Comprehensive Annual Financial Report

for the fiscal year ended June 30, 2020

Making a Positive Impact on Our Members

PSRS/PEERS

PUBLIC SCHOOL & EDUCATION EMPLOYEE RETIREMENT SYSTEMS OF MISSOURI

INTRODUCTORY SECTION

FINANCIAL SECTION

INVESTMENT SECTION

ACTUARIAL SECTION

STATISTICAL SECTION

"Missouri is the best state to work in public education, because it provides the greatest opportunities to serve kids and allows educators to retire well after a full career."

Stephen Gilbreth, PSRS Active

Introductory Section

Mission Statement, Goals, Focus Areas

MISSION STATEMENT

The Public School Retirement System of Missouri and the Public Education Employee Retirement System of Missouri (PSRS and PEERS) work in partnership with the member school districts of this state to provide eligible employees and their beneficiaries with a significant source of income based on the employee's length of service and compensation in order to enhance retirement, disability and death benefits received from other sources.

GOAL

To provide retirement security to Missouri's educators and education employees after a full career of service.

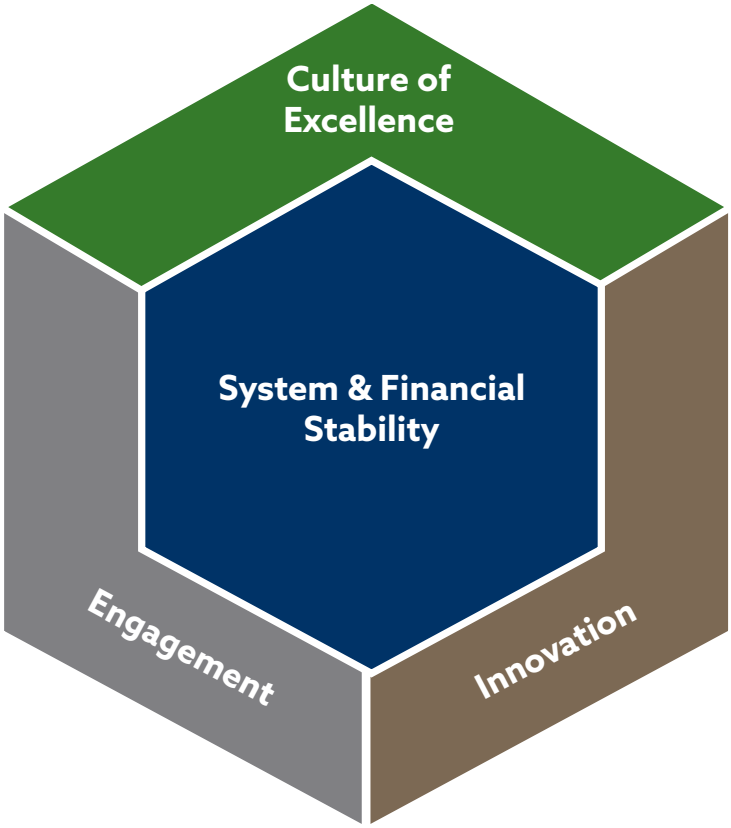
GOAL

To help school districts attract and retain the best and brightest educators and employees for Missouri's school children.

GOAL

To manage the Systems in a prudent and cost-efficient manner while continuing to provide exceptional service to our members.

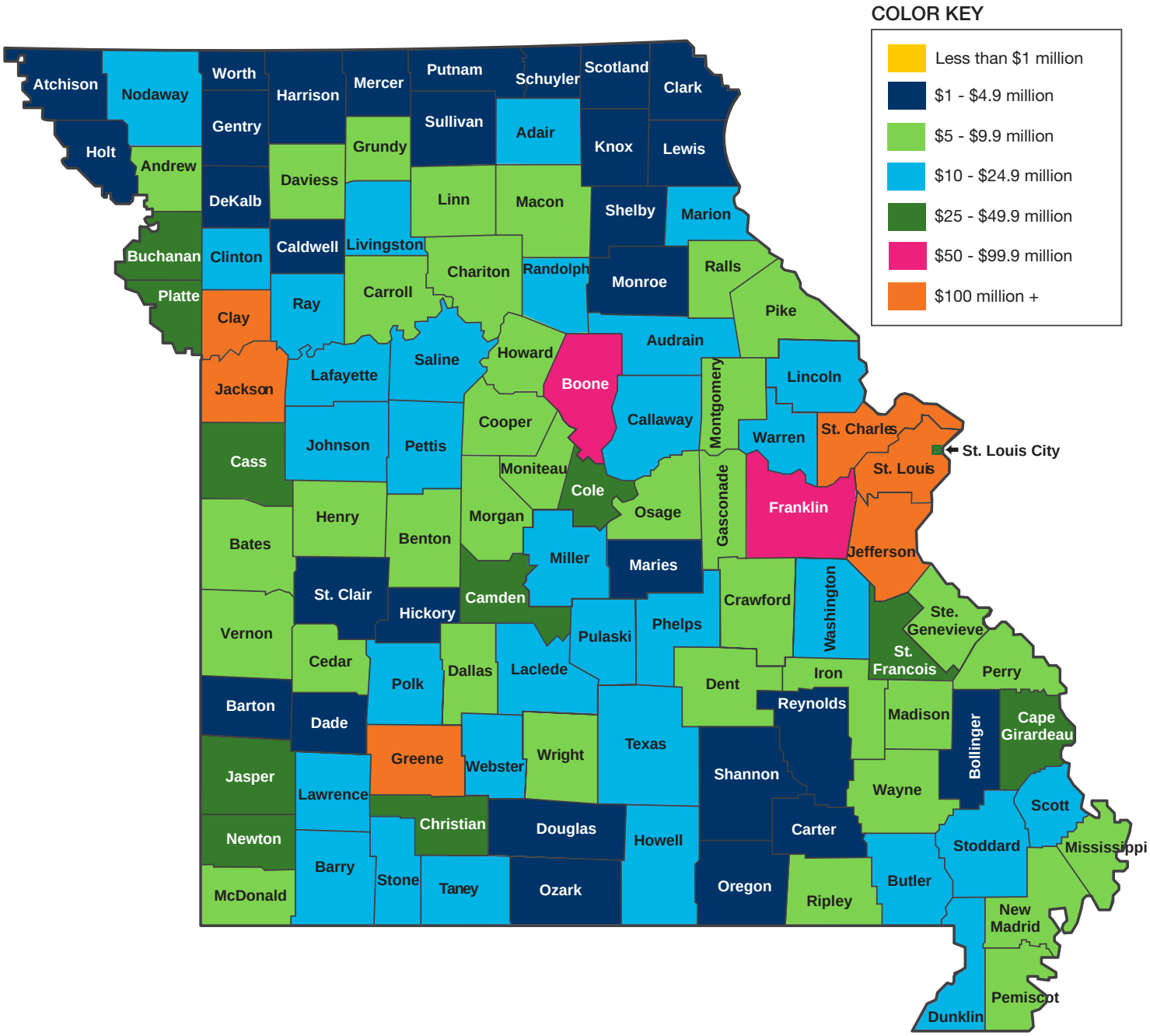
FOCUS AREAS



Economic Impact

The benefits distributed by PSRS/PEERS make a sizable contribution to Missouri's economy and help Missouri public schools attract and retain quality teachers and education employees.

As of June 30, 2020, approximately 98,000 individuals received benefits from PSRS/PEERS. Total benefits paid for the one-year period ending June 30, 2020 were nearly $3.1 billion. Of this amount, more than $2.7 billion, or 89%, was distributed among Missouri's 114 counties, positively impacting the state's economy.



Board of Trustees

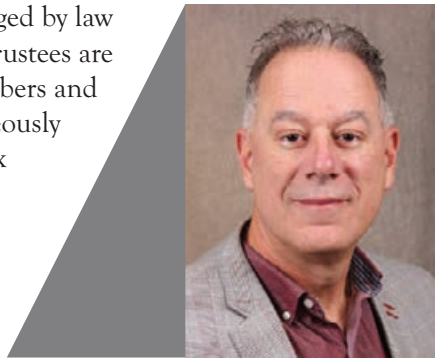
As of June 30, 2020

The PSRS/PEERS Board of Trustees is charged by law with the administration of PSRS/PEERS. Trustees are committed to providing services to the members and beneficiaries professionally, promptly, courteously and efficiently. The Board meets regularly six times a year, with special meetings called as necessary.

It is the fiduciary responsibility of those charged with the administration of PSRS and PEERS to:

- Effectively collect contributions,
- Prudently invest the assets to obtain optimum returns,
- Equitably provide benefits,
- Impartially and in accordance with applicable law administer the benefit programs, and
- Set contribution rates that are adequate to fund promised benefits.

The seven-member Board consists of three elected PSRS active members; one elected PEERS active member; and three governor-appointed trustees, one of whom must be a PSRS or PEERS retiree. Trustees serve four-year terms and serve without compensation.



Dr. Aaron Zalis
Chair
Elected PSRS
Trustee

Jason Hoffman
Vice Chair
Elected PEERS
Trustee

Sharon Kissinger
Appointed
Trustee

Yvonne Heath
Elected PSRS
Trustee

Scott Hunt
Appointed
Trustee

Beth Knes
Appointed
Trustee

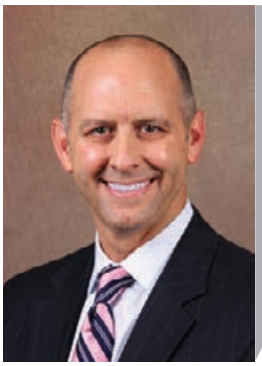
Jason Steliga
Elected PSRS
Trustee

Administrative Organization

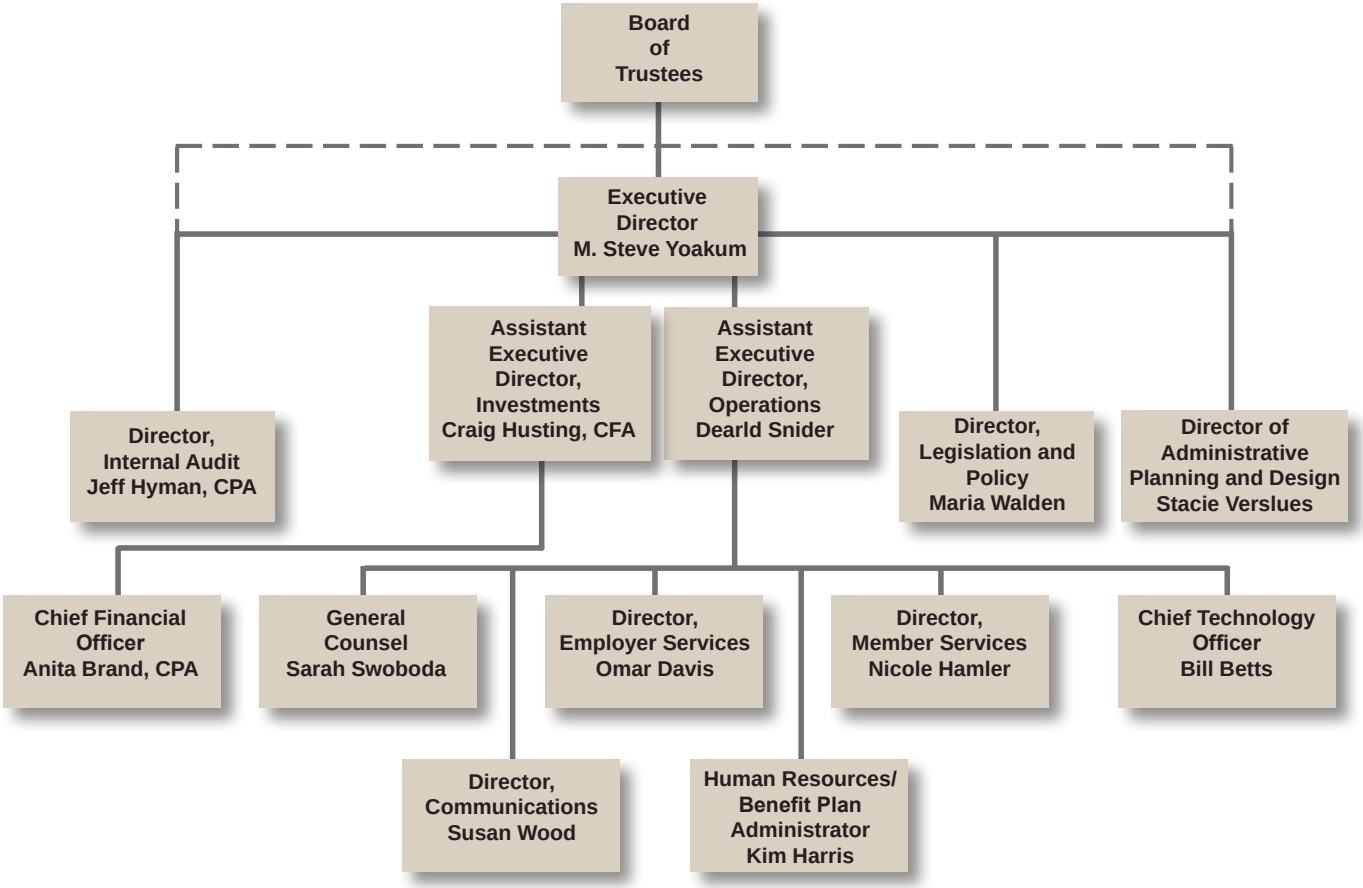
As of June 30, 2020

M. Steve Yoakum
Executive Director

Craig Husting, CFA
Assistant Executive Director, Investments



Dearld Snider
Assistant Executive Director, Operations



Executive Director Yoakum Retires After Serving Over 40 Years in the Public Pension Industry

A Positive Impact on the Public Pension Industry

M. Steve Yoakum's achievements over the last 40 years have made a lasting, positive impact on the financial security of thousands of Missouri public pension plan members.

Yoakum first joined PSRS/PEERS on July 1, 1994 as the Systems' executive director. Even then, he was an experienced public pension administrator, with a background in benefits, investments and group health insurance. He had previously served as assistant executive director of the Missouri Local Government Employees Retirement System (LAGERS) from 1978-1986, helping to grow the plan and provide it with the technology, investment professionals and independent legal counsel that would set it up for future growth into one of the state's largest and most successful public pension funds.

He was then tapped for an appointment as Missouri's first executive director of the Joint Committee on Public Employee Retirement (JCPER), a legislative review board for Missouri's public retirement plans. And in 1987, at 33 years old, he became executive director and chief investment officer of the Missouri State Employees' Retirement System (MOSERS), bringing the state employee retirement plan many of the same advancements and improvements he proved effective at LAGERS.

Along the way, Yoakum was very involved in the creation of the Missouri Association of Public Employee Retirement Systems (MAPERS), writing the organization's original constitution in 1987. He has held offices in the National Association of State Retirement Administrators and Public Pension Coordinating Council and served as a member of the Government Finance Officers Association and the International Foundation of Employee Benefit Plans.

By the time he brought his unique brand of management and growth to PSRS/PEERS in 1994, he was a proven, effective leader with an overall working knowledge of how public pension plans work, good relationships with elected officials, and a desire to modernize the fund to make it the best it could be. With a vision of moving PSRS/PEERS forward in

the most cost-effective way possible, Yoakum stayed at the Systems until 1997, when he had the opportunity to enter the private sector as a managing partner of Rockwood Capital Advisors, an investment firm he co-founded in St. Louis, MO. His experience there as a money manager would provide him beneficial insight on successful investing, which he put to good use when he returned to PSRS/PEERS, again as executive director, in June 2001.

Although he wasn't looking to return to the public pension industry, a meeting with the PSRS/PEERS Board of Trustees proved they shared his vision of making the Systems the best in the nation. And the choice was made.

Upon his return, he led the charge to modernize and diversify the PSRS/PEERS investment program. As he did at LAGERS and MOSERS, he introduced the use of outside legal counsel and directed the implementation of technology to improve the collection

"Serving on the Board of Trustees for PSRS/PEERS was a true highlight of my professional career. I attribute the fond memories in large part to Steve Yoakum. I learned a great deal about leadership from Steve. Specifically, I learned about the importance of developing and sustaining a vision for success, about leading through collaboration and leading with courage and integrity. Steve Yoakum was intentional in building and sustaining an organizational culture that is member focused and undeniably supportive of public education. I adopted many of Steve's leadership examples over the years and I truly believe it had a positive impact on my role as a school superintendent."

Dr. Aaron Zalis, PSRS/PEERS Board Chair

of information and payment of benefits. The result was the creation of an infrastructure and staff at all levels that have indeed driven PSRS/PEERS to the top in terms of public pension plan successes. "Adequate is not good enough," Yoakum says matter-of-factly. "We want to be exemplary."

A Vision of Long-Term Excellence

In speaking with him, it is plain from the start he views his success in the public pension industry during the last 40 years as the result of "being at the right place at the right time;" an ongoing learning experience that has provided him the opportunity to provide retirement security to Missouri public school personnel and help those schools attract and retain the best employees.

But his proudest accomplishment is having served as a mentor to many successful pension and investment professionals who now share and implement their own versions of his vision and goals at pension plans all around the nation.

His dedication to the ongoing success of PSRS/PEERS has not faded.

"I want us to be the 'go-to' fund in America," he explains. "When there is an issue in our industry, the first thing I want people to ask is, "What is PSRS/PEERS doing?" To a large extent, that has happened. Dubbed the 'Missouri Model,' the PSRS/PEERS trust fund's operations have become an example other plans aspire to.

Future Outlook

His vision for the public pension industry is grounded in a holistic view of defined benefit (DB) pensions as the most effective way to deliver retirement security. He understands the positive economic benefits of such pension plans that trickle down to all Missourians, not just those who receive retirement benefits. And he sees the bigger picture in a way most, even those who benefit from pensions, don't think about.

"One of the key things about the pension industry that people forget is that we are here for perpetuity, not a fixed period of time," Yoakum says. In his view, the

Executive Director Yoakum Retires ... continued

success of the industry demands we think about the needs of the systems, and their members, not just today, but literally, for centuries to come.

Meeting Challenges

Over the last few decades, economic downturns and political pressures have meant the nature of the pension business is one of constant change and challenges. Difficult investment markets and low interest rates, coupled with increased special interest group pressures to move public pensions toward defined contribution (DC) plan models like 401(k)s, have made the present, what Yoakum deems, the most difficult time he can remember to run a well-funded pension plan.

The shift from traditional DB to DC plans has left many Americans without the promise of a guaranteed, monthly income stream that cannot be outlived. This shift from DB pensions like PSRS/PEERS to DC accounts like 401(k)s and IRAs, combined with the voluntary nature of retirement systems in the U.S., has left the typical working household in America with virtually no retirement savings. [1]

PSRS/PEERS members have maintained their pensions and escaped this phenomenon. This is due in part to Yoakum's vision and tireless efforts to modernize and prepare the Systems for a successful future, and to help keep their promised lifetime retirement benefits secure for the long term.

He cautions against getting complacent about current successes using a favorite sports analogy. "Winning your first Super Bowl is hard. Winning a second is harder. I want PSRS/PEERS to win multiple championships."

Keeping it Real and Staying Humble

Through it all, his honest and down-to-earth desire to help people achieve retirement security remained constant. With over 40 years of experience and an impressive list of accomplishments behind him, he will now enjoy retirement himself. At the same time, he seems humbled by the power to positively impact so many others and is grateful to have worked with a Board, management and staff who shared his passion.

"People at PSRS/PEERS understand this is an amazingly important responsibility we have," Yoakum says. "People's lives depend on what we do. It is something I remind myself of every day."

"This is not complicated, just do the right thing," he adds with a smile. "It will usually work out pretty well in the end."

> "Serving as the executive director of PSRS/PEERS has been the highlight of my career, but after much personal and professional consideration, I have decided it is time to step down. I wish PSRS/PEERS nothing but continued success in the future carrying out their important mission for the Systems' members and their families."
>
> **M. Steve Yoakum, PSRS/PEERS Executive Director**

A New Chapter

Yoakum will retire effective December 1, 2020, joining his wife Cathy, a former teacher, as a retiree of the Systems.

Our Thank You

The Board of Trustees and staff of PSRS/PEERS wish to express our sincere gratitude for your passion, dedication and insight over the past 22 years. We learned much from your shared wisdom and experience, and will continue to follow the principles of excellence, responsibility and hard work you demonstrated as executive director. We will do our best to make you proud.

Enjoy your much deserved retirement. Here's hoping you enjoy good health, happiness and, of course, a long and financially secure retirement!

[1] *National Institute on Retirement Security (NIRS) report, Millennials and Retirement: Already Falling Short, Jennifer Erin Brown, M.S., J.D., L.L.M. February 2018.*

Transmittal Letter

PUBLIC SCHOOL & EDUCATION EMPLOYEE
RETIREMENT SYSTEMS OF MISSOURI

November 30, 2020

To the Board of Trustees and Members of the Retirement Systems:

On behalf of all management and staff, it is our pleasure to present the ***Comprehensive Annual Financial Report (CAFR)*** of the Public School Retirement System of Missouri (PSRS) and the Public Education Employee Retirement System of Missouri (PEERS) for the fiscal year ended June 30, 2020.

Fiscal year 2020 marked a year of unexpected and unprecedented challenges. The COVID-19 pandemic began spreading throughout the world during the second half of the fiscal year impacting everyone; investors, our members, our employers and our staff. PSRS/PEERS (the Systems) have been strategically preparing for unforeseen and unexpected events for several years. The Systems' investment in technology and a robust business continuity plan has allowed our staff to be fully functional while working remotely during the pandemic. The PSRS/PEERS' Board of Trustees and staff understand Missouri's educators and education employees are facing ever-changing challenges as they navigate the current pandemic. We are proud to have provided uninterrupted service to our members and employers.

We work to ensure all members have access to the best possible financial future by providing lifetime retirement benefits and financial security in retirement. The collaboration between PSRS/PEERS, our participating employers, and members ***makes a positive impact on many lives, now and into the future***. The financial strength and stability of the Systems combined with a strong governance structure continue to provide financial security to all members, even during the most unexpected and challenging times.

In addition to providing information to our Board of Trustees and members concerning the financial condition of the Systems, this report also meets our reporting requirements under Sections 169.020.(4).16 and 169.450(4).11 of the Revised Statues of Missouri (RSMo). Printed copies are available to the public upon request and the complete report is also posted on our website, **www.psrs-peers.org**.

This letter provides a brief overview of the contents of the CAFR. We encourage you to read the Management's Discussion and Analysis on pages 21 to 26 for a more detailed analysis of our financial position for the fiscal year.

Report Contents and Structure

Responsibility for the preparation, accuracy and completeness of this report, including all disclosures, rests with the management staff of PSRS/PEERS. The Systems' financial statements are prepared in accordance with U.S. generally accepted accounting principles (GAAP) within the guidelines established by the Governmental Accounting Standards Board (GASB). To the best of our knowledge, the enclosed data is accurate in all material respects and fairly presents our financial position and operating results.

Location 3210 W. Truman Blvd. / Jefferson City, MO 65109 **Mail** P.O. Box 268 / Jefferson City, MO 65102 **Website** www.psrs-peers.org
Phone (573) 634-5290 **Toll Free** (800) 392-6848 **FAX** (573) 634-7934 **Email** psrspeers@psrspeers.org

Transmittal Letter, continued

The management of the Systems is responsible for internal accounting controls, which are designed to provide reasonable but not absolute assurance that the financial statements are free of any material misstatements and assets are safeguarded. The cost of internal controls should not exceed the benefits to be derived. The Systems employ two internal auditors who perform operational reviews to ensure that the internal controls are functioning effectively. We believe the internal controls in place are adequate to meet the purpose for which they were intended.

Our independent external auditors, selected by the Board of Trustees, have conducted an audit of the basic financial statements in accordance with U.S. generally accepted auditing standards. This audit and the financial statements and related footnotes are presented on pages 19 to 60 of this report.

Overview of the Retirement Systems

The Public School Retirement System of Missouri (PSRS), a cost-sharing multiple employer retirement system, was established in 1946 by the Missouri legislature to provide certificated public school employees and their families with a significant and stable source of retirement income, disability and survivor benefits. The majority of PSRS members do not contribute to Social Security.

The Non-Teacher School Employee Retirement System of Missouri (NTRS), also a cost-sharing multiple employer retirement system, was established in 1965 by the Missouri legislature to build a plan similar to PSRS, but for non-certificated public school personnel. The name of the non-teacher system was changed to the Public Education Employee Retirement System of Missouri (PEERS) in August 2005 to more positively represent the members of the System. Members of PEERS contribute to Social Security.

PSRS and PEERS are governed jointly by a seven-member Board of Trustees, composed of three elected active PSRS members, one elected active PEERS member and three members appointed by the governor.

Unlike most public pension systems, the members of PSRS and PEERS share equally in funding the contributions to the Retirement Systems. The contribution rates in total approximate the contribution rates of similar public plans. However, this funding mechanism has kept the employer contributions lower and the employee contributions higher than many similar public plans.

The combined Systems serve over 284,000 total members in 534 districts and other employers. As of June 30, 2020, approximately 98,000 individuals received retirement benefits from the Systems. Total annual benefits paid were nearly $3.1 billion for the year ended June 30, 2020. At June 30, 2020, PSRS/PEERS had a net position of approximately $45.8 billion, making it larger than all other public retirement systems in the state of Missouri combined.

Funding Status and Valuation Results

The Board of Trustees evaluates a large amount of information each year including, but not limited to, the annual actuarial valuations prepared by the Systems' external actuaries, PricewaterhouseCoopers, LLP. Annually, the Board of Trustees reviews the sensitivities to changes in cost-of-living adjustment (COLA) assumptions and investment returns. Based on the results of the actuarial valuations and sensitivity analysis, the Board of Trustees did not make any amendments to the Systems' Actuarial Funding Policies during the current year. The Funding Policies are reviewed based on two critical elements that are at the forefront of all System decisions: the Board of Trustees' fiduciary responsibility and their funding goals.

Fiduciary responsibility includes the duties of loyalty and impartiality. The duty of loyalty requires the operation of the Systems for the exclusive benefit of the members and retirees of those Systems, and must supersede the interests of all other parties. The duty of impartiality requires that the Board not favor any one type of plan participant over another (e.g. active, inactive, retired members). The Board has a fiduciary duty to: 1. Effectively collect contributions, 2. Prudently invest the assets to obtain optimum returns, 3. Equitably provide benefits, 4. Impartially and in accordance with applicable law, administer the benefit program, and 5. Set contribution rates that are adequate to fund promised benefits.

The Board of Trustees funding goals are: 1. Provide for the security and financial stability of the Systems, including maintaining at least an 80% pre-funded ratio, continuing to amortize the unfunded liability until PSRS/PEERS is 100% pre-funded, and allowing for a reasonable assumed rate of return given capital market estimates, 2. Maintain the contribution rates of both Systems at or below current levels, and 3. Provide a consistent COLA for PSRS/PEERS benefit recipients to maintain their purchasing power, noting COLAs should be dependable and affordable without harming the financial stability of the Systems. The Board of Trustees funding goals are in direct alignment with the Systems mission, goals and strategic plan.

The Systems' funding objective continues to be to achieve a funded ratio of 100% over a closed 30-year period. For this purpose, funded ratio is defined as the actuarial value of assets divided by the actuarial accrued liability determined under the entry age normal cost method and the actuarial assumptions adopted by the Board of Trustees. As of June 30, 2020, PSRS was 84.0% pre-funded, while PEERS was 86.3% pre-funded. Both Systems showed a slight decrease in funding from the June 30, 2019 funded percentage of 84.4% for PSRS and 86.4% for PEERS. Additional information on actuarial assumptions and funding can be found in the Actuarial Section of this report. Based upon the June 30, 2020 valuations and overall financial projections, the Board of Trustees set the fiscal year 2022 contribution rates at the fiscal year 2021 level for both members and employers.

Investment Activities

The Systems' assets increased through investment earnings by $1.6 billion from the previous year with a total fund performance of 3.9% (3.7% net of all investment expenses and fees). The Systems are long-term investors with a diversified portfolio that continues to produce strong long-term returns where the annualized investment return is 8.1% (8.0% net of all investment expenses and fees) over the last 30 years. The impact of the COVID-19 pandemic on investment markets and the Systems' portfolio is discussed in detail in the Investment Section of this report. The Systems' focus on diversification, asset allocation and liquidity combined with a long-time horizon for investment, allows for the Systems to withstand market volatility and capitalize on investment opportunities.

The Systems' external investment consultant typically conducts an Asset Liability Study every five years for the Systems. The most recent Study was conducted during fiscal year 2020 and the results were presented to the Board of Trustees in February and ultimately adopted in April. The objective of the Study was to determine the appropriate asset allocation for PSRS and PEERS given the specific liabilities of the Systems.

Additional detailed information regarding the Systems' investments, including asset allocation, policies and strategies, can be found in the Investment Section of this report.

Transmittal Letter, continued

Other Key Initiatives During Fiscal Year 2020

The Systems are currently in the construction phase of a multi-year building expansion and renovation project. The Board of Trustees approved the building expansion and renovation project at their December 2018 meeting to ensure the Systems continue to deliver a high level of service to all current and future members. The project is expected to be complete in the Fall of 2022.

Legislative Changes During Fiscal Year 2020

There was no significant legislation passed in fiscal year 2020 impacting PSRS or PEERS.

Awards

Public Pension Coordinating Council (PPCC), Public Pension Standards Award

PSRS and PEERS each received the Public Pension Standards Awards in 2020 in recognition of meeting professional standards for plan administration and plan funding as set forth in the Public Pension Standards of the PPCC. These awards are presented by the PPCC, a confederation of the National Association of State Retirement Administrators (NASRA), the National Conference on Public Employee Retirement Systems (NCPERS), and the National Council on Teacher Retirement (NCTR).

Certificate of Achievement for Excellence in Financial Reporting

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to PSRS and PEERS for the ***Comprehensive Annual Financial Report*** for the fiscal year ended June 30, 2019. The Certificate of Achievement is a prestigious national award recognizing excellence in the preparation of state and local government financial reports. To be awarded the Certificate of Achievement, a government unit must publish an easily readable and efficiently organized CAFR whose contents meet or exceed program standards. This report must satisfy both U.S. generally accepted accounting principles, applicable legal requirements and GFOA standards. A Certificate of Achievement is valid for only one year. We believe our current report continues to meet the Certificate of Achievement program requirements and are submitting it to GFOA for consideration again this year.

Professional Services

Certain professional services are provided to the Systems by retained consultants. The required opinion letters from two of those consultants, PricewaterhouseCoopers, LLC, actuaries, and Williams Keepers LLC, independent certified public accountants, are contained elsewhere in this report.

General investment consulting services have been provided by Verus Advisory, Inc.

Acknowledgements

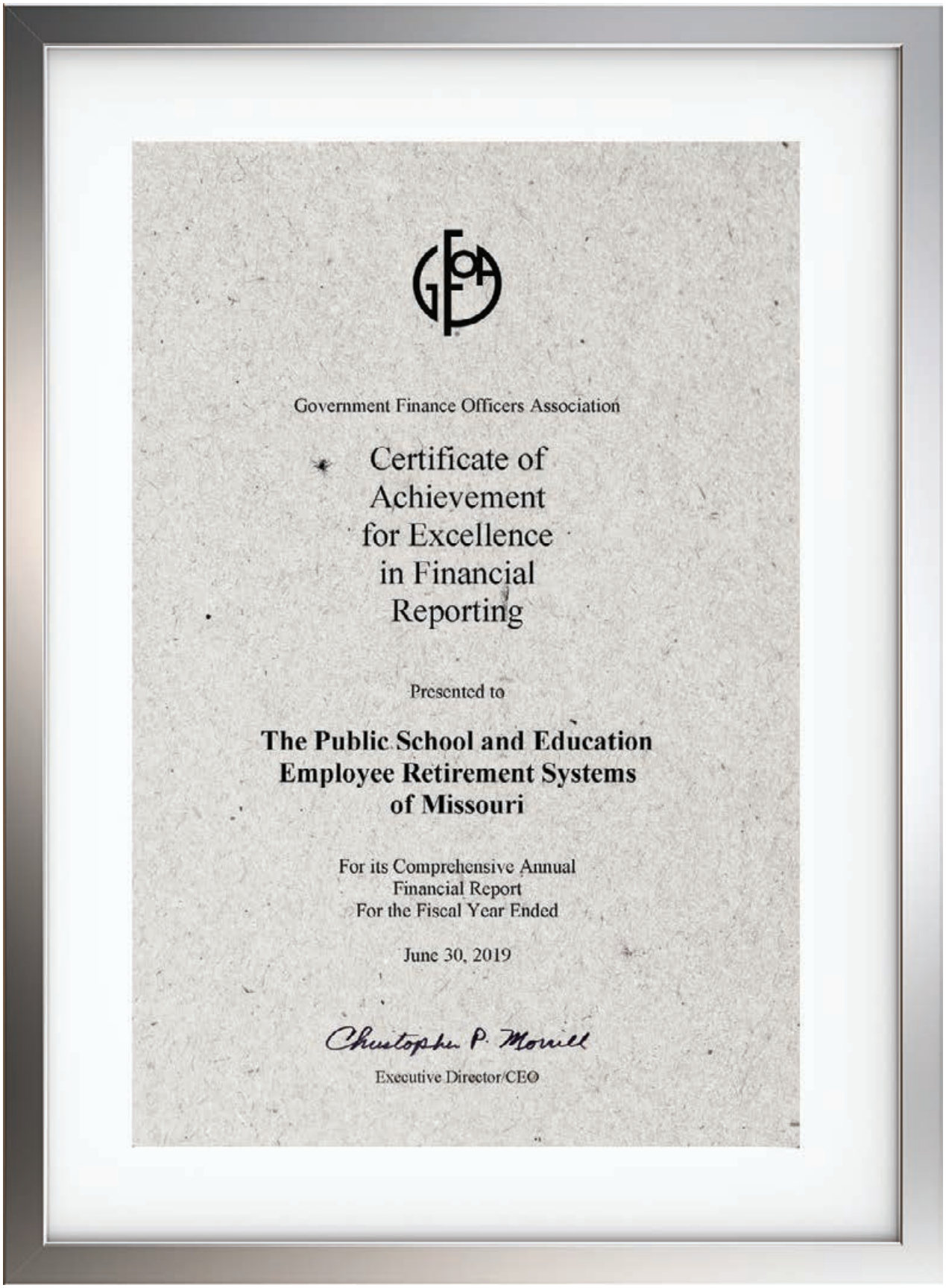
We would like to express our thanks and gratitude to the Board of Trustees, staff, and consultants who have worked diligently to produce this report and to ensure the successful operation of the Systems.

Respectfully submitted,

M. Steve Yoakum
Executive Director

Anita Brand, CPA
Chief Financial Officer

Certificate of Achievement for Excellence in Financial Reporting



Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

The Public School and Education Employee Retirement Systems of Missouri

For its Comprehensive Annual Financial Report For the Fiscal Year Ended

June 30, 2019

Christopher P. Morrill

Executive Director/CEO

Public Pension Coordinating Council Public Pension Standards Awards

Public Pension Coordinating Council

Public Pension Standards Award
For Funding and Administration
2020

Presented to

Public School Retirement System of Missouri

In recognition of meeting professional standards for
plan funding and administration as
set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle
Program Administrator

Public Pension Coordinating Council

Public Pension Standards Award
For Funding and Administration
2020

Presented to

Public Education Employee Retirement System of Missouri

In recognition of meeting professional standards for
plan funding and administration as
set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle
Program Administrator

Professional Services

As of June 30, 2020

Actuaries

PricewaterhouseCoopers, LLP
Cindy Fraterrigo, FSA, EA, MAAA
Brandon Robertson, ASA, EA, MAAA
Chicago, Illinois
New York, NY

Auditors

Williams Keepers, LLC
Nick Mestres, CPA
Columbia, Missouri

Technology Consultants

Alert Logic
Kelsey Martel
Houston, TX

Arctic Wolf Networks
Steven Thiel
Eden Prairie, MN

Cherry Road Technologies
Craig Mauer
Morris Plains, NJ

ConvergeOne, Inc.
Allen Strasburger
Minneapolis, MN

ConvergePoint Inc.
Steven Moore
Katy, TX

Dell EMC
Travis Foxell
Round Rock, TX

Gartner Inc.
Jamie Combs
Stamford, CT

KiZAN Technologies LLC
Ken Fox
Louisville, KY

Network Technology Partners
Bill Streck
Ellisville, MO

Security Equipment Inc.
Cory Burton
Omaha, NE

SHI International
Rick Wolters
Somerset, NJ

Ring Central
Madison Hall
Belmont, CA

Tyler Technologies
Lisa Sawyer
Dallas, TX

Insurance Consultants

Charlesworth & Associates
Bob Charlesworth
Overland Park, Kansas

The Insurance Group
Jason Swindle
Columbia, Missouri

Other Consultants

Cortex
Tom Iannucci
Toronto, Ontario

Legal Counsel

Groom Law Group
David Levine
Washington, D.C.

Pillsbury, Winthrop, Shaw, Pittman, LLP
Semma Arzapalo
Los Angeles, California

Thompson Coburn, LLP
Lawrence C. Friedman
St. Louis, Missouri

Legislative Consultant

Statehouse Strategies, LLC
James "Jim" Moody
Jefferson City, Missouri

Medical Advisor

Andrew Matera, M.D.
Columbia, Missouri

Investment Management, Custodial and Consulting fees can be found in the Schedule of Investment Expenses on page 106. Schedules of broker commissions can be found on page 104. Additional information on Investment Managers can also be found in the Investment Section of this report.

"I love the fact that after leaving covered employment for three-and-a-half years, my money was still there when I returned. I just picked up where I left off, earning retirement service."

Connie Cook, PEERS Active

Financial Section

Independent Auditors' Report

WILLIAMS KEEPERS LLC
CERTIFIED PUBLIC ACCOUNTANTS & CONSULTANTS

2005 West Broadway, Suite 100, Columbia, MO 65203
OFFICE (573) 442-6171 FAX (573) 777-7800
3220 West Edgewood, Suite E, Jefferson City, MO 65109
OFFICE (573) 635-6196 FAX (573) 644-7240
www.williamskeepers.com

The Board of Trustees of the
Public School and Public Education Employee
Retirement Systems of Missouri

We have audited the accompanying financial statements of the Public School and Public Education Employee Retirement Systems of Missouri (the Systems), which comprise the statements of fiduciary net position as of June 30, 2020, the related statements of changes in fiduciary net position for the year then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; 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.

Auditors' Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with U.S. generally accepted auditing standards. Those standards require that we plan and perform the audit 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 auditors' 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 opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Public School and Public Education Employee Retirement Systems of Missouri as of June 30, 2020, and the respective changes in fiduciary net position for the year then ended, in conformity with U.S. generally accepted accounting principles.

American Institute of Certified Public Accountants | Missouri Society of Certified Public Accountants | Member, Allinial Global

Independent Auditors' Report, continued

Other Matters

Prior Year Information

The prior year combined total information has been derived from the Systems' 2019 financial statements and, in our report dated November 26, 2019, we expressed unmodified opinions on the respective financial statements of the Systems' fiduciary net position.

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 21-26, schedules related to the defined benefit plans (schedules of changes in the employers' net pension liability, employers' net pension liability, employer contributions, investment returns, and notes to schedules) on pages 52-57, and schedules related to the defined benefit OPEB plan (schedule of changes in the net OPEB liability and related ratios) on page 58 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, who 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 U.S. generally accepted auditing standards, 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 audits 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 the Public School and Public Education Employee Retirement Systems of Missouri basic financial statements. The introductory, investment, actuarial and statistical sections and the additional information presented on pages 59 through 60 are presented for purposes of additional analysis and are not a required part of the financial statements.

The additional information presented on pages 59 through 60 is the responsibility of management and was derived from and relate directly to the underlying accounting and other records used to prepare the 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 U.S. generally accepted auditing standards. In our opinion, the additional information presented on pages 59 through 60 is fairly stated in all material respects in relation to the basic financial statements as a whole.

The introductory, investment, actuarial and statistical sections 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.

Williams-Keepers LLC

November 20, 2020

Management's Discussion and Analysis

Introduction

This discussion and analysis of the financial position of the Public School Retirement System of Missouri (PSRS) and the Public Education Employee Retirement System of Missouri (PEERS), collectively referred to as the Systems, provides an overview of the Systems' financial activities for the fiscal year ended June 30, 2020. We encourage you to consider the information presented here in conjunction with the *Transmittal Letter* included in the *Introductory Section* and the financial statements and other information presented in the *Financial Section* of this *Comprehensive Annual Financial Report* (CAFR).

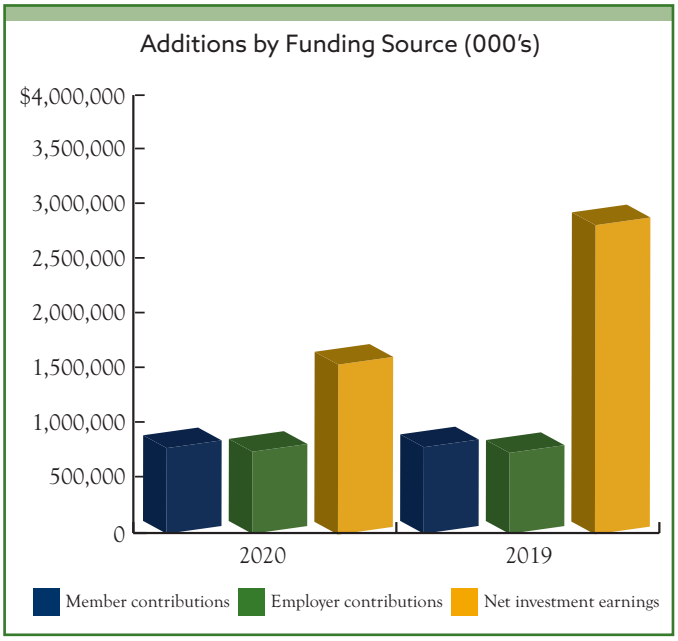
Financial Highlights

The following highlights are explained in more detail for each System later in this discussion.

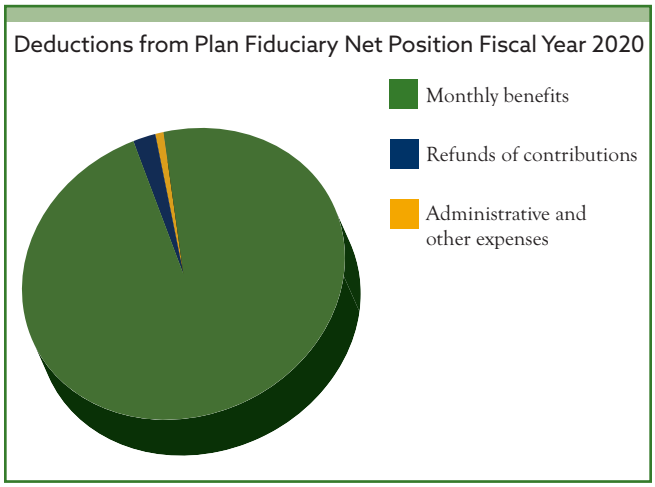
- The Board of Trustees adopts actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience for the Systems, derived from experience studies conducted every fifth year. The most recent comprehensive experience study was completed in June 2016. All economic and demographic assumptions were reviewed and updated, where appropriate, based on the results of the study and effective with the June 30, 2016 valuations. For the June 30, 2017 valuations, the investment rate of return was reduced from 7.75% to 7.6% and the assumption for annual cost-of-living adjustments was updated in accordance with the funding policies amended by the Board of Trustees at their November 3, 2017 meeting. The Board of Trustees further reduced the investment rate of return to 7.5% at their October 29, 2018 meeting. The actuarial assumed rate of return of 7.5% was effective with the June 30, 2018 valuations and fiscal year 2019 investment performance. No additional assumption changes have occurred. The significant actuarial assumptions are detailed in the notes to the financial statements and the notes to the schedules of required supplementary information. The next experience studies are scheduled to occur in fiscal year 2021.
- As of June 30, 2020, PSRS' fiduciary net position as a percentage of the total pension liability decreased to 82.0% from 84.6% for the prior year. PSRS' net pension liability approximated $8.9 billion as of June 30, 2020. As of June 30, 2020, PEERS' fiduciary net position as a percentage of the total pension liability decreased to 84.1% from 86.4% for the prior year. PEERS' net pension liability approximated $970.6 million as of June 30, 2020. The net pension liability is calculated utilizing the market value of assets in accordance with Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans,* for accounting presentation purposes.
- The pre-funded status of the Systems is measured as the ratio of assets available for benefits to a benefit liability measure for the Systems. While there are several such measures that could be appropriately used, the benefit liability measure that ties most closely to the Systems' funding policies is the actuarial accrued liability (AAL) computed in accordance with assumptions and methods approved by the Board of Trustees. The pre-funded ratio uses the actuarial value of assets (AVA), a smoothed asset value that recognizes 20% of the total investment gain or loss on the AVA for each of the preceding five years. This is the significant difference between accounting measurements in accordance with GASB Statement No. 67 and funding calculations. As of June 30, 2020, the pre-funded ratios for funding purposes were 84.0% for PSRS and 86.3% for PEERS.
- The Systems' assets increased through investment earnings by $1.6 billion from the previous year with a total fund performance of 3.9% (3.7% net of all investment expenses and fees). The total plan return, net of all investment expenses and fees, fell short of both the policy benchmark return of 5.0% and the long-term investment goal (actuarially assumed return) of 7.5% as a result of extreme market volatility related to the global COVID-19 pandemic. Over long periods of time, the Systems continue to produce investment returns that meet or exceed the Systems' objective. The annualized investment return for the Systems is 8.1% (8.0% net of all investment expenses and fees) over the last 30 years.
- The Systems' investment returns for fiscal year 2020 and for the three-year, five-year and ten-year time periods then ended exceeded the median of the peer group as defined by the Wilshire TUCS universe of public pension plans with assets in excess of $1 billion. Additionally, the Systems generated the consistently higher returns (and longer-term investment returns) while taking less

risk than the policy benchmark (as measured by standard deviation) and less risk than most comparable public funds over all time periods.

- Cost-sharing, defined-benefit, retirement systems such as the Systems have a long-term perspective on financial activities. The Systems' primary responsibility is to assure that sufficient funds will be available to provide retirement, disability and survivor benefits to current and future members. Condensed Statements of Fiduciary Net Position and Statements of Changes in Fiduciary Net Position are provided for each System on the following pages.
- Pension benefits are funded through a combination of member and employer contributions and investment income. The following chart depicts the combined amount of funding received by the Systems from each source for the years ended June 30, 2020 and 2019.



- Expenses are incurred for the sole purpose for which the Systems were created: the payment of benefits to the Systems' membership and their beneficiaries. Included in the deductions from fiduciary net position were monthly benefit payments, refunds of contributions due to member terminations or deaths and administrative and other expenses. The pie chart depicts the combined Systems' deductions from Plan Fiduciary Net Position for the year ended June 30, 2020.



- The combined net position of the Systems increased by $216.8 million. The net position of PSRS increased by $116.5 million while the net position of PEERS increased by $100.3 million.
- Total revenues for fiscal year 2020 were comprised of contribution revenue of $1.74 billion and investment gains of $1.64 billion, compared to contribution revenue of $1.71 billion and investment gains of $2.9 billion for fiscal year 2019.
- Expenses increased 4.0% over the prior year from $3.0 billion to $3.2 billion. Retirement benefits and member refunds increased by $123.1 million from the prior year, while administrative expenses decreased by $1.0 million during the same time period. Administrative expenditures decreased due to lower computer consulting expenses during fiscal year 2020.

Overview of the Financial Statements

The CAFR reflects the activities of the Systems as reported in Statements of Fiduciary Net Position and the Statements of Changes in Fiduciary Net Position (the Systems' financial statements). The Systems' financial statements, notes to the financial statements, and required supplementary information were prepared in conformity with GASB Statement No. 67, *Financial Reporting for Pension Plans*, as amended. This discussion and analysis are intended to serve as an introduction to the financial section of the CAFR. The financial section of the CAFR consists of the basic financial statements comprised of the Statements of Fiduciary Net Position and the Statements of Changes in Fiduciary Net Position, the notes to the basic financial statements, required supplementary information and other supplementary information.

The Statements of Fiduciary Net Position present information on the Systems' assets, deferred outflows,

liabilities, deferred inflows, and resulting net position, where assets plus deferred outflows less liabilities and deferred inflows is reported as net position. The net position of the Systems reflects the resources available to pay benefits to members when due. Over time, increases and decreases in net position measure whether the Systems' financial position is improving or deteriorating.

The Statements of Changes in Fiduciary Net Position present information detailing the changes in net position that occurred during the current fiscal year. All changes in net position are reported on an accrual basis. This means that the revenue or expense is recognized as soon as the underlying event giving rise to the change occurs, regardless of when the actual cash is received or paid. Thus, revenues and expenses are reported in this statement for some items that will not result in cash flows until future fiscal periods. For example, contributions due from an employer, even though not yet paid by year end, will be reflected as revenue. Earned vacation accruals will be reflected as an expense, even though they have not been paid to employees.

The notes to the financial statements provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes can be found on pages 30 through 51.

The report also contains required supplementary information in addition to the basic financial statements themselves. The required supplementary information consists of the following schedules and related notes:

- The Schedules of Changes in the Employers' Net Pension Liability include historical trend information about the annual changes of the net pension liability, including assumption changes and variances of assumed experience.
- The Schedules of Employers' Net Pension Liability include historical trend information about whether each System's net position is increasing or decreasing over time relative to the total pension liability. The schedules provide a long-term, ongoing perspective of the accumulation of assets to pay benefits when due.
- The Schedules of Employer Contributions present historical trend information about the actuarially determined contributions of employers and the actual contributions made by employers.
- The Schedules of Investment Returns present historical annual money-weighted rate of returns.
- The Schedules of Changes in the Net OPEB Liability and Related Ratios include historical trend information about the defined benefit other post-employment benefit (OPEB) plan from a long-term, ongoing perspective.
- The Notes to the Schedules of Required Supplementary Information provide additional information that is essential to a full understanding of the data provided in the schedules.

Other supplementary schedules are also included. The Schedules of Administrative Expenses present the overall cost of administering the Systems. The Schedules of Professional Services further detail this category of administrative expense. The Schedules of Investment Expenses show the costs associated with investing the assets of the Systems. These expenses are shown as a reduction of revenue on the Statements of Changes in Fiduciary Net Position.

Financial Analysis of the Public School Retirement System of Missouri (PSRS)

PSRS is a mandatory cost-sharing multiple employer retirement system for full-time certificated employees and certain part-time employees of participating employers. PSRS members were required to contribute 14.5% of their annual covered salary during fiscal year 2020. The employer was required to match that amount. Most PSRS members do not contribute to Social Security, except for employees hired after 1986 who contribute to Medicare only. In some instances, positions may be determined not to be exempt from Social Security contributions. PSRS members required to contribute to Social Security are required to contribute two-thirds of the approved PSRS contribution rate and their employer is required to match the contribution. The members' benefits are further calculated at two-thirds the normal benefit amount.

Public School Retirement System of Missouri
Fiduciary Net Position (000's)

	2020	2019	Change
Cash & investments	$ 40,849,436	$ 41,057,494	$ (208,058)
Receivables	2,346,619	2,152,895	193,724
Other	27,516	24,867	2,649
Total assets	43,223,571	43,235,256	(11,685)
Deferred outflows of resources	120	93	27
Total liabilities	2,513,222	2,641,400	(128,178)
Deferred inflows of resources	164	190	(26)
Fiduciary net position	**$ 40,710,305**	**$ 40,593,759**	**$ 116,546**

Assets

Total assets of PSRS as of June 30, 2020 were $43.2 billion and were mostly comprised of cash, investments, investment sales receivables and contributions due from employers. Total assets decreased by $11.7 million or 0.03% from the prior year due to decline in cash and investments offset by an increase in receivables and other assets.

