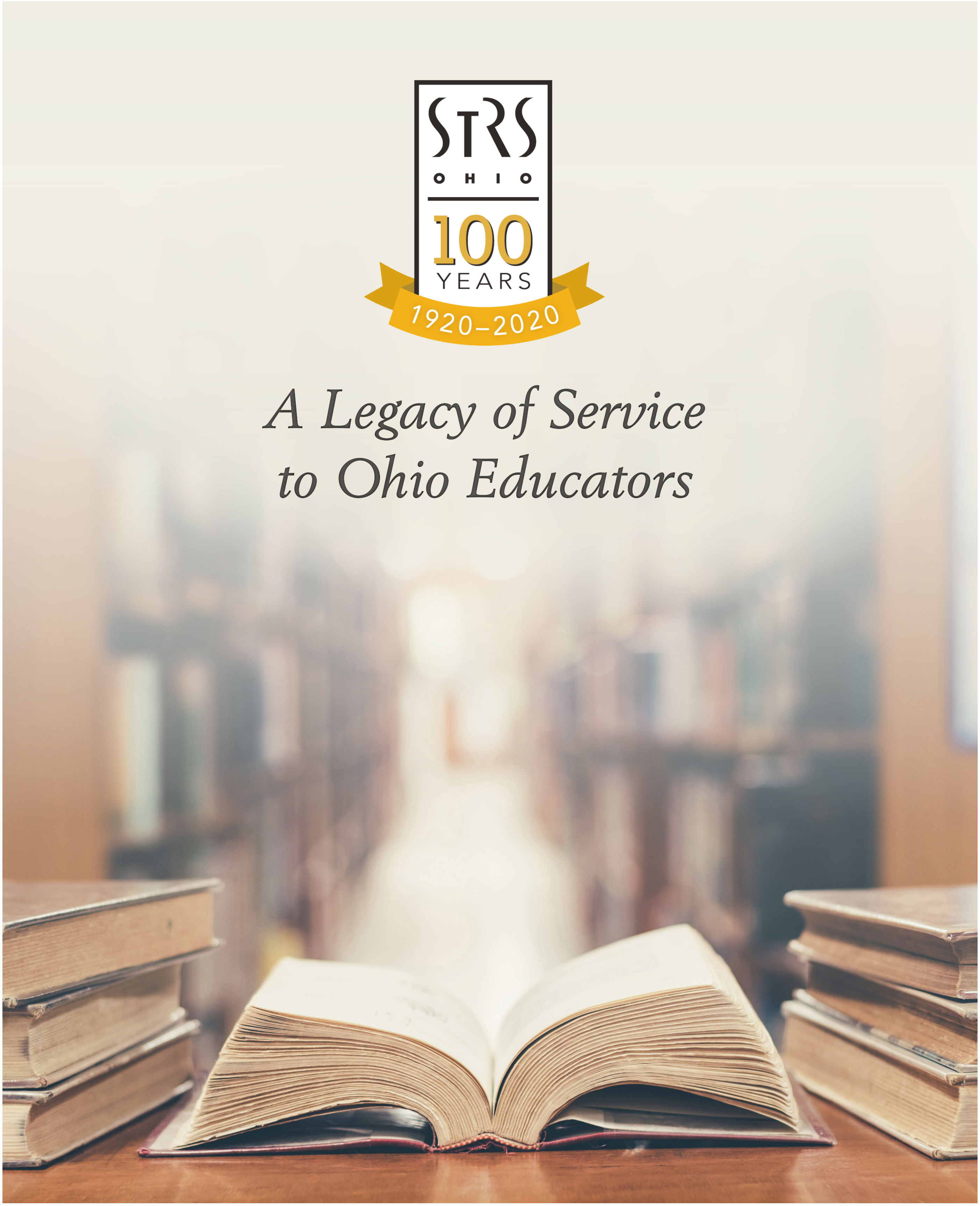

STATE TEACHERS RETIREMENT SYSTEM OF OHIO

Comprehensive Annual Financial Report **2019**

Fiscal Years Ending June 30, 2019 and 2018

OHIO AUDITOR OF STATE
KEITH FABER

88 East Broad Street
Columbus, Ohio 43215
IPAReport@ohioauditor.gov
(800) 282-0370

Retirement Board
State Teachers Retirement System of Ohio
275 East Broad Street
Columbus, Ohio 43215-3771

We have reviewed the *Independent Auditor's Report* of the State Teachers Retirement System of Ohio, Franklin County, prepared by CliftonLarsonAllen LLP, for the audit period July 1, 2018 through June 30, 2019. Based upon this review, we have accepted these reports in lieu of the audit required by Section 117.11, Revised Code. The Auditor of State did not audit the accompanying financial statements and, accordingly, we are unable to express, and do not express an opinion on them.

Our review was made in reference to the applicable sections of legislative criteria, as reflected by the Ohio Constitution, and the Revised Code, policies, procedures and guidelines of the Auditor of State, regulations and grant requirements. The State Teachers Retirement System of Ohio is responsible for compliance with these laws and regulations.

Keith Faber

Keith Faber
Auditor of State
Columbus, Ohio

January 7, 2020

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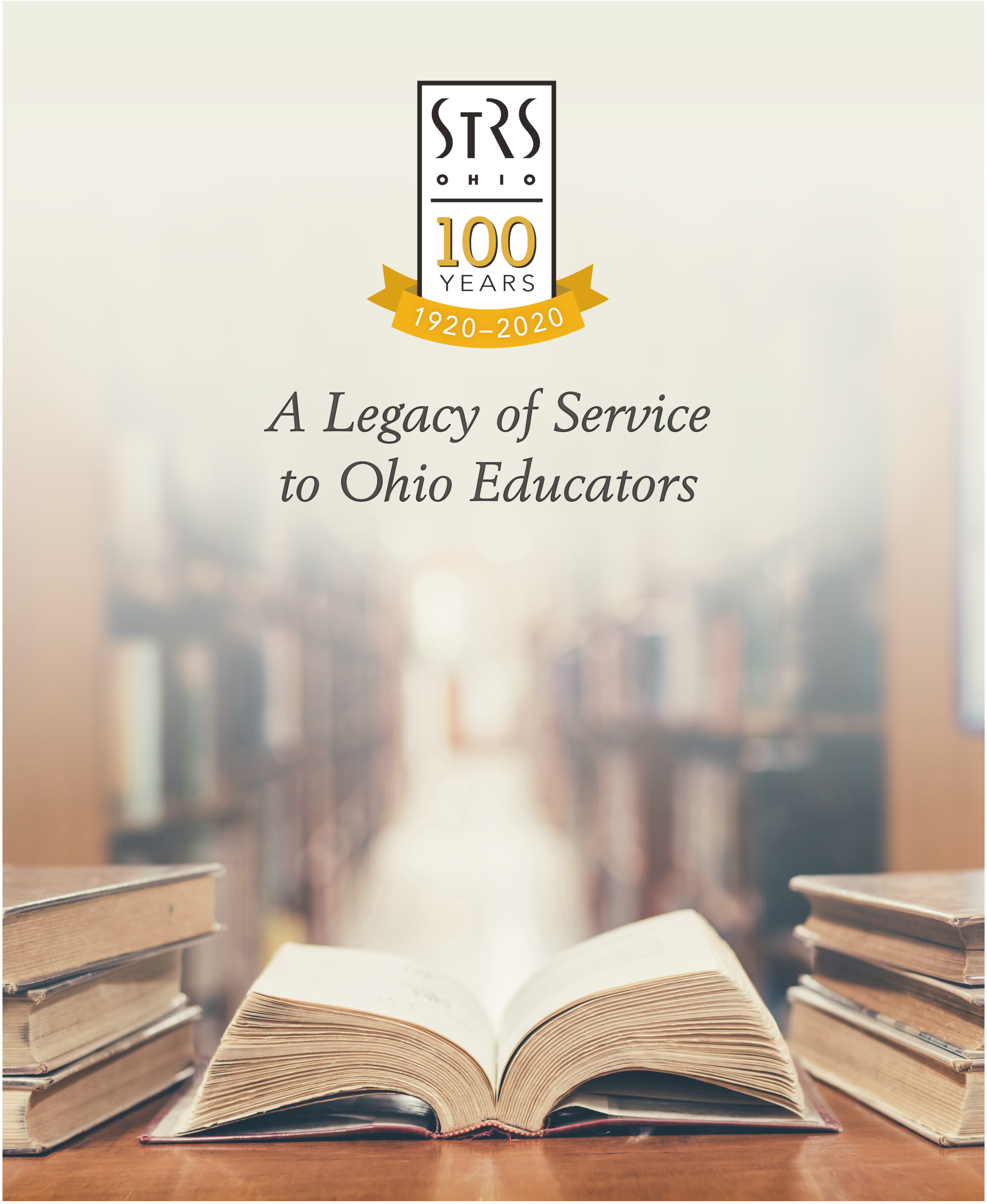

A Legacy of Service to Ohio Educators

STATE TEACHERS RETIREMENT SYSTEM OF OHIO

Comprehensive Annual Financial Report **2019**

Fiscal Years Ending June 30, 2019 and 2018

Prepared through the joint efforts of the STRS Ohio staff
275 E. Broad St., Columbus, OH 43215-3771 • 614.227.4090 • www.strsoh.org

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

The State Teachers Retirement System of Ohio

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

June 30, 2018

Christopher P. Morrill

Executive Director/CEO

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Professional Consultants: Independent Public Accountants, CliftonLarsonAllen LLP, Toledo, Ohio; Investment Consultants, Callan Associates Inc., Chicago, and Cliffwater LLC, Marina del Ray, Calif.; Actuarial Consultants, Cheiron; and Performance Verification Consultants, ACA Performance Services LLP, New York. See Page 59 for a list of external managers.

2018–2019 STATE TEACHERS RETIREMENT BOARD

Guiding the members of the Retirement Board is their collective belief that Ohio's public educators deserve comprehensive benefits and quality service from their retirement system during their careers and in retirement. The Retirement Board provides the direction, fiduciary oversight and policies that enable STRS Ohio to fulfill its mission of partnering with STRS Ohio members in helping to build retirement security.

The Retirement Board is composed of 11 members as follows: five elected contributing members; two elected retired members; an investment expert appointed by the governor; an investment expert appointed jointly by the speaker of the Ohio House of Representatives and the Ohio Senate president; an investment expert appointed by the treasurer of state; and the superintendent of public instruction or his designated investment expert. These individuals devote hundreds of volunteer hours in service to STRS Ohio and are compensated only for necessary expenses.

In June 2019, State Superintendent of Public Instruction Paolo DeMaria appointed his field relations director Dr. Scott Hunt as his representative on the Retirement board. Also in June, Rita Walters was elected as vice chair and Carol Correthers assumed the responsibility of board chair, effective Sept. 1, 2019.

Arthur Lard, a high school teacher from Portsmouth City Schools, filled a contributing member seat on the Retirement Board beginning Sept. 1, 2019, filling the seat vacated by Tai Hayden. Lard was the only STRS Ohio contributing member to file enough completed petitions for the 2019 election. Since he was unopposed, in accordance with Ohio statute, no election was necessary. The term for this seat runs from Sept. 1, 2019, through Aug. 31, 2023.

Robert Stein, Chair
Retired teacher member since 2009.

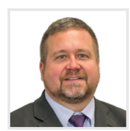
Carol Correthers, Vice Chair
Contributing member since 2009.
Lorain City Schools, Lorain County

Paolo DeMaria
Superintendent of Public Instruction. Ex officio member of the board since 2016.

David Gruber
Appointed jointly by the speaker of the House and the Senate president in 2018.

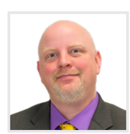
Taiyia L. Hayden
Contributing member since 2006.
Columbus City Schools, Franklin County

Yoel Mayerfeld
Appointed by the Treasurer of State in 2012.

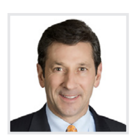


Robert McFee
Contributing member since 2018. Willoughby-Eastlake City Schools, Lake County.

Dale Price
Contributing member since 2010.
Toledo Public Schools, Lucas County



Jeffrey Rhodes
Contributing member since 2018. North Royalton City Schools, Cuyahoga County.



Wade Steen
Appointed by the governor of the state in 2016.

Rita J. Walters
Retired teacher member since 2017.

Michael J. Nehf, Executive Director
State Teachers Retirement System of Ohio

STRS Ohio Mission and Vision

The mission of STRS Ohio is to partner with our members in helping to build retirement security.

The vision of STRS Ohio is to be a leading retirement system by providing comprehensive retirement benefits and quality service to our members through exceptional financial performance, ethical business practices and responsible resource management.

STRS Ohio Guiding Principles

1. Make decisions that produce the greatest sustainable benefits for our members.
2. Attract, develop and retain highly competent and motivated associates who have authority commensurate with their responsibilities.
3. Continually improve through research, development, evaluation and risk management.
4. Build an organizational culture that inspires a high level of professionalism and performance.

STRS Ohio Senior Staff Members

Michael J. Nehf, Executive Director

John D. Morrow, Deputy Executive Director — Investments and Chief Investments Officer

Gary M. Russell, Deputy Executive Director — Member Benefits and Chief Benefits Officer

Paul M. Snyder, Deputy Executive Director — Finance and Chief Financial Officer

Marla E. Bump, Director, Governmental Relations

Rhonda L. Hare, Retirement Board Liaison

Andrew J. Marfurt, Director, Human Resource Services

William J. Neville, Chief Legal Officer

David Tackett, Chief Audit Executive, Internal Audit

Gregory A. Taylor, Chief Information Officer

Nicholas J. Treneff, Director, Communication Services

Dec. 13, 2019

275 East Broad Street
Columbus, OH 43215-3771
614-227-4090
www.strsoh.org

Members of the State Teachers Retirement Board:

We are pleased to present the *Comprehensive Annual Financial Report* of the State Teachers Retirement System of Ohio for the fiscal year ended June 30, 2019. This report is intended to provide financial, investment, actuarial and statistical information in a single publication. STRS Ohio management is responsible for the accuracy of the data, as well as the completeness and fairness of the presentation.

STRS Ohio was established by law in 1919 — the first statewide, actuarial-based teacher retirement system in the United States. After a century of providing retirement benefits and quality service to its members, STRS Ohio is recognizing its 100th anniversary during fiscal year 2020 (July 1, 2019–June 30, 2020). The centennial is a milestone worthy of acknowledgment as the system focuses on strengthening its financial position and continues its mission to partner with members in helping to build retirement security.

STRS Ohio is a cost-sharing, multiple-employer plan providing service retirement, disability and survivor benefits to teachers and faculty members of public boards of education, state-supported colleges and universities, and the state of Ohio and its political subdivisions. Optional health care coverage is available to eligible benefit recipients and their eligible dependents.

More analysis and information of the financial activities of STRS Ohio can be found in the Management's Discussion and Analysis section that begins on Page 10 of this report.

Major Initiatives

Board Adopts Health Care Plan Management Policy

In December 2018, the Retirement Board adopted a health care plan management policy. The new policy's purpose is to state the board's objectives for the health care plan and to lay out clear criteria for making decisions regarding changes to benefits, as well as when those changes should be considered by the board. The policy indicates the goal is to provide a sustainable long-term health care benefit and to make benefit adjustments as conditions allow or are necessary. The Health Care Fund is in a solid actuarial position, with a funded ratio of 174.7% as of June 30, 2019.

Board Adopts Amendments to its Pension Funding Policy

In May 2019, the Retirement Board adopted amendments to its funding policy following several months of review and discussion. One of the funding objectives in the policy is to reach a funded ratio of 100%, noting that "At 85% or greater, the Board may *consider* plan changes that in the determination of the Board's actuary do not materially impair the fiscal integrity of the system."

Progress Continues for STRS Ohio's Funded Ratio and Funding Period

STRS Ohio's annual actuarial valuation report shows funding improvements during the fiscal year ended June 30, 2019. The report shows the funded ratio — the value of assets compared to actuarial accrued liabilities (expected benefits to be paid to the membership) — improved slightly to 76.1% from 75.5% the previous year. The funding period — the time needed to reach a 100% funded ratio under current assumptions and benefit levels — also improved, decreasing to 16.6 years from 17.8 years the previous year. **While the funding level improved slightly in fiscal 2019, staff estimates that the pension fund faces a greater than one-in-four chance of dropping below a 50% funded ratio in the next 10 years.** This level of risk is primarily due to the volatility around investment returns. The board and staff believe this risk level, while improving, is too high, so they will continue their commitment to improving the long-term sustainability of benefits.

Members Continue Shifting to Self-Service Options

During this past fiscal year, about 17,000 changes were made to tax withholdings and direct deposit banks, with 10,000 or nearly 60% of those changes made online. More than 75% of retirement applications and 48% of withdrawal applications were completed online rather than by paper and 52% of beneficiary changes were made online this year. Online beneficiary changes have grown steadily since this option was made available.

New Online Personal Account Option Available for New Members

In spring 2019, the system implemented a new online service for educators who are just beginning their teaching career. New members can now make their initial retirement plan selection through their Online Personal Account. Members will be encouraged to establish their online account at the beginning of their career to make their initial plan selection and designate beneficiaries. This option will speed the enrollment process for the member and will improve accuracy for staff, thus reducing the need for follow up communications to correct inaccurate or ambiguous information provided on the paper form.

STRS Ohio Retains Top Spot for CEM Service Level While Maintaining Cost Per Member

CEM Benchmarking released the results of its annual Pension Administration Benchmarking survey for fiscal year 2018 activity and for the fourth year in a row, STRS Ohio received the top service level score. The survey benchmarks more than 40 participating pension systems, primarily from the United States, Canada and Scandinavia. STRS Ohio's service level score was 95, compared to the median score of 81.

STRS Ohio earned the highest service level score for each of the following areas of business: Pension Payments, Call Center, One-on-One Counseling, Pension Estimates, Member Presentations, Website, Annual Statements and Disaster Recovery. This is the 21st year that STRS Ohio has participated in the benchmarking study and the 11th time the system received the top score. STRS Ohio's total administrative costs decreased by $300,000; however, the number of active members and annuitants decreased by about 800, resulting in a level cost per active member and annuitant. This continues a trend of reduced administrative costs.

Independent Analysis Shows STRS Ohio has Strong Investment Returns, Low Investment Costs Compared to Peer Retirement Systems

Another report by CEM showed STRS Ohio has top quartile investment returns and low investment costs compared to peer retirement systems. The report compared investment data for the five-year period ending Dec. 31, 2018, from 17 large U.S. public fund sponsors. Results of the study showed STRS Ohio was low cost compared to its peer group for investment costs. STRS Ohio's strategy of using internal investment managers for about 70% of the system's assets was the primary reason for its low overall costs. The report stated that STRS Ohio saved about $100 million in 2018 by using the internal management approach. The savings are based on the peer group's median external management costs. The report also provided performance data and showed that STRS Ohio's five-year total net return through calendar 2018 of 6.2% was above the peer median of 5.7%.

Majority of Health Care Enrollees Will See No Premium Increase in 2020

The Retirement Board approved health care plan premiums for the 2020 plan year along with several changes to the STRS Ohio Health Care Program for 2020. The approved premiums reflect favorable claims experience and result in little or no cost increase in most plans. In 2020, more than 90% of enrollees will have premiums equal to or less than their current premium. Additionally, the board approved a one-year extension of the current Medicare Part B Partial Reimbursement Program.

Member Survey Results Show Positive Perceptions of STRS Ohio

Research with STRS Ohio members and retirees conducted in late 2018 revealed that 95% of retirees and 82% of active members have positive overall impressions of the Retirement System. Additionally, trust and confidence in the system remained steady for both retirees (84%) and active educators (73%).

Management Responsibility and Report Contents

This report consists of management's representations regarding STRS Ohio's finances. Management assumes full responsibility for the completeness and reliability of all information presented in this report. To provide a reasonable basis for making these representations, management has established a comprehensive internal control framework that is designed both to protect the assets from loss, theft or misuse and to compile sufficient, reliable information for the preparation of STRS Ohio's financial statements in conformity with generally accepted accounting principles. The internal control framework has been designed to provide reasonable rather than absolute assurance that the financial statements will be free from material misstatement. The concept of reasonable assurance recognizes that first, the cost of a control should not exceed the benefits likely to be derived, and second, the valuation of the cost and benefits requires estimates and judgments by management. We as management believe that the internal controls currently in place support this purpose, and assert that, to the best of our knowledge and belief, this financial report is complete and reliable in all material respects.

STRS Ohio's external auditors, CliftonLarsonAllen LLP, conducted an independent audit of the financial statements in accordance with auditing standards generally accepted in the United States. This audit and the financial statements are presented in the Financial Section, beginning on Page 8.

Investments

Total investments (including short-term investments) increased to $80.9 billion as of June 30, 2019. The Investment Review starting on Page 41 discusses the investment environment during fiscal 2019. The allocation of investment assets is designed to achieve the long-term actuarial objective at an acceptable level of risk. Investment risks are diversified over a very broad range of market sectors, securities and other investments. This strategy reduces portfolio risk to adverse developments in sectors and issuers experiencing unusual difficulties and offers opportunity to benefit from future markets. A summary of the asset allocation can be found on Page 56, the Schedule of U.S. Stock Brokerage Commissions Paid can be found on Page 57 and a schedule of the system's largest investment holdings can be found on Page 58.

STRS Ohio claims compliance with the Global Investment Performance Standards (GIPS®) and the verification report is on Page 54 and full performance disclosures are on Page 55. For the fiscal year ended June 30, 2019, net investment income was $5.1 billion and the total fund returned 7.13%. STRS Ohio's annualized rate of return was 10.29% over the last three years and 7.38% for the last five years. Similar benchmark returns over the same one-, three- and five-year periods were 7.30%, 9.89% and 7.02%, respectively. Investment performance is calculated using a time-weighted rate of return. Performance is net of fees for external managed real estate and alternative investments and gross of fees on all other investments.

Plan Contributions

Member and employer contributions, as well as income from investments, provide funds for pension benefits and health care coverage. Member contributions were $1.6 billion and employer contributions were $1.7 billion. Employer contributions include amounts paid by employers of participants in alternative retirement plans (ARPs). ARP participants are not members of STRS Ohio; however, their employers contribute 4.47% of salaries to STRS Ohio to help pay for unfunded liabilities. In fiscal year 2019, STRS Ohio received $46.0 million in other retirement system revenue.

Premiums received from health care recipients totaled $312.8 million in fiscal year 2019. STRS Ohio received $84.8 million in Medicare Part D government reimbursements for participant prescription costs. This federal subsidy helps offset the overall cost of the post-employment health care program.

Plan Deductions

The principal purpose for STRS Ohio is to provide retirement, survivor and disability benefits to qualified members and their beneficiaries. Plan deductions, including refunds to terminated members, optional health care coverage and administrative expenses, totaled $7.9 billion. Service retirement payouts decreased slightly in fiscal 2019 due to similar benefit recipient headcounts between 2018 and 2019. Refunds increased by 2.9% from fiscal year 2018, due to more members reaching the Internal Revenue Code minimum distribution age.

Pension Funding Results

Contribution rates are intended to provide a level basis of funding using the entry age normal cost method, and an actuarial valuation is performed annually by an external actuarial firm. The June 30, 2019, valuation shows that the amortization period for the unfunded accrued liability decreased to 16.6 years from 17.8 the prior year, and the ratio of actuarial assets to total accrued liabilities increased to 76.1% from 75.5%. A detailed discussion of funding is provided in the Actuarial Section of this report beginning on Page 60.

Retiree Health Care Program

Health Care Fund net position increased 4.1% to $3.9 billion in fiscal 2019 from $3.7 billion in fiscal 2018 as a result of ongoing government reimbursements and benefit recipient health care premiums, decreases in health care benefit payments and net positive investment returns.

Benefit recipient health care premiums decreased by 5.0% during fiscal 2019 as a result of continued decreases in non-Medicare retiree health care enrollment in 2019. Government reimbursements were $84.8 million in fiscal 2019 compared to $107.2 million in fiscal 2018 due to lower federal direct subsidies and reinsurance for prescription drugs in fiscal 2019. Payments for health care claims and administrative expenses totaled $489.2 million in fiscal 2019, a decrease of 5.5% from the previous fiscal year. The decrease is largely due to lower non-Medicare retiree health care enrollment and offsetting or larger prescription rebates and discounts.

The annual health care actuarial valuation showed that benefit payments for the 12-month period ending June 30, 2019, totaled $489.2 million, an average of about $1.3 million per day. The funded ratio of the plan is 174.7%, meaning if the fund earns 7.45% in all future years and all other plan experience matches assumptions, the fund is projected to remain solvent for all current members. The health care program is susceptible to volatility from investment returns, government reimbursement changes, enrollment fluctuations and health care inflation.

Certificate of Achievement and Other Awards

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to STRS Ohio for its *Comprehensive Annual Financial Report* for the fiscal year ended June 30, 2018. The Certificate of Achievement is a prestigious national award recognizing conformance with the highest standards for preparation of state and local government financial reports. To be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized comprehensive annual financial report that conforms to program standards. This report must satisfy both generally accepted accounting principles and applicable legal requirements. A Certificate of Achievement is valid for one year. STRS Ohio has received a Certificate of Achievement for the last 29 years. We believe our current report continues to meet the Certificate of Achievement program requirements and will be submitted to the GFOA.

In addition, the Public Pension Coordinating Council (PPCC) presented STRS Ohio with the 2019 Public Pension Standards Award for Administration in recognition of meeting professional standards set forth in the Public Pension Standards. PPCC is a coalition made up of the National Association of State Retirement Administrators (NASRA), the National Council on Teacher Retirement (NCTR) and the National Conference on Public Employee Retirement Systems (NCPERS).

Acknowledgments

The preparation of this report is possible only through the combined efforts of the STRS Ohio staff. It is intended to provide complete and reliable information as a basis for making management decisions, complying with legal provisions and determining responsible stewardship of the assets contributed by members and their employers.

Respectfully submitted,

Michael J. Nehf
Executive Director

Paul M. Snyder, CPA
Deputy Executive Director
Chief Financial Officer

CliftonLarsonAllen LLP
CLAconnect.com

INDEPENDENT AUDITORS' REPORT

The Retirement Board
State Teachers Retirement System of Ohio and
The Honorable Keith Faber, Auditor of State

Report on the Financial Statements

We have audited the accompanying financial statements of State Teachers Retirement System of Ohio (STRS Ohio), which comprise the statements of fiduciary net position as of June 30, 2019 and 2018, and the related statements of changes in fiduciary net position for the years then ended, and the related notes to the financial statements, as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

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

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the 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 opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of STRS Ohio as of June 30, 2019 and 2018, and the changes in its financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

A member of Nexia International

The Retirement Board
State Teachers Retirement System of Ohio and
The Honorable Keith Faber, Auditor of State
Page 2

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that management's discussion and analysis and the schedules of changes in employers' net pension liability, employers' net pension liability, employers' contributions - pension, investment returns - pension, changes in employers' net OPEB liability, employers' net OPEB liability, employers' contributions – OPEB, investment returns – OPEB, and related notes, as listed in the table of contents, be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audits of the 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 audits were conducted for the purpose of forming an opinion on STRS Ohio's financial statements. The additional information, consisting of the schedules of administrative expenses, investment expenses, and external asset managers' fees, as listed in the table of contents, is presented for purposes of additional analysis and is not a required part of the financial statements.

The additional information is the responsibility of management and was derived from and relates 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 audits of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the additional information, consisting of the schedules of administrative expenses, internal investment expenses, and external asset managers' fees, as listed in the table of contents, is fairly stated, in all material respects, in relation to the financial statements as a whole.

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

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated December 6, 2019 on our consideration of STRS Ohio's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on STRS Ohio's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering STRS Ohio's internal control over financial reporting and compliance.

CliftonLarsonAllen LLP

CliftonLarsonAllen LLP

Toledo, Ohio
December 6, 2019

Management is pleased to provide this overview and analysis of the financial activities of the State Teachers Retirement System of Ohio (STRS Ohio) for the years ended June 30, 2019 and 2018. This information is intended to supplement the financial statements, which begin on Page 17 of this report. We encourage readers to consider all the information and data in this 2019 *Comprehensive Annual Financial Report*.

As STRS Ohio reaches its 100th anniversary, it's important to recognize that some demographic and economic characteristics have changed over the years, and these changes have had a significant impact on the plan's financial condition. The most recent actuarial experience review and asset liability studies, conducted in fiscal 2017, indicated that several factors, including lower than expected investment returns, longer lifespans among active and retired members, and lower than expected payroll growth continue to have a negative effect on the pension fund. The system's funded status has improved over the last few years, but still has not recovered to levels last seen before the financial crisis in 2008–2009, despite a 10-year bull market.

In fiscal 2019, the Retirement Board adopted amendments to its funding policy. The policy includes the purpose "... to state the Board's objectives for funding and to lay out clear criteria for making decisions regarding changes to funding and benefits, as well as when those changes should be considered by the Board." The funding policy's goal is "... to safeguard members' benefits in the long term."

The funding objectives in the policy include:

- ***100% funding.***
  - *At 85% or greater, the Board may consider plan changes that in the determination of the Board's actuary do not materially impair the fiscal integrity of the system.*
- ***Manage the risk of unanticipated benefit changes.***
- ***Intergenerational equity, to the extent consistent with the other funding objectives.***
- ***Transparency and accountability.***

In fiscal 2017, the Retirement Board made the difficult decision to reduce the cost-of-living adjustment (COLA) increases to 0% to preserve the fiscal integrity of the retirement system. The board will evaluate — not later than the next five-year actuarial experience review expected in 2022 — whether an upward adjustment of the COLA is possible without materially impairing the fiscal integrity of the retirement system.

