49,000,701	—
Total contributions	**$ 901,213,509**	**$ 66,867,696**	**$ 968,081,205**	**$ 885,378,086**	**$ 49,000,701**	**$ 934,378,787**
Investment income:						
Net appreciation in fair value	660,578,461	—	660,578,461	1,027,032,210	—	1,027,032,210
Interest	86,397,678	—	86,397,678	70,805,204	—	70,805,204
Dividends	182,949,696	—	182,949,696	166,279,885	—	166,279,885
Miscellaneous	1,081,966	—	1,081,966	503,577	—	503,577
Securities lending income, net	4,500,198	—	4,500,198	4,501,068	—	4,501,068
Less investment expenses:						
Investment advisory and custodial fees	(38,803,455)	—	(38,803,455)	(36,118,005)	—	(36,118,005)
Net investment income	**$ 896,704,544**	**$ —**	**$ 896,704,544**	**$ 1,233,003,939**	**$ —**	**$ 1,233,003,939**
Interest on late required contribution payments	1,123,915	—	1,123,915	—	—	—
Miscellaneous	351,361	—	351,361	214,119	—	214,119
Total additions	**$ 1,799,393,329**	**$ 66,867,696**	**$ 1,866,261,025**	**$ 2,118,596,144**	**$ 49,000,701**	**$ 2,167,596,845**
Deductions:						
Pension benefits	1,437,264,031	—	1,437,264,031	1,389,448,172	—	1,389,448,172
Refunds	24,323,083	—	24,323,083	31,428,981	—	31,428,981
2.2 Legislative refunds	742,315	—	742,315	780,389	—	780,389
Refunds of insurance premiums	—	66,333,655	66,333,655	—	48,451,055	48,451,055
Death benefits	3,951,010	—	3,951,010	3,280,642	—	3,280,642
Total benefit payments	**$ 1,466,280,439**	**$ 66,333,655**	**$ 1,532,614,094**	**$ 1,424,938,184**	**$ 48,451,055**	**$ 1,473,389,239**
Administrative and miscellaneous expenses	21,521,303	534,041	22,055,344	13,781,343	549,646	14,330,989
Total deductions	**$ 1,487,801,742**	**$ 66,867,696**	**$ 1,554,669,438**	**$ 1,438,719,527**	**$ 49,000,701**	**$ 1,487,720,228**
Net increase	311,591,587	—	311,591,587	679,876,617	—	679,876,617
Net position restricted for pension benefits						
Beginning of year	10,793,173,927	—	10,793,173,927	10,093,067,588	20,229,722	10,113,297,310
Transfer of residual assets to Pension Plan	—	—	—	20,229,722	(20,229,722)	—
End of year	**$11,104,765,514**	**$ —**	**$ 11,104,765,514**	**$10,793,173,927**	**$ —**	**$ 10,793,173,927**

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

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2018 AND 2017

(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, 2018, the Fund had 45 participating employers consisting of the primary employer, Chicago Public Schools, 41 charter employers comprising 130 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, 2018 and 2017, Fund membership consisted of the following:

	2018	2017
Retirees and beneficiaries currently receiving benefits	28,549	28,439
Terminated members entitled to benefits but not yet receiving them	9,398	6,062
Current members:		
Vested	17,065	17,800
Nonvested	11,893	11,055
	66,905	**63,356**

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. For a retired member, the survivor's pension is 50% of the member's last pension payment. If the member was not retired at the time of death, the benefit 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 2018, the Department determined that the maximum earnings, salary, or wages that can be used in calculating pension is approximately $113,645.

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

(B) HEALTH INSURANCE PLAN

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

Each year, the Board of Trustees establishes a rebate percentage that is used to defray a portion of the cost of the insurance. The rebate percentage for fiscal years 2018 and 2017 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, 2018 and 2017 are $34,361,325 and $36,229,021, 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. Starting in fiscal year 2019, Public Act 100-0465 requires the State to contribute the normal cost plus the health insurance subsidy 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, 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 $1,396,303,882 (12.6% of fund net position) at June 30, 2018 and at $1,352,510,860 (12.5% of fund net position) at June 30, 2017, 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 data. 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) RECLASSIFICATIONS

Certain 2017 amounts have been reclassified to conform with 2018 presentation.

(G) 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.

(H) 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.

(I) NEW ACCOUNTING PRONOUNCEMENTS ADOPTED

There were no new accounting pronouncements adopted during fiscal year 2018.

During fiscal year 2017, the Fund considered the adoption of GASB Statement No. 74, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pension* - an amendment of GASB Statement No.43. GASB 74 addresses reporting by postemployment benefit plans other than pensions (OPEB) that administer defined benefit OPEB benefits on behalf of governments. Because a qualifying health insurance trust does not exist, the impact of GASB 74 on the Fund's financial reporting was minimal.

(J) CPS FINANCIAL STATUS

The Chicago Public School District (CPS) is poised for long-term financial stability and has had a balanced budget for the previous two fiscal years due, in large part, to more equitable state funding for low-income school districts 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.

(K) 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. In fiscal year 2017, residual assets of $20.2 million in the health insurance fund were transferred to the pension fund to better reflect the character of these funds; these amounts are properly shown as available to offset the total pension liability under GASB 67. See Note 1B on page 31 for health insurance amounts authorized but not expended as of June 30, 2018 and 2017.

(3) RECEIVABLES AND PAYABLES

Required contributions from the Board of Education and State of Illinois are included in the receivables as of June 30, 2018 and 2017.

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 the end of August, 2018.

As a result of litigation settled on March 9, 2015, the Board of Education overpaid the Fund in fiscal year 2011 by $10.4 million. This amount was recognized as an offsetting payable to the Employer receivable in fiscal year 2017.

Since July 1, 2016, total receivables outstanding have included required contributions due from the Chicago Board of Education in the amount of $36.2 million. These receivables, along with the payable of $10.4 million noted above, were resolved in a settlement agreement between the CTPF's Board of Trustees and the Chicago Board of Education in September, 2018. As part of this settlement, CTPF received $14.3 million in satisfaction of the net amount due of $25.8 million.

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 $7,103,397 and $13,398,381 on behalf of the employees at June 30, 2018 and 2017, respectively. Employees owed the Fund $2,179,917 and $2,243,101 for the 2.2 pension formula upgrade at June 30, 2018 and 2017, respectively. As of June 30, 2018 and 2017, there were other miscellaneous contributions of $21,324 and $18,174, 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, 2018 and 2017:

Asset Class	Target Allocation	
	2018	2017
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, 2018 and 2017, the annual money-weighted rate of return on plan investments, net of investment expenses, were 8.93% and 13.12%, 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.

Cash balances at June 30:	2018	2017
Bank balance	$ 693,850	$ 464,255,493
Amount exposed to custodial credit risk	332,277	463,755,493

INVESTMENTS

The following table presents a summary of the Fund's investments at fair values at June 30, 2018 and 2017:

Category	Fair Value	
	2018	2017
U.S. Government and Agency Fixed Income	$ 1,299,056,547	$ 1,123,679,446
U.S. Corporate Fixed Income	1,001,801,816	804,984,477
Foreign Fixed Income	58,787,954	42,077,396
Commingled Common Stock	220,506,365	214,901,529
Commingled Emerging Markets	155,214,389	149,634,248
Commingled Corporate Bonds	58,574,288	37,617,389
Commingled Infrastructure	98,529,258	92,139,297
Commingled Real Estate	589,294,692	566,278,725
U.S. Equities	3,108,323,201	3,084,541,851
Foreign Equities	2,961,156,149	2,868,942,950
Public REITs	133,137,562	123,284,684
Foreign Public REITs	11,633,452	5,346,829
Pooled Short-Term Investment Funds	447,399,457	353,942,206
U.S. Real Estate	147,094,211	147,155,364
Foreign Real Estate	10,132,704	25,499,721
U.S. Infrastructure	100,172,213	82,646,917
Foreign Infrastructure	28,662,570	66,542,521
Private Equity	300,228,413	281,130,643
Total Investments	**$ 10,729,705,241**	**$ 10,070,346,193**

(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, 2018 and 2017, 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:	2018	2017
Margin Cash	$ 3,701,978	$ 109,981

(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, 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 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, 2017:

S&P Credit Rating	Commercial Mortgage Backed	Commingled Fixed Income	Corporate Bonds	Government Agencies	Government Bonds	Government Mortgage Backed	Municipal Bonds
AAA	$ 5,075,715	$ —	$ 52,474,216	$ 1,236,001	$ 290,805	$ —	$ 2,472,488
AA	4,144,771	—	67,076,779	5,114,093	770,695,269	226,026,329	11,220,532
A	1,918,832	—	227,570,441	13,542,353	—	—	2,698,629
BBB	2,805,117	—	372,923,705	15,131,488	1,055,496	—	1,397,649
BB	17,565	—	34,835,594	8,298,697	—	—	—
B	—	—	6,786,656	2,238,869	—	—	—
CCC	1,520,394	—	6,797	—	—	—	—
CC	613,054	—	—	—	—	—	—
C	—	—	—	—	—	—	—
D	32,132	—	340,517	—	—	—	—
Not Rated	30,634,636	37,617,389	19,365,162	2,798,498	17,005,723	60,687,617	688,700
Total	**$ 46,762,216**	**$ 37,617,389**	**$ 781,379,867**	**$ 48,359,999**	**$ 789,047,293**	**$ 286,713,946**	**$ 18,477,998**

As of June 30, 2017, 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, 2018 or 2017.

(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, 2018 and 2017:

Investment Type	Fair Value	Effective Duration (Years)	Fair Value	Effective Duration (Years)
	June 30, 2018		June 30, 2017	
Commercial Mortgage Backed	$ 94,418,651	0.14	$ 46,762,216	0.07
Commingled Fixed Income Funds	58,574,288	0.02	37,617,389	0.00
Corporate Bonds	936,172,206	2.89	781,379,867	2.61
Government Agencies	66,696,388	0.15	48,359,999	0.15
Government Bonds	866,928,450	2.35	789,047,293	2.92
Government Mortgage Backed	378,005,867	0.66	286,713,946	0.46
Municipal Bonds	17,424,755	0.05	18,477,998	0.08
Total	**$ 2,418,220,605**		**$ 2,008,358,708**	

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, 2018 and 2017:

Currency	Base Market Value	Percentage	Base Market Value	Percentage
Foreign Equities:	**June 30, 2018**		**June 30, 2017**	
Australian Dollar	$ 27,315,680	0.92%	$ 27,025,012	0.94%
Brazilian Real	23,393,397	0.79	25,071,940	0.87
British Pound	500,513,957	16.90	518,186,020	18.06
Canadian Dollar	94,377,681	3.19	84,517,664	2.95
Chilean Peso	451,375	0.02	267,275	0.01
Colombian Peso	3,584,970	0.12	2,243,625	0.08
Czech Koruna	8,476,923	0.29	9,905,909	0.35
Danish Krone	45,878,149	1.55	26,252,045	0.92
Euro	820,187,063	27.70	715,604,734	24.94
Hong Kong Dollar	163,527,603	5.52	144,773,775	5.05
Hungarian Forint	3,348,096	0.11	6,626,890	0.23
Indian Rupee	41,602,782	1.41	49,042,500	1.71
Indonesian Rupiah	16,613,871	0.56	20,992,483	0.73
Israeli Shekel	5,367,616	0.18	3,684,966	0.13
Japanese Yen	379,449,014	12.81	380,003,080	13.25
Malaysian Ringgit	1,439,723	0.05	1,899,522	0.07
Mexican Peso	11,712,763	0.40	23,559,096	0.82
New Taiwan Dollar	85,246,668	2.88	69,083,385	2.41
New Zealand Dollar	1,763,720	0.06	—	—
Nigerian Naira	196,146	0.01	157,022	0.01
Norwegian Krone	45,278,070	1.53	33,985,962	1.18
Pakistani Rupee	209,060	0.01	221,107	0.01
Philippine Peso	734,473	0.02	490,064	0.02

Currency	Base Market Value	Percentage	Base Market Value	Percentage
Foreign Equities (continued):	**June 30, 2018**		**June 30, 2017**	
Polish Zloty	$ 542,300	0.02%	$ 504,037	0.02%
Qatari Riyal	107,757	0.00	114,135	0.00
Russian Ruble	85,488	0.00	5,841	0.00
Singapore Dollar	25,534,214	0.86	18,996,643	0.66
South African Rand	20,229,409	0.68	17,175,574	0.60
South Korean Won	71,025,874	2.40	68,573,944	2.39
Swedish Krona	52,717,801	1.78	63,173,756	2.20
Swiss Franc	103,762,416	3.50	142,558,696	4.97
Thai Baht	15,095,732	0.51	11,319,071	0.39
Turkish Lira	6,529,898	0.22	11,744,628	0.41
U.S. Dollar	384,619,315	12.99	391,023,601	13.61
U.A.E. Dirham	237,145	0.01	158,948	0.01
Total	**$ 2,961,156,149**	**100.00%**	**$ 2,868,942,950**	**100.00%**
Foreign Fixed Income:	**June 30, 2018**		**June 30, 2017**	
Argentine Peso	$ 1,175,306	2.01%	$ —	—%
Australian Dollar	151,876	0.26	156,399	0.37
Brazilian Real	8,317,647	14.22	4,763,194	11.32
British Pound	2,269,207	3.88	2,311,796	5.49
Canadian Dollar	245,862	0.42	252,286	0.60
Danish Krone	—	—	38,519	0.09
Euro	2,989,641	5.11	3,879,280	9.22
Japanese Yen	—	—	331,230	0.79
Mexican Peso	14,540,048	24.86	7,334,916	17.43
New Zealand Dollar	5,555,017	9.50	—	—
Norwegian Krone	1,968,643	3.37	—	—
U.S. Dollar	21,265,381	36.37	23,009,776	54.69
Total	**$ 58,478,628**	**100.00%**	**$ 42,077,396**	**100.00%**
Foreign Public REITs:	**June 30, 2018**		**June 30, 2017**	
British Pound	$ 9,670,776	83.13%	$ 4,374,336	81.81%
Euro	1,447,614	12.44	736,961	13.78
Singapore Dollar	237,340	2.04	235,532	4.41
South African Rand	277,722	2.39	—	—
Total	**$ 11,633,452**	**100.00%**	**$ 5,346,829**	**100.00%**
Foreign Infrastructure:	**June 30, 2018**		**June 30, 2017**	
Euro	$ 28,662,570	100.00%	$ 66,542,521	100.00%
Total	**$ 28,662,570**	**100.00%**	**$ 66,542,521**	**100.00%**
Foreign Real Estate:	**June 30, 2018**		**June 30, 2017**	
Euro	$ 2,926,617	28.88%	$ 9,142,467	35.85%
Japanese Yen	3,955,779	39.04	7,978,955	31.29
U.S. Dollar	3,250,308	32.08	8,378,299	32.86
Total	**$ 10,132,704**	**100.00%**	**$ 25,499,721**	**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, 2018 and 2017, the collateral provided was 102.33% and 102.27% 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, 2018 and 2017 was 43.7 days and 49.3 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, 2018 and 2017, 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, 2018, were $946,404,347 and $924,851,487, 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, 2017, were $940,349,072 and $919,452,261, respectively.