Liabilities

Total liabilities as of June 30, 2020, were $2.5 billion and were mostly comprised of payables from the purchase of investments and obligations under security lending arrangements. Total liabilities decreased by $128.2 million from the prior year. This was due to a decrease in interest payable, and obligations under security lending arrangements.

Deferred Outflows and Inflows of Resources

Deferred inflows and outflows are a result of the System's Post-Employment Healthcare Plan and are presented in accordance with GASB Statement No. 75.

Net Position

PSRS assets exceeded liabilities on June 30, 2020, by $40.7 billion. This was an increase of $116.5 million from the 2019 net position. This increase was a result of investment earnings that totaled $1.5 billion for the year offset by benefit payments and other expenses which exceeded contribution revenue by $1.3 billion.

Public School Retirement System of Missouri
Changes in Fiduciary Net Position (000's)

	2020	2019	Change
Additions			
Member contributions	$ 757,917	$ 747,403	$ 10,514
Employer contributions	724,995	712,545	12,450
Investment income	1,457,327	2,595,859	(1,138,532)
Other	192	6	186
Total additions	**2,940,431**	**4,055,813**	**(1,115,382)**
Deductions			
Monthly benefits	2,758,726	2,660,977	97,749
Refunds of contributions	54,506	49,296	5,210
Administrative expenses	10,653	11,282	(629)
Other	-	44	(44)
Total deductions	**2,823,885**	**2,721,599**	**102,286**
Changes in fiduciary net position	**$ 116,546**	**$1,334,214**	**$(1,217,668)**

Revenues – Additions to Fiduciary Net Position

The reserves needed to finance retirement benefits are accumulated through the collection of employer and employee contributions and through investment earnings. Total contribution revenue for the year increased by $23.0 million to $1.5 billion. This was a 1.6% increase over the prior year. Retirement contributions were calculated at 14.5% of retirement salary for each member during fiscal year 2020. The employer matched this amount. Contribution rates were unchanged from the prior year. An increased retirement salary base, the addition of new members and an increase in contributions for members working after retirement resulted in the increase in contributions.

The net investment gain was $1.5 billion as compared to a net investment gain of $2.6 billion in 2019. The current year gains are reflective of a 3.7% net return on the Systems' diversified investment portfolio, compared to 6.9% in the prior year. All investment related expenses, such as fees paid to investment managers, are reflected as a reduction in revenue and are accounted for in this net figure. The *Investment Section* of this report contains additional information regarding investments and securities lending activity.

Expenses – Deductions from Fiduciary Net Position

The primary expenses of PSRS include the payment of pension benefits to members and beneficiaries, refunds of contributions to former members, and the cost of administering the System. Total expenses for fiscal year 2020 were $2.8 billion, an increase of 3.8% over fiscal year 2019.

Benefit expenses increased by $97.7 million to $2.76 billion. This was a result of an overall increase of 1,523 monthly benefit recipients from the prior year end. There were no changes to the benefit formula during 2020. Refunds of contributions increased by $5.2 million during the current year to a total of $54.5 million.

Administrative expenses decreased by $0.6 million to $10.7 million due to a decrease in computer consulting expense. The cost of administrative items was charged 61% to PSRS and 39% to PEERS, unless the expense was determined to be of direct benefit to only one System. In such instance, the allocation of expense was 100% to the benefited System. As always, we will continue to look for ways to streamline costs when prudent.

Financial Analysis of the Public Education Employee Retirement System of Missouri (PEERS)

PEERS is a mandatory cost-sharing multiple employer retirement system for non-certificated employees and certain part-time certificated employees of participating employers. PEERS members were required to contribute 6.86% of their annual covered salary during 2020. The employer was required to match that amount. PEERS members also contribute to Social Security.

Public Education Employee Retirement System of Missouri
Fiduciary Net Position (000's)

	2020	2019	Change
Cash & investments	$ 5,143,569	$ 5,080,876	$ 62,693
Receivables	293,649	266,717	26,932
Other	7	335	(328)
Total assets	**5,437,225**	**5,347,928**	**89,297**
Deferred outflows of resources	**77**	**59**	**18**
Total liabilities	**318,353**	**329,342**	**(10,989)**
Deferred inflows of resources	**105**	**121**	**(16)**
Fiduciary net position	**$ 5,118,844**	**$ 5,018,524**	**$ 100,320**

Assets

Total assets of PEERS as of June 30, 2020 were $5.4 billion and were mostly comprised of cash, investments, investment sales receivables and contributions due from employers. Total assets increased by $89.3 million or 1.7% from the prior year.

Liabilities

Total liabilities as of June 30, 2020 were $318.4 million and were mostly comprised of payables from the purchase of investments and obligations under security lending arrangements. Total liabilities decreased by $11.0 million. This was due to decreases in interest payable and obligations under security lending arrangements.

Deferred Outflows and Inflows of Resources

Deferred inflows and outflows are a result of the System's Post-Employment Healthcare Plan and are presented in accordance with GASB Statement No. 75.

Net Position

PEERS assets exceeded liabilities on June 30, 2020 by $5.1 billion. This was up from the 2019 net position of $5.0 billion by $100.3 million. This increase was a result of investment earnings that totaled $181.9 million for the year offset by benefit payments and other expenses which exceeded contribution revenue by $81.6 million.

Public Education Employee Retirement System of Missouri
Changes in Fiduciary Net Position (000's)

	2020	2019	Change
Additions			
Member contributions	$ 131,336	$ 126,609	$ 4,727
Employer contributions	124,545	120,042	4,503
Investment income	181,855	319,773	(137,918)
Total additions	**437,736**	**566,424**	**(128,688)**
Deductions			
Monthly benefits	309,658	291,568	18,090
Refunds of contributions	20,680	18,674	2,006
Administrative expenses	7,077	7,415	(338)
Other	1	9	(8)
Total deductions	**337,416**	**317,666**	**19,750**
Changes in fiduciary net position	**$ 100,320**	**$ 248,758**	**$(148,438)**

Revenues – Additions to Fiduciary Net Position

The reserves needed to finance retirement benefits are accumulated through the collection of employer and employee contributions and through investment earnings. Total contribution revenue for the year increased by $9.2 million to $255.9 million. Retirement contributions were calculated at 6.86% of retirement salary for each member during fiscal year 2020. The employer matched this amount. Contribution rates were unchanged from the prior year. Overall contribution revenue increased by 3.7%. The increase in total contributions is attributable to a higher retirement salary base and the addition of new members.

The net investment gain was $181.9 million as compared to a net investment gain of $319.8 million in 2019. The current year gains are reflective of a 3.7% net return on the Systems' diversified investment portfolio, as compared to 6.9% in the prior year. All investment related expenses, such as fees paid to investment managers, are reflected as a reduction in revenue and are accounted for in this net figure. The *Investment Section* of this report contains additional information regarding investments and securities lending activity.

Expenses – Deductions from Fiduciary Net Position

The primary expenses of PEERS include the payment of pension benefits to members and beneficiaries, refunds of contributions to former members, and the cost of administering the System. Total expenses for fiscal year 2020 were $337.4 million, an increase of 6.2% over fiscal year 2019.

Benefit expenses increased by $18.1 million to $309.7 million. This was a result of an overall increase of 1,382 monthly benefit recipients from the prior year end. There were no changes to the benefit formula during 2020. Refunds of contributions increased by $2.0 million from the prior year.

Administrative expenses decreased by $0.3 million due to a decrease in computer consulting expense. The cost of administrative items was charged 61% to PSRS and 39% to PEERS, unless the expense was determined to be of direct benefit to only one System. In such instance, the allocation of expense was 100% to the benefited System. As always, we will continue to look for ways to streamline costs when prudent.

Summary

The total net returns of 3.7% for the Systems was slightly under both the long-term investment goal of earning 7.5% and the total plan policy benchmark return of 5.0%. Due to the long-term nature of defined benefit pension plans, it is important to look at the financial performance of the Systems over a period of years and not just at this single point in time. Over long periods of time, the Systems continue to produce investment returns that meet or exceed the Systems' objectives. The annualized investment return for the Systems over the last 30 years is 8.0%, net of all fees and expenses.

The actuarial assumed rate of return was 8.0% from 1980 through fiscal year 2016. The Board of Trustees set the actuarial assumed rate of return at 7.75%, effective with the June 30, 2016 actuarial valuations and fiscal year 2017 investment performance measurement. The Board of Trustees considered the current funded status of the Systems, expectations of capital markets and other factors during fiscal year 2017 and 2018. Based on these considerations the Board of Trustees approved reducing the risk profile of the plans by approving a further reduction of the actuarial assumed rate of return to 7.6% as of June 30, 2017 and 7.5% as of June 30, 2018. The actuarial assumed rate of return of 7.5% was effective with the June 30, 2018 valuations and fiscal year 2019 investment performance. No assumption changes occurred during fiscal years 2019 and 2020. Detailed information regarding the Systems' investment portfolio is included in the *Investment Section* of this report.

The Systems' funding objective is to achieve a funded ratio of 100% over a closed 30-year period. For this purpose, funded ratio is defined as the actuarial value of assets divided by the actuarial accrued liability determined under the entry age normal cost method and the actuarial assumptions adopted by the Board. Detailed information regarding the Systems' actuarial assumptions is included in the *Actuarial Section* of this report.

The economic factor that is of primary significance to the Systems is the investment rate of return earned in global capital markets. Legislative, demographic, and actuarial assumption changes can also have a significant impact on the funded status of the Systems. All these factors are incorporated into the annual actuarial valuations, which determine the contribution rates at which participating employers must contribute in order to appropriately fund benefits.

The fiscal year 2022 contribution rates remain unchanged from the fiscal year 2021 rates and were approved by the Board of Trustees at their October 26, 2020 meeting. The fiscal year 2022 contribution rate for PSRS remains 29.0%. The fiscal year 2022 contribution rate for PEERS remains 13.72%. The fiscal year 2022 contribution rates are in compliance with the PSRS/PEERS Board of Trustees' Funding Policies and represent the continued stability of contribution rates for employers and members.

The Board of Trustees, management and staff continually strive to improve the financial position of the Systems through a prudent investment program and long-term strategic planning.

Requests for Information

This financial report is designed to provide the Board of Trustees, our members, and other users of our financial report with a general overview of the Systems' finances and to demonstrate the Systems' accountability for the money it receives. If you have any questions about this report or need additional financial information, contact the Public School and Education Employee Retirement Systems of Missouri (PSRS/PEERS), P.O. Box 268, Jefferson City, MO 65102.

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Public School Retirement System of Missouri
Public Education Employee Retirement System of Missouri
Statements of Fiduciary Net Position

as of June 30, 2020
with comparative totals for June 30, 2019

			Combined Totals	
	PSRS	PEERS	June 30, 2020	June 30, 2019
ASSETS				
Cash	$ 477,073,139	$ 65,055,037	$ 542,128,176	$ 334,797,286
Receivables				
Contributions	186,415,456	22,793,137	209,208,593	258,663,293
Accrued interest and dividends	80,164,310	10,082,650	90,246,960	99,963,264
Investment sales	2,079,124,234	260,773,218	2,339,897,452	2,060,201,722
Receivable from PEERS for allocated expenses	909,995	-	909,995	754,122
Other	4,939	2	4,941	30,033
Total receivables	2,346,618,934	293,649,007	2,640,267,941	2,419,612,434
Investments, at fair value				
U.S. Treasuries and TIPS	7,427,600,013	934,262,847	8,361,862,860	8,217,184,761
U.S. public equities	10,806,150,721	1,358,181,220	12,164,331,941	13,190,503,728
Non-U.S. public equities	6,106,269,068	767,758,495	6,874,027,563	7,270,096,566
Short term investments	847,870,071	108,604,370	956,474,441	431,747,383
Public debt	1,818,366,904	228,718,918	2,047,085,822	1,934,450,862
Private equity	5,203,924,420	654,620,637	5,858,545,057	5,159,620,661
Private credit	687,963,926	86,533,892	774,497,818	465,318,383
Private real estate	3,487,595,641	438,764,539	3,926,360,180	3,599,494,973
Hedged assets	3,871,363,162	486,571,900	4,357,935,062	5,277,066,528
Total investments	40,257,103,926	5,064,016,818	45,321,120,744	45,545,483,845
Invested securities lending collateral	115,258,679	14,497,536	129,756,215	258,087,676
Prepaid expenses	86,073	7,370	93,443	3,072,548
Capital assets, net of accumulated depreciation	27,430,262	-	27,430,262	22,128,631
Total assets	43,223,571,013	5,437,225,768	48,660,796,781	48,583,182,420
DEFERRED OUTFLOW OF RESOURCES				
Outflows related to other post employment benefit obligations	119,790	76,587	196,377	152,492
LIABILITIES				
Accounts payable	15,289,555	1,856,633	17,146,188	16,563,308
Interest payable	387,549	48,710	436,259	2,061,301
Securities lending collateral	115,220,794	14,492,771	129,713,565	258,074,683
Investment purchases	2,377,841,474	298,312,543	2,676,154,017	2,686,685,281
Payable to PSRS for allocated expenses	-	909,995	909,995	754,122
Accrued medical claims	33,550	21,450	55,000	96,000
Net other post employment benefit obligation	2,519,142	1,610,599	4,129,741	3,885,984
Compensated absences	1,930,222	1,100,704	3,030,926	2,620,573
Total liabilities	2,513,222,286	318,353,405	2,831,575,691	2,970,741,252
DEFERRED INFLOW OF RESOURCES				
Inflows related to other post employment benefit obligations	164,350	105,076	269,426	311,180
NET POSITION - RESTRICTED FOR PENSIONS	$ 40,710,304,167	$ 5,118,843,874	$ 45,829,148,041	$ 45,612,282,480

See accompanying Notes to the Financial Statements.

Public School Retirement System of Missouri
Public Education Employee Retirement System of Missouri
Statements of Changes in Fiduciary Net Position

for the year ended June 30, 2020
with comparative totals for the year ended June 30, 2019

	PSRS	PEERS	Combined Totals Year Ended June 30, 2020	Combined Totals Year Ended June 30, 2019
ADDITIONS				
Contributions				
Employer	$ 724,995,473	$ 124,544,728	$ 849,540,201	$ 832,587,142
Member	757,916,937	131,335,977	889,252,914	874,011,831
Total contributions	1,482,912,410	255,880,705	1,738,793,115	1,706,598,973
Investment income				
From investing activities:				
Net appreciation in fair value of investments	1,423,571,244	177,882,877	1,601,454,121	2,909,560,805
Interest from investments	219,245,591	27,362,065	246,607,656	253,322,972
Interest from bank deposits	155,218	19,561	174,779	370,042
Dividends	196,827,541	24,539,979	221,367,520	258,196,756
Total investment income	1,839,799,594	229,804,482	2,069,604,076	3,421,450,575
Less investment expenses	385,450,713	48,319,863	433,770,576	510,841,605
Net income from investing activities	1,454,348,881	181,484,619	1,635,833,500	2,910,608,970
From security lending activities:				
Security lending gross income	2,938,938	365,473	3,304,411	5,796,576
Net appreciation (depreciation) in fair value of security lending collateral	26,338	3,320	29,658	(2,541)
Less security lending activity expenses:				
Agent fees	569,124	71,586	640,710	962,280
Broker rebates paid (received)	(581,487)	(73,141)	(654,628)	(191,541)
Total security lending expenses	(12,363)	(1,555)	(13,918)	770,739
Net income from security lending activities	2,977,639	370,348	3,347,987	5,023,296
Total net investment income	1,457,326,520	181,854,967	1,639,181,487	2,915,632,266
Other income				
Miscellaneous income	191,770	70	191,840	6,529
Total other income	191,770	70	191,840	6,529
Total additions	2,940,430,700	437,735,742	3,378,166,442	4,622,237,768
DEDUCTIONS				
Monthly benefits	2,758,725,793	309,657,862	3,068,383,655	2,952,546,049
Refunds of contributions	54,506,317	20,679,832	75,186,149	67,969,852
Administrative expenses	10,653,233	7,077,068	17,730,301	18,697,059
Other expenses	55	721	776	53,028
Total deductions	2,823,885,398	337,415,483	3,161,300,881	3,039,265,988
Net increase in net position	116,545,302	100,320,259	216,865,561	1,582,971,780
NET POSITION - RESTRICTED FOR PENSIONS				
Beginning of year	40,593,758,865	5,018,523,615	45,612,282,480	44,029,310,700
End of year	$ 40,710,304,167	$ 5,118,843,874	$ 45,829,148,041	$ 45,612,282,480

See accompanying Notes to the Financial Statements.

Notes to the Financial Statements

Note 1 - Plan Descriptions

The Board of Trustees of the Public School Retirement System of Missouri administers two separate retirement systems, the Public School Retirement System of Missouri (PSRS) and the Public Education Employee Retirement System of Missouri (PEERS). The Board of Trustees consists of seven members, three of whom are elected PSRS active members, one elected active member of PEERS and three persons appointed by the governor, one of whom must be a retired member of either PSRS or PEERS.

The funds of the two Systems are managed simultaneously. Investments of the Systems are combined in a commingled investment pool as allowed by state statute. Each System owns an equity position in the pool and receives proportionate investment income from the pool in accordance with their respective ownership percentage. Each System's allocated share of each type of investment in the pool is shown on the Statements of Fiduciary Net Position. Investment gains and losses are reported in the Statements of Changes in Fiduciary Net Position. Each System's assets may be used only for the payment of benefits to the members of the separate System in accordance with the statutes governing that System as well as expenses required to administer the System.

The Public School Retirement System of Missouri (PSRS)

PSRS is a mandatory cost-sharing multiple employer retirement system for all full-time certificated employees and certain part-time certificated employees of all public school districts in Missouri (except the school districts of St. Louis and Kansas City) and all public community colleges. The System also includes certificated employees of PSRS, Missouri State Teachers' Association, Missouri State High School Activities Association, and certain employees of the state of Missouri who elected to remain covered by PSRS under legislation enacted in 1986, 1987 and 1989. The majority of PSRS members are exempt from Social Security contributions. In some instances, positions may be determined not to be exempt from Social Security contributions. Any PSRS member who is required to contribute to Social Security comes under the requirements of Section 169.070 (9) RSMo, known as the "2/3's statute." PSRS members required to contribute to Social Security are required to contribute two-thirds of the approved PSRS contribution rate and their employer is required to match the contribution. The members' benefits are further calculated at two-thirds the normal benefit amount.

PSRS was established as an independent trust fund by the Missouri General Assembly effective August 1, 1945. Statutes governing the System are found in Sections 169.010-169.141 and Sections 169.560-169.595 RSMo. It is a defined benefit plan providing service retirement, death and disability benefits to its members. Members are vested for service retirement benefits after accruing five years of service. Individuals who (a) are at least age 60 and have a minimum of five years of service, (b) have 30 years of service, or (c) qualify for benefits under the "Rule of 80" (service and age total at least 80) are entitled to a monthly benefit for life, which is calculated using a 2.5% benefit factor. Actuarially age-reduced benefits are available for members with five to 24.9 years of service at age 55 or with 25 years of service (if not yet age 55). Members who are younger than age 55 and who do not qualify under the "Rule of 80" but have between 25 and 29.9 years of service may retire with a lesser benefit factor. Members that are three years beyond normal retirement can elect to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time partial lump sum (PLSO) payment at retirement equal to 12, 24, or 36 times the Single Life benefit amount. Annual cost-of-living adjustments (COLAs) are provided for eligible service and disability retirees and for surviving beneficiaries receiving payments under optional benefit plans, up to a lifetime maximum of 80% of the original benefit amount.

For a more detailed summary of benefits for the members of PSRS, refer to the *Summary Plan Description* in the *Actuarial Section* of this report.

Contributions – PSRS members were required to contribute 14.5% of their annual covered salary during fiscal year 2020. Employers were required to match the contributions made by employees. The contribution rate is set each year by the PSRS/PEERS Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions set in Section 169.030 RSMo. The annual statutory increase in the total contribution rate may not exceed 1% of pay. Administrative costs are financed through investment earnings. Contributions for employees of the State of Missouri were made by the state in accordance with the actuarially determined contribution rate needed

to fund current costs and prior service costs of state employees as authorized in Section 104.342.8 RSMo.

Members – The number of PSRS members and benefit recipients served by the System at June 30, 2020:

Retirees and beneficiaries receiving benefits			64,595
Inactive members entitled to, but not yet receiving benefits			9,272
Active members:	Vested	61,016	
	Non-vested	17,832	
Total active members			78,848
Other inactive members and terminated accounts			9,147
Total			161,862

Employers – PSRS had 533 contributing employers during fiscal year 2020.

The Public Education Employee Retirement System of Missouri (PEERS)

PEERS is a mandatory cost-sharing multiple employer retirement system for all public school district employees (except the school districts of St. Louis and Kansas City), employees of the Missouri Association of School Administrators, and public community college employees (except the Community College of St. Louis). Employees of covered districts who work 20 or more hours per week on a regular basis and who are not contributing members of the Public School Retirement System of Missouri (PSRS) must contribute to PEERS. Employees of PSRS who do not hold Missouri educator certificates also contribute to PEERS.

PEERS was established as a trust fund by the Missouri General Assembly effective October 13, 1965. Statutes governing the System are found in Sections 169.600 - 169.715 and Sections 169.560-169.595 RSMo. The statutes place responsibility for the operation of PEERS on the Board of Trustees of the Public School Retirement System of Missouri.

PEERS is a defined benefit plan providing service retirement and disability benefits to its members. Members are vested for service retirement benefits after accruing five years of service. Individuals who (a) are at least age 60 and have a minimum of five years of service, (b) have 30 years of service, or (c) qualify for benefits under the "Rule of 80" (service and age total at least 80) are entitled to a monthly benefit for life, which is calculated using a 1.61% benefit factor. Members qualifying for "Rule of 80" or "30-and-out" are entitled to an additional temporary .8% benefit multiplier until reaching minimum Social Security age (currently age 62). Actuarially age-reduced retirement benefits are available with five years of service at age 55. Members who are younger than age 55 and who do not qualify under the "Rule of 80" but have between 25 and 29.9 years of service may retire with a lesser benefit factor. Members that are three years beyond normal retirement can elect to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time partial lump sum (PLSO) payment at retirement equal to 12, 24, or 36 times the Single Life benefit amount. Annual cost-of-living adjustments (COLAs) up to a lifetime maximum of 80% of the original benefit amount are provided for eligible service and disability retirees and for surviving beneficiaries receiving payments under optional benefit plans.

For a more detailed summary of benefits for the members of PEERS, refer to the *Summary Plan Description* in the *Actuarial Section* of this report.

Contributions – PEERS members were required to contribute 6.86% of their annual covered salary during fiscal year 2020. Employers were required to match the contributions made by their employees. The contribution rate is set each year by the PSRS/PEERS Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions in Section 169.620 RSMo. The annual statutory increase in the total contribution rate may not exceed 0.5% of pay. Administrative costs proportional to its membership size are reimbursed by PEERS to the Public School Retirement System of Missouri (PSRS) and are financed through investment earnings.

Members - The number of PEERS members and benefit recipients served by the System at June 30, 2020:

Retirees and beneficiaries receiving benefits			33,232
Inactive members entitled to, but not yet receiving benefits			6,867
Active members:	Vested	26,981	
	Non-vested	23,198	
Total active members			50,179
Other inactive members and terminated accounts			32,111
Total			122,389

Employers – PEERS had 530 contributing employers during fiscal year 2020.

Note 2 – Summary of Significant Accounting Policies

Basis of Accounting

For financial reporting purposes, the Systems adhere to accounting principles generally accepted in the United States of America. The Systems apply all applicable pronouncements of the Governmental Accounting Standards Board (GASB).

The Systems' financial statements, notes to the financial statements, and required supplementary information were prepared in conformity with GASB Statement No. 67, *Financial Reporting for Pension Plans*, as amended. GASB Statement No. 67 addresses accounting and financial reporting requirements for pension plans. Significant requirements include an actuarial calculation of total and net pension liability. It also includes comprehensive footnote disclosures regarding the pension liability, the sensitivity of the net pension liability to the discount rate and extensive investment activity disclosures. The total pension liability, determined in accordance with GASB Statement No. 67 is presented in Note 5 - *Net Pension Liability of Employers.*

The financial statements of both Systems were prepared using the accrual basis of accounting. For both Systems, member and employer contributions are recognized when due, pursuant to formal commitments and statutory requirements. Benefits and refunds are recognized when due and payable in accordance with the statutes governing the Systems. Expenses are recognized when the liability is incurred, regardless of when payment is made. Administrative expenses are funded through investment earnings.

Cash

Cash includes cash on hand and demand deposits, and short-term investments with original maturities of three months or less from the date of acquisition.

Receivables

Receivables consist primarily of contributions owed and yet to be remitted by employers, pending investment trades and interest and dividends payable to the Systems as of the end of each fiscal year.

Method Used to Value Investments

Investments are reported at fair value. The fair value of investments is based on published market prices and quotations from major investment brokers at current exchange rates, as available. Many factors are considered in arriving at fair value. Fixed income securities not traded on a national or international exchange are based on equivalent values of comparable securities with similar yield and risk.

The value of private equity, private credit and real estate investments that do not have an established market is determined based upon the most current net asset values and activities through year end. When values are not readily available, alternative investments are valued based on a good faith determination by the General Partner. The estimated fair value of these investments may differ significantly from values that would have been updated had a ready market existed. The estimated fair values can be significantly affected by the uncertainty and volatility the COVID-19 pandemic has had on financial markets. Consequently, fair value estimates in such instances may be subject to wide variations.

GASB Statement No. 72 addresses accounting and reporting issues related to fair value measurements. The Statement requires disclosures to be made about fair value measurements, the level of fair value hierarchy, and valuation techniques. Comprehensive footnote disclosure regarding this Statement is presented in Note 4 - *Deposits, Investments and Securities Lending Program.*

Capital Assets

The building and other capital assets are owned by PSRS and are stated at cost less depreciation accumulated since acquisition. The stated value does not purport to represent replacement or realized value. Costs of major additions and improvements are capitalized. Expenditures for maintenance and repairs are charged to operations as incurred. Depreciation is calculated using the straight-line method, with estimated lives ranging from three to 40 years in the following major classes: computers and software, three years; vehicles, five years; equipment, five years; building and land improvements, 15 years; pension administration system, 20 years; building, 40 years.

PSRS allocates depreciation expense to PEERS for the use of capital assets.

Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of net position restricted for pension benefits at June 30, 2020.

Actual results could differ from those estimates. The COVID-19 pandemic has created and may continue to create significant uncertainty in macroeconomic conditions. As a result, many of our estimates and assumptions required increased judgment and carry a higher degree of variability and volatility. As events continue to evolve and additional information becomes available, our actual results could significantly differ from those estimates in future periods.

Total Columns

The financial statements include total column information for the prior year. Such information does not include sufficient detail to constitute a presentation in conformity with U.S. generally accepted accounting principles. Accordingly, such information should be read in conjunction with both Systems' financial statements for the year ended June 30, 2019, from which the information was derived. Certain reclassifications have been made to the 2019 totals to conform with the classifications for 2020.

Note 3 – Designations of Net Position – Restricted for Pensions

The Systems designate the net position – restricted for pensions for the following specific purposes:

Public School Retirement System of Missouri

	2020
Designated for Members' Contributions (Member Reserves) – Accumulation of active and terminated member contributions plus interest.	$ 8,697,930,444
Designated for the Payment of Benefits to Present Retirees – Transfers from Member Reserves at retirement and an actuarially determined transfer from Operating Reserves to fund the System's obligation for benefit payments and cost-of-living adjustments to current retirees and beneficiary recipients.	30,515,563,219
Designated for Operating Expenses/Benefits to Future Retirees (Operating Reserves) – Accumulation of employer contributions and investment income used to fund future benefit payments, interest on member accounts and, administration and maintenance expenses of the System.	1,496,810,504
Net Position – Restricted For Pensions	$ 40,710,304,167

Public Education Employee Retirement System of Missouri

	2020
Designated for Members' Contributions (Member Reserves) – Accumulation of active and terminated member contributions plus interest.	$ 1,142,564,669
Designated for the Payment of Benefits to Present Retirees – Transfers from Member Reserves at retirement and an actuarially determined transfer from Operating Reserves to fund the System's obligation for benefit payments and cost-of-living adjustments to current retirees and beneficiary recipients.	3,071,099,312
Designated for Operating Expenses/Benefits to Future Retirees (Operating Reserves) – Accumulation of employer contributions and investment income used to fund future benefit payments, interest on member accounts and, administration and maintenance expenses of the System.	905,179,893
Net Position – Restricted For Pensions	$ 5,118,843,874

Note 4 – Deposits, Investments and Securities Lending Program

Custodial Credit Risk

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, the Systems will not be able to recover deposits or will not be able to recover collateral securities that are in the possession of an outside party. The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, the Systems would not be able to recover the value of investment or collateral securities that are in the possession of an outside party. To mitigate custodial credit risk, the Systems require that all deposits be 100% collateralized with securities held in the Systems' name and held by a third party agent.

Deposits

Cash balances include short-term securities and deposits held by the custodial bank and operating balances held by the depository banks.

At June 30, 2020, the PSRS carrying amount of deposits at the depository bank was $13,006,480 and the bank balance was $7,633,883. Of the bank balance, $250,000 was covered by federal depository insurance. In addition, the deposits were collateralized with U.S. agency securities held by a third-party institution in the System's name, totaling $34,681,405. An additional $5,679,926 was held in overnight repurchase agreements with a book value of $5,679,926. The overnight repurchase agreements were collateralized with U.S. agency securities held by a third-party institution in the System's name totaling $5,679,926.

At June 30, 2020, the PEERS carrying amount of deposits at the depository bank was $966,290 and the bank balance was $551,844. Of the bank balance, $250,000 was covered by federal depository insurance. In addition, the deposits were collateralized with U.S. agency securities held by a third-party institution in the System's name, totaling $10,318,788. An additional $624,453 was held in overnight repurchase agreements with a book value of $624,453. The overnight repurchase agreements were collateralized with U.S. agency securities held by a third-party institution in the System's name totaling $624,453.

Investment Policy and Asset Allocation

Funds for both Systems that are in excess of a safe operating balance are invested under policies and procedures established by the Board of Trustees. Chapter 169.040 RSMo as amended effective August 13, 1984, authorizes any investment which a prudent person acting in a like capacity and familiar with similar matters would use in the conduct of an enterprise of a like character and with like aims. Any person with fiduciary responsibility with respect to the Systems is covered by this "prudent person" rule.

The Board of Trustees of PSRS and PEERS approved the commingling of assets for purposes of investment as allowed by state statute. In order to implement this change, PSRS and PEERS adopted the Missouri Education Pension Trust Agreement. The Missouri Education Pension Trust (MEPT) is managed by the PSRS and PEERS Board of Trustees and Investment Staff. Effective July 1, 2013, the invested assets of the Systems were pooled and invested in MEPT. All assets held by MEPT are for the exclusive benefit of PSRS and PEERS. Each of the Systems has equity in MEPT based on funds contributed and earnings allocated. Earnings of MEPT are allocated based on the average daily balances of each of the respective Systems. Individual investments in MEPT are not specifically identified to the respective Systems. For financial statement presentation, MEPT assets, liabilities, revenues, and expenses have been allocated to and presented in each respective system in the basic financial statements as required by investment pools. Due to the fact all invested assets are invested in MEPT, the rate of return for each of the Systems is approximately the same.

The Systems' policy in regard to the allocation of invested assets is established and may be amended by the Board of Trustees. System assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided by the Systems. The Board of Trustees approved the use of total plan leverage in fiscal year 2020. Leverage may be utilized (through futures, swaps, or other derivative instruments) to efficiently implement portfolio rebalancing and/or to apply modest leverage to total plan assets. The total direct leverage at the fund level shall not exceed 10% of the portfolio.

Based on the results of the 2020 asset allocation/liability study, the Board of Trustees amended the following long-term asset allocation targets: Public Risk Assets decreased 10% and Private Risk Assets increased 10%. Within Public Risk Assets, U.S. Equity decreased from 27% to 23%, Public Credit decreased from 7% to 0% and Non-U.S. Equity increased from 15% to 16%.

Within Private Risk Assets, Private Equity increased from 12% to 16%, Real Estate increased from 9% to 11% and Private Credit increased from 4% to 8%. Within Safe Assets, U.S. Treasuries increased from 16% to 20% while U.S. TIPS decreased from 4% to 0%.

Implementation of the amended long-term targets will be achieved over a number of years through a disciplined investment approach. The policy benchmarks will change over time as the Systems make meaningful progress towards the new long-term targets. The following table illustrates the Systems' Board of Trustees approved asset allocation as of June 30, 2020.

Investment Type	Long-term Target	Policy Ranges
Public Risk Asset Programs		
U.S. Public Equity	23.0%	15% - 45%
Public Credit	0.0%	0% - 15%
Hedged Assets	6.0%	0% - 25%
Non-U.S. Public Equity	16.0%	8% - 28%
Total Public Risk Assets	**45.0%**	**35% - 70%**
Safe Assets		
U.S. Treasuries	20.0%	0% - 40%
U.S. TIPS	0.0%	0% - 30%
Cash Equivalents	0.0%	0% - 10%
Total Safe Assets	**20.0%**	**10% - 40%**
Private Risk Asset Programs		
Private Equity	16.0%	4% - 22%
Private Real Estate	11.0%	4% - 15%
Private Credit	8.0%	0% - 12%
Total Private Risk Assets	**35.0%**	**10% - 45%**
Total Fund	**100.0%**	

The Systems categorize their fair value measurements within the fair value hierarchy established by U.S. generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest priority to unobservable inputs (level 3 measurements). The Systems have classified the fair value measurements on the following page in accordance with the Board approved asset allocation discussed above. The classifications will not directly reconcile to total investments per the Statements of Fiduciary Net Position due to the considerations of cash holdings, other liabilities and accruals.

Level 1 - Unadjusted quoted prices for identical instruments in active markets.

Level 2 - Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.

Level 3 - Valuations derived from valuation techniques in which significant inputs are unobservable.

Investments that are measured at fair value using the net asset value (NAV) per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

In instances where inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation. The Systems' assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset or liability. The tables on the following page show the fair value leveling of the investments for the Systems.

Short-term securities generally include investments in money market-type securities reported at cost which approximates market or fair value.

Equities within all assets classes that are classified in Level 1 are valued using prices quoted in active markets for those securities. Equity and equity derivative securities classified in Level 2 are securities whose values are derived daily from associated traded securities. Equity securities classified in Level 3 are valued with last trade data having limited trading volume.

Fixed income securities and derivatives within all assets classes that are classified in Level 2 are valued using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features and ratings. Matrix pricing is used to value securities based on the securities relationship to benchmark quoted prices. Such securities include U.S. Treasuries, corporate and agency bonds, bank loans, and mortgage backed securities. Level 2 fixed income securities have non-proprietary information that was readily available to market participants, from multiple independent sources, which are known to be actively involved in the market.

Investments and Derivatives Measured at Fair Value

Investments by fair value level	Total at 6/30/2020	Fair Value Measurements Level 1	Level 2	Level 3
U.S. Treasuries and TIPS				
U.S. Treasuries	$ 8,361,862,859	$ -	$ 8,361,862,859	$ -
Total U.S. Treasuries and TIPS	8,361,862,859	-	8,361,862,859	-
U.S. public equities				
Equities	5,374,423,530	5,374,423,530	-	-
U.S. Treasuries	175,793,755	-	175,793,755	-
Total U.S. public equities	5,550,217,285	5,374,423,530	175,793,755	-
Non-U.S. public equities				
Equities	4,668,637,133	4,666,509,150	-	2,127,983
Total Non-U.S. public equities	4,668,637,133	4,666,509,150	-	2,127,983
Short term investments				
Short term investment fund	1,417,278,713	-	1,417,278,713	-
Total Short term investments	1,417,278,713	-	1,417,278,713	-
Public debt				
Corporate Bonds	1,987,328,228	-	1,987,328,228	-
Bank Loans	547,335	-	547,335	-
U.S. Treasuries	55,315,759	-	55,315,759	-
Equities	129,072	25,842	-	103,230
Municipal Bonds	7,794,081	-	7,794,081	-
Total Public Debt	2,051,114,475	25,842	2,050,985,403	103,230
Hedged assets				
U.S. Treasuries	416,898,496	-	416,898,496	-
Equities	192,276,409	192,276,409	-	-
Corporate Bonds	105,753,228	-	105,753,228	-
Agency Bonds	10,972,975	-	10,972,975	-
Total Hedged assets	725,901,108	192,276,409	533,624,699	-
Private equity				
Equities	900,894	900,894	-	-
Total Private equity	900,894	900,894	-	-
Total investments by fair value level	**$ 22,775,912,467**	**$ 10,234,135,825**	**$12,539,545,429**	**$ 2,231,213**
Total investments measured at the NAV ***(See detailed schedule on the following page)***	22,578,657,472			
Total Investments measured at fair value	**$ 45,354,569,939**			

Investment derivative instruments:	6/30/2020	Level 1	Level 2	Level 3
Equity total return swaps	$ 5,037,220	$ -	$ 5,037,220	$ -
Interest rate swaps	(2,818,540)	-	(2,818,540)	-
Foreign currency forwards	6,792,381	-	6,792,381	-
Total investment derivative instruments	**$ 9,011,061**	**$ -**	**$ 9,011,061**	**$ -**

	6/30/2020	Level 1	Level 2	Level 3
Total invested securities lending collateral	**$ 129,756,216**	**$ -**	**$ 129,756,216**	**$ -**

Investments Measured at the NAV	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Public Equity Investments				
Passive U.S. Equity Funds	$ 4,560,045,716	$ -	Daily	1 day
Active U.S. Equity Funds	286,012,428	-	Quarterly	45 days
Passive Non-U.S. Equity Fund	342,138,914	-	Daily	2 days
Active Non-U.S. Equity Funds	1,822,101,826	-	Monthly	15 - 30 days
Total Public Equity Investments	7,010,298,884	-		
Hedge Fund Investments				
Asset Allocation/Global Macro	524,919,697	-	Monthly	5 days
Distressed Debt/Credit	681,991,547	-	Quarterly, semi-annual	65 - 90 days
Diversified Beta	240,787,566	-	Quarterly	30 days
Equity Focused	1,482,121,937	-	Monthly, quarterly	5 - 60 days
Multi-Strategy	2,080,035,681	-	Monthly, quarterly	15 - 120 days
Total Hedge Investments	5,009,856,428	-		
Private Risk Investments				
Private Equity	5,857,644,161	4,021,110,289	Not eligible	N/A
Private Credit	774,497,818	1,907,307,362	Not eligible	N/A
Private Real Estate - closed end funds	1,054,996,037	1,183,184,810	Not eligible	N/A
Private Real Estate - open end funds	2,871,364,144	-	Quarterly	15 - 180 days
Total Private Risk Investments	10,558,502,160	7,111,602,461		
Total investments measured at the NAV	$ 22,578,657,472	$ 7,111,602,461		

The fair values of investments in certain public equity, hedged assets, and private risk assets are based on the investments' net asset value (NAV) per share (or its equivalent) and are presented in the above table. Investments that are measured at fair value using the net asset value (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

Public Equity Investments

The public equity investments include two passive U.S. equity funds, one active U.S. equity funds, two passive non-U.S. equity funds and four active non-U.S. equity funds. The passive equity funds provide for basic market exposure with daily liquidity. The active U.S. equity funds provide active industry specific strategies within U.S. markets while the active non-U.S. equity funds provide active investment strategies in the global equity and emerging markets.

Hedged Assets

The hedged assets investment strategy provides diversification and reduced volatility to the total portfolio. The purpose of this program is to enhance the overall risk/return profile through the inclusion of specialized investment strategies that typically generate returns in a different fashion (i.e., absent a high correlation to equities or bonds).

Asset Allocation/Global Macro includes an investment in a fund with the strategy of taking long and short positions based on top-down macroeconomic analysis (i.e., interest rates, foreign exchange rates, and commodity prices). Global strategies involve long and short positions in securities of diverse geographical regions such as developed and emerging markets.

Distressed Debt/Credit includes investments in two funds which seek returns by capitalizing on opportunities in financially distressed companies' debt and credit securities.

Diversified Beta includes investments in three funds with a risk parity approach which focuses on the allocation of risk across the portfolio.

Equity Focused includes investments in seven funds with the strategy of taking long positions in attractive equity securities and potentially short positions in unattractive equity securities.

Multi-Strategy includes investments in nine funds which represent a broad style of investing that seeks diverse sources of alpha generation and positive absolute returns by employing a variety of investment strategies. Strategies utilized may include, but are not limited to, convertible bond arbitrage, equity long/short, statistical arbitrage, and merger arbitrage.

Private Risk Assets

Private risk investments are typically very long term in nature, not publicly traded and relatively illiquid. Investments are made in limited partnerships where redemptions are restricted over the life of the partnership. During the life of the partnerships, distributions are received as underlying portfolio investments are realized.

Private Equity investments provide financing for start-up companies, private middle market companies, firms in financial distress and public and non-public firms seeking buyout financing. Private equity investments can be classified into three basic sub-asset class categories: Venture Capital, Buyouts, and Debt-Related.

Private Credit investments are comprised primarily of debt-related investments that provide a current yield along with equity participation (usually warrants). Primary strategies are distressed debt, bankruptcy restructurings, mezzanine debt, bank loans, and other credit-drive or debt-related strategies.

Real Estate investments are intended to provide exposure to a diversified portfolio of institutional quality private real estate investments that will provide meaningful, consistent returns, and act as a hedge against inflation and a diversifier to the overall investment portfolio. The real estate portfolio includes closed-end funds where distributions from each investment will be received as the underlying investments are liquidated and open-end funds which offer redemption options.

Rate of Return

For the year ended June 30, 2020, the money-weighted rate of return, net of all investment expenses and fees, was 3.7%. The money weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. Time weighted returns (geometric return) for the year ended June 30, 2020 net of all investment expenses and fees, was also 3.7%.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the Systems' investment in a single issue. To mitigate this risk, the Systems' investment policy prohibits investing more than 5% of the total investment portfolio into any single financial institution or issuer, excluding U.S. government securities. At June 30, 2020, the Systems did not have more than 5% of total investments in a single issue except for U.S. government securities.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The Systems' investment policy restricts duration as a means of managing its exposure to fair value losses arising from increased interest rates. In addition, each manager must follow guidelines established relative to the duration of its benchmark. The portfolios are continually monitored to ensure compliance with these guidelines. The following table includes collateral pledged for securities lending collateral. The maturities of all debt securities are presented below:

Security Type	Fair Value at June 30, 2020	< 1 year to maturity	1 to 5 years to maturity	6 to 10 years to maturity	Over 10 years to maturity
U.S. treasuries	$ 9,028,768,367	$ 1,208,422,250	$ 3,797,233,773	$ 2,266,714,131	$ 1,756,398,213
Agencies	12,072,927	1,099,952	4,999,372	-	5,973,603
Corporate bonds	2,093,628,785	55,080,606	827,105,525	835,687,969	375,754,685
Repurchase agreements	53,725,818	53,725,818	-	-	-
Certificate of deposit	56,032,948	56,032,948	-	-	-
Derivatives	(3,038,973)	(220,433)	-	-	(2,818,540)
Municipals	7,794,080	-	7,794,080	-	-
Bank deposits	1,417,278,713	1,417,278,713	-	-	-
Commingled Funds (see note)					
Bridgewater STIF II	6,951,030	6,951,030	-	-	-
Bridgewater US IL Bond Fund	3,555,170	-	-	3,555,170	-
Bridgewater International Bond Fund	4,382,693	-	-	-	4,382,693
Currency	18,402,334	18,402,334	-	-	-
Total	$12,699,553,892	$ 2,816,773,218	$ 4,637,132,750	$ 3,105,957,270	$ 2,139,690,654
Percentage of Total Fixed Income	**100%**	**21%**	**37%**	**25%**	**17%**

Note: Commingled Funds are presented at the weighted average maturity. These funds do not have a single maturity date; however, the underlying securities have maturity dates. To more accurately reflect the interest rate risk of the Systems, these weighted averages are displayed.

The following table includes the debt maturities for the Systems' deposits and repurchase agreements collateral.

Security Type	Fair Value at June 30, 2020	< 1 year to maturity	1 to 5 years to maturity	6 to 10 years to maturity	Over 10 years to maturity
PSRS - Agencies	$ 40,361,330	$ -	$ 1,277,676	$ 10,093,693	$ 28,989,961
PEERS - Agencies	$ 10,943,241	$ -	$ 5,431,566	$ 2,554,084	$ 2,957,591

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Systems do not have a single investment policy designating the minimum allowable credit rating; however, each manager must follow guidelines established specifically for its managed portfolio. The portfolios are continually monitored to ensure compliance with these guidelines. The following table includes collateral pledged for securities lending collateral. The Systems' debt investments by credit rating category as of June 30, 2020 are presented in the following table.

Security Type	Fair Value at June 30, 2020	%	FDIC Insured	AAA	AA	A	BBB	BB	B	CCC	Not Rated
U.S. treasuries	$ 9,028,768,367	71%	$ -	$ 9,028,768,367	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Agencies	12,072,927	0%	-	12,072,927	-	-	-	-	-	-	-
Corporate bonds	2,093,628,785	17%	-	74,765,767	36,798,211	838,275,618	1,008,893,761	78,996,085	38,830,877	4,866,362	12,202,104
Repurchase agreements	53,725,818	0%	-	-	-	53,725,818	-	-	-	-	-
Certificates of deposit	56,032,948	1%	-	9,999,200	-	46,033,748	-	-	-	-	-
Derivatives	(3,038,973)	0%	-	-	-	-	-	-	-	-	(3,038,973)
Municipals	7,794,080	0%	-	7,326,590	467,490	-	-	-	-	-	-
Bank Deposits	1,417,278,713	11%	1,417,278,713	-	-	-	-	-	-	-	-
Commingled Funds (see note)											
Bridgewater STIF II	6,951,030	0%	-	6,951,030	-	-	-	-	-	-	-
Bridgewater US IL Bond Fund	3,555,170	0%	-	3,555,170	-	-	-	-	-	-	-
Bridgewater International Bond Fund	4,382,693	0%	-	4,382,693	-	-	-	-	-	-	-
Currency	18,402,334	0%	-	-	-	-	-	-	-	-	18,402,334
Total	$ 12,699,553,892	100%	$ 1,417,278,713	$ 9,147,821,744	$37,265,701	$ 938,035,184	$1,008,893,761	$ 78,996,085	$ 38,830,877	$ 4,866,362	$27,565,465
Percentage of Total Fixed Income	100.00%		11%	72%	0%	8%	8%	1%	0%	0%	0%

Note: Commingled Funds are presented at the weighted average credit quality. These funds do not carry a rating in and of themselves; however, the underlying securities are all rated. To more accurately reflect the credit risk of the Systems, these weighted averages are displayed. Obligations of the U.S. government or obligations explicitly guaranteed by the U.S. government are not required to be disclosed; however, we feel it shows a more true picture of our fixed income holdings.

All collateral pledged in support of the Systems' deposits and repurchase agreements was held in agency securities with a quality rating of AAA.

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 Systems do not have a single investment policy designating the allowable exposure to foreign currency; however, each manager must follow guidelines established specifically for its managed portfolio. The portfolios are continually monitored to ensure compliance with these guidelines. The Systems' exposure to foreign currency risk as of June 30, 2020 is presented in the following table.

Currency	Equity	Currency/Short Term	Total
Australian Dollar	$ 64,715,472	$ 566,859	$ 65,282,331
Brazilian Real	52,779,443	302,185	53,081,628
Canadian Dollar	134,679,736	(2,034,717)	132,645,019
Chilean Peso	5,198,347	1,778,398	6,976,745
Colombian Peso	1,180,691	(278,065)	902,626
Czech Koruna	8,677,323	188,632	8,865,955
Danish Krone	64,143,630	181,915	64,325,545
Egyptian Pound	11,142,034	270,172	11,412,206
Euro Currency	1,206,476,226	21,475,650	1,227,951,876
Hong Kong Dollar	329,552,208	(4,931,108)	324,621,100
Hungarian Forint	7,246,797	85,962	7,332,759
Indian Rupee	98,964,964	378,049	99,343,013
Indonesian Rupiah	5,710,124	(774,109)	4,936,015
Israeli Shekel	9,027,262	94,075	9,121,337
Japanese Yen	501,139,828	2,813,331	503,953,159
Malaysian Ringgit	17,870,762	157,036	18,027,798
Mexican Peso	8,055,333	(111,616)	7,943,717
New Taiwan Dollar	91,490,505	503,730	91,994,235
New Turkish Lira	22,289,358	27,880	22,317,238
New Zealand Dollar	6,406,374	721,059	7,127,433
Norwegian Krone	9,560,792	(349,989)	9,210,803
Pakistan Rupee	132,619	3,520	136,139
Peruvian Nuevo Sol	155,743	-	155,743
Philippine Peso	10,400,213	306,414	10,706,627
Polish Zloty	7,945,231	(21,760)	7,923,471
Pound Sterling	285,232,734	33,983	285,266,717
Qatari Rial	14,342,592	39,562	14,382,154
Russian Ruble	74,977,654	2,795,991	77,773,645
Saudi Riyal	-	726	726
Singapore Dollar	26,206,772	258,641	26,465,413
South African Rand	44,198,810	3,097,221	47,296,031
South Korean Won	123,201,224	644,191	123,845,415
Swedish Krona	54,053,577	(390,198)	53,663,379
Swiss Franc	332,347,695	391,334	332,739,029
Thailand Baht	27,421,206	98,816	27,520,022
UAE Dirham	5,902,512	11,319	5,913,831
United Kingdom Pound	9,380,337	273,880	9,654,217
Yuan Renminbi	65,942,308	807,799	66,750,107
Total	**$ 3,738,148,436**	**$ 29,416,768**	**$ 3,767,565,204**

Derivatives

Derivatives are generally defined as investment instruments whose cash flows or fair values are derived from the value of some other asset or index. The Systems are parties to derivatives which have off-balance sheet risk. These derivative instruments are used in the normal course of business to generate earnings and reduce exposure to fluctuations in market conditions. The Systems are exposed to various types of credit, market, and legal risk related to these investments. Investment staff monitors these types of investments with extreme care and is not aware of any undue risks at this time. All derivatives are considered investments. Derivatives are reported at fair value on the Statements of Fiduciary Net Position based on quoted market prices when available. In the instances that quoted market prices are unavailable, pricing is obtained via independent pricing sources.

The fair value balances and notional amounts of derivative instruments outstanding as of June 30, 2020, classified by type are as follows:

	Fair Value at June 30, 2020		
Investment Derivatives	**Classification**	**Amount**	**Notional**
Swaps			
Pay-fixed interest rate swaps	Investments, at fair value	$ (2,818,540)	$ 10,000,000
Total return swaps - equity	Investments, at fair value	5,037,220	1,347,550,924
Total swaps		**2,218,680**	**1,357,550,924**
Futures			
Equity futures long	Investments, at fair value	-	74,249,715
Equity futures short	Investments, at fair value	-	32,799,227
Interest rate futures short	Investments, at fair value	-	79,229,719
Commodity futures long	Investments, at fair value	-	6,671,800
Total futures		**-**	**192,950,461**
Foreign currency forwards net receivable/payable	Investment Sales and Purchases	6,792,381	-
Total Investment Derivatives		**$ 9,011,061**	**$ 1,550,501,385**

Swaps - The Systems' investment managers may enter into various swaps including interest rate swaps, credit default swaps, currency swaps and equity and total return swaps. Swaps represent an agreement between two parties to exchange sequences of cash flows over a period in the future. In the most common type of interest rate swap arrangement, one party agrees to pay fixed interest payments on designated dates to a counterparty who, in turn, agrees to make return interest payments that float with some reference rate. A credit default swap is a contract whereby the credit risk associated with an investment is transferred by entering into an agreement with another party, who in exchange for periodic fees, agrees to make payments in the event of a default or other predetermined credit event. A currency swap is a foreign exchange transaction that involves trading principal and interest in one currency for the same in another currency. A total return swap is a contract in which one party makes payments based on a set rate, either fixed or variable, while the other party makes payments based on the return of the underlying asset. The underlying asset is typically an index, bond, etc. Gains and losses on swaps are determined based on market values and are recorded in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. Net gains on swaps of $80.8 million were recognized for the fiscal year ended June 30, 2020.