STRS Ohio continues to phase-in changes from the 2013 multifaceted pension reform plan to strengthen the financial condition of the pension fund. The changes will be fully phased-in by 2026. Key changes made to the pension plan included increasing retirement eligibility requirements, increasing member contributions, changing the benefit formula, changing the final average salary calculation, changes to COLA, changes to disability and survivor benefits and granting the Retirement Board authority to make future adjustments depending on the retirement system's funding progress.

Financial Highlights

Highlights of the fiscal year include:

- The total fund time-weighted rate of return was 7.13% in fiscal 2019. The total fund rate of return for fiscal 2018 was 9.57%. Five- and 10-year total fund annualized returns are 7.38% and 10.44%, respectively. Investment performance is calculated using a time-weighted rate of return and performance is net of fees for externally managed real estate and alternative investments and gross of fees on all other investments.
- Total fiduciary net position increased 1.2% from the prior fiscal year, ending at $79.6 billion as of June 30, 2019. Net position increased 3.7% during fiscal 2018, ending at $78.6 billion as of June 30, 2018.
- The post-employment Health Care (HC) Fund net position was $3.9 billion as of June 30, 2019, an increase of 4.1% from the prior fiscal year. The HC Fund balance increased 7.1% during fiscal 2018, ending at $3.7 billion as of June 30, 2018. Ongoing government reimbursements and benefit recipient health care premiums, decreases in health care benefit payments and net positive investment returns continue to improve the net position.
- The Defined Contribution (DC) Plan finished fiscal 2019 with $1.6 billion in net position, an increase of 11.8% from the end of fiscal 2018 due to investment performance and continued participant growth in the DC Plan. The DC Plan was incepted in 2001 and therefore not as mature, with retirements much lower than the Defined Benefit (DB) Plan.

The DC Plan ended fiscal 2018, with $1.5 billion in net position, an increase of 16.5% from the end of fiscal 2017.

- Total additions to fiduciary net position were $8.8 billion during fiscal 2019 compared to $10.7 billion during fiscal 2018.
- Member and employer contributions totaled $3.3 billion in fiscal 2019 and increased over the prior year by $94 million as a result of the payroll growth increase. Total member and employer contributions were $3.2 billion in fiscal 2018 and increased over the prior year by $96 million.
- Contributions from other retirement systems were $46 million in fiscal 2019 from $29 million in fiscal 2018 and include Ohio retirement systems' joint service credit retirement activity.
- Net investment income was $5.1 billion in fiscal 2019 compared to $7.1 billion in fiscal 2018. Investment performance for fiscal 2019 was a positive absolute return but below the long-term investment return assumption of 7.45% while fiscal 2018 was above the long-term investment return assumption.
- Total deductions to fiduciary net position were $7.9 billion during fiscal 2019 and 2018.
- Total benefit payments were $7.5 billion during fiscal 2019 compared to $7.6 billion during fiscal 2018. STRS Ohio paid benefit recipients $7.0 billion in service retirement, disability, survivor and other benefits plus $489 million for health care coverage during fiscal 2019.
- Refunds to members who have withdrawn were $258 million in fiscal 2019 compared to $251 million in fiscal 2018. The 2.9% increase in fiscal 2019 is due to more members reaching the IRS minimum distribution age.
- Administrative expenses were $66.5 million in fiscal 2019 compared to $65.7 million in fiscal 2018. Investment expenses for internal investment management were $41.1 million in fiscal 2019 compared to $42.1 million in fiscal 2018. External asset management fees increased to $233.1 million in fiscal 2019 from $218.3 million in fiscal 2018 due primarily to increased commitments to alternative investments.

Additions
Years Ended June 30, 2019 and 2018
(dollar amounts in thousands)

	2019	2018	Percentage Change
Member contributions	$ 1,623,095	$ 1,580,430	2.7%
Employer contributions	1,656,132	1,604,782	3.2%
Health care premiums and government reimbursements	397,630	436,502	–8.9%
Other contributions	46,022	29,245	57.4%
Net investment income	5,092,217	7,066,422	–27.9%
Total additions	**$ 8,815,096**	**$10,717,381**	**–17.7%**

Deductions
Years Ended June 30, 2019 and 2018
(dollar amounts in thousands)

	2019	2018	Percentage Change
Benefits (includes optional health care)	$ 7,529,221	$ 7,570,112	–0.5%
Refunds	258,354	251,159	2.9%
Administrative expenses	66,469	65,734	1.1%
Total deductions	**$ 7,854,044**	**$ 7,887,005**	**–0.4%**

Annual Financial Review

The total fund delivered a 7.13% rate of return in fiscal 2019 and all asset classes had a positive absolute return during the year. Domestic equities led all investment categories by generating an 8.74% return while alternative investments returned 8.30%, fixed income had a 7.65% return, real estate had a 7.60% return and international equities returned 2.85%. The total fund annualized investment return for the past 10 fiscal years was 10.44%.

Net position for the HC Fund increased to $3.9 billion at June 30, 2019, from $3.7 billion at June 30, 2018. Premiums received from health care recipients in fiscal 2019 decreased to $313 million from $329 million in fiscal 2018. Government reimbursements of $85 million were received in fiscal 2019 to help offset prescription drug costs compared to $107 million in fiscal 2018. Health care coverage payments decreased to $489 million from $517 million in fiscal 2018.

Overview of the Financial Statements of STRS Ohio

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

The *Statements of Fiduciary Net Position* are a measure of STRS Ohio's assets and liabilities at the close of the fiscal year. Total assets less current liabilities equals net position held in trust for future benefits.

The *Statements of Changes in Fiduciary Net Position* show additions and deductions for the fiscal year. The net increase (or decrease) is the change in net position available for benefits since the end of the previous fiscal year.

For financial reporting purposes, STRS Ohio assets are divided into three primary funds: the Defined Benefit (DB) Plan, the Defined Contribution (DC) Plan and the post-employment Health Care (HC) Fund.

- The DB Plan is the largest fund and includes member contributions, employer contributions and investment earnings for DB Plan participants. The DB Plan pays service retirement benefits using a fixed formula based on age, years of service and salary. In addition to service retirement, DB Plan participants are eligible for disability and survivor benefits.
- The DC Plan began on July 1, 2001. It is an optional plan available to new members. DC Plan participants allocate both member and employer contributions in investment choices provided by STRS Ohio. Benefits are based on the member's account value.

  As an alternative to the DB or DC Plan, new members may elect the Combined (CO) Plan. CO Plan participants allocate their member contributions among the same investment choices as DC Plan members, and employer contributions are used to provide a reduced formula service retirement benefit along with disability and survivor protection. Assets to provide benefits to CO Plan members are divided between the DB Plan and the DC Fund.
- Net position for the HC Fund consists of funds set aside to subsidize optional health care coverage for members enrolled in the DB and CO Plans.

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

In addition to the basic financial statements and notes, a *Schedule of Changes in Employers' Net Pension Liability*, *Schedule of Employers' Net Pension Liability, Schedule of Employers' Contributions — Pension* and *Schedule of Investment Returns — Pension* are included as "required supplementary information." These schedules emphasize the long-term nature of pension plans and the status of STRS Ohio in accumulating sufficient assets to pay benefits when due. They also provide a history of contributions from employers and actuarial assumptions and methods that assist in understanding the net pension liability of STRS Ohio.

The *Notes to Required Supplementary Information — Pension* provide the actuarial assumptions and methods used to determine the data in the *Schedule of Changes in Employers' Net Pension Liability*, the *Schedule of Employers' Net Pension Liability* and the *Schedule of Employers' Contributions — Pension*.

Likewise, to provide actuarial assumptions and methods that assist in understanding the net post-employment benefits other than pensions (OPEB) liability of STRS Ohio, a *Schedule of Changes in Employers' Net OPEB Liability*, *Schedule of Employers' Net OPEB Liability, Schedule of Employers' Contributions — OPEB* and *Schedule of Investment Returns — OPEB* are also included as "required supplementary information."

The *Notes to Required Supplementary Information — OPEB* provide the actuarial method and assumptions used to determine the data in the *Schedule of Changes in Employers' Net OPEB Liability,* the *Schedule of Employers' Net OPEB Liability* and the *Schedule of Employers' Contributions — OPEB*.

Schedules of Administrative Expenses, *Internal Investment Expenses* and *External Asset Management Fees* are included to detail the administrative and investment costs to operate STRS Ohio.

Investment Performance

(total returns, annualized on a fiscal-year basis, July 1–June 30)

1-Year Returns (2019)[1]

Asset Category	STRS Ohio Return	Index Name	Index Return
Domestic Equities	8.74%	Russell 3000® Index[3]	8.98%
International Equities	2.85%	International Blended Benchmark[4]	2.70%
Fixed Income	7.65%	Fixed-Income Blended Benchmark[5]	7.81%
Real Estate	7.60%	Real Estate Blended Benchmark[6]	7.37%
Alternative Investments	8.30%	Alternative Investments Blended Relative Return Objective[7]	–
Total Fund	**7.13%**	**Total Fund Blended Benchmark[8]**	**7.30%**

5-Year Returns (2015–2019)[1]

Asset Category	STRS Ohio Return	Index Name	Index Return
Domestic Equities	10.23%	Russell 3000® Index[3]	10.19%
International Equities	5.02%	International Blended Benchmark[4]	4.11%
Fixed Income	3.30%	Fixed-Income Blended Benchmark[5]	3.12%
Real Estate	9.73%	Real Estate Blended Benchmark[6]	8.81%
Alternative Investments	8.48%	Alternative Investments Blended Relative Return Objective[7]	10.16%
Total Fund	**7.38%**	**Total Fund Blended Benchmark[8]**	**7.02%**

STRS Ohio Long-Term Policy Objective (10 Years)[2]

Total Fund: 6.8%

Investment performance is calculated using a time-weighted rate of return. Performance is net of fees for external managed real estate and alternative investments and gross of fees on all other investments.

[1]The one-year returns for the fiscal years ended June 30, 2009, through 2019, have been examined by ACA Performance Services LLC. A copy of the examination report is available upon request.

[2]The long-term policy objective is a projected annualized policy return based on return forecasts by asset class before any value added. The State Teachers Retirement Board expects the net value added to be 0.40% per year.

[3]The Russell® Indices are a trademark of FTSE International Limited (FTSE), Frank Russell Company (Russell®) and their respective subsidiary undertakings, which are members of the London Stock Exchange Group PLC.

[4]The International Blended Benchmark is calculated monthly using 80% of the MSCI World ex-U.S. 50% Hedged Index-Net and 20% of the MSCI Emerging Markets Index-Net.

[5]The Fixed-Income Blended Benchmark is calculated daily and is a blend of two benchmarks using the actual core fixed-income weighting and the Bloomberg Barclays U.S. Universal index and the actual weighting of the liquid treasury portfolio weighting and the Bloomberg Barclays U.S. Intermediate Treasury Index. Source: Bloomberg Index Services Limited. BLOOMBERG® is a trademark and service mark of Bloomberg Finance L.P. and its affiliates (collectively "Bloomberg"). BARCLAYS® is a trademark and service mark of Barclays Bank PLC (collectively with its affiliates, "Barclays"), used under license. Bloomberg or Bloomberg's licensors, including Barclays, own all proprietary rights in the Bloomberg Barclays Indices. Neither Bloomberg nor Barclays approves or endorses this material, or guarantees the accuracy or completeness of any information herein, or makes any warranty, express or implied, as to the results to be obtained therefrom and, to the maximum extent allowed by law, neither shall have any liability or responsibility for injury or damages arising in connection therewith.

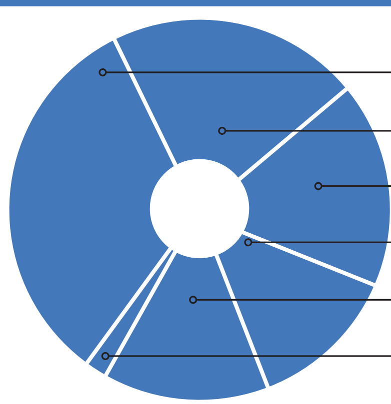
[6]The Real Estate Blended Benchmark is calculated quarterly using 85% NCREIF Property Index (NPI) and 15% FTSE NAREIT Equity REITs Index.

[7]Given the long-term nature of the asset class, no relative return objective for Alternative Investments is displayed for the one-year period. For the longer five-year period, the Alternative Investments Blended Relative Return Objective is a blend of two relative return objectives for Private Equity (PE) and Opportunistic/Diversified (OD) and is calculated using: 43.7% of the Russell 3000® Index plus 1% for PE and 56.3% of the Russell 3000® Index minus 1% for OD effective Oct. 1, 2018; 46.7% of the Russell 3000® Index plus 1% for PE and 53.3% of the Russell 3000® Index minus 1% for OD effective April 1, 2018; 50.0% of the Russell 3000® Index plus 1% for PE and 50.0% of the Russell 3000® Index minus 1% for OD effective Jan. 1, 2014.

[8]The Total Fund Blended Benchmark is calculated and rebalanced monthly using a blend of the asset class benchmarks based on the Total Fund's policy weights in effect during the respective period. For alternative investments, however, the actual Alternative Investments return is used in the calculation of the Total Fund Blended Benchmark. Information concerning asset class benchmarks and policy weights is available upon request.

Investment Distribution by Fair Value — as of June 30, 2019

(dollar amounts in thousands)



Domestic Equities:	$ 21,915,017	27.1%
International Equities:	$ 17,440,790	21.6%
Fixed Income:	$ 16,564,549	20.5%
Real Estate:	$ 9,700,690	12.0%
Alternative Investments:	$ 13,093,344	16.2%
Cash and Short-Term Investments:	$ 2,183,393	2.6%
Total Investments:	**$ 80,897,783**	

Investment Allocation and Fiscal Year Performance

For fiscal 2019, the total fund rate of return was 7.13%. The relative benchmark for STRS Ohio returned 7.30%. The target allocations at the end of fiscal 2019, were 1% liquidity reserves, 21% fixed income, 28% domestic equities, 24% international equities, 10% real estate and 16% alternative investments. Amounts actually invested in these categories at the end of June 2019 represent an investment over/underweight if different from the target allocation. Over/underweighting occurs as fair values change and as investment managers determine allocation entry and exit timing strategies. See Page 13 for detailed investment performance.

External asset management fees are shown separately in the *Statements of Changes in Fiduciary Net Position* as a reduction of investment income. Coupled with internal investment expenses, the cost to manage investments was $274 million in fiscal 2019 and $260 million in fiscal 2018.

Financial Statement Analysis

The tables on Page 15 show condensed information from the *Statements of Fiduciary Net Position* and the *Statements of Changes in Fiduciary Net Position*.

Total fiduciary net position increased 1.2% in fiscal 2019 and 3.7% in fiscal 2018. In fiscal 2019 and fiscal 2018, positive absolute net investment income and contributions more than offset benefit payments.

Net investment income was $5.1 billion in fiscal 2019 compared to $7.1 billion in fiscal 2018. Investment performance for fiscal 2019 was a positive absolute return but below the long-term investment return assumption while fiscal 2018 was above the long-term investment return assumption.

Member contributions increased 2.7% in fiscal 2019 and 2.8% in fiscal 2018. Employer contributions increased 3.2% in fiscal 2019 and 3.5% in fiscal 2018. Member and employer rates remained at 14% in fiscal 2019 and 2018. Increases in contributions were due to the increase in employer payroll.

Health care premiums helped offset some of the increases in health care costs. Of the $489 million paid to health care providers in fiscal 2019, health care enrollees paid $313 million through premium deductions. Health care enrollees were also responsible for additional health care costs paid through deductibles, coinsurance, copayments and other out-of-pocket expenditures. Government reimbursements of $85 million also helped offset health care costs. No employer contributions were allocated to the health care fund in fiscal 2019 and 2018. For fiscal 2018, $517 million was paid to health care providers, benefit recipients contributed $329 million and government reimbursements were $107 million.

STRS Ohio was created to provide retirement, disability and survivor benefits to members and eligible beneficiaries. Expenditures include monthly payments to eligible recipients, refunds of contributions to members who terminate employment and administrative costs of operating STRS Ohio.

These deductions from net position were $7.9 billion in fiscal 2019, a 0.4% decrease compared to fiscal 2018. Total deductions from net position were $7.9 billion in fiscal 2018, a 0.6% increase over fiscal 2017. The largest deductions component is monthly benefit payments for service retirement, disability and survivor benefits. These benefit payments decreased 0.1% in fiscal 2019 and increased 0.8% in fiscal 2018.

Health care costs decreased 5.5% in fiscal 2019 due to lower non-Medicare retiree health care enrollment and offsetting or larger prescription rebates and discounts. Health care costs decreased 8.6% in fiscal 2018.

Pension Funding Valuation (Funding Method)

The present value of expected benefits to be paid to current and future benefit recipients (the actuarial accrued liability or AAL) at fiscal year end 2019, 2018 and 2017 was $97.8 billion, $96.9 billion and $96.1 billion, respectively.

Market changes in investment assets are smoothed over a four-year period, except that the actuarial value of assets or AVA shall not be less than 91% nor more than 109% of market value. Actuarial value of assets ended fiscal 2019 at $74.4 billion, up from $73.1 billion at fiscal year end 2018 and $72.2 billion at fiscal year end 2017.

Net Position (dollar amounts in thousands)					
	2019	2018	2017	Amount Increase (Decrease) From 2018 to 2019	Amount Increase (Decrease) From 2017 to 2018
Cash and investments	$ 80,897,783	$ 79,890,248	$ 76,851,134	$ 1,007,535	$ 3,039,114
Receivables	1,845,564	931,446	921,150	914,118	10,296
Securities lending collateral	480,843	1,804,947	1,347,863	(1,324,104)	457,084
Net capital assets	78,984	83,557	87,161	(4,573)	(3,604)
Total assets	83,303,174	82,710,198	79,207,308	592,976	3,502,890
Total liabilities	3,704,471	4,072,547	3,360,303	(368,076)	712,244
Net position	**$ 79,598,703**	**$ 78,637,651**	**$ 75,847,005**	**$ 961,052**	**$ 2,790,646**

Additions to Net Position (dollar amounts in thousands)					
	2019	2018	2017	Amount Increase (Decrease) From 2018 to 2019	Amount Increase (Decrease) From 2017 to 2018
Contributions:					
Member contributions	$ 1,623,095	$ 1,580,430	$ 1,537,677	$ 42,665	$ 42,753
Employer contributions	1,656,132	1,604,782	1,551,254	51,350	53,528
Health care premiums and government reimbursements	397,630	436,502	418,413	(38,872)	18,089
Other	46,022	29,245	39,615	16,777	(10,370)
Total contributions	3,722,879	3,650,959	3,546,959	71,920	104,000
Net investment income	5,092,217	7,066,422	9,674,127	(1,974,205)	(2,607,705)
Total additions to net position	**$ 8,815,096**	**$ 10,717,381**	**$ 13,221,086**	**$ (1,902,285)**	**$ (2,503,705)**

Deductions From Net Position (dollar amounts in thousands)					
	2019	2018	2017	Amount Increase (Decrease) From 2018 to 2019	Amount Increase (Decrease) From 2017 to 2018
Deductions:					
Benefit payments	$ 6,994,812	$ 7,004,774	$ 6,947,246	$ (9,962)	$ 57,528
Health care coverage	489,169	517,470	565,962	(28,301)	(48,492)
Refunds to members	258,354	251,159	221,841	7,195	29,318
Administrative expenses	66,469	65,734	66,149	735	(415)
Other	45,240	47,868	41,919	(2,628)	5,949
Total deductions from net position	**$ 7,854,044**	**$ 7,887,005**	**$ 7,843,117**	**$ (32,961)**	**$ 43,888**

Net Increase (Decrease) in Net Position (dollar amounts in thousands)					
	2019	2018	2017	Amount Increase (Decrease) From 2018 to 2019	Amount Increase (Decrease) From 2017 to 2018
Net increase (decrease) in net position	**$ 961,052**	**$ 2,830,376**	**$ 5,377,969**	**$(1,869,324)**	**$(2,547,593)**

The unfunded actuarial accrued liability or UAAL for STRS Ohio pension benefits was $23.4 billion as of June 30, 2019, down from $23.8 billion as of June 30, 2018, and $23.9 billion at June 30, 2017. The funded ratio, which is actuarial value of assets divided by actuarial accrued liability, was 76.1% at June 30, 2019. At June 30, 2018, the funded ratio was 75.5% and at June 30, 2017, the funded ratio was 75.1%. At June 30, 2019, the funding period was 16.6 years, down from 17.8 years at June 30, 2018, and 18.4 years at June 30, 2017.

Pension Financial Reporting Valuation (Accounting Method)

Some of the actuarial calculations for financial reporting purposes are different than the funding valuation calculations described above. The approach used for financial reporting complies with Governmental Accounting Standards Board (GASB) reporting requirements and is based on the market value of assets referred to as the fiduciary net position rather than the actuarial value of assets. The primary purpose of the valuation for financial reporting is to provide a consistent, standardized methodology that allows comparability of data and increased transparency of the pension liability across plans.

A side-by-side comparison of the two calculation methods (Funding and Accounting) is as follows:

Funding Method	Accounting Method
Actuarial Accrued Liability (AAL)	Total Pension Liability
– Actuarial Value of Assets (AVA)	– Fiduciary Net Position
= Unfunded Actuarial Accrued Liability (UAAL)	= Net Pension Liability (NPL)

Health Care Financial Reporting Valuation

Additionally, STRS Ohio also complies with GASB reporting requirements for Postemployment Benefit Plans Other Than Pension Plans (OPEB). The OPEB standards are designed to bring greater clarity to post-employment benefit liabilities, the most significant of which is retiree health insurance. These requirements parallel the pension accounting standards discussed above.

Requests for Information

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

State Teachers Retirement System of Ohio
ATTN: Chief Financial Officer
275 E. Broad St.
Columbus, OH 43215-3771

Statements of Fiduciary Net Position (in thousands)

	June 30, 2019				June 30, 2018			
	Defined Benefit	Defined Contribution	Post-employment Health Care	Totals	Defined Benefit	Defined Contribution	Post-employment Health Care	Totals
Assets:								
Cash and short-term investments	$ 1,936,760	$ 144,941	$ 101,692	$ 2,183,393	$ 1,261,956	$ 131,072	$ 64,700	$ 1,457,728
Receivables:								
Accrued interest and dividends	237,171		12,453	249,624	208,868		10,709	219,577
Member contributions	225,053	209		225,262	219,842	122		219,964
Employer contributions	303,699	81		303,780	313,197	39		313,236
Securities sold	941,330		49,425	990,755	130,414		6,687	137,101
Medical benefits receivable			27,170	27,170			16,900	16,900
Miscellaneous receivables	48,973			48,973	24,668			24,668
Total receivables	**1,756,226**	**290**	**89,048**	**$ 1,845,564**	**896,989**	**161**	**34,296**	**931,446**
Investments, at fair value:								
Fixed income	15,502,931	247,625	813,993	16,564,549	14,644,663	310,604	750,824	15,706,091
Domestic equities	19,956,721	910,452	1,047,844	21,915,017	20,846,728	773,063	1,068,801	22,688,592
International equities	16,378,934	201,866	859,990	17,440,790	16,802,421	140,802	861,451	17,804,674
Real estate	9,097,868	125,131	477,691	9,700,690	9,262,065	103,033	474,861	9,839,959
Alternative investments	12,440,163		653,181	13,093,344	11,788,799		604,405	12,393,204
Total investments	**73,376,617**	**1,485,074**	**3,852,699**	**78,714,390**	**73,344,676**	**1,327,502**	**3,760,342**	**78,432,520**
Invested securities lending collateral	456,856		23,987	480,843	1,716,921		88,026	1,804,947
Capital assets	242,776			242,776	249,428			249,428
Accumulated depreciation	(163,792)			(163,792)	(165,871)			(165,871)
Net capital assets	78,984			78,984	83,557			83,557
Total assets	**77,605,443**	**1,630,305**	**4,067,426**	**83,303,174**	**77,304,099**	**1,458,735**	**3,947,364**	**82,710,198**
Liabilities:								
Securities purchased and other investment liabilities	1,083,768		56,904	1,140,672	200,871		10,299	211,170
Debt on real estate investments	1,769,568		92,913	1,862,481	1,767,714		90,630	1,858,344
Accrued expenses and other liabilities	31,409		1,649	33,058	34,299		1,758	36,057
Medical benefits payable			19,827	19,827			35,314	35,314
Obligations under securities lending program	456,623		23,975	480,598	1,716,688		88,014	1,804,702
Net pension and OPEB liabilites	167,835			167,835	126,960			126,960
Total liabilities	**3,509,203**		**195,268**	**3,704,471**	**3,846,532**		**226,015**	**4,072,547**
Fiduciary net position restricted for defined benefit, defined contribution and post-employment health care coverage:	**$ 74,096,240**	**$ 1,630,305**	**$ 3,872,158**	**$ 79,598,703**	**$ 73,457,567**	**$ 1,458,735**	**$ 3,721,349**	**$ 78,637,651**

See accompanying Notes to Financial Statements.

Statements of Changes in Fiduciary Net Position (in thousands)

	Year Ended June 30, 2019				Year Ended June 30, 2018			
	Defined Benefit	Defined Contribution	Post-employment Health Care	Totals	Defined Benefit	Defined Contribution	Post-employment Health Care	Totals
Additions:								
Contributions:								
Member	$ 1,515,445	$ 107,650		$ 1,623,095	$ 1,479,151	$ 101,279		$ 1,580,430
Employer	1,614,188	41,944		1,656,132	1,565,679	39,103		1,604,782
Transfers between retirement plans	17,413	(17,413)			14,003	(14,003)		
Government reimbursements			$ 84,789	84,789			$ 107,197	107,197
Benefit recipient health care premiums			312,841	312,841			329,305	329,305
Other retirement systems	46,022			46,022	29,245			29,245
Total contributions	**3,193,068**	**132,181**	**397,630**	**3,722,879**	**3,088,078**	**126,379**	**436,502**	**3,650,959**
Income from investing activities:								
Net appreciation in fair value of investments	3,504,569	77,271	179,855	3,761,695	5,379,876	111,210	267,123	5,758,209
Interest	444,344	2,958	22,805	470,107	426,754	1,617	21,189	449,560
Dividends	839,181		43,067	882,248	841,876		41,801	883,677
Real estate income	233,368		11,976	245,344	213,801		10,616	224,417
Investment income	5,021,462	80,229	257,703	5,359,394	6,862,307	112,827	340,729	7,315,863
Less internal investment expenses	(38,275)	(828)	(1,964)	(41,067)	(39,379)	(752)	(1,955)	(42,086)
Less external asset management fees	(221,720)		(11,379)	(233,099)	(207,981)		(10,327)	(218,308)
Net income from investing activities	4,761,467	79,401	244,360	5,085,228	6,614,947	112,075	328,447	7,055,469
Securities lending income	7,457		382	7,839	11,593		576	12,169
Securities lending expenses	(808)		(42)	(850)	(1,158)		(58)	(1,216)
Net income from securities lending activities	6,649		340	6,989	10,435		518	10,953
Net investment income	4,768,116	79,401	244,700	5,092,217	6,625,382	112,075	328,965	7,066,422
Total additions	**7,961,184**	**211,582**	**642,330**	**8,815,096**	**9,713,460**	**238,454**	**765,467**	**10,717,381**
Deductions:								
Benefits:								
Service retirement	6,669,115			6,669,115	6,673,049			6,673,049
Disability benefits	201,726			201,726	206,969			206,969
Survivor benefits	123,971			123,971	124,756			124,756
Health care			489,169	489,169			517,470	517,470
Other	45,240			45,240	47,868			47,868
Total benefit payments	7,040,052		489,169	7,529,221	7,052,642		517,470	7,570,112
Refunds to members who have withdrawn	218,601	39,753		258,354	219,453	31,706		251,159
Administrative expenses	63,858	259	2,352	66,469	62,775	532	2,427	65,734
Total deductions	**7,322,511**	**40,012**	**491,521**	**7,854,044**	**7,334,870**	**32,238**	**519,897**	**7,887,005**
Net increase in net position	**638,673**	**171,570**	**150,809**	**961,052**	**2,378,590**	**206,216**	**245,570**	**2,830,376**
Fiduciary net position restricted for defined benefit, defined contribution and post-employment health care coverage:								
Beginning of year	73,457,567	1,458,735	3,721,349	78,637,651	71,118,707	1,252,519	3,475,779	75,847,005
Restatement for adoption of GASB 75					(39,730)			(39,730)
Beginning of year, restated					71,078,977			75,807,275
End of year	**$74,096,240**	**$ 1,630,305**	**$ 3,872,158**	**$ 79,598,703**	**$73,457,567**	**$ 1,458,735**	**$ 3,721,349**	**$78,637,651**

See accompanying Notes to Financial Statements.

1. Summary of Significant Accounting Policies

The financial statements of the State Teachers Retirement System of Ohio (STRS Ohio) presented herein have been prepared on the accrual basis of accounting following the accounting policies set forth below.