The following table represents the fair market value balances relating to the securities lending transactions as of June 30, 2018 and 2017:

Category	Fair Market Value of Underlying Securities Lent as of June 30:	
	2018	2017
U.S. Agency	$ 9,149,002	$ 3,971,267
U.S. Equity	412,172,529	547,690,288
U.S. Government	401,117,975	276,294,554
Corporate Bond	75,305,699	89,761,325
International Equity	27,106,282	1,734,827
Total	**$ 924,851,487**	**$ 919,452,261**

The fair market value of collateral of the securities lending program at June 30, 2018 was $947,417,427, compared to $941,037,933 at June 30, 2017. 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, 2018 and 2017 as rated by S&P are as follows:

S&P Credit Rating	Collateral Amount as of June 30:	
	2018	2017
A-1+	$ 5,000,000	$ 12,000,000
A-1	651,500,000	695,000,000
A-2	47,500,000	—
BBB	—	20,000,000
Not Rated	243,417,427	214,037,933
Total	**$ 947,417,427**	**$ 941,037,933**

(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, 2018 and 2017:

Derivative Type		Notional Amounts		Fair Value	
		2018	2017	2018	2017
A. Foreign currency contracts purchased		$ —	$ —	$ (115,001,952)	$ (118,566,711)
Foreign currency contracts sold		—	—	114,316,681	119,248,264
B. Futures:					
	Long equity	14,293,265	10,858,340	(274,637)	(38,332)
	Long fixed income	588,403,583	211,299,250	1,475,606	(325,043)
	Short fixed income	(206,956,999)	(213,049,375)	(278,150)	556,028
C. Options:					
	Purchased	—	—	374,284	218,284
	Written	—	—	(394,289)	(79,609)
D. Rights and Warrants		—	—	370,874	15,683
E. Swaps:					
	Credit default swaps	—	—	(1,738,609)	(229,160)
	Interest rate swaps	—	—	34,320	1,042,124
	Total	**$ 395,739,849**	**$ 9,108,215**	**$ (1,115,872)**	**$ 1,841,528**

(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, 2018 and 2017 were as follows:

Currency	Fair Value	
Foreign currency exchange sales	**2018**	**2017**
Australian Dollar	$ (3,017,756)	$ (203,333)
Brazilian Real	(103,071)	(200,233)
British Pound	(945,536)	(3,080,084)
Canadian Dollar	(1,325,326)	(1,201,740)
Chinese Yuan Renminbi	(8,195,311)	(10,312,802)
Euro	(15,286,466)	(7,435,137)
Hong Kong Dollar	(791,751)	(52,531)
Japanese Yen	(9,510,708)	(41,026,820)
Mexican Peso	(5,814,906)	(3,557,824)
New Taiwan Dollar	(1,394,120)	(4,317,526)
Phillipine Peso	(5,886,055)	—
South African Rand	(9,342)	(336,046)
Swedish Krona	(92,597)	(298,546)
U.S. Dollar	(62,629,007)	(46,544,089)
Total	**$ (115,001,952)**	**$ (118,566,711)**
Foreign currency exchange purchases		
Argentine Peso	$ 638,712	$ —
Australian Dollar	5,939,422	5,450,406
Brazilian Real	4,529,122	3,570,404
British Pound	7,516,254	6,712,814
Canadian Dollar	6,720,967	4,274,601
Chinese Yuan Reniminbi	2,805,044	2,721,467
Danish Krone	107,100	1,114,494
Euro	9,350,084	5,749,122
Hong Kong Dollar	123,781	61,782
Indian Rupee	1,407,372	—
Indonesian Rupiah	4,292,397	3,138,353
Israeli Shekel	176,793	—
Japanese Yen	14,434,818	7,336,917
Mexican Peso	1,089,643	3,945,607
New Zealand Dollar	44,010	248,825
Norwegian Krone	479,607	477,378
Singapore Dollar	751,753	837,474
South African Rand	1,341,198	—
South Korean Won	—	76,883
Swedish Krona	2,052,499	1,884,896
Swiss Franc	18,352	1,303,106
Turkish Lira	193,264	—
U.S. Dollar	50,304,489	70,343,735
Total	**$ 114,316,681**	**$ 119,248,264**

(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, 2018 and 2017:

Derivative Type	Changes in Fair Value	
	2018	2017
Foreign Currency Contracts	$ (1,259,650)	$ 574,379
Options	192,175	(5,776)
Rights and Warrants	171,696	199,178
Swaps	(5,501,562)	3,797,273
Total	**$ (6,397,341)**	**$ 4,565,054**

(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, 2018 and 2017:

Derivative Type	Fair Value	Effective Duration (Years)	Fair Value	Effective Duration (Years)
	2018		2017	
Futures fixed income (long and short, net)	$ 1,197,456	1.30	$ 230,985	0.27
Options	(20,005)	(0.17)	138,675	(0.03)
Total	**$ 1,177,451**		**$ 369,660**	

(7) CONTRIBUTIONS AND RESERVES

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 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 2018 and 2017, the Employer and the State were required to make contributions of $784.4 million and $745.4 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 $501.2 million and $484.2 million in fiscal years 2018 and 2017, 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 $253.0 million and $250.0 million were outstanding as of June 30, 2018 and 2017, 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 2018 and 2017.

As of June 30, 2017, the Employer owed $286.1 million, including a total of $36.2 million in required contributions related to fiscal years 2014 through 2016 and the State of Illinois owed $11.2 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, 2018, 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 $66.3 million to fund health insurance benefits in fiscal year 2018. During the fiscal year ended June 30, 2017, the Fund did not receive state funding for the health insurance plan. As a result, the Fund allocated approximately $48.5 million of the Employer contribution to pay health benefits to Fund retirees.

Starting in fiscal year 2019, P.A. 100-0465 requires the State to contribute the normal cost for the fiscal year plus the health insurance subsidy.

Although the statutory contribution requirements were met in fiscal years 2018 and 2017, 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 $476,146 and $446,888 for the years ended June 30, 2018 and 2017, respectively, which is 100% of the employee contributions required to be made by the Fund.

(B) NONEMPLOYER CONTRIBUTIONS

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

(8) NET PENSION LIABILITY OF PARTICIPATING EMPLOYER

The components of the net pension liability at June 30, 2018 and 2017 were as follows:

	2018	2017
Total pension liability	$ 24,547,482,873	$ 23,175,590,999
Plan fiduciary net position	11,104,765,514	10,793,173,927
Employer's net pension liability	**$ 13,442,717,359**	**$ 12,382,417,072**
Plan fiduciary net position as a percentage of the total pension liability	45.24%	46.57%

ACTUARIAL ASSUMPTIONS

The total pension liability was determined by actuarial valuations as of June 30, 2018 and 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

	Pension Plan	
	2018	2017
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, simple, for Tier II Participants
Inflation	General inflation rate, 2.50% Wage inflation rate, 3.00%	General inflation rate, 2.50% Wage inflation rate, 3.25%
Investment Rate of Return	7.00%, net of investment expenses	7.25%, net of investment expenses
Salary Increases	3.00% to 12.85%, varying by age	4.00% to 15.50%, 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, 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. Most of the actuarial assumptions used in the June 30, 2017 valuation were based on the results of an experience study for the period July 1, 2007 through June 30, 2012. For healthy participants, 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.

In the June 30, 2017 actuarial valuation, the investment return assumption and general inflation assumption were reduced 25 basis points, from 7.75% to 7.50%, and from 2.75% to 2.50%, respectively. The general inflation assumption also serves as the basis for determination of annual increases in pension and pensionable salary cap for Tier 2 members. As a result of the change in the general inflation assumption, the assumption regarding future

increases in pension and pensionable salary cap was reduced from 1.357% to 1.25% per year for current and future Tier 2 members.

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, 2018 and 2017, are summarized in the following table:

Asset Class	Long-Term Expected Real Rate of Return	
	2018	2017
Equities	5.39%	5.60%
Fixed Income	2.09%	2.26%
Infrastructure	4.64%	4.59%
Private Equity	7.02%	7.57%
Real Estate	4.16%	4.19%

SINGLE DISCOUNT RATE

The discount rate used to measure the total pension liability was 6.81% and 7.07%, for fiscal years 2018 and 2017, respectively.

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%.

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 2017, a Single Discount Rate of 7.07% 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 7.25%, 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 7.25%, and a municipal bond rate of 3.56%.

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 2076. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year 2076, 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 7.07% to 6.81% was an increase in the total pension liability of approximately $1.1 billion. The change in the discount rate was driven by the changes in actuarial assumptions outlined on page 89.

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

The following presents the net pension liability as of June 30, 2018 and 2017, calculated using a Single Discount Rate of 6.81% for fiscal year 2018 and 7.07% for fiscal year 2017. The table below also presents what the net pension liability would be if it were calculated using a Single Discount Rate for fiscal years 2018 and 2017 that is one percentage point lower (5.81% for 2018 and 6.07% for 2017) or one percentage point higher (7.81% for 2018 and 8.07% for 2017) than the current rate:

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
Net Pension Liability	**1% Decrease (6.07%)**	**Current Discount Rate (7.07%)**	**1% Increase (8.07%)**
June 30, 2017	$15,199,983,250	$12,382,417,072	$10,033,130,141

As of June 30, 2018 and 2017, 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, 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 by Fair Value Level	June 30, 2018	Fair Value Measurement: 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	$ 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 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, 2018 and 2017, short-term investment holdings were $383,321,880 and $315,908,559, respectively.

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

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, 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 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, 2017

For comparative purposes, the following table presents the recurring fair value measurements as of June 30, 2017:

	Fair Value Measurement				
Investments by Fair Value Level	June 30, 2017	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	$ 28,994,237	$ 1,504,927	$ 27,489,310	$ —	$ —
Currency	9,039,410	—	—	—	9,039,410
Equity					
Commingled Funds	311,037,391	311,037,391	—	—	—
Common Stock	5,935,770,733	5,935,768,836	—	1,897	—
Preferred Stock	17,698,385	13,172,477	4,525,908	—	—
Total Equity	**$ 6,264,506,509**	**$ 6,259,978,704**	**$ 4,525,908**	**$ 1,897**	**$ —**
Fixed Income					
Corporate Bonds	780,428,227	—	780,428,227	—	—
Government Agency Bonds	48,359,999	713,268	47,646,731	—	—
Government Bonds	745,962,337	676,427,613	69,534,724	—	—
Index Linked Gov't Bonds	43,727,778	36,982,241	6,745,537	—	—
Mortgage Backed Securities	332,833,340	—	332,833,340	—	—
Municipal Bonds	18,477,998	—	18,477,998	—	—
Total Fixed Income	**$ 1,969,789,679**	**$ 714,123,122**	**$ 1,255,666,557**	**$ —**	**$ —**
Investment Derivative Instruments					
Options	138,675	138,675	—	—	—
Swaps	812,965	—	812,965	—	—
Rights and Warrants	15,683	15,683	—	—	—
Total Derivatives	**$ 967,323**	**$ 154,358**	**$ 812,965**	**$ —**	**$ —**
Real State Investment Trust - REIT	128,631,513	128,631,513	—	—	—
Total Investments by Fair Value Level	**$ 8,401,928,671**	**$ 7,104,392,624**	**$ 1,288,494,740**	**$ 1,897**	**$ 9,039,410**
	Not Applicable*				
Collateral from Securities Lending	$ 941,037,933				
Investments Measured at the Net Asset Value (NAV)					
Commingled					
Equity	$ 53,498,385				
Fixed Income	37,617,389				
Infrastructure	92,139,297				
Real Estate	566,278,726				
Total Commingled	**$ 749,533,797**				
Infrastructure	149,189,438				
Private Equity	281,130,643				
Real Estate	172,655,085				
Total Investments by Net Asset Value	**$ 1,352,508,963**				
Total Investments	**$ 10,695,475,567**				

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

INVESTMENTS AT NET ASSET VALUE | AS OF JUNE 30, 2017

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, 2017, 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	$ 53,498,385	$ —	N/A	N/A
Fixed Income	37,617,389	—	N/A	N/A
Infrastructure	92,139,297	—	N/A	N/A
Real Estate	566,278,726	—	N/A	N/A
Total Commingled	**$ 749,533,797**			
Infrastructure	149,189,438	54,558,462	As Needed	7 - 10 days
Private Equity	281,130,643	234,304,251	As Needed	7 - 10 days
Real Estate	172,655,085	66,555,508	As Needed	7 - 10 days
Total Investments by Net Asset Value	**$ 1,352,508,963**			

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 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, 2021, are as follows:

Year Ended June 30:	Amount
2019	$ 668,949
2020	683,335
2021	580,235
Total minimum future rental payments	**$ 1,932,519**

The total rent expense was $653,562 and $640,177 in fiscal years 2018 and 2017, respectively.

(13) SUBSEQUENT EVENTS

The Fund's Board of Trustees and the Board of Education of the City of Chicago entered an intergovernmental agreement via a memorandum of understanding early in fiscal year 2019. The agreement resolves prior year contribution balances, both receivable and payable, outstanding as of June 30, 2018, and resulted in the Board of Education making a $14.3 million payment to the Fund.

(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

	2018	2017	2016	2015	2014
Total pension liability					
Service cost	$ 303,910,267	$ 269,100,663	$ 325,992,943	$ 318,734,274	$ 332,188,481
Interest	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	54,943,524	48,391,475	(106,563,600)	(138,512,940)	(14,177,102)
Changes of assumptions	870,265,669	1,554,506,801	—	—	—
Benefit payments, including refunds of employee contributions	(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	**$ 1,371,891,874**	**$ 2,050,893,987**	**$ 411,479,716**	**$ 396,317,344**	**$ 520,977,383**
Total pension liability-beginning	**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)	**$ 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	$ 784,402,000 *	$ 746,840,000 *	$ 700,070,000 *	$ 643,667,000	$ 585,416,141
Contributions - employee	183,679,205	187,538,787	191,882,430	191,233,298	187,846,065
Net investment income	896,704,544	1,233,003,939	(27,987,163)	381,688,430	1,685,079,840
Benefit payments, including refunds of employee contributions	(1,466,280,439)	(1,424,938,184)	(1,384,826,398)	(1,331,567,406)	(1,306,341,856)
Net transfer for OPEB	(66,867,696) *	(49,000,701) *	(66,104,598) *	—	—
Administrative expense	(21,521,303)	(13,781,343)	(12,867,490)	(11,705,562)	(10,494,139)
Other	1,475,276	214,119	1,463,050	943,946	—
Net change in plan fiduciary net position	**$ 311,591,587**	**$ 679,876,617**	**$ (598,370,169)**	**$ (125,740,294)**	**$ 1,141,506,051**
Plan fiduciary net position - beginning	**10,793,173,927**	**10,113,297,310**	**10,689,954,320**	**10,815,694,614**	**9,674,188,563**
Transfer of remaining OPEB assets**	**—**	**—**	**21,713,159**	**—**	**—**
Plan fiduciary net position - ending (b)	**$ 11,104,765,514**	**$ 10,793,173,927**	**$ 10,113,297,310**	**$ 10,689,954,320**	**$ 10,815,694,614**
Employer's net pension liability - ending (a)-(b)	**$ 13,442,717,359**	**$ 12,382,417,072**	**$ 11,011,399,702**	**$ 10,023,262,976**	**$ 9,501,205,338**

The information above is required beginning fiscal year 2014. Information for the next 5 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

	2018	2017	2016	2015	2014
Total pension liability	$ 24,547,482,872	$ 23,175,590,999	$ 21,124,697,012	$ 20,713,217,296	$ 20,316,899,952
Plan fiduciary net position	11,104,765,514	10,793,173,927	10,113,297,310	10,689,954,320	10,815,694,614
Employer's net pension liability	**$ 13,442,717,358**	**$ 12,382,417,072**	**$ 11,011,399,702**	**$ 10,023,262,976**	**$ 9,501,205,338**
Plan fiduciary net position as a percentage of the total pension liability	45.24%	46.57%	47.87%	51.61%	53.23%
Covered payroll	$ 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	**641.71%**	**609.92%**	**482.69%**	**440.86%**	**425.44%**

The information above is required beginning fiscal year 2014. Information for the next 5 years will be presented in future fiscal years.

SCHEDULE OF THE EMPLOYER'S CONTRIBUTION
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
2009	$ 292,145,359	$ 198,069,327	$ 94,076,032	$ 1,996,194,224	9.92%
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%

* *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
2009	$ 198,002,000	$ 198,069,327	$ (67,327)	$ 1,996,194,224	9.92%
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%

* *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%

* *The information above is required beginning fiscal year 2014. Information for the next 5 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, 2018 and 2017 were determined based on the actuarial valuations as of June 30, 2016 and 2015. The most recent valuation is as of June 30, 2018. 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.

	2018	2017	2016	2015
	Pension Plan	Pension Plan	Pension Plan	Pension Plan
Valuation Date	June 30, 2018	June 30, 2017	June 30, 2016	June 30, 2015
Contribution determined for	Fiscal Year 2020	Fiscal Year 2019	Fiscal Year 2018	Fiscal Year 2017
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 (26 years remaining)	30 years (27 years remaining)	30 years (28 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	7.25%, net of investment expense	7.75%, net of investment expense	7.75%, net of investment expense
Projected salary increases	3.00% to 12.85%, varying by age	4.00% to 15.50%, varying by age	4.25% to 15.75%, 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, 3.25%	General inflation, 2.75% Wage inflation, 3.50%	General inflation, 2.75% Wage inflation, 3.50%
		Post-retirement benefit increase	**Post-retirement benefit increase**	**Post-retirement benefit increase**
2016				
2017				
2018				
2019				
2020	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)
2021				
2022				
2023				
2024				
2025				
2026 & Later				

The following assumption changes were implemented during the fiscal year ended June 30, 2018:

Changes in Assumptions:	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, 2018 AND 2017

SCHEDULE 6

	2018	2017
Depreciation	$ 184,133	$ 162,959
Disaster Recovery	64,540	57,467
Education and Training	206,312	153,406
Equipment	247,307	132,558
Memberships and Subscriptions	35,617	36,314
Personnel	9,800,127	8,717,635
Bad Debt	6,987,600	—
Professional Services	3,227,178	3,731,431
Property	1,100,830	1,061,905
Supplemental	18,825	95,228
Supplies	83,752	87,932
Utilities	67,196	69,388
Miscellaneous	31,927	24,766
Total	**$ 22,055,344**	**$ 14,330,989**

SCHEDULE OF MANAGER FEES
FOR THE YEARS ENDED JUNE 30, 2018 AND 2017

SCHEDULE 7

	2018	2017
Manager Fees	$ 37,195,885	$ 34,060,720
Consultant Fees	1,461,997	1,863,474
Banking and Foreign Exchange Fees	145,573	193,811
Total	**$ 38,803,455**	**$ 36,118,005**

See accompanying independent auditors' report.