Futures - Futures represent commitments to purchase (asset) or sell (liability) securities at a future date and at a specified price. Futures contracts are traded on organized exchanges (exchange traded) thereby minimizing the Systems' credit risk. The net change in the value of futures contracts is settled daily in cash with the exchanges. Net gains or losses resulting from the daily settlements are included in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. The Systems recognized net gains on futures contracts of $69.4 million during the fiscal year ended June 30, 2020.

Options - Options represent or give buyers the right, but not the obligation, to buy (call) or sell (put) an asset at a preset price over a specified period. The option's price is usually a small percentage of the underlying asset's value. As a writer of financial options, the Systems' investment managers receive a premium at the outset of the agreement and bear the risk of an unfavorable change in the price of the financial instrument underlying the option. As a purchaser of financial options, the Systems' investment managers pay a premium at the outset of the agreement and the counterparty bears the risk of an unfavorable change in the price of the financial instrument underlying the option. Net gains or losses resulting from such obligations are included in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. The Systems had no option activity during the fiscal year ended June 30, 2020.

Currency forwards - Currency forwards represent forward foreign exchange contracts that are entered into in order to hedge the exposure to changes in foreign currency rate on the foreign currency dominated portfolio holdings. A forward foreign exchange contract is a commitment to purchase or sell a foreign currency at a future date at a negotiated forward rate. The gain or loss arising from the difference between the original contracts and the closing of such contracts is included in net appreciation (depreciation) in fair value of investments on the Systems' Statements of Changes in Fiduciary Net Position. The Systems recognized net gains on such contracts of $48.5 million during the fiscal year ended June 30, 2020.

Derivative Risk - Derivatives that are exchange traded are not subject to credit risk. No derivatives held are subject to custodial credit risk.

At June 30, 2020 the counterparties' credit ratings for currency forwards, options and swaps are subject to credit risk as shown below:

The Systems are exposed to interest rate risk on their interest rate swaps. As the variable portion of the swaps move in the market, the Systems' exposure increases and decreases. The Systems are exposed to termination risk. The Systems' investment managers or their counterparties may terminate a derivative if either party fails to perform under the terms of the contract.

The Systems' derivatives are governed by ISDA Master Agreements between the Systems and the Counterparties. These agreements set forth collateral requirements and applicable netting arrangements. Foreign currency risks are reflected on page 41.

The Systems could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. The Systems' investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, and exposure monitoring procedures. The Systems anticipate that the counterparties will be able to satisfy their obligations under the contracts.

The derivative financial instruments discussed involve, to varying degrees, elements of market risk to the extent of future market movements in excess of the amounts recognized in the Statements of Fiduciary Net Position. Market risk arises from the potential unfavorable change in the value of the underlying instruments. The contract or notional amounts of these instruments reflect the extent of the Systems' involvement in each class of financial instrument; however, these amounts do not represent the exposure to market loss. Additional derivatives may be held in limited partnerships and commingled funds that are not reflected below.

Derivative Counterparty Credit Ratings

Quality Rating	Swaps	Forwards	Total
AA	$ -	$ 547,951	$ 547,951
A	1,962,246	6,244,430	8,206,676
Total subject to credit risk	**$ 1,962,246**	**$ 6,792,381**	**$ 8,754,627**

Security Lending Activity

Under the "prudent person" authority of the governing statutes and in accordance with the policies set by the Board of Trustees, the Systems lend securities to broker-dealers and banks pursuant to a form of loan agreement. The Systems' custodial bank is authorized to act as the Systems' agent to lend available securities to approved broker-dealers and banks subject to the receipt of acceptable collateral.

During the fiscal year, the Systems' custodial bank lent, on behalf of the Systems, securities to participating broker-dealers. The broker-dealers must provide collateral in the form of cash. The Systems did not impose restrictions during the fiscal year on the amount of loans that the custodial bank made on their behalf. Borrowers were required to deliver collateral for each loan equal to: (1) in the case of loaned securities denominated in U.S. dollars or whose primary trading market was located in the United States, or sovereign debt issued by foreign governments, 102% of the fair value of the loaned securities and (2) in the case of loaned securities not denominated in U.S. dollars or whose primary trading market was not located in the United States, 105% of the fair value of the loaned securities.

Pursuant to the lending agreement, the custodial bank has an obligation to provide a form of indemnification to the Systems in the event of default by a borrower. There were no violations of the contractual provisions nor were there any borrower or lending agent default losses during the fiscal year.

The fair value of securities on loan as of June 30, 2020 was $125,864,545. On June 30, 2020 the Systems had no credit risk exposure to borrowers as the cash and securities collateral amounts received exceeded amounts on loan. Loans are generally terminable on demand. However, with the prior approval of the Systems, loans may be made on the basis of a specified termination date, with or without providing for the right of the Systems to terminate or substitute equivalent securities. As of June 30, 2020, there were no term loans.

Cash collateral is invested in separately managed accounts in accordance with the investment guidelines approved by the Systems. The primary investment objective is the preservation of principal. As of June 30, 2020, the cost basis of the invested cash collateral totaled $129,713,565 and the estimated fair value totaled $129,756,215.

The Systems' recognized net appreciation of $29,658 for the year ended June 30, 2020 on the invested collateral account. Such is reported as net appreciation (depreciation) in fair value of security lending collateral on the Statements of Changes in Fiduciary Net Position.

The weighted average duration of invested collateral as of June 30, 2020 was 20 days and an average final maturity of approximately 37 days. Because the loans were terminable at will, their duration did not match the duration of the investments made with cash collateral.

Note 5 – Net Pension Liability of Employers

The components of the net pension liability of the Systems' employers at June 30, 2020 are as follows:

	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position-Restricted for Pensions (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	Employers' NPL as a % of Covered Payroll ((b-a)/c)
PSRS	$ 49,641,020,407	$ 40,710,304,167	$ 8,930,716,240	82.0%	$ 4,919,286,103	181.5%
PEERS	$ 6,089,401,204	$ 5,118,843,874	$ 970,557,330	84.1%	$ 1,732,243,294	56.0%

Actuarial Assumptions -Actuarial valuations of the Systems involve estimates of the reported amount and assumptions about probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality and future salary increases. Amounts determined regarding the net pension liability are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The Board of Trustees adopts actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience for the Systems, derived from experience studies conducted every fifth year. The most recent comprehensive experience studies were completed in June 2016. All economic and demographic assumptions were reviewed and updated, where appropriate, based on the results of the study and effective with the June 30, 2016 valuation. The next experience studies are scheduled for fiscal year 2021. For the June 30, 2018 valuations, the investment rate of return was reduced from 7.6% to 7.5% and was updated in accordance with the funding policies amended by the Board of Trustees at their October 2018 meeting. No additional assumption changes have occurred.

The Schedules of Employer's Net Pension Liability presents multi-year trend information about whether the plan net positions are increasing or decreasing over time relative to the total pension liability. These schedules are presented in the required supplementary information following the notes to the financial statements. The total pension liability was determined by an actuarial valuation as of June 30, 2020. A summary of the significant actuarial assumptions as of June 30, 2020 are shown on the following page.

Measurement Date	**June 30, 2020**
Valuation Date	**June 30, 2020**
Actuarial Cost Method	Entry Age Normal
Investment Rate of Return	7.50%
Inflation	2.25%
Total Payroll Growth	
PSRS	2.75% per annum, consisting of 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pensionable earnings, and 0.25% of real wage growth.
PEERS	3.25% per annum, consisting of 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pensionable earnings, and 0.50% of real wage growth.
Individual Salary Growth	
PSRS	3.00% - 9.50%, depending on service and including 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pension earnings, 0.25% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.25% to 6.75%.
PEERS	4.00% - 11.00%, depending on service and including 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pension earnings, 0.50% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.75% to 7.75%.
Cost-of-Living Increases	
PSRS	1.65% compounded annually, beginning on the second January after retirement and capped at 80% lifetime increase. The assumption increases from 1.35% to 1.65% over six years.
PEERS	1.65% compounded annually, beginning on the fourth January after retirement and capped at 80% lifetime increase. The assumption increases from 1.35% to 1.65% over six years.
Mortality Assumption	
Actives	
PSRS	RP 2006 White Collar Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.
PEERS	RP 2006 Total Dataset Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.
Non-Disabled Retirees, Beneficiaries and Survivors:	RP 2006 White Collar Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

PSRS

Age	Males	Females
<60	1.00	1.00
60-74	0.89	0.67
75-89	1.05	0.91
>=90	1.05	1.16

PEERS

RP 2006 Total Dataset Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

Age	Males	Females
<60	1.00	1.00
60-74	1.49	0.77
75-89	1.27	1.03
>=90	1.16	1.04

Disabled Retirees RP 2006 Disabled Retiree Mortality Table, with static projections using the 2014 SSA Improvement Scale to 2028.

Sensitivity of Net Pension Liability

The sensitivity of the net pension liability of employers to changes in the discount rate is presented below. The net pension liability of employers calculated using the discount rate of 7.5% is presented as well as what the employers' net pension liability would be using a discount rate that is 1.0% lower (6.5%) or 1.0% higher (8.5%) than the current rate.

		1% Decrease (6.5%)	Current Rate (7.5%)	1% Increase (8.5%)
PSRS	Net Pension Liability	$ 15,154,947,371	$ 8,930,716,240	$ 3,754,469,990
PEERS	Net Pension Liability	$ 1,710,402,567	$ 970,557,330	$ 349,781,807

Long-Term Expected Rate of Return

The long-term expected rate of return on investments was determined in accordance with Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations.* ASOP No. 27 provides guidance on the selection of an appropriate assumed rate of return. The long-term expected rate of return on the Systems' investments was determined using a building-block method in which best-estimate ranges of expected future real rates of returns (expected returns, net of investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return and the assumed asset allocation for each major asset class as of June 30, 2020 are summarized below.

Asset Class	Target Asset Allocation	Long-Term Expected Real Return Arithmetic Basis
U.S. Public Equity	23.0 %	4.81 %
Public Credit	0.0 %	0.80 %
Hedged Assets	6.0 %	2.39 %
Non-U.S. Public Equity	16.0 %	6.88 %
U.S. Treasuries	20.0 %	-0.02 %
U.S. TIPS	0.0 %	0.29 %
Private Credit	8.0 %	5.61 %
Private Equity	16.0 %	10.90 %
Private Real Estate	11.0 %	7.47 %

The long-term expected rate of return used to measure the total pension liability was 7.5% as of June 30, 2020 and is consistent with the long-term expected geometric return on plan investments. The actuarial assumed rate of return was 8.0% from 1980 through fiscal year 2016. The Board of Trustees adopted a new actuarial assumed rate of return of 7.75% effective with the June 30, 2016 valuation based on the actuarial experience studies and asset-liability study conducted during the 2016 fiscal year. The Board of Trustees further reduced the assumed rate of return to 7.6% effective with the June 30, 2017 valuation and then again with the June 30, 2018 valuation to 7.5%. The projection of cash flows used to determine the discount rate assumed that employer contributions would be made at the actuarially calculated rate computed in accordance with assumptions and methods stated in the funding policy adopted by the Board of Trustees, which requires payment of the normal cost and amortization of the unfunded actuarially accrued liability in level percent of employee payroll installments over 30 years utilizing a closed period, layered approach. Based on this assumption, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

Note 6 – Retirement Plans

Section 401(a) Defined Benefit Plan

All full-time System employees holding valid Missouri educator certificates are covered by PSRS. All other eligible employees are members of PEERS. Both Systems provide retirement and disability benefits, annual cost-of-living adjustments and death benefits to plan members and beneficiaries. Chapter 169 RSMo contains the statutory provisions of both Systems.

PSRS members were required to contribute 14.5% of their annual covered salary during fiscal years 2020, 2019 and 2018. PSRS, as the employer, was required to match that amount. The contribution rate is set each year by the Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions set in Section 169.030 RSMo. Employer contributions to PSRS totaled $94,103 for the 2020 fiscal year, $84,515 for the 2019 fiscal year and $67,424 for the 2018 fiscal year. The amounts for these years are equal to the required contributions. PEERS members were required to contribute 6.86% of their annual covered salary during fiscal years 2020, 2019 and 2018. PSRS, as the employer, was required to match that amount. The contribution rate is set each year by the Board of Trustees upon the recommendation of the independent actuary within the contribution restrictions in Section 169.620 RSMo. Employer contributions to PEERS totaled $829,231 for the 2020 fiscal year, $794,871 for the 2019 fiscal year and $756,101 for the 2018 fiscal year. The amounts for these years are equal to the required contributions.

PSRS and PEERS, as the administrators for the defined pension plans, are also participating employers of the Systems. The administrative expenses of the Systems are included in the deductions to the Systems' fiduciary net position. While the employer contributions of the other participating employers are funded from outside revenue sources, the employer contributions of PSRS and PEERS are funded from sources already recognized as revenues - earnings on plan investments. Attempting to allocate a portion of the net pension liability to PSRS and PEERS would result in an allocation of the net pension liability to the other participating employers.

Accordingly, PSRS and PEERS will exclude its contributions from the employer proportionate share calculation for the reporting of a net pension liability, by assigning itself a proportionate share of 0%.

Section 457 Deferred Compensation Plans

A voluntary Section 457 deferred compensation plan is administered to provide additional retirement benefits for employees. The plan provides for employer-matching contributions up to a set maximum. The total contributions are subject to the limitations established in IRC Section 457. The Board of Trustees has authority to establish the employer contribution levels. For most employees, the System will match $50 plus 0.52% of salary per month. For certain employees, the System will make employer-paid contributions equal to annual limitations established in IRC Section 457. This is governed by individual employment contracts as approved by the Board of Trustees.

All employees immediately vest in the employer-matching and employer-paid contributions. Employer-matching contributions totaled $122,064 and employer-paid contributions totaled $71,500 for the 2020 fiscal year. Employee contributions totaled $452,791 for the 2020 fiscal year. Employer-matching contributions totaled $118,410 and employer-paid contributions totaled $68,250 for the 2019 fiscal year. Employee contributions totaled $462,727 for the 2019 fiscal year.

Maintenance of individual member accounts and custody of assets have been contracted to a third-party administrator and investment custodian. Total contributions are sent directly to the third-party administrator by the employer. Employees can self-direct investments of their contributions and their respective share of matching contributions in a number of investment options. Because the System does not hold the plan's assets and does not have significant administrative responsibilities, the plan's assets and changes in net position are not reported in the Systems' financial statements.

The Systems established an unfunded Section 457(f) non-qualified deferred compensation plan for certain employees. The plan is subject to Internal Revenue Code section 457(f), and to the extent applicable, Internal Revenue Code section 409A. Employees approved for participation in the plan by the Systems' Board of Trustees may acquire a vested interest in a deferred compensation award which is credited to the account of the member under terms approved by the Board of Trustees. The value of the member's account shall be subject to a risk of forfeiture based on the applicable vesting schedule determined for the member. As of June 30, 2020, employees had a vested interest under the plan of $153,486 and disbursements of $60,298 were made from the plan for the year then ended.

Section 401(a) Defined Contribution Plan

The Systems established a 401(a) defined contribution plan for certain employees. The employees are approved for participation in the plan by the Systems' Board of Trustees. The plan is a tax qualified plan under Section 401(a) of the Internal Revenue Code and all contributions by or on behalf of employees are tax deferred until time of withdrawal. All employees immediately vest in employer-paid contributions. Employer-paid contributions totaled $56,000 for the 2020 fiscal year.

Maintenance of individual member accounts and custody of assets have been contracted to a third-party administrator and investment custodian. Total contributions are sent directly to the third-party administrator by the employer. Employees can self-direct investments of their contributions in a number of investment options. Because the System does not hold the plan's assets and does not have significant administrative responsibilities, the plan's assets and changes in net position are not reported in the Systems' financial statements.

Note 7 – Other Post-Employment Benefit Plans

Post-Employment Staff Retiree Healthcare Plan

Plan Description, Funding Policy and Benefits Provided – The Public School Retirement System of Missouri Staff Retiree Healthcare Program (SRHP) is a single-employer defined benefit other post-employment benefit (OPEB) plan administered by PSRS. SRHP is administered as required by RSMo 169.590. SRHP provides a healthcare premium implicit rate subsidy to eligible staff retirees and their dependents provided they pay 100% of the blended healthcare premium. The blended healthcare premium is based on all active and retired employees. Retiree healthcare benefits are funded on a pay-as-you-go basis, with premiums determined annually. Therefore, no formal trust has been established for the SRHP. The PSRS/PEERS Board of Trustees determines the funding of benefits and any benefit amendments. There is no continuing obligation to provide benefits beyond each calendar year. SRHP does not issue a stand-alone public financial report.

Employees covered by benefit terms:

Retirees and spouses of retirees receiving benefits	16
Active employees	135
Total	151

OPEB Liability – The components of the net OPEB Liability of the SRHP as of June 30, 2020 are as follows:

Total OPEB Liability - Beginning of the year	$ 3,885,984
Service cost	163,813
Interest Costs	98,507
Experience (gains) losses	12,551
Assumption changes	60,354
Plan amendments	-
Benefit payments	(91,468)
Total OPEB Liability - End of year	$ 4,129,741
OPEB Plan Fiduciary Net Position	$ -
Net OPEB Liability	$ 4,129,741

OPEB Expense – The components of the OPEB expense for the year ended June 30, 2020 are as follows:

Service Cost	$ 163,813
Plan Amendments	-
Interest Costs	98,507
Recognition of deferred (inflows) outflows of resources related to:	
Liability experiences (gains) losses	21,928
Assumption changes (gains) losses	(34,663)
Total Recognition of deferred (inflows) outflows of resources	(12,735)
Total collective OPEB expense recognized	$ 249,585

Actuarial Method and Assumptions - The total OPEB liability was determined by an actuarial valuation as of June 30, 2020. Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and plan members to that point. The actuarial assumptions and methods used in the valuation are based on prior plan experience and industry trends. The nature of the plan design and overall plan size does not allow for full scale periodic experience studies; therefore, such a study has not been conducted. Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality and healthcare cost trends. Amounts determined regarding

the total OPEB liability and expense are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future.

In the June 30, 2020 actuarial valuation, the following actuarial assumptions and methods were used:

Measurement date	June 30, 2020
Valuation date	June 30, 2020
Actuarial cost method	Entry Age Normal
Actuarial value of assets	No Assets (pay-as-you-go)
Amortization method	Level Percent Open
Discount rate	2.46% per year effective June 30, 2019 1.81% per year effective June 30, 2020
Wage inflation	3.5% per year for June 30, 2015 and prior years 3.25% per year effective June 30, 2016
Healthcare trend rate	6.5% in fiscal year 2020, decreasing by one-half percentage point per year to an ultimate of 4.5% in fiscal year 2024 and after
Mortality	
Active members	Based on 75% of the RP-2006 Mortality Tables with static projecting to 2028 using the 2014 Improvement Scale.
Non-disabled retirees and beneficiaries	Based on the RP-2006 Mortality Tables with plan-specific experience adjustments and static projection to 2028 using the 2014 SSA Improvement Scale
Disabled retirees	Based on the RP-2014 Disabled Retiree Mortality Table, adjusted to 2006, with static projection to 2028 using the 2014 SSA Improvement Scale

Discount Rate - GASB Statement No. 75 requires plans not administered through a trust to utilize the yield or index rate for 20-year, tax-exempt general obligation municipal bonds with and average rating of AA/Aa or higher. The Systems utilized the US. General Obligation AA Municipal Bond Yield Curve for 20 years for the June 30, 2020 and 2019 valuations. The June 30, 2020 rate was 1.81% and the June 30, 2019 rate utilized was 2.46%. The movement in the yield on the 20 Year US. General Obligation AA Municipal Bond is considered an assumption change for reporting purposes.

Deferred Inflows and Outflows of Resources - As of June 30, 2020, the Systems reported deferred outflows of resources and deferred inflows of resources from the following sources related to the SRHP:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Balance of Deferred Outflows and Inflows Due to:		
Differences between expected and actual experience	$ 196,377	$ -
Changes of assumptions	-	269,426
Total	$ 196,377	$ 269,426

Amounts reported as collective deferred (inflows) /outflows of resources are to be recognized in pension expense as follows:

Year Ending June 30:	
2021	$ (12,735)
2022	(12,735)
2023	(12,735)
2024	(12,735)
2025	(12,735)
Thereafter	(9,374)
	$ $(73,049)

Sensitivity of the net OPEB liability to changes in the discount rate and health care cost trend rate. – The following table presents the sensitivity of the net OPEB liability to changes in the discount rate. The net OPEB liability calculated using the discount rate of 1.81% is presented as well as what the net OPEB liability would be using a discount rate that is 1.0% lower (0.81%) or 1.0% higher (2.81%) than the current rate.

Discount Rate Sensitivity			
	1% Decrease (0.81%)	Current Rate (1.81%)	1% Increase (2.81%)
Net OPEB Liability	$ 4,592,759	$ 4,129,740	$ 3,707,974

The following table presents the sensitivity of the net OPEB liability to changes in the healthcare trend rate. The net OPEB liability calculated using the healthcare trend rate between 6.50% is presented as well as what the net OPEB liability would be using a healthcare trend rate that is 1.0% lower (5.50%) or 1.0% higher (7.50%) than the current rate.

Trend Rate Sensitivity			
	1% Decrease (5.50%)	Current Rate (6.50%)	1% Increase (7.50%)
Net OPEB Liability	$ 3,574,706	$ 4,129,740	$ 4,792,819

Post-Employment Health Plan

PSRS maintains a Post-Employment Health Plan ("PEHP") for employees. Upon termination, an employee will receive payment at the rate of one day of pay for each two days of accrued sick leave up to 100 days of accrued sick leave (50 days paid). Any days above 100 will be forfeited. All payments under the PEHP in excess of $1,000 will be transferred into a PEHP account which can be used to pay health insurance premiums for the employee or dependent at any time in the future. If an employee is retiring, the payments can be transferred back to PSRS on a monthly basis to cover the cost of health insurance for the retiree. The amount paid into the PEHP was $71,184 for seven employees during 2020.

Note 8 – Risk Management

The Systems are exposed to various risks of loss related to natural disasters, errors and omissions, loss of assets, torts, etc. The Systems have chosen to cover such losses through the purchase of commercial insurance. There have been no material insurance claims filed or paid during the past three years.

The Systems have a disaster recovery plan that provides for continued computer operations at a remote location should the retirement office be unavailable for normal operations.

Note 9 – Commitments and Contingencies

Commitments to the future purchase of investments at June 30, 2020 totaled $2,676,154,017.

Total unfunded capital commitments to private real estate, private equity and other alternative investments totaled approximately $7.1 billion as of June 30, 2020. The unfunded commitments are not recorded in the Statements of Fiduciary Net Position.

Certain legal proceedings are pending with PSRS and PEERS arising from normal activities. Although unable to predict the outcome of these matters, the Systems believe the final outcome of these actions will not have a material adverse effect on the Systems' financial statements.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Changes in the Employers' Net Pension Liability

Public School Retirement System of Missouri

Year Ended:	June 30, 2020	June 30, 2019	June 30, 2018	June 30, 2017
Total pension liability				
Service cost	$ 845,283,640	$ 830,084,321	$ 792,276,388	$ 740,176,751
Interest cost	3,559,151,521	3,466,455,926	3,346,220,624	3,198,060,384
Difference between actual and expected experience	75,988,120	(314,439,382)	137,516,335	60,942,067
Assumption changes	-	-	531,202,248	1,279,805,826
Plan amendments	-	-	-	-
Benefit payments	(2,813,232,110)	(2,710,273,502)	(2,606,985,013)	(2,521,832,399)
Net change in total pension liability	1,667,191,171	1,271,827,363	2,200,230,582	2,757,152,629
Total pension liability - beginning of year	$ 47,973,829,236	$ 46,702,001,873	$ 44,501,771,291	$ 41,744,618,662
Total pension liability - end of year (a)	$ 49,641,020,407	$ 47,973,829,236	$ 46,702,001,873	$ 44,501,771,291
Plan Fiduciary Net Position				
Employer contributions	$ 724,995,473	$ 712,545,096	$ 696,970,398	$ 684,857,718
Member contributions	757,916,937	747,402,726	726,996,161	719,625,373
Net investment return	1,457,518,290	2,595,865,535	3,173,735,918	4,104,123,251
Benefit payments, including refunds of member contributions	(2,813,232,110)	(2,710,273,502)	(2,606,985,013)	(2,521,832,399)
Administrative and other expenses	(10,653,288)	(11,326,398)	(11,418,119)	(10,497,712)
Net change in plan fiduciary net position	116,545,302	1,334,213,457	1,979,299,345	2,976,276,231
Plan fiduciary net position - beginning of year	$ 40,593,758,865	$ 39,259,545,408	$ 37,280,246,063	$ 34,303,969,832
Plan fiduciary net position - end of year (b)	**$ 40,710,304,167**	**$ 40,593,758,865**	**$ 39,259,545,408**	**$ 37,280,246,063**
Net pension liability - end of year (a-b)	$ 8,930,716,240	$ 7,380,070,371	$ 7,442,456,465	$ 7,221,525,228

Public Education Employee Retirement System of Missouri

Year Ended:	June 30, 2020	June 30, 2019	June 30, 2018	June 30, 2017
Total pension liability				
Service cost	$ 173,676,697	$ 170,543,513	$ 161,028,014	$ 150,975,958
Interest cost	436,863,559	417,341,777	397,675,858	374,497,203
Difference between actual and expected experience	(286,057)	(10,635,802)	117,686	3,076,923
Assumption changes	-	-	61,921,295	140,420,925
Plan amendments	-	-	-	-
Benefit payments	(330,337,694)	(310,242,399)	(287,634,108)	(269,268,101)
Net change in total pension liability	279,916,505	267,007,089	333,108,745	399,702,908
Total pension liability - beginning of year	$ 5,809,484,699	$ 5,542,477,610	$ 5,209,368,865	$ 4,809,665,957
Total pension liability - end of year (a)	$ 6,089,401,204	$ 5,809,484,699	$ 5,542,477,610	$ 5,209,368,865
Plan Fiduciary Net Position				
Employer contributions	$ 124,544,728	$ 120,042,046	$ 115,103,143	$ 111,239,585
Member contributions	131,335,977	126,609,105	121,467,850	118,446,790
Net investment return	181,855,037	319,773,260	381,523,965	485,046,867
Benefit payments, including refunds of member contributions	(330,337,694)	(310,242,399)	(287,634,108)	(269,268,101)
Administrative and other expenses	(7,077,789)	(7,423,689)	(7,113,566)	(6,377,808)
Net change in plan fiduciary net position	100,320,259	248,758,323	323,347,284	439,087,333
Plan fiduciary net position - beginning of year	$ 5,018,523,615	$ 4,769,765,292	$ 4,446,418,008	$ 4,007,330,675
Plan fiduciary net position - end of year (b)	$ 5,118,843,874	$ 5,018,523,615	$ 4,769,765,292	$ 4,446,418,008
Net pension liability - end of year (a-b)	$ 970,557,330	$ 790,961,084	$ 772,712,318	$ 762,950,857

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

June 30, 2016	June 30, 2015	June 30, 2014
$ 842,548,463	$ 836,085,151	$ 849,712,130
3,263,288,365	3,019,050,250	2,885,182,982
(641,098,601)	598,417,056	226,591,816
100,247,551	-	-
-	-	-
(2,430,906,732)	(2,326,196,773)	(2,236,468,407)
1,134,079,046	2,127,355,684	1,725,018,521
$ 40,610,539,616	$ 38,483,183,932	$ 36,758,165,411
$ 41,744,618,662	$ 40,610,539,616	$ 38,483,183,932
$ 670,794,045	$ 656,924,899	$ 643,989,869
704,785,734	689,187,215	679,390,918
533,180,245	1,447,169,205	4,927,198,588
(2,430,906,732)	(2,326,196,773)	(2,236,468,407)
(11,562,965)	(10,013,601)	(8,919,201)
(533,709,673)	457,070,945	4,005,191,767
$ 34,837,679,505	$ 34,380,608,560	$ 30,375,416,793
$ 34,303,969,832	**$ 34,837,679,505**	**$ 34,380,608,560**
$ 7,440,648,830	$ 5,772,860,111	$ 4,102,575,372

June 30, 2016	June 30, 2015	June 30, 2014
$ 161,391,660	$ 156,599,641	$ 159,672,364
372,184,628	333,780,285	315,131,402
(51,257,557)	45,518,402	(14,308,876)
65,420,724	-	-
-	-	-
(250,390,477)	(235,070,181)	(216,624,810)
297,348,978	300,828,147	243,870,080
$ 4,512,316,979	$ 4,211,488,832	$ 3,967,618,752
$ 4,809,665,957	$ 4,512,316,979	$ 4,211,488,832
$ 106,717,021	$ 103,624,310	$ 100,699,735
114,257,497	110,443,660	106,420,656
60,317,387	163,719,526	544,154,941
(250,390,478)	(235,070,010)	(216,624,810)
(6,981,573)	(5,629,551)	(4,840,432)
23,919,854	137,087,935	529,810,090
$ 3,983,410,821	$ 3,846,322,886	$ 3,316,512,796
$ 4,007,330,675	$ 3,983,410,821	$ 3,846,322,886
$ 802,335,282	$528,906,158	$ 365,165,946

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Employers' Net Pension Liability

Public School Retirement System of Missouri

Year Ended	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position - Restricted for Pensions (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	Employers' NPL as a % of Covered Payroll ((b-a)/c)
6/30/14	$ 38,483,183,932	$ 34,380,608,560	$ 4,102,575,372	89.3%	$ 4,425,567,630	92.7%
6/30/15	40,610,539,616	34,837,679,505	5,772,860,111	85.8%	4,508,241,581	128.1%
6/30/16	41,744,618,662	34,303,969,832	7,440,648,830	82.2%	4,556,137,282	163.3%
6/30/17	44,501,771,291	37,280,246,063	7,221,525,228	83.8%	4,655,169,121	155.1%
6/30/18	46,702,001,873	39,259,545,408	7,442,456,465	84.1%	4,759,665,456	156.4%
6/30/19	47,973,829,236	40,593,758,865	7,380,070,371	84.6%	4,844,248,703	152.3%
6/30/20	49,641,020,407	40,710,304,167	8,930,716,240	82.0%	4,919,286,103	181.5%

Public Education Employee Retirement System of Missouri

Year Ended	Total Pension Liability (TPL) (a)	Plan Fiduciary Net Position - Restricted for Pensions (b)	Net Pension Liability (NPL) (a - b)	Plan Fiduciary Net Position as a % of TPL (b/a)	Covered Payroll (c)	Employers' NPL as a % of Covered Payroll ((b-a)/c)
6/30/14	$ 4,211,488,832	$ 3,846,322,886	$ 365,165,946	91.3%	$ 1,442,700,979	25.3%
6/30/15	4,512,316,979	3,983,410,821	528,906,158	88.3%	1,469,771,528	36.0%
6/30/16	4,809,665,957	4,007,330,675	802,335,282	83.3%	1,519,081,146	52.8%
6/30/17	5,209,368,865	4,446,418,008	762,950,857	85.4%	1,558,183,433	49.0%
6/30/18	5,542,477,610	4,769,765,292	772,712,318	86.1%	1,636,007,948	47.2%
6/30/19	5,809,484,699	5,018,523,615	790,961,084	86.4%	1,665,654,047	47.5%
6/30/20	6,089,401,204	5,118,843,874	970,557,330	84.1%	1,732,243,294	56.0%

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Employer Contributions

Public School Retirement System of Missouri

Year Ended June 30	Actuarially Determined Contribution	Actual Employer Contributions	Contribution Excess/ (Deficiency) [1]	Covered Payroll	Contributions as a Percentage of Covered Payroll
2011	$ 684,366,766	$ 594,732,137	$ (89,634,629)	$ 4,248,086,693	14.00%
2012	720,303,976	620,214,231	(100,089,745)	4,277,339,524	14.50%
2013	507,232,268	634,040,335	126,808,067	4,372,691,966	14.50%
2014	608,459,393	643,989,869	35,530,476	4,441,309,441	14.50%
2015	666,438,984	656,924,899	(9,514,085)	4,530,516,545	14.50%
2016	643,155,536	669,953,683	26,798,147	4,620,370,228	14.50%
2017	642,821,624	684,857,718	42,036,094	4,723,156,676	14.50%
2018	533,062,186	696,970,397	163,908,211	4,806,692,393	14.50%
2019	628,513,916	712,545,096	84,031,180	4,914,104,110	14.50%
2020	679,495,757	724,995,473	45,499,716	4,999,968,779	14.50%

Public Education Employee Retirement System of Missouri

Year Ended June 30	Actuarially Determined Contribution	Actual Employer Contributions	Contribution Excess/ (Deficiency) [1]	Covered Payroll	Contributions as a Percentage of Covered Payroll
2011	$ 90,816,155	$ 90,816,155	$ -	$ 1,369,776,094	6.63%
2012	95,094,785	95,094,785	-	1,386,221,356	6.86%
2013	87,013,816	97,059,313	10,045,497	1,414,858,790	6.86%
2014	98,497,846	100,699,735	2,201,889	1,467,926,166	6.86%
2015	105,739,092	103,624,310	(2,114,782)	1,510,558,455	6.86%
2016	104,011,593	106,654,638	2,643,045	1,554,732,332	6.86%
2017	108,807,233	111,239,585	2,432,352	1,621,568,294	6.86%
2018	97,653,104	115,103,143	17,450,039	1,677,888,382	6.86%
2019	113,567,475	120,042,046	6,474,571	1,749,884,052	6.86%
2020	119,461,270	124,544,728	5,083,458	1,815,520,816	6.86%

[1]The annual statutory increase in the total contribution rate may not exceed 1% of pay for PSRS and 0.5% of pay for PEERS. The limitation on contribution increases resulted in a deficiency for some of the years presented. Contributions were funded to the maximum statutory limit each year.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Schedules of Investment Returns

Year ended June 30:	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of all investment fees and expenses	3.7%	6.9%	8.7%	12.3%	1.6%	4.3%	16.7%
Time-weighted rate of return, net of all investment fees and expenses	3.7%	6.9%	8.7%	12.3%	1.6%	4.3%	16.7%

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Notes to the Schedules of Required Supplementary Information

The information presented in the required supplementary schedule was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Changes in benefit terms:

PSRS:	The 25-and-Out and 2.55% provisions were extended in 2007 through 2013. In 2013 the state legislature provided a permanent extension of the 25-and Out provision and extended the 2.55% provision to 2014.
PEERS:	The 25-and-Out provision was extended in 2007 through 2013. In 2013 the state legislature provided a permanent extension of the 25-and- Out provision.

Changes of assumptions: In 2011 and 2016 payroll growth, salary increases, assumed life expectancies and mortality were adjusted to more closely reflect actual experience. In 2016, the inflation rate was adjusted to 2.25% from 2.5%, the investment rate of return from 8.00% to 7.75% and annual cost-of-loving adjustments were calculated in accordance with the funding policy as amended in June 2016. During 2016, minor revisions were made to other actuarially assumptions including but not limited to, retirement rates, withdraw rates, etc. The 2016 assumption changes were a result of an actuarial experience study conducted during the 2016 fiscal year. For fiscal year 2017, the investment rate of return was further reduced from 7.75% to 7.6% and the assumption for annual cost-of-living adjustments. For fiscal year 2018, the investment rate of return was further reduced to 7.5%. There were no assumption changes made during fiscal years 2019 and 2020.

Actuarially Methods and Assumptions: The actuarially determined contribution rates in the schedule of employers' contributions are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported. The following actuarial methods and assumptions were used to determine contribution rates reported in the schedule.

Actuarial Cost Method	Entry Age Normal Level Percent of Payroll
Amortization Method	Closed, level percent for 30 years
Remaining amortization period	
PSRS	21.7 years
PEERS	22.0 years
Asset valuation method	5-year smoothing of actual returns above or below expected returns
Measurement Date	**June 30, 2020**
Valuation Date	**June 30, 2020**
Investment Rate of Return	7.50%
Inflation	2.25%
Total Payroll Growth	
PSRS	2.75% per annum, consisting of 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pension earnings, and 0.25% of real wage growth.
PEERS	3.25% per annum, consisting of 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pension earnings, and 0.50% of real wage growth.
Individual Salary Growth	
PSRS	3.00% - 9.50%, depending on service and including 2.25% inflation, 0.25% additional inflation due to the inclusion of health care costs in pension earnings, 0.25% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.25% to 6.75%.
PEERS	4.00% - 11.00%, depending on service and including 2.25% inflation, 0.50% additional inflation due to the inclusion of health care costs in pension earnings, 0.50% of real wage growth for productivity, and real wage growth for merit, promotion and seniority of 0.75% to 7.75%.
Cost-of-Living Increases	
PSRS	1.65% compounded annually, beginning on the second January after retirement and capped at 80% lifetime increase. The assumption increases from 1.35% to 1.65% over six years.
PEERS	1.65% compounded annually, beginning on the fourth January after retirement and capped at 80% lifetime increase. The assumption increases from 1.35% to 1.65% over six years.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Notes to the Schedules of Required Supplementary Information - Continued

Measurement Date **June 30, 2020**

Valuation Date **June 30, 2020**

Mortality Assumption

Actives:

PSRS — RP 2006 White Collar Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.

PEERS — RP 2006 Total Dataset Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028.

Non-Disabled Retirees, Beneficiaries and Survivors:

PSRS — RP 2006 White Collar Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

Age	Males	Females
<60	1.00	1.00
60-74	0.89	0.67
75-89	1.05	0.91
>=90	1.05	1.16

PEERS — RP 2006 Total Dataset Mortality Table multiplied by the adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028.

Age	Males	Females
<60	1.00	1.00
60-74	1.49	0.77
75-89	1.27	1.03
>=90	1.16	1.04

Disabled Retirees: RP 2006 Disabled Retiree Mortality Table, with static projections using the 2014 SSA Improvement Scale to 2028.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Required Supplementary Information

Staff Retiree Health Plan – Defined Benefit OPEB Plan

Schedule of Changes in the Net OPEB Liability and Related Ratios

Year ended:	June 30, 2020	June 30, 2019	June 30, 2018
Total OPEB Liability - beginning of the year	$ 3,885,983	$ 3,788,863	$ 2,050,100
Remeasurement of June 30, 2017 OPEB liability	-	-	1,479,740
Service cost	163,813	151,794	152,625
Interest cost	98,507	132,375	116,484
Experience (gains) losses	12,551	74,147	110,476
Assumption changes	60,354	(259,345)	(104,653)
Plan amendments	-	-	-
Benefit payments	(91,468)	(1,850)	(15,909)
Net change in total OPEB liability	$ 4,129,740	$ 3,885,984	$ 3,788,863
OPEB Plan Fiduciary Net Position	$ -	$ -	$ -
Net OPEB Liability - end of the year	$ 4,129,740	$ 3,885,984	$ 3,788,863
Covered Payroll	$ 12,645,475	$ 12,025,626	$ 10,742,062
Employer's Net OPEB Liability as a Percentage of Coverage Payroll	32.7%	32.3%	35.3%

Note: This schedule is intended to show information for ten years. Additional years will be displayed as they become available.

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Schedules of Administrative Expenses

for the year ended June 30, 2020

	PSRS	PEERS	Combined Totals
Personnel services	$ 6,858,105	$ 4,568,830	$ 11,426,935
Professional services			
Actuarial services	214,242	195,453	409,695
Legal services	76,034	80,528	156,562
Financial audit services	56,700	36,251	92,951
Other consultants	83,678	53,453	137,131
Technology consulting	145,346	92,926	238,272
Legislative consulting	29,738	19,013	48,751
Insurance consulting	3,355	2,145	5,500
Total professional services	609,093	479,769	1,088,862
Communications			
Information and publicity	198,050	138,164	336,214
Postage	307,165	207,878	515,043
Member education	15,458	9,442	24,900
Telephone	60,124	38,322	98,446
Total communications	580,797	393,806	974,603
Miscellaneous			
Building and utilities	123,100	78,706	201,806
Board of Trustees Election	87,667	56,050	143,717
Insurance	84,127	53,786	137,913
Office	918,722	587,074	1,505,796
Staff development	154,434	97,154	251,588
Miscellaneous	204,897	101,903	306,800
Total miscellaneous	1,572,947	974,673	2,547,620
Depreciation expense	1,032,291	659,990	1,692,281
Total administrative expenses	$ 10,653,233	$ 7,077,068	$ 17,730,301

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Schedules of Professional Services

for the year ended June 30, 2020

	PSRS	PEERS	Combined Totals
Actuarial services	$ 214,242	$ 195,453	$ 409,695
Legal expenses	76,034	80,528	156,562
Financial audit services	56,700	36,251	92,951
Other consulting	83,678	53,453	137,131
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Insurance consulting	3,355	2,145	5,500
Total professional services	$ 609,093	$ 479,769	$ 1,088,862

Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri

Schedules of Investment Expenses

for the year ended June 30, 2020

	PSRS	PEERS	Combined Totals
Investment management expenses			
U.S. Treasuries and TIPS	$ 4,532,630	$ 560,213	$ 5,092,843
U.S. public equities	70,656,794	8,853,453	79,510,247
Non-U.S. public equities	25,330,728	3,135,748	28,466,476
Public debt	1,504,965	186,006	1,690,971
Private equity	153,168,820	19,228,689	172,397,509
Private credit	12,354,456	1,553,023	13,907,479
Private real estate	34,364,717	4,322,484	38,687,201
Hedged assets	71,665,770	9,013,383	80,679,153
Total investment management expenses	373,578,880	46,853,001	420,431,881
Investment consultant fees	5,027,669	621,398	5,649,067
Custodial bank fees	1,511,274	186,786	1,698,060
Investment staff expenses	5,507,989	680,501	6,188,490
Commission recapture income	(175,099)	(21,821)	(196,920)
Total investment expenses	$ 385,450,713	$ 48,319,863	$ 433,770,576
Security lending expenses			
Agent fees	$ 569,124	$ 71,586	$ 640,710
Broker rebates	(581,487)	(73,141)	(654,628)
Total security lending expenses	$ (12,363)	$ (1,555)	$ (13,918)

"PSRS/PEERS gives me peace of mind. It would be too easy not to think about retirement so early in my career. But I know the years will fly by, and it's nice to know I will have financial stability when I retire."

Adrienne Carson, PSRS Active

Investment Section

Letter from Verus

Verus

October 22, 2020

To the Members of the Board,

During the latter half of 2019, global economies generally exhibited moderate and positive economic growth, inflation remained mild, central bank policies were accommodative, and labor markets had fully recovered from the GFC. In early 2020, this relatively stable environment shifted dramatically when a novel coronavirus began spreading across the globe. The sudden impact of this pandemic on economic activity and markets was unprecedented. The unemployment rate rose from a 50-year low of 3.5% in February to 14.7% in April, and U.S. real GDP contracted sharply during the second quarter. The size and pace of the shutdowns resulted in global stimulus on a massive scale.

As COVID-19 began to course through the U.S., the S&P 500 index plunged 33.8% between February 19th and March 23rd before rebounding strongly in the second quarter. Due to the nature of the crisis, investors piled into mega-cap technology stocks, which powered the rise in both the S&P 500 and NASDAQ 100 indices. By the end of the fiscal year on June 30th the S&P 500 had reached 3,100—placing the index within 10% of the February high water mark of 3,386. After this roller-coaster ride of historical proportions, the S&P 500 Index finished the fiscal year with a respectable 7.5% return.

By contrast, international developed market equities lagged U.S. stocks during the first half of the fiscal year, with the MSCI World ex-US Index posting a 6.9% return. The index fell further than the S&P 500 during the first quarter of 2020, and rebounded less strongly in the second quarter, finishing the fiscal year in negative territory (-5.4%). The MSCI Emerging Markets Index returned -3.4% over the fiscal year. China (MSCI China Index +13.1%) supported emerging market equity performance substantially.

Bonds rallied for much of the fiscal year, and ten-year Treasury yields fell from 2.01% to 0.66%. Holding duration provided a significant downside ballast during the crisis. Credit spreads jumped in the first quarter of 2020. The option-adjusted spreads of the Bloomberg Barclays Aggregate Corporate and Corporate High Yield indices topped out at 3.70% and 11.00%, respectively. As corporate credit facilities announced by the Fed in March became operational, spreads fell back down to 6.26% for high yield credit and 1.50% for investment grade credit. Over the fiscal year, investment grade credit returned 9.5% while high yield credit returned 0.0%.

The combined PSRS/PEERS plans, known collectively as the Missouri Education Pension Trust (MEPT), had a total (net of all fees) return of 3.71%, trailing its Policy Index (5.02%), but ahead of its Peer Median (3.24%). MEPT's peers are other U.S. Public Funds with assets of greater than $1 billion. Much like its peers, MEPT underperformed in U.S. Equity markets. This was somewhat offset by strong returns in Private Equity and Non-U.S. Equity. The plans maintain a lower than median risk profile by design.

MEPT and Verus completed a comprehensive Asset/Liability Study over the fiscal year. The Board opted to moderately increase its allocation to private investments, including co-investments, in order to increase the portfolio's expected return in a cost-effective manner while maintaining sufficient liquidity to meet MEPT's liabilities. Importantly, the portfolio remains diversified and risk focused.

Sincerely,

Margaret Jadallah

Margaret S. Jadallah
Managing Director

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Letter from the Chief Investment Officer

November 13, 2020

To the Members of the Systems:

Throughout this year's Financial Report, you will see the phrase: "***Making a Positive Impact on Members***." The investment staff, under the direction of the Board of Trustees, is solely focused on making a positive impact on our members by providing consistent, long-term investment returns that can support retirement benefits and provide financial security.

Fiscal year 2020 (July 1, 2019 through June 30, 2020) will forever be marked by the coronavirus pandemic. PSRS and PEERS have weathered many challenging investment environments in the last 75 years, including the stock market crash of 1987, the bursting of the dot-com bubble in the early 2000's, the 9/11 attacks in 2001 and the Global Financial Crisis in 2007 and 2008. However, as we move further into the coronavirus pandemic, it is evident that this event is different. Covid-19 is a health crisis that turned into an economic crisis as the procedures that were implemented to slow the pandemic, stopped the economy. From an investment return perspective, the fiscal year can be broken down into two distinct segments: pre-Covid and post-Covid. Interest rates were relatively stable and global stock markets exhibited steady growth into February of this year. However, as the pandemic hit, the S&P 500, a U.S. stock market index, declined 35% in a six-week period, the fastest move ever into a bear market (defined as a decline of 20% or more). Interest rates were immediately pushed lower at the beginning of the pandemic with the yield on the ten-year Treasury bond moving from 1.9% on December 31, 2019 to 0.7% on March 31, 2020. The investment markets improved significantly, beginning the last week of March, after the Federal Reserve announced plans to inject $2 trillion into the markets and Congress passed an additional $2 trillion economic rescue package. The stock market rebounded almost as quickly as it declined, recovering much of its losses by the end of the fiscal year.

PSRS and PEERS benefited from the downward move in interest rates (providing gains in the bond portfolio) and the recovery in the stock market late in the fiscal year. In total, the Systems' assets increased through investment earnings by over $1.6 billion from the previous year with a total fund performance of 3.9% (or 3.7% net of all fees and expenses).

Key Points within this year's Financial Report

As you review the financial information in this report for the fiscal year ended June 30, 2020, it is important to be aware of the following points:

- The Systems generated the 3.9% investment return while taking less risk (as measured by standard deviation) than the policy benchmark[1] and less risk than two-thirds of comparable public funds over all time periods,

[1] *The plan policy benchmark is a standard to measure investment performance and indicates the return of the PSRS/PEERS asset allocation if passive market rates of return were achieved.*

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Toll Free (800) 392-6848 **Email** psrspeers@psrspeers.org **Member Services FAX** (573) 634-7934 **Employer Services FAX** (573) 634-7911

- The PSRS and PEERS investment return for fiscal year 2020 and for the last five-year and ten-year time periods exceeded 62% of the peer group as defined by the Wilshire TUCS universe of public pension plans with assets in excess of $1 billion,
- Total Systems' assets have increased through investment earnings by approximately $30 billion over the last ten years,
- The PSRS/PEERS internal investment staff and external investment managers added value above the policy benchmark of over $1.2 billion, net of all fees and expenses, over the last ten years. The outperformance was due to portfolio construction and tactical asset allocation decisions by internal investment staff (overweighting and underweighting asset classes around targets) as well as active management on the part of external managers,
- The PSRS and PEERS investment return for the last ten-year time period exceeded the return of a passive portfolio of 60% global stocks and 40% bonds by 1.5% per year resulting in added value above a traditional portfolio of $5.3 billion,
- The PSRS/PEERS investment expenses (including accrued performance-based fees and all internal investment staff expenses) for fiscal year 2020 were 0.95%, or 95¢ for every $100 managed,
- The investment returns reported throughout this publication are mostly net of these fees. The investment return net of all fees and expenses was 3.7% for PSRS and PEERS,
- Investment performance throughout this report is calculated using a time-weighted rate of return based on market values, and
- The total invested assets of both PSRS and PEERS were approximately $45.6 billion on June 30, 2020, making the combined entity larger than all other public retirement plans in the state combined, and the 45th largest defined benefit plan in the United States.

Fiscal Year 2020 Year in Review

The internal investment staff, under the direction of the PSRS/PEERS' Board of Trustees, has adopted a disciplined and diversified investment portfolio that includes allocations to multiple asset classes. Over time, every specific asset class within the PSRS/PEERS' investment portfolio performs a valuable function.

In fiscal year 2020, the combined asset allocation provided the Systems with low (but positive) absolute returns, led by above average returns from bonds (both Treasury and corporate) and reasonable returns from U.S. stocks. The yield on the ten-year Treasury bond declined from 2.0% at the beginning of the fiscal year to 0.65% on June 30, 2020. This sharp drop in yield contributed to a positive absolute return for all bonds. U.S. Treasury bonds (as measured by the Bloomberg Barclays Treasury Index) increased 10.5% for the fiscal year while corporate bonds (as measured by the Bloomberg Barclays Intermediate Credit Index) increased 7.0%. U.S. stocks (as measured by the Russell 3000 Index) returned 6.5% for the fiscal year ended June 30, 2020. In contrast, non-U.S. stocks produced negative returns for the fiscal year. Non-U.S. developed stocks (as measured by the MSCI EAFE Index), moved 5.1% lower, and emerging market stocks (as measured by the MSCI Emerging Markets Index) declined 3.4%.

Letter from the Chief Investment Officer, continued

The PSRS/PEERS non-traditional asset classes provided mixed returns in fiscal year 2020 amidst the heightened volatility. Specifically, the Private Equity program generated a 6.9% return whereas the Real Estate composite increased 1.4% and the Private Credit composite increased 1.2%. The Hedged Asset composite declined 2.4% in the fiscal year.

This combination of positive and negative absolute returns across these asset classes contributed to the 3.9% return for PSRS and PEERS in fiscal year 2020. The investment returns were also impacted by implementation (security selection) decisions and tactical asset allocation moves. For example, the PSRS/PEERS' Non-U.S. Equity portfolio outperformed its benchmark (MSCI All Country World ex U.S. net Index) by 2.8% in fiscal year 2020. From a portfolio construction and tactical standpoint, the internal investment staff maintained an underweight to bonds (both credit and Treasury) throughout the year (due to historically low interest rates and tight credit spreads) and an overweight to hedged assets. This underweight to bonds diminished total fund performance as both Treasury bonds and credit bonds significantly outperformed hedged assets for the year.