Organization — STRS Ohio is a cost-sharing, multiple-employer plan that operates under Chapter 3307 of the Ohio Revised Code (R.C.) and is administered by a board comprised of 11 members as follows: five elected contributing members; two elected retired teacher members; an investment expert appointed by the governor; an investment expert appointed jointly by the speaker of the Ohio House of Representatives and the Ohio Senate President; an investment expert designated by the treasurer of state; and the superintendent of public instruction or his or her designated investment expert.

The accompanying financial statements comply with the provisions of the Governmental Accounting Standards Board (GASB) Statement No. 39, an amendment of GASB Statement No. 14, *The Financial Reporting Entity*. This statement requires that financial statements of the reporting entity include all of the organizations, activities, functions and component units for which the reporting entity is financially accountable. Financial accountability is defined as the appointment of a voting majority of the component unit's board and either (1) the reporting entity's ability to impose its will over the component unit, or (2) the possibility that the component unit will provide a financial benefit to or impose a financial burden on the reporting entity. STRS Ohio does not have financial accountability over any entities.

Investment Accounting — Purchases and sales of investments are recorded as of their trade date. Dividend income is recognized on the ex-dividend date. Interest and rental income is recognized as the income is earned. Investment expenses associated with external asset management are reported if they are separable from investment income and the administrative expenses of the plan.

STRS Ohio has no individual investment that exceeds 5% of net position available for benefits.

Contributions and Benefits — Employer and member contributions are recognized when due based on statutory or contractual requirements. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

Capital Assets — Capital assets are recorded at historical cost. Depreciation is provided on a straight-line basis over estimated useful lives of five to 10 years for equipment and 40 years for building and building improvements. Capital assets include purchases of $5,000 or more with a useful life of at least five years.

Method Used to Value Investments — Investments are reported at fair value. Short-term investments including commercial paper, certificates of deposit and repurchase agreements, are reported at amortized cost, which approximates fair value. Equity securities traded on a national or international exchange are valued at the primary closing market price on the principal registered stock exchange. Fixed-income investments are valued as determined by a qualified independent service. The fair value of real estate investments and other internally managed alternative investments is based on independent external appraisals and internal valuations. The fair value of externally managed alternative investments and real estate is determined by the valuation methodology outlined in the partnership agreement and updated to include current capital activity.

Federal Income Tax Status — STRS Ohio is exempt from federal income taxes under Section 401(a) of the Internal Revenue Code.

Use of Estimates — In preparing financial statements in conformity with accounting principles generally accepted in the United States of America, management makes estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates and assumptions.

New Accounting Pronouncements — GASB Statement No. 75, *Postemployment Benefit Plans Other Than Pensions* was implemented for the year ended June 30, 2018. One of the primary requirements is for participating employers in STRS Ohio to record a net OPEB liability based on their proportionate share of STRS Ohio's total net OPEB liability. Likewise, STRS Ohio is required to record a proportionate share of the total net OPEB liability of Ohio Public Employees Retirement System (OPERS). STRS Ohio adopted GASB Statement No. 75 effective July 1, 2017, resulting in a restatement of the beginning net position restricted for defined benefits of –$39.7 million.

GASB Statement No. 88, *Certain Disclosures Related to Debt, including Direct Borrowings and Direct Placements* was implemented for the year ended June 30, 2019. The primary objective of this statement is to provide additional disclosures in the notes to the financial statements related to debt that includes summarized information on amounts of unused lines of credit, assets pledged as collateral for debt and terms specified in the debt agreements related to events of default, termination events and acceleration clauses.

Reclassifications — Certain reclassifications of 2018 amounts were made to conform with the 2019 presentation. The reclassifications have no effect on the fiduciary net position or changes in fiduciary net position.

2. Description of the STRS Ohio Plan

Plan Membership — STRS Ohio is a statewide retirement plan for licensed teachers and other faculty members employed in the public schools of Ohio (the state) or any school, college, university, institution or other agency controlled, managed and supported, in whole or part, by the state or any political subdivision thereof.

Member and retiree data and participating employers are shown in the tables below.

Member and Retiree Data at June 30, 2019 and 2018

	2019	2018
Current active members	170,004	170,327
Inactive members eligible for refunds only	139,421	138,075
Terminated members entitled to receive a benefit in the future	18,803	18,416
Retirees and beneficiaries currently receiving a benefit	157,418	157,422
Defined Contribution Plan members	9,846	9,682
Reemployed retirees	21,026	22,038
Total Plan Membership	**516,518**	**515,960**

Participating Employers at June 30, 2019 and 2018

	2019	2018
City school districts	194	194
Local school districts	369	369
County educational service centers	52	52
Exempted village school districts	49	49
Joint vocational schools	49	49
Colleges and universities	36	36
County boards of developmental disabilities	59	61
Community schools	302	318
State of Ohio	1	1
Other	10	11
Total	**1,121**	**1,140**

Active members are defined as participants who earned 0.25 years of service credit or more in the valuation year and those employed on or after Jan. 1, with less than 0.25 years of service credit.

Plan Options — New members have a choice of three retirement plan options. In addition to the DB Plan, new members are offered a DC Plan or a CO Plan. The DC Plan allows members to allocate all their member contributions and employer contributions equal to 9.53% of earned compensation among various investment choices. The CO Plan offers features of the DC Plan and the DB Plan. In the CO Plan, member contributions less 2% of earned compensation are allocated among investment choices by the member. Employer contributions and a portion of member contributions in the CO Plan are used to fund a defined benefit payment at a reduced level from the regular DB Plan. Contributions into the DC Plan and the CO Plan are credited to member accounts as employers submit their payroll information to STRS Ohio, generally on a biweekly basis.

DB Plan Benefits — Plan benefits are established under Chapter 3307 of the R.C. Effective Aug. 1, 2017–July 1, 2019, any member could retire with reduced benefits who had (1) five years of service credit and age 60; (2) 27 years of service credit and age 55; or (3) 30 years of service credit regardless of age. Effective Aug. 1, 2019–July 1, 2021, any member may retire with reduced benefits who has (1) five years of service credit and age 60; (2) 28 years of service credit and age 55; or (3) 30 years of service credit regardless of age. Eligibility changes will continue to be phased in through Aug. 1, 2026, when retirement eligibility for unreduced benefits will be five years of service credit and age 65, or 35 years of service credit and at least age 60. Retirement eligibility for reduced benefits will be five years of service credit and age 60, or 30 years of service credit regardless of age.

The annual retirement allowance, payable for life, is based on the average of the member's five highest years of earnings multiplied by 2.2% for each year of credited service. For July 1, 2015, and earlier, the annual allowance is determined by multiplying final average salary (average of three highest years of earnings) by 2.2% for the first 30 years of credited service. Each year over 30 years is incrementally increased by 0.1%, starting at 2.5% for the 31st year of contributing service up to a maximum allowance of 100% of final average salary. Upon reaching 35 years of Ohio service, the first 31 years of Ohio contributing service are multiplied by 2.5%, and each year over 31 years is incrementally increased by 0.1% starting at

2.6% for the 32nd year. Members retiring before age 65 with less than 30 years of service credit receive a percentage reduction in benefit amounts.

For members who were eligible to retire on July 1, 2015, the annual benefit is the greater of the benefit amount calculated upon retirement under the new benefit formula or the frozen benefit amount as of July 1, 2015.

Since the plan is tax-qualified, benefits are subject to limits established by Section 415 of the Internal Revenue Code.

A retiree of STRS Ohio or another Ohio public retirement system is eligible for reemployment as a teacher following the elapse of two months from the date of retirement. Contributions are made by the reemployed member and employer during the reemployment. Upon termination of reemployment or age 65, whichever comes later, the retiree is eligible for an annuity benefit or equivalent lump-sum payment in addition to the original retirement allowance. A reemployed retiree may alternatively receive a refund of member contributions with interest before age 65, once employment is terminated.

In September 2012, the Ohio General Assembly passed and the Governor signed into law Substitute Senate Bill 342. The legislation improves pension funding of the STRS Ohio DB Plan.

The legislative changes that improve funding to STRS Ohio's DB Plan include: increasing age and service requirements for retirement; pensions calculated on a lower, fixed formula; increasing the period for determining final average salary, increasing member contributions to the retirement system; and modifications to the COLA. The law also provides the Retirement Board with authority to make future adjustments to the member contribution rate, retirement age and service requirements, and the COLA as the need or opportunity arises, depending on the retirement system's funding progress. In April 2017, the Retirement Board made the decision to reduce COLA granted on or after July 1, 2017, to 0% to preserve the fiscal integrity of the retirement system. Benefit recipients' base benefit and past cost-of-living increases are not affected by this change.

DC Plan Benefits — Benefits are established under Chapter 3307.80 to 3307.89 of the R.C.

For members who select the DC Plan, all member contributions and employer contributions at a rate of 9.53% are placed in an investment account. The member determines how to allocate the member and employer money among various investment choices offered by STRS Ohio. The member receives a quarterly statement of his or her account activity and balance. The remaining 4.47% of the 14.0% employer rate is allocated to the DB Plan unfunded liability.

A member is eligible to receive a monthly retirement benefit at age 50 and termination of employment. In lieu of a retirement benefit, the member may elect a lump-sum withdrawal. Employer contributions into member accounts are vested after the first anniversary of the first day of paid service. Members vest 20% per year in employer contributions and all gains and losses on those contributions.

Members in the DC Plan who become disabled are entitled only to their account balance. If a member dies before retirement benefits begin, the member's designated beneficiary is entitled to receive the member's account balance.

CO Plan Benefits — For members who select the CO Plan, 12% of the 14% member contribution rate is deposited into the member's DC account and the remaining amount applied to the DB Plan. In the CO Plan, member contributions are allocated among investment choices by the member, and employer contributions are used to fund a defined benefit payment.

A member's defined benefit is determined by multiplying 1% of the member's final average salary by the member's years of service credit. The defined benefit portion of the CO Plan payment is payable to a member on or after age 60 with five years of service. The defined contribution portion of the account may be taken as a lump sum or converted to a lifetime monthly annuity at age 50 and termination of employment.

DC and CO Plan members must actively select the DB Plan during their fifth year of membership or their original selection is maintained. Also, for DC and CO Plan members who retire and elect to have an annuity, the DC account balance is transferred to the DB Plan. During fiscal 2019, $17.4 million was transferred from the DC and CO Plan accounts to the DB Plan. During fiscal 2018, $14.0 million was transferred from the DC and CO Plan accounts to the DB Plan.

Death, Survivor and Disability Benefits — A DB or CO Plan member with five or more years of credited service who is determined to be disabled (illness or injury preventing individual's ability to perform regular job duties for at least 12 months) may receive a disability benefit. Additionally, eligible survivors of members who die before service retirement may qualify for monthly benefits. New members on or after July 1, 2013, must have at least 10 years of qualifying service credit to apply for disability benefits.

A death benefit of $1,000 is payable to the beneficiary of each deceased retired member who participated in the DB Plan. Death benefit coverage up to $2,000 can be purchased by participants in the DB, DC or CO Plans. Various other benefits are available to members' beneficiaries.

Health Care Coverage After Retirement — Ohio law allows the State Teachers Retirement Board to offer a cost-sharing, multiple-employer health care plan. STRS Ohio provides access to health care coverage to eligible retirees who participated in the DB or CO Plans and their eligible dependents.

Coverage under the current program includes hospitalization, physicians' fees and prescription drugs and partial reimbursement of monthly Medicare Part B premiums. Medicare Part B premium reimbursements will be discontinued effective Jan. 1, 2021. Pursuant to the R.C., the Retirement Board has discretionary authority over how much, if any, of the associated health care costs will be absorbed by the plan. All benefit recipients pay a portion of the health care costs in the form of a monthly premium. Benefit recipients contributed $312.8 million or 64% of the total health care costs in fiscal 2019 (excluding deductibles, coinsurance and copayments). For fiscal 2018, benefit recipients contributed $329.3 million or 64% of the total health care costs.

Under Ohio law, funds to pay health care costs may be deducted from employer contributions, currently 14% of compensation. For fiscal years 2019 and 2018, no employer allocation was made to health care.

Medicare Part D is a federal program to help cover the costs of prescription drugs for Medicare beneficiaries. This program allows STRS Ohio to recover part of the cost for providing prescription coverage since all eligible STRS Ohio HC Plans include creditable prescription drug coverage. For the years ended June 30, 2019 and 2018, STRS Ohio received $84.8 million and $107.2 million in Medicare Part D government reimbursements, respectively.

Refunds — Withdrawal cancels a member's rights and benefits in STRS Ohio.

Upon termination of employment, a DB Plan member may withdraw their accumulated contributions made to STRS Ohio. Refunds of member contributions may include interest and 50% matching payments.

A CO Plan member is eligible for the present value of future benefits from the defined benefit portion of the account if he or she terminates employment after at least five years of service. For the defined contribution portion of the account, the refund consists of member contributions plus any investment gains or losses on those contributions.

DC Plan members receive their contributions plus any investment gains or losses on member contributions until they have completed one year of membership. After one year of membership, members vest 20% per year in employer contributions and all gains or losses on those contributions.

Alternative Retirement Plan — Eligible faculty of Ohio's public colleges and universities may choose to enroll in either STRS Ohio or an alternative retirement plan (ARP) offered by their employer.

Employees have 120 days from their date of hire to select a retirement plan.

For employees who elect an ARP, employers are required to remit employer contributions to STRS Ohio at a rate of 4.47% of payroll. For the years ended June 30, 2019 and 2018, the ARP participant payroll totaled $769.1 million and $735.5 million, respectively.

Administrative Expenses — The costs of administering the DB and HC Plans are financed by investment income. The administrative and investment costs of the DC Plan are financed by participant fees.

3. Net Pension Liability of Participating Employers

The components of the net pension liability of the participating employers as of June 30, 2019 and 2018, was as follows:

Net Pension Liability at June 30, 2019 and 2018
(dollar amounts in thousands)

	2019	2018
Total Pension Liability for STRS Ohio	$ 97,840,944	$ 96,904,057
Fiduciary Net Position	(75,726,545)	(74,916,302)
Net Pension Liability	$ 22,114,399	$ 21,987,755
Ratio of Fiduciary Net Position to the Total Pension Liability	77.4%	77.3%

The total pension liability for 2019 and 2018 was determined by an actuarial valuation as of June 30, 2019 and 2018, using actuarial assumptions related to inflation (2.50%), investment rate of return (7.45%), 0% COLA and projected salary increases ranging from 2.50% at age 65 to 12.50% at age 20.

Pension and post-employment health care assets are commingled for investment purposes. Consequently, amounts reported for individual asset classes are allocated between pension and post-employment health care based upon ending net position.

STRS Ohio's investment consultant develops an estimate range for the investment return assumption based on the target allocation adopted by the Retirement Board. The target allocation and long-term expected rate of return for each major asset class are summarized as follows:

Asset Class	Target Allocation*	Long-term Expected Rate of Return**
Domestic Equity	28%	7.35%
International Equity	23%	7.55%
Alternatives	17%	7.09%
Fixed Income	21%	3.00%
Real Estate	10%	6.00%
Liquidity Reserves	1%	2.25%

*Target weights will be phased in over a 24-month period concluding on July 1, 2019.

**10-year annualized geometric nominal returns, which include the real rate of return and inflation of 2.25% and does not include investment expenses. Over a 30-year period, STRS Ohio's investment consultant indicates that the above target allocations should generate a return above the actuarial rate of return, without net value added by management.

Pension Plan Discount Rate — The projection of cash flows used to determine the discount rate assumes that employer and member contributions will be made at statutory contribution rates of 14% each. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Based on those assumptions, STRS Ohio's fiduciary net position was projected to be available to make all projected future benefit payments to current plan members as of June 30, 2019 and 2018. Therefore, the long-term expected rate of return on pension plan investments of 7.45% was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2019 and 2018.

Sensitivity of the Net Pension Liability to the Discount Rate Assumption — The following represents the net pension liability as of June 30, 2019 and 2018, calculated using the current period discount rate assumption, as well as what the net pension liability would be if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current assumption.

Net Pension Liability (in thousands)

	1% Decrease (6.45%)	Current Assumption (7.45%)	1% Increase (8.45%)
June 30, 2018	$32,110,221	$21,987,755	$13,420,460
June 30, 2019	$32,317,731	$22,114,399	$13,476,756

Mortality Rates for Pension — For the actuarial valuations as of June 30, 2019 and 2018, post-retirement mortality rates are based on RP-2014 Annuitant Mortality Table with 50% of rates through age 69, 70% of rates between ages 70 and 79, 90% of rates between ages 80 and 84, and 100% of rates thereafter, projected forward generationally using mortality improvement scale MP-2016; pre-retirement mortality rates are based on RP-2014 Employee Mortality Table, projected forward generationally using mortality improvement scale MP-2016.

Disabled: Post-retirement disabled mortality rates are based on RP-2014 Disabled Mortality Table with 90% of rates for males and 100% of rates for females, projected forward generationally using mortality improvement scale MP-2016.

Experience Study — The actuarial assumptions used in the June 30, 2019 and 2018, valuations, were adopted by the board from the results of an actuarial experience study for July 1, 2011, through June 30, 2016.

4. Post Employment Health Care Net OPEB Asset of Participating Employers

The components of the net OPEB asset of the participating employers as of June 30, 2019 and 2018, was as follows:

Net OPEB Asset at June 30, 2019 and 2018 (dollar amounts in thousands)

	2019	2018
Fiduciary Net OPEB Position	$ 3,872,158	$ 3,721,349
Total OPEB Liability	2,215,918	2,114,451
Net OPEB Asset	$ 1,656,240	$ 1,606,898
Ratio of Fiduciary Net Position to the Total OPEB Liability	174.7%	176.0%

The total OPEB asset for 2019 and 2018 was determined by an actuarial valuation as of June 30, 2019 and 2018, using actuarial assumptions including the discount rate of return (7.45%), projected salary increases ranging from 2.5% to 12.5% and health care cost trend rates ranging from 4.9% to 9.6% initially and a 4% ultimate rate for the 2019 valuation and –5.2% to 9.6% initially and a 4% ultimate rate for the 2018 valuation.

STRS Ohio's investment consultant develops an estimate range for the investment return assumption based on the target allocation adopted by the Retirement Board. The target allocation and long-term expected rate of return for each major asset class are summarized as follows:

Asset Class	Target Allocation*	Long-term Expected Rate of Return**
Domestic Equity	28%	7.35%
International Equity	23%	7.55%
Alternatives	17%	7.09%
Fixed Income	21%	3.00%
Real Estate	10%	6.00%
Liquidity Reserves	1%	2.25%

*Target weights will be phased in over a 24-month period concluding on July 1, 2019.

**10-year annualized geometric nominal returns, which include the real rate of return and inflation of 2.25% and does not include investment expenses. Over a 30-year period, STRS Ohio's investment consultant indicates that the above target allocations should generate a return above the actuarial rate of return, without net value added by management.

OPEB Discount Rate — The projection of cash flows used to determine the discount rate assumed STRS Ohio continues to allocate no employer contributions to the HC Fund. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments to current plan members as of June 30, 2019 and 2018. Therefore, the long-term expected rate of return on HC Fund investments of 7.45% was applied to all periods of projected benefit payments to determine the total OPEB liability as of June 30, 2019 and 2018.

Sensitivity of the Net OPEB Asset to the Discount Rate and Health Care Cost Trend Rate Assumptions — The following represents the net OPEB asset as of June 30, 2019, calculated using the current period discount rate assumption of 7.45%, as well as what the net OPEB asset would be if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current assumption. Also shown is the net OPEB asset as of June 30, 2019, calculated using health care cost trend rates that are one percentage point lower or one percentage point higher than the current health care cost trend rates.

Net OPEB Asset at June 30, 2019
(in thousands)

1% Decrease in Discount Rate (6.45%)	Current Discount Rate (7.45%)	1% Increase in Discount Rate (8.45%)
$ 1,413,271	$ 1,656,240	$ 1,860,520
1% Decrease in Trend Rates	**Current Trend Rates**	**1% Increase in Trend Rates**
$ 1,878,100	$ 1,656,240	$ 1,384,515

Mortality Rates for Health Care — *Healthy:* Rates are based on the RP-2014 Annuitant Mortality Table with 50% of rates through age 69, 70% of rates between ages 70 and 79, 90% of rates between ages 80 and 84, and 100% of rates thereafter, projected forward generationally using mortality improvement scale MP-2016.

Disabled: Rates are based on the RP-2014 Disabled Mortality Table with 90% of rates for males and 100% of rates for females, projected forward generationally using mortality improvement scale MP-2016.

Experience Study — The actuarial assumptions used in the June 30, 2019 and 2018, valuation were adopted by the board from the results of an actuarial experience study for July 1, 2011, through June 30, 2016.

5. Contribution Requirements and Reserves

Member and employer contribution rates are established by the Retirement Board and limited by Chapter 3307 of the R.C. The member and employer contribution rates are 14% of covered payroll.

Various funds are established under the R.C. to account for contributions, reserves, income and administrative expenses.

The Teachers' Savings Fund (TSF) is used to accumulate member contributions in trust and from which transfers are made to fund retirement and survivor benefits.

The Employers' Trust Fund (ETF) is used to accumulate employer contributions in trust and from which transfers are made to fund retirement and survivor benefits. The remaining balance in the Guarantee Fund is closed to the ETF at year-end.

The DC Fund accumulates contributions deducted from DC and CO Plan members, employer contributions credited to the DC member accounts and investment earnings thereon less DC Plan expenses and withdrawals. Transfers are made from the DC Fund to the Annuity and Pension Reserve Fund for accounts annuitized at retirement.

The Annuity and Pension Reserve Fund (APRF) is the fund from which all annuity and pension payments for retirement and disability benefits are made. Reserves for the present value of new benefits are transferred to this fund from the TSF, ETF and DC funds at the time of retirement and interest is transferred to this fund annually from the Guarantee Fund.

The Survivors' Benefit Fund (SBF) is the fund from which all survivor benefit payments are made. Reserves for the present value of new benefits are transferred to this fund from the TSF and ETF funds at the time benefits begin and interest is transferred to this fund annually from the Guarantee Fund.

The Guarantee Fund (GF) is used to accumulate income derived from investments, gifts and bequests for the year. It is also the fund from which transfers are made to cover the balance in the Expense Fund and from which interest is transferred and credited to the APRF and SBF funds. Any remaining balance in the GF at fiscal year end is closed to the ETF.

The Expense Fund is the fund from which all administrative and management expenses of STRS Ohio are paid each year. A transfer from the GF is made at the end of each fiscal year to cover the accumulated balance in this fund.

The HC Fund is used to accumulate amounts for the retiree health care program from the allocated portion of employer contributions, investment earnings, governmental reimbursements and benefit recipient premiums less health care expenses.

6. Commitments and Contingencies

STRS Ohio has made commitments to fund various real estate investments totaling $1,312,715,000 as of June 30, 2019. These commitments have expected funding dates from December 2019 to December 2027.

STRS Ohio has made commitments to fund various alternative investments totaling $8,579,253,000 as of June 30, 2019. The expected funding dates for the commitments as of June 30, 2019, range from July 2019 to June 2025.

STRS Ohio is a party in various legal actions. While the final outcome cannot be determined at this time, management is of the opinion that the liability, if any, for these legal actions will not have a material adverse effect on fiduciary net position.

7. Fair Value Measurement

STRS Ohio's investments measured and reported at fair value are shown on Page 26 and are classified according to the following hierarchy:

Level 1: Level 1 inputs are quoted prices in active markets such as exchange markets.

Level 2: Level 2 inputs are prices that are observable either directly or indirectly. Level 2 inputs may include quoted prices in markets that are not considered active or inputs other than quoted prices that are observable such as interest rates, yield curves, implied volatilities, credit spreads or market-corroborated inputs.

Level 3: Level 3 inputs are prices based on unobservable sources. Level 3 inputs include the best information available under the circumstances, which can include the government's own data and takes into account all information about market participant assumptions.

The assignment of Levels, within the hierarchy, is based on the type or class of investment and the pricing transparency of the investment. Assets classified as Level 1 are valued directly from a primary external pricing vendor. Assets classified as Level 2 are priced using an alternative independent pricing source or a pricing model that uses observable inputs in conjunction with trade information. Assets classified in Level 3 are cases where there is limited activity or a lack of an independent pricing source. Certain entities calculate a net asset value (NAV) per share (or its equivalent). For these investments, governmental accounting standards permit establishment of fair value using a practical expedient based on the NAV per share (or its equivalent).

8. Deposit and Investment Risk Disclosure

Investment Authority — The investment authority of the Retirement Board is governed by Section 3307.15 of the R.C. that also requires the Retirement Board to publish its investment policies annually and make copies available to interested parties. This section requires that investments be made with care, skill, prudence and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims.

Rates of Return — Rates of return on total fund are calculated in two ways — as time weighted rates and as money-weighted rates. The time-weighted rate of return expresses investment performance without consideration of the timing and amounts invested. For the year ended June 30, 2019, the annual time-weighted rate of return, net of investment expenses was 6.99%. The money-weighted rate of return expresses investment performance after consideration of the impact of the changing amounts actually invested. For

Investments Measured at Fair Value at June 30, 2019 and 2018 (in thousands)

		Fair Value Measurements Using:				Fair Value Measurements Using:		
	June 30, 2019	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	June 30, 2018	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level:								
Short-term								
U.S. Treasury bills	$ 1,818,913		$ 1,818,913		$ 1,259,765		$ 1,259,765	
U.S. Government Agencies	131,802		131,802					
Asset-backed security held in short term					5,501		5,501	
Commercial paper	193,069		193,069		95,892		95,892	
Corporate notes held in short term					30,503		30,503	
Short-term investment funds	35,000		35,000		50,000		50,000	
Fixed income								
U.S. government agency obligations	468,717		468,717		499,848		499,848	
Corporate bonds	4,624,033		4,624,033		4,017,749		4,017,749	
High yield and emerging markets	1,557,370	$ 31,164	1,526,206		1,660,217	$ 56,344	1,603,873	
Mortgages and asset-backed	3,162,085		3,162,085		2,911,068		2,911,068	
U.S. government obligations	6,752,310		6,752,310		6,617,209		6,617,209	
Domestic								
Common and preferred stock	21,915,017	21,915,017			22,689,443	22,689,443		
International								
Foreign stock	16,162,284	16,162,284			16,342,518	16,342,518		
Foreign equity index funds	1,313,026		1,313,026		1,410,347		1,410,347	
Real estate								
Direct real estate assets	7,655,584			$ 7,655,584	7,677,592			$ 7,677,592
REITs	1,142,666	1,142,666			1,229,655	1,229,655		
Alternative investments								
Foreign stock held in alternative investments	222,640	222,640			183,444	183,444		
Domestic stock held in alternative investments	75,957	75,957			84,678	84,678		
Opportunistic diversified	1,515,372	1,093,307	335,722	86,343	1,459,155	929,706	251,054	278,395
Total investments by fair value level	**68,745,845**	**40,643,035**	**20,360,883**	**7,741,927**	**68,224,584**	**41,515,788**	**18,752,809**	**7,955,987**
Investments measured at net asset value (NAV):								
Real estate								
Real estate funds	902,440				932,712			
Alternative investments								
Hedge funds	1,321,913				1,668,003			
Private equity	6,068,952				5,793,527			
Opportunistic diversified	3,899,003				3,201,782			
Total investments measured at NAV	**12,192,308**				**11,596,024**			
Investment derivatives:								
Options	(12,286)	(441)	(11,845)		2,823	(1,670)	4,493	
Rights and warrants	3,688			3,688	2,077			2,077
Foreign currency forwards	(52,994)		(52,994)		55,643		55,643	
Credit Default Swaps	34		34					
Equity swaps	16,579		16,579		(6,970)		(6,970)	
Total investment derivatives	**(44,979)**	**$ (441)**	**$ (48,226)**	**$ 3,688**	**53,573**	**$ (1,670)**	**$ 53,166**	**$ 2,077**
Cash	4,609				16,067			
Total investments and cash	**$ 80,897,783**				**$ 79,890,248**			

Investments Measured at Net Asset Value (NAV) at June 30, 2019 and 2018 (in thousands)

	June 30, 2019	Unfunded Commitment	Redemption Frequency (if Currently Eligible)	Redemption Notice Period	June 30, 2018	Unfunded Commitment	Redemption Frequency (if Currently Eligible)	Redemption Notice Period
Real estate funds total[1]	$ 902,440	$ 945,955	N/A	N/A	$ 932,712	$ 751,440	N/A	N/A
Hedge funds								
Credit/Distressed[2]	451,022		Quarterly	65 days	683,508		Quarterly	65 days
Equity long/short[3]	12,791		Quarterly	Fully redeemed	18,558		Quarterly	Fully redeemed
Event driven[4]	155,906		Quarterly	65 days	149,510		Quarterly	65 days
Macro[5]	244,830		Quarterly	60 days	317,517		Quarterly	60 days
Multi-strategy[6]	457,364		Quarterly	90–95 days	498,910		Quarterly	60–95 days
Hedge funds total	1,321,913				1,668,003			
Private equity total[7]	6,068,952	5,331,235	N/A	N/A	5,793,527	4,193,379	N/A	N/A
Opportunistic diversified total[8]	3,899,003	$ 3,248,018	N/A	N/A	3,201,782	$ 2,373,283	N/A	N/A
Total investments measured at NAV	$ 12,192,308				$ 11,596,024			

[1]**Real estate funds total** — Consisting of 44 opportunistic and international funds which invest in markets throughout the globe. The primary strategy of these funds is to invest in mispriced, mismanaged and distressed assets with the goal of repositioning the asset as a core investment for sale to institutional investors within a 3–5 year holding period. These funds are not eligible for redemption. The fair value of these funds is determined using net assets valued one quarter in arrears plus current cash flows.