OTHER SUPPLEMENTARY INFORMATION *(UNAUDITED)*

SCHEDULE OF CONSULTANT PAYMENTS

FOR THE YEARS ENDED JUNE 30, 2018 AND 2017

SCHEDULE 8

	2018	2017
Agile Progress, LLC	$ 16,000	$ —
Alper Services, LLC	11,100	—
Baker & McKenzie, LLP	9,711	88,672
Bogfire, Inc.	—	3,900
Bradley Consulting Group, Inc.	339,795	392,209
Callan Associates, Inc.	622,722	613,538
ComGraphics, Inc.	178,075	169,756
Data Consultants Corp.	17,000	28,876
Election Service Corporation	44,635	4,431
Foster Pepper, PLLC	487,410	207,723
Gabriel, Roeder, Smith & Co.	152,654	—
Governmental Consulting Solutions, Inc.	45,000	65,000
Grant Thornton	354,330	1,242,753
Imaging Office Systems, Inc.	14,678	40,809
Impact Networking, LLC	27,469	30,771
Jacobs, Burns Orlove & Hernandez	405,833	334,956
Laner Muchin, LTD	39,092	—
KPMG Limited	—	8,091
Michelle Holleman	34,385	21,105
Mitchell & Titus, LLP	—	29,000
North Shore Printers, Inc.	71,164	45,181
Plante & Moran, PLLC	184,375	163,370
Rider Dickerson	156,465	126,290
Segal Company	112,008	148,611
Sikich, LLP	28,097	12,022
Steptoe & Johnson, LLP	6,755	66,297
Sword & Shield Enterprise Security	55,070	83,989
Vision Mai, LLC	77,632	74,262
Total	**$ 3,491,455**	**$ 4,001,612**

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

September 26, 2018

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, 2017 through June 30, 2018.

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

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

Sincerely,

Michael J. Beggy
Service Director

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

The Bank of New York Mellon

Callan

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

Main 312.348.3536
Fax 312.346.1356

www.callan.com

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, 2018. During fiscal year 2018, markets continued their positive performance with many asset classes showing positive returns. Domestic equities continued to register positive performance, with the broad market returning 14.78%. During this period, smaller capitalization companies outperformed their large cap counterparts. Growth sectors fueled this performance with select names in the information technology sector experiencing significant increases. International markets underperformed domestic markets with a return of 7.75% due to changing fundamentals overseas and U.S. Dollar strength. Emerging markets performed slightly better than developing markets. Domestic fixed income ended the fiscal year slightly negative, down 0.40%, as yields increased over the period. Real estate and infrastructure continued to add appreciation and income to investors.

As of June 30, 2018, the Fund's market value totaled $10.8 billion, representing an increase from assets as of June 30, 2017. During the past twelve month period:

- The Russell 3000 Index, an index of domestic stocks covering all capitalizations, increased 14.78%.
- Developed international equity markets continued their gains from last year and increased 7.04%, as measured by the MSCI World ex-USA Index (Net). Similarly, emerging markets posted a gain of 8.20%, as measured by the MSCI Emerging Markets Index.
- The domestic fixed income market produced a return of -0.40% during the year, as measured by the Bloomberg Aggregate Bond Index.
- Private real estate, as measured by the NCREIF NFI-ODCE Index returned 7.64% over the period.

In this environment, the Fund returned 8.69% net-of-fees (8.96% gross-of-fees) during the 12 month period ended June 30, 2018, outperforming its benchmark by 0.33%. Over the trailing three-year period, the Fund outperformed its benchmark by 8 basis points (net-of-fees) with an annualized return of 7.28%. For the trailing five-year period, the Fund outperformed its benchmark by 30 basis points with an annualized net-of-fee return of 8.52%. Since inception, the Fund has returned 8.35% net-of-fees, outperforming its benchmark by 30 basis points annually.

Callan

The Fund's domestic equity managers gained 15.57% (net-of-fees) during the fiscal year, outperforming the benchmark return of 14.78%. The Fund's international equity managers registered a positive return of 8.06% (net-of-fees) over the same period and outperformed the benchmark return by 31 basis points. The Fund's active management in public equities was additive to performance. The fixed income composite returned -0.38% (net-of-fees) compared to the benchmark return of -0.40%. The Fund's core fixed income managers contributed positively to returns over the fiscal year while the core plus managers underperformed the investment-grade index.

The Fund's private real estate managers posted a return of 7.60% on a net-of-fee basis compared to the benchmark return of 7.64%. During the fiscal year, the infrastructure portfolio gained 17.28% on a net-of-fee basis compared to the infrastructure benchmark return of 2.99%. Private equity contributed 14.34% to the Fund over the period.

Manager changes over the past year are summarized below:

New Managers	Asset Class	Inception Date
Green Oak	Real Estate	July 2017
Oak Street	Real Estate	November 2017
NMS Capital	Private Equity	November 2017
KKR Americas	Private Equity	October 2017
EQT Fund Management	Private Equity	December 2017
BMO Asset Management	Domestic Equity	May 2018
Conestoga Capital Advisors	Domestic Equity	June 2018

Terminated Managers	Asset Class	Termination Date
Greystar Equity	Private Equity	September 2017
Holland Capital Management	Domestic Equity	September 2017
Intercontinental	Real Estate	December 2017
Ivy Investments	Domestic Equity	May 2018
Muller and Monroe (ILPEFF)	Private Equity	February 2018

The Public School Teachers' Pension & Retirement Fund of Chicago maintains an appropriately diversified strategy, designed to enhance return potential with an acceptable level of risk. Callan supports the Fund's ongoing efforts to enhance investment opportunities 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 a modified BAI calculation for accounts without daily pricing.

Sincerely,

B Weymouth

Brianne Weymouth, CAIA

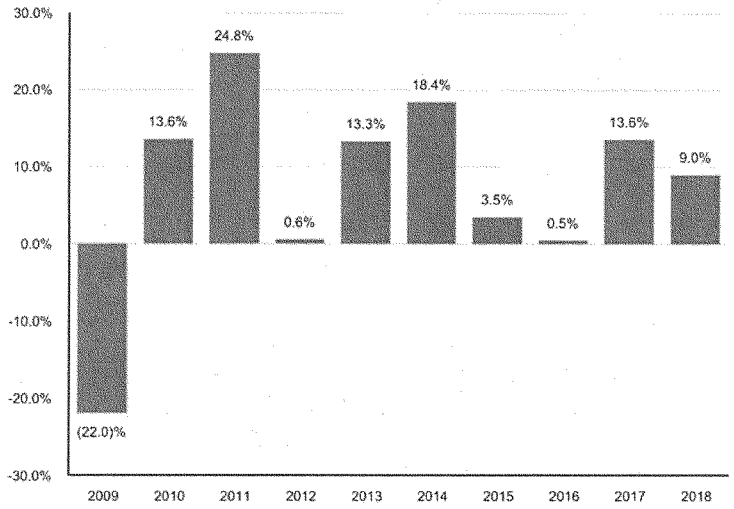
Angel Haddad

INVESTMENT MANAGERS
AS OF JUNE 30, 2018

Adams Street Partners, LLC
Ariel Capital Management, LLC
Attucks Asset Management, 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
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
Hispania Capital Partners, LLC
Hudson Realty Capital, LLC
ICV Capital Partners, LLC
Industry Capital Advisors, LLC
J.P. Morgan Fleming Asset Management, Inc.
Kohlberg Kravis Roberts & Co., L.P.
LaSalle Investment Management, Inc.
Lazard Asset Management, LLC
Leading Edge Investment Advisors, LLC
LM Capital Group, LLC
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
Strategic Global Advisors, LLC
Syncom Venture Partners, LLC
Taplin, Canida and Habacht, Inc.
The Northern Trust Company
UBS Realty Investors, LLC
Urban America Advisors, LP
Walton Street Capital, LLC
Western Asset Management Co.
William Blair & Company, LLC
Zevenbergen Capital Investments, LLC

TOTAL ANNUAL FUND RATE OF RETURN*

FOR THE FISCAL YEARS ENDED JUNE 30, 2009 THROUGH 2018



* Time-weighted rate of return.

SCHEDULE OF INVESTMENT RESULTS

	As of June 30					Annualized Returns		
	2014	2015	2016	2017	2018	3 Year	5 Year	10 Year
Total Fund	**18.4%**	**3.5 %**	**0.5 %**	**13.6 %**	**9.0 %**	**7.6%**	**8.8%**	**6.7%**
Large Cap	26.4%	7.6 %	1.1 %	18.9 %	15.8 %	11.6%	13.6%	10.2%
Russell 1000 Index	25.4%	7.4 %	2.9 %	18.1 %	14.5 %	11.6%	13.4%	10.2%
S&P 500	24.6%	7.4 %	4.0 %	17.9 %	14.4 %	11.9%	13.4%	10.2%
Small Cap Equity	26.6%	6.8 %	(7.7)%	21.2 %	15.4 %	8.9%	11.8%	10.4%
Russell 2000 Index	23.6%	6.5 %	(6.7)%	24.6 %	17.6 %	11.0%	12.5%	10.6%
International Equity	22.6%	(1.8)%	(8.4)%	19.8%	8.5 %	6.0%	7.5%	5.0%
International Equity Benchmark	22.3%	(4.9)%	(10.2)%	20.5%	7.8 %	5.2%	6.1%	2.6%
Fixed Income	5.5%	1.5 %	6.3%	0.9%	(0.3)%	2.2%	2.7%	4.3%
Bloomberg Aggregate Index	4.4%	1.9 %	6.0%	(0.3)%	(0.4)%	1.7%	2.3%	3.7%
REITs	14.2%	2.6 %	12.1 %	—	—	—	—	—
Custom REITs Index*	14.2%	0.4 %	12.6 %	—	—	—	—	—
Real Estate (Private)	15.8%	14.6 %	14.0 %	6.7 %	8.4 %	9.6%	11.3%	4.0%
NFI ODCE Value Weight Net Only	12.8%	14.4 %	11.8 %	6.9 %	7.6 %	8.4%	10.1%	4.4%
Private Equity**	20.2%	11.3 %	5.1 %	15.8 %	14.6 %	11.7%	13.3%	8.1%
N/A	—	—	—	—	—	—	—	—
Infrastructure***	9.4%	(5.3)%	9.6 %	6.8 %	17.8 %	11.3%	6.8%	—
Absolute Benchmark	8.0%	8.0 %	8.0 %	8.0 %	3.0 %	6.3%	7.0%	—
Hedge Funds	5.1%	3.2 %	(8.9)%	—	—	—	—	—
T-Bills+5%	5.1%	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.*

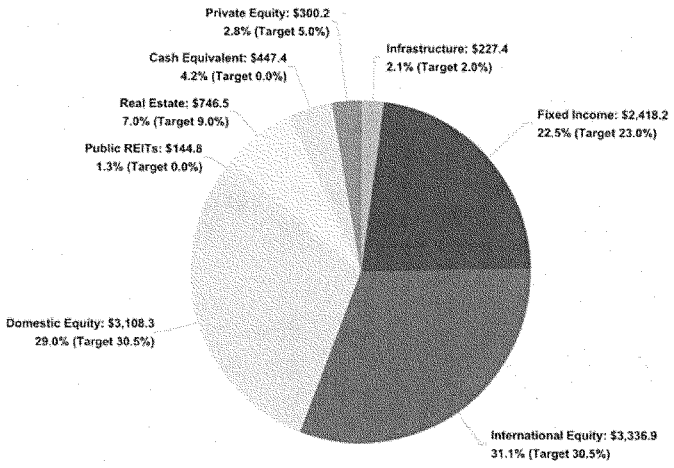
*** *New Infrastructure benchmark (FTSE Core Developed Infrastructure 50/50/Index) adopted September 21, 2017.*

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

INVESTMENT PORTFOLIO SUMMARY
DOLLARS IN MILLIONS

	June 30, 2017 Fair Value	Purchases	Sales (Fair Value)	Fair Value Adjustments	June 30, 2018 Fair Value	Percent of Total
Fixed Income	$ 2,008.4	$ 240.7	$ (226.5)	$ 395.6	$ 2,418.2	22.5%
Equity	6,318.0	231.2	(176.3)	72.3	6,445.2	60.1%
Public REITs	128.6	—	—	16.2	144.8	1.3%
Real Estate	738.9	4.2	(0.8)	4.2	746.5	7.0%
Infrastructure	241.3	—	—	(13.9)	227.4	2.1%
Private Equity	281.1	3.4	—	15.7	300.2	2.8%
Cash & Cash Equivalent	354.1	199.8	(251.5)	145.0	447.4	4.2%
Total Portfolio	**$ 10,070.4**	**$ 679.3**	**$ (655.1)**	**$ 635.1**	**$ 10,729.7**	**100.0%**

ASSET ALLOCATION SUMMARY
IN MILLIONS OF DOLLARS*

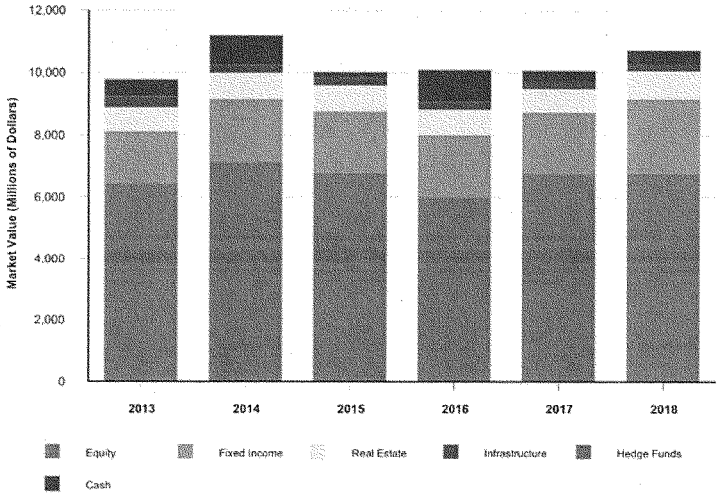


* **Note:** Percentage indicates actual category weight as a percentage of the entire portfolio.

HISTORICAL ASSET ALLOCATION
BY PERCENTAGE OF TOTAL PORTFOLIO

	2013		2014		2015		2016		2017		2018	
	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy	Actual	Policy
Equity:												
Domestic	33.0	31.3	32.0	31.3	33.3	30.0	28.8	30.5	32.8	30.5	29.0	30.5
International	27.0	31.2	27.0	31.2	27.1	30.0	25.1	30.5	30.0	30.5	31.1	30.5
Public REITs	2.8	2.5	1.8	2.5	2.5	2.0	2.3	—	1.3	—	1.3	—
Private Equity	2.8	3.0	2.7	3.0	3.1	3.0	2.8	5.0	2.8	5.0	2.8	5.0
Total Equity	**65.6**	**68.0**	**63.5**	**68.0**	**66.0**	**65.0**	**59.0**	**66.0**	**66.9**	**66.0**	**64.2**	**66.0**
Fixed Income	17.3	19.5	18.3	19.5	19.6	21.0	20.2	23.0	19.9	23.0	22.5	23.0
Real Estate	7.9	6.5	7.4	6.5	8.5	7.0	8.0	9.0	7.3	9.0	7.0	9.0
Infrastructure	3.4	2.0	2.2	2.0	2.0	3.0	2.4	2.0	2.4	2.0	2.1	2.0
Hedge Funds	0.3	2.0	0.3	2.0	0.3	2.0	0.3	—	—	—	—	—
Cash & Equiv.	5.5	2.0	8.3	2.0	3.6	2.0	10.1	—	3.5	—	4.2	—
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, 2018

Economic Sector Holdings

Economic Sector	Number of Shares	Market Value	Percent of Total	S&P 500 Index
Consumer Discretionary	6,684,845	$ 490,277,536	15.8%	12.9%
Consumer Staples	2,750,781	165,598,717	5.3%	7.0%
Energy	4,293,913	196,359,911	6.3%	6.3%
Financial Services	11,371,716	599,807,947	19.3%	16.7%
Health Care	6,191,670	417,057,936	13.4%	14.1%
Materials & Processing	2,380,518	110,608,215	3.6%	2.6%
Miscellaneous	4,525,479	5,849,644	0.2%	0.0%
Producer Durables	5,401,863	330,189,292	10.6%	9.5%
Technology	7,823,049	651,276,139	21.0%	26.0%
Utilities	3,225,796	141,297,864	4.5%	4.9%
Grand Total	**54,649,630**	**$ 3,108,323,201**	**100.0%**	**100.0%**

Top 10 Domestic Equity Holdings

Description	Number of Shares	Market Value	Percent of Total
DFA International Small Cap	8,335,557	$ 180,631,528	5.8%
Apple, Inc.	507,099	93,869,096	3.0%
Amazon.com, Inc.	49,376	83,929,325	2.7%
Microsoft Corp.	827,959	81,645,037	2.6%
Facebook, Inc.	282,151	54,827,582	1.8%
Earnest Partners China Fund	17,782	39,874,837	1.3%
Alphabet, Inc. Class A	32,728	36,956,130	1.2%
The Bank of America Corp.	1,728,077	36,226,559	1.2%
Alphabet, Inc. Class C	31,364	34,991,247	1.1%
JP Morgan Chase & Co.	306,026	31,887,909	1.0%
Total Top 10 Domestic Equity	**12,118,119**	**$ 674,839,250**	**21.7%**
Grand Total	**54,649,630**	**$ 3,108,323,201**	**100.0%**