Fiscal Year 2021: Covid-19 and Private Credit

As I write this annual letter on November 13, 2020, we are five months into fiscal year 2021, and investors and epidemiologists agree that Covid-19 troubles are not yet over. Social distancing, mask-wearing and hand washing will continue to be part of everyday life. However, the expected investment outcome for specific asset classes in our new environment is unknown. The path of future investment returns could be based on 1) the virus itself, 2) the continued monetary stimulus from central banks and fiscal stimulus from governments, and 3) the containment response to the virus. Essentially, the virus and the related response in each city, state, and country will affect economic activity, growth and ultimately asset prices. Therefore, as an institutional investor in an uncertain environment, PSRS/PEERS will continue to maintain a highly diversified asset allocation with a long-term focus.

The internal investment staff initiated a private equity co-investment program in 2014 to allow the Systems to make direct investments in private companies alongside private equity managers with whom PSRS/PEERS have an existing relationship. The investment staff implemented a similar program within private credit in fiscal year 2020 that allows the investment staff to lend directly to private operating businesses across various industries. The lending opportunities are researched and vetted by both internal investment staff and an external consultant. The investments are compelling because (like private equity co-investments) they are executed with no direct investment fees and no performance- based fees. As of June 30, 2020, the Systems had committed $211 million to 11 direct credit investments. The internal investment staff will continue this program of private credit direct investing in fiscal year 2021. With the yield on ten-year Treasury bonds below 1%, direct private credit investments provide the Systems with an avenue to earn higher yields at relatively moderate levels of risk.

Asset/Liability Study

The Systems' external investment consultant (Verus) typically conducts an Asset Liability Study every five years for the Systems. Verus conducted the most recent Study in the early part of 2020 and the results were presented to the Board of Trustees in February and ultimately adopted in April. The objective of the Study was to determine the appropriate asset allocation for PSRS and PEERS given the specific liabilities of the Systems.

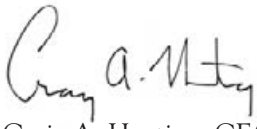
Through the Asset Liability Study, Verus worked closely with the PSRS/PEERS' investment staff to develop a number of potential asset allocation scenarios to present to the Board of Trustees. The most consistent way to compound wealth is to limit both the volatility and the downside (risk of loss) in a portfolio. As such, both staff and Verus were comfortable with the current level of risk in the Systems' portfolio and thus recommended asset allocation scenarios with similar levels of total portfolio risk.

A substantial advantage to be an investor for defined benefit pension assets is the long-term investment horizon. The Systems have embraced this with both staff and Verus collectively recommending asset allocation alternatives to the Board that increased the Systems' allocation to longer dated (private) risk assets. There is a return premium and a diversification benefit afforded to those investors willing to accept the illiquidity risk within private assets. To that end, PSRS/PEERS could add private assets to the total portfolio which would result in higher expected return with only a modest increase in risk.

The Board of Trustees ultimately adopted a new asset allocation that will increase the allocation to private assets by 10% with a commensurate decrease in the allocation to public credit and public equity. The Systems began building private investment portfolios (including private equity, private credit and private real estate) in 2003 in order to generate long-term returns superior to the public markets, take advantage of market inefficiencies, and increase diversification. The nature of private investing requires a process of portfolio construction that takes years to develop. This is particularly true for a plan with the substantial assets of PSRS/PEERS. Over the years, the Systems have continued to build on this successful investment platform that serves as an alternative to traditional public markets. It is anticipated that the most recent increase in the target to private assets will take several years to implement.

Under the support and guidance of the Board of Trustees, I am confident that the investment program at PSRS/PEERS will continue to provide the Systems with an excellent opportunity to achieve solid investment returns over future economic and capital market environments. Most importantly, I believe the portfolio is well-positioned to ***make a positive impact*** on the lives of all PSRS/PEERS' members.

Respectfully,



Craig A. Husting, CFA
Chief Investment Officer

Investment Policy Summary

The Board of Trustees of the Public School Retirement System of Missouri and Public Education Employee Retirement System of Missouri (PSRS and PEERS, also referred to as the Systems) is charged with the responsibility of investing the assets of the Systems in a manner consistent with the fiduciary standards set forth in the 'prudent person' rule. To that end, the Board has adopted the following principles to guide all investment-related decisions:

1. Act in the exclusive interest of the members of the Systems,
2. Maximize total return within prudent risk parameters, and
3. Preserve the long-term purchasing power of the Systems.

The investment portfolios of PSRS and PEERS represent all contributions to the plans, from members and their employers, as well as all net earnings on these assets. These funds are held in support of both current and future liabilities. In total, approximately 62% of every dollar used to pay retirees is generated from investment earnings[1].

The Board of Trustees of PSRS and PEERS approved the commingling of assets for purposes of investment as allowed by state statute in January 2013. In order to implement this change, PSRS and PEERS adopted the Missouri Education Pension Trust Agreement (MEPT), which is managed by the PSRS and PEERS Board of Trustees and Investment Staff. Effective July 1, 2013, the invested assets of the Systems were pooled and invested in MEPT. All assets held by MEPT are for the exclusive benefit of PSRS and PEERS. Each of the Systems has equity in MEPT based on funds contributed and earnings allocated. Earnings of MEPT are allocated based on the average daily balances of each of the respective Systems. Individual investments in MEPT are not specifically identified to the respective Systems. Due to the fact all invested assets are invested in MEPT, the rate of return for each of the Systems is approximately the same. Therefore, the following discussions focus on MEPT in total and not the individual Systems.

[1] *Based on a twenty-five year average for fiscal years 1995-2020.*

Roles and Responsibilities

Board of Trustees

It is the responsibility of the Board of Trustees (Board) to establish and maintain policies and objectives for all aspects of the Systems' investment program including the determination of long-term policies for risk tolerance and asset allocation.

In keeping with its obligation to serve as the governing fiduciary, any changes to the investment policy or investment implementation manuals require the Board's approval.

As one of the largest public pension funds in the United States, the Systems' operational requirements are complex. In order to properly administer the Systems and carry out investment strategies, the Board relies heavily on both internal staff and external service providers. Due to the number of parties involved, their roles as fiduciaries are clearly identified to ensure distinct lines of responsibility and proper controls exist, while providing increased operational efficiency and elimination of duplication of effort.

Executive Director

The Executive Director (Director) is appointed by, and serves at the pleasure of the Board. The Director is responsible for planning, organizing and administering all operations of the Systems under the broad policy guidance and direction of the Board. The Director, with the assistance of the investment staff, monitors the performance of the investment portfolio; ensures that funds are invested in accordance with Board policies; and ensures that proper internal controls are developed to safeguard the assets of the Systems. In fulfilling these responsibilities, the Director relies heavily on the Chief Investment Officer and external asset consultants.

Chief Investment Officer

The Chief Investment Officer (CIO) serves at the pleasure of the Director yet has a direct, but limited, link to the Board on investment-related issues. The CIO's sole access to the Board is for submission of investment reports, information, or communications required by the investment policy and any other information or opinions specifically requested by the Board with regard to the investment program. The CIO is the individual primarily responsible for providing direction for the investment program. It is the CIO's responsibility to work with the Director, the general consultant, specialty consultants, and other external

service providers, with the assistance of the internal staff, in advising the Board on policies related to the investment program. The CIO has responsibilities related to hiring and terminating service providers.

Critical functions of the CIO include recommendations for implementation decisions related to the investment plan and for the strategic allocation of the portfolio within broad ranges approved by the Board.

External Asset Consultants

The Systems employ Verus Advisory, Inc. (Verus) as a general consultant and Albourne America, LLC (Albourne), Pathway Capital Management (Pathway) and The Townsend Group (Townsend) as specialty consultants. Verus is an independent resource available to collaborate with the Board and staff on the investment process. This typically includes regular meetings with the Board to provide an independent perspective on the Systems' goals, structure, performance and external service providers. Additionally, Verus may be involved with the strategic allocation shifts for the portfolio.

The specialty consultants work on specific programs within the overall investment program. Albourne is utilized for the Private Credit, Private Equity, Hedged Assets and Alpha Overlay programs. Pathway is a consultant for the Private Equity and Private Credit programs and Townsend consults on the Real Estate program.

External Investment Managers

The Systems employ external investment managers. The external money managers may be structured as public or private entities in the form of a partnership, limited liability company, trust, separately managed account, commingled account, or some other form of operational structure in which assets may be held by an external custodian selected and monitored by the external manager.

Managers are given explicit written directions detailing their particular assignments or they follow the investment program outlined in their offering documents or Limited Partnership Agreements, and will construct and manage investment portfolios that are consistent with the investment philosophy and disciplines for which they were hired. Discretion is delegated to the managers to carry out investment actions as directed by the Systems.

Master Custodian

JP Morgan Chase Bank, NA (JP Morgan) serves as the master custodian for the Systems. The master custodian holds most cash and securities for the Systems, except in cases where investment in a partnership, commingled account, or unique asset class makes it impossible to do so. The Systems thoroughly evaluate the structure of all investments and their custody arrangements. JP Morgan is responsible for providing the official book of record for investment performance reporting and accounting, and serves as an additional layer of risk control in safekeeping the Systems' assets.

Investment Objective

Based on the long-term investment returns available from a well-diversified, prudently invested portfolio, the Board has adopted an objective to achieve a **total nominal investment return of 7.5% with a real rate of return of at least 5.25% per annum over time**.[2] The long-term investment return objective of 7.5% became effective for fiscal year 2019 investment performance. The investment objective was previously 8.0% effective from 1980 through fiscal year 2016, 7.75% effective for fiscal year 2017, and 7.60% effective for fiscal year 2018.

In order to achieve the investment objective, the Systems have developed a portfolio that is prudently invested across a broad array of assets that reflects the long-term nature of the Systems' pension obligations. The principles of diversification, risk control and competitive rates of return provide the framework for selecting an asset allocation that is expected, over longer periods of time and in the aggregate, to give the Systems the most competitive long-term return within a prudent level of risk.

Understanding Risk

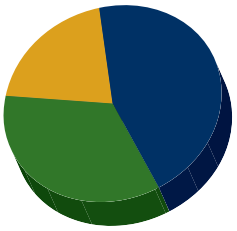
Selection of an appropriate asset allocation is one of the most important decisions made by a retirement plan. Within that asset allocation, it is important to not only consider the expected investment return, but also to understand the risks. The importance of risk consideration for institutional investors is critical to long-term success. To that end, the Systems employ an effective and intuitive risk-based approach to setting and reporting the asset allocation decision. The Systems developed a risk-based asset allocation to clearly define

[2] *The real rate of return is the rate by which the long-term total return exceeds the long-term inflation rate. The Board of Trustees shall employ an actuarial consultant for purposes of determining the inflation rate to be used in calculating the pension obligations. The assumed inflation rate as of June 30, 2020 was 2.25% per annum.*

the prudent risks taken within its investment portfolios. The Systems consider a variety of risks including, but not limited to, liquidity risk, volatility, tail risk (the possibility that an investment will move much more than expected) and the ability to meet the Systems' assumed rate of return when structuring the portfolio.

This analysis results in an asset allocation to Public Risk Assets, Safe Assets and Private Risk Assets. Within each risk allocation, the Systems' investment portfolio includes long-term commitments to specific asset programs. The target risk-based asset allocation is illustrated in the pie chart below. The Board of Trustees recently increased the Private Risk Assets target by 10% and proportionately decreased the Public Risk Assets target. These changes are discussed further in the following Asset Allocation section.

Target Risk-Based Asset Allocation



Asset Allocation

The asset allocation decision is generally regarded as the most important decision in the investment management process since it is crucial to achieving the long-term objectives established by the Board. In that light, it is the Board's responsibility to determine the appropriate policy asset allocation based upon several criteria with input and guidance from internal staff and Verus. These criteria are as follows:

1. The expected rate of return for each asset classification;
2. The expected risk of each asset classification (expressed as the standard deviation of the rate of return);
3. The correlation of returns between asset types;
4. The investment objectives and risk constraints of the Systems (including, but not limited to, liquidity needs and the expected time horizon);
5. The funded ratio and cash flow requirements for PSRS and PEERS; and
6. The impact of the Systems' return volatility on the contribution rate.

2020 Asset Allocation/Liability Study

The internal staff completed an asset allocation/liability study during fiscal year 2020 with the assistance of the Systems' external investment consultant, Verus. The key goal of the asset liability study is the development of an asset allocation that maximizes the likelihood that the investment portfolio assets will, over the long-term planning horizon, fund plan benefits within appropriate risk parameters. The asset/liability study was presented at the February 2020 Board of Trustees meeting and adopted at the April 2020 Board meeting and as a result, the Board of Trustees amended the following long-term asset allocation targets: Public Risk Assets decreased 10% and Private Risk Assets increased 10%. Within Public Risk Assets, U.S. Equity decreased from 27% to 23%, Public Credit decreased from 7% to 0% and Non-U.S. Equity increased from 15% to 16%. Within Private Risk Assets, Private Equity increased from 12% to 16%, Real Estate increased from 9% to 11% and Private Credit increased from 4% to 8%. Within Safe Assets, U.S. Treasuries increased from 16% to 20% while U.S. TIPS decreased from 4% to 0%.

The allocation to each investment program considers both the risk tolerance of the Systems and the long-term return objective. The new long-term target asset allocation is expected to maintain similar levels of total portfolio risk while allowing for more efficient investment returns. However, given the nature of investing in Private Risk Assets, it is expected to take several years to implement through a disciplined investment approach. The policy benchmarks will change over time as the Systems make meaningful progress to the new long-term targets.

The following chart details the interim target asset allocation for fiscal year 2020, as well as, the new long-term asset allocation targets approved by the Board of Trustees as part of the 2020 asset liability study. The interim policy allocations have been established to reflect the continued funding of Private Risk Assets and progress towards the Systems' long-term asset allocation objective. For performance measurement purposes, the interim policy will serve as the basis for establishing the Total Fund policy benchmark until the on-going process of funding Private Risk investments is meaningfully complete.

Target Asset Allocation and Policy Ranges			
	Fiscal Year 2020	As Amended in 2020	
Investment Type	Interim Target	Long-Term Target	Policy Ranges
Public Risk Asset Programs			
U.S. Public Equity	27.00%	23.00%	15% - 45%
Public Credit	9.00%	0.00%	0% - 15%
Hedged Assets	6.00%	6.00%	0% - 25%
Non-U.S. Public Equity	15.00%	16.00%	8% - 28%
Total Public Risk Assets	57.00%	45.00%	35% - 70%
Safe Assets Programs			
U.S. Treasuries	16.00%	20.00%	0% - 40%
U.S. TIPS	4.00%	0.00%	0% - 30%
Cash & Cash Equivalents	0.00%	0.00%	0% - 10%
Total Safe Assets	20.00%	20.00%	10% - 40%
Private Risk Asset Programs			
Private Equity	12.00%	16.00%	4% - 22%
Private Real Estate	9.00%	11.00%	4% - 15%
Private Credit	2.00%	8.00%	0% - 12%
Total Private Risk Assets	23.00%	35.00%	10% - 45%
Total Fund	100.0%	100.0%	

The Board recognizes the cyclical nature of the investment markets and it has allowed the internal staff to capitalize upon opportunities by changing the allocation of each asset class or sub-asset class within broad strategic bands or policy ranges (as indicated in the previous table). The flexibility given to the internal staff in establishing the strategic mix provides opportunities for the Systems to take advantage of changing market conditions. To ensure appropriate controls, the Director, CIO and Verus must unanimously agree upon all material strategic changes prior to implementation.

Total Plan Leverage

The Board of Trustees approved the use of total plan leverage in fiscal year 2020. Leverage may be utilized (through futures, swaps, or other derivative instruments) to efficiently implement portfolio rebalancing and/or to apply modest leverage to total plan assets. The total direct leverage at the fund level shall not exceed 10% of the portfolio.

Performance Objectives and Monitoring Process

Generating a total nominal rate of return net of expenses of at least 7.5% and a real rate of return net of expenses of at least 5.25% per annum is an important consideration in the asset allocation decision and the primary performance objective for the Systems over long periods of time. The need for a long-term focus is necessary to preclude the temptation to overreact to events in the financial markets that have no relevance to long-term asset/liability management of the Systems. The resulting dilemma is the conflicting requirement to evaluate investment policy implementation over shorter time periods while maintaining a long-term focus on meeting the return objectives. In order to determine if the Systems' short-term and long-term objectives are being achieved, the Board evaluates performance relative to policy and strategic benchmarks. The policy benchmarks allow the Systems to be judged by performance relative to a defined set of broad market indices (i.e., the Systems' long-term asset allocation objective). The strategic benchmarks allow the Board to consider the additional value generated from the latitude given to the internal staff to alter the asset class or sub-asset class allocations.

Policy Decisions

The value added through policy decisions is measured by the difference between the policy benchmark return and the actuarial required rate of return objective (defined as Real Return Objective + Inflation). A policy benchmark return greater than the actuarial required rate of return reflects value added. A policy benchmark return less than the actuarial required rate of return reflects losses or shortfalls in performance in funding the liabilities of the Systems. These policy decisions are measured over long periods of time.

Strategy Decisions

Strategy decisions are asset class or sub-asset class asset allocation choices made by the internal staff to deviate from the policy benchmark weights, with approval from Verus and the Director that the proposed material deviation is in compliance with the Board's investment policy. The value added through these decisions to overweight and/or underweight these sub-asset classes is measured by the difference between the strategic benchmark return and the policy benchmark return. This difference captures the value added by internal staff through asset class or sub-asset class strategic decisions relative to the Board's broad policy allocation decisions. A strategic benchmark return greater than the policy benchmark return reflects value added through the allocation decisions. A strategic benchmark return less than the policy benchmark return reflects losses to the fund's performance based upon strategy decisions.

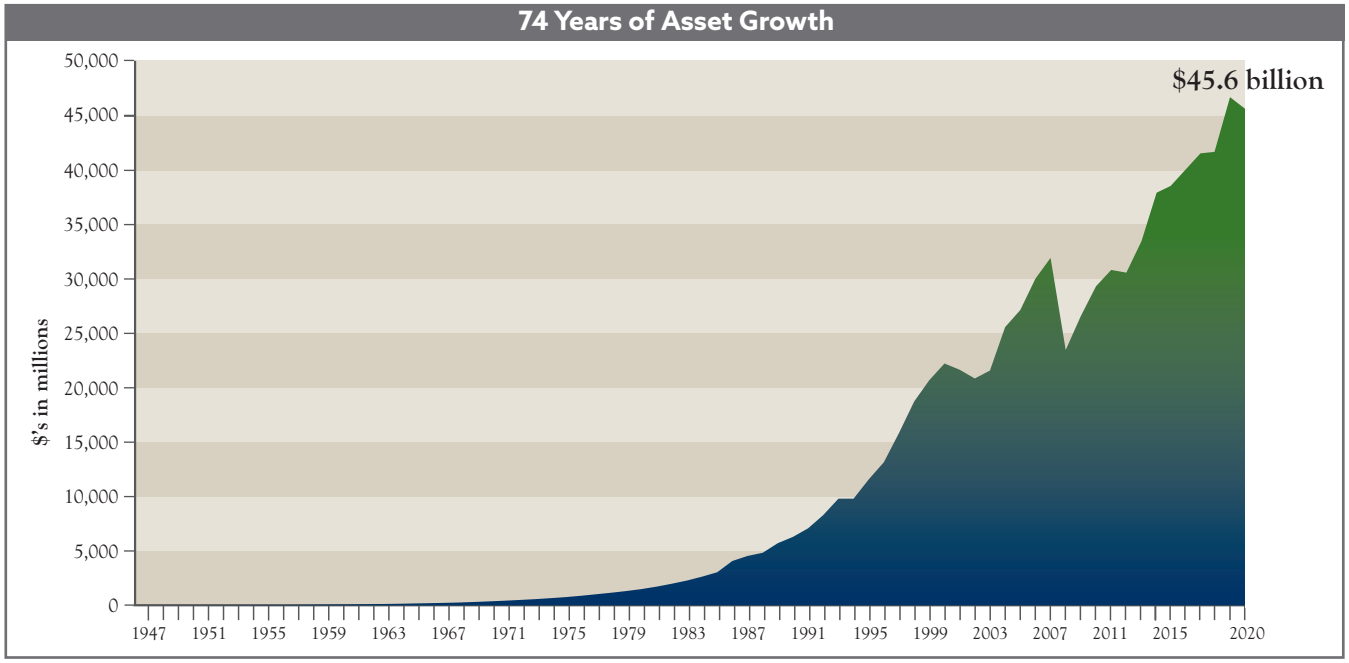
Implementation Decisions

Implementation decisions are manager selection choices made by the internal staff with the approval of a consultant(s) and the Director. The value added through these manager selection decisions is measured by the difference between the actual portfolio return and the strategic benchmark return. An actual portfolio return greater than the strategic benchmark return reflects value added through these manager selection decisions. An actual portfolio return less than the strategic benchmark return reflects losses to the fund's performance based upon implementation decisions.

Risk Controls

The Board recognizes that even though the Systems' investments are subject to short-term volatility, it is critical that a long-term investment focus be maintained. Given the importance of the broad asset allocation decision to the Systems' long-term investment success, internal staff is required to conduct an asset allocation/liability study at least every five years to examine the appropriate long-term investment strategies for the Systems. As previously discussed in the asset allocation section, an asset/liability study was conducted this year. In addition, the CIO must annually evaluate the asset allocation mix and any strategic allocation of the portfolio and provide a report to the Board on the results of that evaluation. This ongoing review of the asset allocation process helps to ensure the asset allocation is being monitored and modified as needed to meet the financial obligations of the Systems.

Total Fund Review



The Systems' total invested assets were $45.6 billion as of June 30, 2020. There has been a long-term growth in assets since the inception of PSRS in 1946 and PEERS in 1965, as shown in the graph above.

Investment Performance[3]

The Systems earned an investment return of 3.9% for fiscal year 2020 (3.7% net of all investment expenses and fees) with an ending market value of invested assets at $45.6 billion. The Systems' well-structured and diversified investment portfolio added approximately $1.6 billion in investment earnings to the growth of assets during the year.

As illustrated in the table below, the Systems' Safe Assets program performed especially well for the year driven by strong fixed income markets with the U.S. Treasuries portfolio returning 11.7%. The Private Risk program also did well with Private Equity increasing 6.9%. Within Public Risk Assets, Public Credit returned 7.4% and U.S. Public Equities produced a 4.1% return. Each of these asset classes strongly contributed to the total return of the Systems while providing diversification from the Non-U.S. Public Equity markets and Hedged Assets.

Total Fund Performance

Investment Program	Total Return	Weighted Contribution
U.S. Public Equity	4.1%	1.1%
Public Credit	7.4%	0.4%
Hedged Assets	-2.4%	-0.2%
Non-U.S. Public Equity	-2.0%	-0.3%
Public Risk Assets	**1.8%**	**1.0%**
U.S. Treasuries	11.7%	1.7%
U.S. TIPS	5.8%	0.2%
Cash & Cash Equivalents	2.1%	0.0%
Safe Assets	**9.5%**	**1.9%**
Private Equity	6.9%	0.9%
Private Real Estate	1.4%	0.1%
Private Credit	1.2%	0.0%
Private Risk Assets	**4.4%**	**1.0%**
TOTAL RETURN	**3.9%**	**3.9%**

[3] *Investment returns were prepared using a time-weighted rate of return based on market values.*

Investment Performance Relative to Benchmarks*

	Fiscal Year	3-Year	5-Year	10-Year
Public Risk Assets Program				
U.S. Public Equity	**4.1%**	**8.4%**	**8.7%**	**13.4%**
Russell 3000 Index	6.5%	10.0%	10.0%	13.7%
Public Credit	**7.4%**	**5.3%**	**4.9%**	**4.5%**
Bloomberg Barclays U.S. Intermediate Credit Index	7.0%	4.9%	4.2%	4.2%
Hedged Assets	**-2.4%**	**2.6%**	**3.1%**	**6.0%**
Hedged Assets Benchmark	4.2%	5.5%	5.4%	7.0%
Benchmark consists of:				
50.0% Bloomberg Barclays U.S. Intermediate Credit Index				
25.0% MSCI ACWI ex-USA net Index				
25.0% Russell 3000 Index				
Non-U.S. Public Equity	**-2.0%**	**3.5%**	**4.7%**	**7.2%**
MSCI ACWI ex-USA net Index	-4.8%	1.1%	2.3%	5.1%
Total Public Risk Assets	**1.8%**	**5.8%**	**6.3%**	**9.4%**
Public Risk Assets Policy Benchmark	3.6%	6.5%	6.6%	9.1%
Benchmark consists of:				
50.0% Russell 3000 Index				
28.9% MSCI ACWI ex-USA net Index				
21.1% Bloomberg Barclays U.S. Intermediate Credit Index				
Safe Assets Program				
Total Safe Assets	**9.5%**	**5.1%**	**3.7%**	**3.0%**
Safe Assets Policy Benchmark	9.5%	5.3%	3.9%	3.2%
Benchmark consists of:				
80.0% Bloomberg Barclays U.S. Treasury Index				
20.0% Bloomberg Barclays U.S. TIPS 1-10 Years Index				
Private Risk Assets Program				
Private Equity	**6.9%**	**13.8%**	**13.9%**	**14.7%**
Private Equity Benchmark	4.9%	9.5%	9.7%	13.5%
Benchmark consists of:				
75.0% MSCI ACWI ex-USA net Index				
25.0% Russell 3000 Index				
Private Real Estate	**1.4%**	**5.7%**	**7.3%**	**10.6%**
NFI-ODCE Index	1.3%	4.7%	6.2%	9.4%
Private Credit	**1.2%**	**6.4%**	**6.5%**	**8.2%**
ICE BofAML U.S. High Yield Master II Index	-1.1%	2.9%	4.6%	6.5%
Total Private Risk Assets	**4.4%**	**10.0%**	**10.7%**	**12.6%**
Private Risk Assets Policy Benchmark	3.3%	7.3%	8.1%	11.5%
Benchmark consists of:				
39.1% Russell 3000 Index				
39.1% NFI-ODCE Index				
13.1% MSCI ACWI ex-USA net Index				
8.7% ICE BofAML U.S. High Yield Master II Index				
TOTAL FUND				
Total Fund	**3.9%**	**6.6%**	**6.8%**	**9.0%**
Total Fund Policy Benchmark	5.0%	6.6%	6.5%	8.5%
Benchmark consists of:				
37.5% Russell 3000 Index				
19.5% MSCI ACWI ex-USA net Index				
16.0% Bloomberg Barclays U.S. Treasury Index				
12.0% Bloomberg Barclays U.S. Intermediate Credit Index				
9.0% NFI-ODCE Index				
4.0% Bloomberg Barclays U.S. TIPS 1-10 Years Index				
2.0% ICE BofAML U.S. High Yield Master II Index				
Actuarial Required Rate of Return **	**7.5%**	**7.5%**	**7.7%**	**7.8%**
TUCS Universe Median	**3.2%**	**6.2%**	**6.4%**	**8.8%**

**Investment returns were prepared using a time-weighted rate of return based on market values.*

***The extended time periods reflect the blended returns of the historical actuarial required rates of return, as previously discussed in the Investment Objective section.*

Investment Performance Relative to Benchmarks

The Board has established a long-term objective (actuarial required rate of return) to achieve a total investment return of at least 7.5% per year and a real rate of return of at least 5.25% per year. The fiscal year 2020 total plan return of 3.9% fell short of the long-term objective as a result of the extreme market volatility related to the global COVID-19 pandemic. However, over long periods of time, PSRS and PEERS continue to produce investment returns that meet or exceed the Systems' objective. The annualized investment return for the Systems is 8.1% (8.0% net of all investment expenses and fees) over the last 30 years.

As previously discussed, in order to determine if the Systems' short-term and long-term objectives are being achieved, the Board utilizes three benchmarks by which the Systems' progress may be judged: (1) performance relative to a **policy benchmark** (defined set of broad market indices that reflects the Systems' long-term asset allocation, or market beta), (2) performance relative to a **strategic benchmark** which indicates value added by the internal staff, and, to a lesser extent, (3) performance relative to other public pension systems and their investment managers as a reference point of oversight.

The internal staff presents to the Board a detailed attribution of the total fund performance at the end of each fiscal year. Value is added over and above expected market returns if the strategic benchmark exceeds the policy benchmark (i.e., the internal staff made positive strategic decisions) and/or if the actual total fund return exceeds the strategic benchmark. The Statistical Performance section on the following page shows that over the past ten years the total fund return exceeded the strategic benchmark and the strategic benchmark has exceeded the policy benchmark demonstrating added value by internal staff through strategic asset allocation decisions and implementation decisions.

Fiscal year 2020 was a difficult environment for all institutional investors with extreme market volatility over the last two quarters. The fiscal year 2020 return of 3.9% underperformed the policy benchmark return of 5.0% by approximately 110 basis points. The underperformance is primarily due to valuations of illiquid private risks assets being benchmarked to public market indexes during a very strong fourth quarter. The pricing and performance methodology utilized for private assets can provide for significant performance variances over short time periods. For instance, the Systems utilize a liquid benchmark (Russell 3000 Index) to measure an illiquid (private equity) asset class. In addition, not all of the illiquid valuations are available by the close of fiscal year-end which will result in significant performance differences over short time periods in volatile markets. Despite the difficult year, the total fund return has exceeded the policy benchmark in six of the last ten fiscal years, an indication that internal staff and active investment management have added value to the Systems. Over the past ten years, the total fund return has exceeded the policy benchmark by 50 basis points, on an annualized basis, resulting in over $1.2 billion in excess performance (net of all investment expenses and fees) to the Systems.

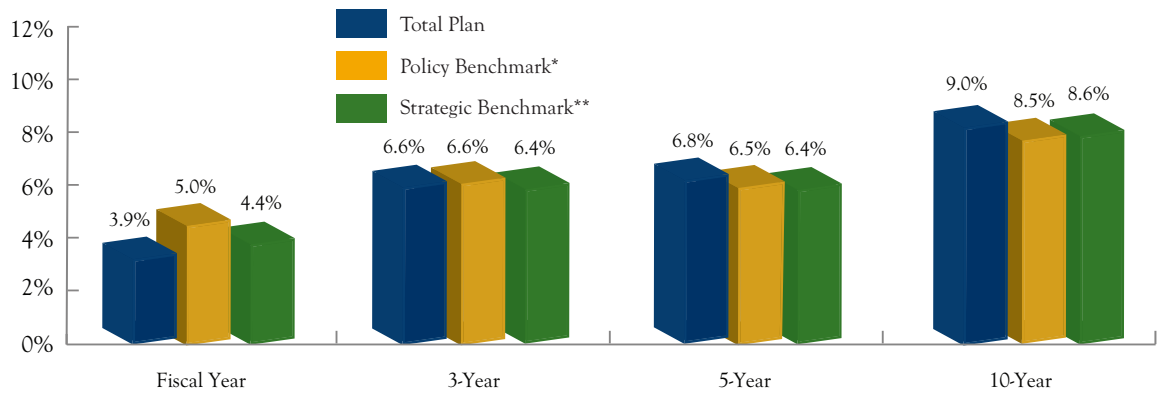
The Systems' fiscal year return was modest on an absolute basis, but strong on a relative basis. The Systems' utilize the Trust Universe Comparison Services (TUCS) to compare the total return and risk levels of the Systems relative to other public pension funds with assets in excess of $1 billion. As the chart on page 72 indicates, the total fund return has exceeded the median return of other large public funds over all reported time periods. The systems have taken substantially less risk than comparable funds during all time periods yet have consistently provided higher investment returns.

Statistical Performance

One of the primary investment objectives of the Systems is to achieve returns similar to the market but at lower risk or volatility levels. To that end, internal staff monitors a number of quantitative risk statistics related to the total investment portfolio as well as individual composites. The following table indicates that the Systems have taken less risk than the policy benchmark (as measured by standard deviation) over all time periods while achieving higher returns, thereby indicating strong risk-adjusted performance.

Beta measures the volatility, or systematic risk, of a security or portfolio in comparison to the market as a whole. If a portfolio has a beta of 1.0, it indicates that the portfolio moves in unison with the market. The Systems' portfolios have a beta of less than 1.0 relative to the policy benchmark, indicating less market volatility. The Systems' beta relative to the all country world stock index (MSCI ACWI net Index) is approximately 0.50. This signifies that the Systems' portfolio moves up or down approximately half as much as the world stock index.

Total Plan Performance



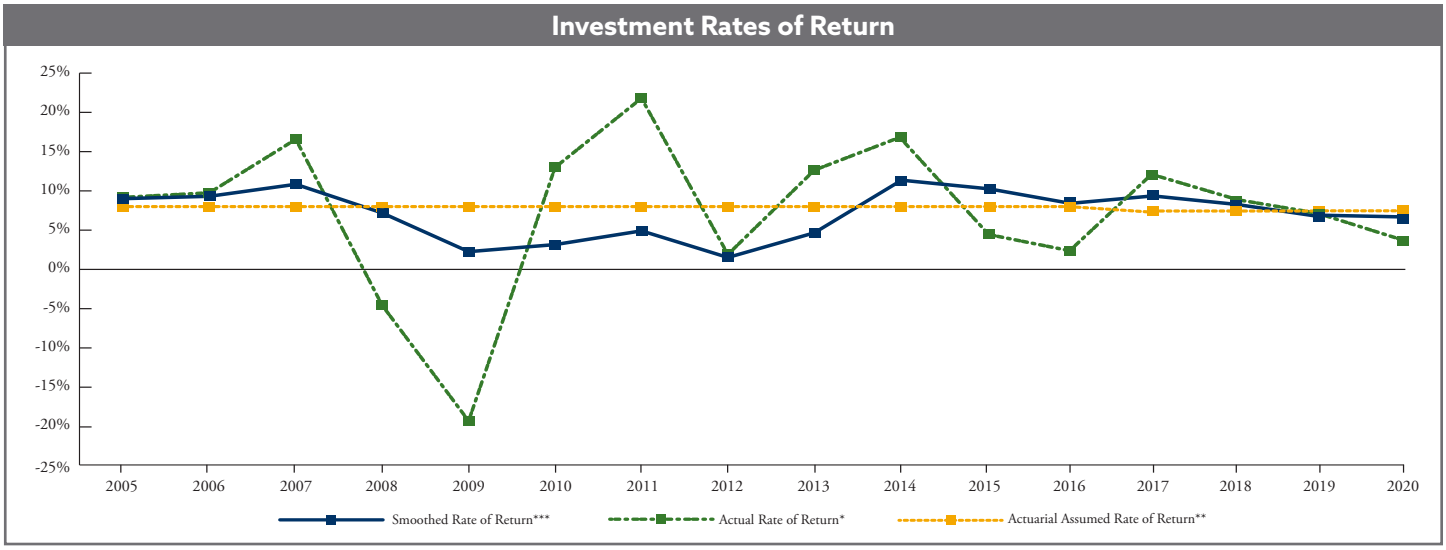
Total Plan Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Total Plan Return	3.9%	6.6%	6.8%	9.0%
Annualized Policy Benchmark Return*	5.0%	6.6%	6.5%	8.5%
Annualized Strategic Benchmark Return**	4.4%	6.4%	6.4%	8.6%
Excess Return	-1.1%	0.0%	0.3%	0.5%
Annualized Standard Deviation of Composite	9.8%	7.5%	6.7%	6.7%
Annualized Standard Deviation of Policy Benchmark*	13.1%	9.6%	8.5%	7.9%
Beta to Policy Benchmark*	0.75	0.77	0.78	0.84
Beta to MSCI ACWI net Index	0.45	0.46	0.45	0.47

*As of June 30, 2020: 37.5% Russell 3000 Index, 19.5% MSCI ACWI ex-USA net Index, 16% Bloomberg Barclays US Treasury Index, 12% Bloomberg Barclays U.S. Intermediate Credit Index, 9.0% NFI-ODCE, 4% Bloomberg Barclays U.S. TIPS 1-10 Years Index and 2% ICE BofAML U.S. High Yield Master II Index.

**As of June 30, 2020: 39.4% Russell 3000 Index, 20.6% MSCI ACWI ex-USA net Index, 15.1% Barclays US Treasury Index, 9.7% Barclays U.S. Intermediate Credit Index, 8.9% NFI-ODCE, 2.7% Barclays U.S. TIPS 1-10 Years Index, 2.5% Merrill Lynch 3- Month U.S. Treasury Bill Index and 1.7% ICE BofAML U.S. High Yield Master II Index. The Total Plan Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month.

The following chart shows the relationship between market value returns (actual rate of return), the actuarially assumed rate of return and the utilization of an actuarial asset valuation method of smoothed assets. To reduce volatility in employer and employee contribution rates, a common actuarial practice of "asset smoothing" is utilized. The application of this practice results in full recognition of returns at the actuarial assumed rate and recognizes any annual excess or deficiency relative to the assumed rate over a period of five years.



**The Actual Rate of Return (market return) consists of all investment gains and losses (net of investment expenses) on the fair market value of assets each year.*

***The Actuarial Assumed Rate of Return is the assumed rate of return on the actuarial value of assets and is used in establishing contribution rates and pension obligations, including the net pension liability.*

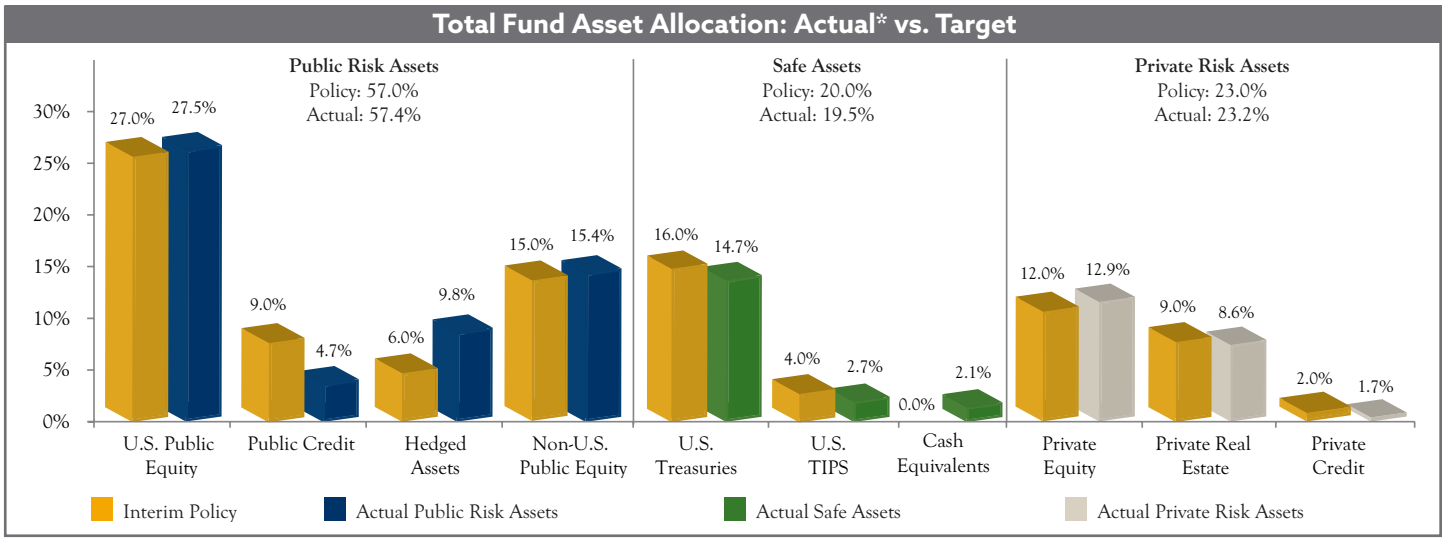
****Investment earnings in excess or deficient of the assumed rate of return are smoothed over a 5-year period for actuarial funding purposes. Twenty percent of the excess or deficiency is recognized annually for a 5-year period. This calculation results in the Smoothed Rate of Return.*

Asset Allocation: Actual Versus Target

The interim policy allocations have been established to reflect meaningful progress towards the new long-term targets and for policy benchmark weights, as discussed in the Investment Policy Summary: Asset Allocation section. As meaningful progress is made, the interim targets will be updated from the prior long-term policy allocations.

The June 30, 2020 interim policy allocation was 57% Public Risk Assets, 20% Safe Assets and 23% Private Risk Assets. In fiscal year 2020 the interim asset class targets were updated to reflect the progress made in funding the Private Equity and Private Real Estate programs. The Public Credit allocation was decreased from 12.0% to 9.0% while Private Equity was increased from 10.5% to 12% and Private Real Estate was increased from 7.5% to 9.0%. These sub-asset class target allocation updates resulted in a 3% decrease in Public Risk Assets from 60% to 57% and a corresponding increase to Private Risk Assets of 3% from 20% to 23%.

As illustrated in the chart, internal staff utilized the flexibility built into the investment policy to strategically overweight or underweight certain asset classes throughout the year. Strategic decisions during the year included the utilization of Total Plan leverage to rebalance into U.S. Public Equities in March 2020 during the severe market selloff from the COVID-19 pandemic. As discussed in the Investment Policy Summary: Asset Allocation section, the Board of Trustees recently approved the use of Total Plan leverage to efficiently implement portfolio rebalancing. The Total Plan leverage as of June 30, 2020 is 0.3% which provided meaningful returns to the Systems in fiscal year 2020.



**Total Plan assets include 0.2% invested in an operating cash account that is not reflected in the chart above.*

Public Risk Assets Summary

As of June 30, 2020, Public Risk Assets had a fair value of approximately $26.0 billion, representing 57.4% of total plan assets.

Investment Program Description

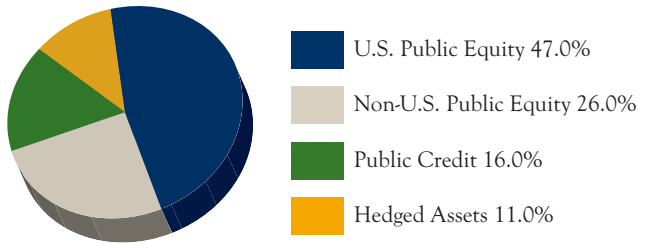
The Board of Trustees has adopted an asset allocation policy that includes a significant allocation to Public Risk Assets. The four programs within the Public Risk Asset composite are U.S. Public Equity, Public Credit, Hedged Assets and Non-U.S. Public Equity. Each program within the Public Risk allocation is a separate multi-manager composite that is treated generally as a single portfolio. Each program serves a specific and distinct role within the overall Public Risk composite and also within the overall total plan allocation. Over time, the Public Risk composite and its sub-components serve as an effective and efficient vehicle to supply the underlying beta exposure to a portfolio of global risk assets required by the Systems' asset allocation policy, while providing the opportunity to achieve excess returns above that of a passive benchmark through the prudent combination of passive investment vehicles and a wide range of active investment strategies.

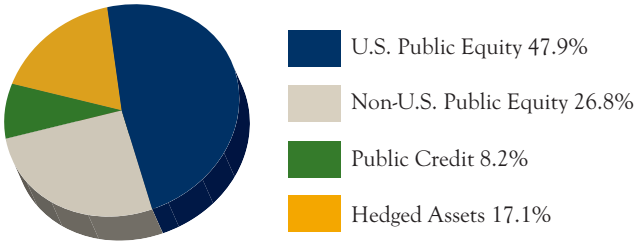
Structure

As of June 30, 2020, 47.9% of the Systems' Public Risk Assets were invested in the U.S. Public Equity program, 26.8% in the Non-U.S. Public Equity program, 8.2% in the Public Credit program and 17.1% in the Hedged Assets program. Each of these programs is discussed in more detail on the following pages.

The internal staff decreased the total plan's overweight to Public Risk Assets during the year. The interim target allocation for Public Risk Assets during fiscal year 2020 was 57.0% and the Systems' allocation at the end of the fiscal year was 57.4%, down from the prior year overweight of 60.6%. Internal staff strategically rebalanced from Public Risk Assets during fiscal year 2020. Within the Public Risk Assets composite, internal staff decreased the overweight to U.S. Public Equity, Non-U.S. Public Equity and Hedged Assets while maintaining an underweight to Public Credit throughout the fiscal year.

Public Risk Assets Allocation





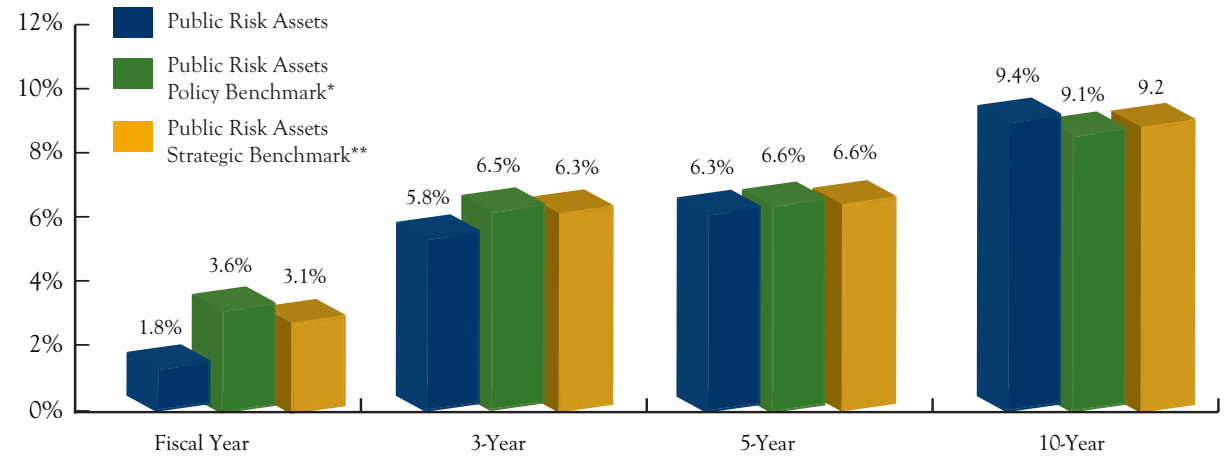
Market Overview

Fiscal year 2020 was a volatile period for the financial markets. Faced with the COVID-19 pandemic, an uncertain economic outlook and an unprecedented government response, the global equity markets went from one of the sharpest market sell-offs in history during the first quarter of 2020 to one of the fastest recoveries ever in the second quarter. Despite the difficult market environment, the Russell 3000 Index (broad measure of the U.S. stock market) produced a positive 6.5% return for the year. The Non-U.S. equity markets did not recover to the same extent, underperforming the U.S. equity markets for the year with the MSCI ACWI ex-USA Index (broad measure of the international stock markets) declining 4.8%. Bond markets also experienced extreme volatility with interest rates declining to historically low levels resulting in strong gains for the Public Credit benchmark (Barclays U.S. Intermediate Credit Index) of 7.0%.

Performance

The total return for the Systems' Public Risk portfolio was 1.8% which underperformed the policy benchmark by 180 basis points. However, as shown in the table and graph below, the Systems' Public Risk composite has performed well over long periods of time with 30 basis points of annualized alpha over the last ten years. The positive performance of the portfolio relative to the policy benchmark indicates value added by the internal staff through both strategic asset allocation decisions and manager selection decisions.

Public Risk Assets Performance



Public Risk Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Return	1.8%	5.8%	6.3%	9.4%
Annualized Policy Benchmark Return*	3.6%	6.5%	6.6%	9.1%
Annualized Strategic Benchmark Return**	3.1%	6.3%	6.6%	9.2%
Excess Return	-1.8%	-0.7%	-0.3%	0.3%
Annualized Standard Deviation of Composite	19.3%	13.6%	11.7%	10.8%
Annualized Standard Deviation of Policy Benchmark*	18.6%	13.4%	11.7%	10.9%
Beta to Policy Benchmark*	1.03	1.01	1.00	0.99
Beta to MSCI ACWI net Index	0.89	0.83	0.80	0.76

**The Public Risk Assets Policy Benchmark is composed as follows: 50% Russell 3000 Index, 28.9% MSCI ACWI ex-USA net Index and 21.1% Bloomberg Barclays U.S. Intermediate Credit Index.*

*** The Public Risk Assets Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month.*

U.S. Public Equity Program Summary

As of June 30, 2020, the U.S. Public Equity program had a fair value of approximately $12.4 billion, representing 27.5% of total plan assets.

Investment Program Description

U.S. Public Equity is comprised of the Large-Cap, Small-Cap and Alpha Overlay programs which seek to provide long-term capital appreciation and dividend income in excess of inflation through the investment in domestic equity securities. Returns above a purely passive investment benchmark are targeted through the use of a wide variety of active investment strategies that may employ exposure to both equity securities and other types of investments. The primary ***beta*** exposure is achieved through investments in passive investment vehicles (including derivatives), traditional long-only active domestic equity management, and active long/short approaches. ***Alpha*** (or, excess returns above a passive alternative) is expected to be achieved through traditional long-only active domestic equity management, active long/short approaches and alpha overlay strategies (described in greater detail at the end of this section).

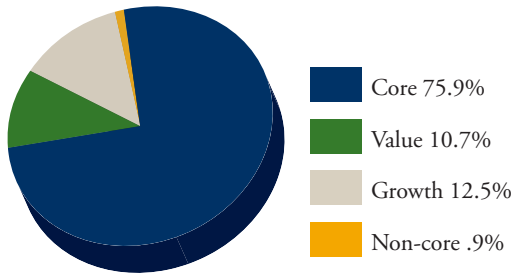
Structure

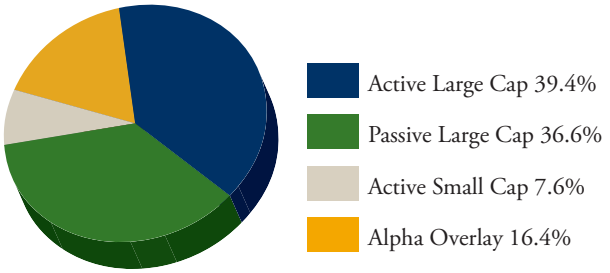
As of June 30, 2020, 36.6% of the U.S. Public Equity composite was passively managed. The remainder of the portfolio was actively managed and diversified across a broad array of capitalization ranges and investment styles, including the Small-Cap and the Alpha Overlay programs. Both programs represent multi-manager pools of assets managed within the overall U.S. Public Equity structure. The Small-Cap program encompasses small capitalization assets. The Alpha Overlay composite focuses on the separation of returns into alpha and beta, and encompasses alternative equity mandates including hedge fund portfolios.

Exposure to the various segments of the domestic equity market (i.e., growth-oriented, value-oriented, and core) and to the approved investment strategy types are achieved through the identification, selection and on-going management of SEC-registered investment advisors qualified to serve as fiduciaries to the Systems.

The pie charts below depict the U.S. Public Equity portfolio by presenting the current style structure of the portfolio as well as the allocation by composite and market sector.

U.S. Public Equity Allocations: Style and Composite





Market Overview

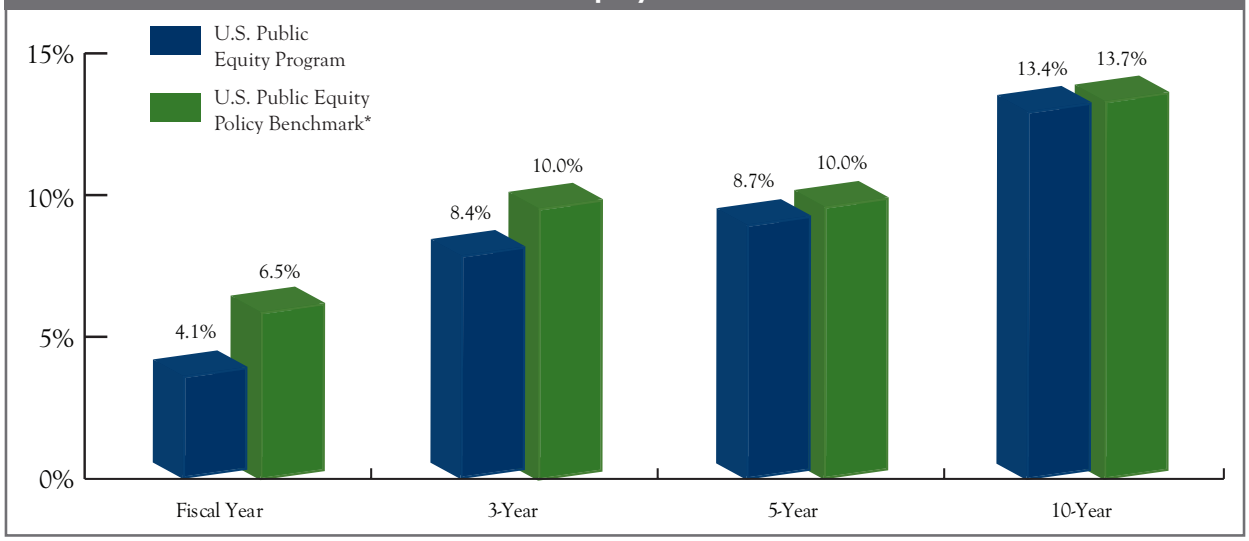
The extreme market volatility during the year resulted in significant return disparities across U.S. equity market capitalizations and styles. For the year, large cap stocks significantly outperformed small cap stocks while growth styles significantly outperformed value styles. The comprehensive measure of the U.S. stock market (Russell 3000 Index) increased 6.5% while large-cap stocks (Russell 1000) increased 7.5% outperforming small-cap stocks (Russell 2000 Index) which declined 6.6% for the year. Large-cap growth stocks (Russell 1000 Growth Index) outperformed large-cap value stocks (Russell 1000 Value Index) with a return of 23.3% compared to -8.8% while small-cap growth stocks (Russell 2000 Growth Index) outperformed small cap value stocks (Russell 2000 Value Index) with a return of 3.5% compared to -17.5%.