[2]**Credit/Distressed** — Consisting of two funds, this strategy invests both long and short in securities of companies that have been, or are expected to be, in potential restructuring situations, as well as U.S. and global credit securities with the goal of generating excess yield relative to traditional credit instruments. These investments are valued at NAV per share. Due to contractual gating restrictions, 50% of the value of these investments is eligible for redemption within the next six months. The remaining 50% of the value of these investments remain restricted up to 12 months.

[3]**Equity long/short** — Consisting of one fund, this strategy invests both long and short in U.S. and global equity securities, with the goal of adding growth and minimizing market exposure. This investment is valued at NAV per share. 100% of this investment is eligible for redemption within the next six months.

[4]**Event driven** — Consisting of one fund, this strategy seeks to gain an advantage from pricing inefficiencies that may occur in the onset or aftermath of a corporate action or related event. This investment is valued at NAV per share. 100% of this investment is eligible for redemption within the next six months.

[5]**Macro** — Consisting of one fund, this strategy invests in interest rate, currency, commodity, and equity securities in anticipation of price movements in the global capital markets with the goal of generating returns uncorrelated with the broader markets. This investment is valued at NAV per share. Due to contractual gating restrictions, 50% of the value of this investment is eligible for redemption within the next six months. The remaining 50% of the value of this investment remains restricted up to 14 months.

[6]**Multi-strategy** — Consisting of three funds, this strategy aims to pursue varying strategies in order to diversify risks and reduce volatility. These investments are valued at NAV per share. 100% of the value of these investments is eligible for redemption within the next six months.

[7]**Private equity total** — Consisting of 174 commingled funds, fund-of-funds and separately managed accounts involving domestic and global buyout and venture capital funds. These are long-term lock up vehicles, typically with 10-year terms plus available extensions. These investments are valued at NAV as reported by the fund/account manager. The unfunded commitments can be called by the managers to make new investments during the investment period, which is roughly the first half of the fund term. Thereafter, the manager can call capital to fund follow-on expenses in support of the existing portfolio investments or to pay fund expenses.

[8]**Opportunistic diversified** — Consisting of 72 commingled funds, co-investments, and direct investments involving domestic and global energy, infrastructure, and specialty finance funds. These are generally long-term lock up vehicles, typically with 10-year terms plus available extensions. These investments are generally valued at NAV as reported by the fund/account manager, with some exceptions for publicly traded securities. The unfunded commitments can be called by the managers to make new investments during the investment period, which is roughly the first half of the fund term. Thereafter, the manager can call capital to fund follow-on expenses in support of the existing portfolio investments or to pay fund expenses.

the year ended June 30, 2019, the annual money-weighted rate of return, net of investment expenses, was 6.94%.

Investments held at fair value by STRS Ohio at June 30, 2019 and 2018, are summarized below.

Investments and Invested Securities Lending Collateral Held at Fair Value by STRS Ohio at June 30, 2019 and 2018 (summarized and in thousands)

Category	June 30, 2019	June 30, 2018
Cash and short-term investments		
Cash	$ 4,609	$ 16,067
Commercial paper	193,069	95,892
Short-term investment funds	35,000	50,000
Asset-backed security held in short term		5,501
Corporate notes held in short term		30,503
U.S. government agencies	131,802	
U.S. Treasury bills	1,818,913	1,259,765
Total cash and short-term	**2,183,393**	**1,457,728**
Fixed income		
U.S. government agency obligations	468,717	499,848
Corporate bonds	4,624,033	4,017,749
High yield and emerging market	1,557,404	1,660,217
Mortgages and asset-backed	3,162,085	2,911,068
U.S. government obligations	6,752,310	6,617,209
Total fixed income	**16,564,549**	**15,706,091**
Domestic equities	**21,915,017**	**22,688,592**
International equities (See Note 9)	**17,440,790**	**17,804,674**
Real estate (See Note 10)		
East region	2,987,123	3,097,011
Midwest region	1,202,457	1,285,763
South region	911,494	756,929
West region	2,554,510	2,537,899
REITs	1,142,666	1,229,655
Non-core	902,440	932,712
Total real estate	**9,700,690**	**9,839,959**
Alternative investments (See Note 11)	**13,093,344**	**12,393,204**
Invested securities lending collateral	**480,843**	**1,804,947**
Total investments and invested securities lending collateral	**$ 81,378,626**	**$ 81,695,195**

Cash and Short-Term Investments — Cash and short-term investments are combined for reporting purposes and include cash balances of $4,609,000 at June 30, 2019, and $16,067,000 at June 30, 2018, in the *Statements of Fiduciary Net Position*.

GASB Statement No. 40 — GASB Statement No. 40, *Deposit and Investment Risk Disclosures*, addresses common deposit and investment risks related to credit risk, concentration of credit risk, interest rate risk and foreign currency risk.

Credit Risk — Credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. This risk is measured by ratings assigned by a nationally recognized statistical rating organization. The quality ratings of investments in fixed income as of June 2019 and 2018, are shown in the table on the next page. U.S. government fixed-income securities or obligations explicitly guaranteed by the U.S. government are not considered to have credit risk.

Custodial Credit Risk — Deposits are exposed to custodial credit risk if they are uninsured and uncollateralized. Custodial credit risk is the risk that, in the event of a failure of the counterparty, STRS Ohio will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of STRS Ohio, and are held by either the counterparty or the counterparty's trust department or agent but not in the name of STRS Ohio.

All investments are held in the name of STRS Ohio or its nominee by the Treasurer of the State of Ohio as custodian. At June 30, 2019 and 2018, the bank statement cash balances were approximately $14,147,000 and $23,400,000, respectively. Bank balances are insured up to $250,000 by the Federal Deposit Insurance Corporation. The remaining bank deposits are covered by collateral held in the name of STRS Ohio's pledging financial institution, as required by state statute.

Interest Rate Risk — Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of the investment. Duration is a measure of a debt investment's exposure to fair value changes arising from changing interest rates. It uses the present value of cash flows, weighted for those cash flows as a percentage of the investment's full price. The longer the maturity, the more the value of the fixed-income investment will fluctuate with interest rate changes. The table on the next page shows the maturities of investments in fixed income by weighted-average duration, expressed in years, at June 30, 2019 and 2018.

Concentration of Credit Risk — STRS Ohio is guided by statute and policy in the selection of security investments. No investment in any one organization represents 5% or more of STRS Ohio's net position as of June 30, 2019 and 2018.

Quality Ratings of Fixed-Income Investments Held at June 30, 2019 and 2018 (in thousands)

Investment Type	Quality Rating	June 30, 2019 Fair Value	June 30, 2018 Fair Value
U.S. government agency obligations	Aaa	$ 272,847	$ 263,242
	Aa	179,833	220,654
	NR	16,037	15,952
Total U.S. government agency obligations		**468,717**	**499,848**
Corporate bonds	Aaa	115,967	124,208
	Aa	627,034	588,043
	A	2,545,357	1,926,376
	Baa	1,293,411	1,299,413
	Ba	24,728	9,923
	NR	17,536	69,786
Total corporate bonds		**4,624,033**	**4,017,749**
High yield and emerging markets fixed income	Aaa	22,903	17,651
	Aa	31,640	8,389
	A	91,014	45,576
	Baa	124,429	96,958
	Ba	349,002	444,604
	B	601,039	683,301
	Caa and below	214,413	237,518
	NR	122,964	126,220
Total high yield and emerging markets fixed income		**1,557,404**	**1,660,217**
Mortgages and asset-backed	Aaa	3,004,844	2,608,655
	Aa		
	A		
	Baa		
	B		
	Caa and below	1,167	1,399
	NR	156,074	301,014
Total mortgages and asset-backed		**3,162,085**	**2,911,068**
Credit risk debt securities		**9,812,239**	**9,088,882**
U.S. government obligations		**6,752,310**	**6,617,209**
Total fixed-income investments		**$16,564,549**	**$15,706,091**

Duration of Fixed-Income Investments Held at June 30, 2019 and 2018 (in thousands)

Investment Type	June 30, 2019 Fair Value	June 30, 2019 Weighted-Average Duration (Years)	June 30, 2018 Fair Value	June 30, 2018 Weighted-Average Duration (Years)
U.S. government agency obligations	$ 468,717	2.1	$ 499,848	2.8
Corporate bonds	4,624,033	6.2	4,017,749	5.8
High yield and emerging markets fixed income	1,557,404	4.2	1,660,217	4.5
Mortgages and asset-backed	3,162,085	2.9	2,911,068	3.9
U.S. government obligations	6,752,310	5.2	6,617,209	5.3
Total fixed income	**$ 16,564,549**		**$ 15,706,091**	

Significant investment guidelines that relate to investment concentration, interest rate risk and foreign currency risk by major asset class are as follows:

Overall Investment Portfolio — The Retirement Board has approved a target risk budget range of 0.60% to 1.20%, with a working range of 0.20% to 1.60%, annualized active management for the total fund. A risk budget is the amount the Retirement Board has approved for returns to vary from an unmanaged passive investment profile. The board's objective is for active management to add net 0.40% of annualized excess return over moving five-year periods to judge its effectiveness.

Fixed Income — The portfolio will seek diversification by market sector, quality and issuer. The core fixed income portfolio risk budget range is 0.10% to 1.50% using the Bloomberg Barclays U.S. Universal Index as the benchmark. The Liquid Treasury portfolio risk budget range is 0.0% to 0.25% during normal market conditions, but will have a board-approved risk budget range of 0.0% to 1.0% using the Bloomberg Barclays U.S. Intermediate Treasury Index as the benchmark. Derivatives may be used to adjust the exposure to interest rates, individual securities or to various market sectors in the portfolio. Underlying exposure of derivatives for fixed-income investments will not exceed 5% of total fund assets. Short sales may be used, but may not exceed 10% of the value of the asset class.

Global Equities — Domestic — The risk budget range for domestic equities is 0.20% to 1.50% using the Russell 3000® Index as the benchmark. Derivatives may be used in management of the equity portfolio. Underlying exposure of equity derivatives will not exceed 10% of total fund assets. Short sales may be used, but may not exceed 10% of the value of the asset class.

Global Equities — International — International assets will be a diversified portfolio including both developed and emerging countries. The risk budget range for international equity is between 0.60% to 2.50% using a blended benchmark of 80% MSCI World ex US Index-Net (50% hedged currency) and 20% MSCI Emerging Markets Index-Net. Derivatives may be used in management of the portfolio and underlying exposure of derivatives for international investments will not exceed 10% of total fund assets. Short sales may be used, but may not exceed 10% of the value of the asset class.

Real Estate — The real estate portfolio shall be diversified between property type, geographic location and investment structure. The risk budget range for real estate investments is 2.00% to 7.00% using a benchmark of 85% NCREIF Property Index and 15% FTSE NAREIT Equity REITs Index. Investments in non-core real estate, which includes domestic and international opportunity funds and real estate development projects, shall not exceed 20% of total real estate assets. Derivatives may be used and will not exceed 1% of total fund assets. STRS Ohio may borrow funds on a secured or unsecured basis and leverage is limited to 50% in aggregate of internally managed real estate assets excluding publicly traded real estate investment trusts (REITs). Short sales may be used, but may not exceed 10% of the value of the asset class.

Alternative Investments — Alternative investments involve separate allocations to private equity and opportunistic/diversified investments. Private equity investments are being managed with the objective of earning at least 1% net of fees above domestic public equity markets (Russell 3000® Index) over moving 10-year periods. Private equity investments are traded infrequently and, therefore, risk budget concepts are not applicable. Opportunistic/diversified investments are being managed with the objective of earning domestic public equity-like returns defined as 1% net of fees below domestic public equity markets (Russell 3000® Index) over moving 10-year periods, but with the added objective of downside protection during equity bear markets. Investments in this category can be liquid or illiquid and, therefore, risk budget concepts are not applicable. Derivatives may be used but will not exceed 10% of total fund assets.

Foreign Currency Risk — Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or deposit. Forward currency contracts may be used to manage the exposure to foreign currencies. The system's investments exposed to foreign currency risk at June 30, 2019 and 2018, are shown in the table to the right. The investment figures are comprised of numerous portfolios within international equity, debt securities and real estate investments.

Fair Value Subject to Foreign Currency Risk Held at June 30, 2019 and 2018 (in thousands)

	June 30, 2019		June 30, 2018	
Foreign Currency Denomination	International	High Yield & Emerging Markets Fixed Income	International	High Yield & Emerging Markets Fixed Income
Argentine Peso			$ 2,679	$ 214
Australian Dollar	$ 318,443		309,921	
Brazilian Real	230,382	$ 248	216,982	1,983
British Pound Sterling	854,682		924,635	
Canadian Dollar	358,269		355,644	
Chilean Peso	43,968		47,503	
Chinese Yuan Renminbi	31,033		15,891	
Colombian Peso	4,670		1,866	
Czech Republic Koruna	6,233		4,330	
Danish Krone	165,497		94,535	
Egyptian Pound	5,215	555	5,747	
European Union Euro	1,330,732	16,883	1,425,660	24,220
Hong Kong Dollar	1,000,496		1,104,027	
Hungarian Forint	33,670		21,844	
Indian Rupee	280,078	1,902	262,485	1,773
Indonesian Rupiah	34,348	1,329	36,023	665
Israeli Shekel	(15,170)		(1,643)	
Japanese Yen	1,036,099		1,216,358	
Kenyan Shilling	899		1,698	
Malaysian Ringgit	28,178	2,536	26,443	
Mexican Peso	53,455	4,041	36,852	2,565
Moroccan Dirham	1,950		1,603	
New Taiwan Dollar	418,381		436,292	
New Zealand Dollar	54,861		11,299	
Nigerian Naira	15,932	747	22,307	
Norwegian Krone	58,808		83,729	
Peruvian Nuevo Sol		1,424		620
Philippines Peso	28,844		18,604	
Polish Zloty	44,049		41,965	
Qatari Rial	6,873			
Romanian Leu	2,440		1,596	
Russian Ruble	72,518	4,858	56,269	
Singapore Dollar	189,958		107,048	
South African Rand	180,100		204,201	4,937
South Korean Won	459,040		573,419	
Swedish Krona	123,372		123,029	
Swiss Franc	440,500		385,164	
Thailand Baht	119,018		88,623	
Turkish Lira	66,161		98,175	
United Arab Emirates Dirham	3,153		808	
Vietnamese Dong	9,466		9,372	
Zimbabwean Dollar	514			
Held In Foreign Currency	**8,097,115**	**34,523**	**8,372,983**	**36,977**
Held In U.S. Dollars	**9,343,675**	**1,522,881**	**9,431,691**	**1,623,240**
Total	**$17,440,790**	**$1,557,404**	**$17,804,674**	**$1,660,217**

Securities Lending — STRS Ohio participates in a domestic and international securities lending program whereby securities are loaned to investment brokers/dealers (borrower). Securities loaned are collateralized by the borrower at 102% of the domestic equity and U.S. dollar-denominated fixed-income loaned securities' fair value and 105% of the international loaned securities' fair value.

STRS Ohio lends domestic equities, international equities, U.S. Treasuries, agencies and corporate bonds. The collateral received is cash, U.S. Treasuries or related agency securities. STRS Ohio cannot sell or pledge collateral received. If a borrower defaults, then the collateral can be liquidated.

A custodial agent bank administers the program and STRS Ohio receives a fee from the borrower for the use of loaned securities. Cash collateral from securities lending is invested in U.S. government agencies, repurchase agreements, commercial paper, asset-backed securities and corporate obligations.

The credit quality of the invested cash collateral is the same as the credit quality on STRS Ohio direct holdings. There are slight mismatches between the duration of the cash invested and the length of time the securities are on loan. As of June 30, 2019, the weighted average maturity of the invested cash collateral is 140 days. Because much of the cash collateral is invested in floating rate securities, the weighted average number of days interest rates reset is 27 days as of June 30, 2019. STRS Ohio has minimized its exposure to credit risk due to borrower default by having the custodial agent bank determine daily that the required collateral meets the specified collateral requirements. There are no restrictions on the amount of securities that can be loaned. The fair value of loaned securities was $469,228,000 and $1,753,453,000 as of June 30, 2019 and 2018, respectively. The fair value of the associated invested cash collateral as of June 30, 2019 and 2018, was $480,843,000 and $1,804,947,000, respectively.

9. International Investments

Externally Managed — STRS Ohio has investments in international equity securities through the use of external money managers. It is the intent of STRS Ohio and the money managers to be fully invested; however, cash and short-term fixed-income investments may be held temporarily. The portfolios are managed in accordance with various mandates based on Morgan Stanley Capital International's (MSCI) indexes. Investments are held in both developed and emerging international markets.

Internally Managed:

Developed Markets, Emerging Markets — STRS Ohio actively invests in developed and emerging markets. The portfolio's active management adds value primarily through security selection and country allocation decisions using a variety of portfolio management approaches including quantitative and fundamental techniques. Aggregate exposures to countries, currencies, equity styles, and market capitalization are monitored and managed relative to their benchmark exposures.

Europe, Australia and Far East (EAFE) Index Fund — To increase diversification in international developed markets, STRS Ohio invests in an EAFE Index Fund. The EAFE Index Fund purchases foreign equities, futures and other traded investments to replicate the makeup of the EAFE benchmark, consisting of MSCI World ex-U.S. 50% Hedged Index.

Equity Swaps — Three EAFE swap agreements were contracted during fiscal 2019 with maturity dates in fiscal 2020. There were no Emerging Market Free (EMF) international equity swap agreements contracted during fiscal 2019. In exchange for LIBOR (London Interbank Offered Rate) minus a negotiated spread, STRS Ohio will receive or pay the difference of the change in the total return of the various market indices included in the swap agreements. Fixed-income securities with a notional amount of $764.6 million have been set aside at the global subcustodial account as security.

Forward Contracts — Managers have the ability to add value through currency management. Forward currency contracts are used to minimize the impact of foreign currency fluctuations on the asset positions of foreign investments.

The fair values of international investments held at June 30, 2019 and 2018, are shown below.

Fair Values of International Investments Held at June 30, 2019 and 2018 (in thousands)

	June 30, 2019	June 30, 2018
Externally managed		
International stocks	$ 7,407,462	$ 7,488,096
International currency and liquidity reserves	100,726	176,751
Forward contracts	(25,778)	25,189
Total externally managed	**7,482,410**	**7,690,036**
Internally managed		
Developed markets	6,406,938	6,603,449
Emerging markets	2,134,426	2,072,747
EAFE Index Fund	1,313,025	1,410,347
EAFE equity swaps	131,207	(2,359)
Forward contracts	(27,216)	30,454
Total internally managed	**9,958,380**	**10,114,638**
Total international	**17,440,790**	**$17,804,674**

10. Real Estate Investments

Direct — STRS Ohio properties are diversified among property type, geographic location and investment structure. Eighty-five percent of real estate is actively managed. The portfolio is primarily managed internally with direct property investments representing most of the portfolio. Direct real estate investments include office, apartment, industrial and retail space.

Public Real Estate — Public real estate includes publicly traded real estate securities and real estate investment trusts (REITs). REITS are passively managed and targeted at 15% of the real estate portfolio to enhance liquidity and diversification.

Non-Core Real Estate — Non-core real estate investments include opportunistic and international funds that invest in markets throughout the globe. Non-core real estate investments typically carry more risk with higher expected return.

Debt on Real Estate Investments — STRS Ohio uses debt to lower the cash outlay in acquiring real estate assets and to positively impact the performance of the real estate portfolio. STRS Ohio utilizes only direct borrowings that includes both recourse and non-recourse debt, but does not include unused lines of credit. Of the debt on real estate investments, $250 million was recourse debt as of June 30, 2019 and 2018. This debt is recourse to STRS Ohio with a covenant not to mortgage a specific pool of real estate assets. The remainder of the debt on real estate investments of $1.61 billion and $1.61 billion at June 30, 2019 and 2018, respectively, is non-recourse debt, which means that in the event of default, the lender looks to only the real estate holding for repayment of the loan and not the general assets of STRS Ohio.

STRS Ohio's borrowings contain a provision that in the event of default, outstanding amounts may become immediately due depending on the nature of the default.

At June 30, 2019, the recourse loans of $250 million had a maturity date in May 2020. The interest rate on the recourse loans are based on a fixed rate of 2.95% .

Of the non-recourse debt at June 30, 2019, loan maturities range from March 2020 to May 2030. Non-recourse debt at June 30, 2018, had loan maturities ranging from September 2018 to May 2030.

The repayment schedule and changes in real estate debt as of June 30, 2019, are shown in the following tables.

Real Estate Debt Repayment Schedule
As of June 30, 2019 (in thousands)

By Fiscal Year	Principal	Interest
2020	$ 277,218	$ 67,985
2021	39,525	59,616
2022	123,991	54,532
2023	92,495	53,102
2024	155,391	45,319
2025–2029	1,145,362	77,535
2030–2034	28,499	1,186
Total	$ 1,862,481	$ 359,275

Changes in Real Estate Debt
As of June 30, 2019 (in thousands)

	Balance at June 30, 2018	Increase	(Decrease)	Balance at June 30, 2019
Direct borrowings				
Recourse	$ 250,000			$ 250,000
Non-recourse	$ 1,608,344	$ 39,666	$ (35,529)	$ 1,612,481
Total	$ 1,858,344	$ 39,666	$ (35,529)	$ 1,862,481

11. Alternative Investments

Alternative investments involve separate allocations to private equity and opportunistic/diversified investments. Private equity is 100% actively managed and includes, but is not limited to, venture capital and leverage buyouts, mezzanine debt or distressed debt. Private equity investments may be made directly, through funds, fund of funds or as co-investments. Opportunistic/diversified investments are typically actively managed and are tactical in nature with a goal of downside protection during equity bear markets. The category can be liquid or illiquid and investments may be made directly, through funds, fund of funds or as co-investments.

12. Derivatives

Equity and Over-the-Counter Swap Agreements — As discussed in Note 9, STRS Ohio has entered into international equity swap agreements. In addition, STRS Ohio has entered into over-the-counter (OTC) swap agreements for its alternative investments . No funds are exchanged at the inception of the swap agreements; however, STRS Ohio has purchased fixed-income securities equivalent to the initial notional amount of the agreements, which are located in the global subcustodial account as of June 30, 2019. In addition, collateral is pledged between the parties during the term of the agreements to account for market movements. The notional amount of the equity swap contracts was $764.6 million at June 30, 2019, and $737.4 million at June 30, 2018. The fair value of the equity swap contracts was $14.7 million at June 30, 2019, and –$5.9 million at June 30, 2018, is included in the *Statements of Fiduciary Net Position*. The notional amount of the OTC swap agreements was $209.1 million at June 30, 2019 and $201.1 million at June 30, 2018. The fair value of the OTC swap contracts was $1.8 million as of June 30, 2019 and –$1.0 million as of June 30, 2018, is included in the *Statements of Fiduciary Net Position*. The market risk of the swap is the same as if STRS Ohio owned the underlying stocks that comprise the indexes. The revenues and expenses resulting from these agreements have been recorded in the basic financial statements.

Forward Contracts — Forward contracts in various currencies are used to transact and hedge direct foreign equity and real estate investments that STRS Ohio maintains through the use of outside managers. Additionally, forward contracts are used to hedge currency exposure as a result of the EAFE equity swap agreements. STRS Ohio is obligated to deliver the foreign currency at a certain dollar price sometime in the future. To fulfill this obligation at maturity, STRS Ohio must obtain the currency in the open market. Before the contract matures, STRS Ohio can enter into an offsetting forward contract that nets out the original contract. These events expose STRS Ohio to currency market risk, which can fluctuate. The fair value of the foreign currency forwards of –$53.0 million at June 30, 2019, and $55.6 million at June 30, 2018, is included in the *Statements of Fiduciary Net Position*. STRS Ohio is also subject to the risk that the counterparty will fail to fulfill the contract.

Futures — Index futures are designed to offer lower cost and more efficient alternatives to buying individual stocks that comprise the index. The market and credit risk of the futures were the same as if STRS Ohio had owned the underlying stocks that comprise the index. The realized gain or loss on index futures is included in net appreciation (depreciation) in fair value of investments in the *Statements of Changes in Fiduciary Net Position*.

Additionally, futures were used in the EAFE Index Fund and by external money managers. The system's notional exposure to future and forward contracts at June 30, 2019 and 2018, is shown in the following table.

Notional Exposure to Future and Forward Contracts Held at June 30, 2019 and 2018 (in thousands)

	June 30, 2019	June 30, 2018
Forward contracts		
Externally managed	$ 5,201,448	$ 4,307,295
Internally managed	4,194,209	4,328,208
Total forward contracts	**$ 9,395,657**	**$ 8,635,503**
Future contracts		
EAFE Index Fund	$ 34,613	$ 20,853
S&P Index Futures	475,342	
Externally Managed	24,584	34,913
Total future contracts	**$ 534,539**	**$ 55,766**

Options — STRS Ohio writes option contracts on existing stock positions to enhance the return on the stock portfolio. In exchange for a premium, STRS Ohio gives the option buyer the right to buy or sell the underlying stock. Options are also purchased to "cover" existing written open option positions. STRS Ohio did not hold any internal options contracts at June 30, 2019, and the notional value of the options contracts was $34.2 million at June 30, 2018 and the fair value of the options contracts of –$0.85 million at June 30, 2018, is included in the *Statements of Fiduciary Net Position*. Additionally, options were utilized by external managers with a notional value of $7.5 billion at June 30, 2019 and $6.6 billion at June 30, 2018. The fair value of –$12.3 million at June 30, 2019 and $3.7 million at June 30, 2018, is included in the *Statements of Fiduciary Net Position*.

Warrants — Warrants allow the right to purchase underlying stock shares at a specified price. Warrants are usually added on as an incentive to an issuer's fixed-income securities. STRS Ohio held warrants with a value of $3.7 million as of June 30, 2019, and $2.1 million at June 30, 2018, and is included in the *Statements of Fiduciary Net Position*.

Fixed-Income Credit Default Swaps — STRS Ohio may manage credit exposure through the use of credit default swaps. 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. One of the main advantages of a credit default swap is it allows for exposure to credit risk while limiting exposure to other risks, such as interest rate and currency risk. STRS Ohio held credit default swaps with a notional value of $2.5 million at June 30, 2019, and none as of June 30, 2018.

13. Pension Plan for Employees of STRS Ohio

All STRS Ohio employees are required to participate in a contributory retirement plan administered by Ohio Public Employees Retirement System (OPERS). OPERS is a cost-sharing, multiple-employer public employee retirement system that administers three pension plans that include a defined benefit plan, a defined contribution plan and a combined plan. Participation in these plans is a choice members make at the time their employment commences.

In 2012, the Ohio Legislature passed Senate Bill 343 to improve the financial condition of OPERS. In the legislation, members were categorized into three groups with varying provisions of the law applicable to each group. Retirement benefits are specific to each group and members must meet the eligibility requirements based on their age and years of service within the group. The key components to OPERS' pension plan changes are:

- Age and service requirements for retirement increased.
- Final average salary calculation increased to five years from three years.
- Calculation used to determine the benefit amount for service retirement was modified.
- COLA is based on the annual percentage change in the Consumer Price Index with a 3% cap.
- Calculation used for early retirement benefit is determined by OPERS' actuary.

Details about OPERS' plan changes and when they become effective can be found on its website at www.OPERS.org.

The member and employer contribution rates are 10.0% and 14.0% of covered payroll, respectively. The required employer contributions for the current year and the two preceding years are shown in the table below.

STRS Ohio Required Employer Contributions to OPERS

Year Ended June 30	Annual Required Contribution	Percent Contributed
2017	$7,787,000	100%
2018	$7,848,000	100%
2019	**$7,820,000**	**100%**

GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, requires STRS Ohio to record a net pension liability based on its proportionate share of OPERS' total net pension liability. Likewise, STRS Ohio's proportionate share of OPERS' deferred outflows and deferred inflows of resources related to pensions and pension expense are recorded in the *Statements of Fiduciary Net Position* and *Statements of Changes in Fiduciary Net Position* for fiscal years ending June 30, 2019, and June 30, 2018.

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of OPERS and additions to/deductions from OPERS' fiduciary net position have been determined on the same basis as they are reported by OPERS. For this purpose, benefits and refunds are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

OPERS also provides post-employment health care coverage which is considered an OPEB as described in GASB Statement No. 75. In addition to the legislation that made changes to the pension plan, the OPERS Board approved changes to the retiree health care plan with phased-in implementation dates over the next several years. OPERS has the discretion to direct a portion of employer contributions to fund retiree health care. The R.C. provides statutory authority for employer contributions. The employer rate allocated to post employment health care in the defined benefit plan and combined plan was 0% in calendar 2018 and 1% in calendar 2017. The portion of the employer rate allocated to post employment health care in the defined contribution plan was 4% in calendar 2018 and 2017.

For purposes of measuring the net OPEB liability, deferred outflows of resources and deferred inflows of resources related to OPEB, and OPEB expense, information about the OPEB fiduciary net position of OPERS and additions to/deductions from the OPEB fiduciary net position of OPERS have been determined on the same basis as they are reported by OPERS. For this purpose, health care benefit payments are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

Historical trend information showing the progress of OPERS in accumulating sufficient assets to pay pension and OPEB benefits when due is presented in the OPERS *Comprehensive Annual Financial Report*. OPERS issues a publicly available financial report for the plans. The report may be found on its website at www.opers.org.