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

INTERNATIONAL EQUITY SUMMARY
AS OF JUNE 30, 2018

Country	Number of Shares	Market Value	Percent of Total	MSCI ACWI Ex-U.S. Index
South Africa	2,784,187	$ 20,821,943	0.6%	1.0%
Other	5,171,949	2,032,567	0.1%	0.9%
Total Africa	**7,956,136**	**$ 22,854,510**	**0.7%**	**1.9%**
Brazil	9,132,839	42,244,823	1.3%	1.5%
Canada	3,099,992	116,032,101	3.5%	3.5%
Chile	1,100,887	586,686	0.0%	0.0%
Colombia	3,727,031	15,659,072	0.5%	0.5%
Mexico	2,127,919	11,988,214	0.3%	0.5%
Other	55,975	4,331,490	0.1%	4.3%
Total Americas	**19,244,643**	**$ 190,842,386**	**5.7%**	**10.3%**
Australia	4,347,630	33,786,624	1.0%	1.6%
China	46,973,261	159,457,786	4.8%	5.9%
Hong Kong	17,663,776	67,867,788	2.0%	2.5%
India	7,303,586	65,045,935	1.9%	2.3%
Japan	13,507,068	379,930,959	11.4%	12.8%
Singapore	7,998,384	26,302,214	0.8%	0.8%
South Korea	1,119,793	72,981,980	2.2%	2.7%
Taiwan	30,826,164	96,938,057	2.9%	3.1%
Other	88,700,872	426,207,510	12.8%	1.5%
Total Asia/Pacific Basin	**218,440,534**	**$ 1,328,518,853**	**39.8%**	**33.2%**
Belgium	244,718	19,595,011	0.6%	0.7%
France	3,443,741	310,473,850	9.3%	9.3%
Germany	2,415,346	168,172,419	5.1%	5.3%
Ireland	3,702,322	113,203,042	3.4%	2.3%
Netherlands	3,623,558	167,781,066	5.0%	4.7%
Norway	3,789,114	57,456,091	1.7%	1.8%
Spain	2,372,642	50,297,263	1.5%	1.6%
Sweden	2,857,889	52,377,090	1.6%	1.7%
Switzerland	3,323,006	163,442,679	4.9%	4.9%
United Kingdom	40,379,895	520,952,606	15.6%	16.0%
Other	6,578,785	170,910,037	5.1%	6.3%
Total Europe	**72,731,016**	**$ 1,794,661,154**	**53.8%**	**54.6%**
Grand Total	**318,372,329**	**$ 3,336,876,903**	**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, 2018

Description	Number of Shares	Market Value	Percent of Total
Lazard Emerging Markets Equity Portfolio	7,449,003	$ 131,474,905	3.9%
Novartis International AG	631,589	47,835,383	1.4%
Safran S.A.	342,772	41,641,169	1.3%
SAP SE	315,213	36,417,749	1.1%
Royal Dutch Shell	997,858	34,690,091	1.0%
British American Tobacco	645,755	32,652,973	1.0%
Reckitt Benckiser Group	387,746	31,938,792	1.0%
GlaxoSmithKline	1,556,949	31,808,821	1.0%
Prudential	1,382,899	31,668,022	0.9%
Shiseido Company, Ltd.	392,880	31,206,233	0.9%
Total Top 10 International Equity	**14,102,664**	**$ 451,334,138**	**13.5%**
Grand Total	**318,372,329**	**$ 3,336,876,903**	**100.0%**

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

FIXED INCOME SUMMARY
AS OF JUNE 30, 2018

Fixed Income Holdings

Asset Category	Par Value	Market Value	Percent of Total	Barclays Aggregate Bond Index
Treasury	$ 817,478,299	$ 804,021,013	33.3 %	37.5%
Mortgage Backed Securities	372,158,600	378,005,867	15.6 %	28.1%
Corporate Bonds	905,972,642	945,964,849	39.1 %	25.0%
Government Agency	454,575,964	129,294,499	5.4 %	6.6%
Non Gov't Backed CMOs/Asset Backed	51,028,210	50,505,352	2.1 %	0.5%
Commercial Mortgage-Backed	96,174,095	94,418,651	3.9 %	2.0%
Municipal Bonds	15,010,000	17,424,754	0.7 %	0.0%
Other	(681)	(1,414,380)	(0.1)%	0.3%
Grand Total	**$ 2,712,397,129**	**$ 2,418,220,605**	**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, 2018

Public REITs Summary

Property Type	Number of Shares	Market Value	Percent of Total	NAREIT Property Index
Retail REITs	379,829	$ 13,445,118	9.3%	19.4%
Industrial & Office REITs	805,057	30,991,868	21.4%	20.9%
Residential (Apartment) REITs	583,945	20,006,266	13.8%	16.1%
Health Care Facilities	261,838	7,830,445	5.4%	11.3%
Hotel & Lodging REITs	462,647	10,890,062	7.5%	6.8%
Residential (Development) REITs	3,900	116,493	0.1%	6.7%
Other	2,523,685	61,490,762	42.5%	18.8%
Grand Total	**5,020,901**	**$ 144,771,014**	**100.0%**	**100.0%**

Top 10 Public REITs Holdings

Holding	Number of Shares	Market Value	Percent of Total
Equinix, Inc.	18,159	$ 7,806,373	5.4%
Essex Property Trust, Inc.	31,314	7,486,238	5.2%
Boston Properties, Inc.	54,063	6,780,581	4.7%
American Tower Corp.	46,328	6,679,108	4.6%
Simon Property Group, Inc.	32,194	5,479,097	3.8%
Crown Castle International Corp.	41,688	4,494,800	3.1%
Public Storage	16,200	3,675,132	2.5%
Host Hotels & Resorts, Inc.	166,414	3,506,343	2.4%
Highwoods Properties, Inc.	69,029	3,501,841	2.4%
SEGRO, plc	395,642	3,496,586	2.4%
Total Top 10 Public REITs Holdings	**871,031**	**$ 52,906,099**	**36.5%**
Grand Total	**5,020,901**	**$ 144,771,014**	**100.0%**

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

PRIVATE EQUITY SUMMARY
AS OF JUNE 30, 2018

Private Equity Holdings

Fund	Total Capital Called	Market Value	Percent of Total
Adams Street Partners (Multiple Funds)	$ 153,477,600	$ 153,477,600	51.1%
Brinson Partners (Multiple Funds)	182,370	182,370	0.1%
HarbourVest Partners (Multiple Funds)	28,588,714	28,588,714	9.5%
Hispania Capital Partners	2,739,387	2,739,387	0.9%
ICV Partners (Multiple Funds)	14,227,533	14,227,533	4.7%
KKR Americas Fund	3,459,974	3,459,974	1.2%
Mesirow Capital Partners (Multiple Funds)	49,565,851	49,565,851	16.5%
Muller & Monroe Private Equity Fund of Funds	2,422,013	2,422,013	0.8%
NMS Capital Fund	1,708,085	1,708,085	0.6%
Palladium Equity Partners (Multiple Funds)	8,272,002	8,272,002	2.8%
Pantheon Ventures (Multiple Funds)	16,108,000	16,706,526	5.6%
Pharos Capital Partners (Multiple Funds)	15,746,614	15,746,614	5.2%
RLJ Equity Partners Fund II	1,165,885	1,165,885	0.4%
Syndicated Communications Venture Partners V	1,965,859	1,965,859	0.6%
Grand Total	**$ 299,629,887**	**$ 300,228,413**	**100.0%**

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

INFRASTRUCTURE SUMMARY
AS OF JUNE 30, 2018

Infrastructure Holdings

Fund	Number of Shares	Market Value	Percent of Total
JP Morgan Infrastructure Investments Fund	98,529,258	$ 98,529,258	43.3%
Total Commingled Funds	**98,529,258**	**$ 98,529,258**	**43.3%**

Fund	Total Capital Called	Market Value	Percent of Total
Brookfield Infrastructure Fund III, LP	$ —	$ 19,789,496	8.7%
Macquarie Infrastructure Partners II US	—	80,382,718	35.4%
Macquarie European Infrastructure Fund III	—	28,662,569	12.6%
Total Closed-End Funds	**$ —**	**$ 128,834,783**	**56.7%**
Grand Total		**$ 227,364,041**	**100.0%**

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

REAL ESTATE SUMMARY
AS OF JUNE 30, 2018

Real Estate Holdings

Fund	Number of Shares	Market Value	Percent of Total
JP Morgan Strategic Property Fund	46,344	$ 156,331,533	20.9%
LaSalle Property Fund	107,843,254	107,843,254	14.4%
PRISA I Real Estate Fund	2,346	145,766,965	19.5%
PRISA II Real Estate Fund	622	22,916,414	3.1%
UBS Trumbull Property Fund	156,436,525	156,436,525	21.0%
Total Commingled Funds	**264,329,091**	**$ 589,294,691**	**78.9%**

Fund	Total Capital Called	Market Value	Percent of Total
Blackstone RE Debt Strategies High Grade, LP	$ 15,022,708	$ 15,022,708	2.0%
Capri Select Income II, LLC	51,101	51,101	0.0%
Clarion Lion Industrial Trust	51,183,076	51,183,076	6.9%
DV Urban Realty Partners I, LP	1,428,065	1,428,065	0.2%
Emerging Manager Real Estate Fund of Funds, LP	13,866,053	13,866,053	1.9%
Europa Fund III, LP	2,783,870	3,250,308	0.4%
Fortress Japan Opportunity Domestic Fund C-I, LP	3,955,779	2,926,617	0.4%
Fortress Japan Opportunity Fund II Dollar A, LP	324,166,743	3,955,779	0.5%
Fremont Strategic Property Partners II	1,509,618	1,509,618	0.2%
GreenOak US III, LP	2,368,798	2,368,798	0.3%
Hudson Realty Capital Fund V, LP	228,391	228,391	0.0%
Industry Capital Berkeley Partners	3,180,149	3,180,149	0.4%
MB Asia RE Fund (TE), LP	514,254	514,254	0.1%
Newport Capital Partners II, LP	17,028,505	17,028,505	2.3%
Oak Street Real Estate Capital IV, LP	4,352,585	4,352,585	0.6%
Southwest Multifamily Partners, LP	11,581,691	11,581,691	1.6%
Walton Street Capital (Multiple Funds)	24,779,217	24,779,218	3.3%
Total Closed-End Funds	**$ 478,000,603**	**$ 157,226,916**	**21.1%**
Grand Total		**$ 746,521,607**	**100.0%**

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

MANAGER ANALYSIS
AS OF JUNE 30, 2018

Asset Category	Market Value as of June 30, 2018	Percent of Total	FY 2018 Manager Fees	Percent of Market Value
Domestic Equity	$ 3,108,323,201	29.0%	$ 5,379,052	0.2%
International Equity	3,336,876,903	31.1%	14,161,318	0.4%
Public REITs	144,771,014	1.3%	—	—
Fixed Income	2,418,220,605	22.5%	2,314,466	0.1%
Real Estate	746,521,607	7.0%	6,903,344	0.9%
Infrastructure	227,364,041	2.1%	2,946,132	1.3%
Private Equity	300,228,413	2.8%	5,041,554	1.7%
Cash and Equivalent	447,399,457	4.2%	—	—
Total	**$ 10,729,705,241**	**100.0%**	**$ 36,745,866**	**0.3%**

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, 2018

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	4,768,159	$ 113,982	$ 0.02
The Williams Capital Group, LP	6,023,605	63,866	0.01
Cabrera Capital Markets, LLC	2,084,513	54,228	0.03
Telsey Advisory Group, LLC	1,542,457	46,274	0.03
North South Capital, LLC	1,059,312	42,372	0.04
Penserra Securities, LLC/Cheevers & Co., Inc.	2,201,927	34,907	0.02
Andes Capital Group, LLC	1,220,108	30,694	0.03
Raymond James & Associates, Inc.	806,504	19,340	0.02
Barclays Capital, Inc.	611,238	19,101	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	830,881	10,861	0.01
Deutsche Bank Securities, Inc./Alex Brown	294,050	10,704	0.04
Goldman Sachs Execution & Clearing, LP	1,092,312	10,694	0.01
Investment Technology Group, Inc./ ITG, Inc.	588,807	9,759	0.02
Cowen & Co., LLC	346,464	8,816	0.03
RBC Capital Markets, LLC	254,898	8,715	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
Robert W. Baird & Co., Inc.	170,581	5,902	0.03
Citigroup Global Markets, Inc./Salomon Bros.	195,953	5,756	0.03
Yamner & Co., Inc.	535,429	5,354	0.01
Instinet, LLC	2,603,902	5,326	0.00
JP Morgan Securities, LLC	131,201	5,159	0.04
Sandler, O'Neil & Partners, LP	506,447	5,064	0.01
Stephens	236,658	4,733	0.02
JMP Securities, LLC	125,140	4,628	0.04
Keybanc Capital Markets, Inc.	129,473	4,538	0.04
Drexel Hamilton, LLC	155,101	4,065	0.03
Seaport Global Securities, LLC	341,396	3,414	0.01
CIS Brokerage, Inc.	89,759	3,411	0.04
Liquidnet, Inc.	191,452	2,872	0.02
Sanford C. Bernstein & Co., LLC	120,921	2,860	0.02
William Blair & Co., LLC	72,626	2,636	0.04
Jefferies, LLC	74,074	2,623	0.04
Credit Suisse First Boston	117,723	2,463	0.02
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
Divine Capital Markets, LLC	78,906	1,810	0.02
Wall Street Access GLP	176,191	1,762	0.01
Cantor Fitzgerald & Co.	81,567	1,631	0.02
Other (24 Brokers)	971,683	15,555	0.02
Grand Total	**33,131,273**	**$ 629,639**	**$ 0.02**

BROKER COMMISSION REPORT

MWDBE DOMESTIC AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2018

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	4,768,159	$ 113,982	$ 0.02
The Williams Capital Group, LP	6,023,605	63,866	0.01
Cabrera Capital Markets, LLC	2,084,513	54,228	0.03
Telsey Advisory Group, LLC	1,542,457	46,274	0.03
North South Capital, LLC	1,059,312	42,372	0.04
Penserra Securities, LLC/Cheevers & Co., Inc.	2,201,927	34,907	0.02
Andes Capital Group, LLC	1,220,108	30,694	0.03
Cheevers & Co., Inc.	382,540	11,064	0.03
Castleoak Securities, LP	547,535	7,712	0.01
CL King & Associates, Inc.	166,970	4,262	0.03
Vandham Securities Corp.	52,758	2,020	0.04
Drexel Hamilton, LLC	155,101	4,065	0.03
Divine Capital Markets, LLC	55,760	1,115	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
Total Directed Domestic Commission	**20,376,478**	**$ 418,542**	**$ 0.02**
Grand Total	**33,131,273**	**$ 629,639**	**$ 0.02**

BROKER COMMISSION REPORT

INTERNATIONAL AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2018

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	21,156,074	$ 270,134	$ 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	10,938,768	56,401	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
Bloomberg, LP	868,057	14,360	0.02
Weeden & Co., LP	1,180,284	14,288	0.01
Cabrera Capital Markets, LLC	5,366,652	14,246	0.00
RBC Capital Markets, LLC	351,864	10,928	0.03
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)	12,864,315	103,676	0.01
Grand Total	**246,108,698**	**$ 2,141,571**	**$ 0.01**

BROKER COMMISSION REPORT

MWDBE INTERNATIONAL AGENCY TRADES FOR THE YEAR ENDED JUNE 30, 2018

Broker	Number of Shares Traded	Commission Amount	Commission per Share
Loop Capital Markets, LLC	21,156,074	$ 270,134	$ 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	2,290,699	13,190	0.01
Cabrera Capital Markets, LLC	5,366,652	14,246	0.00
North South Capital, LLC	1,691,453	10,442	0.01
Capital Institutional Services, Inc. (CAPIS)	275,234	7,039	0.03
The Williams Capital Group, LP	251,339	6,752	0.03
Castleoak Securities, LP	566,998	3,086	0.01
Vandham Securities Corp.	6,110	183	0.03
Divine Capital Markets, LLC	1,430	36	0.03
Andes Capital Group, LLC	880	22	0.03
Total Directed Domestic Commission	**47,848,678**	**$ 643,155**	**$ 0.01**
Grand Total	**246,108,698**	**$ 2,141,571**	**$ 0.01**

SCHEDULE OF CASH RECEIPTS AND DISBURSEMENTS
FOR THE YEARS ENDED JUNE 30, 2018 AND 2017

	2018	2017
Cash and Cash Equivalents - Beginning of Period	$ 818,028,637	$ 1,032,073,205
Add Receipts:		
Member Contributions	189,743,551	180,305,126
Public Revenues	783,529,139	759,705,382
Interest and Dividends	268,421,943	240,276,268
Miscellaneous	—	—
Net Investment Sales	112,702,276	137,208,494
Total Cash Receipts	**$ 1,354,396,909**	**$ 1,317,495,270**
Less Disbursements:		
Pension Benefits	1,441,077,156	1,395,879,937
Refunds	27,318,770	28,156,250
2.2 Legislative Refunds	742,315	780,389
Refunds of Insurance Premiums	61,907,220	58,313,352
Investment and Administrative Expenses	60,483,011	48,409,910
Total Cash Disbursements	**$ 1,591,528,472**	**$ 1,531,539,838**
Net Increase (Decrease) in Cash and Cash Equivalents	(237,131,563)	(214,044,568)
Cash and Cash Equivalents - End of Period	**$ 580,897,074**	**$ 818,028,637**

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.