Performance

The total return for the U.S. Public Equity program was 4.1% compared to the benchmark return of 6.5% for the fiscal year ended June 30, 2020. Within the U.S. Public Equity program, the Large-Cap program returned 5.4%, Alpha Overlay returned 4.4% and the Small-Cap program returned -8.3% for the year.

As indicated in the table and graph, the U.S. Public Equity portfolio has produced strong absolute returns over extended time periods. Over longer periods of time, the Systems' U.S. Public Equity portfolio is designed to deliver approximately 50-100 basis points of excess return through a combination of active and passive investment strategies.

U.S. Public Equity Performance



U.S. Public Equity Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
U.S. Public Equity Return	4.1%	8.4%	8.7%	13.4%
Annualized Policy Benchmark Return*	6.5%	10.0%	10.0%	13.7%
Excess Return	-2.4%	-1.6%	-1.3%	-0.3%

**The U.S. Public Equity Policy Benchmark is the Russell 3000 Index.*

Statistics

The following table displays the statistical characteristics of the Systems' U.S. Public Equity program as of June 30, 2020 with comparisons shown to the portfolio's policy benchmark. In addition, the top ten U.S. Public Equity holdings as of June 30, 2020 are shown in the table following the characteristics.

U.S. Public Equity Characteristics

Characteristics	June 30, 2020 Systems' U.S. Public Equity Program*	June 30, 2020 Russell 3000 Index
Number of Securities	2,396	3,009
Dividend Yield	1.8%	1.8%
Price-to-Earnings Ratio	27.2	22.4
Avg. Market Capitalization	$ 266.8 bil	$ 328.9 bil
Price-to-Book Ratio	4.3	3.4

** Includes only actively managed separate accounts.*

A complete list of portfolio holdings is available upon request.

U.S. Public Equity - Top 10 Holdings

Top 10 Largest Holdings* June 30, 2020		Fair Value	% of Total U.S. Public Equity
Amazon.com Inc.	$	126,312,574	1.0%
Microsoft Corp.		123,853,744	1.0%
Alphabet Inc.		110,109,947	0.9%
Apple Inc.		91,925,587	0.7%
Facebook Inc.		80,706,128	0.7%
Johnson & Johnson		64,394,758	0.5%
Tesla Inc.		63,076,021	0.5%
Shopify Inc.		60,369,120	0.5%
Nvidia Corp.		50,063,780	0.4%
Netflix Inc.		47,490,250	0.4%
TOTAL	$	818,301,909	6.6%

Investment Advisors

As of June 30, 2020, the Systems had contracts with 19 external investment advisors who managed 27 portfolios that comprised 83.6% of the U.S. Public Equity portfolio. The remaining 16.4% of the portfolio was in the Alpha Overlay program described in the next section. The Systems repositioned the Large-Cap program during the year by terminating a mandate with Analytic Investors while adding new mandates with Eagle Capital Management and NISA Investment Advisors. The Systems repositioned the Small-Cap program during the year by terminating mandates with Allianz and NISA Investment Advisors while adding new mandates with Chartwell Investment Partners, Greenhouse Funds, RK Capital Management and Russell Investments.

U.S. Public Equity Investment Advisors

Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
Analytic Investors	Quantitative Low Volatility	$ 1,039,964,617	2.3%
AQR Capital Management	Quantitative 140/40 Core	567,427,033	1.2%
Aronson + Johnson + Ortiz	Quantitative 130/30 Value	216,380,015	0.5%
Aronson + Johnson + Ortiz	Quantitative Value	126,715,221	0.3%
Blackrock	Passive Russell 1000 Index	4,348,225,933	9.5%
Coatue Long Only Partners	Concentrated Technology	286,012,428	0.6%
Davis Selected Advisers	Concentrated Finance	70,891,080	0.2%
Eagle Capital Management	Concentrated Core	199,698,640	0.4%
Grantham, Mayo, Van Otterloo & Co.	Concentrated High Quality	447,943,072	1.0%
Lazard Asset Management	Concentrated All-Cap	123,138,142	0.3%
Martingale Asset Management	Quantitative 130/30 Growth	280,648,418	0.6%
NISA Investment Advisors	Passive S&P 500 Index	177,371,867	0.7%
Russell Investments	Completion Portfolio	215,899,182	0.5%
Select Equity Group	Concentrated High Quality	115,263,679	0.2%
Westwood Management	Concentrated Value	398,155,452	0.9%
Westwood Management	Master Limited Partnerships	89,328,012	0.2%
Zevenbergen Capital	Concentrated All-Cap Growth	695,115,770	1.5%
Large-Cap Subtotal		**9,398,178,561**	**20.9%**
AQR Capital Management	Quantitative Core	89,824,138	0.2%
Blackrock	Passive Russell 2000 Index	211,819,783	0.5%
Chartwell Investment Partners	Diversified Value	50,273,257	0.1%
Chartwell Investment Partners	Diversified Small/Midcap Value	33,027,128	0.1%
Greenhouse Funds	Concentrated Core	77,771,629	0.2%
Martingale Asset Management	Quantitative Low Volatility	104,473,143	0.2%
RK Capital Management	Diversified Core	102,576,569	0.2%
Russell Investments	Passive Russell 2000 Growth	27,402,337	0.1%
Russell Investments	Completion Portfolio	136,125,705	0.3%
Systematic Financial Management	Diversified Value	110,782,610	0.2%
Small-Cap Subtotal		**944,076,299**	**2.1%**
Total		$ 10,342,254,860	23.0%

Alpha Overlay Program Summary

As of June 30, 2020, the Alpha Overlay program had a fair value of approximately $2.0 billion, representing 4.5% of total plan assets.

Investment Program Description

The Alpha Overlay portfolio resides within the U.S. Large-Cap Equity program. The Alpha Overlay portfolio has been constructed to assist in meeting the long-term goals established for the overall U.S. Large-Cap Equity allocation. Specifically, Alpha Overlay provides broad exposure to large-cap U.S. stocks using S&P 500 total return swaps, while the returns of a select portfolio of hedge fund strategies provide the opportunity to earn excess returns above the passive S&P 500 Index. By combining the market exposure obtained through the S&P 500 total return swaps with the diversified exposures to investment strategies focused on alpha generation, the combined portfolio is constructed and managed to produce a return stream with volatility and beta characteristics similar to the passive S&P 500 Index, while generating excess returns (or alpha) of approximately 200-250 basis points over longer periods of time.

Structure

As of June 30, 2020, 22.5% of the Alpha Overlay composite assets were passively managed by NISA Investment Advisors using S&P 500 total return swaps to attain equitization. An additional 69.5% of the portfolio was actively managed across a diversified range of multi-strategy and market neutral hedge fund mandates. The remaining 8.0% of the portfolio was actively managed by Zevenbergen Capital in a long-only mandate. The chart below displays the specific investment advisor exposure within the composite as of June 30, 2020.

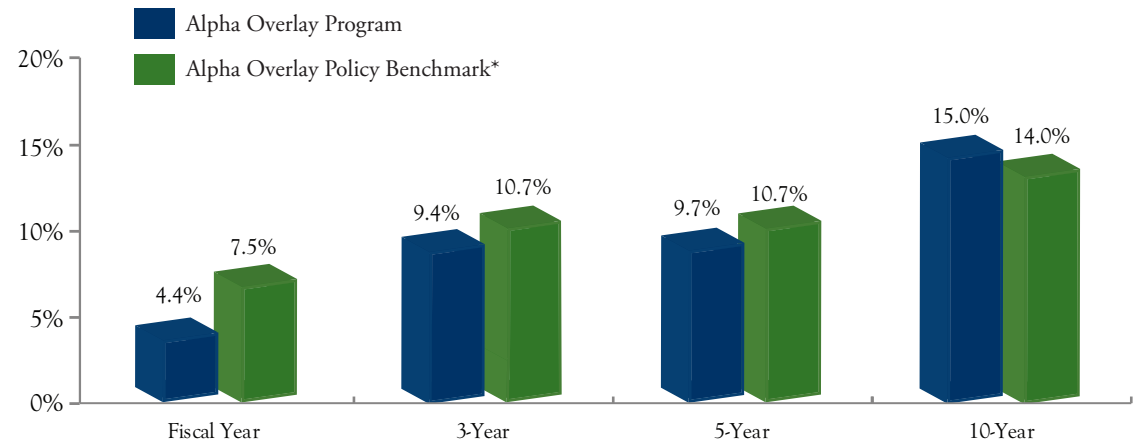
Alpha Overlay Investment Advisors

Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
Analytic Investors	Relative Value	$ 27,593,678	0.1%
AQR Absolute Return Fund	Relative Value	79,703,430	0.2%
Bridgewater Pure Alpha II	Asset Allocation/Global Macro	104,983,941	0.2%
Davidson Kempner Institutional Partners	Event Driven	224,027,733	0.5%
HBK Capital Management	Relative Value	220,848,865	0.5%
NISA Investment Advisors	S&P 500 Exposure	456,423,536	1.0%
Renaissance Institutional Equities Fund	Low Volatility Equity	336,097,079	0.7%
Rock Springs Capital Fund	Long-Biased Equity	60,635,257	0.1%
Sculptor Domestic Partners	Mulit-Strategy	178,869,760	0.4%
Stark Investments Limited Partners	Equity Long/Short	1,170,780	0.0%
UBS O'Connor Multi-Strategy Alpha	Relative Value	176,353,339	0.4%
Zevenbergen Capital	Active All-Cap Growth	161,645,294	0.4%
Total		**$ 2,028,352,692**	**4.5%**

Performance

The fiscal year 2020 return for the Alpha Overlay program was 4.4% underperforming the benchmark return of 7.5% by 310 basis points. However as shown in the table and graph below, the Alpha Overlay composite has produced significant long-term absolute and relative returns while maintaining a risk profile (standard deviation and beta) lower than the benchmark.

Alpha Overlay Performance



Alpha Overlay Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Alpha Overlay Return	4.4%	9.4%	9.7%	15.0%
Annualized Policy Benchmark Return*	7.5%	10.7%	10.7%	14.0%
Excess Return	-3.1%	-1.3%	-1.0%	1.0%
Annualized Standard Deviation of Composite	23.5%	16.4%	14.0%	13.0%
Annualized Standard Deviation of Policy Benchmark*	21.9%	17.0%	14.8%	13.4%
Beta to Benchmark*	1.06	0.95	0.92	0.95

**The Alpha Overlay Policy Benchmark is the S&P 500 Index.*

Non-U.S. Public Equity Program Summary

As of June 30, 2020, the Non-U.S. Public Equity program had a fair value of approximately $7.0 billion, representing 15.4% of total plan assets.

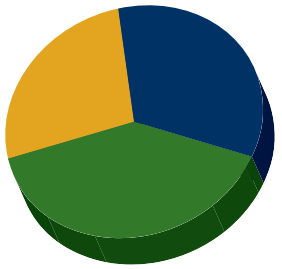
Investment Program Description

The Non-U.S. Public Equity program provides long-term capital appreciation and dividend income in excess of inflation through exposure to public equity securities on a global basis. Specific investment strategies approved for the Non-U.S. Public Equity program include passive investment vehicles, traditional long-only active equity management and active long/short approaches. Exposure to the various segments of the global equity market (i.e., U.S., developed non-U.S., emerging, growth-oriented, value-oriented, and core) and to the approved investment strategy types are achieved through the identification, selection and on-going management of SEC-registered investment advisors qualified to serve as fiduciaries to the Systems. The Non-U.S. Public Equity portfolios provide an element of diversification relative to the domestic equity portfolios. Currency is an aspect of international investing that can impact the performance and volatility of the asset class over the short-term. However, over the long-term, the effect from currency is expected to be neutral.

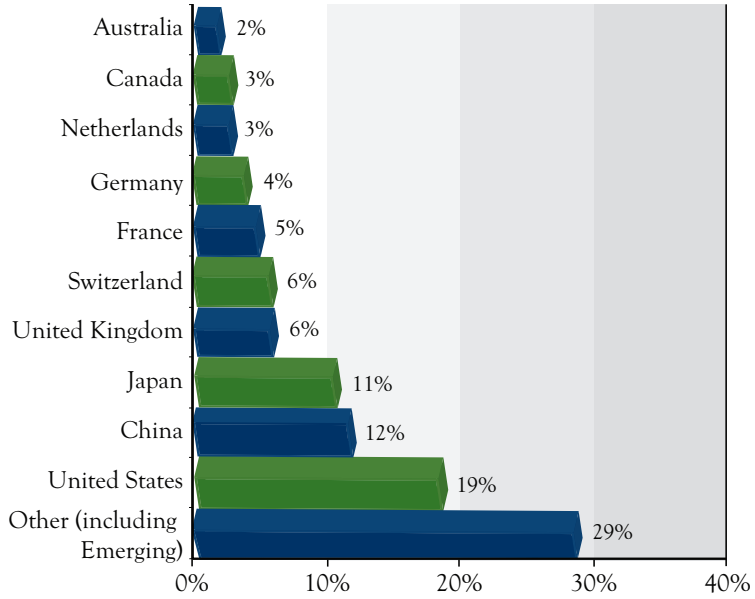
Structure

As of June 30, 2020, 4.9% of the Non-U.S. Public Equity composite was passively managed. The remainder of the portfolio was actively managed and diversified across capitalization ranges, styles and a number of developed and emerging market countries. The pie chart below indicates broader exposure by investment mandate within the composite while the bar graph displays the specific country exposure.

Non-U.S. Public Equity Allocation



Non-U.S. Public Equity Country Allocation



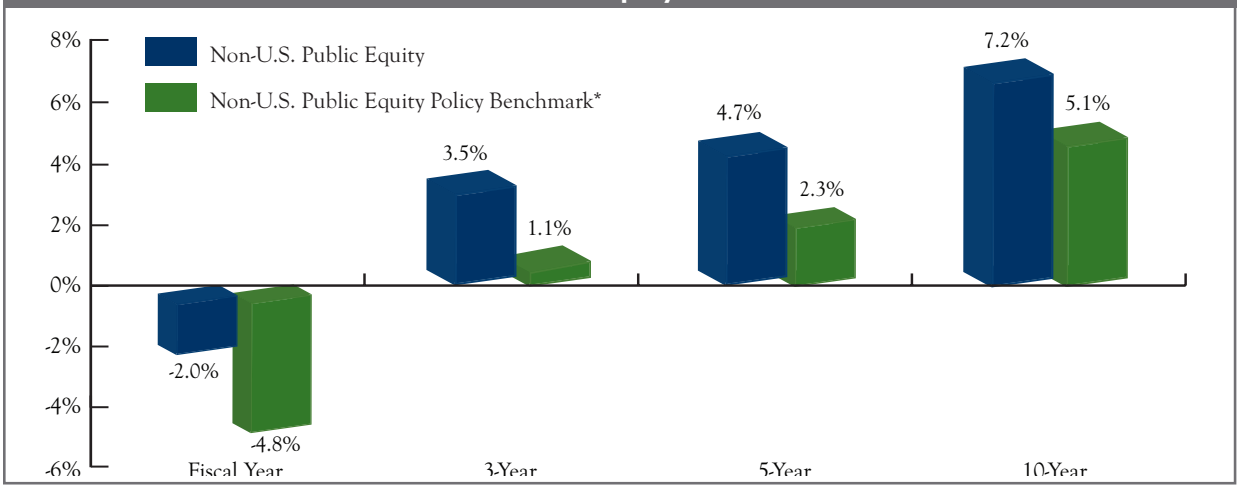
Market Overview

The non-U.S. equity markets experienced extreme volatility during the year due to the global COVID-19 pandemic, similar to the U.S. equity markets, however further weakness in the commodities and foreign exchange markets resulted in underperformance relative to the U.S. For the fiscal year ended June 30, 2020 developed market global stocks (MSCI World net Index) increased 2.8% outperforming emerging markets (MSCI EM net Index) which decreased 3.4% and developed international markets (MSCI EAFE net Index) which decreased 5.1% while the broad measure of the non-U.S. equity markets (MSCI ACWI ex-USA Index) declined 4.8%.

Performance

The total return for the Non-U.S. Public Equity program was -2.0% compared to the benchmark return of -4.8% for the fiscal year ended June 30, 2020. As shown in the table and graph below, the Systems' Non-U.S. Public Equity composite returns substantially outperformed the benchmark in all time periods. Over long periods of time, the Systems' Non-U.S. Public Equity program is designed to deliver approximately 100-150 basis points of excess returns through a combination of active and passive investment strategies. The Non-U.S. Public Equity program's returns have exceeded these expectations.

Non-U.S. Public Equity Performance



Non-U.S. Public Equity Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Non-U.S. Public Equity Return	-2.0%	3.5%	4.7%	7.2%
Annualized Policy Benchmark Return*	-4.8%	1.1%	2.3%	5.1%
Excess Return	2.8%	2.4%	2.4%	2.1%

**The Non-U.S. Public Equity Benchmark is the MSCI ACWI ex-USA net Index.*

Statistics

The following table displays the top ten Non-U.S. Public Equity holdings as of June 30, 2020.

Non-U.S. Public Equity - Top 10 Holdings		
Top 10 Largest Holdings* June 30, 2020	Fair Value	% of Total Non-U.S. Public Equity
Roche Holding AG	$ 82,429,694	1.2%
Nestle SA	62,863,012	0.9%
Microsoft Corp.	54,814,401	0.8%
Alibaba Group	52,128,219	0.8%
Schneider Electric SE	51,813,677	0.7%
SAP SE	48,181,150	0.7%
Taiwan Semiconductor	47,512,857	0.7%
AIA Group Ltd.	43,718,316	0.6%
Hoya Corp.	42,681,448	0.6%
Samsung Electronics Ltd.	37,760,571	0.5%
Total	**$ 523,903,345**	**7.5%**

** Includes only actively managed separate accounts.*

A complete list of portfolio holdings is available upon request.

Investment Advisors

As of June 30, 2020, the Systems had contracts with 12 external investment advisors who managed 17 portfolios within the Non-U.S. Public Equity portfolio. In fiscal year 2020 the Systems terminated one mandate and added an emerging markets mandate with ABS Investment Management.

Non-U.S. Public Equity Investment Advisors			
Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
Acadian Asset Management	Quantitative Emering Markets Low Volatility	$ 478,662,755	1.0%
Acadian Asset Management	Quantitative International Small Cap	119,070,498	0.3%
ABS Investment Management	Local Emerging Markets	215,955,668	0.5%
AllianceBernstein Institutional Mgmt.	Global Low Volatility	274,656,798	0.6%
Analytic Investors	Quantitative Global Low Volatility	649,626,077	1.4%
AQR Capital Management	Quantitiative International Core	502,284,111	1.1%
Arrowstreet Capital	Quantitative Emerging Markets	257,722,848	0.6%
Arrowstreet Capital	Quantitative Global	833,012,753	1.8%
Arrowstreet Capital	Quantitiative Global Long/Short	1,054,988,365	2.3%
Blackrock	Passive EAFE Index	316,237,784	0.7%
Blackrock	Passive Emerging Markets Index	25,901,130	0.1%
Coronation Asset Management Limited	Global Emerging Markets	309,816,336	0.7%
Invesco	Quantitative International Low Volatility	194,663,143	0.4%
MFS Investment Management	Diversifed International Core	962,562,309	2.1%
MFS Investment Management	Concentrated International Core	277,448,615	0.6%
Neon Capital Management	Emerging Markets Small Cap	103,611,970	0.2%
Rock Creek Group	Local Emerging Markets	447,545,823	1.0%
Total		**$ 7,023,766,983**	**15.4%**

Public Credit Program Summary

As of June 30, 2020, the Public Credit program had a fair value of approximately $2.2 billion, representing 4.7% of total plan assets.

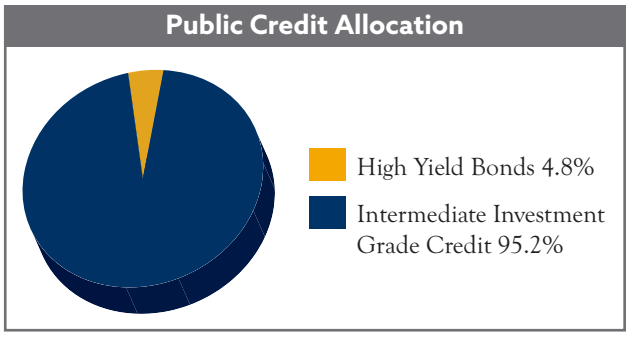
Investment Program Description

The Public Credit program is designed to provide a source of income and capital appreciation for the Systems while creating substantial diversification to the total plan with a low correlation to other asset classes. Most securities in this program exhibit high liquidity. Specific investments can include investment grade corporate securities, below investment grade debt instruments, distressed debt securities, convertible bonds, bank loans, agencies, mortgage-backed securities, asset-backed securities, and interest rate sensitive securities (including those issued or guaranteed by the United States government or its agencies). Investments in this program may include debt of both U.S. and non-U.S. issuers.

The performance objective for the Public Credit program is to exceed the returns of the investment grade credit markets through the use of a wide variety of active management approaches while incurring a level of risk that is generally consistent with the policy benchmark.

Structure

As of June 30, 2020, the Public Credit composite was actively managed and diversified across high yield bonds with a base of high-quality corporate bonds. The following pie chart presents the strategy allocation of the Systems' Public Credit assets as of June 30, 2020.



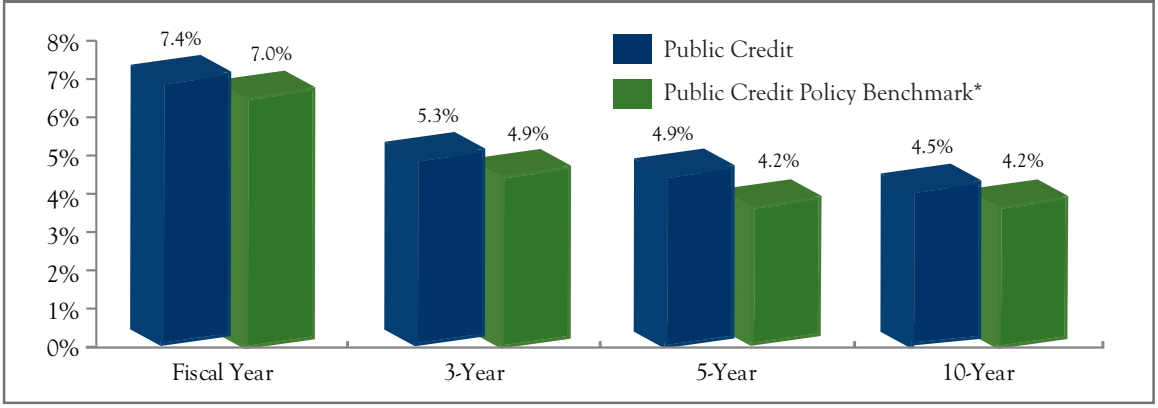
Market Overview

For fiscal year 2020, investment grade credit outperformed high yield bonds as the yield on the 10-year Treasury decreased to 0.7% on June 30, 2020 from 2.0% on June 30, 2019. The significant decrease in interest rates throughout the year positively impacted the price of bonds. The comprehensive measure of the U.S. Treasury market (Bloomberg Barclays U.S. Treasury Index) increased 10.5%, investment grade credit corporate bonds (Bloomberg Barclays U.S. Intermediate Credit Index) increased 7.0% while a broader measure of the U.S. bond market (Bloomberg Barclays U.S. Aggregate Index) increased 8.7% for the year. High yield, or lower quality bonds (ICE BofAML U.S. High Yield Master II Index), decreased 1.1% for the year and global bonds (Bloomberg Barclays Global Agg. Ex-US Index) increased 1.0%.

Performance

The Public Credit program produced strong absolute and relative returns for fiscal year 2020. The fiscal year return of 7.4% was above the benchmark return of 7.0% by 40 basis points. As indicated in the table and graph, the Public Credit portfolio has produced moderate absolute and relative returns in all reported time periods. Over long periods of time, the Systems' Public Credit program is designed to deliver approximately 50-100 basis points of excess return through a combination of active and passive strategies.

Public Credit Performance



Public Credit Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Public Credit Return	7.4%	5.3%	4.9%	4.5%
Annualized Policy Benchmark Return*	7.0%	4.9%	4.2%	4.2%
Excess Return	0.4%	0.4%	0.7%	0.3%

**The Public Credit Policy Benchmark is the Bloomberg Barclays U.S. Intermediate Credit Index.*

Statistics

The following table displays the top ten Public Credit holdings as of June 30, 2020.

Public Credit - Top 10 Holdings

Top 10 Largest Holdings* June 30, 2020		Fair Value	% of Total Public Credit
Transcontinental Gas Pipe Line Co. LLC, 7.85%, 02/01/2026	$	43,021,165	2.0%
Goldman Sachs Group Inc., 3.8%, 03/15/2030		42,000,550	1.9%
Morgan Stanley, Floating, 01/20/2023		37,083,858	1.7%
Republic Services Inc., 2.5%, 08/15/2024		31,757,062	1.5%
New York Life Global Funding, 2.0%, 01/22/2025		31,498,949	1.5%
Cintas Corp No. 2, 3.25%, 06/01/2022		30,419,119	1.4%
Raytheon Technologies Corp, 3.5%, 06/01/2022		30,122,943	1.4%
Anheuser-Busch Inbev, 4.70%, 02/01/2036		29,451,750	1.4%
Cameron Lng, LLC, 3.40%, 01/15/2038		29,078,585	1.3%
AT&T Inc, 0.00%, 11/27/2022		28,377,950	1.3%
Total	**$**	**332,811,931**	**15.4%**

**A complete list of portfolio holdings is available upon request.*

Investment Advisors

As of June 30, 2020, the Systems had contracts with three external investment advisors who managed three portfolios in the Public Credit program. During the year, the Systems continued to wind down the Oaktree Bank Loans portfolio.

Public Credit Investment Advisors

Investment Advisor	Investment Style		Fair Value As of June 30, 2020	% of Total Plan Fair Value
NISA Investment Advisors	Corporate Credit	$	2,051,744,752	4.5%
Oaktree Bank Loans	Senior Bank Loans		933,043	0.0%
Pacific Investment Management Co.	High Yield		102,696,680	0.2%
Total		**$**	**2,155,374,475**	**4.7%**

Hedged Assets Program Summary

As of June 30, 2020, the Hedged Assets program had a fair value of approximately $4.5 billion, representing 9.8% of total plan assets.

Investment Program Description

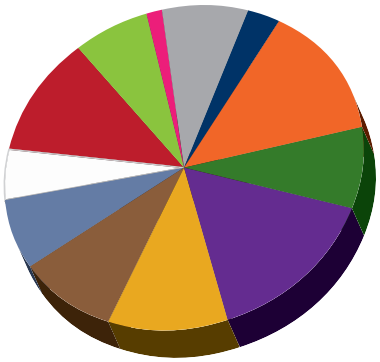
The Hedged Assets program's objective is to provide diversification to the total portfolio and reduce volatility within the Public Risk composite. The purpose of this program is to enhance the overall risk/return profile of the Public Risk composite through the inclusion of specialized investment strategies that typically generate returns in a different fashion (i.e., absent a high correlation to equities or bonds). These strategies may utilize leverage as allowed within their governing documents. The returns from these strategies have historically had a low-to-moderate correlation with the traditional equity markets, thus providing diversification benefits in addition to portfolio return enhancement. These strategies seek to control risks and maintain a focus on absolute returns. The inherent nature of these vehicles to serve as a "hedge" provides for the expectation that the program will lag the equity market during times when equities are performing above the long-term averages. However, when equities are performing below the long-term averages, the program would be expected to outperform the equity market. In addition, managers within this asset class have historically possessed significantly lower volatility relative to traditional equity managers.

Structure

The Systems have retained Albourne America, LLC (Albourne) as its hedged asset consultant. Albourne is an independent global advisory firm with a significant focus on hedge funds. The Systems utilize direct investments into hedge funds as opposed to incorporating fund-of-funds. The Systems' internal staff believes the benefits of direct investments, including lower fees, customized portfolio exposures, direct access to manager knowledge, and higher levels of transparency outweighed the benefit of quicker implementation offered by fund-of-funds.

The following chart indicates the strategy diversification of the Hedged Assets program as of June 30, 2020. The Systems manage the Hedged Assets portfolio to a blended benchmark of 25% Russell 3000 Index, 25% MSCI ACWI ex-USA net Index, and 50% Bloomberg Barclays U.S. Intermediate Credit Index.

Hedged Assets Diversification

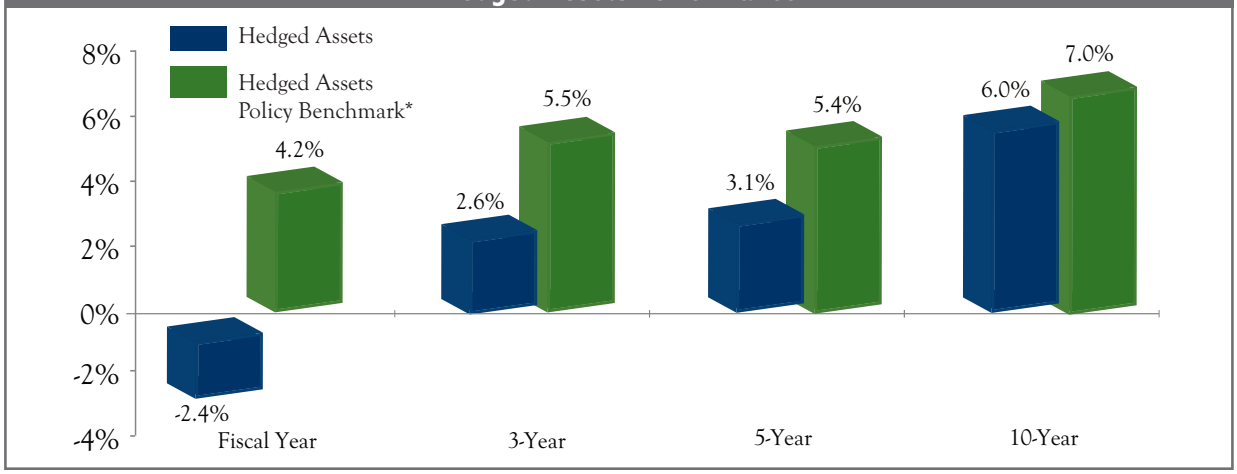


Performance

The total annualized return on the Systems' Hedged Assets portfolio was -2.4%, compared to the benchmark return of 4.2% for the fiscal year ended June 30, 2020.

Over the past ten years, the Hedged Assets program has underperformed its policy benchmark of 7.0%. The performance relative to the policy benchmark is reasonable however, given the significant performance of equities over this time period. The Russell 3000 Index was up an annualized 13.7% over the past ten years and the MSCI ACWI net Index was up an annualized 9.2%. As discussed previously, the hedging characteristics of the Hedged Assets program provide for the expectation that its performance will lag equity markets and/or its policy benchmark during periods of higher-than-normal equity returns. The Hedged Assets program is expected to outperform in more normal and down markets. As the table indicates, the longer-term performance was accomplished by assuming less than one-half of the volatility of the all country world stock index and achieving a beta of approximately 0.40 to the index, signifying that the Systems' portfolio moves up or down less than half as much as the world stock index.

Hedged Assets Performance



Hedged Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Hedged Assets Return	-2.4%	2.6%	3.1%	6.0%
Annualized Policy Benchmark Return*	4.2%	5.5%	5.4%	7.0%
Annualized S&P 500 Return	7.5%	10.7%	10.7%	14.0%
Annualized MSCI ACWI net Index	2.1%	6.1%	6.5%	9.2%
Annualized Standard Deviation of Composite	12.0%	7.5%	6.3%	6.3%
Annualized Standard Deviation of Policy Benchmark*	13.7%	10.0%	8.4%	7.9%
Annualized Standard Deviation of S&P 500	21.9%	17.0%	14.8%	13.4%
Annualized Standard Deviation of MSCI ACWI net Index	21.6%	16.3%	14.5%	14.0%
Beta to Policy Benchmark*	0.83	0.72	0.67	0.72
Beta to S&P 500	0.49	0.37	0.35	0.38
Beta to MSCI ACWI net Index	0.52	0.41	0.38	0.39

**The Hedged Assets Policy Benchmark is composed as follows: 50% Bloomberg Barclays U.S. Intermediate Credit Index, 25% MSCI ACWI ex-USA net Index and 25% Russell 3000 Index.*

Investment Advisors

As of June 30, 2020, the Systems had contracts with 18 external investment advisors who managed 24 portfolios. During the fiscal year two investment mandates were terminated while one investment mandate with Rock Springs Capital was added to the program.

Hedged Assets Investment Advisors			
Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
AQR Absolute Return Fund	Relative Value	$ 148,020,657	0.3%
AQR Adaptive Multi-Strategy	Risk Parity	200,489,355	0.4%
AQR Diversified Beta Fund	Risk Parity	43,272,642	0.1%
AQR Real Asset Fund	Inflation Protection	25,671,459	0.1%
Bridgewater All Weather	Risk Parity	104,627,212	0.2%
Bridgewater Inflation Pool	Inflation Protection	26,872,534	0.1%
Bridgewater Pure Alpha II	Asset Allocation/Global Macro	419,935,756	0.9%
Davidson Kempner Institutional Partners	Event Driven	336,041,600	0.7%
Davidson Kempner Distressed Opportunities Fund	Distressed Debt/Credit	226,884,124	0.5%
GoldenTree Partners	Distressed Debt/Credit	455,107,424	1.0%
HBK Capital Management	Relative Value	220,848,866	0.5%
Hillhouse China Value Fund	Long-Biased Equity	178,322,400	0.4%
Indus Asia Pacific Fund	Equity Long/Short	6,323,441	0.0%
Maverick Fund USA	Equity Long/Short	128,167,667	0.3%
NISA Investment Advisors	Custom Beta	509,623,227	1.1%
Owl Creek Overseas Fund	Event Driven	4,533,073	0.0%
Renaissance Institutional Equities Fund	Low Volatility Equity	624,180,290	1.4%
Rock Springs Capital Fund	Long-Biased Equity	40,423,505	0.1%
Stark Investments Limited Partners	Equity Long/Short	2,174,305	0.0%
Sculptor Domestic Partners	Multi-Strategy	332,186,697	0.7%
Sculptor Europe Domestic Partners	Multi-Strategy	765,468	0.0%
UBS O'Connor Multi-Strategy Alpha	Relative Value	117,568,882	0.3%
Westwood Management	Income Focused/Quality	299,713,229	0.7%
York Capital Management	Event Driven	14,595,853	0.0%
Total		**$ 4,466,349,666**	**9.8%**

Safe Assets Summary

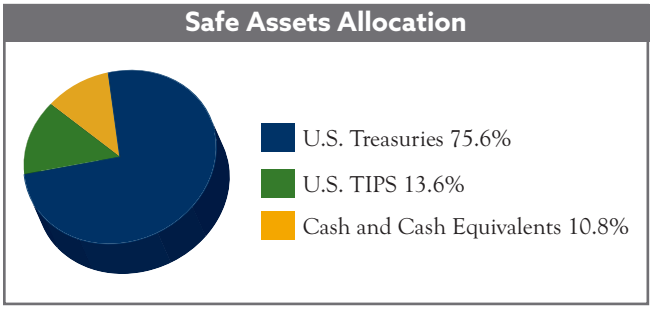
As of June 30, 2020, Safe Assets had a fair value of approximately $8.9 billion, representing 19.5% of total plan assets.

Investment Program Description

The Safe Assets program is intended to act as a source of safety and income for the Systems. The program is designed to create substantial diversification to the total fund and reduce volatility through low correlation to other asset classes. Specifically, the Safe Assets portfolio should provide asset protection at the total fund level in periods of economic stress.

Structure

As of June 30, 2020, NISA Investment Advisors was the only external investment manager within the Safe Assets program. Additionally, the Safe Assets program includes an FDIC insured interest-bearing account with a competitive yield at J.P. Morgan. The assets held within the program exhibit high liquidity and safety. The pie chart below depicts the Safe Assets program by showing the composite allocations as of June 30, 2020.



The Systems' slightly increased its allocation to Safe Assets from 18.9% as of June 30, 2019 to 19.5% as of June 30, 2020.

Market Overview

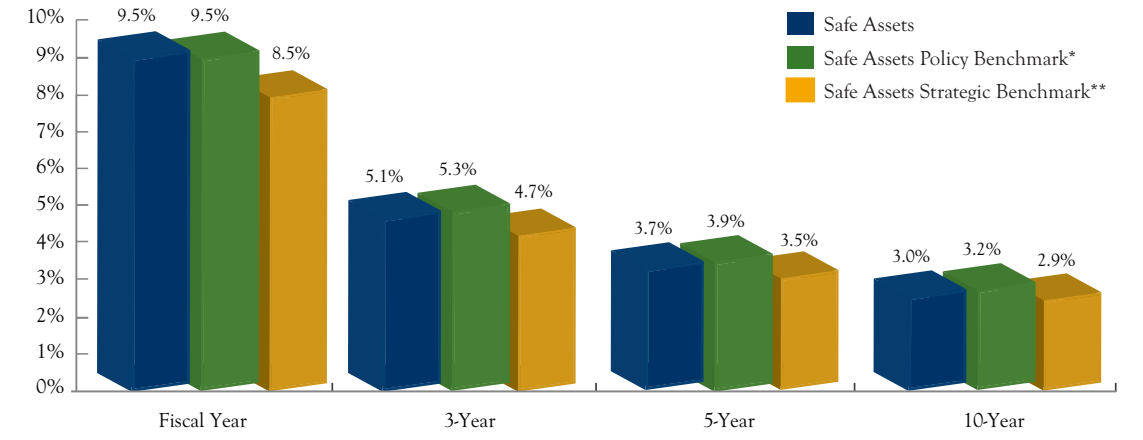
The Treasury markets produced very strong returns for the year as the yield on the 10-year Treasury decreased to 0.7% on June 30, 2020 from 2.0% on June 30, 2019. The Federal Reserve took unprecedented measures in response to COVID-19, aggressively cutting interest rates and initiating new emergency lending programs. The large decrease in interest rates and strong demand for lower risk assets positively impacted the price of Treasuries. The comprehensive measure of the U.S. Treasury market (Bloomberg Barclays U.S. Treasury Index) increased 10.5% while the TIPS market (Bloomberg Barclays U.S. TIPS 1-10 Years) increased 5.8% for the year.

Performance

The total return for the Safe Assets portfolio was 9.5%, producing a very strong absolute return for the fiscal year ended June 30, 2020. The fiscal year 2020 performance highlights the benefit of diversification from other risk assets during periods of significant volatility.

The absolute return of the Safe Assets portfolio is relatively modest over longer time periods. However, the Safe Assets portfolio is designed to provide asset protection at the total fund level in periods of economic stress and ultimate liquidity to the Systems. An allocation to Safe Assets allows the Systems to accept market risk in other portions of the total fund portfolio.

Safe Assets Performance



Safe Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Safe Assets Return	9.5%	5.1%	3.7%	3.0%
Annualized Policy Benchmark Return*	9.5%	5.3%	3.9%	3.2%
Annualized Strategic Benchmark Return**	8.5%	4.7%	3.5%	3.0%
Excess Return	0.0%	-0.2%	-0.2%	-0.2%
Annualized Standard Deviation of Composite	4.4%	3.4%	3.1%	3.0%
Annualized Standard Deviation of Policy Benchmark*	4.4%	3.6%	3.3%	3.1%
Beta to Policy Benchmark*	1.00	0.93	0.93	0.94
Beta to MSCI ACWI net Index	-0.13	-0.10	-0.08	-0.07

**The Safe Assets Policy Benchmark is composed as follows: 80.0% Bloomberg Barclays U.S. Treasury Index and 20.0% Bloomberg Barclays U.S. TIPS 1-10 Yrs. Index.*

***The Safe Assets Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month.*

The Systems have specifically taken less risk compared to the policy benchmark due to the inclusion of the cash and cash equivalents portfolios. Additionally, the Safe Assets program had a beta slightly less than 1.0 relative to the policy benchmark over extended time periods, indicating less market volatility. Most importantly, the Safe Assets portfolio exhibits a beta of approximately zero relative to the all country world stock index (MSCI ACWI net Index) indicating no correlation to risk assets. These statistics support one of the primary objectives of Safe Assets: diversification from other risk assets in the total fund.

Statistics

The following table displays the statistical characteristics of the Systems' Safe Assets program as of June 30, 2020 with comparisons shown to the Bloomberg Barclays U.S. Treasury Index. Additionally, the top ten Safe Assets holdings as of June 30, 2020 are shown in the table below the characteristics.

Safe Assets Characteristics

Characteristics	June 30, 2020 Systems' Safe Assets Program	June 30, 2020 Bloomberg Barclays U.S. Treasury Index
Number of Securities	121	260
Average Coupon	2.0%	2.1%
Yield to Maturity	0.3%	0.5%
Average Maturity (Years)	7.2	7.7
Duration (Years)	6.5	7.0

Safe Assets - Top 10 Holdings

Top 10 Largest Holdings* June 30, 2020	Fair Value	% of Total Safe Assets
United States Treasury Note, 2.75%, 08/15/2021	$ 313,952,005	3.5%
United States Treasury Note, 3.00%, 05/15/2047	274,927,185	3.1%
United States Treasury Note, 2.875%, 08/15/2028	268,273,558	3.0%
United States Treasury Note, 2.75%, 07/31/2023	241,728,044	2.7%
United States Treasury Note, 1.875%, 07/31/2022	239,499,034	2.7%
United States Treasury Note, 1.625%, 05/15/2026	227,807,018	2.6%
United States Treasury Note, 2.25%, 11/15/2025	214,535,655	2.4%
United States Treasury Note, 2.75%, 05/31/2023	199,575,306	2.2%
United States Treasury Note, 2.25%, 11/15/2024	192,969,125	2.2%
United States Treasury Note, 1.75%, 05/31/2022	182,872,053	2.0%
Total	**$ 2,356,138,983**	**26.4%**

**A complete list of portfolio holdings is available upon request.*

Investment Advisors

NISA Investment Advisors was the only external investment advisor within the Safe Assets program, managing three portfolios as of June 30, 2020. The Safe Assets program also includes an interest-bearing cash account with the Systems' master custodian J.P. Morgan.

Safe Assets Investment Advisors

Investment Advisor	Investment Style	Fair Value As of June 30, 2020	% of Total Plan Fair Value
NISA Investment Advisors	U.S. Treasuries	$ 6,736,254,016	14.7%
NISA Investment Advisors	U.S. TIPS	1,214,910,720	2.7%
NISA Investment Advisors	Cash Equivalents	543,653,048	1.2%
J.P. Morgan	Interest Bearing Cash Account	414,765,015	0.9%
Total		**$ 8,909,582,799**	**19.5%**

Private Risk Assets Summary

As of June 30, 2020, Private Risk Assets had a fair value of approximately $10.6 billion, representing 23.2% of total plan assets.

Investment Program Description

The allocation to Private Risk investments is viewed as a separate asset class for inclusion in the Systems' overall investment portfolios. The process of building the Systems' Private Risk program and fully funding the target allocation is expected to occur over a period of several years. Additional new investments will be necessary beyond the funding period in order to maintain the long-term target allocation. The three programs within the Private Risk Assets composite are Private Equity, Private Real Estate and Private Credit. Each program within the Private Risk allocation is a separate multi-manager composite that is treated generally as a single portfolio. Each program serves a specific and distinct role within the overall Private Risk composite and also within the overall Total Plan allocation. Over time, the Private Risk composite serves as a long-term vehicle to supply the underlying beta exposure to a portfolio of private assets.

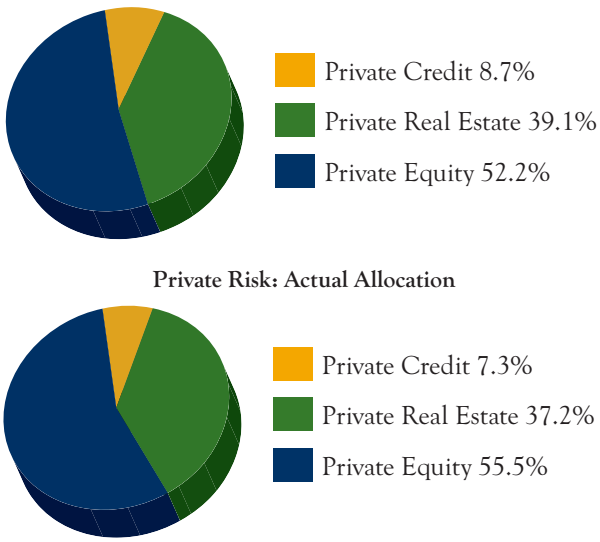
Investments in Private Risk Assets differ substantially from the Systems' public markets asset classes (Public Risk Assets and Safe Assets) in part because they are typically very long-term in nature, not publicly traded, relatively illiquid and offer the potential for substantially higher returns (along with a commensurate level of risk). The illiquid nature of Private Risk Assets can result from the form of the asset or security itself, or it can be a function of the investment structure being utilized (e.g., a limited partnership).

Due to the fact that Private Risk Assets are not publicly traded, pricing and performance measurements prior to the realization of gains are less reliable than in the traditional publicly traded asset classes. The Systems continually monitor the valuation policies and procedures utilized for such investments.

Structure

As of June 30, 2020, 55.5% of Private Risk Assets were invested in the Private Equity program, 37.2% in the Private Real Estate program and 7.3% in the Private Credit program. Each of these programs is discussed in more detail on the following pages.

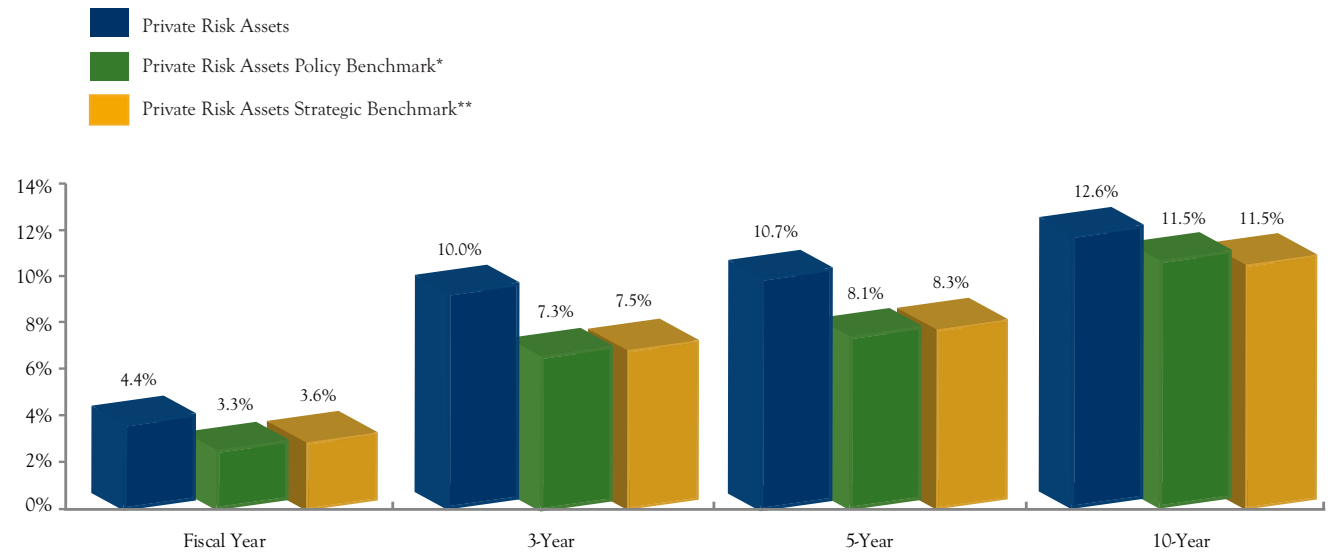
Private Risk Assets Allocation



Performance

The total return for the Private Risk portfolio was 4.4%, compared to the policy benchmark return of 3.3% for the fiscal year ended June 30, 2020. The pricing and performance methodology utilized for private assets can provide for significant performance variances over short time periods. For instance, the Systems utilize a liquid benchmark (Russell 3000 Index) to measure an illiquid (private equity) asset class. Thus, there will be significant performance differences over short time periods in volatile markets. Due to the long-term nature of Private Risk Assets, the performance can be more appropriately judged over a longer timeframe. As the table below indicates, the Private Risk portfolio has produced excellent absolute and relative returns over all time periods. The ten-year return exceeded the benchmark by 110 basis points. These excess returns are net of fees and expenses.

Private Risk Assets Performance



Private Risk Assets Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Risk Assets Return	4.4%	10.0%	10.7%	12.6%
Annualized Policy Benchmark Return*	3.3%	7.3%	8.1%	11.5%
Annualized Strategic Benchmark Return**	3.6%	7.5%	8.3%	11.5%
Excess Return	1.1%	2.7%	2.6%	1.1%

** The Private Risk Assets Policy Benchmark is composed as follows: 39.1% Russell 3000 Index, 39.1% NFI-ODCE Index, 13.1% MSCI ACWI ex-USA net Index and 8.7% ICE BofAML U.S. High Yield Master II Index.*

*** The Private Risk Assets Strategic Benchmark changes monthly based on the actual asset allocation at the end of the previous month.*

Private Equity Program Summary

As of June 30, 2020, the Private Equity program had a fair value of approximately $5.9 billion, representing 12.9% of total plan assets.

Investment Program Description

The Private Equity asset class is comprised of investment opportunities not typically included within the public equity and fixed income markets. Private Equity investments provide financing for start-up companies, private middle market companies, firms in financial distress and public and non-public firms seeking buyout financing. Private Equity investments can be classified into three basic sub-asset class categories:

- Venture Capital,
- Buyouts, and
- Debt-Related.

Investments in the sub-asset classes can be made in the U.S. or foreign countries. In total, the allocation to non-U.S. Private Equity investments will not exceed 50.0% of the overall Private Equity target allocation. The risks associated with Private Equity will be viewed both in isolation and within the context of the entire fund.

In January 2014, the Board of Trustees approved the development and implementation of a Private Equity Co-Investment program. The Co-Investment program is expected to further advance the goals and objectives of the overall Private Equity program by obtaining additional exposure to underlying portfolio company investments through direct equity investments made on a side-by-side basis with private equity funds where the Systems have an existing relationship. Co-Investments serve to increase exposure to the Private Equity asset class with little or no additional fees and/or performance carry paid to the underlying private equity partnerships. The objective of the Co-Investment program is to leverage existing, high-quality relationships with private equity managers in order to increase commitments to the asset class in a format that does not materially increase overall risk, while simultaneously helping to lower fees and performance carry.