Schedule of Changes in Employers' Net Pension Liability
Fiscal Years Ending June 30, 2014–2019* (in thousands)

	2019	2018	2017	2016	2015	2014
Total pension liability						
Service cost	$ 1,129,449	$ 1,075,334	$ 1,067,687	$ 1,058,987	$ 1,111,078	$ 1,094,986
Interest	7,036,514	6,974,353	7,611,942	7,472,169	7,272,034	7,137,686
Benefit changes, due to COLA reduction	0	0	(12,353,691)	0	0	0
Difference between expected and actual experience	69,329	31,732	(239,322)	527,725	1,355,347	292,708
Changes in assumptions	0	0	6,494,408	0	0	0
Benefit payments, including refunds of employee contributions	(7,298,405)	(7,303,802)	(7,211,006)	(7,317,113)	(6,890,862)	(6,725,017)
Net change in total pension liability	936,887	777,617	(4,629,982)	1,741,768	2,847,597	1,800,363
Total pension liability, beginning of year	96,904,057	96,126,440	100,756,422	99,014,654	96,167,057	94,366,694
Total pension liability, end of year	**97,840,944**	**96,904,057**	**96,126,440**	**100,756,422**	**99,014,654**	**96,167,057**
Fiduciary net pension position						
Member contributions	$ 1,623,095	$ 1,580,430	$ 1,537,677	$ 1,372,033	$ 1,259,135	$ 1,193,808
Employer contributions, including other retirement systems	1,702,154	1,634,027	1,590,869	1,545,103	1,594,794	1,508,442
Net investment income	4,847,517	6,737,457	9,233,930	372,871	3,671,845	10,534,608
Benefit payments	(7,298,405)	(7,303,802)	(7,211,006)	(7,317,113)	(6,890,863)	(6,725,017)
Administrative expenses	(64,118)	(63,307)	(63,652)	(67,065)	(61,183)	(60,991)
Net change in fiduciary net pension position	810,243	2,584,806	5,087,818	(4,094,171)	(426,272)	6,450,850
Fiduciary net pension position, beginning of year	74,916,302	72,371,226	67,283,408	71,377,579	71,843,596	65,392,746
Restatement of fiduciary net pension position**	N/A	(39,730)	N/A	N/A	(39,745)	N/A
Restatement of fiduciary net pension position, beginning of year	N/A	72,331,496	N/A	N/A	71,803,851	N/A
Fiduciary net pension position, end of year	**75,726,545**	**74,916,302**	**72,371,226**	**67,283,408**	**71,377,579**	**71,843,596**
Net pension liability, end of year	**$ 22,114,399**	**$ 21,987,755**	**$ 23,755,214**	**$ 33,473,014**	**$ 27,637,075**	**$ 24,323,461**

*This is a 10-year schedule — however, the information is not required to be presented retroactively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

**For purposes of determining net pension liability and related disclosures, fiduciary net position was not restated for earlier periods to reflect the adoption of GASB 75 in 2018 and GASB 68 in 2015.

Schedule of Employers' Net Pension Liability
Fiscal Years Ending June 30, 2013–2019* (dollar amounts in thousands)

Fiscal Year Ending	Total Pension Liability	Fiduciary Net Position	Net Pension Liability	Ratio of Fiduciary Net Position to Total Pension Liability	Covered Payroll	Net Pension Liability as a Percentage of Covered Payroll
June 30, 2013	$94,366,694	$65,392,746	$28,973,948	69.3%	$10,765,635	269.1%
June 30, 2014	$96,167,057	$71,843,596	$24,323,461	74.7%	$10,725,329	226.8%
June 30, 2015	$99,014,654	$71,377,579	$27,637,075	72.1%	$10,948,586	252.4%
June 30, 2016	$100,756,422	$67,283,408	$33,473,014	66.8%	$11,099,607	301.6%
June 30, 2017	$96,126,440	$72,371,226	$23,755,214	75.3%	$11,557,147	205.5%
June 30, 2018	$96,904,057	$74,916,302	$21,987,755	77.3%	$11,923,688	184.4%
June 30, 2019	**$97,840,944**	**$75,726,545**	**$22,114,399**	**77.4%**	**$12,296,800**	**179.8%**

*This is a 10-year schedule — however, the information is not required to be presented retroactively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

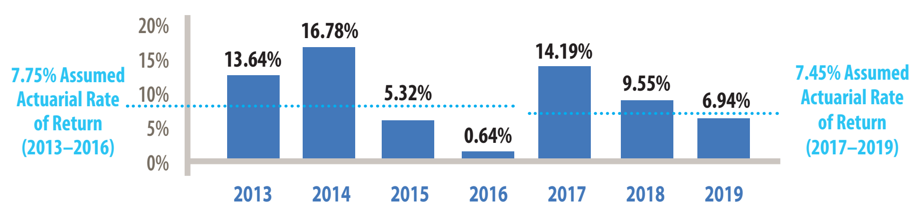
Schedule of Employers' Contributions — Pension
Fiscal Years Ending June 30, 2010–2019* (dollar amounts in thousands)

Fiscal Year	Actuarial Determined Contribution	Employer Contributions*	Contribution Deficiency (Excess)	Covered Payroll**	Contributions as a Percentage of Covered Payroll
2010	$2,623,624	$1,374,327	$1,249,297	$10,341,512	13.29%
2011	$2,715,523	$1,379,104	$1,336,419	$10,369,367	13.30%
2012	$3,248,651	$1,349,561	$1,899,090	$10,102,509	13.36%
2013	$2,910,537	$1,327,862	$1,582,675	$9,917,911	13.39%
2014	$1,489,734	$1,325,141	$164,593	$9,833,028	13.48%
2015	$1,368,602	$1,449,165	$(80,563)	$9,985,181	14.51%
2016	$1,178,129	$1,466,938	$(288,809)	$10,069,269	14.57%
2017	$1,054,862	$1,514,285	$(459,423)	$10,459,706	14.48%
2018	$1,056,430	$1,565,679	$(509,249)	$10,775,526	14.53%
2019	**$1,088,328**	**$1,614,188**	**$(525,860)**	**$11,088,785**	**14.56%**

*Employer contributions are the same as contractually required contributions.
**Excludes payroll from the Defined Contribution and Alternative Retirement Plans in order to report the amount needed to fund defined benefits.

Schedule of Investment Returns — Pension
Fiscal Years Ending June 30, 2013–2019*

Money-Weighted Rate of Return, Net of Fees



	2013	2014	2015	2016	2017	2018	2019
Time-Weighted Rate of Return, Net of Fees	13.54%	16.71%	5.33%	0.78%	14.15%	9.43%	6.99%

*This is a 10-year schedule — however, the information is not required to be presented retroactively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

Notes to Required Supplementary Information — Pension
Fiscal Years Ending June 30, 2019 and 2018

Valuation date	June 30, 2019	June 30, 2018
Actuarial cost method	Entry age normal	Entry age normal
Actuarial assumptions:		
Investment rate of return, net of investment expense, including inflation	7.45%	7.45%
Projected salary increases	12.50% at age 20 to 2.50% at age 65	12.50% at age 20 to 2.50% at age 65
Projected payroll growth	3.00%	3.00%
Inflation assumption	2.50%	2.50%
Cost-of-living adjustments	None	None

The information presented in the required supplemental schedules was determined as part of the actuarial valuations for the dates indicated. See accompanying independent auditors' report.

Schedule of Changes in Employers' Net OPEB Liability (Asset)
Fiscal Years Ending June 30, 2017–2019* (in thousands)

	2019	2018	2017
Total OPEB liability			
Service cost	$ 338,776	$ 633,316	$ 225,094
Interest	164,544	320,157	277,562
Benefit changes	53,985	(3,340,847)	(1,065,891)
Difference between expected and actual experience	(7,285)	(109,227)	262,764
Changes in assumptions	40,616	(2,248,888)	(366,671)
Benefit payments	(489,169)	(517,470)	(489,102)
Net change in total OPEB liability	101,467	(5,262,959)	(1,156,244)
Total OPEB liability, beginning of year	2,114,451	7,377,410	8,533,654
Total OPEB liability, end of year	**2,215,918**	**2,114,451**	**7,377,410**
Fiduciary net OPEB position			
Retired member contributions	312,841	329,305	339,056
Employer contributions	0	0	0
Net investment income	244,700	328,965	440,196
Benefit payments, net of reimbursements	(404,380)	(410,273)	(486,605)
Administrative expenses	(2,352)	(2,427)	(2,496)
Net change in fiduciary net OPEB position	150,809	245,570	290,151
Fiduciary net OPEB position, beginning of year	3,721,349	3,475,779	3,185,628
Fiduciary net OPEB position, end of year	**3,872,158**	**3,721,349**	**3,475,779**
Net OPEB liability (asset), end of year	**$ (1,656,240)**	**$ (1,606,898)**	**$ 3,901,631**

*This is a 10-year schedule — however, the information is not required to be presented retroactively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

Schedule of Employers' Net OPEB Liability
Fiscal Years Ending June 30, 2016–2019* (dollar amounts in thousands)

Fiscal Year Ending	Total OPEB Liability	Fiduciary Net OPEB Position	Net OPEB Liability (Asset)	Ratio of Fiduciary Net OPEB Position to Total OPEB Liability	Covered Payroll	Net OPEB Liability (Asset) as a Percentage of Covered Payroll
June 30, 2016	$8,533,654	$3,185,628	$5,348,026	37.3%	$10,628,269**	50.3%
June 30, 2017	$7,377,410	$3,475,779	$3,901,631	47.1%	$10,767,964**	36.2%
June 30, 2018	$2,114,451	$3,721,349	$(1,606,898)	176.0%	$10,775,526	(14.9)%
June 30, 2019	**$2,215,918**	**$3,872,158**	**$(1,656,240)**	**174.7%**	**$11,088,785**	**(14.9)%**

*This is a 10-year schedule — however, the information is not required to be presented retroactively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

**Covered payroll was based on the prior calendar year projected forward to the fiscal year end period.

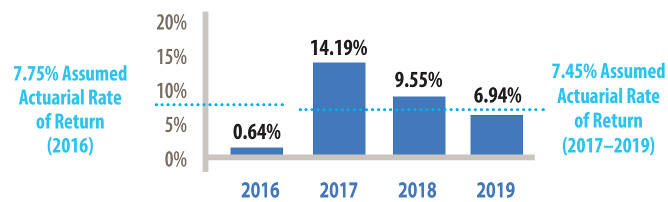
Schedule of Employers' Contributions — OPEB
Fiscal Years Ending June 30, 2017–2019* (dollar amounts in thousands)

Fiscal Year	Actuarial Determined Contribution	Employer Contributions*	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2017	$239,430	$0	$239,430	$10,767,964	0.00%
2018	$0	$0	$0	$10,775,526	0.00%
2019	**$0**	**$0**	**$0**	**$11,088,785**	**0.00%**

*This is a 10-year schedule — however, the information is not required to be presented retroactively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

Schedule of Investment Returns — OPEB
Fiscal Years Ending June 30, 2016–2019*

Money-Weighted Rate of Return, Net of Fees



	2016	2017	2018	2019
Time-Weighted Rate of Return, Net of Fees	0.78%	14.15%	9.43%	6.99%

*This is a 10-year schedule — however, the information is not required to be presented retroactively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

Notes to Required Supplementary Information — OPEB
Fiscal Years Ending June 30, 2019 and 2018

Valuation date	June 30, 2019	Jan. 1, 2018
Measurement date	June 30, 2019	June 30, 2018
Amortization method	Level percentage of payroll	Level percentage of payroll
Actuarial cost method	Entry age normal	Entry age normal
Actuarial assumptions:		
Discount rate	7.45%	7.45%
Projected salary increases	12.50% at age 20 to 2.50% at age 65	12.50% at age 20 to 2.50% at age 65
Payroll increases	3.00%	3.00%
Trend rates	4.00–9.62% initial; 4.00% ultimate	–5.23%–9.62% initial; 4.00% ultimate

The information presented in the required supplemental schedules was determined as part of the actuarial valuations for the dates indicated. See accompanying independent auditors' report.

Schedules of Administrative Expenses
For the Years Ending June 30, 2019 and 2018

	2019	2018
Personnel		
Salaries and wages	$ 34,871,306	$ 33,405,768
Retirement contributions	4,692,468	4,630,475
Benefits	6,361,400	6,461,741
Total personnel	**45,925,174**	**44,497,984**
Professional and technical services		
Computer support services	946,957	901,914
Health care services	584,939	710,190
Actuary	248,271	219,311
Auditing	196,172	318,757
Defined contribution recordkeeping fees	915,652	1,137,175
Legal	112,688	391,022
Temporary employment services	25,146	10,692
Total professional and technical services	**3,029,825**	**3,689,061**
Communications		
Postage and courier services	1,151,214	1,150,637
Printing and supplies	1,225,579	1,211,546
Telephone	308,197	297,709
Total communications	**2,684,990**	**2,659,892**
Other expenses		
Equipment repairs and maintenance	4,957,888	5,249,570
Building utilities and maintenance	1,409,966	1,434,252
Transportation and travel	207,041	190,227
Recruitment fees	32,920	40,014
Depreciation	6,902,195	6,572,639
Member and staff education	196,211	174,538
Insurance	637,035	594,314
Memberships and subscriptions	131,616	141,217
Ohio Retirement Study Council	261,188	247,561
Miscellaneous	93,681	242,919
Total other expenses	**14,829,741**	**14,887,252**
Total administrative expenses	**$ 66,469,730**	**$ 65,734,189**

Note: Above amounts do not include internal investment expenses, which are deducted from investment income and shown in a separate schedule on Page 40.

See accompanying independent auditors' report.

Schedules of Internal Investment Expenses
For the Years Ending June 30, 2019 and 2018

	2019	2018
Personnel		
Salaries and wages	$ 27,174,325	$ 27,755,310
Retirement contributions	3,127,716	3,217,164
Benefits	2,543,484	2,675,119
Total personnel	**32,845,525**	**33,647,593**
Professional and technical services		
Investment research	2,556,144	2,561,510
Financial asset advisors	761,610	733,647
Custody banking fees	1,781,515	2,292,854
Investment quotation systems	2,175,771	1,952,051
Temporary employment services	17,101	27,537
Total professional and technical services	**7,292,141**	**7,567,599**
Other expenses		
Printing and supplies	3,540	3,429
Building utilities and maintenance	215,795	206,947
Travel	422,522	444,653
Staff education	9,685	15,837
Memberships and subscriptions	87,491	106,883
Miscellaneous	190,623	92,936
Total other expenses	**929,656**	**870,685**
Total internal investment expenses	**$ 41,067,322**	**$ 42,085,877**

See accompanying independent auditors' report.

Schedules of External Asset Management Fees
For the Years Ending June 30, 2019 and 2018

	2019	2018
Asset class		
Fixed income	$ 6,478,686	$ 6,716,217
Domestic equities	11,477,633	12,262,706
International equities	29,994,251	31,782,239
Real estate	11,933,566	15,278,726
Alternative investments	173,214,463	152,268,290
Total external asset management fees	**$ 233,098,599**	**$ 218,308,178**

Note: Investment-related costs associated with external asset management are reported as external asset management fees in the *Statement of Changes in Fiduciary Net Position*, if the investment-related costs are reasonably separable from investment income and expenses of the plan.

See accompanying independent auditors' report.

Investment Review

For Fiscal Year July 1, 2018, through June 30, 2019
Prepared by STRS Ohio's Investment Department Associates

Basis of Presentation

STRS Ohio provides the investment returns for the fund and performance calculations are prepared using time-weighted rates of return. Performance is net of fees for external managed real estate and alternative investments and gross of fees on all other investments. Returns for periods longer than one year are annualized.

Economic Environment

The U.S. economy set an expansion duration record immediately after the end to fiscal 2019 amid continuing concerns that a recession — whether related to trade wars or not — could be on the horizon. The current economic expansion wears the crown for being the longest U.S. expansion since reliable records began in the mid-1800s — outshining the 10-year growth cycle from 1991–2001. After two years of solid economic activity averaging an annualized 2.7%, investor confidence has been shaken positively and negatively since the fall of 2018. However, though the risk of recession through fiscal 2020 has grown in the United States, the more likely course over the next year is that the economy moderates toward its long-term trend of roughly 2–2.25% real gross domestic product (GDP) growth with around 2% inflation.

Downside risks appear to exceed upside ones primarily because of escalating trade tensions between the United States and, in particular but not limited to, China. Nonetheless, real economic growth in the 1.5–3% range appears to be highly likely because both consumer and business confidence measures remain generally high for this stage of the business cycle. At the same time, the previous gradual tightening of monetary conditions toward a more normal policy will likely be reversed on the margin in fiscal 2020.

In such an economic environment and with, at best, moderate economic growth elsewhere in the world, the Federal Reserve will be hesitant to re-ignite the financial market volatility that followed its last interest rate hike on Dec. 19, 2018. The Federal Reserve adopted a policy of gradual interest rate increases beginning in December 2015 that was intended to more closely align monetary policy with broad U.S. economic developments and provide the central bank with ammunition to fight a future recession. Furthermore, central bankers will likely stop the selling of assets from its balance sheet in fiscal 2020, leaving the amount of Treasury and other government securities that it holds at a level notably higher than it had communicated previously. Together, such actions would signal that monetary policy would remain marginally accommodative for continued economic growth during fiscal 2020.

Real gross domestic product (GDP) growth hit 2.3% during fiscal 2019. Core domestic economic activity represented by private domestic final sales (that excludes volatile foreign trade, inventory change and government spending from real GDP) grew at an above-trend 2.4%. Real GDP growth through fiscal 2019 has averaged an annualized 2.3% over the entire expansion while the growth in real private domestic final sales has been at a strong 2.9% pace.

That rate of real GDP growth remains marginally more than half of the average growth rates recorded from all post-World War II economic expansions. Much of the softer economic growth can be attributed to a significant slowing in productivity growth. It has advanced by just an annualized 1.2% during the past 10 years compared to a postwar expansion average of 2.4% and an entire postwar business cycle (including recessions) average of 2.1%. Unfortunately, the disappointing productivity growth of the current expansion matches the average productivity gains that have occurred in all postwar recessions when economic activity generally contracts. At the same time, the demographic challenges for the United States from retiring Baby Boomers and slower labor force growth will continue for decades to come. Taken together, the two primary components — worker productivity and labor inputs — to potential economic growth abruptly slowed during the current economic expansion.

Solid consumer spending from a nearly fully employed workforce that increasingly has seen stronger wage growth has led the way for the U.S. economy since mid-fiscal 2018. And until recently, as the Trump administration's trade tariff battles with Canada, Mexico, Europe and, most prominently, China intensified, business fixed investment on equipment and structures had significantly accelerated in response to a stronger economy and greater tax incentives. However, those trade battles played an important part in slower business fixed investment growth in fiscal 2019 because policy uncertainty weighed on business planning.

Though the month-long government shutdown had only a minimal impact on economic activity, the ongoing murkiness of U.S. trade policy could reach across the business sector and, ultimately, the consumer sector of the economy. A further increase in Chinese or European tariffs could damage trade and business prospects in fiscal

2020 beyond the impact already expected in the forecast of a moderating economy. Yet, resolution to these conflicts could instead ignite dampened business investment and trade beyond that currently expected. The most likely course is that some of the trade issues are seemingly resolved — like the movement from the NAFTA to the USMCA trade deal — while others continue to weigh on economic growth, leaving trade as a net negative to overall economic activity amid further moderate business fixed investment growth.

The yield curve spread between the 10-year and three-month Treasuries narrowed rapidly since mid-November when the fixed income market correctly priced in another Federal Reserve short-term interest rate hike a month later. The Federal Reserve Bank of New York's year-ahead recession probability model jumped to nearly 35% from 15% as this yield curve spread inverted in late May. When this spread falls further and further below zero, the chance for a recession within a year or so grows into a strongly predicted outcome. Historically, a sustained spread of –45 to –50 basis points aligns with a recession probability of 40% or more while providing ample warning of an impending recession. However, other leading indicators for the business cycle were not as troubling.

Leading indicators of economic activity in the United States point to slower, though continuing positive, growth through fiscal 2020. The smoothed growth rate for the leading economic indicators decelerated from its March 2018 peak but continues to grow in positive territory and has rebounded somewhat from the recent March 2019 low. Three prior episodes of similar slowing in the leading economic indicators (2011, 2012 and 2016) did not precede a recession in this economic expansion. The 10 components that make up the leading economic indicators index include a couple of financial market variables but largely consist of real economic variables that, together with the financial ones, provide a year or so lead to economic recessions. The leading economic indicators suggest economic activity through fiscal 2020 should moderate but not likely hit a recession.

It is important to note, however, that this is the first instance in this cycle where both indicators are in the warning range. Other leading indicators support the diagnoses behind these two primary indicators. As a result, recession risks have grown even as economic activity will likely slow toward its long-term trend instead. Should U.S. trade battles with other countries and regions lead to supply channel shocks that affect business and consumer confidence, then recession risks would grow larger with the greater chance that a short and mild recession could develop in the midst of a presidential election year. That risk alone should be enough to restrain the strident trade language and actions from the Trump administration, but other countries/regions may not be as willing to compromise. In any event, the growing possibility that the Trump administration and U.S. trading partners could find themselves in a real trade war would weigh heavily on the economic forecast and increase the chance for recession in fiscal 2020. Fundamentally, the U.S. economy remains in good shape with 50-year lows for the unemployment rate and strong hiring expectations, while business fixed investment has improved and housing activity is pointing to a moderate rebound in growth. However, the lack of clarity for foreign trade issues will help to slow overall growth.

Broad and core inflation growth rates peaked modestly above 2% in early fiscal 2019 and decelerated to roughly 1.5% by the end of the fiscal year. The Federal Reserve targets a 2% inflation rate as one of its long-term monetary policy objectives, but has fallen short of that goal for much of the current economic expansion. Through fiscal 2019, most of the impact on inflation from slower global economic growth in recent quarters has shown up at the energy costs level as opposed to spreading broadly to all consumer categories. In fact, the growth in the Federal Reserve Bank of Cleveland's median CPI index that calculates the change in prices by measuring the sorted median category remained at its expansion peak of 2.8% at fiscal year-end.

The Federal Reserve has maintained a stimulative-to-currently-accommodative monetary policy since the beginning of the Great Recession. Policymakers at the Federal Reserve understood that they had to do everything in their power to prevent a deflationary spiral developing out of the recession — an issue stagnant Japan dealt with for more than two decades. Initially, the Federal Reserve drove short-term interest rates significantly lower to roughly 0% by using its main policy tool — the federal funds targeted rate — but it did not stop there. Quantitative easing led to an expansion of assets on the Federal Reserve's balance sheet to as high as $4.5 trillion from roughly $900 billion prior to the recession. The Federal Reserve made sure the banking system was flooded with cash for future loans that could eventually spark a credit cycle leading to ever-stronger economic growth.

At its December 2013 monetary policy meeting, the Federal Reserve began to taper the purchases of securities from quantitative easing (QE) because the labor market was showing signs of better growth and the overall economy was finally gaining traction. At each subsequent meeting, it reduced the size of further quantitative easing purchases until monetary policymakers finished QE in the fall of 2014. In December 2015, the Federal Reserve's main policy tool of controlling short-term interest rates was eased back, too, when the Federal Reserve raised the federal funds rate 0.25%, making it the first increase in short-term interest rates since mid-2006. Since then, the Federal Reserve gradually raised interest rates to the targeted range of 2.25–2.50% for the federal funds rate in mid-fiscal 2019 where it remained through the end of the fiscal year.

For the Federal Reserve that has already begun to signal a pause in its campaign to raise both nominal and inflation-adjusted short-term interest rates, the expectation of a moderating economy will likely lead to marginal interest rate reductions in fiscal 2020. With real short-term interest rates remaining only modestly positive or flat and an earlier end to removing assets from the Federal Reserve's balance sheet, monetary policy should be marginally accommodative for continued economic growth through fiscal 2020. Because of trade policy uncertainty and previous slower global economic growth, recession risks have grown in the United States. However, the most likely course for the economy should be decelerating growth toward the long-term potential growth rate with inflation remaining well behaved.

Fixed Income

Fiscal 2019 was a strong year for fixed-income market returns, as measured by the Bloomberg Barclays U.S. Universal Index*. The first six months of the fiscal year had a return of +1.4% and the second half of the fiscal year returned +6.5%. Fixed-income returns were driven by the decrease in interest rates and interest income earned. The highest returning sector was emerging market debt (+10.9%), followed by investment-grade corporate bonds (+10.7%), commercial mortgage-backed securities (+8.9%), government related (+7.9%), high yield (+7.5%), U.S. Treasuries (+7.2%), mortgage-backed securities (+6.2%) and asset-backed securities (+4.9%). The Liquid Treasury Portfolio benchmark, the Bloomberg Barclays U.S. Intermediate Treasury Index*, had a return of 6.2% for fiscal 2019.

STRS Ohio's fixed-income asset class returned 7.65% versus the benchmark's return of 7.81%. Over the three prior fiscal years, the STRS Ohio fixed-income asset class returned an annual average of 3.10% versus the benchmark's return of 2.75%. STRS Ohio's performance over the prior five fiscal years was 3.30% versus the benchmark's 3.12%. A more complete report of STRS Ohio performance appears on Page 55.

Domestic Equities

The U.S. equity market rose for the tenth consecutive year in fiscal 2019 and reached an all-time high. The U.S. economy remained strong despite global macro-economic uncertainties and ongoing trade tensions between the United States and China. The S&P 500 gained 10.4% on a total return basis, closing the year at 2941.76. Returns for the year were driven by continued corporate earnings growth. S&P 500 earnings grew approximately 10% during the fiscal year. The growth was led by solid gains in the energy, financials and real estate sectors. Despite the rising market, defensive sectors were the market leaders. The utilities, real estate and consumer staples sectors were the best performers during the period.

The STRS Ohio domestic equities asset class returned 8.74% versus the Russell 3000® Index benchmark's return of 8.98%. Over the three prior fiscal years, the STRS Ohio domestic equities asset class returned an annualized 14.76% versus the benchmark's return of 14.02%. STRS Ohio's performance over the prior five fiscal years was 10.23% versus the benchmark return of 10.19%. A more complete report of STRS Ohio performance appears on Page 55.

International Equities

The international markets rose for the third consecutive year in fiscal 2019 with both the developed and emerging markets performing better in the second half of the fiscal year. The MSCI World ex-US Index (50% hedged) for developed markets increased 3.0% and the MSCI EM Index for emerging markets increased 1.2%. Decelerating global economic growth and tension in trade negotiations restrained the overall international returns.

Only half of the developed markets were able to record positive returns in U.S. dollar terms. The best performing countries were Switzerland (+20.9%), New Zealand (+16.6%) and Hong Kong (+10.4%). The three weakest markets were Austria (–12.5%), Ireland (–8.8%) and Belgium (–8.1%). The U.S. dollar strength overall against developed market currencies contributed to a modest reduction in returns.

There was a wider divergence in returns for the emerging countries. The three best returns in emerging markets were Brazil (+39.9%), Russia (+28.4%) and Indonesia (+21.0%). The weakest markets were Pakistan (–36.1%), Turkey (–16.7%) and Chile (–11.0%).

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The STRS Ohio international asset class returned 2.85% versus the benchmark's return of 2.70%. Over the past three fiscal years, the STRS Ohio international asset class returned an annualized 10.44% to match the benchmark's return. STRS Ohio's performance over the prior five years was 5.02% versus the benchmark's return of 4.11%. A more complete report of STRS Ohio performance appears on Page 55.

Real Estate

The real estate market total return at 7.37% in fiscal 2019 compares favorably to 6.74% in fiscal 2018. The private real estate market component provided a total return of 6.51% with the public real estate market (REITs) turning in a return of 11.21%. While the private real estate market was down somewhat versus fiscal 2018, the public market was significantly higher than the –3.49% return in fiscal 2018.

The income component of the private market represented almost 70% of total return in fiscal 2019. This is slightly more than double the rate in fiscal 2007 (just prior to the great financial crisis) when the market experienced significant cap rate compression resulting in appreciation as the dominant return driver. As the cycle has matured over the course of the extended bull market, the relative relationship between income and appreciation is at its 20-year annual average. Real estate's role in a multi-asset class portfolio is to provide diversification with reduced volatility. The strong income component of real estate provides stability, thereby reducing overall volatility. The fundamentals of real estate — supply and demand — drive real estate income returns. In fiscal 2019, the environment continued to demonstrate positive fundamentals in relative balance overall. The private market return is expected to remain stable over the next year.

The STRS Ohio total real estate asset class returned 7.60% versus the benchmark's return of 7.37% in fiscal 2019. Over the three prior fiscal years, the STRS Ohio real estate total asset class returned an annual average return of 7.10% versus the benchmark's return of 6.58%. STRS Ohio's performance over the prior five fiscal years was 9.73% versus the benchmark's 8.81%. A more complete report of STRS Ohio performance appears on Page 55.

Alternative Investments

There are two portfolios within alternative investments: private equity and opportunistic/diversified. The target allocation for private equity is 7%. The target allocation for opportunistic/diversified is currently 9%, resulting in a combined target neutral weight for the alternative investments asset class of 16% of total fund.