INVESTMENT AUTHORITY ILLINOIS PENSION CODE

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

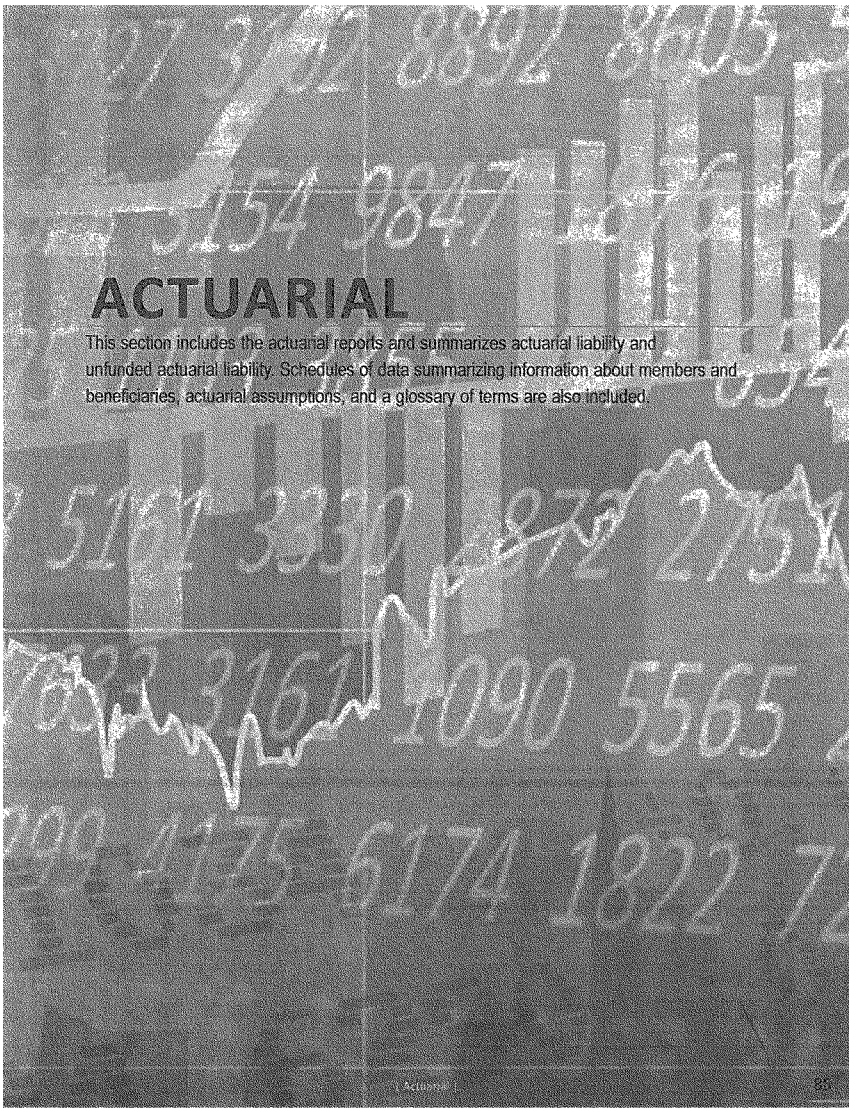
Custody of Fund-Bonds-Legal proceedings. The city treasurer, ex-officio, shall be the custodian of the Fund, and shall secure and safely keep it, subject to the control and direction of the Board of Trustees. He shall keep his books and accounts concerning the Fund in the manner prescribed by the Board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

P: 312.456.9800 | F: 312.683.3271 | www.grsconsulting.com

November 21, 2018

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, 2018

Dear Members of the Board:

The results of the June 30, 2018, 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, 2019, and ending June 30, 2020. The employer's contribution requirement has been determined in accordance with Illinois State Statues, in particular under 40 ILCS Sections 5/17-127, 5/17-127.2, and 5/17-129. Information required by Governmental Accounting Standards Board ("GASB") Statement Nos. 67 and 68 is provided in a separate report. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

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

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

The findings in this report are based on data and other information through June 30, 2018. 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, 2018, actuarial valuation are based on an experience study for the five-year period from July 1, 2012 through June 30, 2017, and the 2018 investment return assumption review, 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 the 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 an 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 Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

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

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

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

Amy Williams, ASA, MAAA, FCA
Consultant

GRS

SECTION A: EXECUTIVE SUMMARY

Actuarial Valuation Date:	June 30, 2018	June 30, 2017
Required Employer Contributions for Fiscal Year Ending:	June 30, 2020	June 30, 2019
Estimated Required Employer Contributions:		
Required Board of Education Contributions	$ 584,504,000	$ 556,814,000
Additional Board of Education Contributions (0.58% of pay)	12,647,000	12,887,000
Additional State Contributions (0.544% of pay)	11,862,000	12,087,000
State Contributions Pursuant to P.A. 100-0465 (Normal Cost)[a]	245,487,000	226,782,000
Total Required Employer Contributions	$ 854,500,000	$ 808,570,000
Percentage of Projected Capped Payroll	39.187%	36.392%
Actuarial Valuation Date:	**June 30, 2018**	**June 30, 2017**
Actuarial Information for Fiscal Year Ending:	**June 30, 2019**	**June 30, 2018**
Actuarially Determined Contribution[b] as of the Actuarial Valuation Date:		
Annual Amount	$ 1,097,170,031	$ 920,752,559
Percentage of Projected Capped Payroll for Upcoming Year	51.80%	42.92%
Membership:		
Number of		
Active Members	28,958	28,855
Members Receiving Payments	28,549	28,439
Vested Former Members Eligible for Deferred Benefits	9,398	6,062
Non-vested Former Members Eligible for Refunds Only	20,282	22,570
Total	87,187	85,926
Covered Payroll as of the Actuarial Valuation Date	$ 2,111,982,104	$ 2,030,175,116
Projected Capped Payroll for Upcoming Year	$ 2,118,062,176	$ 2,145,171,999
Projected Capped Payroll for Upcoming Year + 1	$ 2,180,577,527	$ 2,221,849,230
Annualized Benefit Payments	$ 1,444,085,794	$ 1,403,989,272
Assets:		
Market Value of Assets (MVA)	$ 11,104,765,514	$ 10,793,173,927
Actuarial Value of Assets (AVA)	$ 10,969,085,523	$ 10,933,031,685
Approximate Return on Market Value of Assets	8.54%	12.53%
Approximate Return on Actuarial Value of Assets	5.84%	8.26%
Ratio - Actuarial Value of Assets to Market Value of Assets	98.78%	101.30%
Actuarial Information as of the Actuarial Valuation Date:		
Total Normal Cost Amount (Including Admin. Expenses)	$ 366,153,498	$ 349,429,055
Employer's Normal Cost Amount (Including Admin. Expenses)	$ 175,527,902	$ 156,363,575
Employer's Normal Cost Amount (Including Admin. Expenses and Health Insurance Subsidy)[c]	$ 240,527,902	$ 221,363,575
Actuarial Accrued Liability (AAL)	$ 22,922,992,558	$ 21,822,010,297
Unfunded Actuarial Accrued Liability (UAAL)	$ 11,953,907,035	$ 10,888,978,612
Funded Ratio based on Actuarial Value of Assets	47.85%	50.10%
UAAL as % of Covered Payroll	566.00%	536.36%
Funded Ratio based on Market Value of Assets	48.44%	49.46%

[a] *State Normal Cost contribution represents the projected employer Normal Cost for fiscal years 2019 and 2020, 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, 2018, the remaining amortization period is 25 years. The ADC is used for financial reporting purposes only.*

[c] *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 (CTPF) requires the Actuary, as the technical advisor to the Board of Trustees to determine the amount of Board of Education contributions required for each fiscal year.

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

Gabriel, Roeder, Smith & Company (GRS) has been retained by the CTPF Board of Trustees to perform an actuarial valuation as of June 30, 2018. 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, 2020.

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 projection 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 to be used for the June 30, 2018, actuarial valuation were adopted by the Board (including the Chicago Public School's (CPS) requested modifications) during the September 30, 2018, Board meeting, and were based on the recommendations from the experience study for the five-year period from July 1, 2012 through June 30, 2017, the 2018 investment return assumption review performed by GRS, and the requested modifications of CPS. The changes in actuarial assumptions include:

- Decreased the investment return assumption from 7.25% to 7.00%;
- Decreased the wage inflation assumption from 3.25% to 3.00%;
- Decreased all salary increase rates;
- Changed the post-retirement mortality table for healthy lives from the RP-2000 Healthy Annuitant mortality table to the RP-2014 White Collar Healthy Annuitant mortality table;
- Changed the post-retirement mortality table for disabled lives from the RP-2000 Disabled mortality table to the RP-2014 Disabled mortality table;
- Changed the pre-retirement mortality table from the RP-2000 Employee mortality table to the RP-2014 White Collar Employee mortality table;
- Increased life expectancy by updating mortality projection scales applied to the mortality tables;
- Moved from a select and ultimate termination rate table based on age and service to a service-based only table for all years of service and increased termination rates for most years of service;
- Decreased disability rates for members under age 50 and increased rates for members age 50 and older;
- Decreased dependent assumptions from 80% married for males and females to 75% married for males and 65% married for females;
- Changed decrement timing from beginning of year to middle of year to better reflect the actual timing of when members are decrementing from active status;
- Included a provision to add additional Tier 2 active members (150 members for the June 30, 2018, actuarial valuation) to the funding projections used to calculate the contribution requirements to account for June 2018 retirements and terminations expected to be replaced with active members during August/September 2018;
- Annualized payroll for members with less than a year of service;

- Updated the assumption on the characteristics of new hires to an assumption that new entrants have a similar demographic profile as new entrants who have been hired in the three years prior to the actuarial valuation date; and
- Changed the method used to project administrative expenses (from the prior year's administrative expenses) from increases of 5.00% per year to increases of 5.75% per year for 15 years and then increases in line with projected capped payroll.

In addition to the above changes, based on historical information, GRS recommended increasing retirement rates for all age and service bands and for projection purposes, reducing active membership by 1.00% per year for ten years and then remaining constant. However, CPS requested the retirement rates and active population assumptions remain unchanged from the June 30, 2017 actuarial valuation based on their belief that CPS has long-term financial stability that has/will shift the demographic trends away from the trends experienced during the years of CPS' financial crisis (2013 - 2017).

The Board agreed with CPS' modifications to GRS' recommendations. GRS recommends monitoring retirement and active population experience on an annual basis to confirm the continued appropriateness of CPS' requested modifications regarding retirement and active population growth.

The net change in the actuarial assumptions detailed above increased the actuarial accrued liability as of June 30, 2018 by $621.77 million.

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

Report Highlights

The Employer's contribution requirement for fiscal year (FY) 2020 is $854.5 million. The 2017 actuarial valuation had projected the statutory contribution would increase from $808.6 million for FY 2019 to $835.5 million for FY 2020. The key reasons for the $19.0 million increase in the Employer's contribution requirement of $854.5 million over the projected amount from the prior actuarial valuation of $835.5 million are the change in the actuarial assumptions and unfavorable demographic experience including more retirements than expected and unfavorable mortality 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 2009, 2012, 2015, and 2016. The market return for the year ending June 30, 2018 was approximately 8.54% compared to a return of 12.53% in FY 2017. The average market value investment return over the most recent 10 years has been approximately 6.31%. Table 9 on page 110 provides historical investment returns (on an MVA and AVA basis).

The funded ratio decreased from 49.5% as of June 30, 2017, to 48.4% as of June 30, 2018, based on the market value of assets, and decreased from 50.1% as of June 30, 2017, to 47.9% as of June 30, 2018, based on the actuarial value of assets. There are net deferred asset gains of $135.7 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 2018

The Fund assets earned approximately 8.54% on a market value basis during FY 2018 which was greater than the investment return assumption of 7.25% for FY 2018. The Fund assets earned approximately 5.84% on an actuarial value of assets basis during FY 2018, due to recognition of net deferred investment losses under the asset smoothing method. Since 5.84% is less than the assumed rate of investment return of 7.25% for FY 2018, there was an asset loss of $133.22 million on the actuarial value of assets.

There was also a net loss of $76.58 million from actuarial liabilities, which is comprised of a loss of approximately $69.65 million from demographic experience, and a loss of $6.93 million from higher 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)	$	21,822.01
2. Total Normal Cost - Prior Year[a]		349.43
3. Benefits and Administrative Expenses Paid in FY 2018		(1,488.34)
4. Interest on the above items, 1, 2, and 3		1,541.54
5. Expected AAL 06/30/2018 (1+2+3+4)		22,224.64
6. Impact of Change in Actuarial Assumptions and Methods		621.77
7. Expected AAL 06/30/2018 After Assumption Changes (5+6)		22,846.41
8. Actual AAL 06/30/2018		22,922.99
9. Actuarial (Gain)/Loss on Liabilities (8-7) (Pensions Only)	$	76.58

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

CTPF experienced an overall actuarial loss of $209.80 million. The total net actuarial loss is the total of the loss from assets and the net loss from liabilities. The total actuarial loss for the year is as follows (dollars in millions):

1. Actuarial (Gain)/Loss on Assets	$	133.22
2. Actuarial (Gain)/Loss on Liabilities		76.58
3. Total Actuarial (Gain)/Loss (1+2)	$	209.80

The experience of the population determines the liability gain or loss for the year. There was a loss on salaries, due to higher salary increases than assumed. From the last year to this year, there were losses on retirement and retiree mortality. Active mortality and disabled experience was about as expected. 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 (page 105) for detail of the gains and losses by source.

Asset Information

The market value of the assets of the Fund that are available for benefits increased from $10,793.2 million as of June 30, 2017, to $11,104.8 million as of June 30, 2018. The actuarial value of assets as of June 30, 2018, is $10,969.1 million, which is $135.7 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. The $135.7 million, which is the value of net deferred gains, will be smoothed into the actuarial value of assets over the next three years. The remaining unrecognized net asset loss from FY 2016 will be smoothed in over the year, and the remaining asset gains from FY 2017 and FY 2018 will be smoothed in over the next two and three years, respectively.

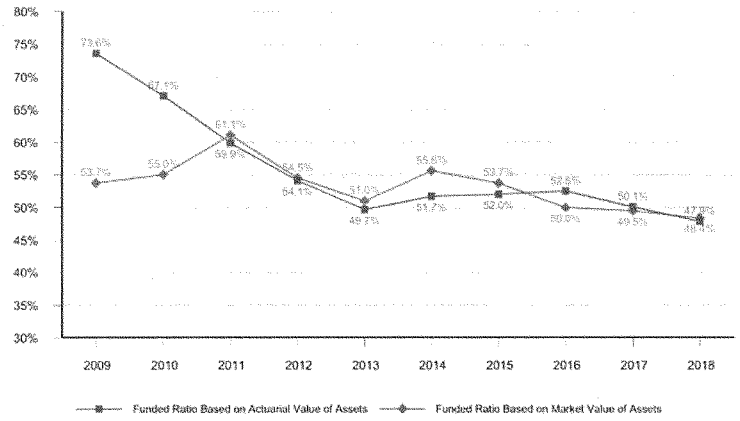
The detailed determinations of asset values utilized in this valuation and asset growth in the last year are set out in Section E.

Funding Status

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

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

Comparison of Historical Funded Ratios



Employer Contribution Requirement for Fiscal Year 2020

The funded ratio as of the June 30, 2018, actuarial valuation on an actuarial value basis is 47.9%. Therefore, additional contributions by the Board of Education and State will be required for fiscal year 2020. The projected payroll for fiscal year 2020 is $2,180,577,527. Based on the projected payroll for fiscal year 2020, 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 2020 are as follows:

Development of Additional Contributions under Section 17-127 and 17-127.2 of the Illinois Pension Code	Fiscal Year 2020
Projected Total Capped Payroll	$ 2,180,577,527
Additional State Contributions Under Section 17-127 of the Illinois Pension Code	$ 11,862,000
(% of Projected Capped Payroll)	0.544%
Additional Board of Education Contributions Under Section 17-127.2 of the Illinois Pension Code	$ 12,647,000
(% of Projected Capped Payroll)	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:

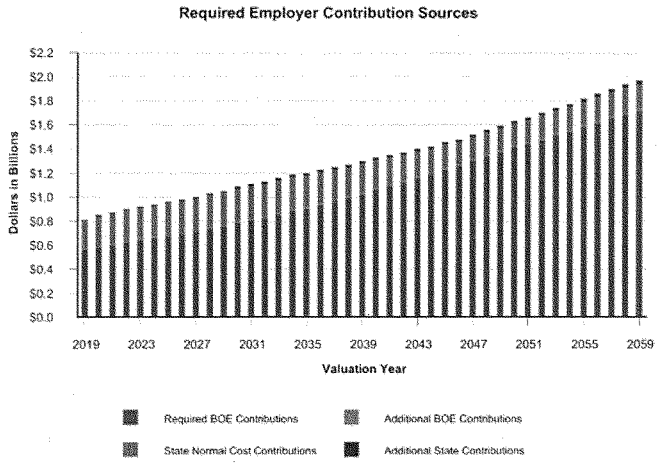
Development of Normal Cost State Contributions under Section 17-127(d)(1) of the Illinois Pension Code	Fiscal Year 2020
Total Normal Cost	$ 352,074,000
Projected Administrative Expenses	24,665,000
Total Normal Cost Including Administrative Expenses	$ 376,739,000
Expected Employee Contributions	196,252,000
Employer Normal Cost	$ 180,487,000
Health Insurance Subsidy	65,000,000
State Contributions Under Section 17-127(d)(1) of the Illinois Pension Code	**$ 245,487,000**

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 2020 is equal to $584,504,000, (net of Additional State and Board of Education Contributions).