Structure

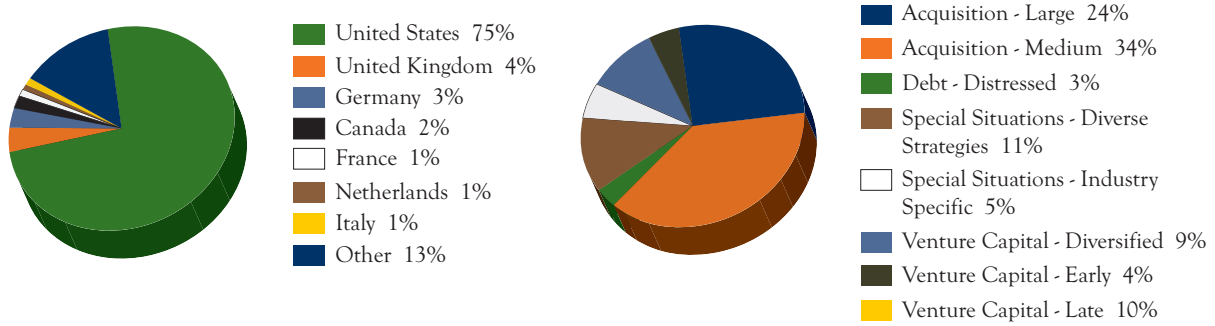
As of June 30, 2020, Private Equity assets committed* for investment were $11.9 billion. The fair value of funds that had been drawn down and actually invested as of June 30, 2020 was approximately $5.9 billion, representing 12.9% of total plan assets. The Systems' private equity investment commitments that have not yet been funded were approximately $4.0 billion as of June 30, 2020.

The objective of the Systems' allocation to Private Equity is to achieve returns that are higher than those attainable in the public equity markets with the added benefit of diversification. The long-term target allocation to Private Equity is 16.0%. However, as of June 30, 2020, the actual allocation for the Systems was 12.9% because the long-term and illiquid nature of the Private Equity asset class dictates that capital must be invested at a measured pace. In addition, private equity investments have made record distributions in recent years. Pathway Capital Management has been retained by the Systems to provide private equity investment management services through three structures; a discretionary fund-of-funds relationship, an advisory relationship and a co-investment program. Additionally, the Systems have invested in private equity secondary funds and also utilize Albourne America, LLC to provide private equity advisory services.

The following pie charts show the diversification (utilizing the market value of invested assets) of the Systems' Private Equity holdings as of June 30, 2020 from both strategy and country perspectives.

** Committed capital reflects the total amount of capital that the Systems are legally obligated to supply to the partnerships and funds as the capital is needed to invest in underlying holdings. Fair value reflects capital that has actually been drawn and invested by the partnerships and funds.*

Private Equity Strategy and Diversification



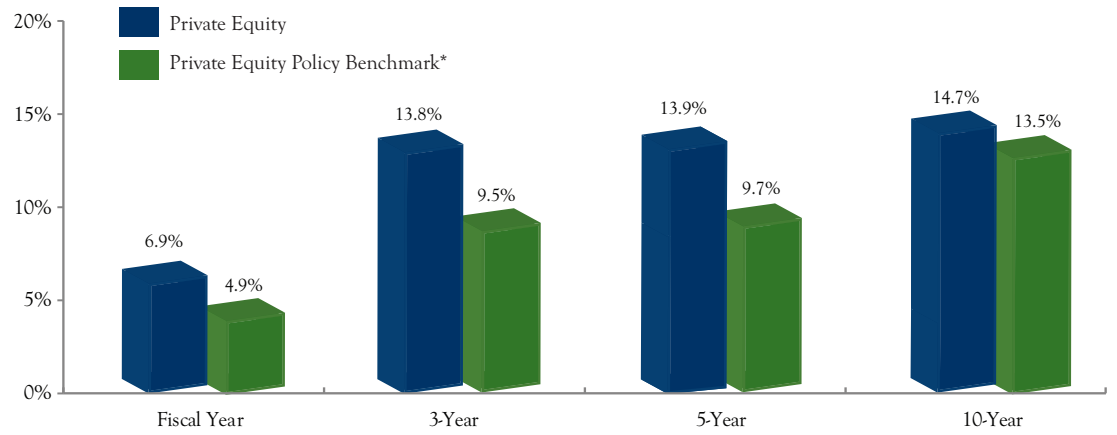
Market Overview

Private Equity funds continued to perform very well in fiscal year 2020. Although it was a very difficult and uncertain investment climate, the program's buyout and venture capital investments were especially successful in generating strong results for the year. The Private Equity program produced the strongest asset class returns for the Systems behind the U.S. Treasuries and Public Credit fixed income asset classes.

Performance

The total return for the Private Equity program was 6.9%, compared to the benchmark return of 4.9% for the fiscal year ended June 30, 2020. While short-term returns are not overly insightful for the Private Equity program in comparison to its benchmark, the one-year return exceeded the benchmark by 200 basis points. The Private Equity benchmark utilizes a liquid public equity index (Russell 3000 Index) to measure an illiquid (Private Equity) asset class. As such, there could be significant performance differences over short time periods in volatile markets. Due to the long-term nature of the asset class, the performance of a Private Equity portfolio can be more appropriately judged over a longer timeframe. As the table below indicates, the Private Equity portfolio has produced excellent absolute and relative returns over all time periods. The ten-year return exceeded the benchmark by 120 basis points. These excess returns are net of fees and expenses.

Private Equity Performance



Private Equity Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Equity Return	6.9%	13.8%	13.9%	14.7%
Annualized Policy Benchmark Return*	4.9%	9.5%	9.7%	13.5%
Excess Return	2.0%	4.3%	4.2%	1.2%

**Effective October 1, 2019 the Private Equity Policy Benchmark is 75% Russell 3000 and 25% MSCI ACWI ex-USA net Index. The Russell 3000 Index is used for prior periods.*

Investment Advisors

As of June 30, 2020, the Systems were invested in 187 separate partnerships with 78 firms within the Private Equity asset class. In fiscal year 2020 the Systems committed to 21 new partnerships for $455 million. Additionally, the Systems received total distributions from the private equity partnerships of approximately $886 million in fiscal year 2020.

Private Equity Investment Advisors

Investment Advisor	Investment Strategy	Fair Value* As of June 30, 2020	% of Total Plan Fair Value
Advent International GPE IX, VII-B and VIII	Acquisition - Medium	$ 96,740,921	0.2%
Alchemy Special Opportunities Fund IV	Debt - Distressed	864,139	0.0%
Baring Asia VI	Acquisition - Medium	35,564,120	0.1%
Battery Ventures XII, XII Side Fund, XIII and XIII Side Fund	Venture Capital	8,631,901	0.0%
BC European IX	Acquisition - Large	26,773,300	0.1%
Blackstone Capital Partners V and VI	Acquisition - Large	19,031,324	0.0%
Canaan Partners IX, X and XI	Venture Capital	81,228,330	0.2%
Carlyle Europe Partners III	Acquisition - Medium	1,924,085	0.0%
Carlyle Partners V and VI	Acquisition - Large	47,545,881	0.1%
Centerbridge Capital Partners I, II and III	Special Situations - Diverse Strategies	53,314,448	0.1%
Centerbridge Capital Special Credit Partners II, III and III-Flex	Debt - Distressed	53,058,873	0.1%
Charlesbank Equity Fund IX and Overage Allocation Program	Acquisition - Medium	9,069,608	0.0%
Chequers Capital XVII	Acquisition - Medium	3,117,203	0.0%
Cinven VII Fund	Acquisition - Medium	4,953,492	0.0%
Clayton, Dubilier & Rice Fund X	Acquisition - Medium	19,956,491	0.1%
Clearlake Capital Partners V, VI and Opportunities Partners II	Special Situations - Diverse Strategies	17,810,384	0.0%
Coller International Partners VII and VIII	Secondary Fund	151,780,915	0.3%
CVC Capital Partners VI and VII	Acquisition - Large	67,054,850	0.2%
CVC European Equity Partners IV, V and Tandem Fund	Acquisition - Large	3,193,570	0.0%
DEFY Partners I and II	Venture Capital	5,661,683	0.0%
Encap Energy IX, X, XI and VIII Co-Investors	Special Situations - Industry Specific	50,002,487	0.1%
EnCap Flatrock Midstream III and IV	Special Situations - Industry Specific	15,876,144	0.0%
Energy Spectrum Partners VIII	Acquisition - Medium	8,324,694	0.0%
EQT VIII	Acquisition - Medium	28,130,638	0.1%
Exponent Partners II	Acquisition - Medium	396,325	0.0%
First Reserve Fund XI and XII	Special Situations - Industry Specific	2,774,172	0.0%
General Catalyst Group IX	Venture Capital	24,169,978	0.1%
General Catalyst X - Early, Endurance and Growth Ventures	Venture Capital	2,932,763	0.0%
Genstar Capital Partners V, VIII and IX	Acquisition - Medium	20,557,767	0.1%
Glendon Opportunities Fund and II	Debt - Distressed	24,413,839	0.1%
GTCR Fund X, XI and XII	Acquisition - Medium	61,669,651	0.1%
Harvest Partners VIII	Acquisition - Medium	10,955,716	0.0%
Hellman & Friedman VI, Spock 1, VII, VIII and IX	Acquisition - Large	118,439,045	0.3%
H.I.G. Growth Buyouts & Equity Fund III	Acquisition - Large	1,367,534	0.0%
Hillhouse Fund IV	Acquisition - Large	38,171,894	0.1%
Huron Fund V	Acquisition - Medium	6,141,197	0.0%
Insight Venture Partners IX, X and XI	Special Situations - Diverse Strategies	102,992,094	0.2%
Institutional Investment Partners XV and XVI	Venture Capital	59,659,150	0.1%
Kelso Investment Associates VIII	Acquisition - Medium	5,537,701	0.0%
KKR 2006 Fund	Acquisition - Large	9,341,062	0.0%
KRG Fund IV	Acquisition - Medium	1,271,090	0.0%
Lexington Capital Partners VI-B, VII, VIII, IX	Secondary Fund	223,583,696	0.5%
Lone Star Fund X	Debt - Distressed	71,984,833	0.2%
Madison Dearborn VI, VII and VII Auxiliary SPV	Acquisition - Large	104,502,112	0.2%
Marlin Equity V and Heritage II	Acquisition - Medium	19,322,072	0.0%
Mayfair Equity Partners II and Sidecar	Acquisition - Medium	7,097,054	0.0%
Montagu IV	Acquisition - Medium	6,244,620	0.0%
Nautic Partners IX	Acquisition - Medium	1,483,864	0.0%
New Enterprise Associates 13, 14, 15, 16 and 17	Venture Capital	170,204,001	0.4%
New Horizon VI: Advantech II and Redview II	Special Situations - Diverse Strategies	4,367,291	0.0%
New Mountain Partners V	Acquisition - Medium	27,777,102	0.1%
Nordic VII, CVI Alpha, IX Beta and VIII	Acquisition - Medium	66,906,494	0.2%
NorthEdge Capital SME I	Acquisition - Medium	888,375	0.0%
Oak Investment Partners XIII	Venture Capital	17,233,266	0.0%
OCM Principal Opportunities Fund IV, VII, VIIb, IX and Xb	Debt - Distressed	24,310,143	0.1%
Odyssey Investment Partners IV and V	Acquisition - Medium	53,045,803	0.1%
Onex Partners II, III, IV, V and ONCAP IV	Acquisition - Medium	40,750,177	0.1%
Pamlico Capital IV	Acquisition - Medium	23,122,702	0.1%
Pantheon Global Secondary Fund III and IV	Secondary Fund	16,410,573	0.0%
Pathway Capital Management	Fund-of-Funds	2,646,905,906	5.8%
Paul Capital Partners IX	Secondary Fund	19,825,629	0.0%
Permira V, VI and VII	Acquisition - Medium	98,293,258	0.2%
Providence Equity Partners VI and Strategic Growth IV	Special Situations - Industry Specific	9,786,624	0.0%
Quad-C Partners VIII and IX	Acquisition - Medium	38,533,278	0.1%
Quantum Energy Partners V, V-C, VI, VI-C, VII and VII-C	Special Situations - Industry Specific	60,703,418	0.1%
Ridgemont Equity Partners III	Acquisition - Medium	7,496,545	0.0%
Riverside Micro-Cap Fund V	Acquisition - Medium	5,377,478	0.0%
The Resolute Fund II, III and IV	Acquisition - Medium	63,607,286	0.1%
Sentinel Capital Partners VI and Junior Capital I	Debt - Mezzanine	5,100,331	0.1%
Silver Lake Partners III and SPV-2	Special Situations - Industry Specific	7,559,691	0.0%
Siris Partners IV	Acquisition - Medium	22,640,481	0.1%
Spectrum Equity Investors VI, VII and VIII	Special Situations - Diverse Strategies	58,790,417	0.1%
Summit Partners Growth Equity Fund X	Special Situations - Diverse Strategies	1,793,973	0.0%
TA XI, XII and XIII-A	Special Situations - Diverse Strategies	76,327,677	0.2%
TCV VI, VII, VIII, IX and X	Venture Capital	169,832,577	0.4%
Thoma Bravo Discover Fund I and II	Acquisition - Medium	30,069,647	0.1%
Thoma Bravo Fund XII and XIII	Acquisition - Large	86,702,395	0.2%
Thoma Bravo Special Opps Fund II	Acquisition - Medium	40,345,364	0.1%
TPG Partners V and VI	Acquisition - Large	6,119,763	0.0%
Trident Capital Fund VII	Acquisition - Medium	40,011,837	0.1%
Veritas Capital Fund VII	Acquisition - Medium	390,641	0.0%
Vista Equity Partners V, VI, VII and Foundation III	Acquisition - Medium	160,462,210	0.4%
Wayzata Opportunities Fund II and III	Debt - Distressed	8,504,480	0.0%
Wind Point Partners VI, CV1 and VII	Acquisition - Medium	12,536,107	0.0%
Wynnchurch Capital Partners V	Acquisition - Medium	292,511	0.0%
Stock distribution account	Public Stocks	900,894	0.0%
Total		**$ 5,858,545,055**	**12.9%**

**Fair values are reported by the Systems' Private Equity advisors. Fair values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2020, the net asset values utilized were cash flow adjusted through June 30, 2020.*

Private Credit Program Summary

As of June 30, 2020, the Private Credit program had a fair value of approximately $774 million, representing 1.7% of total plan assets.

Investment Program Description

Investments in Private Credit are similar to Private Equity investments in that they are typically very long-term in nature, not publicly traded, relatively illiquid, and offer the potential for substantially higher returns (along with a commensurate level of risk). The Private Credit portfolio also differs from the Private Equity portfolio, and is a separate and distinct composite within Private Risk Assets. The Private Credit asset class is comprised primarily of debt-related investments that provide a current yield along with equity participation (usually warrants) referred to as an 'equity kicker.' Primary strategies are distressed debt, bankruptcy restructurings, mezzanine debt, bank loans and other credit-driven or debt-related investment strategies. Investments can be made in the U.S. or foreign countries. In total, the allocation to non-U.S. Private Credit investments will not exceed 50% of the overall Private Credit target allocation. The risks associated with Private Credit will be viewed both in isolation and within the context of the entire fund.

In October 2019 the Board of Trustees approved the development and implementation of a Private Credit Direct Investment program. The Direct Investment program is expected to further advance the goals and objectives of the overall Private Credit program by obtaining additional exposure to underlying credit and credit-related investments through co-investments made on a side-by-side basis with private credit funds where PSRS/PEERS is an investor or by investing in debt-oriented securities associated with private equity portfolio companies where the original equity investment occurred through private equity funds where the Systems' have an existing relationship. The Direct Investments serve to increase exposure to the Private Credit asset class with little or no additional fees and/or performance carry paid to the underlying private equity or private credit partnerships. The objective of the Direct Investment Program is to leverage existing, high-quality relationships with private credit and private equity managers in order to increase commitments to the asset class in a format that does not materially increase overall risk, while simultaneously helping to lower fees and performance carry.

Structure

As of June 30, 2020, Private Credit assets committed* for investment were $3.2 billion. The fair value of funds that have been drawn down and actually invested as of June 30, 2020 was approximately $774 million, representing 1.7% of total assets. The Systems' private credit investment commitments that have not yet been funded were approximately $1.9 billion as of June 30, 2020.

The objective for the Systems' allocation to Private Credit is to achieve returns that are higher than those attainable in the public markets with the added benefit of diversification. The long-term and illiquid nature of the Private Credit asset class dictates that capital must be invested at a measured pace. Pathway Capital Management has been retained by the Systems to provide private credit investment management services through three structures; a discretionary fund-of-funds relationship, an advisory relationship, and a direct investment program. Albourne America, LLC has also been retained to provide private credit advisory services.

Market Overview

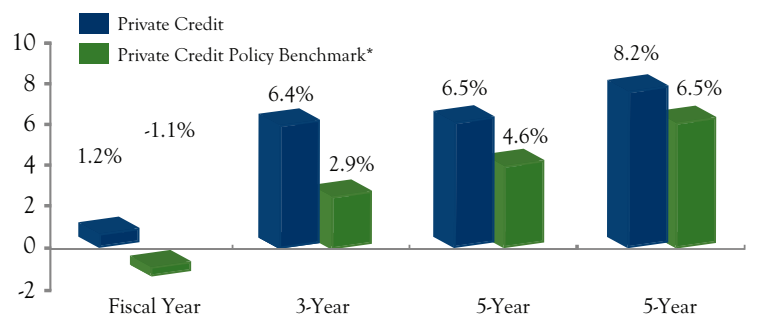
The private credit markets experienced extreme volatility and challenging financial conditions as a result of the global COVID-19 pandemic. Similar to the equity markets, credit market conditions improved considerably in the 2nd quarter of 2020. However, over the course of fiscal year 2020, credit spreads widened, default rates increased and significant economic uncertainty remains leading to negative high yield returns. The high yield market as measured by the private credit benchmark, ICE BofAML U.S. High Yield Master II Index, returned -1.1% for the year compared to a 7.6% return for fiscal year 2019.

Performance

The total return for the Private Credit program was 1.2% compared to the benchmark return of -1.1% for the fiscal year ended June 30, 2020. Short-term returns can be volatile for the Private Credit program in comparison to a public benchmark, as discussed previously; private assets are more appropriately evaluated over longer time frames. As the table below indicates, the Private Credit portfolio has produced very strong absolute and relative returns over all extended time periods. The ten-year return exceeded the benchmark by 170 basis points. These excess returns are net of fees and expenses.

** Committed capital reflects the total amount of capital that the Systems are legally obligated to supply to the partnerships and funds as the capital is needed to invest in underlying holdings. Fair value reflects capital that has actually been drawn and invested by the partnerships and funds.*

Private Credit Performance



Private Credit Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Credit Return	1.2%	6.4%	6.5%	8.2%
Annualized Policy Benchmark Return*	-1.1%	2.9%	4.6%	6.5%
Excess Return	2.3%	3.5%	1.9%	1.7%

**The Private Credit Policy Benchmark is the ICE BofAML U.S. High Yield Master II Index.*

Investment Advisors

As of June 30, 2020, the Systems were invested in 29 separate partnerships with 18 firms within the Private Credit asset class. Seven new commitments were made to the Private Credit asset class during fiscal year 2020 for $1.6 billion. The Systems received total distributions from the private credit partnerships of approximately $125 million in fiscal year 2020.

Private Credit Investment Advisors

Investment Advisor	Investment Strategy	Fair Value* As of June 30, 2020	% of Total Plan Fair Value
Bayview Opportunity Domestic V	Debt - Distressed	$ 74,943,509	0.2%
Benefit Street Partners Debt Fund IV	Debt - Lending	39,027,874	0.1%
Caltius IV	Debt - Mezzanine	1,287,742	0.0%
EIG Energy Fund XVI	Debt - Energy	61,751,514	0.1%
Encap Fund VII	Special Situations - Industry Specific	1,032,818	0.0%
Encap Fund VIII	Special Situations - Industry Specific	6,244,487	0.0%
GSO Capital Solutions Fund III	Debt - Distressed	7,832,630	0.0%
GSO Energy Select Opportunities Fund II	Debt - Distressed	5,223,121	0.0%
GSO European Senior Debt Fund II	Debt - Distressed	4,138,959	0.0%
H.I.G Capital Bayside IV	Debt - Distressed	17,834,904	0.0%
H.I.G Capital Bayside V	Debt - Distressed	9,442,724	0.0%
H.I.G Capital Bayside VI	Debt - Distressed	3,086,632	0.0%
H.I.G Capital Whitehorse	Debt - Distressed	45,120,523	0.1%
HPS Mezzanine Partners 2019	Debt - Mezzanine	21,780,887	0.1%
HPS Specialty Loan Fund 2016	Debt - Mezzanine	78,674,235	0.2%
Hayfin Direct Lending Fund III	Debt - Lending	29,210,962	0.1%
Hayfin Special Opportunities Fund III SCSp	Debt - Lending	722,198	0.0%
HealthCare Royalty Partners IV	Debt - Lending	2,329,890	0.0%
Indigo Capital V	Debt - Mezzanine	485,009	0.0%
Lone Star Real Estate Fund II	Debt - Distressed	1,338,331	0.0%
Oberland Capital Healthcare Fund II	Debt - Distressed	2,877,828	0.0%
OCM Opportunities Fund VIII	Debt - Distressed	652,210	0.0%
OCM Opportunities Fund VIII b	Debt - Distressed	7,794,683	0.0%
Pathway Capital Management	Funds-of-Funds	226,875,422	0.5%
Summit Partners Credit Fund III	Debt - Lending	26,524,145	0.1%
TA Subordinated Debt Fund III	Debt - Mezzanine	13,378,744	0.0%
TA Subordinated Debt Fund IV	Debt - Mezzanine	32,302,303	0.1%
TSSP Adjacent Opportunities Partners	Debt - Multi Strategy	43,583,434	0.1%
TSSP Opportunities Partners IV	Debt - Multi Strategy	9,000,099	0.0%
Total		**$ 774,497,817**	**1.7%**

**Fair values are reported by the Systems' Private Credit advisors. Fair values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2020, the net asset values utilized were cash flow adjusted through June 30, 2020.*

Private Real Estate Program Summary

As of June 30, 2020, the Private Real Estate program had a fair value of approximately $3.9 billion, representing 8.6% of total plan assets.

Investment Program Description

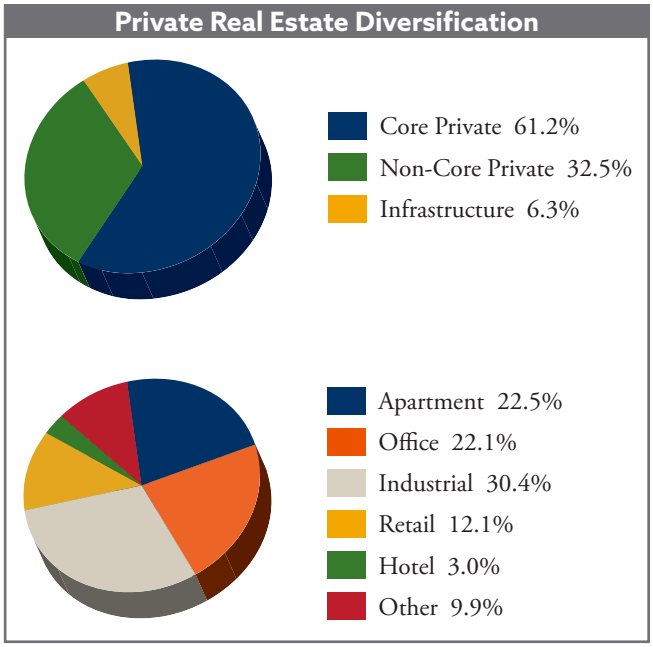
The Real Estate allocation is intended to provide exposure to a diversified portfolio of institutional quality private real estate investments that will provide meaningful, consistent returns and act as a hedge against inflation and as a diversifier to the overall investment portfolio. The specific objectives of the real estate allocation will be to optimize yield and return, preserve capital and enhance portfolio value across market cycles. The risks associated with Private Real Estate will be viewed both in isolation and within the context of the entire fund.

Structure

As of June 30, 2020, the Systems' Private Real Estate assets committed* for investment were $5.8 billion. The fair value of funds that had been drawn down and actually invested as of June 30, 2020 was approximately $3.9 billion, representing 8.6% of total assets. The Systems' private real estate investment commitments that had not yet been funded were approximately $1.2 billion as of June 30, 2020.

Within the overall Real Estate allocation, the Systems have established a 55% target allocation to non-core real estate (inclusive of infrastructure) and a 45% allocation to core private real estate. Non-core investments represent those properties and/or investment strategies that require specialized acquisition and management expertise or skill to mitigate the business and leasing risk that may be associated with individual investments. Non-core investments have greater associated risk compared to core investments. Core investments include existing, substantially leased income-producing properties located mainly in metropolitan areas that exhibit reasonable economic diversification and growth.

The following pie charts indicate the diversification (utilizing the market value of invested assets) of the Systems' Real Estate holdings as of June 30, 2020 from both the strategy and property type perspectives.



Market Overview

The Private Real Estate benchmark, NCREIF Fund Index – Open Diversified Core Equity (NFI-ODCE), returned 1.3% for fiscal year 2020 compared to a 5.5% return for fiscal year 2019. The total return of 1.3% consisted of 4.1% income and -1.8% appreciation, gross of fees. The negative appreciation for the year is the first decline in market value since the global financial crisis and is a result of the COVID-19 pandemic causing considerable market disruption and uncertainty across the real estate market. Real estate values declined across most property types for the year except for industrial which produced a modest gain.

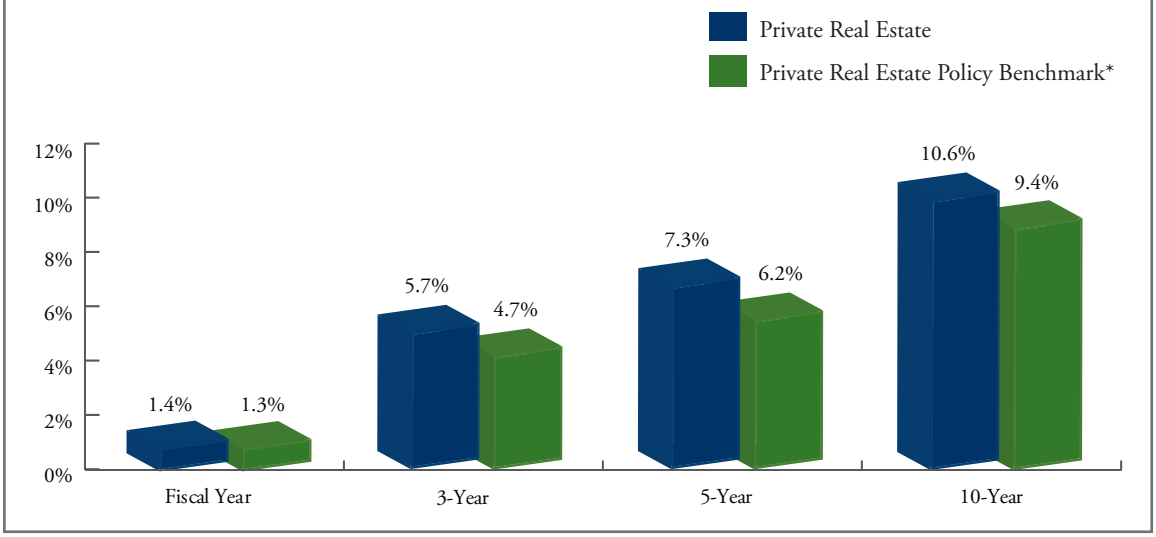
The Systems maintain a sizable allocation to high-quality, stabilized real estate assets (core) due to the secure income return. Additionally, the Systems have an allocation to non-core assets to enhance return to the overall real estate portfolio. The Systems will continue to focus real estate efforts going forward on investments that complement the existing portfolio.

** Committed capital reflects the total amount of capital that the Systems are legally obligated to supply to the partnerships and funds as the capital is needed to invest in underlying holdings. Fair value reflects capital that has actually been drawn and invested by the partnerships and funds.*

Performance

The total return for the Private Real Estate program was 1.4% compared to the benchmark return of 1.3% for the fiscal year ended June 30, 2020. Despite modest returns for the year, the Systems' Private Real Estate program has produced very strong absolute and relative long-term returns as noted below. The ten-year return exceeded the benchmark by 120 basis points. These excess returns are net of fees and expenses.

Private Real Estate Performance



Private Real Estate Statistical Performance

Portfolio Characteristics	Fiscal Year	3-Year	5-Year	10-Year
Annualized Private Real Estate Return	1.4%	5.7%	7.3%	10.6%
Annualized Policy Benchmark Return*	1.3%	4.7%	6.2%	9.4%
Excess Return	0.1%	1.0%	1.1%	1.2%

**Effective January 1, 2016 the Real Estate Policy Benchmark is the NCREIF Open End Diversified Core Equity Index (NFI-ODCE). The NCREIF Property Index is used for prior periods.*

Investment Advisors

As of June 30, 2020, the Systems were invested in 69 separate partnerships with 33 firms within the Private Real Estate asset class. In fiscal year 2020 the Systems committed to two new partnerships totaling $175 million. Additionally, the Systems received total distributions from the real estate partnerships of approximately $498 million during the year.

Private Real Estate Investment Advisors

Investment Advisor	Investment Strategy	Fair Value* As of June 30, 2020	% of Total Plan Fair Value
AEW Core Property Fund	Core - Private	$ 99,121,024	0.2%
Almanac Realty Securities VIII	Non-Core - Private	11,367,503	0.0%
Alterna Core Capital Assets Fund II	Infrastructure	57,717,919	0.1%
Angelo Gordon Realty Value Fund X	Non-Core - Private	23,891,217	0.1%
Asana Partners Fund I and II	Non-Core - Private	88,787,112	0.2%
Black Creek Industrial Fund	Non-Core - Private	104,534,087	0.2%
Blackstone R.E. Partners V, VI, VII, VIII and IX	Non-Core - Private	171,902,224	0.4%
Blackstone Real Estate Partners Europe VI (Cayman)	Non-Core - Private	15,989,450	0.0%
Blackstone Real Estate Partners Asia I and II	Non-Core - Private	75,283,910	0.2%
Brockton Capital II	Non-Core - Private	4,604,263	0.0%
Carlyle Europe Real Estate Partners III	Non-Core - Private	2,858,192	0.0%
Carlyle Property Investors	Core - Private	149,867,603	0.3%
Carlyle Realty V, VI, VII and VIII	Non-Core - Private	88,856,574	0.2%
CBRE US Value 6 and 7	Non-Core - Private	1,827,454	0.0%
CIM Fund III and VIII	Non-Core - Private	94,231,211	0.2%
CIM Urban REIT	Non-Core - Private	6,888	0.0%
Colony Investors VIII	Non-Core - Private	1,314,256	0.0%
CPI Capital Partners Europe	Non-Core - Private	685,237	0.0%
Dune Real Estate Fund I	Non-Core - Private	241,485	0.0%
Exeter Industrial Value Fund IV	Non-Core - Private	70,509,591	0.2%
Global Energy & Power Infrastructure Fund III F	Infrastructure	16,846,941	0.0%
Heitman Value Partners III and IV	Non-Core - Private	41,067,003	0.1%
IFM Global Infrastructure (US) L.P. Class A Interests	Infrastructure	101,458,654	0.2%
JPMorgan Special Situation Property Fund	Non-Core - Private	172,272,931	0.4%
JPMorgan Strategic Property Fund	Core - Private	298,992,603	0.7%
KKR Real Estate Partners America I and II	Non-Core - Private	48,512,908	0.1%
LaSalle Asia Opportunity Fund II and III	Non-Core - Private	917,571	0.0%
LaSalle Japan Logistics Fund II	Non-Core - Private	1,245	0.0%
LaSalle Property Fund	Core - Private	364,610,859	0.8%
Lone Star V and VI	Non-Core - Private	10,220,115	0.0%
Lone Star Real Estate Fund	Non-Core - Private	1,403,060	0.0%
Lone Star V Co-Investment Fund	Non-Core - Private	44	0.0%
Macquarie Infrastructure Partners I and IV	Infrastructure	71,465,879	0.2%
MetLife Core Property Fund	Core - Private	150,920,902	0.3%
Morgan Stanley Prime Property Fund	Core - Private	412,471,608	0.9%
North Haven Real Estate Fund V International	Non-Core - Private	1,167,918	0.0%
Noble Hospitality Fund I, III, IV-Income and IV-Value Added	Non-Core - Private	39,050,024	0.1%
Principal Enhanced Property Fund	Core - Private	149,711,882	0.3%
Prologis Targeted U.S. Logistics Holdings	Core - Private	350,392,389	0.8%
Prudential PRISA Fund	Core - Private	190,293,359	0.4%
Prudential PRISA III	Non-Core - Private	88,325,627	0.2%
Standard Life European Real Estate Fund I, II and III	Non-Core - Private	21,619,040	0.1%
Starwood Hospitality Fund	Non-Core - Private	2,083,923	0.0%
UBS Trumbull Property Fund	Core - Private	238,390,617	0.5%
Westbrook R.E. Fund VII, VIII, IX and X	Non-Core - Private	90,565,879	0.2%
Total		**$ 3,926,360,181**	**8.6%**

**Fair values are reported by the Systems' Private Real Estate advisors. Fair values reflect the most current net asset values. In instances where the most current net asset values were not as of June 30, 2020, the net asset values utilized were cash flow adjusted through June 30, 2020.*

U.S. Public Equity Broker Commissions Report				
Brokerage Firm	Shares Traded	Dollars Traded	Commissions Paid	Cost Per Share
Instinet, LLC	49,687,160	$ 1,809,216,433	$ 352,392	$ 0.01
Morgan Stanley & Co.	32,054,478	1,022,075,670	291,262	0.01
Bank of America	38,204,084	1,048,308,876	288,697	0.01
JP Morgan Chase	19,428,618	745,031,193	228,461	0.01
Cap Institutional Services	6,677,955	451,569,937	200,150	0.03
UBS Securities, LLC	8,436,802	377,687,310	161,823	0.02
Goldman Sachs & Co.	33,808,696	981,565,113	154,290	0.01
Auerbach Grayson & Co.	14,644,245	620,428,885	152,451	0.01
Piper Jaffray & Co.	20,853,363	1,328,381,145	139,801	0.01
Jefferies & Co.	10,968,568	337,336,057	129,803	0.01
Other (<$120,000)	139,826,440	5,680,625,719	1,289,683	0.01
Total	**374,590,409**	**$14,402,226,338**	**$ 3,388,813**	**$ 0.01**

Non-U.S. Public Equity Broker Commissions Report				
Brokerage Firm	Shares Traded	Dollars Traded	Commissions Paid	Cost (Basis Points)
JP Morgan Chase	2,752,101,542	$ 1,139,972,170	$ 384,281	3.4
Instinet, LLC	219,845,863	749,160,291	210,371	2.8
Goldman Sachs & Co.	95,241,123	722,780,465	151,793	2.1
Morgan Stanley & Co.	82,728,802	561,413,746	136,878	2.4
UBS Securities, LLC	93,954,736	617,495,245	131,162	2.1
Bank of America	18,931,871	597,183,310	107,894	1.8
HSBC Bank	1,085,977,530	397,597,632	107,316	2.7
Citigroup Global Markets, Inc.	47,224,906	443,230,475	103,962	2.3
Investment Technology Group	38,092,606	488,905,036	97,090	2.0
Merrill Lynch	71,066,441	365,203,450	94,454	2.6
Other (<$90,000)	3,032,155,729	2,985,833,460	789,448	2.6
Total	**7,537,321,149**	**$ 9,068,775,280**	**$ 2,314,649**	**2.6**

Investment Summary as of June 30, 2020

Asset Type	Fair Value	Percent of Total Fair Value FY 2020	Percent of Total Fair Value FY 2019	Market Exposure	Percent of Market Exposure FY2020	Percent of Market Exposure FY2019
Public Risk Assets						
U.S. Public Equity	$12,370,607,552	27.2%	28.2%	$ 12,520,333,355	27.5%	28.2%
Non-U.S. Public Equity	7,023,766,983	15.4%	16.3%	7,023,766,983	15.4%	16.3%
Public Credit	2,155,374,475	4.7%	4.3%	2,155,374,475	4.7%	4.3%
Hedged Assets	4,466,349,666	9.8%	11.8%	4,466,349,666	9.8%	11.8%
Total Public Risk Assets	***26,016,098,676***	***57.1%***	***60.6%***	***26,165,824,479***	***57.4%***	***60.6%***
Safe Assets						
U.S. Treasuries	6,736,254,016	14.7%	12.3%	6,736,254,016	14.7%	12.3%
U.S. TIPS	1,214,910,720	2.7%	3.2%	1,214,910,720	2.7%	3.2%
Cash & Cash Equivalents	958,418,063	2.1%	3.4%	958,418,063	2.1%	3.4%
Total Safe Assets	***8,909,582,799***	***19.5%***	***18.9%***	***8,909,582,799***	***19.5%***	***18.9%***
Private Risk Assets						
Private Real Estate	3,926,360,181	8.6%	7.9%	3,926,360,181	8.6%	7.9%
Private Equity	5,858,545,055	12.9%	11.4%	5,858,545,055	12.9%	11.4%
Private Credit	774,497,817	1.7%	1.0%	774,497,817	1.7%	1.0%
Total Private Risk Assets	***10,559,403,053***	***23.2%***	***20.3%***	***10,559,403,053***	***23.2%***	***20.3%***
Securities Lending Collateral	***42,650***	***0.0%***	***0.0%***	***42,650***	***0.0%***	***0.0%***
Cash & Equivalents*	***111,005,030***	***0.2%***	***0.2%***	***111,005,030***	***0.2%***	***0.2%***
Total Investments**	$45,596,132,208	100.0%	100.0%	$ 45,745,858,011	100.3%	100.0%
Reconciliation with Financial Statements						
Total from above	$45,596,132,208					
Accrued payable for investments purchased	2,676,154,017					
Accrued income payable	436,259					
Accrued receivable for investments sold	(2,339,897,452)					
Accrued income receivable	(90,246,960)					
Securities lending collateral	(42,650)					
Short-term investments designated for benefits	(521,414,678)					
Statements of Fiduciary Net Position	$45,321,120,744					

**Managers may hold cash or cash equivalents as part of an active management strategy. Cash or cash equivalents held as part of an active management strategy are not separately listed.*

*** Total Investments includes accrued income and securities lending collateral as of June, 30, 2020.*

Investment Expenses for the Fiscal Year Ended June 30, 2020

Investment Managers	
Investment Management Fees	
NISA Investment Advisors - Core	$ 4,229,373
NISA Investment Advisors - TIPS	863,470
Safe Assets Fees	5,092,843
NISA Investment Advisors - Corporate	1,139,181
Oaktree Bank Loans	45,000
Pacific Investment Management Company	506,790
Public Credit Fees	1,690,971
Analytic Investors, LLC	1,557,284
AQR Capital Management	950,897
Aronson & Johnson & Ortiz	712,852
BlackRock Investment Management	211,102
Coatue Long Only Partners	24,805,989
Davis Selected Advisers	456,365
Eagle Capital Management	401,554
Grantham, Mayo, Van Otterloo & Co.	1,760,316
Lazard Asset Management	987,366
Martingale Asset Management	1,075,813
NISA Investment Advisors	27,289
Rock Springs Capital	1,802,930
Russell Investments	240,744
Select Equity Group	153,384
Westwood Management	1,911,144
Zevenbergen Capital	1,410,729
U.S. Public Equity Fees	38,465,758
ABS Investment Management	1,103,064
Acadian Asset Management	2,203,968
Alliance Bernstein Institutional Management	851,809
Analytic Investors, LLC	1,365,779
AQR Capital Management	1,490,290
Arrowstreet Capital	10,871,949
BlackRock Investment Management	155,787
Coronation Asset Management (Proprietary) Limited	1,067,236
Invesco Advisers, Inc	596,016
MFS Institutional Advisors	4,286,265
Neon Capital Management	1,462,261
NISA Investment Advisors	81,085
The Rock Creek Group	2,930,967
Non-U.S. Public Equity Fees	28,466,476
Allianz	670,784
AQR Capital Management	195,454
BlackRock Investment Management	65,066
Chartwell Investment Partners	486,191
Greenhouse Funds	1,724,371
Martingale Asset Management	594,251
NISA Investment Advisors	19,612
Russell Investments	99,386
Systematic Financial Management	1,022,526
S-Cap Fees	4,877,641
Alpha Overlay Fees	**36,166,848**
Hedged Assets Fees	**80,679,153**
Private Real Estate Fees	**38,687,201**
Private Credit Fees	**13,907,479**
Private Equity Fees	**172,397,509**
Commission Recapture Income	(196,920)
Investment Management Expense	420,234,959
Custodial Services	
JP Morgan Chase, NA	1,698,060
Custodial Fees	1,698,060
Investment Consultants	
Albourne America, LLC	750,000
Institutional Shareholder Services, Inc.	74,500
Pathway Consulting	4,009,567
RVK, Inc.	15,000
Townsend	350,000
Verus Advisory Inc	450,000
Investment Consultant Fees	5,649,067
Legal Expenses	1,141,861
Staff Investment Expenses	5,046,629
Total Investment Expenses	**$ 433,770,576**

"I am now an administrator, and in that role I find that PSRS/PEERS plays a big role in attracting and recruiting talented staff to the district."

Meghan Klosterman, PSRS Active

Actuarial Section

Certification of Actuarial Results

November 3, 2020

Board of Trustees
Public School Retirement System of Missouri
Public Education Employee Retirement System of Missouri
3210 West Truman Boulevard
Jefferson City, MO 65109

Re: Certification of Actuarial Results as of June 30, 2020

Dear Members of the Board:

At your request, we have performed actuarial valuations of the Public School Retirement System ("PSRS") and the Public Education Employee Retirement System ("PEERS") of Missouri as of June 30, 2020. An actuarial valuation of each System is performed annually for purposes of preparing the required accounting information under Governmental Accounting Standards and for purposes of determining the Actuarial Determined Contribution under the Plan's funding policy. Our reports have been prepared pursuant to an engagement letter between PSRS and PEERS of Missouri and PwC, and are intended solely for the use and benefits of PSRS and PEERS of Missouri and not for reliance by any other person.

The actuarial valuations are based upon:

a. *Benefit Provisions* - Our understanding of the benefit provisions in effect on the valuation date under Missouri Revised Statutes Chapter 169.

b. *Data Relative to the Members of the Systems* - Data for all members of each System as of June 30, 2020 was provided by PSRS and PEERS of Missouri staff ("staff"). PwC relied on the data provided. PwC reviewed the data for reasonableness relative to the prior year's data, but the data was not audited.

c. *Assets of the Fund* - The values of the trust fund assets as of June 30, 2020 for each System were also provided by the staff. An actuarial value of assets, with investment gains and losses relative to the assumed return recognized over five years, is used in the development of the contribution rates.

d. *Actuarial Cost Method* - The actuarial cost method utilized by each System for accounting purposes is the Entry Age Normal, Level Percent method, as required by GASB Statement No. 67. The system has elected to use the same cost method in the determination of the contribution rates for pre-funding the benefits. The objective of this method is to allocate the cost of benefits as a level percentage of pay over the entire career of each member. On a funding basis, any Unfunded Actuarial Accrued Liability ("UAAL") is separately financed as a level percentage of payroll over a fixed 30-year period, where a new 30-year amortization base is established for the gain or loss that occurred during the year prior to the valuation date.

e. *Actuarial Assumptions* - For the June 30, 2020 valuation, the actuarial assumptions were adopted by the Board pursuant to an experience study completed in June 2016. Since the last experience study, the investment return and COLA assumptions have been updated. For the June 30, 2017 valuations, the investment return assumption was lowered from 7.75% to 7.60% and the COLA assumption was increased based on changes to the Board's funding policy relating to COLAs. Both changes were adopted at the November 3, 2017 meeting. For the June 30, 2018 valuations, the investment return assumption was further lowered from 7.60% to 7.50%, as adopted by the Board at the October 29, 2018 meeting. There were no additional changes for the June 30, 2019 or June 30, 2020 valuations.

For accounting purposes, the actuarial assumptions and methods used in this valuation were selected and approved by the Board and are in accordance with our understanding of GASB Statement No. 67.

For funding purposes, the actuarial assumptions and methods were selected and approved by the Board and are consistent with the funding policy adopted by the Board and summarized below. In general, the methods provide orderly funding of all benefits being accrued, as well as funding of any Unfunded Actuarial Accrued Liability over a period of 30 years. The smoothing method employed in determining the Actuarial Value of Assets may accelerate or lengthen the effective funding period, depending on whether gains or losses are experienced. In our opinion, the actuarial assumptions and methods are reasonable for purposes of the actuarial valuations and meet the parameters set by the Actuarial Standards of Practice.

In order to establish long-term, consistent methods for pre-funding the benefits of each System, the Board of Trustees has adopted a funding policy. The objective is to achieve a funded ratio of 100% over a closed 30-year period. For this purpose, the funded ratio is defined as the Actuarial Value of Assets divided by the Actuarial Accrued Liability determined under the Entry Age Normal Level Percent cost method and the actuarial assumptions adopted by the Board.

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Certification of Actuarial Results, continued

The Board has identified the following principles to guide its funding policy:

1. Maintain adequate assets so that current plan assets plus future contributions and investment earnings should be sufficient to fund all benefits expected to be paid to members and their beneficiaries.
2. Maintain stability of contribution rates, consistent with other funding objectives.
3. Maintain public policy goals of accountability and transparency. Each policy element is clear in intent and effect, and each should allow an assessment of whether, how, and when the funding requirements of the plan will be met.
4. Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provide services to them, rather than deferring those costs to future members and employers.
5. Provide a reasonable margin for adverse experience to help offset risks.
6. Review the investment earnings assumption in conjunction with the periodic asset / liability study and in consideration of the Board's risk profile.
7. Review demographic and economic assumptions in conjunction with the periodic experience study performed by an actuary.
8. Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liabilities (UAAL) while keeping the member and employer contribution rates at or near 14.5% of pay for PSRS and 6.86% of pay for PEERS, the contribution rates first paid during 2011-2012.

The actuarially determined contribution rates developed from the June 30, 2020 valuations reflect these principles.

We provide the information used by PSRS and PEERS of Missouri staff to prepare the following schedules and other data in this Actuarial Section:

- Schedules of Funding Progress
- Required Contribution Rates and Amortizations of Unfunded Liability
- Reconciliation of Unfunded Actuarial Accrued Liability
- Solvency Tests
- Schedules of Active Member Valuation Data
- Schedules of Retirees and Beneficiaries Added to and Removed from Retirement Rolls

We also provide the information used by PSRS and PEERS of Missouri staff to prepare the following schedules and other data in the Financial Section:

- Sensitivity of the Net Pension Liabilities to Changes in the Discount Rate
- Schedules of Changes in the Employers' Net Pension Liability
- Schedules of Employers' Net Pension Liability
- Schedules of Employer Contributions

In preparing the results presented herein, we have used and evaluated actuarial models in accordance with Actuarial Standards of Practice ("ASOP") No. 56. PwC uses the ProVal valuation system developed by Winklevoss Technologies, LLC in performing valuations of pension and postretirement benefit plans. We have utilized the ProVal software to prepare the valuation results presented herein. ProVal is used to value participant data through projecting retirement benefits and applying plan specific assumptions, methods and plan provisions under applicable accounting and funding standards. PwC is not aware of any material limitations or known weaknesses in the ProVal software.

A range of results, different from those presented in this report could be considered reasonable. Future actuarial measurements may differ significantly from the current measurement presented in this report due to a number of factors including but not limited to: plan experience differing from that anticipated by the economic and demographic assumptions; increases or decreases expected as part of the natural operation of the methods used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); rounding conventions; and changes in plan provisions or applicable law. Due to the limited scope of this report, an analysis of the potential range of such future measurements has not been performed.

To the best of our knowledge, our actuarial reports are complete and accurate and have been prepared in accordance with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. Our calculations also reflect our understanding of the requirements of Missouri state law. The undersigned actuaries are members of the Society of Actuaries and other professional organizations, including the American Academy of Actuaries, and meet the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States relating to pension plans. There is no relationship between the PwC practitioners involved in this engagement and PSRS and PEERS of Missouri that may impair our objectivity.

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Plans administered by PSRS and PEERS of Missouri as of June 30, 2020 based on the underlying census data, asset information and selected assumptions and methods.