Private equity managers continued to take advantage of the capital markets in order to exit their investments through strategic sales and IPOs and to return capital. Additionally, STRS Ohio sold older vintage private equity funds through a competitive auction process to reduce the private equity allocation at highly competitive pricing. During the fiscal year, this activity generated distributions that exceeded the capital that was called. The opportunistic/diversified portfolio grew as the result of opportunistic funds, co-investments and liquid alternative investment activity during the fiscal year that more than offset realizations and redemptions.

The performance of the alternative investments asset class is compared to a relative return objective or an absolute return objective, which are expected to converge over the very long term. Currently, the relative return objective is the Russell 3000® Index and the absolute return objective is 7.09%. Over the 10 prior fiscal years, the STRS Ohio total alternative investment asset class returned an annual average return of 11.93%. This compares to the relative return objective of 15.18% and the absolute return objective of 8.42%. A more complete report of STRS Ohio performance appears on Page 55.

Total Fund

During fiscal 2019, the STRS Ohio fund returned 7.13% versus the benchmark's return of 7.30%. Over the three prior fiscal years, the STRS Ohio fund returned an annual average of 10.29% versus the benchmark's return of 9.89%, while the fund performance over the prior five fiscal years was 7.38% versus the benchmark's 7.02%. During the 10 past fiscal years, the STRS Ohio fund returned an annual average of 10.44% versus the benchmark's return of 10.29%. A more complete report of STRS Ohio fund performance appears on Page 55.

Statement of Investment Objectives and Policy

Effective Dec. 13, 2018

1.0 Purpose

1.1 The State Teachers Retirement System of Ohio ("STRS Ohio") was established for the benefit of the teachers of the public schools of the State of Ohio. STRS Ohio is dedicated to partnering with STRS Ohio members to provide financial performance and member service to help build financial security for current and future retirees.

1.2 The State Teachers Retirement Board of Ohio (the "Board") is vested with the operation and management of the State Teachers Retirement System of Ohio ("STRS Ohio") (ORC Section 3307.04). The Board has the full power to invest the assets (the "Fund") of STRS Ohio (ORC Section 3307.15). The Board is required to ". . . adopt in a regular meeting, policies, objectives or criteria for the operation of the investment program . . ." (ORC Section 3307.15).

1.3 To fulfill the statutory requirement of ORC Section 3307.15, the Board has adopted this Statement of Investment Objectives and Policies (the "Statement") to govern the investment of the Fund. This Statement summarizes the objectives and policies for the investment of the Fund.

1.4 The Board has approved these objectives and policies after careful consideration of STRS Ohio benefit provisions, and the implications of alternative objectives and policies.

1.5 The Statement has been prepared with five audiences in mind: incumbent, new and prospective Board members; STRS Ohio investment staff; STRS Ohio active and retired members; the Ohio General Assembly and Governor; and agents engaged by the Board to manage and administer the Fund.

1.6 The Board regularly, but in no event less than annually, will assess the continued suitability of this Statement, initiate change as necessary and update this Statement accordingly.

1.7 The Board may authorize its administrative officers and committees to act for it in accord with its policies (ORC Sections 3307.04 and 3307.15). The Board, no less frequently than annually, adopts a resolution delegating to the Executive Director and the Deputy Executive Director — Investments the authority to acquire, dispose, operate and manage the assets of the Fund, subject to the Board's policies and to subsequent approval by the Board. Consequently, the Executive Director, the Deputy Executive Director — Investments and the investment staff are responsible for preparing and maintaining numerous supporting management documents that govern the implementation of Board policies, including, but not limited to, individual investment manager mandates and guidelines, agent agreements and limited partnership documents.

1.8 In carrying out the operation and management of STRS Ohio, the Board, the Executive Director, his/her investment staff and others that are considered fiduciaries as defined in ORC Section 3307.01(K) are subject to various fiduciary responsibilities in ORC Chapter 3307, including those found in ORC Sections 3307.15, 3307.151, 3307.181 and 3307.18. This Statement incorporates, and is subject to, all of the provisions of ORC Chapter 3307.

1.9 The Board acknowledges its responsibilities under ORC Chapter 3307 and to the extent that this Statement is inconsistent with ORC Chapter 3307, Chapter 3307 shall control.

1.95 The Board approved this Statement on Dec. 13, 2018.

2.0 Investment Objective

2.1 Subject to the Ohio Revised Code, the investment objectives for the total fund are:

(a) to earn, over moving 30-year periods, an annualized return that equals or exceeds the actuarial rate of return (ARR) approved by the Board to value STRS Ohio liabilities. The current actuarial rate of return is 7.45%;

(b) to earn a rate of return that equals or exceeds the System's long-term policy index with an acceptable level of risk; and

(c) maintain sufficient liquidity to satisfy cash flow needs.

2.2 The Board believes, based on the assumptions in this Statement, that the investment policies summarized in this Statement will achieve this long-term actuarial objective at an acceptable level of risk. The Board evaluates risk in terms of the probability of not achieving the ARR over a 30-year time horizon.

3.0 Key Document Policy

To assist the Board and the investment staff, the following key documents will be produced or reviewed according to the schedule in Exhibit 1.

Exhibit 1: Key Document Schedule

Key Document	Document Source	Review Schedule
Quarterly Performance Review	Board Consultant	Quarterly
Statement of Investment Objectives and Policy/ Fund Governance	STRS Ohio Investment Staff/ Reviewed by Board Consultant	Annually
Annual Plan (Includes Risk Budget)	STRS Ohio Investment Staff/ Reviewed by Board Consultant	Annually
Actuarial Study	Actuary/STRS Ohio Finance Department	Annually
Asset/Liability Study and Experience Review	STRS Ohio Investment Staff/ STRS Ohio Senior Staff/Board Consultant/Actuary/Board	At least once in every quinquennial period

4.0 Asset Mix Policy, Risk Diversification and Return Expectations

4.1 After careful consideration of the investment objectives, liability structure, funded status and liquidity needs of STRS Ohio, and the return, risk and risk-diversifying characteristics of different asset classes, the Board approved the asset mix policy presented in Exhibit 2 (below). The exhibit also summarizes the Board's return expectations for the asset mix policy and active management.

4.2 Fifty-eight percent of the Fund is targeted for investment in equities, inclusive of domestic, international and private equity investments. Equity investments have provided the highest returns over long time periods, but can produce low and even negative returns over shorter periods.

4.3 The probability of low or negative returns over shorter time periods makes 100% equity policies unsuitable for most pension funds, including STRS Ohio. By investing across multiple equity asset classes, and in lower return but lower volatility fixed-income and real estate, the Board is managing and diversifying total fund risk.

4.4 Forecasts of capital market and active management returns undertaken by the Board's investment consultant indicate that the Board's asset allocation summarized in Exhibit 2 has an expected 10-year annualized return of 6.84% (without net value added). Over a 30-year period, the Board's investment consultant indicates that this asset mix should generate a return above the actuarial rate of return, without net value added by management.

Exhibit 2: Asset Mix Policy and Return Expectations for STRS Ohio Total Fund

Asset Class	Target Allocation[1]	Rebalancing Range	Expected 10-Year Policy Returns[2]	Expected Management Net Returns[3]	Expected Total Return
Equity					
Domestic	**28%**	**23–33%**	**7.35%**	**0.25%**	**7.60%**
International	**23%**	**18–29%**	**7.55%**	**1.00%**	**8.55%**
Alternatives	**17%[5]**	**7–21%[5]**	**7.09%**		**7.09%**
Private Equity	7%[5]	4–9%[5]	8.15%		8.15%
Opportunistic/Diversified	10%[5]	3–12%[5]	6.35%		6.35%
Fixed Income	**21%**	**13–28%**	**3.00%**	**0.35%**	**3.35%**
Core	16%	13–21%			
Liquid Treasury	5%	0–7%			
Real Estate	**10%**	**6–13%**	**6.00%**	**1.00%**	**7.00%**
Liquidity Reserve	**1%**	**0–5%**	**2.25%**		**2.25%**
Total Fund[5]	**100%**		**6.84%**	**0.40%**	**7.24%[4]**

[1]The target allocation as a percent of total fund became effective as of July 1, 2017. The eventual new target weights will be phased-in over a 24 month period, based on the "Phase-In Target Weights" table in the next section.

[2]The expected 10-year policy returns are based on the investment consultant's capital market assumptions in the 2017 asset-liability study for each asset class and total fund using the eventual new asset mix policy.

[3]Individual asset class returns (except real estate and alternative investments) are gross value added. The total fund is net of all investment management costs, and real estate and alternative investments is net of external management fees.

[4]The 10-year total fund return forecast is 7.24% per year, which includes the expected net value added by management and is based on the eventual new asset mix policy.

[5]The Private Equity and Opportunistic Diversified target weights and rebalancing ranges are only meant to be general guidelines; the official target weight and rebalancing range is at the total alternative investment asset class level.

Phase-In Target Weights

Asset Class	Pre-Phase-In	July 1, 2017	Oct. 1, 2017	April 1, 2018	Oct. 1, 2018	July 1, 2019
Liquidity Reserve	1%	1%	1%	1%	1%	1%
Fixed Income — Core	18%	18%	17%	17%	16%	16%
Fixed Income — Liquid Treasury	N/A	1%	3%	4%	5%	5%
Domestic Equity	31%	30%	30%	29%	28%	28%
International Equity	26%	26%	25%	24%	24%	23%
Real Estate	10%	10%	10%	10%	10%	10%
Private Equity	7%	7%	7%	7%	7%	7%
Opportunistic/Diversified	7%	7%	7%	8%	9%	10%

4.5 From the 2017 Asset-Liability Study, the 6.84% expected asset mix 10-year policy return was developed with reference to the observed long-term relationships among major asset classes. The Board believes this return expectation is reasonable, but recognizes that the actual 10-year asset mix policy return can deviate significantly from this expectation — both positively and negatively. The volatility level associated with this asset mix is approximately 14.46%.

4.6 Fund assets are invested using a combination of passive and active management strategies. Passive management reduces both the possibility for underperformance and the opportunities of outperformance. Active management is expected to earn net 0.40% per annum of additional returns over moving five-year periods. The Board recognizes that unsuccessful active management can reduce total fund returns.

4.7 Investment objectives and guidelines for individual asset classes have been approved by the Board and are summarized in the following sections.

4.8 Liquidity reserves are kept at a minimum level, but sufficient to cover the short-term cash flow needs. STRS Ohio investment staff may utilize a derivative overlay to maintain the liquidity reserve level at 1%.

4.9 The Board reviews at least annually its expectations for asset class and active management performance, and assesses how the updated expectations affect the probability that the Fund will achieve the established investment objectives.

5.0 Rebalancing

5.1 Exposures to selected asset classes are actively managed within the rebalancing ranges specified in Exhibit 2. Rebalancing ensures that the Fund's actual asset allocation remains close to the target asset mix policy.

5.2 The Fund's actual asset mix is monitored at least monthly relative to established asset allocation policy targets and ranges. The timing and magnitude of rebalancing are decided with due consideration to the liquidity of the investments and the associated transaction costs.

5.3 In its Annual Investment Plan prepared for the Board, staff explains how it is managing asset class exposures based on short- and intermediate-term capital market forecasts.

5.4 The impact of rebalancing decisions on total fund returns is included in investment performance reports to the Board.

6.0 Passive and Active Management Within Risk Budgets

6.1 STRS Ohio investment staff has been delegated the responsibility for managing the Fund's exposure to passive and active investment strategies, subject to the constraint that active risk does not exceed Board-approved target risk budgets for the total fund and individual asset classes. Active risk will be evaluated compared to risk budgets on an ex-ante basis.

6.2 The Board has approved a target risk budget of .60% to 1.20%, with a working range of .20% to 1.60%, annualized active management for the total fund. In exchange for assuming this level of active risk, the Board expects active management to add net 0.40% of annualized excess return over moving five-year periods to judge its effectiveness.

6.3 The Board realizes that actual active management returns will likely be above or below the net 0.40% target over any five-year moving period, and therefore will evaluate the success of STRS Ohio active management program within this context. The Board recognizes that any amount of management return in excess of the associated investment costs improves the security of STRS Ohio plan members.

6.4 Passive management uses low cost index funds to access the return streams available from the world's capital markets. Index funds control costs, are useful tools for evaluating active management strategies, capture exposure to the more efficient markets and facilitate rebalancing to the asset mix policy.

6.5 Active management is expected to earn higher returns than those available from index funds by making value-added security selection and asset mix timing decisions. Unsuccessful active management results in below index fund returns.

6.6 Because there are no index fund products for private real estate and alternative investments, these assets must be actively managed. Active versus passive decisions in all asset classes are based upon using the best available information.

7.0 Global Equities — Domestic

7.1 Domestic equity is being managed relative to a Board-approved risk budget range of .20% to 1.50%, and is expected to earn at least 0.25% of annualized excess return above the Russell 3000® Index over moving five-year periods.

7.2 Key elements of the strategy:

(a) The portfolio's active management adds value primarily through security selection. Sector tilts by style, economic sectors or market capitalization are managed in accordance with the risk budget for domestic equities.

(b) The portfolio utilizes a variety of portfolio management approaches including quantitative and fundamental techniques to diversify the source of excess return.

(c) The portfolio utilizes a combination of internal and external management, utilizing multiple internal portfolio managers and multiple external manager firms to improve the likelihood of achieving excess returns, to diversify risk and to control costs.

7.3 Short sales may be used in the management of STRS Ohio domestic equity portfolios, but may not exceed 10% of the value of the asset class.

8.0 Global Equities — International

8.1 International equity is being managed relative to a Board-approved risk budget range of 0.60% to 2.50%, and is expected to earn at least 1.0% of annualized excess return above a blended benchmark of 80% MSCI World ex US Index-Net (50% hedged currency) and 20% MSCI Emerging Markets Index-Net over moving five-year periods.

8.2 Key elements of the strategy:

(a) The portfolio's active management adds value primarily through security selection and country allocation decisions. These decisions have been shown to be the principal sources of the excess return in international equity portfolios. Managers also have the ability to add value through currency management.

(b) The portfolio uses a variety of portfolio management approaches including quantitative and fundamental techniques to diversify the source of excess return.

(c) Aggregate exposures to countries, currencies, equity styles and market capitalization are monitored and managed relative to their benchmark exposures.

(d) The portfolio utilizes a combination of internal and external management, with multiple internal portfolio managers and multiple external manager firms to improve the likelihood of achieving excess returns, to diversify risk and to control costs.

(e) STRS Ohio utilizes a 50% hedged benchmark on the developed markets portfolios in order to reduce the overall exposure to currency volatility. With a 50% hedged benchmark, all developed market portfolios are generally hedged around the 50% benchmark level. Active currency positions are taken from time to time in some portfolios at the managers' discretion. This is generally limited to 10 percentage points under or over hedged around the benchmark for the total internal developed portfolios. Three-month currency forwards are the investment instrument generally used for hedges.

8.3 Short sales may be used in the management of STRS Ohio international equity portfolios, but may not exceed 10% of the value of the asset class.

9.0 Fixed Income

9.1 Core Fixed Income Portfolio is being managed relative to a Board-approved risk budget range of 0.10% to 1.50%, and is expected to earn at least 0.35% of annualized excess returns above the Bloomberg Barclays U.S. Universal Index over moving five-year periods.

9.2 Core Fixed Income Portfolio is actively managed because active management is generally low cost and market opportunities exist for skilled managers to generate excess returns.

9.3 Key elements of the Core Fixed Income Portfolio strategy:

(a) The portfolio will primarily be managed internally, with multiple external managers utilized in specialized segments of the market such as high yield and emerging market debt.

(b) The portfolio will emphasize issue selection, credit analysis, sector allocations and duration management.

(c) Aggregate exposures to duration, credit and sectors are monitored and managed relative to corresponding exposures in the asset class benchmark.

9.4 Liquid Treasury Portfolio is expected to be managed within a risk budget range of 0.0% to .25% during normal market conditions, but will have a Board-approved risk budget range of 0.0% to 1.0%. At times, it may be prudent to manage the portfolio to the upper end of the Board-approved risk budget range to accommodate the liquidity needs of the total fund. Returns are expected to track or slightly exceed the annualized returns of the Bloomberg Barclays U.S. Intermediate Treasury Index over moving five-year periods.

9.5 The marketability of this portfolio will remain high to maintain substantial flexibility in meeting the liquidity needs of the total fund including benefit payments, asset allocation rebalancing and diversification.

9.6 Key elements of the Liquid Treasury Portfolio strategy:

(a) The portfolio is internally managed because internal management is generally low cost and provides greater control over the timing of investment decisions in order to meet the rebalancing and cash flow needs of the total fund.

(b) The portfolio will emphasize liquidity, issue selection and minimize transaction costs through achievement of efficient trade execution.

(c) Exposures to duration, credit and sectors are monitored and managed relative to the portfolio benchmark and characteristics.

9.7 Short sales may be used in the management of STRS Ohio fixed-income portfolios, but may not exceed 10% of the value of the asset class.

10.0 Real Estate

10.1 Real estate investments are being managed relative to a Board-approved risk budget range of 2.00% to 7.00%, and are expected to earn at least 1.00% of annualized excess returns above a blended benchmark over moving five-year periods. The Real Estate Blended Benchmark is 85% NCREIF Property Index and 15% FTSE NAREIT Equity REITs Index.

10.2 Key elements of the strategy:

(a) Eighty-five percent of Real Estate is actively managed. The portfolio is primarily managed internally, with direct property investments representing most of the portfolio. External Managers are used primarily for specialized segments of the market. Risk is diversified by investing across major property types and geographic areas.

(b) Leverage of up to and including 50%, in aggregate, is permitted for internally managed assets (excluding REITs).

(c) Publicly traded REITs are passively managed and targeted at 15% of the real estate portfolio to enhance liquidity and diversification.

(d) Non-core real estate investments are limited to 20% of the real estate portfolio. Investment strategies will be characterized as "opportunistic" based on the market conditions prevailing at the time of investment.

10.3 Short sales may be used in the management of REITs, but may not exceed 10% of the value of the asset class.

11.0 Alternative Investments (Private Equity and Opportunistic/Diversified)

11.1 Alternative investments involve separate allocations to private equity and opportunistic/diversified investments.

11.2 Private equity investments are being managed with the objective of earning at least 1% net of fees above domestic public equity markets (Russell 3000® Index) over moving 10-year periods. Private equity investments are traded infrequently and, therefore, risk budget concepts are not applicable.

11.3 Key elements of the private equity strategy:

(a) Private equity investments are 100% actively managed.

(b) Private equity risk is diversified by investing across different types of investments including, but not limited to, venture capital, leverage buyouts, mezzanine debt or distressed debt. Private equity investments may be made directly, through funds, fund-of-funds or as co-investments.

(c) Private equity risk is also diversified by investing across vintage years, industry sectors, investment size, development stage and geography.

(d) Private equity investments are managed by general partners with good deal flow, specialized areas of expertise, established or promising net of fees track records and fully disclosed and verifiable management procedures.

11.4 Opportunistic/diversified investments are being managed with the objective of earning domestic public equity-like returns defined as 1% net of fees below domestic public equity markets (Russell 3000® Index) over moving 10-year periods, but with the added objective of downside protection during equity bear markets. Investments in this category can be liquid or illiquid and, therefore, risk budget concepts are not applicable.

11.5 Key elements of the opportunistic/diversified strategy:

(a) Opportunistic/diversified investments are tactical in nature and typically are actively managed.

(b) Downside protection during equity bear markets can be achieved and asset class risk is diversified by investing across different types of opportunistic/diversified investments.

(c) Opportunistic/diversified investments may be made directly, through funds, fund-of-funds or as co-investments.

12.0 Derivatives

12.1 Derivatives may be used in the management of STRS Ohio total fund, including all asset classes. Derivatives are typically, but not exclusively, futures contracts, equity swaps, credit default swaps, option contracts and option contracts on futures for market indexes. Options on individual securities, baskets of securities and equity-linked notes, and shorting for positioning purposes are further examples. Derivatives are both exchange traded and traded over the counter.

12.2 Derivative exposures must be of a hedging or positioning nature. As a percentage of total fund assets, the underlying exposure of all positioning derivatives will not exceed:

(a) 5% for fixed-income investments;

(b) 10% for domestic equity investments;

(c) 10% for international equity investments; and

(d) 1% for real estate investments.

(e) 10% for alternative investments

Hedging derivatives will not be included in the limits above, but must be disclosed in the semi-annual derivative exposure report.

12.3 Any use of leverage will adhere to asset allocation restrictions and asset class active management risk budget constraints.

13.0 Proxy Voting

13.1 Common stock proxies are valuable and should be voted in the best interest of STRS Ohio active and retired members.

13.2 The Board shall maintain stock proxy voting policies and has directed STRS Ohio investment staff and the proxy voting agents to use these policies as guidelines for voting common stock proxies held by the Fund.

14.0 Ohio Investments

14.1 The Board will give due consideration to investments that enhance the general welfare of the State of Ohio and its citizens provided that assets are invested in the best interest of STRS Ohio active and retired members. Preference will be given to Ohio investments offering competitive returns at risk levels comparable to similar investments currently available to the Board.

14.2 STRS Ohio investment staff shall maintain and implement an Ohio Investment Plan. The plan shall set forth procedures to assure that a special effort will be made by the investment staff to examine and evaluate all legal investment opportunities in the state and, where policy criteria are satisfied, to acquire such investments.

15.0 Broker-Dealers

15.1 Purchases and sales of publicly traded securities shall be executed with broker-dealers from a list reviewed by the Board. In those rare situations where best execution cannot be achieved through a broker-dealer on the list, the Deputy Executive Director — Investments may approve the use of a broker-dealer not on the list.

15.2 Selection shall be based on an evaluation by the STRS Ohio investment staff as to financial soundness, underwriting capabilities, research services, execution capabilities and other factors required by the staff to fulfill its assigned investment responsibilities.

15.3 Specific transactions will be directed to the broker on that list most capable of providing brokerage services necessary to obtain both the best available price and the most favorable execution.

15.4 The Board shall give equal consideration to smaller Ohio-headquartered broker-dealers or smaller broker-dealers with at least one Ohio office and broker-dealers owned and controlled by minorities and/or women, provided the assets are transacted in the best interest of STRS Ohio members.

15.5 The Board has a goal to increase the use of Ohio-qualified broker-dealers for the execution of domestic equity and fixed-income securities transactions, when the services that Ohio-qualified broker-dealers provide are equal in quality, cost, scope and execution capabilities to all broker-dealers approved to transact securities transactions on behalf of the Board.

15.6 Each firm listed shall file with the Board on an annual basis such evidence of financial responsibility as required by the Board. This information shall include, but not be limited to, an audited financial statement.

15.7 When stocks are purchased during underwriting, allocations may be made to dealers not on the approved list provided the managing underwriter is so listed.

15.8 When entering into real estate transactions, the Board shall give equal consideration to Ohio firms providing associated professional services, minority-owned and controlled firms, and firms owned and controlled by women.

16.0 Securities Lending

The Board may operate a securities lending program to enhance the income of the Fund. The program must be operated by a bank trustee who follows the custodial requirements of the Treasurer of the State of Ohio and each security lent must be fully collateralized. Results of the program must be reported to the Board annually.

17.0 Securities Litigation

Involvement in securities litigation is an important responsibility for institutional investors with major public market exposure. The Board shall maintain a policy to determine the appropriate action to be taken when class action litigation is initiated against a company that generates a significant loss for the Board during the class period.

18.0 Security Valuation

Valuation of investments shall be the total of:

(a) The primary closing price on the principal registered stock exchange for all common and preferred stocks so listed.

(b) The official closing price as reflected by either the OTCBB (Over the Counter Bulletin Board) or the Pink Sheets for common and preferred stocks not listed on a registered stock exchange.

(c) The current value as determined by a qualified independent service for all bonds, notes and certificates of indebtedness, including accrued income.

(d) Amortized cost for commercial paper, certificates of deposit, repurchase agreements and other short-term investments with a maturity of 270 or fewer days.

(e) Each internally managed real estate property initially valued at acquisitional price. Subsequent valuations completed internally or externally as outlined in the Real Estate Valuation Policy Manual. Full, self-contained appraisals completed by an independent external appraiser no less than every third year.

(f) The most recent external manager valuations for alternative investments and externally managed real estate updated to include current capital activity.

(g) International equity and external fixed income investments are valued by the subcustodian using relevant closing market prices and exchange rates and including accrued income for fixed income investments.

(h) Each internally managed alternative investment initially valued at acquisition price. Subsequent valuations completed internally as outlined in the Alternative Investments Valuation Policy Manual.

19.0 Performance Monitoring and Evaluation

19.1 The Board and its agents use a variety of compliance, verification and performance measurement tools to monitor, measure and evaluate how well STRS Ohio assets are being managed. Monitoring, reporting and evaluation frequencies range from live real time performance, to daily, weekly, monthly, quarterly and annualized performance for periods up to 20 years.

19.2 The Board has developed a performance monitoring and evaluation system that answers two fundamental fiduciary questions:

(a) Are the assets being prudently managed? More specifically, are assets being managed in accordance with established laws, policies and procedures, and are individual investment managers in compliance with their mandates?

(b) Are the assets being profitably managed? More specifically, has performance affected benefit security, has capital market risk been rewarded and has active management risk been rewarded?

19.3 If there is a deviation from Board policies, STRS Ohio investment staff is required to provide the Board with a report explaining how the deviation was discovered, the reasons for the deviation, the impact on Fund performance, if any, and steps taken to mitigate future occurrences.

19.4 Exhibit 3 is an example of one of many reports used by the Board to monitor and evaluate performance of the total fund. Panel one indicates whether the total fund return exceeded the actuarial rate of return. Panel two indicates whether the Fund was rewarded for investing in the capital markets. Panel three indicates whether active management added or detracted from returns.

19.5 Additional reports provide the Board with a multi-level view of investment activities at different levels and over different time horizons. These include:

(a) Performance of the total fund;

(b) Performance of individual asset class strategies;

(c) Performance of internally and externally managed portfolios; and

(d) Performance of individual external managers.

Exhibit 3: EXAMPLE Total Fund Trustee Summary Report, as of June 30, 2018

Experienced Returns	Annualized Rates of Return				
	1 Year	3 Years	5 Years	10 Years	20 Years
Have returns affected funded ratio?					
1. Total fund return*	9.57%	8.12%	9.26%	7.04%	6.78%
2. Actuarial discount rate	7.45%	7.65%	7.69%	7.82%	7.82%
3. Relative performance (1–2)	2.12%	0.47%	1.57%	–0.78%	–1.04%
Has plan been rewarded for capital market risk?					
4. Total fund blended benchmark return*	8.94%	7.58%	8.98%	7.05%	6.61%
5. Minimum risk/high opportunity cost policy of 91-day T-Bills	1.36%	0.68%	0.42%	0.31%	1.84%
6. Impact of asset mix policy (4–5)	7.58%	6.90%	8.56%	6.74%	4.77%
Has plan been rewarded for active management risk?					
7. Active management return (1–4)*	0.63%	0.54%	0.28%	–0.01%	0.17%
8. Net active management return estimated**	0.49%	0.40%	0.15%	–0.13%	0.05%

* Mix of net and gross as per industry conventions (external managers fees for alternative and real estate investment have been deducted, but no fees deducted for internal asset, external equity or external fixed income).

** After all investment management costs deducted.

The STRS Ohio real estate return includes the use of leverage.

The STRS Ohio fund policy return is 29% Russell 3000, 24% International Blended Benchmark, 21% Fixed Income Blended Benchmark, 10% Real Estate Blended Benchmark, 15% Alternative Investments and 1% 90 day Treasury Bill as of April 1,2018.

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Statement of Fund Governance

Effective Dec. 13, 2018

1.0 Purpose

1.1 This Statement of Fund Governance (the "Statement") summarizes the governance structure established by the Board of the State Teachers Retirement Board of Ohio (the "Board") to ensure the prudent, effective and efficient management of the assets of the State Teachers Retirement System of Ohio ("STRS Ohio").

1.2 The fund governance structure was approved by the Board after careful consideration of alternative approaches to governing a very large and growing pension fund within an increasingly complex financial and investment environment.

1.3 The Statement has been prepared with five audiences in mind: incumbent, new and prospective Board members; STRS Ohio investment staff; STRS Ohio active and retired members; the Ohio General Assembly and Governor; and agents engaged by the Board to manage, administer or advise on STRS Ohio's assets ("Fund").

1.4 The Statement summarizes more detailed policy and procedure documents prepared and maintained by STRS Ohio investment staff, and numerous other documents that govern the day-to-day management of STRS Ohio assets.

1.5 The Board regularly assesses the continued suitability of the STRS Ohio fund governance structure, initiates change as necessary and updates this Statement accordingly.

1.6 The Board may authorize its administrative officers and committees to act for it in accord with its policies (Ohio Revised Code [ORC] Sections 3307.04 and 3307.15). The Board, no less frequently than annually, adopts a resolution delegating to the Executive Director and the Deputy Executive Director — Investments the authority to acquire, dispose, operate and manage the assets of the Fund, subject to the Board's policies and to subsequent approval by the Board.

1.7 In carrying out the operation and management of STRS Ohio, the Board, the Executive Director, the investment staff and others that are considered fiduciaries as defined in ORC Section 3307.01(K) are subject to various fiduciary responsibilities in ORC Chapter 3307, including those found in ORC Sections 3307.15, 3307.151, 3307.18 and 3307.181. This Statement incorporates, and is subject to, all of the provisions of ORC Chapter 3307.

1.8 The Board acknowledges its responsibilities under ORC Chapter 3307 and to the extent that this Statement is inconsistent with ORC Chapter 3307, Chapter 3307 shall control.