The fiscal year ending June 30, 2019 and June 30, 2020, 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
2019	$ 556,814,000	$ 12,887,000	$ 12,087,000	$ 226,782,000	$ 808,570,000
2020	584,504,000	12,647,000	11,862,000	245,487,000	854,500,000
2021	601,576,000	12,982,000	12,176,000	250,378,000	877,112,000
2022	618,813,000	13,315,000	12,489,000	255,016,000	899,633,000
2023	636,729,000	13,653,000	12,805,000	259,251,000	922,438,000
2024	655,189,000	13,992,000	13,124,000	263,070,000	945,375,000
2025	674,034,000	14,330,000	13,440,000	266,367,000	968,171,000
2026	693,251,000	14,665,000	13,755,000	269,135,000	990,806,000
2027	712,881,000	14,999,000	14,068,000	271,421,000	1,013,369,000
2028	733,385,000	15,335,000	14,384,000	273,014,000	1,036,118,000
2029	754,750,000	15,674,000	14,701,000	273,856,000	1,058,981,000

The following graph details the projected employer contribution requirements by Source for fiscal years 2019 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, 2018, actuarial valuation. In order to determine projected contribution amounts, the following additional assumptions were used:

- Total employer contributions of $808,570,000 for fiscal year 2019, as provided by the Fund.
- Administrative expenses of $22,055,344 for fiscal year 2018, 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 32.04 and average pay is $46,958 (2018 dollars).
- The active member population is assumed to remain level at 29,108 (includes 150 expected new hires) for all years of the 41-year projection. However, recent trends indicate an average decrease in active population over the last nine years of approximately 1.2% per year. 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 $103,312,688 in fiscal year 2019 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 41-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, 2018, actuarial valuation is 25 years.

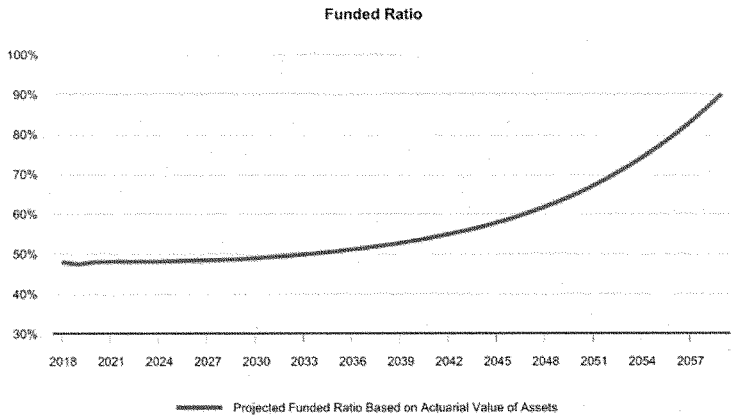
A key objective of the ADC is to accrue costs over the working lifetime of plan members to ensure that benefit obligations are satisfied and intergenerational equity is promoted. Although the ADC is solely an accounting provision, in certain circumstances it could represent a reasonable annual funding 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 2018 and 2019, as well as the statutory employer contribution for fiscal years 2018 and 2019, are shown below as a percentage of projected capped payroll. The ADC for 2018 and statutory employer contribution for 2019 are based on the results of the June 30, 2017, actuarial valuation.

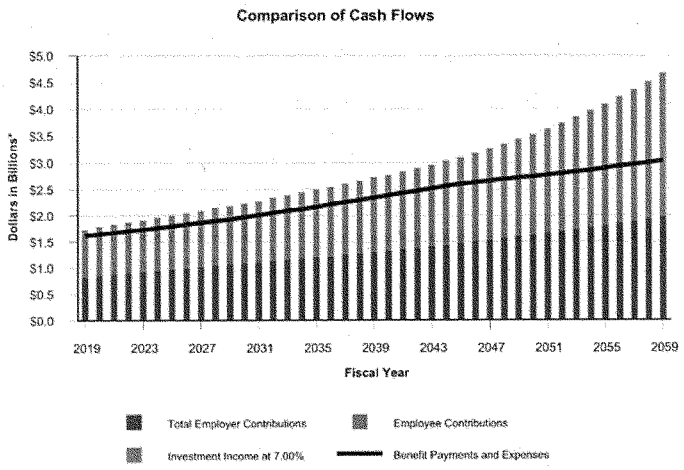
Actuarial Valuation Date:	June 30, 2018	June 30, 2017
Actuarially Determined Contributions for Fiscal Year Ending:	June 30, 2019	June 30, 2018
1. Actuarial Accrued Liability	$ 22,922,992,558	$ 21,822,010,297
2. Actuarial Value of Assets	$ 10,969,085,523	$ 10,933,031,685
3. Unfunded Actuarial Accrued Liability [1 - 2]	$ 11,953,907,035	$ 10,888,978,612
4. Employer Normal Cost (Including Administrative Expenses and Health Insurance Subsidy)	$ 240,527,902	$ 221,363,575
5. Employer Normal Cost Adjusted for Contribution Timing	$ 245,621,046	$ 226,932,582
6. Amount to Amortize the Unfunded Liability over a 30-year Closed-period, Beginning July 1, 2013, as a Level Percentage of Payroll	$ 851,548,985	$ 693,819,977
7. Actuarially Determined Contribution Requirement [5 + 6]	$ 1,097,170,031	$ 920,752,559
8. Projected Capped Payroll for Fiscal Year	$ 2,118,062,176	$ 2,145,171,999
9. Actuarially Determined Contribution as a Percentage of Projected Capped Payroll	51.80%	42.92%
10. Total Required Employer Contribution Including Health Insurance Subsidy	$ 808,570,000	$ 784,402,000
11. Total Required Employer Contribution as a Percentage of Projected Capped Payroll [10 / 8]	38.17%	36.57%
12. Total Required Employer Contribution as a Percentage of Actuarially Determined Contribution [10 / 7]	73.70%	85.19%

The fiscal year 2019 Actuarially Determined Contribution is based on an amortization factor which reflects 25 years remaining in the amortization period, an 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.

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 2019 to 2059, the percentage of investment income needed to pay ongoing benefits decreases from 80.2% to 25.4%. 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 ($11,104.8 billion on a market value basis) are not sufficient to cover current retiree liabilities ($17,010.7 billion) and the ratio of assets (Market Value) to retiree benefit payments and expenses is approximately 7.5. 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. (Policy which recognizes unfunded liability at the valuation date and not 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 2019 contribution would be $1,097.17 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 Cost 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 Cost method recognizes costs as a level percentage of payroll over a member's career. We recommend a change to the Entry Age Normal Cost 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

Recent 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, the change in the investment return assumption and other demographic assumptions 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 47.9% 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 112, the number of active members has decreased by about 9.2% between 2009 and 2018, which is an average annualized decrease of about 1.1%.

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. Given the decrease in the number of active members over the past nine years, if CTPF expects to continue to see a similar decline of the active population in the near-term 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 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 an 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. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, 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).
3. 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 2020 shown on pages 92 and 93 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:

	2018	2017
Ratio of the Market Value of Assets to Payroll	5.26	5.32
Ratio of Actuarial Accrued Liability to Payroll	10.85	10.75
Ratio of Actives to Retirees and Beneficiaries	1.01	1.01
Ratio of Net Cash Flow to Market Value of Assets	(5.27)%	(5.12)%

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 11.0 times the payroll, a chance 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 percentage 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, 2018

1. Number of Members		
a. Active		28,958
b. Inactive:		
i. Eligible for deferred vested pension benefits		9,398
ii. Eligible for return of contributions only		20,282
c. Current Benefit Recipients:		
i. Retirement annuities		24,897
ii. Survivor annuities		3,188
iii. Disability annuities		464
d. Total		87,187
2. Covered Payroll		
a. As of the Actuarial Valuation Date	$	2,111,982,104
b. Projected Capped Payroll for Fiscal Year 2019		2,118,062,176
c. Projected Capped Payroll for Fiscal Year 2020		2,180,577,527
3. Annualized Benefit Payments Currently Being Made		
a. Retirement annuities	$	1,353,269,577
b. Survivor annuities		73,331,546
c. Disability annuities		17,484,671
d. Total	$	1,444,085,794
4. Actuarial Accrued Liability - Annuitants		
a. Current Benefit Recipients:		
i. Retirement annuities	$	16,148,990,040
ii. Survivor annuities		666,092,260
iii. Disability annuities		195,597,723
b. Total	$	17,010,680,023
5. Actuarial Accrued Liability - Inactive Members		
a. Eligible for Deferred Vested Pension Benefits	$	418,008,624
b. Eligible for Return of Contributions Only		81,989,445
c. Total	$	499,998,069

Table 1: Results of Actuarial Valuation (Continued)
as of June 30, 2018

	Normal Cost	Actuarial Accrued Liability
6. Active Members		
a. Retirement Benefits	$ 260,820,464	$ 4,563,395,452
b. Withdrawal	70,518,812	693,436,512
c. Death Benefits	4,759,090	66,447,773
d. Disability	6,731,606	89,034,729
e. Administrative Expenses	23,323,526	—
f. Total	$ 366,153,498	$ 5,412,314,466
7. Total Actuarial Accrued Liability (4 + 5 + 6)		$ 22,922,992,558
8. Market Value of Assets (MVA)		$ 11,104,765,514
9. Unfunded Actuarial Accrued Liability Based on MVA (7 - 8)		$ 11,818,227,044
10. Funded Percentage Based on MVA (8 ÷ 7)[a]		48.44%
11. Actuarial Value of Assets (AVA)		$ 10,969,085,523
12. Unfunded Actuarial Accrued Liability Based on AVA (7 - 11)		$ 11,953,907,035
13. Funded Percentage Based on AVA (11. ÷ 7.)[a]		47.85%
14. Total Normal Cost	$ 366,153,498	
15. Expected Employee Contributions	$ 190,625,596	
16. Annual Employer Normal Cost	$ 175,527,902	
(% of Projected Capped Payroll for Fiscal Year 2019)	8.29%	
17. Health Insurance Subsidy	$ 65,000,000	
18. Annual Employer Normal Cost, Including Health Insurance Reimbursement (16 + 17)	$ 240,527,902	
(% of Projected Capped Payroll for Fiscal Year 2019)[b]	11.36%	

[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	19,389		9,569		28,958	
2. Covered Payroll						
a. As of the Valuation Date	$ 1,611,209,183		$ 500,772,921		$ 2,111,982,104	
b. Projected Capped Payroll for Fiscal Year 2019	1,611,209,183		506,852,993		2,118,062,176	
c. Projected Capped Payroll for Fiscal Year 2020	1,584,700,977		595,876,550		2,180,577,527	
3. Actuarial Accrued Liability						
a. Retirement Benefits	$ 4,515,266,489		$ 48,128,963		$ 4,563,395,452	
b. Withdrawal	622,080,578		71,355,934		693,436,512	
c. Death Benefits	63,423,746		3,024,027		66,447,773	
d. Disability	84,001,012		5,033,717		89,034,729	
e. Total	$ 5,284,771,825		$ 127,542,641		$ 5,412,314,466	
4. Normal Cost	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**
a. Retirement Benefits	$ 248,498,758	15.42%	$ 12,321,706	2.43 %	$ 260,820,464	12.31%
b. Withdrawal	49,423,732	3.07%	21,095,080	4.16 %	70,518,812	3.33%
c. Death Benefits	3,962,612	0.25%	796,478	0.16 %	4,759,090	0.22%
d. Disability	5,478,595	0.34%	1,253,011	0.25 %	6,731,606	0.32%
e. Administrative Expenses	17,742,199	1.10%	5,581,327	1.10 %	23,323,526	1.10%
f. Total	$ 325,105,896	20.18%	$ 41,047,602	8.10 %	$ 366,153,498	17.29%
5. Expected Employer Contributions	$ 145,008,826	9.00%	$ 45,616,770	9.00 %	$ 190,625,596	9.00%
6. Annual Employer Normal Cost	$ 180,097,069	11.18%	$ (4,569,167)	(0.90)%	$ 175,527,902	8.29%

[a] *The actuarial accrued liability, normal cost, projected capped payroll and expected employee contributions include the results for 150 members expected to be hired to replace retirements and terminations that occurred in June 2018.*
Actuarial Accrued Liability and Normal Cost are determined under the Projected Unit Credit actuarial cost method.
Normal Cost rates as a percent of pay under the Projected Unit Credit actuarial cost method increase over a member's career.

Table 3: Analysis of Change in Unfunded Actuarial Accrued Liability

In addition to the expected change in the unfunded accrued actuarial liability, changes in membership demographics and Fund assets have affected the actuarial valuation results. The increase in the unfunded actuarial accrued liability (UAAL) of $1,064,928,423 was due to the following:

1. Unfunded Actuarial Accrued Liability (UAAL) at 06/30/2017	$	10,888,978,612
2. Contributions		
a. Contributions due (Normal Cost plus interest on the UAAL)		
i. Interest on item 1.	$	789,450,949
ii. Member contributions		183,679,205
iii. Employer normal cost (middle of year)		230,749,850
iv. Interest on ii and iii		14,760,205
v. Total due	$	1,218,640,209
b. Contributions paid (Actual)		
i. Member contributions	$	183,679,205
ii. Employer		784,402,000
iii. Interest on i and ii[a]		17,207,735
iv. Total paid	$	985,288,940
c. Expected increase in Unfunded Actuarial Accrued Liability	$	233,351,269
3. Expected Unfunded Actuarial Accrued Liability at 06/30/2018	$	11,122,329,881
4. (Gains)/Losses		
a. Investment income	$	131,839,730
b. Retiree health insurance cash flows		1,381,154
c. Salary increases		6,927,266
d. Demographic		69,656,510
e. Total	$	209,804,660
5. Plan Provision Changes	$	—
6. Assumption Changes	$	621,772,494
7. Total Change in UAAL	$	1,064,928,423
8. UAAL at 06/30/2018	$	11,953,907,035

[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 Ended June 30, 2018

Activity		(Gain)/Loss	% of June 30, 2018 AAL
1. Actuarial (Gain)/Loss			
a. Retirements	$	27,778,569	0.13 %
b. Incidence of Disability		(1,010,548)	0.00 %
c. In-Service Mortality		1,253,670	0.01 %
d. Retiree Mortality		70,809,472	0.32 %
e. Salary Increases		6,927,266	0.03 %
f. Terminations		(39,625,292)	(0.18)%
g. Investment Return		131,839,730	0.60 %
h. Retiree Health Insurance Cash Flows		1,381,154	0.01 %
i. New Entrant Liability		38,467,726	0.18 %
j. Other		(28,017,087)	(0.13)%
k. Total Actuarial (Gain)/Loss	$	209,804,660	0.96 %
2. Plan Provision Changes	$	—	— %
3. Assumption Changes	$	621,772,494	2.85 %
4. Contribution (Excess)/Shortfall[a]	$	233,351,269	1.07 %
5. Total Financial (Gain)/Loss	$	1,064,928,423	4.88 %

[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 2014	FY 2015	FY 2016	FY 2017	FY 2018	
Investment Return (AVA Basis)	$ (457,415,422)	$ (45,212,951)	$ (81,129,490)	$ (80,937,857)	$ 131,839,730	$ (532,855,990)
Retiree Health Insurance Cash Flows	—	9,833,404	1,673,226	(17,178,251)	1,381,154	(4,290,467)
Salary Increases	(150,327,609)	(79,584,326)	(264,801,612)	(180,217,505)	6,927,266	(668,003,786)
Retirements	54,224,028	66,015,157	47,235,684	32,846,858	27,778,569	228,100,296
Terminations	81,255	(10,625,923)	(6,458,419)	(7,478,652)	(39,625,292)	(64,107,031)
Disability Incidence	—	—	—	(685,126)	(1,010,548)	(1,695,674)
In-Service Mortality	—	—	—	657,829	1,253,670	1,911,499
Retiree Mortality	66,239,359	(28,722,389)	15,811,894	14,544,206	70,809,472	138,682,542
New Entrants	—	—	—	32,961,135	38,467,726	71,428,861
Other[a]	6,691,129	9,963,968	57,480,517	(54,889,992)	(28,017,087)	(8,771,465)
Total Actuarial (Gain)/Loss	$ (480,507,260)	$ (78,333,060)	$ (230,188,200)	$ (260,377,355)	$ 209,804,660	$ (839,601,215)
(Gain)/Loss as a % of BOY AAL	(2.5)%	(0.4)%	(1.2)%	(1.3)%	1.0%	
Total Non-Investment (Gain)/Loss	$ (23,091,838)	$ (33,120,109)	$ (149,058,710)	$ (179,439,498)	$ 77,964,930	$ (306,745,225)
(Gain)/Loss as a % of BOY AAL	(0.1)%	(0.2)%	(0.7)%	(0.9)%	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	$ 316,844,491	$ 241,161,140	$ 260,150,252	$ 220,857,399	$ 233,351,269	$ 1,272,364,551
(Gain)/Loss as a % of BOY AAL	1.7 %	1.2 %	1.3 %	1.1 %	1.1%	
Total Financial (Gain)/Loss	$ (163,662,769)	$ 162,828,080	$ 29,962,052	$ 1,035,003,888	$ 1,064,928,423	$ 2,129,059,674
(Gain)/Loss as a % of BOY AAL	(0.9)%	0.8 %	0.2 %	5.1 %	4.9%	
BOY Actuarial Accrued Liability (AAL)	$ 19,044,533,016	$ 19,503,893,632	$ 19,951,289,974	$ 20,484,951,277	$ 21,822,010,297	

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

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

SECTION D: ACTUARIAL PROJECTIONS

Table 6: Baseline Projections - Employer Contributions Determined Under Public Act 90-0655, Public Act 91-0357, Public Act 96-0889 and Public Act 100-0465