Sincerely,

Cindy Fraterrigo

Cindy Fraterrigo, FSA, EA, MAAA
Principal

Brandon A. Robertson

Brandon Robertson, ASA, EA, MAAA
Director

Schedule of Funding Progress

Public School Retirement System of Missouri
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)-Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
6/30/11	$ 29,387,486	$ 34,383,430 [3]	$ 4,995,944	85.5%	$ 4,338,976	115.1%
6/30/12	29,013,002	35,588,030 [1]	6,575,028	81.5%	4,379,060	150.1%
6/30/13	29,443,147	36,758,165 [2]	7,315,018	80.1%	4,460,872	164.0%
6/30/14	31,846,599	38,483,184 [1]	6,636,585	82.8%	4,425,568	150.0%
6/30/15	34,073,415	40,610,540 [1]	6,537,125	83.9%	4,508,242	145.0%
6/30/16	35,419,278	41,744,619 [3]	6,325,341	84.8%	4,556,137	138.8%
6/30/17	37,373,740	44,501,771 [3]	7,128,031	84.0%	4,655,169	153.1%
6/30/18	39,211,452	46,702,002 [3]	7,490,550	84.0%	4,759,665	157.4%
6/30/19	40,498,479	47,973,829 [1]	7,475,350	84.4%	4,844,249	154.3%
6/30/20	41,705,059	49,641,020 [1]	7,935,961	84.0%	4,919,286	161.3%

[1] *There were no significant legislative changes in fiscal years 2012, 2014, 2015, 2019, and 2020 impacting the valuation.*

[2] *The extension of the 25-and-out and 2.55% provisions to 2014 are included in the AAL for 2013.*

[3] *There were no significant legislative changes in fiscal years 2011, 2016, 2017 and 2018, however actuarial assumptions were revised.*

Schedule of Funding Progress

Public Education Employee Retirement System of Missouri
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)-Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
6/30/11	$ 3,028,757	$ 3,549,348 [3]	$ 520,591	85.3%	$ 1,414,442	36.8%
6/30/12	3,090,880	3,746,347 [1]	655,467	82.5%	1,437,310	45.6%
6/30/13	3,237,200	3,967,619 [2]	730,419	81.6%	1,470,830	49.7%
6/30/14	3,584,719	4,211,489 [1]	626,770	85.1%	1,442,701	43.4%
6/30/15	3,915,199	4,512,317 [1]	597,118	86.8%	1,469,772	40.6%
6/30/16	4,157,427	4,809,666 [3]	652,239	86.4%	1,519,081	42.9%
6/30/17	4,470,270	5,209,369 [3]	739,099	85.8%	1,558,183	47.4%
6/30/18	4,774,781	5,542,478 [3]	767,697	86.1%	1,636,008	46.9%
6/30/19	5,019,868	5,809,485 [3]	789,617	86.4%	1,665,654	47.4%
6/30/20	5,257,847	6,089,401 [1]	831,554	86.3%	1,732,243	48.0%

[1] *There were no significant legislative changes in fiscal years 2012, 2014, 2015, 2019 and 2020, impacting the valuation.*

[2] *The extension of the 25-and-out provision is included in the AAL for 2013.*

[3] *There were no significant legislative changes in fiscal years 2011, 2016, 2017 and 2018, however actuarial assumptions were revised.*

Required Contribution Rate & Amortization of Unfunded Liability

Public School Retirement System of Missouri
For the fiscal year ended June 30, 2020

		Percentage of Payroll
(1)	Normal cost rate	17.47%
(2)	Rate needed to fund UAAL	11.39%
(3)	Benchmark contribution rate - normal cost plus a rate to fund the UAAL over 21.7 years	28.86%
(4)	Additional amount towards funding UAAL	0.14%
(5)	Recommended rate for FY 2022	29.00%

Required Contribution Rate & Amortization of Unfunded Liability

Public Education Employee Retirement System of Missouri
For the fiscal year ended June 30, 2020

		Percentage of Payroll
(1)	Normal cost rate	10.47%
(2)	Rate needed to fund UAAL	3.23%
(3)	Benchmark contribution rate - normal cost plus a rate to fund the UAAL over 22.0 years	13.70%
(4)	Additional amount towards funding UAAL	0.02%
(5)	Recommended rate for FY 2022	13.72%

Reconciliation of Unfunded Actuarial Accrued Liability

Public School Retirement System of Missouri
As of June 30, 2020

(1) Unfunded actuarial liability as of July 1, 2019		$ 7,475,350,674
(2) Changes in Unfunded Actuarial Accrued Liability		
a. Impact of Plan Changes	-	
b. Actuarial (Gains)/Losses		
i. From investment	417,365,593	
ii. From actuarial liabilities due to assumption changes	-	
iii. From actuarial liabilities due to actual vs. expected COLA	184,381,908	
iv. From actuarial liabilities due to actual vs. expected salary changes	(179,541,506)	
v. From actuarial liabilities due to other demographic experience	35,650,571	
vi. Total Unfunded Actuarial Accrued Liability (Gain)/Loss		457,856,566
c. Total New Amortization Bases: (2)(a) + (2)(b)(vi)		457,856,566
d. Net Change in Existing Bases Due to Prior Year Contributions, Net of Interest		2,754,501
e. Total changes in Unfunded Actuarial Accrued Liability		460,611,067
(3) Unfunded Actuarial Accrued Liability as of June 30, 2020		$ 7,935,961,741

Reconciliation of Unfunded Actuarial Accrued Liability

Public Education Employee Retirement System of Missouri
As of June 30, 2020

(1) Unfunded actuarial liability as of July 1, 2019		$ 789,616,222
(2) Changes in Unfunded Actuarial Accrued Liability		
a. Impact of Plan Changes	-	
b. Actuarial (Gains)/Losses		
i. From investment	46,833,212	
ii. From actuarial liabilities due to assumption changes	-	
iii. From actuarial liabilities due to actual vs. expected COLA	15,235,917	
iv. From actuarial liabilities due to actual vs. expected salary changes	(31,638,093)	
v. From actuarial liabilities due to other demographic experience	8,235,762	
vi. Total Unfunded Actuarial Accrued Liability (Gain)/Loss		38,666,798
c. Total New Amortization Bases: (2)(a) + (2)(b)(vi)		38,666,798
d. Net Change in Existing Bases Due to Prior Year Contributions, Net of Interest		3,271,495
e. Total changes in Unfunded Actuarial Accrued Liability		41,938,293
(3) Unfunded Actuarial Accrued Liability as of June 30, 2020		$ 831,554,515

Schedule of Active Member Valuation Data

Public School Retirement System of Missouri

Actuarial Valuation Date	Number of Employers	Number of Members	Covered Annual Payroll (000's)	Average Annual Salary	% Increase in Average Salary	Average Attained Age	Average Years of Service
6/30/11	537	77,708	$ 4,338,976	$ 55,837	-1.5%	42.3	11.5
6/30/12	537	77,529	4,379,060	56,483	1.2%	42.2	11.4
6/30/13	535	78,076	4,460,872	57,135	1.2%	42.1	11.4
6/30/14	535	75,168	4,425,568	58,876	3.0%	42.2	11.8
6/30/15	535	78,138	4,508,242	58,582	-0.5%	42.0	11.5
6/30/16	534	78,129	4,556,137	59,005	0.7%	42.0	11.6
6/30/17	534	78,274	4,655,169	60,643	2.8%	42.0	11.7
6/30/18	533	78,700	4,759,665	61,634	1.6%	42.1	11.8
6/30/19	533	78,863	4,844,249	62,764	1.8%	42.2	12.0
6/30/20	533	78,848	4,919,286	63,688	1.5%	42.3	12.2

Schedule of Active Member Valuation Data

Public Education Employee Retirement System of Missouri

Actuarial Valuation Date	Number of Employers	Number of Members	Covered Annual Payroll (000's)	Average Annual Salary	% Increase in Average Salary	Average Attained Age	Average Years of Service
6/30/11	534	48,800	$ 1,414,442	$ 28,984	1.8%	47.9	8.3
6/30/12	534	48,605	1,437,310	29,571	2.0%	48.1	8.4
6/30/13	532	48,709	1,470,830	30,196	2.1%	48.1	8.5
6/30/14	532	45,589	1,442,701	31,646	4.8%	48.6	8.9
6/30/15	532	46,864	1,469,772	32,220	1.8%	48.4	8.6
6/30/16	530	47,851	1,519,081	32,887	2.1%	48.3	8.6
6/30/17	530	47,953	1,558,183	33,643	2.3%	48.3	8.5
6/30/18	530	48,549	1,636,008	34,361	2.1%	48.2	8.4
6/30/19	530	49,345	1,665,654	35,111	2.2%	48.1	8.3
6/30/20	530	50,179	1,732,243	35,800	2.0%	48.0	8.2

Solvency Test

Public School Retirement System of Missouri
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Accrued Liability for: Member Contributions (1)	Current Retirees & Beneficiaries (2)	Active & Inactive Members Employer Financed Portion (3)	Actuarial Value of Assets	Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets for: (1)	(2)	(3)
6/30/11	$ 6,571,916	$ 20,023,701	$ 7,787,813	$ 29,387,486	100.0%	100.0%	35.8%
6/30/12	6,687,358	21,191,032	7,709,641	29,013,002	100.0%	100.0%	14.7%
6/30/13	6,856,920	22,328,795	7,572,451	29,443,147	100.0%	100.0%	3.4%
6/30/14	6,985,665	23,579,998	7,917,522	31,846,599	100.0%	100.0%	16.2%
6/30/15	6,787,038	24,674,171	9,149,331	34,073,415	100.0%	100.0%	28.6%
6/30/16	6,994,370	25,895,012	8,855,237	35,419,278	100.0%	100.0%	28.6%
6/30/17	7,267,682	27,544,082	9,690,007	37,373,740	100.0%	100.0%	26.4%
6/30/18	7,593,869	28,811,151	10,296,982	39,211,452	100.0%	100.0%	27.3%
6/30/19	7,928,036	29,429,993	10,615,800	40,498,479	100.0%	100.0%	29.6%
6/30/20	8,268,226	30,515,563	10,857,231	41,705,059	100.0%	100.0%	26.9%

Solvency Test

Public Education Employee Retirement System of Missouri
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Accrued Liability for: Member Contributions (1)	Current Retirees & Beneficiaries (2)	Active & Inactive Members Employer Financed Portion (3)	Actuarial Value of Assets	Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets for: (1)	(2)	(3)
6/30/11	$ 783,112	$ 1,398,620	$ 1,367,616	$ 3,028,757	100.0%	100.0%	61.9%
6/30/12	822,485	1,541,541	1,382,321	3,090,880	100.0%	100.0%	52.6%
6/30/13	862,035	1,653,613	1,451,971	3,237,200	100.0%	100.0%	49.7%
6/30/14	894,650	1,861,575	1,455,264	3,584,719	100.0%	100.0%	56.9%
6/30/15	892,547	2,040,647	1,579,123	3,915,199	100.0%	100.0%	62.2%
6/30/16	926,274	2,205,328	1,678,064	4,157,427	100.0%	100.0%	61.1%
6/30/17	962,156	2,453,877	1,793,336	4,470,270	100.0%	100.0%	58.8%
6/30/18	1,004,383	2,678,124	1,859,971	4,774,781	100.0%	100.0%	58.7%
6/30/19	1,050,907	2,861,160	1,897,418	5,019,868	100.0%	100.0%	58.4%
6/30/20	1,097,457	3,071,099	1,920,845	5,257,847	100.0%	100.0%	56.7%

PSRS Schedule of Retirees and Beneficiaries Added to and Removed from Retirement Rolls

	Added to Rolls		Removed from Rolls		Rolls End of Year			% Increase	
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Average Annual Allowances	in Annual Allowance	in Average Annual Allowance
2019-2020									
Service Retirees	2,472	$ 101,028,068	1,120	$ 41,405,854	58,855	$ 2,528,800,920	$ 42,967	2.39 %	0.04 %
Disability Retirees	56	1,554,789	43	795,175	1,032	29,243,125	28,336	1.46	0.28
Beneficiaries	370	12,637,095	238	7,157,255	4,708	150,820,748	32,035	4.24	0.74
Note: Other adjustments to 1 services retiree, 1 disability retiree, and 26 beneficiaries occurred during the current year.									
2018-2019									
Service Retirees	2,502	$ 98,082,129	935	$ 36,759,920	57,502	$ 2,469,681,559	$ 42,949	4.55 %	1.69 %
Disability Retirees	44	1,297,197	22	559,767	1,020	28,822,119	28,257	5.17	2.18
Beneficiaries	359	13,443,600	183	5,334,802	4,550	144,685,986	31,799	7.46	3.30
Note: Other adjustments to 5 services retirees and 7 disability retirees occurred during the 2018-2019 fiscal year.									
2017-2018									
Service Retirees	2,406	$ 90,851,701	1,105	$ 41,389,599	55,930	$ 2,362,271,747	$ 42,236	3.78 %	1.36 %
Disability Retirees	50	1,448,148	38	952,179	991	27,406,384	27,655	3.09	2.05
Beneficiaries	405	13,902,271	202	5,519,407	4,374	134,644,480	30,783	7.72	2.50
Note: Other adjustments to 2 disability retirees and 9 beneficiaries occurred during the 2017-2018 fiscal year.									
2016-2017									
Service Retirees	2,601	$ 97,816,017	1,042	$ 36,450,990	54,629	$ 2,276,325,975	$ 41,669	2.73 %	-0.21 %
Disability Retirees	56	1,525,607	30	585,716	981	26,584,277	27,099	2.83	0.31
Beneficiaries	345	12,304,287	203	5,520,642	4,162	124,990,237	30,031	6.00	1.72
Note: Other adjustments to 1 service retiree, 2 disability retirees and 26 beneficiaries occurred during the 2016-2017 fiscal year.									
2015-2016									
Service Retirees	2,603	$ 94,495,423	883	$ 30,442,764	53,069	$ 2,215,921,481	$ 41,755	5.03 %	1.62 %
Disability Retirees	83	2,292,574	23	524,458	957	25,852,085	27,014	9.35	1.92
Beneficiaries	311	9,947,411	190	4,077,020	3,994	117,916,972	29,524	6.53	3.60
Note: Other adjustments to 4 service retirees, 5 disability retirees and 11 beneficiaries occurred during the 2015-2016 fiscal year.									
2014-2015									
Service Retirees	2,571	$ 92,740,440	933	$ 30,965,898	51,345	$ 2,109,756,890	$ 41,090	5.07 %	1.61 %
Disability Retirees	74	2,034,400	41	909,636	892	23,641,506	26,504	6.55	2.25
Beneficiaries	351	10,810,471	387	4,706,760	3,884	110,685,031	28,498	7.82	7.48
Note: Effective June 30, 2015, retirees and beneficiaries with their benefits on hold are included in the payment rolls at year-end.									

PEERS Schedule of Retirees and Beneficiaries Added to and Removed from Retirement Rolls

	Added to Rolls		Removed from Rolls		Rolls End of Year			% Increase	
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Average Annual Allowances	in Annual Allowance	in Average Annual Allowance
2019-2020									
Service Retirees	2,132	$ 24,672,435	914	$ 6,646,821	30,166	$ 283,475,672	$ 9,397	5.34 %	1.09 %
Disability Retirees	32	206,913	32	140,024	831	4,783,679	5,757	0.80	0.93
Beneficiaries	248	1,873,479	106	614,372	2,235	14,486,379	6,482	9.74	1.69
Note: Other adjustments to 1 service retiree, 1 disability retiree, and 22 beneficiaries occurred during the current year.									
2018-2019									
Service Retirees	2,104	$ 25,207,998	732	$ 5,118,903	28,947	$ 269,094,108	$ 9,296	8.20 %	3.07 %
Disability Retirees	45	337,905	25	148,841	832	4,745,905	5,704	5.82	3.41
Beneficiaries	179	1,332,732	94	440,834	2,071	13,200,310	6,374	9.18	3.96
Note: Other adjustments to 1 disability retiree and 14 beneficiaries occurred during the 2018-2019 fiscal year.									
2017-2018									
Service Retirees	2,025	$ 23,443,109	788	$ 5,183,020	27,575	$ 248,707,170	$ 9,019	7.93 %	3.07 %
Disability Retirees	36	219,230	27	179,121	813	4,484,799	5,516	2.19	1.06
Beneficiaries	206	1,426,667	92	482,533	1,972	12,090,177	6,131	10.00	3.92
Note: Other adjustments to 3 service retirees and 5 beneficiaries occurred during the 2017-2018 fiscal year.									
2016-2017									
Service Retirees	2,023	$ 23,078,805	752	$ 4,631,306	26,335	$ 230,438,067	$ 8,750	7.36 %	2.16 %
Disability Retirees	46	313,598	23	109,268	804	4,388,588	5,458	4.54	1.68
Beneficiaries	207	1,335,560	88	451,434	1,863	10,991,043	5,900	8.14	1.01
Note: Other adjustments to 3 service retirees, 1 disability retiree and 4 beneficiaries occurred during the 2016-2017 fiscal year.									
2015-2016									
Service Retirees	1,903	$ 20,486,168	746	$ 4,299,969	25,061	$ 214,643,511	$ 8,565	8.59 %	3.57 %
Disability Retirees	53	333,484	31	149,572	782	4,198,147	5,368	5.38	3.35
Beneficiaries	192	1,254,525	90	413,164	1,740	10,163,757	5,841	11.60	4.60
Note: Other adjustments to 4 service retirees, 7 disability retirees and 7 beneficiaries occurred during the 2015-2016 fiscal year.									
2014-2015									
Service Retirees	1,886	$ 20,303,553	742	$ 4,999,606	23,900	$ 197,661,001	$ 8,270	9.23 %	3.62 %
Disability Retirees	62	373,039	30	183,496	767	3,983,823	5,194	7.38	2.49
Beneficiaries	171	1,199,171	78	371,236	1,631	9,107,407	5,584	11.51	5.08
Note: Effective June 30, 2015, retirees and beneficiaries with their benefits on hold are included in the payment rolls at year-end.									

PSRS Summary Plan Description

The Public School Retirement System of Missouri (PSRS) became operative July 1, 1946. It was established by an Act of the Missouri Legislature and is governed by Chapter 169 of the Revised Statutes of Missouri. Its purpose is to provide benefits to members and their dependents at retirement or in the event of death or disability prior to retirement.

PSRS is a defined benefit plan funded on an actuarial reserve basis, which establishes the availability of funds to pay benefits as prescribed by law. The System is established as an independent trust fund and is not subject to direction by any state agency. Administrative expenses are paid entirely out of investment earnings.

Administration – The administration of PSRS is vested in a seven-member Board of Trustees, composed of three elected active PSRS members, one elected active Public Education Employee Retirement System of Missouri (PEERS) member, and three appointed trustees. The four elected trustees are selected by vote of the members and retirees of both Systems. Two are elected each even-numbered calendar year to serve four-year terms. The three appointed trustees, one of whom must be a PSRS or a PEERS retiree, are named by the governor to serve four-year terms. The appointed trustees must be residents of school districts included in the System but not employees of such districts nor state employees nor state elected officials.

The Board appoints an executive director who is responsible for employment of the retirement office staff, routine operation of the System, and acts as an advisor to the Board on all matters pertaining to the System.

Member Participation – PSRS membership is automatic for certificated, full-time employees of public school districts in Missouri (except the St. Louis city and the Kansas City school districts), public two-year colleges in Missouri, PSRS and certain statewide non-profit educational associations that have previously elected to join. Non-profit educational associations are no longer allowed to join the System. Certificated, part-time employees whose services would qualify them for membership in PEERS are contributing members of PSRS unless PEERS membership is elected. The vast majority of PSRS members are not covered by Social Security. However, there are a few exceptions due to specific guidance from the Social Security Administration. Those members who are also covered by Social Security contribute to PSRS at two-thirds the rate of other members and receive two-thirds benefits.

Members working in covered employment are considered active members. Such members contribute 14.5% of total retirement salary to PSRS. The contributions are deducted and remitted by the employer and are credited by PSRS to individual member accounts. Since July 1, 1989, member contributions have been tax-deferred for federal and state income tax purposes under IRS 414(h)(2). Contributions are not considered income for such purposes until they are paid as a lump-sum refund or monthly benefits.

Interest at a rate set each year by the Board of Trustees is credited to individual member accounts each June 30 on the previous June 30 balance. The interest rate set annually by the board, was 2.0% on June 30, 2020. Since PSRS is a defined benefit plan, benefits are based upon the member's final average salary and years of service. The amount of interest credited to a member's account has no bearing on the monthly benefit amount payable at retirement.

In addition to service earned for covered employment, members may purchase service in various categories including several types of leave, out-of-state school service, other public and private employment, active U.S. military duty, and service under the federal Uniformed Services Employment and Re-Employment Rights Act of 1994 (USERRA).

Members who have contributions on deposit with PSRS but are not working in covered employment are considered inactive members.

Employer Participation – The employers served by PSRS withhold members' contributions from salary payments and contribute an amount equal to those contributions at a current rate of 14.5% of payroll. Employer contributions and investment earnings on those funds are placed by PSRS in a general reserve account to pay monthly benefits to retirees and to beneficiaries of deceased members. Employers are responsible for remitting contributions promptly and for furnishing contribution information and new membership information to PSRS. Employers also provide needed data when members apply for monthly benefits or for refunds upon termination of employment.

Survivor Benefits – The designated beneficiary of a member who dies before retirement is eligible for a lump-sum refund of the member's contributions and interest. If the beneficiary is an eligible dependent and the member dies while in covered employment with at least two years of service, or while eligible for disability retirement benefits, monthly survivor benefits based on a percentage of the member's salary for the last full year of covered service can be elected instead of a lump-sum refund. Monthly survivor benefits may also be payable to qualified dependents of an inactive member who has at least five years of service.

In lieu of a lump-sum refund or monthly survivor benefits, survivors with an insurable interest and beneficiaries of disability retirees may elect to receive monthly benefits under the Joint-and-Survivor 100% benefit plan. Such benefits are payable when the member would have been eligible for early or normal service retirement.

Refund of Contributions – Member contributions and interest are fully refundable upon termination of covered employment or death. All service and benefit rights are forfeited upon voluntary refund or automatic termination of membership.

A member may, upon returning to covered employment, reinstate the service forfeited through termination of a previous membership by repaying the money refunded plus interest.

Membership Termination – Membership is terminated by death, retirement, refund of contributions or absence from covered employment by a non-vested member for five consecutive school years.

Disability Retirement Benefits – Disability retirement benefits are payable to eligible members who have met service and eligibility requirements and who, because of permanent disability, are unable to earn a livelihood in any occupation. In most instances, the disability retirement benefit is calculated at 50% of the member's salary for the last full year of service.

Service Retirement Benefits – Service retirement benefits are payable to members who have terminated covered employment and have met certain eligibility requirements.

Benefit Formula – All service retirement benefits are based on a formula which multiplies final average salary by the applicable benefit factor, by the years of service and, in the case of early retirement, by an age-reduction factor. Final average salary is obtained by dividing the total salaries for the three highest consecutive years of service by 36 months to arrive at a monthly average; the applicable factor is determined by the type of retirement eligibility; total service is the amount accumulated at retirement for covered employment and purchased service; and the age-reduction factor, when applicable, is determined by the age at retirement.

Normal Retirement – A member may retire with benefits calculated under the standard (2.5%) benefit factor at age 60 with five years of service, at any age with 30 years of service, or when a combination of age and service equals 80 or more. Between July 1, 2001 and July 1, 2014, a member could retire with a 2.55% benefit factor with 31 or more years of service.

Early Retirement – A member may retire with benefits calculated under the standard (2.5%) formula with an age-reduction factor applied, at age 55 with five years of service or at any age with 25 years of service, as long as he or she does not qualify for Rule of 80.

A special provision allows members under age 55 with 25.0 to 29.9 years of service to retire with benefits calculated under a modified benefit factor ranging from 2.2% to 2.4% with no age-reduction factor applied.

Payment Options – A retiring member may choose to receive the maximum benefits payable under the Single Life benefit plan, or may elect to receive a reduced benefit under one of three Joint-and-Survivor benefit plans or under one of two Term-Certain benefit plans, to provide survivor benefit coverage in varying degrees after the retiree's death.

Certain benefit minimums apply to normal or early retirement with 15 or more years of service. The minimums for 15 but fewer than 25 years of service are reduced if a Joint-and-Survivor or a Term-Certain benefit plan is elected and/or if an age-reduction factor is applicable because of early retirement. The minimums for 25 or more years of service are reduced only if a Joint-and-Survivor or a Term-Certain benefit plan is selected.

The Partial Lump Sum Option (PLSO) is available to qualified members. This option allows qualified members to choose to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time, lump-sum payment at retirement.

Cost-of-Living Adjustments – Cost-of-living adjustments (COLAs) are provided beginning the second January after retirement to service and disability retirees, and to Joint-and-Survivor and Term-Certain beneficiaries of deceased retirees. Lifetime COLAs are limited to 80% of the original retirement benefit.

The Department of Labor Consumer Price Index for Urban Consumers (CPI-U) for the previous fiscal year is used as a guideline for the annual COLA which is set by the Board. By law, if the change in CPI-U is 2% or more, the COLA must be at least 2%, but no more than 5%. If the change in CPI-U is between 0% and 2%, the Board may grant a COLA of 0% to 5%. If the change in CPI-U is less than 0%, no increase can be given. If it is more than 5%, the Board is required to give a 5% increase. Under the funding policies adopted by the Board in November 2017. The following applies:

- If the June to June change in the CPI-U is less than 2% for consecutive one-year periods, a cost-of-living increase of 2% will be granted when the cumulative increase is equal to or greater than 2%, at which point the cumulative increase in the CPI-U will be reset to be based on the June value immediately preceding the January 1 at which the 2% cost-of-living increase is granted.
- If the June to June change in the CPI-U is greater than or equal to 2%, but less than 5%, a cost-of-living increase of 2% will be granted.
- If the June to June change in the CPI-U is greater than or equal to 5%, a cost-of-living increase of 5% will be granted.

Member Handbook – A ***Member Handbook*** containing detailed information concerning the retirement program is available on our website or can be obtained from the retirement office upon request.

PEERS Summary Plan Description

The Public Education Employee Retirement System of Missouri (PEERS) was established by an Act of the Missouri Legislature to begin operations on November 1, 1965, and is governed by Chapter 169 of the Revised Statutes of Missouri. Its purpose is to provide benefits to members and their dependents at retirement or in the event of death or disability prior to retirement.

PEERS is a defined benefit plan funded on an actuarial reserve basis, which establishes the availability of funds to pay benefits as prescribed by law. The System is established as an independent trust fund and is not subject to direction by any state agency. Administrative expenses are paid entirely out of investment earnings.

Administration – The law provides that the responsibility for the operation and administration of the retirement system is vested in the Public School Retirement System of Missouri (PSRS) Board of Trustees sitting as the Board of Trustees for PEERS. The Board is comprised of three elected active PSRS members, one elected active PEERS member and three appointed trustees. The four elected trustees are selected by vote of the members and retirees of both Systems. Two are elected each even-numbered calendar year to serve four-year terms. The three appointed trustees, one of whom must be a PSRS or a PEERS retiree, are named by the governor to serve four-year terms. The appointed trustees must be residents of school districts included in the System but not employees of such districts nor state employees nor state elected officials.

The Board appoints an executive director who is responsible for employment of the retirement office staff, routine operation of the System, and acts as an advisor to the Board on all matters pertaining to the System.

Member Participation – PEERS membership is automatic, regardless of position, for all persons not covered by PSRS who are employed for 20 or more hours a week on a regular basis in a position that normally requires at least 600 hours during the school term by the public school districts in Missouri (except the St. Louis city and the Kansas City school districts), public two-year colleges in Missouri (except St. Louis

Community College), PSRS and statewide non-profit educational associations that have elected to join.

Members working in covered employment are considered active members. Such members contribute 6.86% of their total retirement salary to PEERS. The contributions are deducted by the employer and are credited by PEERS to individual member accounts. PEERS members are also covered by Social Security.

PEERS membership can be elected by employees with Missouri educator certificates who work in any position for 17 or more hours weekly but less than full time; however, PSRS membership is automatic if a PEERS election is not made. The election to join PEERS must be filed with the Board within 90 days after entering first time, part-time employment.

Since July 1, 1989, member contributions have been tax-deferred for federal and state income tax purposes under IRC 414(h)(2). Contributions are not considered as income for federal or state income tax purposes until they are paid in a lump-sum refund or in monthly benefits.

Individual accounts are maintained for all PEERS members. Interest is credited each June 30 on the previous June 30 balance. The interest rate, set annually by the Board, was 2.0% on June 30, 2020. Since PEERS is a defined benefit plan, benefits are based upon the member's final average salary and years of service. The amount of interest credited to a member's account has no bearing on the monthly benefit amount payable at retirement.

In addition to service earned for covered employment, members may purchase service in various categories including several types of leave, out-of-state school service, other public and private employment, active U.S. military duty, and service under the federal Uniformed Services Employment and Re-employment Rights Act of 1994 (USERRA).

Members who have contributions on deposit with PEERS but are not currently working in covered employment are considered inactive members.

Employer Participation – The employers served by PEERS withhold members' contributions from salary payments and contribute an amount equal to employee contributions at a current rate of 6.86% of payroll. Employer contributions and investment earnings on those funds are placed in a general reserve account to pay monthly benefits to retirees and to beneficiaries of deceased members. It is the responsibility of the employers to remit contributions promptly and for furnishing contribution information and new membership information to PEERS. Employers also provide needed data when members apply for benefits or refund of contributions upon termination of employment.

Survivor Benefits – When a member dies before retirement, the designated beneficiary becomes eligible for a lump-sum refund of the employee's contributions and interest. In lieu of a lump-sum refund, survivors with an insurable interest and beneficiaries of disability retirees may elect to receive monthly benefits under the Joint-and-Survivor 100% benefit plan. Such benefits are payable when the member would have been eligible for early or normal service retirement.

Refund of Contributions – Member contributions and interest are fully refundable upon termination of covered employment or death. All service and benefit rights are forfeited upon voluntary refund or automatic termination of membership.

A member may, upon returning to covered employment, reinstate the service forfeited through termination of a previous membership by repaying the money refunded plus interest.

Membership Termination – Membership is terminated by death, retirement, refund of contributions or absence from covered employment by a non-vested member for five consecutive school years.

Disability Retirement Benefits – Disability retirement benefits are payable to members who have met service and eligibility requirements and who, because of permanent disability, are unable to earn a livelihood in any occupation. The disability retirement benefit is calculated at 90% of the normal service retirement benefit.

Service Retirement Benefits – Service retirement benefits are payable to members who have terminated covered employment and who have met certain eligibility requirements.

Benefit Formula – All service retirement benefits are based on a formula which multiplies final average salary by the applicable benefit factor, by the years of service and, in the case of early retirement, by an age-reduction factor. Final average salary is obtained by dividing the total salaries for the three highest consecutive years of service by 36 months to arrive at a monthly

average; the applicable factor is determined by the type of retirement eligibility; total service is the amount accumulated at retirement for covered employment and purchased service; and the age-reduction factor, when applicable, is determined by the age at retirement.

Because of the conversion of the System from a formula integrated with Social Security to the present basis, a special "frozen benefit" is in effect for certain members for service prior to July 1, 1973.

Normal Retirement – A member may retire with benefits calculated under the standard (1.61%) formula at age 60 with five years of service, at any age with at least 30 years of service, and at the point where the member's age plus service equals 80 or more (Rule of 80). A member may retire under the standard (1.61%) formula when the member qualifies for Rule of 80 or 30-and-Out and will receive an additional 0.8% multiplier until reaching minimum eligibility age for Social Security benefits (currently age 62).

Early Retirement – A member may retire with benefits calculated under the standard (1.61%) formula with an age-reduction factor applied at age 55 with five years of service, or at any age with 25 years of service, as long as he or she does not qualify for Rule of 80.

A special provision allows members under age 55 with 25.0 to 29.9 years of service to retire with benefits calculated under a modified benefit factor ranging from 1.51% to 1.59% with no age-reduction factor applied.

Payment Options – A retiring member may choose to receive the maximum benefits payable under the Single Life benefit plan, or may choose to receive a reduced benefit under one of three Joint-and-Survivor benefit plans or under one of two Term-Certain benefit plans, to provide survivor benefit coverage in varying degrees after the retiree's death.

Another option, the Accelerated Payment Plan (APP), allows members to receive a higher PEERS benefit prior to minimum Social Security eligibility age (currently age 62). When the minimum Social Security eligibility age is attained, the member's PEERS benefit is reduced and remains at a reduced level for the remainder of their retirement.

The Partial Lump Sum Option (PLSO) is available to qualified members. This option allows qualified members to choose to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time, lump-sum payment at retirement.

Cost-of-Living Adjustments – Cost-of-living adjustments (COLAs) are provided starting the fourth January after retirement to service and disability retirees, and to Joint-and-Survivor and Term-Certain beneficiaries of deceased retirees. Lifetime COLAs are limited to 80% of the original retirement benefit.

The Department of Labor Consumer Price Index for Urban Consumers (CPI-U) for the previous fiscal year is used as a guideline for the annual COLA which is set by the Board of Trustees. By law, if the change in CPI-U is 2% or more, the COLA must be at least 2%, but no more than 5%. If the change in CPI-U is between 0% and 2%, the Board may grant a COLA of 0% to 5%. If the change in CPI-U is less than 0%, no increase can be given. If it is more than 5%, the Board is required to give a 5% increase. Under the funding policies adopted by the Board in November 2017. The following applies:

- If the June to June change in the CPI-U is less than 2% for consecutive one-year periods, a cost-of-living increase of 2% will be granted when the cumulative increase is equal to or greater than 2%, at which point the cumulative increase in the CPI-U will be reset to be based on the June value immediately preceding the January 1 at which the 2% cost-of-living increase is granted.
- If the June to June change in the CPI-U is greater than or equal to 2%, but less than 5%, a cost-of-living increase of 2% will be granted.
- If the June to June change in the CPI-U is greater than or equal to 5%, a cost-of-living increase of 5% will be granted.

Member Handbook – A ***Member Handbook*** containing detailed information concerning the retirement program is available on our website or can be obtained from the retirement office upon request.

PSRS and PEERS Summary of Actuarial Assumptions and Methods

The Board is responsible for the adoption of the Systems' Funding Policies and assumptions. A summary of the current Funding Policy is included in the Certification of Actuarial Results.

The actuarial assumptions and methods utilized for funding and financial reporting purposes differ slightly. The primary difference between the two methods is the fact that financial reporting requires the recognition of investment gains at market with no smoothing.

Inflation

Inflation is assumed to be 2.25% per annum. (effective 6/30/16)

Payroll Growth

Total payroll growth for PSRS is assumed to be 2.75% per annum, consisting of 2.25% inflation, 0.25% real wage growth due to the inclusion of active health care costs in pension earnings, and 0.25% of real wage growth due to productivity. (effective 6/30/16)

Total payroll growth for PEERS assumed to be 3.25% per annum, consisting of 2.25%inflation, 0.50% real wage growth due to the inclusion of active health care costs in pension earnings, and 0.50% of real wage growth due to productivity. (effective 6/30/16)

Individual Salary Growth

PSRS

Individual salaries for PSRS are assumed to increase each year with inflation of 2.25%, real wage growth generated by the cost of active health care of 0.25% (since health care costs are included in pension earnings), real wage growth due to productivity of 0.25%, and additional real salary growth for merit, promotion, and seniority. (effective 6/30/16)

PSRS – Real Salary Growth

Service	Inflation	Health Care Cost	Productivity	Merit, Promotion, Seniority	Total Individual Salary Growth
0	2.25%	0.25%	0.25%	6.75%	9.50%
1	2.25%	0.25%	0.25%	3.25%	6.00%
2	2.25%	0.25%	0.25%	3.10%	5.85%
3	2.25%	0.25%	0.25%	2.95%	5.70%
4	2.25%	0.25%	0.25%	2.80%	5.55%
5	2.25%	0.25%	0.25%	2.65%	5.40%
6	2.25%	0.25%	0.25%	2.50%	5.25%
7	2.25%	0.25%	0.25%	2.35%	5.10%
8	2.25%	0.25%	0.25%	2.20%	4.95%
9	2.25%	0.25%	0.25%	2.05%	4.80%
10	2.25%	0.25%	0.25%	1.90%	4.65%
11	2.25%	0.25%	0.25%	1.75%	4.50%
12	2.25%	0.25%	0.25%	1.60%	4.35%
13	2.25%	0.25%	0.25%	1.45%	4.20%
14	2.25%	0.25%	0.25%	1.30%	4.05%
15	2.25%	0.25%	0.25%	1.23%	3.98%
16	2.25%	0.25%	0.25%	1.16%	3.91%
17	2.25%	0.25%	0.25%	1.09%	3.84%
18	2.25%	0.25%	0.25%	1.02%	3.77%
19	2.25%	0.25%	0.25%	0.95%	3.70%
20	2.25%	0.25%	0.25%	0.88%	3.63%
21	2.25%	0.25%	0.25%	0.81%	3.56%
22	2.25%	0.25%	0.25%	0.74%	3.49%
23	2.25%	0.25%	0.25%	0.67%	3.42%
24	2.25%	0.25%	0.25%	0.60%	3.35%
25	2.25%	0.25%	0.25%	0.53%	3.28%
26	2.25%	0.25%	0.25%	0.46%	3.21%
27	2.25%	0.25%	0.25%	0.39%	3.14%
28	2.25%	0.25%	0.25%	0.32%	3.07%
29	2.25%	0.25%	0.25%	0.25%	3.00%
>=30	2.25%	0.25%	0.25%	0.25%	3.00%

PEERS

Individual salaries for PEERS are assumed to increase each year with inflation of 2.25%, real wage growth generated by the cost of active health care of 0.50% (since health care costs are included in pension earnings), real wage growth due to productivity of 0.50%, and additional real salary growth for merit, promotion, and seniority. (effective 6/30/16)

PEERS – Real Salary Growth

Service	Inflation	Health Care Cost	Productivity	Merit, Promotion, Seniority	Total Individual Salary Growth
0	2.25%	0.50%	0.50%	7.75%	11.00%
1	2.25%	0.50%	0.50%	3.00%	6.25%
2	2.25%	0.50%	0.50%	2.50%	5.75%
3	2.25%	0.50%	0.50%	2.25%	5.50%
4	2.25%	0.50%	0.50%	2.00%	5.25%
5	2.25%	0.50%	0.50%	1.90%	5.15%
6	2.25%	0.50%	0.50%	1.80%	5.05%
7	2.25%	0.50%	0.50%	1.70%	4.95%
8	2.25%	0.50%	0.50%	1.60%	4.85%
9	2.25%	0.50%	0.50%	1.50%	4.75%
10	2.25%	0.50%	0.50%	1.40%	4.65%
11	2.25%	0.50%	0.50%	1.30%	4.55%
12	2.25%	0.50%	0.50%	1.20%	4.45%
13	2.25%	0.50%	0.50%	1.10%	4.35%
14	2.25%	0.50%	0.50%	1.00%	4.25%
15	2.25%	0.50%	0.50%	0.95%	4.20%
16	2.25%	0.50%	0.50%	0.90%	4.15%
17	2.25%	0.50%	0.50%	0.85%	4.10%
18	2.25%	0.50%	0.50%	0.80%	4.05%
19	2.25%	0.50%	0.50%	0.75%	4.00%
20	2.25%	0.50%	0.50%	0.75%	4.00%
21	2.25%	0.50%	0.50%	0.75%	4.00%
22	2.25%	0.50%	0.50%	0.75%	4.00%
23	2.25%	0.50%	0.50%	0.75%	4.00%
24	2.25%	0.50%	0.50%	0.75%	4.00%
25	2.25%	0.50%	0.50%	0.75%	4.00%
26	2.25%	0.50%	0.50%	0.75%	4.00%
27	2.25%	0.50%	0.50%	0.75%	4.00%
28	2.25%	0.50%	0.50%	0.75%	4.00%
29	2.25%	0.50%	0.50%	0.75%	4.00%
>=30	2.25%	0.50%	0.50%	0.75%	4.00%

Investment Return

It is assumed that investments of the Systems will return a yield of 7.50% per annum, net of system expenses (investment and administrative). (effective 6/30/18)

Cost-of-Living Adjustments

The long-term cost-of-living adjustment assumed in the valuation is 1.65% per year, based on the current policy of the Board. The Board policy is as follows:

- If the June to June change in the CPI-U is less than 2.00% for consecutive one-year periods, a cost-of-living increase of 2.00% will be granted when the cumulative increase is equal to or greater than 2.00%, at which point the cumulative increase in the CPI-U will be reset to be based on the June value immediately preceding the January 1 at which the 2.00% cost-of-living increase is granted.
- If the June to June change in the CPI-U is greater than or equal to 2.00%, but less than 5.00%, a cost-of-living increase of 2.00% will be granted.
- If the June to June change in the CPI-U is greater than or equal to 5.00%, a cost-of-living increase of 5.00% will be granted.

The actuarial assumption increases from 1.35% to 1.65% over six years beginning January 1, 2022. The COLA applies to service retirements and beneficiary annuities. The COLA does not apply to the benefits for in-service death payable to spouses (where the spouse is over age 60), and does not apply to the spouse with children pre-retirement death benefit, the dependent children pre-retirement death benefit, or the dependent parent death benefit. The total lifetime COLA cannot exceed 80% of the original benefit. Future COLAs for current benefit recipients reflect actual cumulative adjustments granted at the time of valuation. (effective 6/30/17)

Mortality Rates

Active Member Mortality

PSRS

Mortality rates for PSRS active members are based on RP 2006 White Collar Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028 (i.e. a 12-year projection from the date first implemented, the approximate duration of the total actuarial accrued liability). Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/16):

PSRS Active Member Mortality

Age	Male	Female
20	0.196	0.097
30	0.228	0.123
40	0.280	0.224
50	0.851	0.666
60	1.929	1.205
70	6.434	3.579

PEERS

Mortality rates for PEERS active members are based on the RP 2006 Total Dataset Employee Mortality Table, multiplied by an adjustment factor of 0.75 at all ages for both males and females, with static projection using the 2014 SSA Improvement Scale to 2028 (i.e. a 12-year projection from the date first implemented, the approximate duration of the total actuarial accrued liability). Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/16):

PEERS Active Member Mortality

Age	Male	Female
20	0.279	0.114
30	0.325	0.146
40	0.399	0.265
50	1.214	0.789
60	2.751	1.429
70	8.672	4.156

Service Retiree, Beneficiary and Survivor Mortality

PSRS

Mortality rates for PSRS non-disabled retirees and beneficiaries are based on the RP 2006 White Collar Mortality Table multiplied by the plan specific adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028 (i.e. a 12-year projection from the date first implemented, the approximate duration of the total actuarial accrued liability). (effective 6/30/16)

PSRS Non-Disabled Retiree and Beneficiary Plan Specific Mortality Adjustment Factors

Age	Male	Female
<60	1.00	1.00
60-74	0.89	0.67
75-89	1.05	0.91
>=90	1.05	1.16

Illustrative rates per 1,000 members at various ages are as follows: (effective 6/30/16):

PSRS Service Retiree, Beneficiary and Survivor Mortality		
Age	Male	Female
40	0.373	0.298
50	2.655	1.982
60	3.639	2.034
70	9.212	6.211
80	34.813	25.742
90	126.672	118.203
100	314.507	310.679
110	465.57	493.661

PEERS

Mortality rates for PEERS non-disabled retirees and beneficiaries are based on the RP 2006 Total Dataset Mortality Table multiplied by the plan specific adjustment factors shown in the table below, with static projections using the 2014 SSA Improvement Scale to 2028 (i.e. a 12-year projection from the date first implemented, the approximate duration of the total actuarial accrued liability). (effective 6/30/16)

PEERS Non-Disabled Retiree and Beneficiary Plan Specific Mortality Adjustment Factors		
Age	Male	Female
<60	1.00	1.00
60-74	1.49	0.77
75-89	1.27	1.03
>=90	1.16	1.04

Illustrative rates per 1,000 members at various ages are as follows: (effective 6/30/16):

PEERS Service Retiree, Beneficiary and Survivor Mortality		
Age	Male	Female
40	0.532	0.353
50	3.904	2.642
60	9.060	3.119
70	20.854	8.702
80	50.476	33.375
90	153.099	113.293
100	347.456	278.540
110	514.345	442.593

Disability Retiree Mortality

Mortality rates for PSRS and PEERS disabled retirees are based on the RP 2006 Disabled Retiree Mortality Table, with static projections using the 2014 SSA Improvement Scale to 2028 (i.e. a 12-year projection from the date first implemented, the approximate duration of the total actuarial accrued liability). (effective 6/30/16):

Illustrative rates per 1,000 members at various ages are as follows: (effective 6/30/16):

PSRS and PEERS Disability Retiree Mortality		
Age	Male	Female
40	9.317	4.862
50	19.588	11.367
60	20.817	13.263
70	33.674	24.771
80	68.090	56.760
90	168.008	134.892
100	311.674	275.075
110	443.401	425.570

Retirement Rates

Retirement is assumed in accordance with the following rates per 1,000 eligible members (effective 6/30/16):

PSRS Active Member Retirement

	Years of Service										
Age	<=20	21	22	23	24	25	26	27	28	29	>=30
<50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	3.00%	3.00%	45.00%
50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	3.00%	3.00%	45.00%
51	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	3.00%	20.00%	45.00%
52	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	20.00%	20.00%	45.00%
53	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	30.00%	20.00%	20.00%	45.00%
54	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	30.00%	20.00%	20.00%	20.00%	45.00%
55	5.00%	5.00%	5.00%	5.00%	5.00%	40.00%	20.00%	20.00%	20.00%	20.00%	45.00%
56	3.00%	3.00%	3.00%	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
57	3.00%	3.00%	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
58	3.00%	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
59	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
60	15.00%	15.00%	15.00%	15.00%	15.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
61	15.00%	15.00%	15.00%	15.00%	15.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
62	15.00%	15.00%	15.00%	15.00%	15.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
63	15.00%	15.00%	15.00%	15.00%	15.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
64	15.00%	15.00%	15.00%	15.00%	15.00%	20.00%	20.00%	20.00%	20.00%	20.00%	45.00%
65	25.00%	25.00%	25.00%	25.00%	25.00%	40.00%	40.00%	40.00%	40.00%	40.00%	45.00%
66	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	45.00%
67	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	45.00%
68	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	45.00%
69	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	45.00%
>=70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

PEERS Active Member Retirement

	Years of Service										
Age	<=20	21	22	23	24	25	26	27	28	29	>=30
<50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	30.00%
50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	20.00%
51	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	30.00%	20.00%
52	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%
53	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%
54	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%
55	5.00%	5.00%	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%
56	5.00%	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
57	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
58	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
59	5.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
60	10.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%	16.00%
61	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
62	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
63	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
64	14.00%	14.00%	14.00%	14.00%	14.00%	14.00%	14.00%	14.00%	14.00%	14.00%	14.00%
65	26.00%	26.00%	26.00%	26.00%	26.00%	26.00%	26.00%	26.00%	26.00%	26.00%	26.00%
66	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
67	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
68	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
69	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
70	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
71	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
72	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
73	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
74	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
>=75	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Withdrawal Rates

Termination of membership prior to eligibility for retirement from all causes other than death, disability or retirement is assumed in accordance with the following illustrative rates per 1,000 members: (effective 6/30/16):

PSRS Active Member Withdrawal	
Years of Service	Rate
0	240.0
1	115.0
2	100.0
3	80.0
4	70.0
5	60.0
10	27.5
15	15.0
20	10.0
25+	0.0

PEERS Active Member Withdrawal	
Years of Service	Rate
0	350.0
1	230.0
2	180.0
3	150.0
4	125.0
5	100.0
10	55.0
15	33.0
20	18.0
25+	0.0

Refund of Contributions

Active members who terminate employment with less than five years of service and inactive members with less than five years of service are assumed to take an immediate refund of their contributions.

Active members who terminate employment with five or more years of service, but prior to satisfying the age and service requirements for service retirement, and inactive members with five or more years of service are assumed to select the option that has the greater present value between an immediate refund of their contributions and a life annuity deferred to their earliest retirement age. (effective 6/30/2016).

Active members who terminate employment with five or more years of service and satisfy the age and service requirements for service retirement upon termination, and inactive members with five or more years of service and currently eligible for service retirement are assumed to select an immediate life annuity. (effective 6/30/2016).

Disability Rates

Retirement for disability prior to age 60 is assumed in accordance with the following illustrative rates per 1,000 eligible members (effective 6/30/16):

PSRS Active Member Disability	
Age	Rates
25	0.0017%
30	0.0080%
35	0.0220%
40	0.0480%
45	0.0780%
50	0.1110%
55	0.1460%

PEERS Active Member Disability	
Age	Rates
25	0.0017%
30	0.0080%
35	0.0016%
40	0.0320%
45	0.0640%
50	0.1220%
55	0.2100%

Interest on Member Accounts

1.00% per annum (6/30/10)

Service Purchases

A 1.00% load for PSRS and a 1.50% load for PEERS is added to the Normal Cost to account for anticipated losses resulting from service purchases and reinstatements. (effective 6/30/16).

Provisions for Expenses

There is no specific provision for expenses. The implicit assumption is that administrative expenses are paid from investment income in excess of 7.5% per annum. (effective 6/30/18).

Dependent Assumptions

(effective 6/30/16)

- **Marriage Assumptions (Pre-retirement)** 70% of male and female members are assumed to be married. Beneficiaries are assumed to be of the opposite sex from the member. Male spouses are assumed to be two years older than that of female spouses.
- **Beneficiary Assumptions (Post-retirement)** Retired members, regardless of gender, are assumed to be three years older than their joint annuitant.

Survivor Benefits (Pre-retirement PSRS Only)

All active members under age 50 are assumed to have two dependent children. Each child is assumed to receive payments of $860 per month for 18 years if the member is under age 32, and grading down to zero years if the member is age 50. (effective 6/30/16).

Return of Unused Member Account Balance

A cash refund feature is included in the valuation of annuity benefits to reflect that cumulative annuity payments to members may not be less than the amount of contributions paid by the member. (effective 6/30/16).

Actuarial Cost Method

The actuarial cost method is Entry Age Normal - Level Percent of Payroll.

The normal cost is calculated separately for each active member and is equal to the level percentage of payroll needed as an annual contribution from entry age to retirement age to fund projected benefits. The actuarial accrued liability on any valuation date is the accumulated value of such normal costs from entry age to the valuation date. (1947).

Asset Valuation Method

The Actuarial Value of Assets is a smoothed value of assets. The actuarial value at June 30 of the prior year is projected by increasing the amount by 7.5% interest, adding contributions with 7.5% interest for half the year, and subtracting benefit payments for half the year. Twenty percent of the difference between the actual returns at market value for the year and expected return from the projection of the prior year actuarial value, along with corresponding amounts from each of the prior four years is added to the actuarial value. The Actuarial Value of Assets was reset to market value at June 30, 2003. The methodology remains unchanged. (1994).

Amortization of Unfunded Actuarial Accrued Liability

Gains and losses occurring from census experience different than assumed and assumption changes are amortized over a 30-year period as a level percent of payroll. A new gain or loss base is established each year based on the additional gain or loss during that year and that base is amortized over a new 30-year period. The purpose of the method is to give a smooth progression of the costs from year to year and, at the same time, provide for an orderly funding of the unfunded liabilities. Increases or decrease in the Actuarial Accrued Liability caused by changes in the benefit provisions are amortized over 20 years, as determined in the 2007 session of the Legislature.

The method for amortizing the unfunded Actuarial Accrued Liability was changed from a rolling 30-year method to the closed 30-year method described above effective June 30, 2011.

For accounting, gains and losses occurring form census experience different than assumed and assumption changes are amortized into expense over the average expected future service of all plan participants (active and inactives). Gains and losses occurring from investment experience different than assumed are amortized into expense over a five year period. The effect of plan changes on the plan liability are fully recognized in expense in the year in which they occur.

NOTE: Dates reflect the effective date as adopted by the Board of Trustees. The most recent assumption revisions were approved by the Board of Trustees at their October 2018 meeting. The revised assumptions were used for the June 30, 2018 valuation.

"PSRS/PEERS provides great benefits and makes the process to retire so easy. The staff are knowledgeable and helpful, and the user-friendly website helped me make my retirement decisions."

Dale Peterson, PEERS Retiree

Statistical Section

Statistical Summary

Benefit Recipients

The largest percentage of the Systems' benefit recipients are service retirees. Service retirement benefits are payable to members who have met age and service requirements. The number of PSRS service retirees on the payment rolls increased by 1,353 from 57,502 at June 30, 2019 to 58,855 at June 30, 2020. The number of PEERS service retirees on the payment rolls increased by 1,219 from 28,947 at June 30, 2019 to 30,166 at June 30, 2020.

Disability benefits in PSRS and PEERS are paid to members who are unable to earn a livelihood due to permanent disability and who have met certain eligibility requirements. The number of PSRS disability retirees on the payment rolls increased by 12 from 1,020 at June 30, 2019 to 1,032 at June 30, 2020. The number of PEERS disability retirees on the payment rolls decreased by 1 from 832 at June 30, 2019 to 831 at June 30, 2020.

In both PSRS and PEERS, beneficiary payments are available to survivors if the retiree elected this option. Three Joint-and-Survivor benefit plans and two Term-Certain benefit plans are available. In PSRS, survivor benefits are also available to designated beneficiaries of members who die before retirement.

The charts on page 128 detail the number of benefit recipients by type and monthly benefit amount for each System.

Pension Funding

An unfunded actuarial accrued liability (UAAL) for pension benefits generally represents the difference between the present value of all benefits estimated to be payable to plan members as a result of their age, salary, and service through the valuation date and the actuarial value of plan assets available to pay those benefits. This amount changes over time as a result of changes in accrued benefits, pay levels, rates of return on investments, changes in actuarial assumptions, and changes in the demographics of the employee base. Each year an outside actuary performs a valuation to determine the present value of the benefits payable (actuarial accrued liability) and compares this to the assets available to arrive at the funded status of the Systems.

The charts on page 136 show a comparison of the assets and liabilities of the Systems over time. At June 30, 2020, PSRS was 84.0% pre-funded and PEERS was 86.3% pre-funded. At June 30, 2019, PSRS was 84.4% pre-funded and PEERS was 86.4% pre-funded. Detailed information on actuarial assumptions, can be found in the Actuarial Section of this report.

Changes in Net Position

The charts on page 129 detail a 10-year history of the additions (revenue) and deductions (expenses) of the Systems.

Other charts in this section detail demographic information concerning our members and employers.

The data in this section was derived from internal sources and the annual actuarial valuation reports.