1.9 The Board approved this Statement on Dec. 13, 2018.

2.0 Governance Principles

2.1 Three principles guided the Board's development of the STRS Ohio fund governance structure:

(a) As STRS Ohio governing fiduciary, the Board is ultimately accountable for all investment decisions. Section 3307.15 of the Ohio Revised Code (the "Code") vests the investment function in the Board and requires the Board to ". . . adopt, in regular meetings, policies, objectives, or criteria for the operation of the investment program . . ." Section 3307.15 of the Code sets forth the fiduciary responsibility of the Board in discharging its duties with respect to the fund.

(b) To ensure STRS Ohio assets are prudently, profitably and efficiently managed on a day-to-day basis, the Board needs to delegate the management and implementation of Board investment policies to qualified managing and operating fiduciaries. Sections 3307.04 and 3307.15 of the Code empower the Board to authorize its committees and administrative officers to act for it in accord with Board policies. The fiduciary responsibility of Board delegates in discharging their duties with respect to the fund is specified in Section 3307.15.

(c) To ensure effective oversight of delegates, the Board requires informative and timely performance reports that reveal if managing and operating fiduciaries have complied with established policies, and indicate how assets under their care have performed relative to Board-approved investment objectives.

3.0 Investment Decisions Retained by the Board

3.1 The Board approves the following investment policies:

(a) Statement of Investment Objectives and Policy, which includes the following:

(i) Total fund risk and return objectives;

(ii) Total fund target asset mix policy;

(iii) Total fund asset mix policy rebalancing ranges;

(iv) Active management risk and return objectives at the total fund and asset class levels; and

(v) Performance measurement criteria and evaluation standards.

(b) Proxy voting;

(c) Ohio investments;

(d) Securities lending;

(e) Broker-dealer selection criteria and procedures;

(f) Ohio-qualified investment managers and brokers; and

(g) Securities litigation.

3.2 Before approving or amending policy decisions, the Board seeks advice, guidance and recommendations from STRS Ohio investment staff, Board-retained investment consultants, and other experts or sources as considered prudent by the Board.

4.0 Investment Decisions Delegated to Investment Staff

4.1 The Board, through the Executive Director, has delegated to qualified STRS Ohio investment staff the following investment management and implementation decisions:

(a) Buying, selling, managing and monitoring individual securities, real assets and/or other investment transactions to achieve the total fund and asset class investment objectives approved by the Board;

(b) Retaining, managing and terminating external investment managers within each asset class as required to achieve the total fund and asset class investment objectives approved by the Board;

(c) Ensuring total fund, asset class and individual manager portfolios comply with established parameters and risk levels; and

(d) Preparing, negotiating and executing external investment manager mandates, guidelines and fee agreements.

4.2 In making these decisions, STRS Ohio investment staff seeks the advice, guidance and recommendations of Board-retained investment consultants, external investment managers, and other experts and sources as considered prudent by STRS Ohio staff.

5.0 Board Oversight

5.1 The Board requires investment staff to prepare and deliver an Annual Investment Plan that explains how STRS Ohio assets will be managed in order to achieve the Board-established investment objectives. This provides the Board a focused opportunity to:

(a) Question and comment on staff's investment management plans;

(b) Request additional information and support about staff's investment intentions; and

(c) Express its confidence in the Annual Investment Plan.

5.2 The Board meets at least quarterly to assess how assets are being managed relative to the Annual Investment Plan, to monitor and evaluate investment performance relative to objectives and to address other investments issues as are warranted.

5.3 The Board approves the criteria and standards for monitoring and evaluating the impact different investment decisions have on total fund, asset class and manager-level performance. Performance is monitored and evaluated with respect to risk and return objectives established by the Board.

(a) Investment risks are monitored and evaluated quarterly by comparing total fund and asset class risk characteristics relative to suitable benchmarks.

(b) Investment returns are monitored monthly and evaluated quarterly by comparing total fund and asset class returns relative to suitable benchmarks.

5.4 Before approving or amending the criteria for monitoring and evaluating investment decisions, the Board seeks advice, guidance and recommendations from STRS Ohio investment staff, Board-retained investment consultants, and other experts and sources as considered prudent by the Board.

ACA COMPLIANCE GROUP
PERFORMANCE SERVICES

Verification Report

State Teachers Retirement System of Ohio
275 E. Broad Street
Columbus, OH 43215-3771

We have verified whether State Teachers Retirement System of Ohio ("the Firm") (1) complied with all the composite construction requirements of the Global Investment Performance Standards (GIPS®) on a firm-wide basis for the periods from July 1, 2006 through June 30, 2019, and (2) designed its policies and procedures to calculate and present performance in compliance with the GIPS standards as of June 30, 2019. The Firm's management is responsible for compliance with the GIPS standards and the design of its policies and procedures. Our responsibility is to express an opinion based on our verification. We conducted this verification in accordance with the required verification procedures of the GIPS standards. We also conducted such other procedures as we considered necessary in the circumstances.

In our opinion, the Firm has, in all material respects:

- Complied with all the composite construction requirements of the GIPS standards on a firm-wide basis for the periods from July 1, 2006 through June 30, 2019, and
- Designed its policies and procedures to calculate and present performance in compliance with the GIPS standards as of June 30, 2019.

Since our verification was designed to form an opinion on a firm-wide basis this report does not relate to any composite compliant presentation of the Firm and does not ensure the accuracy of any specific composite compliant presentation, including what is reflected in this Comprehensive Annual Financial Report.

ACA Performance Services, LLC

ACA Performance Services, LLC
August 20, 2019

Investment Performance

(total returns, annualized on a fiscal-year basis, July 1–June 30)

1-Year Returns (2019)[1]

Asset Category	STRS Ohio Return	Index Name	Index Return
Domestic Equities[9]	8.74%	Russell 3000® Index[3]	8.98%
International Equities[9]	2.85%	International Blended Benchmark[4]	2.70%
Fixed Income[9]	7.65%	Fixed-Income Blended Benchmark[5]	7.81%
Real Estate[9]	7.60%	Real Estate Blended Benchmark[6]	7.37%
Alternative Investments[9]	8.30%	Alternative Investments Blended Relative Return Objective[7]	–
Total Fund	**7.13%**	**Total Fund Blended Benchmark[8]**	**7.30%**

3-Year Returns (2017–2019)[1]

Asset Category	STRS Ohio Return	Index Name	Index Return
Domestic Equities[9]	14.76%	Russell 3000® Index[3]	14.02%
International Equities[9]	10.44%	International Blended Benchmark[4]	10.44%
Fixed Income[9]	3.10%	Fixed-Income Blended Benchmark[5]	2.75%
Real Estate[9]	7.10%	Real Estate Blended Benchmark[6]	6.58%
Alternative Investments[9]	11.13%	Alternative Investments Blended Relative Return Objective[7]	–
Total Fund	**10.29%**	**Total Fund Blended Benchmark[8]**	**9.89%**

5-Year Returns (2015–2019)[1]

Asset Category	STRS Ohio Return	Index Name	Index Return
Domestic Equities[9]	10.23%	Russell 3000® Index[3]	10.19%
International Equities[9]	5.02%	International Blended Benchmark[4]	4.11%
Fixed Income[9]	3.30%	Fixed-Income Blended Benchmark[5]	3.12%
Real Estate[9]	9.73%	Real Estate Blended Benchmark[6]	8.81%
Alternative Investments[9]	8.48%	Alternative Investments Blended Relative Return Objective[7]	10.16%
Total Fund	**7.38%**	**Total Fund Blended Benchmark[8]**	**7.02%**

STRS Ohio Long-Term Policy Objective (10 Years)[2]

Total Fund: 6.8%

State Teachers Retirement System of Ohio claims compliance with the Global Investment Performance Standards (GIPS®). To receive a compliant presentation and/or a description of the firm's composite, please contact the STRS Ohio Communication Services Department at 614-227-2825.

State Teachers Retirement System of Ohio is defined and created by the Ohio Revised Code, Chapter 3307.15. The STRS Ohio Total Fund performance returns consist of all assets of the fund, including both internally and externally managed accounts. All returns are calculated in U.S. dollars using a time-weighted rate of return. All returns are net of brokerage commissions, expenses related to trading, and applicable foreign withholding taxes on dividends, interest and capital gains. Performance is net of fees for external managed real estate and alternative investments and gross of fees on all other investments. Net of fees returns are available upon request and investment management fees vary among asset classes. All measurements and comparisons have been made using standard performance evaluation methods, and results are presented in a manner consistent with the investment industry in general and public pension funds in particular.

The Total Fund reflects an actual asset allocation to the following asset classes as of June 30, 2019: Liquidity Reserves 2.0%, Fixed Income 20.3%, Domestic Equities 28.4%, International Equities 23.1%, Real Estate 9.9% and Alternative Investments 16.3%. The investment objective for the Total Fund is to earn, over moving 30-year periods, an annualized return that equals or exceeds the actuarial rate of return, approved by the State Teachers Retirement Board ("Board") to value STRS Ohio liabilities. As of June 30, 2019, the actuarial rate of return was 7.45%.

As part of the Total Fund strategy, certain asset classes may use derivatives and/or leverage. The following asset classes may use derivatives and/or leverage to gain exposure to certain sectors of the market:

- Fixed Income: Exposure to derivatives may not exceed 5% of Total Fund assets. A variety of derivatives may be used to adjust the exposure to interest rates, individual securities or to market sectors in the fixed income asset class.
- Domestic Equities: Exposure to derivatives, including, but not limited to, futures, stock options and index options may not exceed 10% of Total Fund assets.
- International Equities: Exposure to derivatives, including swap agreements, may not exceed 10% of Total Fund assets.
- Real Estate: Activities may include borrowing funds on a secured or unsecured basis with leverage limited to 50% of the internally managed direct real estate assets. At June 30, 2019 and 2018, debt as a percentage of these assets was 24.3% and 24.1%, respectively. Derivatives may also be used and cannot exceed 1% of Total Fund assets.
- Alternative Investments: Exposure to derivatives may not exceed 10% of Total Fund assets. Alternative investment managers may use derivatives as components of the funds' investment strategy and to achieve the investment objectives of the fund.

[1]The one-year returns for the fiscal years ended June 30, 2009, through 2019, have been examined by ACA Performance Services LLC. A copy of the examination report is available upon request.

[2]The long-term policy objective is a projected annualized policy return based on return forecasts by asset class before any value added. The State Teachers Retirement Board expects the net value added to be 0.40% per year.

[3]The Russell® Indices are a trademark of FTSE International Limited (FTSE), Frank Russell Company (Russell®) and their respective subsidiary undertakings, which are members of the London Stock Exchange Group PLC.

[4]The International Blended Benchmark is calculated monthly using 80% of the MSCI World ex-U.S. 50% Hedged Index-Net and 20% of the MSCI Emerging Markets Index-Net.

[5]The Fixed-Income Blended Benchmark is calculated daily and is a blend of two benchmarks using the actual core fixed-income weighting and the Bloomberg Barclays U.S. Universal index and the actual weighting of the liquid treasury portfolio weighting and the Bloomberg Barclays U.S. Intermediate Treasury Index. Source: Bloomberg Index Services Limited. BLOOMBERG® is a trademark and service mark of Bloomberg Finance L.P. and its affiliates (collectively "Bloomberg"). BARCLAYS® is a trademark and service mark of Barclays Bank PLC (collectively with its affiliates, "Barclays"), used under license. Bloomberg or Bloomberg's licensors, including Barclays, own all proprietary rights in the Bloomberg Barclays Indices. Neither Bloomberg nor Barclays approves or endorses this material, or guarantees the accuracy or completeness of any information herein, or makes any warranty, express or implied, as to the results to be obtained therefrom and, to the maximum extent allowed by law, neither shall have any liability or responsibility for injury or damages arising in connection therewith.

[6]The Real Estate Blended Benchmark is calculated quarterly using 85% NCREIF Property Index (NPI) and 15% FTSE NAREIT Equity REITs Index.

[7]Given the long-term nature of the asset class, no relative return objective for Alternative Investments is displayed for the one- and three-year periods. For the longer five-year period, the Alternative Investments Blended Relative Return Objective is a blend of two relative return objectives for Private Equity (PE) and Opportunistic/Diversified (OD) and is calculated using: 43.7% of the Russell 3000® Index plus 1% for PE and 56.3% of the Russell 3000® Index minus 1% for OD effective Oct. 1, 2018; 46.7% of the Russell 3000® Index plus 1% for PE and 53.3% of the Russell 3000® Index minus 1% for OD effective April 1, 2018; 50.0% of the Russell 3000® Index plus 1% for PE and 50.0% of the Russell 3000® Index minus 1% for OD effective Jan. 1, 2014.

[8]The Total Fund Blended Benchmark is calculated and rebalanced monthly using a blend of the asset class benchmarks based on the Total Fund's policy weights in effect during the respective period. For alternative investments, however, the actual Alternative Investments return is used in the calculation of the Total Fund Blended Benchmark. Information concerning asset class benchmarks and policy weights is available upon request.

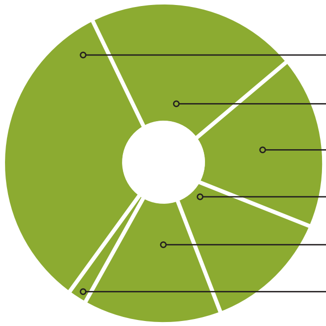
[9]Returns are supplemental to the Total Fund composite returns.

Summary of Investments and Cash
As of June 30, 2019 and 2018 (dollar amounts in thousands)

	June 30, 2019	Percentage of Assets	June 30, 2018	Percentage of Assets
Cash and short-term investments				
Cash	$ 4,609	0.0%	$ 16,067	0.0%
Commercial Paper	193,069	0.2%	95,892	0.1%
Short-term investment funds	35,000	0.0%	50,000	0.1%
Asset-backed security held in short-term		0.0%	5,501	0.0%
Corporate notes held in short-term		0.0%	30,503	0.0%
U.S. government agencies	131,802	0.2%		
U.S. Treasury bills	1,818,913	2.2%	1,259,765	1.6%
Total cash and short-term investments	**2,183,393**	**2.6%**	**1,457,728**	**1.8%**
Fixed income				
U.S. government agency obligations and U.S. government obligations	7,221,027	9.0%	7,117,057	8.9%
Corporate bonds	4,624,033	5.7%	4,017,749	5.1%
High yield and emerging market	1,557,404	1.9%	1,660,217	2.1%
Mortgages and asset-backed	3,162,085	3.9%	2,911,068	3.6%
Total fixed income	**16,564,549**	**20.5%**	**15,706,091**	**19.7%**
Domestic equities	**21,915,017**	**27.1%**	**22,688,592**	**28.4%**
International equities	**17,440,790**	**21.6%**	**17,804,674**	**22.3%**
Real estate				
East region	2,987,123	3.7%	3,097,001	3.9%
Midwest region	1,202,457	1.5%	1,285,763	1.6%
South region	911,494	1.1%	756,929	0.9%
West region	2,554,510	3.2%	2,537,899	3.2%
REITs	1,142,666	1.4%	1,229,655	1.5%
Non-core	902,440	1.1%	932,712	1.2%
Total real estate	**9,700,690**	**12.0%**	**9,839,959**	**12.3%**
Alternative investments	**13,093,344**	**16.2%**	**12,393,204**	**15.5%**
Total investments and cash	**$80,897,783**	**100.0%**	**$79,890,248**	**100.0%**

Investment schedule excludes invested securities lending collateral.

Investment Distribution by Fair Value — as of June 30, 2019



Ohio Investment Profile — as of June 30, 2019
(in thousands)

STRS Ohio continues to engage in quality Ohio investments. As of June 30, 2019, STRS Ohio investments in companies with headquarters in Ohio are valued at more than $1.2 billion.

Fixed income	$ 207,750
Domestic equities	711,283
Real estate	43,499
Alternative investments	245,454
Total Ohio-headquartered investments	**$ 1,207,986**

Schedule of U.S. Stock Brokerage Commissions Paid
(for the year ended June 30, 2019)

Brokerage Firm	Shares Traded*	Commissions Paid	Average Cents Per Share
Nomura (Instinet LLC)	32,049,779	$ 1,279,980	4.0
ITG, Inc.	28,147,496	985,215	3.5
Susquehanna Financial Group LLP	23,251,200	817,827	3.5
JP Morgan Securities LLC	24,530,781	495,527	2.0
Cantor Fitzgerald & Company	13,478,774	386,483	2.9
Evercore ISI Institutional Equities	9,033,411	338,648	3.7
KeyBanc Capital Markets	10,765,594	306,140	2.8
Weeden And Co	7,513,493	300,540	4.0
RBC Capital Markets LLC	7,690,013	240,952	3.1
UBS Securities LLC	6,174,947	238,502	3.9
Cowen & Company LLC	5,331,380	205,392	3.9
Barclays Capital Inc.	7,429,486	200,862	2.7
Citi Capital Markets Inc.	4,723,175	188,127	4.0
Wells Fargo Securities LLC	4,691,892	184,363	3.9
Merrill Lynch, Pierce, Fenner & Smith Inc.	5,396,880	184,220	3.4
Deutsche Bank Securities Inc.	4,789,960	181,934	3.8
Raymond James & Associates, Inc.	4,218,916	167,963	4.0
Bernstein (Sanford C.) & Company LLC	4,177,455	167,098	4.0
Morgan Stanley & Company LLC	4,338,282	166,831	3.8
Credit Suisse Securities (USA) LLC	4,371,105	164,707	3.8
Others (includes 35 brokerage firms and external managers)	100,716,560	2,585,323	2.6
Totals	**312,820,579**	**$ 9,786,634**	**3.1**

*Includes option equivalent shares.
Excludes commissions on futures trading.

Schedule of Largest Investment Holdings* (as of June 30, 2019)

Domestic Equities — Top 20 Holdings

	Shares	Fair Value
Microsoft Corp.	5,951,224	797,225,967
Apple Computer Inc.	3,347,910	662,618,347
Amazon Com Inc.	333,778	632,052,034
Facebook Inc.-A	2,149,603	414,873,379
Visa Inc. Class A	1,618,690	280,923,649
Alphabet Inc.	252,099	272,972,797
Unitedhealth Group Inc.	1,071,287	261,404,741
JPMorgan Chase & Co.	2,324,747	259,906,715
Alphabet Inc. Class C	234,126	253,069,135
Berkshire Hathaway Inc. Class B	1,091,976	232,776,524
Mastercard Inc. Class A	806,186	213,260,383
Exxon Mobil Corp.	2,727,689	209,022,808
Johnson & Johnson	1,437,399	200,200,933
ChevronTexaco Corp.	1,520,827	189,251,712
Procter & Gamble Co.	1,690,239	185,334,706
Bank Of America Corp.	6,349,691	184,141,039
Adobe Systems Inc.	611,166	180,080,062
Home Depot Inc.	824,079	171,383,710
Wells Fargo Company	3,612,066	170,922,963
Citigroup Inc.	2,439,825	170,860,945

International Equities — Top 20 Holdings

	Shares	Fair Value
Roche Holding AG (Switzerland)	1,227,879	345,884,069
Nestle SA (Switzerland)	2,496,127	258,726,764
SAP SE (Germany)	1,419,709	195,240,498
Novartis AG (Switzerland)	1,959,306	179,251,380
Samsung Electronics Co. LTD (South Korea)	4,293,966	174,785,781
Taiwan Semiconductor Manufacturing Co. LTD (Taiwan)	19,219,478	147,892,118
AIA Group LTD (Hong Kong)	12,420,140	133,938,790
Allianz SE (Germany)	543,562	131,229,784
Unilever plc (United Kingdom)	1,662,375	103,553,168
Canadian National Railway Co. (Canada)	1,093,539	101,424,853
Enel SpA (Italy)	14,135,345	98,837,613
Air Liquide SA (France)	700,865	98,211,752
Danone (France)	1,127,017	95,616,800
Novo Nordisk A/S (Denmark)	1,861,266	94,994,427
Hitachi (Japan)	2,358,100	86,431,566
Experian Ord (United Kingdom)	2,780,891	84,375,483
LVMH Moet Hennessy Louis Vuitton SE (France)	193,842	82,625,705
Compass Group Ord (United Kingdom)	3,432,301	82,429,625
L'Oréal (France)	281,498	80,302,767
Diageo PLC Ord (United Kingdom)	1,797,239	77,403,793

Fixed Income — Top 20 Holdings

	Par Value	Fair Value
U.S. Treasury N/B, 1.625%, 10/31/2023, Aaa	217,537,000	216,449,314
U.S. Treasury N/B, 1.750%, 5/15/2023, Aaa	168,798,000	168,903,499
U.S. Treasury N/B, 1.625%, 7/31/2021, Aaa	166,459,000	164,326,243
U.S. Treasury N/B, 1.625%, 5/15/2026, Aaa	166,869,000	164,209,524
U.S. Treasury N/B, 2.875%, 8/15/2028, Aaa	141,918,000	152,517,500
U.S. Treasury N/B, 1.125%, 8/31/2021, Aaa	154,394,000	152,367,578
U.S. Treasury N/B, 2.000%, 2/15/2025, Aaa	130,326,000	131,649,623
U.S. Treasury N/B, 1.375%, 9/30/2023, Aaa	133,303,000	131,313,870
U.S. Treasury N/B, 2.000%, 11/15/2026, Aaa	128,019,000	128,999,145
U.S. Treasury N/B, 1.625%, 2/15/2026, Aaa	128,493,000	126,605,758
U.S. Treasury N/B, 2.125%, 8/31/2020, Aaa	123,051,000	123,344,207
U.S. Treasury N/B, 2.125%, 2/29/2024, Aaa	117,830,000	119,781,559
U.S. Treasury N/B, 1.500%, 8/15/2026, Aaa	110,383,000	107,588,930
U.S. Treasury N/B, 1.125%, 2/28/2021, Aaa	101,401,000	100,264,199
U.S. Treasury N/B, 2.000%, 7/31/2022, Aaa	92,504,000	93,270,048
U.S. Treasury N/B, 3.000%, 11/15/2045, Aaa	83,660,000	91,555,412
U.S. Treasury N/B, 2.250%, 4/30/2021, Aaa	79,455,000	80,131,609
TSY INFL IX N/B, 0.375%, 7/15/2027, Aaa	72,000,000	75,922,153
U.S. Treasury N/B, 2.500%, 2/15/2045, Aaa	74,601,000	74,321,246
U.S. Treasury N/B, 1.750%, 12/31/2020, Aaa	72,527,000	72,436,341

*A complete list of investment holdings is available from STRS Ohio.

Schedule of External Managers (as of June 30, 2019)

Domestic Equities

Intech
Chartwell Investment Partners
Fuller & Thaler Asset Management
M.A. Weatherbie & Company
Neuberger Berman

International Equities

Alliance Bernstein
Arrowstreet Capital
Genesis Asset Managers
Lazard Asset Management
MFS Investment Management
Stewart Investors
Wellington Management

Fixed Income

Fidelity Institutional Asset Management
Oaktree Capital Management
Pacific Investment Management Company
Stone Harbor Investment Partners

Real Estate

BCMR-GP LLC
Benson Elliot Capital Management LLP
BentallGreenOak
Blackstone Real Estate Advisors Europe, LP
Blackstone Real Estate Advisors LP
Carlyle Investment Management LLC
CBRE Global Investment Partners Asia, Pte. Ltd.
CBRE Global Investors
CIM Global LLC
CLSA Capital Partners Singapore PTE Ltd.
DDR Corporation
Fortress Japan Opportunity Management LLC
Fortress Real Estate Opportunities Advisors LLC
Invesco Avisers Inc.
JP Morgan Funds Limited
KSL Advisors, LLC
LaSalle Investment Management (Asia) Pte. Ltd.
LNR CPI Fund GP, LLC
PAG Holdings
Normandy Real Estate Partners
Patria Brazil Real Estate Fund General Partner II, Ltd.
Patria Brazil Retail Property Fund General Partner, Ltd.
PCCP LLC
Pramerica Investment Management Limited
SCREP V Management , LLC
Strategic Partners Fund Solutions Advisors LP
Westbrook Realty Management V, LP
Westbrook Realty Management VI, LP
Westbrook Realty Management VII, LP
Westbrook Realty Management VIII, LP
Westbrook Realty Management IX, LP
Westbrook Realty Management X, LP

Alternative Investments

Adams Capital Management, Inc.
Advanced Technology Ventures
Advent International Corporation
Angelo, Gordon & Co.
Apax Partners Worldwide
Apollo Aviation Group, LLC
Apollo Management
AQR Capital Management, LLC
ArcLight Capital Partners, LLC
Ares Management, LLC
Asia Alternatives Management LLC
Atalaya Capital Managment LP
Athenian Venture Partners
Avenue Capital Group
Avenue Capital Management
Avenue Capital Management II, LP
Axiom Asia Private Capital
Bain Capital, LLC
Baker Capital Corp.
Beacon Capital Partners, LLC
Benefit Street Partners LLC
Berkshire Partners, LLC
Blackboard Inc. - Transact
BlackRock Institutional Trust Company, N.A.
Blue Chip Venture Company, Ltd.
Bridgepoint Capital, Ltd.
Brookside Capital, LLC
C B Health Ventures, LLC
Capital Fund Management LLP
Cardinal Partners
Cerberus Capital Management, L.P.
Citibank, N.A.
Clayton, Dubilier & Rice, LLC
Commonfund Capital, Inc
Commonwealth Capital Ventures
Community Bancorp LLC
CQS
CVC Capital Partners Limited
Davidson Kempner Advisors, Inc.
Duff Ackerman & Goodrich
Dyal Capital Partners
EnCap Investments LP
Essex Woodlands Health Ventures
Fairview Management Group, LLC
Fortress Investment Group, LLC
Foundation Medical Partners
Fox Paine & Company, LLC
Francisco Partners
Freeman Spogli & Co.
Friedman, Fleischer & Lowe, LLC
General Catalyst Partners
Gilbert Global Equity Capital, LLC
Globespan Capital Management, LLC
Golub Capital
Grosvenor Capital Management, LLC
GSO Capital Partners, LP
GTCR LLC
H.I.G. Capital Management
Hamilton Bancorp Incorporated
HarbourVest Partners, LLC
Heartland Industrial Partners
Hellman & Friedman LLC
Hermes GPE LLP
HSBC Group
King Street Advisors, LLC
Kohlberg Kravis Roberts & Co. LP
Leonard Green & Partners, LP
Lighthouse Capital Partners
Lightspeed China Partners
Lime Rock Partners, LLC
Linsalata Capital Partners
Man Asset Management Limited
Meritage Holdings, LLC
MHR Fund Management LLC
MKP Capital Management
Monitor Clipper Partners, Inc.
Moonrise Capital LP
Moore Capital Advisors, LLC
Morgenthaler Ventures
MV Management XIV, LLC
New Enterprise Associates (NEA)
NISA
Oak Hill Capital Management, Inc.
Oaktree Capital Management Limited
Oaktree Capital Management, LLC
Och-Ziff Capital Management Group
Ohio Innovation Fund
Owl Rock Capital Advisors
Oxford Finance, LLC
Paine Schwartz Paine, LLC
Pamplona Capital Management
Panda Energy International, Inc.
Park Street Capital, LLC
PineBridge Investments
Primus Venture Partners, Inc.
Providence Equity Partners, Inc.
Quad Partners LLC
Redpoint Omega III, LLC
Redshift Ventures
Resolution Life
Reverence Capital Partners LLC
Ross, Jeffrey & Antle LLC
SciBeta
Semaphore
Silver Lake Partners
Summit Partners
TA Associates, Inc.
TCW Group
Texas Pacific Group
The Blackstone Group
The Carlyle Group
The Riverside Company
Thoma Bravo, LLC
Tiger Iron Capital
TowerBrook Capital Partners, LP
TPG Sixth Street Partners (TSSP)
Triton Partners
Truebridge Capital Partners, LLC
TSG Consumer Partners (FKA: Shansby Group)
Two Sigma Advisers
Veritas Capital Fund Management, LLC
Vista Equity Partners Management, LLC
Vitruvian Partners LLP
Warburg Pincus LLC
WL Ross & Co, LLC (Invesco)

Classic Values, Innovative Advice

Certification

October 2019

State Teachers Retirement System of Ohio
275 East Broad Street
Columbus, Ohio 43215

This report presents the June 30, 2019 Actuarial Valuation of the State Teachers Retirement System of Ohio ("STRS"). In preparing our report, we relied on information, some oral and some written, supplied by the STRS. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Included in the report are the following supporting schedules prepared by Cheiron to be included in the Financial, Actuarial and Statistical sections of the STRS Ohio *Comprehensive Annual Financial Report*:

– Financial/Required Supplementary Information
  - Schedule of Changes in Employers' Net Pension Liability
  - Schedule of Employers' Net Pension Liability
  - Schedule of Employers' Contributions – Pension
  - Notes to Required Supplementary Information – Pension
  - Sensitivity of the Net Pension Liability to the Discount Rate Assumption

– Actuarial
  - Schedule of Valuation Data – Active Members
  - Schedule of Valuation Data – Retirees/Beneficiaries
  - Benefit Recipients Added to and Removed from the Rolls
  - Solvency Test
  - Analysis of Financial Experience

– Statistical
  - Actuarial Funded Ratio & Funding Period
  - Selected Funding Information – Defined Benefit Plan
  - Number of Benefit Recipients by Type
  - Summary of Active Membership Data
  - Benefit Payments by Type

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and, changes in plan provisions or applicable law.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This report was prepared for STRS for the purposes described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Gene Kalwarski, FSA, FCA, MAAA, EA
Principal Consulting Actuary

Michael Nobel, FSA, FCA, MAAA, EA
Principal Consulting Actuary

This section presents the results of the annual valuation of the assets and liabilities of the State Teachers Retirement System of Ohio (STRS Ohio) as of June 30, 2019, prepared by its actuary, Cheiron, in accordance with Section 3307.51 of Chapter 3307 of the Ohio Revised Code.