Investment Return of 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
2019	$ 23,326.3	$ 11,058.3	$ 12,268.0	47.41%	$ 2,118.1	$ 431.2	$ 190.6	$ 240.6	11.36%
2020	23,737.4	11,378.4	12,359.0	47.93%	2,180.6	441.7	196.3	245.5	11.26%
2021	24,157.2	11,604.9	12,552.3	48.04%	2,238.3	451.8	201.4	250.4	11.19%
2022	24,587.2	11,810.7	12,776.5	48.04%	2,295.7	461.6	206.6	255.0	11.11%
2023	25,026.4	12,026.4	13,000.0	48.05%	2,353.9	471.1	211.9	259.3	11.02%
2024	25,474.7	12,251.4	13,223.3	48.09%	2,412.5	480.2	217.1	263.1	10.91%
2025	25,931.0	12,487.5	13,443.5	48.16%	2,470.7	488.7	222.4	266.4	10.78%
2026	26,394.1	12,734.8	13,659.3	48.25%	2,528.4	496.7	227.6	269.1	10.64%
2027	26,863.6	12,993.5	13,870.1	48.37%	2,586.0	504.2	232.7	271.4	10.49%
2028	27,336.7	13,262.4	14,074.3	48.51%	2,644.0	511.0	238.0	273.0	10.33%

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 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
2019	$ 808.6	$ 12.1	$ 226.8	$ 12.9	$ 556.8	38.17%	$ 1,592.5
2020	854.5	11.9	245.5	12.6	584.5	39.19%	1,622.9
2021	877.1	12.2	250.4	13.0	601.6	39.19%	1,652.3
2022	899.6	12.5	255.0	13.3	618.8	39.19%	1,680.7
2023	922.4	12.8	259.3	13.7	636.7	39.19%	1,710.4
2024	945.4	13.1	263.1	14.0	655.2	39.19%	1,740.3
2025	968.2	13.4	266.4	14.3	674.0	39.19%	1,771.5
2026	990.8	13.8	269.1	14.7	693.3	39.19%	1,803.8
2027	1,013.4	14.1	271.4	15.0	712.9	39.19%	1,836.5
2028	1,036.1	14.4	273.0	15.3	733.4	39.19%	1,871.5

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%	—%

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	2018	2019	2020	2021
Beginning of Year:				
1. Market Value of Assets	$ 10,793,173,927			
2. Actuarial Value of Assets	$ 10,933,031,685			
End of Year				
3. Market Value of Assets	$ 11,104,765,514			
4. Contributions and Disbursements				
a. Actual Employer & Misc. Contributions	$ 785,877,276			
b. Employee Contributions	183,679,205			
c. Benefit Payouts & Refunds	(1,532,614,094)			
d. Administrative Expenses	(22,055,344)			
e. Net of Contributions and Disbursements	$ (585,112,957)			
5. Total Investment Income = (3)-(1)-(4e)	$ 896,704,544			
6. Projected Rate of Return	7.25%			
7. Projected Investment Income[a]	$ 754,481,801			
8. Investment Income in Excess of Projected Income	$ 142,222,743			
9. Excess Investment Income Recognized				
This Year (4-year recognition)				
a. Year Ended June 30, 2018	$ 35,555,686			
b. Year Ended June 30, 2017	114,636,306	$ 35,555,686		
c. Year Ended June 30, 2016	(195,532,238)	114,636,306	$ 35,555,686	
d. Year Ended June 30, 2015	(87,974,760)	(195,532,237)	114,636,305	$ 35,555,685
e. Total Recognized Investment Gain	$ (133,315,006)	(45,340,245)	150,191,991	35,555,685
10. Change in Actuarial Value of Assets = (4e)+(7)+(9e)	$ 36,053,838			
End of Year:				
3. Market Value of Assets	$ 11,104,765,514			
11. Actuarial Value of Assets	$ 10,969,085,523			
12. Difference Between Market & Actuarial Values	$ 135,679,991			
13. Estimated Actuarial Value Rate of Return	5.84%			
14. Estimated Market Value Rate of Return	8.54%			
15. Ratio of Actuarial Value to Market Value	98.78%			

[a] Projected investment income is estimated based on a weighted contribution timing of middle of year, 8/12ths of a year, and end of year.

Table 9: Historical Investment Returns*

Year Ended June 30	Market Value Return	Actuarial Value Return
2009	(22.4)%	0.2 %
2010	13.6 %	(0.4)%
2011	24.8 %	(0.5)%
2012	(0.4)%	1.0 %
2013	13.1 %	11.2 %
2014	17.9 %	12.8 %
2015	3.6 %	8.2 %
2016	(0.3)%	8.6 %
2017	12.5 %	8.3 %
2018	8.5 %	5.8 %
Average Returns		
Last 10 Years:	6.3 %	5.4 %

* *This table has been adjusted to display information for the past 10 fiscal years. For the full table, please see the fiscal year 2018 actuarial valuation, which can be found at www.ctpf.org.*

SECTION F: PARTICIPANT DATA

Table 10: Summary of Fund Membership

	Year Ended June 30, 2018	Year Ended June 30, 2017	Change from Prior Year
Active Members			
Number	28,958	28,855	0.4 %
Average Age	42.0	41.8	
Average Service	10.7	10.6	
Total Salary Supplied by Fund	$ 2,094,830,446	$ 2,030,175,116	3.2 %
Average Annual Salary	$ 72,340	$ 70,358	2.8 %
Total Active Vested Participants	17,065	17,800	(4.1)%
Male Members	6,954	6,961	(0.1)%
Female Members	22,004	21,894	0.5 %
Tier 1 Members	19,389	20,271	(4.4)%
Tier 2 Members	9,569	8,584	11.5 %
Inactive Vested Members[a]			
Number	9,398	6,062	55.0 %
Average Age	46.6	47.2	
Average Service (Excluding Reciprocal Service)	7.8	10.1	
Inactive Non-Vested Members			
Number	20,282	22,570	(10.1)%
Retirees			
Number	24,897	24,837	0.2 %
Average Age	74.1	73.7	
Average Annual Benefit	$ 54,355	$ 53,052	2.5 %
Total Annual Benefit	$ 1,353,269,577	$ 1,317,657,163	2.7 %
Disabled Retirees			
Number	464	467	(0.6)%
Average Age	67.7	67.0	
Average Annual Benefit	$ 37,682	$ 36,427	3.4 %
Total Annual Benefit	$ 17,484,671	$ 17,011,424	2.8 %
Beneficiaries (Including Children)			
Number	3,188	3,135	1.7 %
Average Age	76.6	76.3	
Average Annual Benefit	$ 23,002	$ 22,112	4.0 %
Total Annual Benefit	$ 73,331,546	$ 69,320,685	5.8 %
Total Members	**87,187**	**85,926**	**1.5 %**

[a] Projected investment income is estimated based on a weighted contribution timing of middle of year, 8/12^{ths} of a year, and end of year.

Table 11: Schedule of Active Member Data

Year Ended June 30	Active Participants	Covered Payroll	Average Annual Payroll	% Increase in Average Payroll	Participating Employers*
2009	31,905	$ 1,996,194,224	$ 62,567		37
2010	31,012	2,107,934,080	67,972	8.64 %	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

* *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
2009	31,905	3,056	24,218	0.85
2010	31,012	3,554	24,600	0.91
2011	30,133	4,253	25,199	0.98
2012	30,366	4,245	25,926	0.99
2013	30,969	4,502	27,440	1.03
2014	30,654	4,818	27,722	1.06
2015	29,706	5,464	28,114	1.13
2016	29,543	5,715	28,298	1.15
2017	28,855	6,062	28,439	1.20
2018	28,958	9,398	28,549	1.31

[a] *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, 2018

	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	188	600	—	—	—	—	—	—	—	788
	$ 2,357	$ 30,825	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ 33,182
25-29	450	2,598	705	—	—	—	—	—	—	3,753
	$ 5,057	$ 141,203	$ 44,932	$ —	$ —	$ —	$ —	$ —	$ —	$ 191,192
30-34	256	1,766	2,191	480	—	—	—	—	—	4,693
	$ 3,112	$ 97,905	$ 152,143	$ 41,008	$ —	$ —	$ —	$ —	$ —	$ 294,168
35-39	209	933	1,350	1,727	450	1	—	—	—	4,670
	$ 2,294	$ 50,828	$ 95,743	$ 152,116	$ 43,499	$ 97	$ —	$ —	$ —	$ 344,577
40-44	179	539	657	1,077	1,335	248	—	—	—	4,035
	$ 1,840	$ 28,308	$ 46,837	$ 95,342	$ 129,605	$ 25,770	$ —	$ —	$ —	$ 327,702
45-49	156	423	473	652	948	1,036	211	—	—	3,899
	$ 1,437	$ 22,468	$ 34,207	$ 56,972	$ 91,330	$ 105,215	$ 22,804	$ —	$ —	$ 334,433
50-54	105	265	271	362	506	637	586	103	1	2,836
	$ 961	$ 11,916	$ 18,350	$ 30,694	$ 47,009	$ 62,889	$ 60,164	$ 11,104	$ 95	$ 243,182
55-59	112	222	187	292	350	443	392	237	20	2,255
	$ 948	$ 9,420	$ 11,376	$ 23,416	$ 31,823	$ 42,355	$ 39,024	$ 24,752	$ 2,345	$ 185,459
60-64	88	158	125	172	236	216	191	89	49	1,324
	$ 481	$ 5,901	$ 7,050	$ 12,901	$ 20,445	$ 20,705	$ 18,801	$ 9,225	$ 5,276	$ 100,785
65-69	51	71	71	69	84	50	59	30	24	509
	$ 198	$ 1,597	$ 2,716	$ 4,510	$ 6,869	$ 4,515	$ 5,921	$ 2,952	$ 2,461	$ 31,739
70 & Over	32	42	30	23	24	17	8	7	13	196
	$ 150	$ 578	$ 683	$ 915	$ 1,690	$ 1,314	$ 707	$ 776	$ 1,598	$ 8,411
Total	1,826	7,617	6,060	4,854	3,933	2,648	1,447	466	107	28,958
	$ 18,835	$ 409,949	$ 414,037	$ 417,674	$ 372,270	$ 262,860	$ 147,421	$ 48,869	$ 11,775	$ 2,094,830

Total lives and annual salaries exclude 150 expected new hires.

* *Annual salaries are displayed in thousands of dollars.*

Table 14: Reconciliation of Member Data as of June 30, 2018

	Actives	Deferred Vested	Expected Refunds	Retirees	Disabilities	Beneficiaries	Total
Totals as of the June 30, 2017, Actuarial Valuation	28,855	6,062	22,570	24,837	467	3,135	85,926
New Entrants	2,779	—	—	—	—	—	2,779
Rehires - Members with Service	619	(186)	(432)	(1)	—	—	—
Non-Vested Terminations	(1,617)	(13)	1,630	—	—	—	—
Vested Terminations	(857)	3,785	(2,928)	—	—	—	—
Service Retirements	(514)	(237)	(11)	763	(1)	—	—
Disabilities	(5)	(5)	—	—	10	—	—
Deaths	(27)	(15)	(33)	(707)	(12)	(193)	(987)
New Beneficiaries	—	—	—	—	—	244	244
Refunds and Benefit Terminations	(275)	(137)	(678)	—	—	—	(1,090)
Data Adjustments	—	144	164	5	—	2	315
Net Change	103	3,336	(2,288)	60	(3)	53	1,261
Totals as of the June 30, 2018, Actuarial Valuation	28,958	9,398	20,282	24,897	464	3,188	87,187

Table 15: History of Retirees and Beneficiaries Added to Rolls during the Fiscal Year Ended June 30, 2018

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		
2008	881	$ 67,060,461	584	$ 16,543,468	23,920	$ 904,836,833	$ 37,828	4.60%
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%

Table 16: Annuitants Classified by Benefit Type and Amount as of June 30, 2018

Monthly Pension Amount	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
$ 1 - 500	383	989	1	1	171	241	555	1,231
501 - 1,000	381	866	5	10	197	361	583	1,237
1,001 - 1,500	310	681	14	32	156	187	480	900
1,501 - 2,000	227	612	7	41	160	223	394	876
2,001 - 2,500	228	690	12	44	146	237	386	971
2,501 - 3,000	257	868	9	49	226	342	492	1,259
3,001 - 3,500	293	992	16	42	77	196	386	1,230
3,501 - 4,000	289	1,282	11	35	16	81	316	1,398
4,001 - 4,500	327	1,295	11	43	17	63	355	1,401
4,501 - 5,000	388	1,361	8	34	10	38	406	1,433
5,001 - 5,500	646	2,033	4	14	4	19	654	2,066
5,501 - 6,000	819	2,521	2	7	5	11	826	2,539
6,001 - 6,500	621	2,008	1	2	—	2	622	2,012
6,501 - 7,000	287	882	2	1	—	1	289	884
7,001 - 7,500	192	296	—	1	—	—	192	297
7,501 - 8,000	150	250	2	2	—	—	152	252
8,001 - 8,500	98	208	—	—	—	—	98	208
8,501 - 9,000	87	192	1	—	—	—	88	192
9,001 - 9,500	74	148	—	—	—	—	74	148
Over $9,500	229	437	—	—	—	1	229	438
Total	**6,286**	**18,611**	**106**	**358**	**1,185**	**2,003**	**7,577**	**20,972**

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 2014								
Average Monthly Pension	$ 262	$ 758	$ 1,648	$ 2,581	$ 3,477	$ 4,307	$ 5,683	$ 3,217
Average Monthly FAS	$ 6,555	$ 5,023	$ 6,309	$ 6,657	$ 7,376	$ 7,516	$ 7,823	$ 6,958
Number of Retired Members	46	89	74	102	184	120	145	760
Average Age								63.4
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 Benefit	$ 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 Persons	39	92	81	88	175	122	171	768
Average Age								63.2

SECTION G: ACTUARIAL METHODS AND ASSUMPTIONS
(Most Adopted Effective with the June 30, 2018, Actuarial Valuation)

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

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

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

For ancillary benefits for active members, in particular death and survivor benefits, termination benefits, and the post-retirement 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.

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 $^1/_2$ of the increase in CPI-U with a maximum increase of 3.00%.

Wage Inflation

3.00% per annum, compounded annually.

Calculation of the Actuarially Determined Contribution

The amortization factor used to calculated 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 2018				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	50.96	54.23	34.01	40.40	52.13	55.34	35.90	42.14
40	45.79	49.04	30.34	35.99	46.93	50.13	32.03	37.60
45	40.70	43.91	27.04	31.89	41.81	44.98	28.60	33.41
50	35.70	38.82	23.85	27.94	36.79	39.87	25.34	29.37
55	30.82	33.78	20.77	24.19	31.88	34.81	22.16	25.53
60	26.09	28.88	17.81	20.76	27.09	29.86	19.03	21.93
65	21.55	24.18	15.02	17.43	22.46	25.09	16.03	18.44
70	17.24	19.68	12.33	14.12	18.06	20.53	13.18	15.02
75	13.26	15.44	9.74	11.03	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, 2018, was increased by 150 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 29,108. 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 as 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	1,015	47,502,128
25 - 29	1,389	67,098,931
30 - 34	769	37,935,606
35 - 39	439	21,040,240
40 - 44	269	13,198,656
45 - 49	226	10,542,840
50 - 54	151	5,942,362
55 - 59	130	4,700,769
60 - 64	67	1,774,893
65 - 69	16	211,967
70 & Over	—	—
Total	4,471	$ 209,948,392
Avg. Salary		$ 46,958
Avg. Age		32.04
Percent Female		74%

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, 2018, 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 years' 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%.

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 $103,312,688 for fiscal year 2019 and increased each year by 3%.
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 $113,645 for fiscal year 2018 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 Requirement 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 Chicago Board of Education (board) may levy annually for taxable years prior to 2017, upon all taxable property located within the district, a tax at a rate not to exceed 0.383%. Beginning with the 2017 taxable year, for the purpose of making an employer contribution to the Public School Teachers' Pension and Retirement Fund of Chicago, the board may levy annually, upon all taxable property within the district, a tax at a rate of 0.567%. The proceeds from this additional tax shall be paid, as soon as possible after collection, directly to the Public School Teachers' Pension and Retirement Fund of Chicago and not to the Board of Education.

State Contributions under P.A. 100-0465

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

> (d) In addition to any other contribution required under this Article, including the contribution required under subsection (c), the State shall contribute to the Fund the following amounts:
>
> (1) For State fiscal year 2018, the State shall contribute $221,300,000 for the employer normal cost for fiscal year 2018 and the amount allowed under paragraph (3) of Section 17-142.1 of this Code to defray health insurance costs. Funds to this paragraph (1) shall come from funds appropriated for Evidence-Based Funding pursuant to Section 18-8.15 of the School Code.
>
> (2) Beginning in State fiscal year 2019, the State shall contribute for each fiscal year an amount to be determined by the Fund, equal to the employer normal cost for that fiscal year, plus the amount allowed pursuant to paragraph (3) of Section 17-142.1 to defray health insurance costs.

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

SECTION H: SUMMARY OF PLAN PROVISIONS
(as of June 30, 2018)

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 6 members elected by the teacher contributors, 3 members elected by the annuitants, 1 member elected by the principal contributors and 2 members 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% toward the retirement pension, 1.0% toward the survivor pension, and 0.5% toward 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 5 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 4 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 4 years for each year of prior service, up to a maximum of 20%, 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 1 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

Survivors' 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 1 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 6 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 6-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 P.A. 96-0889

Final Average Compensation

Based on last 8 years of service and may not exceed $106,800, as automatically increased by the lesser of 3.0% or $^1/_2$ 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 $^1/_2$ 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 $^1/_2$ of the annual increase in the Consumer Price Index-U during the preceding 12-month calendar year and are not compounded.