PSRS Summary of Benefit Recipients By Type As of June 30, 2020

Amount of Monthly Benefit	Service Retirement	Disability Retirement	Beneficiary Recipients				Total
			Disability	Survivors	Beneficiary	Term-Certain	
<$1,000	5,167	19	236	396	317	4	6,139
$1,000 - $1,999	6,599	346	118	183	696	6	7,948
$2,000 - $2,999	10,463	478	35	89	819	5	11,889
$3,000 - $3,999	13,585	158	9	81	690	1	14,524
$4,000 - $4,999	11,218	26	2	41	495	1	11,783
$5,000 - $5,999	6,804	4	-	15	261	-	7,084
$6,000+	5,019	1	-	22	184	2	5,228
Total	58,855	1,032	400	827	3,462	19	64,595

PEERS Summary of Benefit Recipients By Type As of June 30, 2020

Amount of Monthly Benefit	Service Retirement	Disability Retirement	Beneficiary Recipients				Total
			Disability	Survivors*	Beneficiary	Term-Certain	
<$500	14,614	521	246	-	1,131	24	16,536
$500 - $999	7,578	246	44	-	476	9	8,353
$1,000 - $1,999	5,867	64	8	-	245	6	6,190
$2,000 - $2,999	1,410	-	-	-	31	1	1,442
$3,000 - $3,999	436	-	-	-	10	-	446
$4,000+	261	-	-	-	4	-	265
Total	30,166	831	298	-	1,897	40	33,232

** Benefit not available in PEERS.*

PSRS Schedule of Changes in Fiduciary Net Position, Last 10 Fiscal Years

(Dollar amounts in thousands)

	Fiscal Year									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Additions by source										
Member contributions	$ 638,357	$ 620,214	$ 665,926	$ 679,618	$ 689,187	$ 704,786	$ 719,625	$ 726,996	$ 747,403	$ 757,917
Employer contributions	594,732	658,936	634,040	643,763	656,925	670,794	684,858	696,970	712,545	724,995
Investment income	5,018,519	449,822	3,378,531	4,927,193	1,447,144	533,174	4,104,110	3,173,732	2,595,859	1,457,327
Other income	930	441	20	6	26	6	13	4	6	192
Total additions by source	6,252,538	1,729,413	4,678,517	6,250,580	2,793,282	1,908,760	5,508,606	4,597,702	4,055,813	2,940,431
Deductions by type										
Monthly benefits										
Service retirement	1,674,931	1,775,305	1,880,783	1,999,520	2,102,511	2,203,773	2,288,945	2,360,945	2,460,422	2,542,672
Service retirement -PLSO	69,956	69,392	61,062	58,849	37,191	32,365	34,721	37,754	33,751	39,628
Disability	18,406	19,640	21,120	22,138	23,447	25,309	26,379	27,235	27,826	29,373
Beneficiary	82,327	85,894	92,799	100,040	107,109	114,829	121,170	129,722	138,978	147,053
Lump-sum refunds										
Death	7,763	9,295	8,344	7,123	7,712	9,078	8,504	8,879	9,471	10,351
Withdrawal/transfers	45,876	45,161	47,051	48,799	48,226	45,553	42,114	42,450	39,825	44,155
Administrative expenses/other	8,839	8,135	8,714	8,919	10,015	11,563	10,497	11,418	11,326	10,653
Total deductions by type	1,908,098	2,012,822	2,119,873	2,245,388	2,336,211	2,442,470	2,532,330	2,618,403	2,721,599	2,823,885
Changes in plan net position	$4,344,440	$ (283,409)	$ 2,558,644	$4,005,192	$ 457,071	$(533,710)	$ 2,976,276	$ 1,979,299	$1,334,214	$ 116,546

PEERS Schedule of Changes in Fiduciary Net Position, Last 10 Fiscal Years

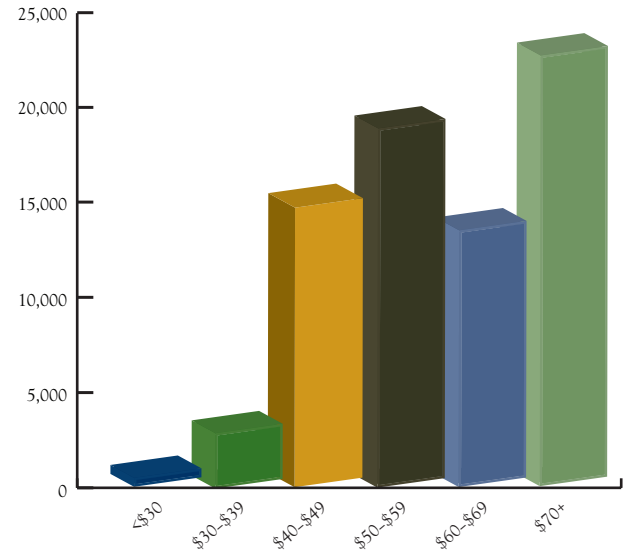
(Dollar amounts in thousands)

	Fiscal Year									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Additions by source										
Member contributions	$ 95,792	$ 95,095	$ 103,271	$ 106,430	$ 110,444	$ 114,258	$ 118,447	$ 121,468	$ 126,609	$ 131,336
Employer contributions	90,816	101,930	97,059	100,690	103,624	106,717	111,240	115,103	120,042	124,545
Investment income	502,934	39,774	353,729	544,154	163,718	60,317	485,047	381,524	319,773	181,855
Other income	-	-	-	1	2	-	-	-	-	-
Total additions by source	689,542	236,799	554,059	751,275	377,788	281,292	714,734	618,095	566,424	437,736
Deductions by type										
Monthly benefits										
Service retirement	136,912	150,334	163,134	179,262	195,980	212,327	229,599	246,062	266,172	283,100
Service retirement -PLSO	5,178	7,191	5,006	5,971	6,576	4,410	6,585	7,274	8,138	7,849
Disability	2,798	3,057	3,430	3,665	3,917	4,158	4,313	4,453	4,621	4,817
Beneficiary	5,881	6,363	7,094	7,847	8,769	9,791	10,581	11,575	12,637	13,892
Lump-sum refunds										
Death	1,047	1,113	1,202	1,063	1,418	1,159	1,266	1,075	1,123	1,763
Withdrawal/transfers	17,776	17,357	17,434	18,817	18,410	18,546	16,925	17,195	17,551	18,917
Administrative expenses/other	5,611	5,591	4,803	4,840	5,629	6,981	6,377	7,113	7,424	7,078
Total deductions by type	175,203	191,006	202,103	221,465	240,699	257,372	275,646	294,747	317,666	337,416
Changes in plan net position	$ 514,339	$ 45,793	$ 351,956	$ 529,810	$ 137,089	$ 23,920	$ 439,088	$ 323,348	$ 248,758	$ 100,320

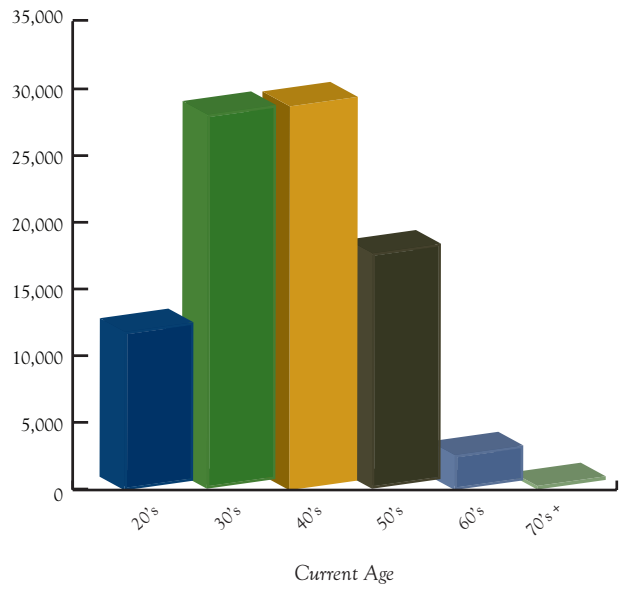
PSRS Summary of Changes in Membership During 2019-2020

		Male	Female	Total
Membership July 1, 2019		21,579	75,359	96,938
New members added		1,087	3,674	4,761
Less:	Service retirements	552	1,920	2,472
	Disability retirements	7	49	56
	Withdrawals	390	1,308	1,698
	Deaths	25	57	82
		974	3,334	4,308
	Other	(33)	(91)	(124)
Net change in membership 2019-2020		80	249	329
Membership June 30, 2020		21,659	75,608	97,267

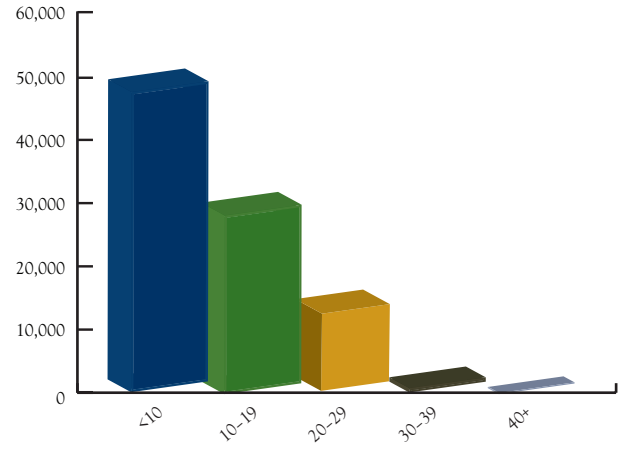
2019-2020 PSRS Members by Annual Salary



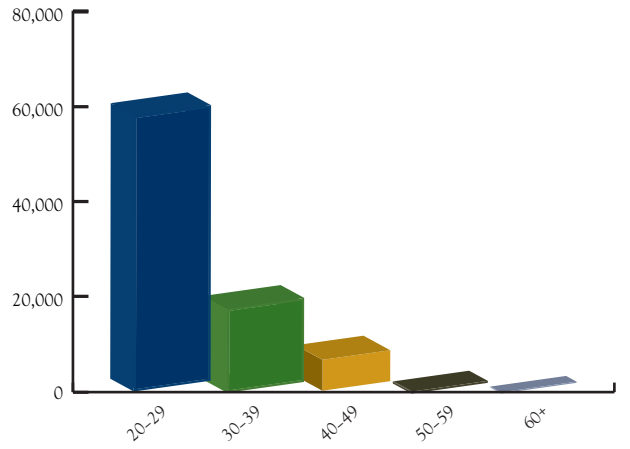
2019-2020 PSRS Members by Current Age



2019-2020 PSRS Members by Total Years of Service



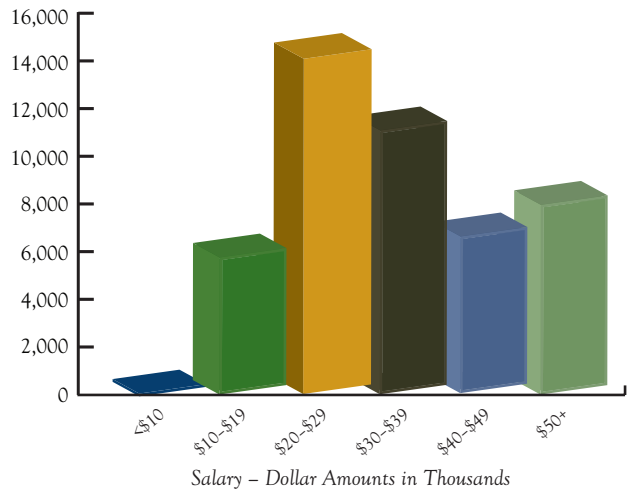
2019-2020 PSRS Member Age at Entry Into System



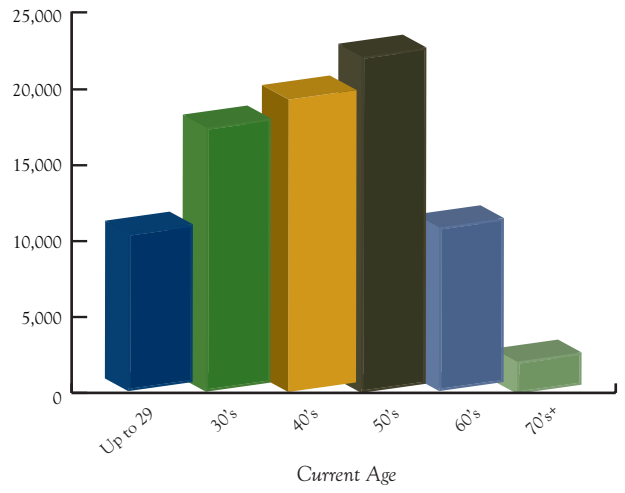
PEERS Summary of Changes in Membership During 2019-2020

		Male	Female	Total
Membership July 1, 2019		23,367	63,096	86,463
New members added		2,460	6,408	8,868
Less:	Service retirements	504	1,628	2,132
	Disability retirements	9	23	32
	Withdrawals	1,070	2,683	3,753
	Deaths	104	107	211
		1,687	4,441	6,128
	Other	(24)	(22)	(46)
Net change in membership 2019-2020		749	1,945	2,694
Membership June 30, 2020		24,116	65,041	89,157

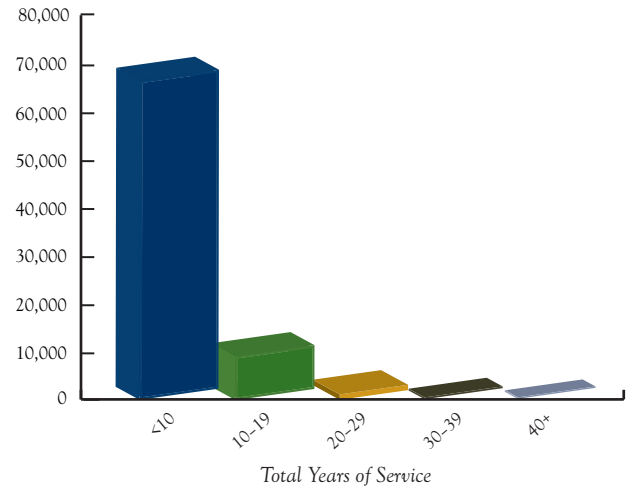
2019-2020 PEERS Members by Annual Salary



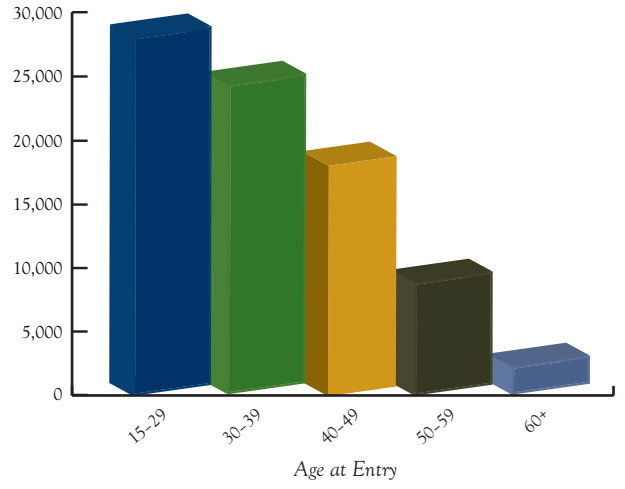
2019-2020 PEERS Members by Current Age



2019-2020 PEERS Members by Total Years of Service



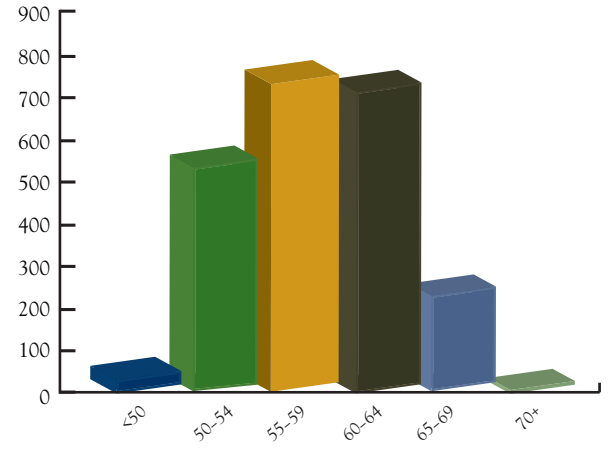
2019-2020 PEERS Member Age at Entry Into System



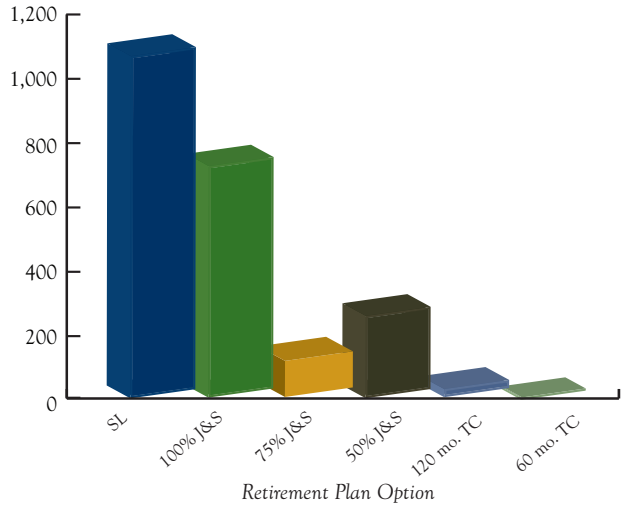
PSRS 2019-2020 New Service Retirees

	Service Retirees	Disability Retirees	Beneficiaries
Retirees July 1, 2019	57,502	1,020	4,550
Added during the year	2,472	56	370
Died during the Year	(1,120)	(43)	(224)
Other	1	(1)	12
Retirees June 30, 2020	58,855	1,032	4,708

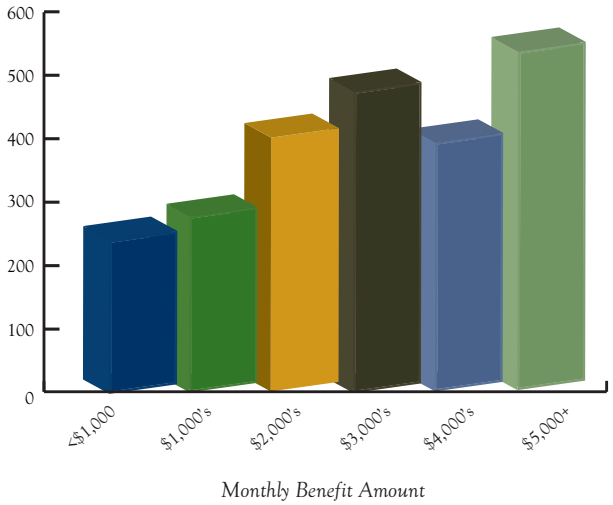
2019-2020 PSRS New Service Retirees by Age at Retirement



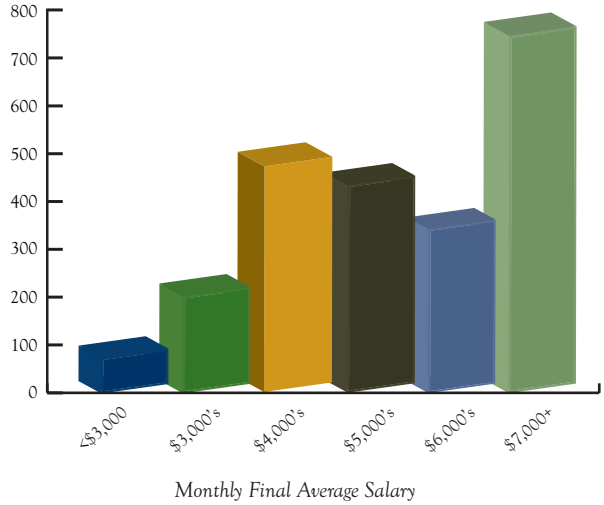
2019-2020 PSRS New Service Retirees by Retirement Plan Option



2019-2020 PSRS New Service Retirees by Single Life Monthly Benefit Amount



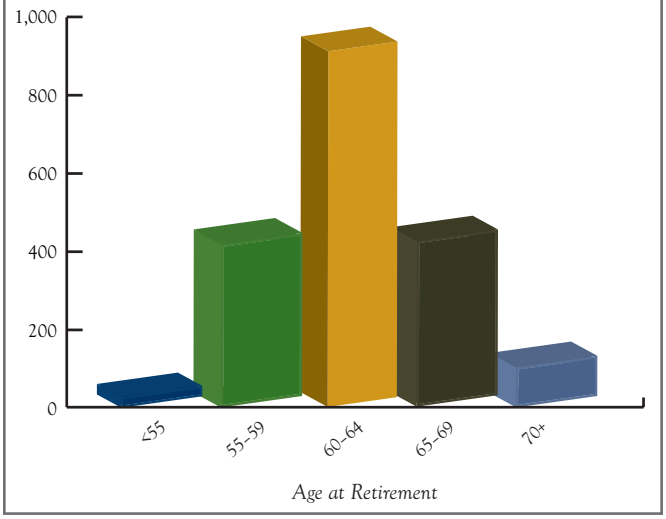
2019-2020 PSRS New Service Retirees by Final Average Monthly Salary



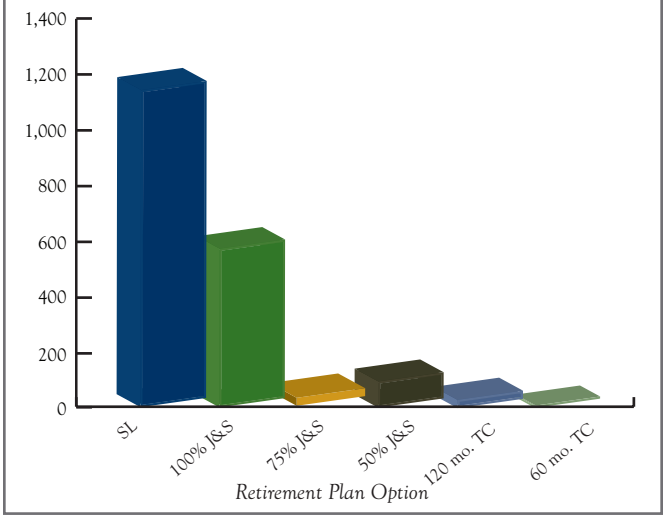
PEERS 2019-2020 New Service Retirees

	Service Retirees	Disability Retirees	Beneficiaries
Retirees July 1, 2019	28,947	832	2,071
Added during the Year	2,132	32	248
Died during the Year	(914)	(32)	(93)
Other	1	(1)	9
Retirees June 30, 2020	30,166	831	2,235

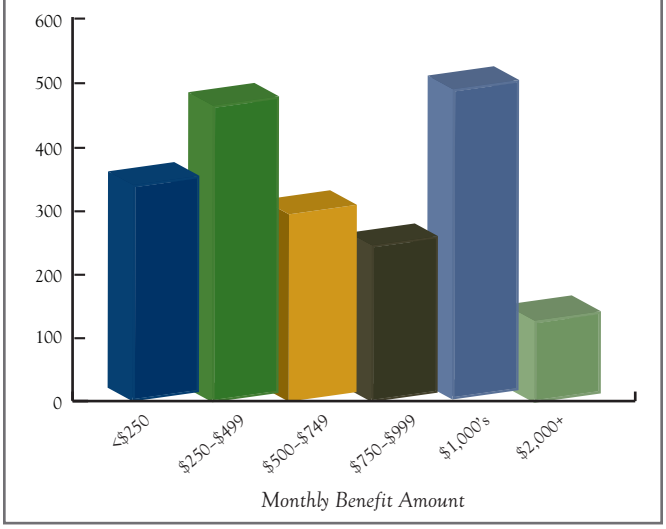
2019-2020 PEERS New Service Retirees by Age at Retirement



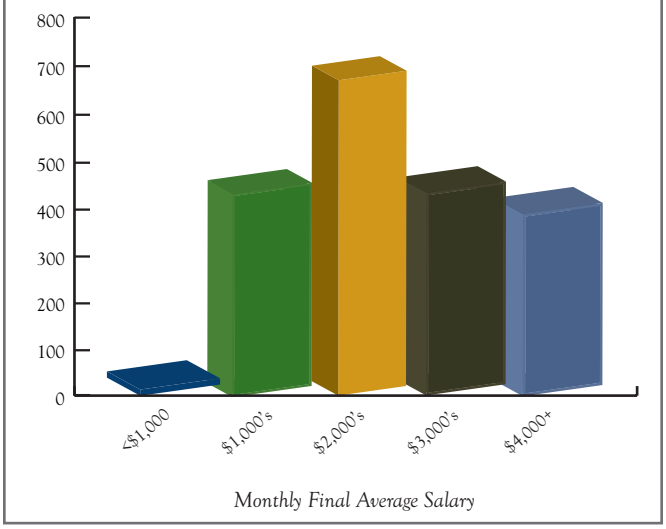
2019-2020 PEERS New Service Retirees by Retirement Plan Option



2019-2020 PEERS New Service Retirees by Single Life Monthly Benefit Amount



2019-2020 PEERS New Service Retirees by Final Average Monthly Salary



PSRS Schedule of Average Benefit Payments to New Service Retirees

	Years of Service							
	5 - 9.9	10 - 14.9	15 - 19.9	20 - 24.9	25 - 29.9	30 - 34.9	35 - 39.9	40+
2019-2020								
Average monthly benefit	$ 651	$ 1,419	$ 2,258	$ 3,412	$ 4,476	$ 5,766	$ 6,717	$ 8,435
Average final average salary	$ 3,940	$ 4,836	$ 5,345	$ 6,098	$ 6,673	$ 7,357	$ 7,428	$ 8,435
Number of retirees	220	235	299	482	785	390	53	8
2018-2019								
Average monthly benefit	$ 657	$ 1,323	$ 2,260	$ 3,273	$ 4,364	$ 5,480	$ 7,506	$ 8,813
Average final average salary	$ 4,117	$ 4,597	$ 5,375	$ 5,848	$ 6,541	$ 7,024	$ 8,156	$ 8,813
Number of retirees	249	267	267	494	766	408	38	13
2017-2018								
Average monthly benefit	$ 708	$ 1,361	$ 2,161	$ 3,124	$ 4,357	$ 5,374	$ 6,871	$ 7,111
Average final average salary	$ 4,394	$ 4,641	$ 5,144	$ 5,632	$ 6,453	$ 6,912	$ 7,410	$ 7,111
Number of retirees	228	263	301	486	712	371	35	10
2016-2017								
Average monthly benefit	$ 639	$ 1,296	$ 2,228	$ 3,213	$ 4,289	$ 5,135	$ 6,427	$ 6,881
Average final average salary	$ 3,806	$ 4,476	$ 5,320	$ 5,737	$ 6,395	$ 6,574	$ 7,056	$ 6,881
Number of retirees	249	243	339	531	756	427	44	12
2015-2016								
Average monthly benefit	$ 671	$ 1,322	$ 2,179	$ 3,127	$ 4,152	$ 4,942	$ 5,627	$ 6,686
Average final average salary	$ 4,141	$ 4,515	$ 5,192	$ 5,628	$ 6,193	$ 6,389	$ 6,195	$ 6,686
Number of retirees	251	265	328	530	745	430	37	17
2014-2015								
Average monthly benefit	$ 729	$ 1,351	$ 2,102	$ 3,083	$ 4,120	$ 5,064	$ 6,130	$ 6,418
Average final average salary	$ 4,342	$ 4,581	$ 5,004	$ 5,562	$ 6,091	$ 6,324	$ 6,521	$ 6,418
Number of retirees	255	308	313	487	677	469	46	15
2013-2014								
Average monthly benefit	$ 697	$ 1,299	$ 2,135	$ 3,108	$ 3,955	$ 5,147	$ 6,319	$ 6,601
Average final average salary	$ 4,257	$ 4,385	$ 5,024	$ 5,557	$ 5,930	$ 6,396	$ 6,730	$ 6,601
Number of retirees	274	260	317	483	746	696	101	11
2012-2013								
Average monthly benefit	$ 695	$ 1,327	$ 2,035	$ 3,143	$ 3,927	$ 4,998	$ 6,739	$ 6,033
Average final average salary	$ 4,067	$ 4,554	$ 4,818	$ 5,609	$ 5,896	$ 6,212	$ 7,218	$ 6,033
Number of retirees	233	263	286	483	692	583	79	13
2011-2012								
Average monthly benefit	$ 607	$ 1,261	$ 1,995	$ 2,980	$ 3,824	$ 4,893	$ 6,071	$ 5,262
Average final average salary	$ 3,946	$ 4,305	$ 4,795	$ 5,317	$ 5,713	$ 6,070	$ 6,506	$ 5,262
Number of retirees	248	265	293	531	723	767	81	18
2010-2011								
Average monthly benefit	$ 661	$ 1,262	$ 1,969	$ 3,010	$ 3,792	$ 4,815	$ 6,231	$ 6,595
Average final average salary	$ 4,074	$ 4,298	$ 4,754	$ 5,366	$ 5,642	$ 5,974	$ 6,662	$ 6,595
Number of retirees	267	322	289	540	733	832	126	13

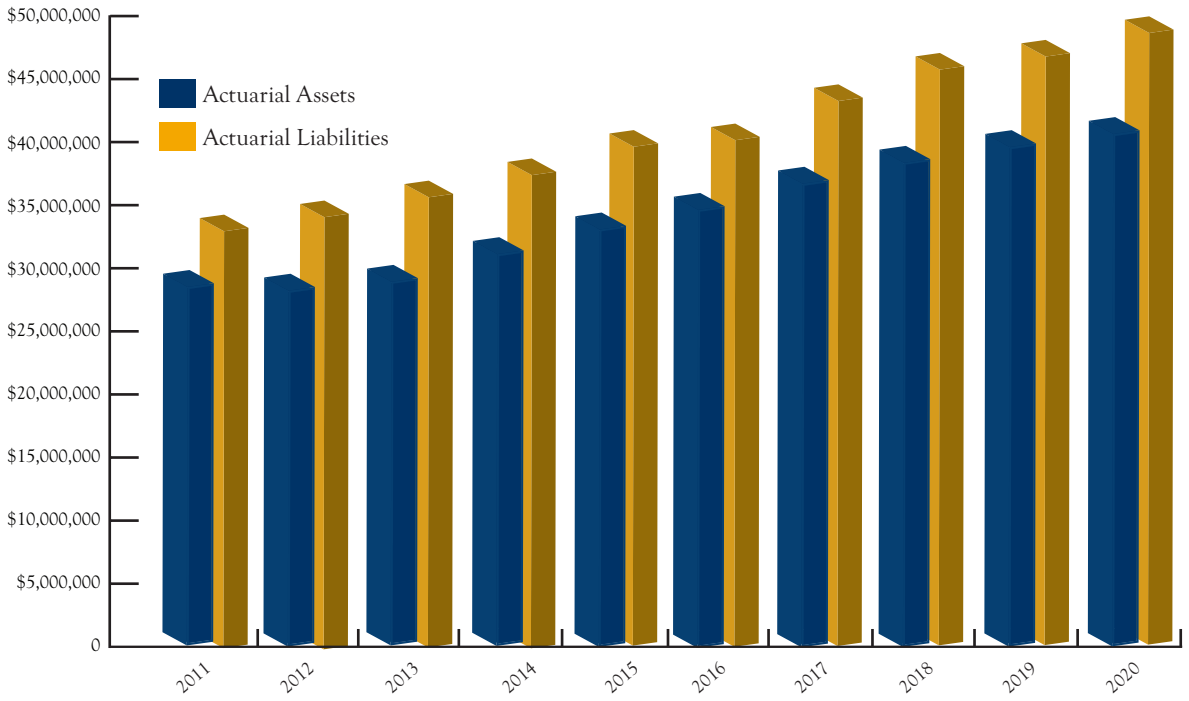
PEERS Schedule of Average Benefit Payments to New Service Retirees

	Years of Service					
	5 - 9.9	10 - 14.9	15 - 19.9	20 - 24.9	25 - 29.9	30+
2019-2020						
Average monthly benefit	$ 261	$ 519	$ 849	$ 1,224	$ 1,708	$ 2,286
Average final average salary	$ 2,339	$ 2,684	$ 3,098	$ 3,418	$ 3,924	$ 4,228
Number of retirees	555	467	347	407	229	127
2018-2019						
Average monthly benefit	$ 253	$ 521	$ 828	$ 1,206	$ 1,691	$ 2,530
Average final average salary	$ 2,259	$ 2,680	$ 3,021	$ 3,363	$ 3,906	$ 4,629
Number of retirees	544	396	374	424	231	135
2017-2018						
Average monthly benefit	$ 244	$ 510	$ 830	$ 1,171	$ 1,787	$ 2,365
Average final average salary	$ 2,167	$ 2,686	$ 3,009	$ 3,303	$ 4,075	$ 4,367
Number of retirees	557	389	348	410	196	125
2016-2017						
Average monthly benefit	$ 255	$ 483	$ 802	$ 1,157	$ 1,690	$ 2,441
Average final average salary	$ 2,209	$ 2,523	$ 2,919	$ 3,225	$ 3,874	$ 4,505
Number of retirees	558	425	339	363	209	129
2015-2016						
Average monthly benefit	$ 238	$ 493	$ 785	$ 1,160	$ 1,630	$ 2,235
Average final average salary	$ 2,078	$ 2,520	$ 2,807	$ 3,231	$ 3,703	$ 4,128
Number of retirees	520	410	328	289	235	121
2014-2015						
Average monthly benefit	$ 237	$ 490	$ 766	$ 1,162	$ 1,665	$ 2,212
Average final average salary	$ 2,054	$ 2,500	$ 2,802	$ 3,229	$ 3,824	$ 4,073
Number of retirees	529	419	303	309	197	127
2013-2014						
Average monthly benefit	$ 228	$ 461	$ 796	$ 1,178	$ 1,588	$ 2,233
Average final average salary	$ 2,042	$ 2,406	$ 2,884	$ 3,257	$ 3,632	$ 4,110
Number of retirees	568	429	301	283	206	132
2012-2013						
Average monthly benefit	$ 219	$ 467	$ 735	$ 1,104	$ 1,512	$ 1,995
Average final average salary	$ 1,958	$ 2,439	$ 2,734	$ 3,054	$ 3,491	$ 3,672
Number of retirees	475	362	250	275	173	121
2011-2012						
Average monthly benefit	$ 227	$ 433	$ 705	$ 1,063	$ 1,508	$ 1,957
Average final average salary	$ 2,010	$ 2,257	$ 2,597	$ 2,954	$ 3,502	$ 3,637
Number of retirees	516	371	246	250	184	147
2010-2011						
Average monthly benefit	$ 221	$ 410	$ 707	$ 1,052	$ 1,389	$ 1,947
Average final average salary	$ 1,965	$ 2,176	$ 2,628	$ 2,920	$ 3,195	$ 3,611
Number of retirees	487	345	231	244	185	164

Comparisons of Actuarial Assets and Total Actuarial Liabilities

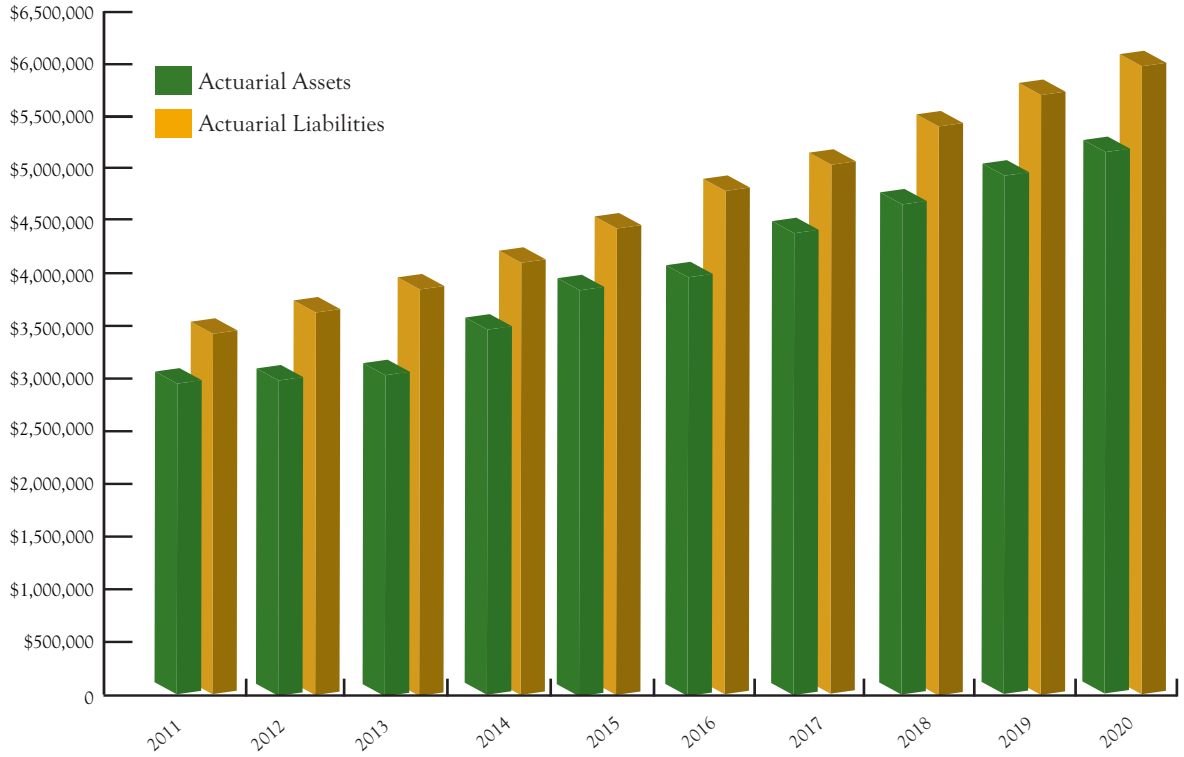
Public School Retirement System of Missouri

Dollar Amounts in Thousands



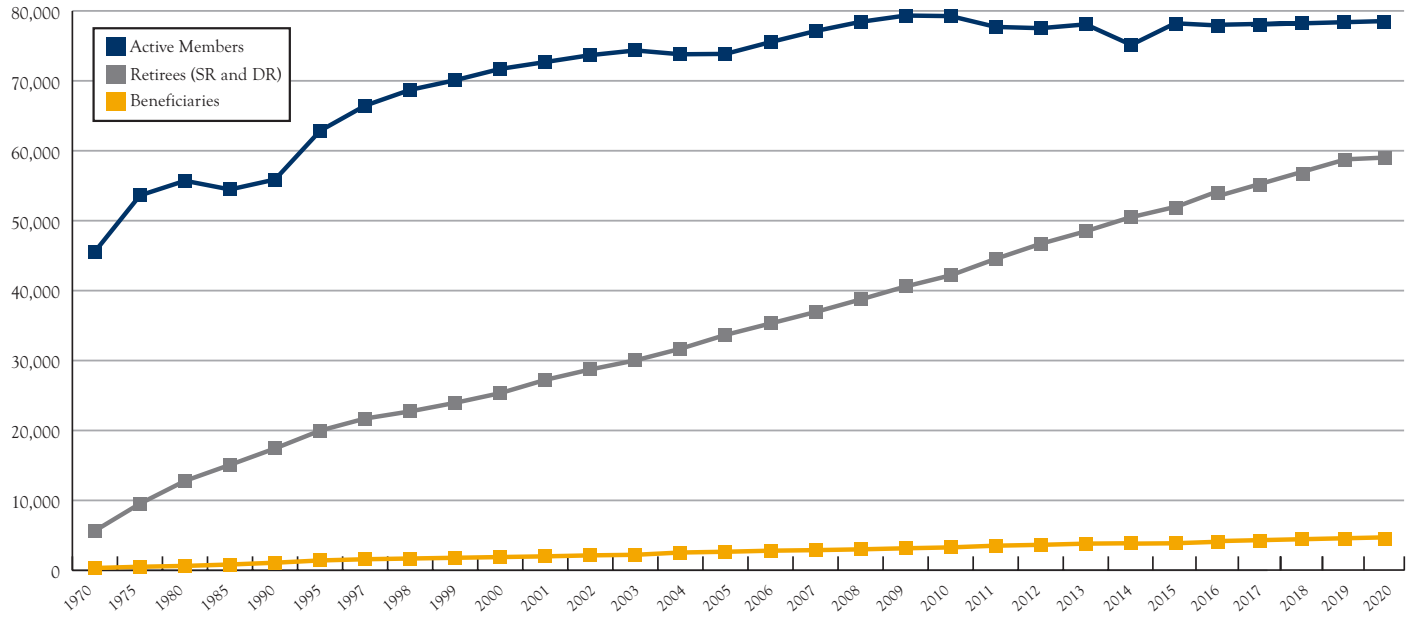
Public Education Employee Retirement System of Missouri

Dollar Amounts in Thousands

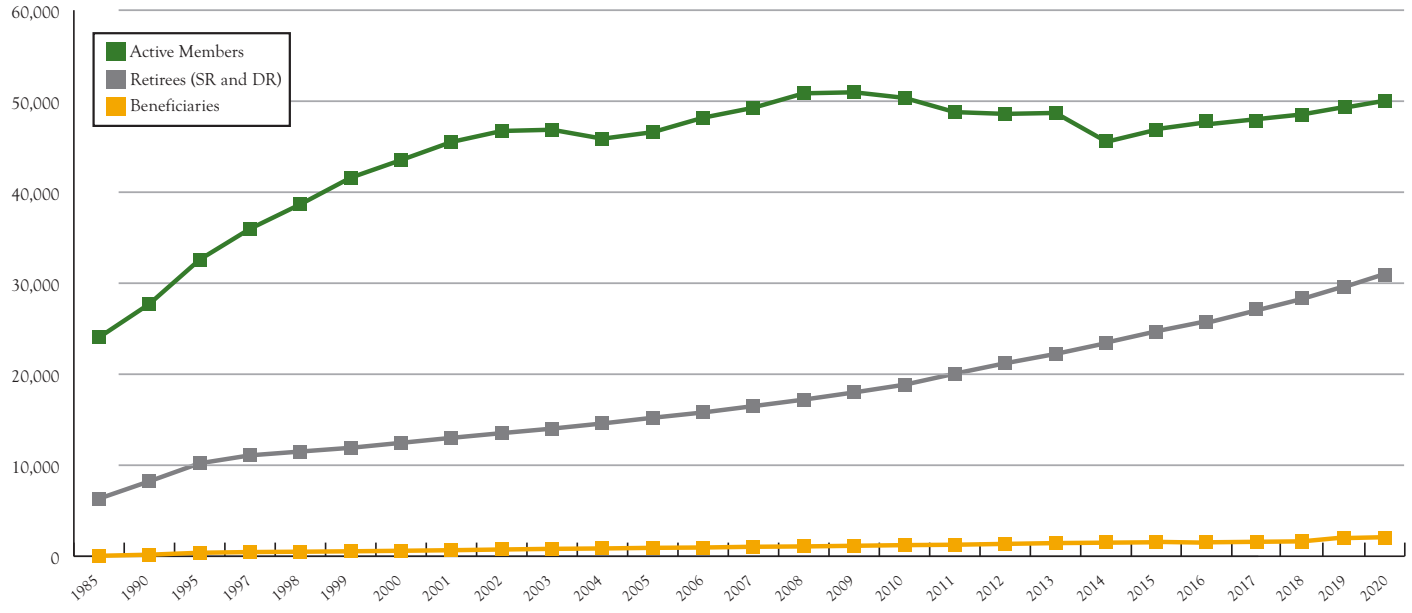


Growth in Membership

Public School Retirement System of Missouri



Public Education Employee Retirement System of Missouri



PSRS Schedule of Covered Employees in the Top 10 Employers

Employer	2020 Covered Employees	2020 Percentage of Total	2019 Covered Employees	2019 Percentage of Total
Special School District - St. Louis	2,873	3%	2,932	4%
Springfield R-XII Schools	2,759	3%	2,302	3%
Rockwood R-VI Schools	1,911	2%	1,915	2%
North Kansas City Schools	1,807	2%	1,797	2%
Columbia Public Schools	1,774	2%	1,745	2%
Ft. Zumwalt R-II Schools	1,727	2%	1,750	2%
Parkway C-2 Schools	1,685	2%	1,728	2%
Francis Howell R-III Schools	1,522	2%	1,523	2%
Lee's Summit R-VII Schools	1,480	2%	1,476	2%
Hazelwood R-I Schools	1,456	2%	1,449	2%
All Others	63,667	78%	63,951	77%
Total - 533 Employers	82,661	100%	82,568	100%

Employer	2018 Covered Employees	2018 Percentage of Total	2017 Covered Employees	2017 Percentage of Total
Special School District - St. Louis	2,922	4%	2,914	4%
Springfield R-XII Schools	2,205	3%	2,208	3%
Rockwood R-VI Schools	1,916	2%	1,926	2%
North Kansas City Schools	1,758	2%	1,735	2%
Columbia Public Schools	1,737	2%	1,726	2%
Ft. Zumwalt R-II Schools	1,736	2%	1,670	2%
Parkway C-2 Schools	1,733	2%	1,703	2%
Francis Howell R-III Schools	1,522	2%	1,510	2%
Lee's Summit R-VII Schools	1,471	2%	1,459	2%
Hazelwood R-I Schools	1,435	2%	1,488	2%
All Others	64,078	77%	63,886	77%
Total - 533 Employers during 2018 and 534 during 2017	82,513	100%	82,225	100%

Employer	2016 Covered Employees	2016 Percentage of Total	2015 Covered Employees	2015 Percentage of Total
Special School District - St. Louis	2,956	4%	2,995	4%
Springfield R-XII Schools	2,208	3%	2,189	3%
Rockwood R-VI Schools	2,036	2%	2,003	2%
Columbia Public Schools	1,844	2%	1,779	2%
Parkway C-2 Schools	1,804	2%	1,769	2%
North Kansas City Schools	1,723	2%	1,713	2%
Ft. Zumwalt R-II Schools	1,611	2%	1,611	2%
Hazelwood R-I Schools	1,559	2%	1,577	2%
Francis Howell R-III Schools	1,549	2%	1,610	2%
Lee's Summit R-VII Schools	1,443	2%	1,415	2%
All Others	64,842	77%	65,940	77%
Total - 534 Employers during 2016 and 535 during 2015	83,575	100%	84,601	100%

PSRS Schedule of Covered Employees in the Top 10 Employers (continued)

Employer	2014 Covered Employees	2014 Percentage of Total	2013 Covered Employees	2013 Percentage of Total
Special School District - St. Louis	3,082	4%	3,080	4%
Springfield R-XII Schools	2,159	3%	2,096	3%
Rockwood R-VI Schools	1,912	2%	1,888	2%
North Kansas City Schools	1,740	2%	1,763	2%
Columbia Public Schools	1,690	2%	1,649	2%
Parkway C-2 Schools	1,672	2%	1,714	2%
Francis Howell R-III Schools	1,575	2%	1,538	2%
Ft. Zumwalt R-II Schools	1,568	2%	1,549	2%
Hazelwood R-I Schools	1,566	2%	1,600	2%
Lee's Summit R-VII Schools	1,390	2%	1,360	2%
All Others	64,335	77%	63,377	77%
Total - 535 Employers	82,689	100%	81,614	100%

Employer	2012 Covered Employees	2012 Percentage of Total	2011 Covered Employees	2011 Percentage of Total
Special School District - St. Louis	3,039	4%	3,020	4%
Springfield R-XII Schools	2,096	3%	2,116	3%
Rockwood R-VI Schools	1,910	2%	1,936	2%
Parkway C-2 Schools	1,794	2%	1,789	2%
North Kansas City Schools	1,699	2%	1,663	2%
Columbia Public Schools	1,640	2%	1,592	2%
Ft. Zumwalt R-II Schools	1,508	2%	1,525	2%
Hazelwood R-I Schools	1,589	2%	1,510	2%
Francis Howell R-III Schools	1,494	2%	1,559	2%
Lee's Summit R-VII Schools	1,341	2%	1,412	2%
All Others	62,775	77%	62,525	77%
Total - 537 Employers	80,885	100%	80,647	100%

Note: Schedules reflect total members reported at any time during the fiscal year.

PEERS Schedule of Covered Employees in the Top 10 Employers

Employer	2020 Covered Employees	2020 Percentage of Total	2019 Covered Employees	2019 Percentage of Total
Special School District - St. Louis	2,616	5%	2,573	5%
Springfield R-XII Schools	1,588	3%	1,505	3%
Rockwood R-VI Schools	1,480	3%	1,515	3%
North Kansas City Schools	1,463	3%	1,479	3%
Ft. Zumwalt R-II Schools	1,431	3%	1,388	2%
Lee's Summit R-VII Schools	1,330	2%	1,355	2%
Columbia Public Schools	1,186	2%	1,182	2%
Wentzville R-IV Schools	1,141	2%	1,107	2%
Francis Howell R-III Schools	1,137	2%	-	-
Independence Public Schools	1,100	2%	1,094	2%
Parkway C-2 Schools	-	-	1,038	2%
All Others	42,097	73%	41,776	74%
Total - 530 Employers	56,569	100%	56,012	100%

Employer	2018 Covered Employees	2018 Percentage of Total	2017 Covered Employees	2017 Percentage of Total
Special School District - St. Louis	2,500	5%	2,504	5%
Rockwood R-VI Schools	1,523	3%	1,503	3%
Springfield R-XII Schools	1,510	3%	1,499	3%
North Kansas City Schools	1,406	3%	1,406	3%
Lee's Summit R-VII Schools	1,340	2%	1,291	2%
Ft. Zumwalt R-II Schools	1,352	2%	1,278	2%
Columbia Public Schools	1,183	2%	1,160	2%
Independence Public Schools	1,083	2%	1,083	2%
Parkway C-2 Schools	1,034	2%	1,054	2%
Wentzville R-IV Schools	1,099	2%	-	-
Hazelwood R-I Schools	-	-	959	2%
All Others	41,029	74%	40,305	74%
Total - 530 Employers	55,059	100%	54,042	100%

Employer	2016 Covered Employees	2016 Percentage of Total	2015 Covered Employees	2015 Percentage of Total
Special School District - St. Louis	2,501	5%	2,496	5%
Springfield R-XII Schools	1,540	3%	1,540	3%
North Kansas City Schools	1,397	3%	1,369	3%
Rockwood R-VI Schools	1,319	2%	1,230	2%
Lee's Summit R-VII Schools	1,294	2%	1,283	2%
Ft. Zumwalt R-II Schools	1,228	2%	1,232	2%
Columbia Public Schools	1,126	2%	1,081	2%
Independence Public Schools	1,111	2%	1,135	2%
Parkway C-2 Schools	1,060	2%	1,054	2%
Hazelwood R-I Schools	964	2%	1,004	2%
All Others	40,351	75%	40,627	75%
Total - 530 Employers during 2016 and 532 during 2015	53,891	100%	54,051	100%

PEERS Schedule of Covered Employees in the Top 10 Employers (continued)

Employer	2014 Covered Employees	2014 Percentage of Total	2013 Covered Employees	2013 Percentage of Total
Special School District - St. Louis	2,405	5%	2,386	5%
Springfield R-XII Schools	1,480	3%	1,488	3%
North Kansas City Schools	1,296	2%	1,246	2%
Lee's Summit R-VII Schools	1,207	2%	1,164	2%
Rockwood R-VI Schools	1,186	2%	1,179	2%
Ft. Zumwalt R-II Schools	1,180	2%	1,141	2%
Independence Public Schools	1,143	2%	1,065	2%
Columbia Public Schools	1,043	2%	982	2%
Parkway C-2 Schools	1,031	2%	1,041	2%
Hazelwood R-I Schools	960	2%	961	2%
All Others	39,568	76%	38,464	76%
Total - 532 Employers	52,499	100%	51,117	100%

Employer	2012 Covered Employees	2012 Percentage of Total	2011 Covered Employees	2011 Percentage of Total
Special School District - St. Louis	2,481	5%	2,532	5%
Springfield R-XII Schools	1,478	3%	1,502	3%
Rockwood R-VI Schools	1,222	2%	1,206	2%
North Kansas City Schools	1,216	2%	1,203	2%
Lee's Summit R-VII Schools	1,171	2%	1,174	2%
Ft. Zumwalt R-II Schools	1,131	2%	1,128	2%
Parkway C-2 Schools	1,085	2%	1,106	2%
Independence Public Schools	1,071	2%	1,082	2%
Hazelwood R-I Schools	964	2%	977	2%
Columbia Public Schools	945	2%	906	2%
All Others	38,222	76%	38,146	76%
Total - 534 Employers	50,986	100%	50,962	100%

**If an employer was not in the Top Ten for a year their covered employees are included in "All Others".*

"PSRS/PEERS is well-known as the greatest retirement system, even by educators in other states. I am thankful I am a member of this system."

Marda Shroeder, PSRS Active

The Pardecks –
Lindsay, Vickie and Keith.

Making a positive impact on Missouri schools and students is a commitment that runs in the family.

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