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

Year Ending	CPI-U	$^1/_2$ CPI-U	COLA	Maximum Annual Pensionable Earnings
2011			3.00%	$ 106,800.00
2012	3.90%	1.95%	1.95%	108,882.60
2013	2.00%	1.00%	1.00%	109,971.43
2014	1.20%	0.60%	0.60%	110,631.26
2015	1.70%	0.85%	0.85%	111,571.63
2016	0.00%	0.00%	0.00%	111,571.63
2017	1.50%	0.75%	0.75%	112,408.42
2018	2.20%	1.10%	1.10%	113,644.91

SECTION I: ADDITIONAL PROJECTION DETAILS

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

Fiscal Year	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries, & Deferreds	Actives	Total
2019	$ 17,010.68	$ 500.00	$ 5,284.77	$ 127.54	$ 0.00	$ 17,510.68	$ 5,412.31	$ 22,922.99
2020	16,690.63	521.20	5,957.65	156.87	0.00	17,211.83	6,114.52	23,326.35
2021	16,339.15	543.28	6,661.86	185.87	7.23	16,882.43	6,854.96	23,737.39
2022	15,956.88	566.19	7,396.73	216.87	20.53	16,523.07	7,634.13	24,157.20
2023	15,544.63	589.78	8,161.36	252.09	39.37	16,134.41	8,452.82	24,587.23
2024	15,103.35	614.05	8,953.74	291.87	63.35	15,717.40	9,308.96	25,026.36
2025	14,634.16	638.99	9,771.29	337.26	93.02	15,273.15	10,201.57	25,474.72
2026	14,138.42	664.29	10,610.91	389.07	128.34	14,802.71	11,128.32	25,931.03
2027	13,617.74	690.05	11,469.27	447.36	169.72	14,307.79	12,086.35	26,394.14
2028	13,073.92	716.01	12,342.90	512.52	218.24	13,789.93	13,073.66	26,863.59

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

Fiscal Year	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries, & Deferreds	Actives	Totals
2019	$ 17,010.68	$ 500.00	$ 8,960.88	$ 739.43	$ 0.00	$ 17,510.68	$ 9,700.31	$ 27,210.99
2020	16,690.63	521.20	9,554.79	769.12	92.67	17,211.83	10,416.58	27,628.41
2021	16,339.15	543.28	10,171.68	800.87	196.60	16,882.43	11,169.15	28,051.58
2022	15,956.88	566.19	10,810.54	836.02	309.02	16,523.07	11,955.58	28,478.65
2023	15,544.63	589.78	11,470.38	876.16	429.18	16,134.41	12,775.72	28,910.13
2024	15,103.35	614.05	12,149.22	921.15	558.17	15,717.40	13,628.54	29,345.94
2025	14,634.16	638.99	12,844.72	971.61	696.01	15,273.15	14,512.34	29,785.49
2026	14,138.42	664.29	13,554.23	1,028.00	843.27	14,802.71	15,425.50	30,228.21
2027	13,617.74	690.05	14,274.94	1,090.05	1,001.32	14,307.79	16,366.31	30,674.10
2028	13,073.92	716.01	15,003.94	1,157.96	1,171.59	13,789.93	17,333.49	31,123.42

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

Fiscal Year	Current Inactives		Actives			Grand Totals		
	Retirees & Beneficiaries	Deferreds	Tier 1	Current Tier 2	Future Tier 2	Current Retirees, Beneficiaries, & Deferreds	Actives	Total
2019	$ 1,460.54	$ 13.34	$ 81.69	$ 36.88	$ 0.00	$ 1,473.88	$ 118.57	$ 1,592.45
2020	1,469.27	13.92	97.45	35.49	6.76	1,483.19	139.70	1,622.89
2021	1,475.25	14.61	116.05	33.43	12.98	1,489.86	162.46	1,652.32
2022	1,478.36	15.51	137.20	30.27	19.32	1,493.87	186.79	1,680.66
2023	1,478.54	16.45	161.74	27.77	25.94	1,494.99	215.45	1,710.44
2024	1,475.65	17.44	189.86	25.10	32.27	1,493.09	247.23	1,740.32
2025	1,469.57	18.78	221.66	22.48	39.01	1,488.35	283.15	1,771.50
2026	1,460.12	20.06	257.15	20.59	45.86	1,480.18	323.60	1,803.78
2027	1,447.26	21.59	296.21	18.94	52.45	1,468.85	367.60	1,836.45
2028	1,430.83	23.20	339.62	18.79	59.11	1,454.03	417.52	1,871.55

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

Fiscal Year	Tier 1 Active Members				Current Tier 2 Active Members				Future Tier 2 Active Members			
	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost	Population	Covered Payroll	Employee Contributions	Normal Cost
2019	19,389	$1,611.21	$ 145.01	$374.55	9,719	$ 506.85	$ 45.62	$ 56.60	0	$ 0.00	$ 0.00	$ 0.00
2020	18,164	1,584.70	142.62	375.08	8,431	474.33	42.69	52.91	2,513	121.54	10.94	13.75
2021	17,131	1,561.03	140.49	375.66	7,576	454.83	40.93	50.82	4,401	222.42	20.02	25.34
2022	16,186	1,537.35	138.36	375.85	6,917	441.53	39.74	49.64	6,005	316.87	28.52	36.15
2023	15,303	1,513.13	136.18	375.48	6,405	433.43	39.01	49.17	7,400	407.39	36.66	46.46
2024	14,460	1,486.99	133.83	374.30	5,993	428.93	38.60	49.23	8,655	496.56	44.69	56.66
2025	13,657	1,457.88	131.21	372.12	5,658	427.44	38.47	49.75	9,793	585.33	52.68	66.86
2026	12,884	1,425.63	128.31	368.90	5,385	428.36	38.55	50.61	10,840	674.43	60.70	77.18
2027	12,132	1,390.14	125.11	364.63	5,151	430.49	38.74	51.66	11,825	765.36	68.88	87.87
2028	11,400	1,351.61	121.64	359.10	4,936	432.93	38.96	52.80	12,772	859.51	77.36	99.08

* *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.*

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, 2018, with Comparative Totals for 9 Years

Additions:	2018	2017	2016	2015	2014
Contributions:					
Intergovernmental, net (Employer)	$ 784,402,000	$ 746,840,000	$ 635,070,000	$ 643,667,000	$ 585,416,141
Employee contributions	183,679,205	187,538,787	191,882,430	191,233,298	187,846,065
Allocation to Health Insurance Fund	(66,867,696)	(49,000,701)	—	—	—
	$ 901,213,509	$ 885,378,086	$ 826,952,430	$ 834,900,298	$ 773,262,206
Investment Income					
Net investment income (loss)	896,704,544	1,233,003,939	(28,176,952)	381,688,431	1,685,079,840
Interest on late required contribution payments	1,123,915	—	—	—	—
Miscellaneous	351,361	214,119	1,463,050	943,946	—
Total Additions (Losses)	**$ 1,799,393,329**	**$ 2,118,596,144**	**$ 800,238,528**	**$ 1,217,532,675**	**$ 2,458,342,046**
Deductions:					
Pension Benefits:					
Retirement	1,367,547,495	1,322,061,148	1,282,078,958	1,242,868,398	1,211,523,930
Survivors	55,729,685	53,004,333	50,082,015	47,403,198	44,428,213
Disability	13,986,851	14,382,691	14,372,308	14,223,383	13,882,921
Refunds:					
Separation	17,679,787	22,718,240	23,077,014	17,504,508	22,332,203
Death	2,311,835	4,095,450	4,581,068	2,009,495	3,598,338
Other	5,073,775	5,395,680	5,917,518	4,365,794	6,901,631
Death Benefits:					
Heirs of Active Teachers	465,729	755,675	1,158,629	161,214	194,115
Heirs of Annuitants	3,485,282	2,524,967	3,558,888	3,031,417	3,480,505
	$ 1,466,280,439	$ 1,424,938,184	$ 1,384,826,398	$ 1,331,567,407	$ 1,306,341,856
Administrative and Miscellaneous Expenses	21,521,303	13,781,343	12,298,862	11,705,562	10,494,139
Total Deductions	**$ 1,487,801,742**	**$ 1,438,719,527**	**$ 1,397,125,260**	**$ 1,343,272,969**	**$ 1,316,835,995**
Net increase (decrease)	311,591,587	679,876,617	(596,886,732)	(125,740,294)	1,141,506,051
Net assets held in trust for benefits:					
Beginning of period	10,793,173,927	10,093,067,588	10,689,954,320	10,815,694,614	9,674,188,563
Transfer of residual assets to Pension Plan	—	20,229,722 *	—	—	—
End of period	**$ 11,104,765,514**	**$ 10,793,173,927**	**$ 10,093,067,588**	**$ 10,689,954,320**	**$ 10,815,694,614**

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

Continued from previous page

Additions:	2013	2012	2011	2010	2009
Contributions:					
Intergovernmental, net (Employer)	$ 142,654,000	$ 138,729,011	$ 143,589,994	$ 290,759,950	$ 198,069,327
Employee contributions	188,356,294	187,141,384	185,882,636	194,621,551	176,176,975
Allocation to Health Insurance Fund	—	—	—	—	—
	$ 331,010,294	$ 325,870,395	$ 329,472,630	$ 485,381,501	$ 374,246,302
Investment Income					
Net investment income (loss)	1,174,500,001	(38,124,125)	2,123,272,170	1,107,453,898	(2,464,420,944)
Interest on late required contribution payments	—	—	—	—	—
Miscellaneous	—	431,790	55,307	—	—
Total Additions (Losses)	**$ 1,505,510,295**	**$ 288,178,060**	**$ 2,452,800,107**	**$ 1,592,835,399**	**$ (2,090,174,642)**
Deductions:					
Pension Benefits:					
Retirement	1,173,343,019	1,062,373,677	999,323,111	943,252,537	897,873,287
Survivors	41,503,227	38,812,556	36,196,804	33,738,810	31,028,747
Disability	13,472,748	12,698,514	12,019,044	11,512,123	11,673,453
Refunds:					
Separation	12,948,597	17,521,737	13,135,132	9,334,950	10,615,031
Death	3,284,366	4,139,266	3,373,836	4,253,510	3,765,163
Other	8,554,098	14,633,633	10,671,550	7,495,834	5,658,269
Death Benefits:					
Heirs of Active Teachers	441,036	387,047	419,861	496,832	514,743
Heirs of Annuitants	3,553,273	2,937,334	2,840,999	2,449,315	2,462,789
	$ 1,257,100,364	$ 1,153,503,764	$ 1,077,980,337	$ 1,012,533,911	$ 963,591,482
Administrative and Miscellaneous Expenses	11,537,394	10,120,434	9,527,938	8,800,848	8,751,945
Total Deductions	**$ 1,268,637,758**	**$ 1,163,624,198**	**$ 1,087,508,275**	**$ 1,021,334,759**	**$ 972,343,427**
Net increase (decrease)	236,872,537	(875,446,138)	1,365,291,832	571,500,640	(3,062,518,069)
Net assets held in trust for benefits:					
Beginning of period	9,437,316,026	10,312,762,164	8,947,470,332	8,375,969,692	11,438,487,761
Transfer of residual assets to Pension Plan	—	—	—	—	—
End of period	**$ 9,674,188,563**	**$ 9,437,316,026**	**$ 10,312,762,164**	**$ 8,947,470,332**	**$ 8,375,969,692**

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
HEALTH INSURANCE FUND

For the Year Ended June 30, 2018, with Comparative Totals for 9 Years

Additions:	2018	2017	2016	2015	2014
Contributions:					
Allocation of Employer Contribution plus Allocations from Prior Years	$ 66,333,655	$ 49,000,701	$ 65,000,000	$ 65,000,000	$ 65,000,000
Investment Income:					
Net investment income	—	—	189,789	51,868	55,134
Miscellaneous	—	—	—	—	8,000,000
Total Additions	**$ 66,333,655**	**$ 49,000,701**	**$ 65,189,789**	**$ 65,051,868**	**$ 73,055,134**
Deductions:					
Health Insurance Premium Subsidy	66,333,655	49,000,701	66,673,226	79,316,153	72,874,594
Total Deductions	**$ 66,333,655**	**$ 49,000,701**	**$ 66,673,226**	**$ 79,316,153**	**$ 72,874,594**
Net increase (decrease)	—	—	(1,483,437)	(14,264,285)	180,540
Fiduciary Net Position Held in Trust for Pension Benefits:					
Beginning of period	—	20,229,722	21,713,159	35,977,444	35,796,904
Transfer of residual assets to Pension Plan	—	(20,229,722)	—	—	—
End of period	**$ —**	**$ —**	**$ 20,229,722**	**$ 21,713,159**	**$ 35,977,444**

Continued from previous page

Additions:	2013	2012	2011	2010	2009
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	82,822	41,058	20,471	119,855	514,200
Miscellaneous	8,352,647	6,770,651	10,338,661	—	15,000,000
Total Additions	**$ 73,435,469**	**$ 71,811,709**	**$ 75,359,132**	**$ 65,119,855**	**$ 80,514,200**
Deductions:					
Health Insurance Premium Subsidy	71,763,523	69,011,323	78,892,292	79,953,873	75,811,835
Total Deductions	**$ 71,763,523**	**$ 69,011,323**	**$ 78,892,292**	**$ 79,953,873**	**$ 75,811,835**
Net increase (decrease)	1,671,946	2,800,386	(3,533,160)	(14,834,018)	4,702,365
Fiduciary Net Position Held in Trust for Pension Benefits:					
Beginning of period	34,124,958	31,324,572	34,857,732	49,691,750	44,989,385
Transfer of residual assets to Pension Plan	—	—	—	—	—
End of period	**$ 35,796,904**	**$ 34,124,958**	**$ 31,324,572**	**$ 34,857,732**	**$ 49,691,750**

ANNUITANTS

Distribution of Current Annuitants by Benefit Type
As of June 30, 2018

Monthly Pension Amount	Retirees		Disabled Retirees		Beneficiaries		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
$ 1 - 500	383	989	1	1	171	241	555	1,231
501 - 1,000	381	866	5	10	197	361	583	1,237
1,001 - 1,500	310	681	14	32	156	187	480	900
1,501 - 2,000	227	612	7	41	160	223	394	876
2,001 - 2,500	228	690	12	44	146	237	386	971
2,501 - 3,000	257	868	9	49	226	342	492	1,259
3,001 - 3,500	293	992	16	42	77	196	386	1,230
3,501 - 4,000	289	1,282	11	35	16	81	316	1,398
4,001 - 4,500	327	1,295	11	43	17	63	355	1,401
4,501 - 5,000	388	1,361	8	34	10	38	406	1,433
5,001 - 5,500	646	2,033	4	14	4	19	654	2,066
5,501 - 6,000	819	2,521	2	7	5	11	826	2,539
6,001 - 6,500	621	2,008	1	2	—	2	622	2,012
6,501 - 7,000	287	882	2	1	—	1	289	884
7,001 - 7,500	192	296	—	1	—	—	192	297
7,501 - 8,000	150	250	2	2	—	—	152	252
8,001 - 8,500	98	208	—	—	—	—	98	208
8,501 - 9,000	87	192	1	—	—	—	88	192
9,001 - 9,500	74	148	—	—	—	—	74	148
$ 9,500 & Over	229	437	—	—	—	1	229	438
Total	**6,286**	**18,611**	**106**	**358**	**1,185**	**2,003**	**7,577**	**20,972**

ANNUITANTS

Distribution of Pensioners with Health Insurance Reimbursements by Size of Annuity
As of June 30, 2018

Monthly Pension Amount	Health Insurance	
	Male	Female
$ 0 - 499	68	206
500 - 999	119	338
1,000 - 1,499	150	562
1,500 - 1,999	228	820
2,000 - 2,499	303	1,035
2,500 - 2,999	476	1,491
3,000 - 3,499	507	1,433
3,500 - 3,999	564	1,685
4,000 - 4,499	571	1,755
4,500 - 4,999	321	1,196
5,000 - 5,499	268	835
5,500 - 5,999	192	765
6,000 - 6,499	86	288
6,500 - 6,999	57	156
7,000 - 7,499	39	125
7,500 - 7,999	27	101
8,000 - 8,499	38	74
8,500 - 8,999	14	73
$ 9,000 & Over	33	96
Total	**4,061**	**13,034**

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 2009							
Average Monthly Pension	$ 339	$ 813	$ 1,519	$ 2,249	$ 2,621	$ 3,523	$ 4,748
Average Final Salary*	$ 6,323	$ 5,224	$ 5,635	$ 6,074	$ 5,616	$ 5,970	$ 6,459
Number of Retired Members	38	63	52	50	82	53	314
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 Benefit	$ 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 Persons	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

* *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
2009	7,617	24,288	31,905
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

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

BOARD OF TRUSTEES

As of January 1, 2018

Jeffery Blackwell
President

Mary Sharon Reilly
Vice President

Gregory Redfeairn
Financial Secretary

Jacquelyn Price Ward
Recording Secretary

Robert F. Bures
James Cavallero
Gervaise Clay
Mark F. Furlong
Tina Padilla
Maria J. Rodriguez
Jerry Travlos
Gail D. Ward

Charles A. Burbridge
Executive Director

Chicago Teachers' Pension Fund | 203 North LaSalle Street | Suite 2600 | Chicago, Illinois 60601-1231
312.641.4464 | 312.641.7185 *Fax* | *www.ctpf.org*