Summary of Actuarial Assumptions and Methods

The assumptions below have been adopted by the State Teachers Retirement Board after consulting with the actuary. The board has adopted a funding policy that establishes the framework and specific objectives to monitor the system's funding status.

Mortality Rates — Post-Retirement: RP-2014 Annuitant Mortality Table with 50% of rates through age 69, 70% of rates between ages 70 and 79, 90% of rates between ages 80 and 84, and 100% of rates thereafter, projected forward generationally using mortality improvement scale MP-2016. (Adopted effective July 1, 2017). Sample 2014 mortality rates are as follows.

Mortality Rates — Post-Retirement		
Age	Male	Female
50	0.20%	0.14%
55	0.29%	0.18%
60	0.39%	0.26%
65	0.55%	0.40%
70	1.17%	0.90%
75	1.88%	1.47%
80	4.02%	3.14%
85	7.75%	6.05%
90	13.59%	10.71%
95	21.86%	17.90%
100	31.40%	27.09%

Mortality Rates — Pre-Retirement: RP-2014 Employee Mortality Table, projected forward generationally using mortality improvement scale MP-2016. (Adopted effective July 1, 2017).

Mortality Rates — Post-Retirement Disabled: RP-2014 Disabled Mortality Table with 90% of rates for males and 100% of rates for females, projected forward generationally using mortality improvement scale MP-2016. (Adopted effective July 1, 2017). Sample 2014 mortality rates as follows.

Mortality Rates — Post-Retirement Disabled		
Age	Male	Female
45	1.53%	0.90%
50	1.84%	1.19%
55	2.10%	1.45%
60	2.39%	1.70%
65	2.85%	2.09%
70	3.63%	2.82%
75	4.89%	4.10%

Active Retirement Rates: The following rates of retirement are assumed for members eligible to retire — shown below for selected ages. (Adopted effective July 1, 2017).

Active Retirement Rates

Defined Benefit Plan – Grandfathered Male Rates				
Age	Under 25 Years of Service	25-29 Years of Service	30-34 Years of Service	35 or More Years of Service
<53	0%	0%	20%	30%
55	0%	6%	20%	40%
60	10%	7%	20%	40%
65	20%	20%	25%	25%
70	15%	20%	25%	20%
75	100%	100%	100%	100%

Defined Benefit Plan – Grandfathered Female Rates				
Age	Under 25 Years of Service	25-29 Years of Service	30-34 Years of Service	35 or More Years of Service
<53	0%	0%	20%	35%
55	0%	9%	20%	40%
60	10%	10%	30%	45%
65	25%	30%	35%	45%
70	20%	20%	35%	40%
75	100%	100%	100%	100%

Defined Benefit Plan – Non-Grandfathered Male Rates				
Age	Under 25 Years of Service	25-29 Years of Service	30-34 Years of Service	35 or More Years of Service
<53	0%	3%	20%	20%
55	0%	3%	20%	20%
60	5%	5%	20%	25%
65	20%	20%	25%	25%
70	20%	20%	25%	20%
75	100%	100%	100%	100%

Defined Benefit Plan – Non-Grandfathered Female Rates				
Age	Under 25 Years of Service	25-29 Years of Service	30-34 Years of Service	35 or More Years of Service
<53	0%	5%	20%	20%
55	0%	5%	20%	20%
60	10%	10%	30%	30%
65	30%	30%	35%	35%
70	20%	20%	35%	30%
75	100%	100%	100%	100%

Combined Plan		
Age	Male	Female
60	13%	22%
65	17%	20%
70	12%	12%
75	100%	100%

Inactive Vested Retirement Rates: 5% at each early retirement age through age 64 and 100% at age 65, or the first age at which unreduced benefits are available.

Disability Rates: Shown below for selected ages. (Adopted effective July 1, 2017).

Disability Rates	
Age	Unisex Rate
Under 30	0.01%
30	0.01%
35	0.03%
40	0.05%
45	0.10%
50	0.18%
55	0.22%
60	0.25%
65 and Over	0.25%

Termination Rates: Termination rates based on service, for causes other than death, disability, or retirement. (Adopted effective July 1, 2017).

Vested Terminations*		
Age	Male	Female
20	11.25%	13.25%
25	11.25%	12.50%
30	2.75%	3.75%
35	2.00%	2.00%
40	1.75%	1.50%
45	1.75%	1.25%
50	2.00%	1.75%
55	3.25%	3.00%
60	0.00%	0.00%

* Termination rates cut out at first retirement eligibility

Non-Vested Terminations		
Service	Male	Female
Under 1 Year	30.00%	25.00%
1 to 2 Years	20.00%	20.00%
2 to 3 Years	15.00%	10.00%
3 to 5 Years	10.00%	10.00%

Percent Electing a Deferred Termination Benefit: 50% of terminating members of the Defined Benefit Plan are assumed to elect deferred termination benefit. Termination benefits are assumed to commence at age 60 or the first age at which unreduced benefits are available, if earlier.

Percent Married: For valuation purposes, 80% of male members and 60% of female members are assumed to be married. Male members are assumed to be three years older than their spouses, and female members are assumed to be one year younger than their spouses. (The assumed age difference adopted effective July 1, 2012, and reaffirmed effective July 1, 2017.)

Dependents for Survivor's Benefit: The spouse is the only assumed beneficiary for the survivor's benefit.

Investment Return Rate: 7.45% per annum, compounded annually and net of all expenses. (Adopted effective July 1, 2017)

Salary Increase Rates: Inflation rate of 2.50% plus merit and seniority increase, as shown below for selected ages. (Adopted effective July 1, 2017).

Salary Increase Rates	
Age	Rate
20	12.50%
25	11.50%
30	7.75%
35	6.50%
40	5.25%
45	4.75%
50	4.00%
55	3.50%
60	2.75%
65	2.50%

Payroll Growth Rate: 3.00% per annum. (Adopted effective July 1, 2017).

Defined Contribution Plan: The defined benefit account balance is added to the actuarial liability and the actuarial value of assets. If a member retires and elects to have the defined contribution account balance paid as an annuity, then the account balance is transferred to the Defined Benefit Plan and the annuity is valued as part of the Defined Benefit Plan.

Rationale for Assumptions: The demographic actuarial assumptions were adopted by the Board based on recommendations from the prior actuary from an experience study covering plan experience for the period July 1, 2011, through June 30, 2016. Cheiron has reviewed this experience study dated March 3, 2017. Cheiron considers these assumptions to be generally reasonable, but has not yet performed its own actuarial experience study. An experience study will be performed once a sufficient amount of recent data has been accumulated.

Actuarial Value of Assets: The actuarial value of assets is based on the market value of assets with a four-year phase-in of actual investment return in excess of (or less than) expected investment income. Expected investment income is determined using the assumed investment return rate and the actuarial value of assets (adjusted for receipts and disbursements during the year). The actual investment return for this purpose is determined net of all investment and administrative expenses. The actuarial value is further adjusted, if necessary, to be within 9% of the market value.

Actuarial Funding Method: The funding method for the valuation of liabilities used for this valuation is the Entry Age Normal (EAN) method. Under this funding method, a normal cost rate is determined as a level percentage of pay for each active participant. The normal cost rate multiplied by payroll equals the total normal cost for each participant. The normal cost contributions (employer and participant) will pay for projected benefits at retirement for each active participant.

The actuarial liability is the difference between the present value of future benefits and the present value of future normal costs. The difference between this actuarial liability and the actuarial value of assets is the unfunded actuarial liability (UAL).

The portion of the actuarial liability in excess of plan assets, the UAL, is amortized to develop an additional cost that is added to each year's employer normal cost. Under this funding method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability. The amortization method is described below.

Amortization Method: The actuarially determined contribution (ADC) is determined as the sum of (a) the employer normal cost rate, and (b) a level percentage of payroll required to amortize the unfunded actuarial accrued liability over the 30-year closed period that began July 1, 2015.

Benefit Recipients Added to and Removed From the Rolls, 2010–2019

Fiscal Year Ended	Beginning Number of Benefit Recipients	Beginning Annual Allowances (in thousands)	Benefit Recipients Added	Payments Added (in thousands)	Benefit Recipients Removed	Payments Removed (in thousands)	Ending Number of Benefit Recipients	Ending Annual Allowance (in thousands)
2010	129,659	$4,706,964	7,089	$334,654	3,645	$83,658	133,103	$4,957,960
2011	133,103	$4,957,960	7,744	$501,900	2,759	$66,488	138,088	$5,393,372
2012	138,088	$5,393,372	8,761	$512,952	3,593	$90,917	143,256	$5,815,407
2013	143,256	$5,815,407	8,493	$441,942	2,528	$67,167	149,221	$6,190,182
2014	149,221	$6,190,182	5,550	$283,768	2,563	$76,415	152,208	$6,397,535
2015	152,208	$6,397,535	9,027	$490,598	3,119	$86,952	158,116	$6,801,181
2016	158,116	$6,801,181	2,675	$177,665	2,853	$82,684	157,938	$6,896,162
2017	157,938	$6,896,162	3,254	$155,702	3,153	$96,555	158,039	$6,955,309
2018	158,039	$6,955,309	3,847	$128,494	4,464	$134,381	157,422	$6,949,422
2019	**157,422**	**$6,949,422**	**4,894**	**$178,255**	**4,898**	**$156,522**	**157,418**	**$6,971,155**

Schedule of Valuation Data — Active Members, 2010–2019

Valuation Date	Number of Active Members	Annualized Salaries (in thousands)	Annual Average Pay	% Increase in Average Pay
2010	175,842	$9,633,354	$54,784	0.8%
2011	177,897	$9,609,723	$54,018	–1.4%
2012	173,044	$9,330,845	$53,922	–0.2%
2013	169,945	$9,118,036	$53,653	–0.5%
2014	169,295	$9,148,438	$54,038	0.7%
2015	164,925	$9,057,095	$54,916	1.6%
2016	169,212	$9,562,236	$56,510	2.9%
2017	168,132	$9,842,388	$58,540	3.6%
2018	170,327	$10,581,345	$62,124	6.1%
2019	**170,004**	**$10,849,863**	**$63,821**	**2.7%**

Schedule of Valuation Data — Retirees/Beneficiaries, 2010–2019

Valuation Date	Number of Retirees/Beneficiaries	Annual Allowances (in thousands)	Average Annual Allowances	% Increase in Annual Allowances
2010	133,103	$4,957,960	$37,249	5.3%
2011	138,088	$5,393,372	$39,057	8.8%
2012	143,256	$5,815,407	$40,595	7.8%
2013	149,221	$6,190,182	$41,483	6.4%
2014	152,208	$6,397,535	$42,032	3.3%
2015	158,116	$6,801,181	$43,014	6.3%
2016	157,938	$6,896,162	$43,664	1.4%
2017	158,039	$6,955,309	$44,010	0.9%
2018	157,422	$6,949,422	$44,145	–0.1%
2019	**157,418**	**$6,971,155**	**$44,284**	**0.3%**

Solvency Test, 2010–2019 (dollar amounts in thousands)

Valuation Date	Accrued Liability For: (1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members (Employer-Financed Portion)	Actuarial Value of Assets*	Portion of Accrued Liabilities Covered by Valuation Assets: (1)	(2)	(3)
2010	$10,641,167	$57,754,654	$26,324,848	$55,946,259	100%	78%	0%
2011	$10,907,611	$62,441,601	$25,416,993	$58,110,495	100%	76%	0%
2012	$10,985,246	$68,111,175	$27,205,420	$59,489,508	100%	71%	0%
2013	$10,962,886	$68,075,440	$15,328,367	$62,590,786	100%	76%	0%
2014	$11,477,457	$69,776,259	$14,913,341	$66,657,175	100%	79%	0%
2015	$11,473,309	$74,340,699	$13,200,646	$68,655,999	100%	77%	0%
2016	$12,498,469	$74,282,592	$13,975,362	$70,114,637	100%	78%	0%
2017	$13,668,834	$69,723,394	$12,734,213	$72,216,212	100%	84%	0%
2018	$15,440,336	$68,911,073	$12,552,648	$73,115,358	100%	84%	0%
2019	**$16,454,187**	**$68,412,083**	**$12,974,674**	**$74,411,836**	**100%**	**85%**	**0%**

*Excludes health care assets.

Analysis of Financial Experience

Gains and Losses in Unfunded Actuarial Liability Resulting From Differences Between Assumed Experience and Actual Experience (in thousands)

Type of Activity	2019	2018	2017	2016	2015
Investment income. If there is greater investment income than assumed, there is a gain. If less, there is a loss.	$ 3,515	$ (253,993)	$ 857,418	$ 774,260	$ 1,068,184
Payroll growth. If more contributions from payroll growth are received than expected, there is a gain. If less, there is a loss.	0	0	7,091	(40,874)	(26,173)
Salary increases. If there are smaller salary increases than assumed, there is a gain. If greater increases, there is a loss.	207,875	180,810	279,058	236,054	21,385
Retirement and other separation experience. If members retire from service at an older age or with a lower final average salary than assumed, there is a gain. If separation claims are less than expected, there is a gain. If new members don't enter the system as expected, there is a loss.	(325,891)	(285,353)	(316,922)	(333,342)	(1,064,240)
Death after retirement. If retirees live shorter than expected, there is a gain. If retirees live longer than assumed, there is a loss.	152,788	(9,495)	27,307	(336,967)	(223,251)
Final plan reselection. If the account value from defined contribution accounts is greater than the reestablished defined benefit account balance, there is a gain.	0	0	(1,403)	(9,569)	(8,240)
Gain (or loss) during year from financial experience	38,287	(368,031)	852,549	289,562	(232,335)
Actuarial gain (or loss) due to assumption changes/plan amendments	0	236,418	415,862	0	0
Composite gain (or loss) during the year	**$ 38,287**	**$ (131,613)**	**$ 1,268,411**	**$ 289,562**	**$ (232,335)**

Summary of Benefit and Contribution Provisions — Defined Benefit Plan

Eligibility for Membership

Immediate upon commencement of employment.

Service Retirement

Eligibility: Effective Aug. 1, 2015, the service credit requirements for an unreduced benefit are as follows:

Unreduced Benefit for Retirement	Minimum Age and Years of Service
Through 7/1/2015	Any age and 30 years; or age 65 and 5 years
8/1/2015–7/1/2017	Any age and 31 years; or age 65 and 5 years
8/1/2017–7/1/2019	Any age and 32 years; or age 65 and 5 years
8/1/2019–7/1/2021	Any age and 33 years; or age 65 and 5 years
8/1/2021–7/1/2023	Any age and 34 years; or age 65 and 5 years
8/1/2023–7/1/2026	Any age and 35 years; or age 65 and 5 years
8/1/2026	Age 60 and 35 years; or age 65 and 5 years

Amounts effective Aug. 1, 2015: Annual amount equal to 2.2% of final average salary for the five highest years of earnings, multiplied by all years of service.

Amounts on or before July 1, 2015: Annual amount equal to the greater of (a) 2.2% of final average salary for the three highest years of earnings, multiplied by years of total Ohio service credit, or 2.5% of final average salary for the three highest paid years if the member has 35 or more years of contributing service credit multiplied by years of total contributing service credit, except that for years of contributing service credit in excess of 30, the following percentages apply:

Year	Percentage
31	2.5%
32	2.6%
33	2.7%
34	2.8%
35	2.9%
36	3.0%
37	3.1%
38	3.2%
39	3.3%

or (b) $86 multiplied by years of service credit.

Transition Benefit: For members who were eligible to retire on July 1, 2015, the annual amount will be greater of (a) the benefit amount calculated upon retirement under the current benefit formula, or (b) the benefit amount the member would have received if he/she retired on July 1, 2015.

Annual salary is subject to the limit under Section 401(a) (17) of the Internal Revenue Code.

Reduction factors for early retirement: The service credit requirements for an actuarially reduced benefit are as follows:

Actuarially Reduced Benefit for Retirement	Minimum Age and Years of Service
Through 7/1/2015	Age 55 and 25 years; or age 60 and 5 years
8/1/2015–7/1/2017	Any age and 30 years; or age 55 and 26 years; or age 60 and 5 years
8/1/2017–7/1/2019	Any age and 30 years; or age 55 and 27 years; or age 60 and 5 years
8/1/2019–7/1/2021	Any age and 30 years; or age 55 and 28 years; or age 60 and 5 years
8/1/2021–7/1/2023	Any age and 30 years; or age 55 and 29 years; or age 60 and 5 years
8/1/2023	Any age and 30 years; or age 60 and 5 years

The actuarially reduced benefit reflects a reduction for each year that the member retires before meeting eligibility for an unreduced benefit.

Disability Retirement

Eligibility: Membership before July 30, 1992, and election of this benefit, completion of five or more years of qualifying service credit, under age 60 and permanently incapacitated for the performance of duty.

Amount

(1) Annuity with a reserve equal to the member's accumulated contributions, plus

(2) The difference between (1) and 2% of the average salary during the three highest paid years times total service plus years and months from date of disability to age 60. Maximum allowance is 75% of final average salary. Minimum allowance is 30% of final average salary. Disability benefits commencing before Aug. 1, 2015, were based on a three-year final average salary.

Disability Allowance

Eligibility: Membership on or after July 1, 2013, completion of 10 years of qualifying service credit and permanently incapacitated for the performance of duty. For membership after July 29, 1992, and before July 1, 2013, or membership before July 30, 1992, and election of this benefit, completion of five or more years of qualifying service credit and permanently incapacitated for the performance of duty.

Amount: 2.2% of the average salary during the five highest paid years times total service. Maximum allowance is 60% of final average salary. Minimum allowance is 45% of final average salary. The disability allowance payment terminates at age 65 (or later if payment begins after age 60). After termination of the disability allowance, the member may apply for service retirement. Disability benefits commencing before Aug. 1, 2015, were based on a three-year final average salary.

Death After Retirement

Lump-sum payment of $1,000 upon death after service or disability retirement.

Survivor Benefits

Eligibility: For membership before July 1, 2013, upon death after at least 1-1/2 years of credit with at least 1/4 year of such service in the 2-1/2 years preceding death or upon death of a disability benefit recipient. For membership on or after July 1, 2013, upon death after at least five years of qualifying service credit and died not later than one year after the date service terminated or upon the death of a disability benefit recipient.

Qualified survivors will receive the highest benefit from among the following for which they are eligible: dependent-based benefit, service-based benefit, and retirement-based benefit.

Qualified survivors are the spouse, dependent children, and/or dependent parents over age 65.

Dependent-based benefit: Monthly survivor benefits are determined according to the number of qualified survivors. These benefits are payable as a percentage of final average salary. The percentages are as follows:

Number of Qualified Dependents	% of Final Average Salary
1	25%
2	40%
3	50%
4	55%
5 or more	60%

Service-based benefit: If a member has 20 or more years of service before death, monthly survivor benefits are determined according to the number of years of service credit. These benefits are payable as a percentage of final average salary. The percentages are as follows:

Years of Service	% of Final Average Salary
20	29%
21	33%
22	37%
23	41%
24	45%
25	48%
26	51%
27	54%
28	57%
29 or more	60%

Retirement-based benefit: If a member dies after meeting service retirement eligibility, the monthly survivor benefit is determined as if the member had actually retired and provided the maximum joint and survivor benefit to the qualified survivor (Option 1). Early retirement reduction applies if the member is not eligible for unreduced benefit.

The primary beneficiary may withdraw the deceased member's account in lieu of receiving monthly benefits if there are no children who are qualified survivors.

Lump-Sum Withdrawal Option

In lieu of any other pension or survivor benefits, a member who leaves the system can receive his or her member contributions with interest in a lump sum payment according to the following schedule:

Credited Service	Lump-Sum Amount
Less than three years	Member contributions with 2% interest
Three or more years but less than five years	Member contributions with 3% interest
Five or more years	150% of member contributions with 3% interest

The board has the authority to modify the interest credited to member contributions.

Plans of Payment

There are four basic plans of payment:

Plan I — Single Life Annuity: if a member chooses this plan at retirement and later marries, he/she may change the plan to a Joint and Survivor Annuity with his/her spouse as beneficiary within the first year of the marriage.

Plan II — Joint and Survivor Annuity: there are four options under this plan of payment:

- Options 1, 2 and 3 apply to a single primary beneficiary
- Option 4 applies to multiple primary beneficiaries

Plan III — Annuity Certain: if a death occurs before the guaranteed period ends, a beneficiary receives the same monthly benefit until the guaranteed period expires. If a member names more than one beneficiary, a lump-sum payment, representing the present value of the remaining payments, is divided equally and paid to the beneficiaries. If all beneficiaries die before the expiration of the certain period, the present value of all remaining payments is paid to the estate of the beneficiary last receiving payments.

Plan IV — Partial Lump-Sum Option Plan: allows a member to take an amount from six to 36 times the monthly Single Life Annuity benefit in a lump sum at retirement. The remainder of a member's lifetime benefits will be paid based on member's selected plan of payment: Single Life Annuity, Joint and Survivor Annuity or Annuity Certain.

Optional Forms of Benefit

Option 1 — 100% joint and survivorship. Reduced retirement allowance payable to the member, continuing after the member's death, for life to the member's sole beneficiary named at retirement.

Option 2 — A joint and survivorship annuity payable during the lifetime of the member, with the member's sole beneficiary named at retirement to receive some other portion of the member's annuity after the member's death.

Option 3 — The sole member's reduced retirement allowance provided under Option 1 or Option 2 is to be paid after the member's death for life to the member's sole beneficiary named at retirement, except that in the event of the death of the sole beneficiary or termination of marriage between the retiree and the sole beneficiary, the retiree may elect to return to his single lifetime benefit equivalent. In the case of termination of marriage, the election may be made with the written consent of the beneficiary or by court order.

Option 4 — Members may elect a reduced benefit to provide continuing lifetime benefits for up to four primary beneficiaries under a Joint and Survivor Annuity. A member may specify percentages of his/her benefit or a flat dollar amount for each beneficiary; however, the total benefit amount payable to all beneficiaries cannot exceed the amount payable to the member.

Cost-of-Living Adjustment (COLA)

Effective July 1, 2017, the COLA was reduced to zero.

Health Care

Retirees, their spouses and dependents are eligible for a comprehensive medical expense health care plan as may be offered by the Retirement Board, subject to changes in terms and conditions from time to time.

Contributions

By Members: 14% of salary.

By Employers: 14% of salaries of their employees who are members.

Summary of Benefit and Contribution Provisions — Combined Plan

Eligibility for Membership

New members hired on or after July 1, 2001, may elect in writing to participate in the Combined Plan.

Service Retirement

Eligibility: Age 60 with five years of service.

Amount: The balance in the member's defined contribution account plus an annual amount equal to 1% of final average salary for the five highest paid years multiplied by years of total Ohio service credit.

Before Aug. 1, 2015, the final average salary was the average of the member's three highest salary years.

Annual salary is subject to the limit under Section 401(a)(17) of the Internal Revenue Code.

Vesting

Eligibility: Completion of five years of service for the defined benefit portion. Member contributions and earnings are 100% vested at all times.

Amount: A member who terminates with five or more years of service credit can receive the actuarial equivalent present value of the defined benefit formula. Before age 50, a withdrawal must include both the defined benefit and defined contribution portions of the account.

Early Retirement

Eligibility: Before age 60 with five years of service.

Amount: The normal retirement benefit commencing at age 60. At age 50 or after, a member may elect to withdraw the full value of his or her defined contribution account and receive the withdrawal value of the defined benefit in a single sum, or leave the defined benefit on account for a benefit payable at age 60. The member may withdraw the defined benefit portion of the account only if he or she is also withdrawing the defined contribution account.

Disability Benefits

Eligibility: Completion of five or more years of qualifying service credit and permanently incapacitated from the performance of duty. For membership on or after July 1, 2013, completion of 10 years of qualifying service credit with STRS Ohio.

Amount: 2.2% of the average salary during the five highest paid years times total service. Maximum allowance is 60% of final average salary and the minimum is 45%. All contributions and investment gains in the member's defined contribution account are used to fund the benefit. At age 65, the disability allowance converts to a service retirement benefit with a 2.2% formula. Alternatively, the member's defined contribution account is available.

Survivor Benefits

Eligibility: For membership before July 1, 2013, upon death after at least 1-1/2 years of qualifying service credit with at least 1/4 year of such service in the 2-1/2 years preceding death or upon death of a disability benefit recipient. For membership on or after July 1, 2013, upon death at least five years of qualifying service credit and died no later than one year after service terminated or upon death of a disability benefit recipient.

Amount: Qualified survivors have the option of receiving dependent-based, service-based or retirement-based benefits described under the Defined Benefit Plan. Both employer contributions and the member's contributions and any investment gains in the member's defined contribution account are used to fund the benefit. Survivors also have the option to withdraw the defined contribution and defined benefit portions of the Combined Plan account.

Optional Forms of Payment of Defined Benefit Portion

The greater of a lump sum of the actuarial equivalent of the defined benefit formula benefit or member contributions to the defined benefit portion. If a member withdraws the defined contribution account before age 50, the defined benefit portion is paid in a lump sum.

Joint and Survivorship Options — Options 1 through 4 described in the Defined Benefit Plan provisions are available, as well as the PLOP. All alternative forms of payment are the actuarial equivalent of the Single Life Annuity benefit payable at age 60.

Optional Forms of Payment of Member's Defined Contribution Account

The actuarial equivalent of the member's defined contribution account can be paid on or after age 50 as a lifetime annuity. Options 1 through 4, described in the Defined Benefit Plan provisions, are also available. The monthly annuity must be $100 or more to receive the member's defined contribution account in the form of an annuity.

The vested amount of the member's defined contribution account upon termination of employment can be paid as a single lump sum. If a member takes a lump sum of the defined benefit formula benefit, the member must simultaneously withdraw the lump-sum value of the member's defined contribution account in a single lump sum.

Health Care

Retirees, their spouses and dependents are eligible for a comprehensive medical expense health care plan as may be offered by the Retirement Board, subject to changes in terms and conditions from time to time.

Contributions

By Members: 14% of salary.

12% of salary is deposited into the member's defined contribution account and 2% is applied to the defined benefit portion of the Combined Plan.

By Employers: 14% of salaries of their employees who are Combined Plan members.

Summary of Benefit and Contribution Provisions — Defined Contribution Plan

Eligibility for Membership

New members hired on or after July 1, 2001, may elect in writing to participate in the Defined Contribution Plan.

Service Retirement

Eligibility: Termination after age 50.

Amount: The balance in the member's defined contribution account.

Vesting

Eligibility: Members vest 20% per year in employer contributions and all gains and losses on those contributions. Member contributions and earnings are 100% vested immediately.

Amount: The balance in the member's defined contribution account.

Early Retirement

Eligibility: Termination before age 50.

Amount: The balance in the member's defined contribution account.

Disability Benefits

Eligibility: Permanently incapacitated for the performance of duty and termination of employment.

Amount: The balance in the member's defined contribution account. At age 50, other payment options are available, but employment must first be terminated.

Survivor Benefits

Eligibility: Upon death.

Amount: The balance in the member's defined contribution account. A spouse may either continue to manage the member's defined contribution account or withdraw the account.

Optional Forms of Payment

The actuarial equivalent of the member's defined contribution account can be paid on or after age 50 as a lifetime annuity. Options 1 through 4, described in the Defined Benefit Plan provisions, are also available. The monthly annuity must be $100 or more to receive the member's defined contribution account in the form of an annuity.

Cost-of-Living Adjustment (COLA)

Not available.

Health Care

Not available.

Contributions

By Members: 14% of salary is deposited into the member's defined contribution account.

By Employers: 14% of salaries of their employees who are Defined Contribution Plan members. Effective July 1, 2017, 9.53% of salary is deposited into the member's defined contribution account. 4.47% of the salaries is used to amortize the unfunded actuarial accrued liability of the plan.

CHEIRON Classic Values, Innovative Advice

Certification

October 2019

State Teachers Retirement System of Ohio
275 East Broad Street
Columbus, Ohio 43215

This report presents the June 30, 2019 actuarial valuation and disclosure information under the Governmental Accounting Standards Board (GASB) Statement Nos. 74 and 75 for the Other Postemployment Benefits (OPEB) Plan provided by the State Teachers Retirement System of Ohio (STRS). This report is for the use of STRS and their auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the measurement of funding requirements for the Plan.

The actuary prepared the following supporting schedules including the Financial and Actuarial Sections of the *Comprehensive Annual Financial Report*:

– Financial/Required Supplementary Information
  - Schedule of Changes in Employers' Net OPEB Liability
  - Schedule of Employers' Net OPEB Liability
  - Schedule of Employers' Contributions – OPEB
  - Notes to Required Supplementary Information – OPEB
  - Sensitivity of the Net OPEB Liability to the Discount Rate and Trend Rate Assumptions

– Actuarial
  - Health Care Solvency Test
  - Key methods and assumptions used in Health Care Actuarial Valuation
  - Summary of Membership Data

In preparing our report, we relied on information (some oral and some written) supplied by STRS. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, changes in healthcare assumptions, and changes in plan provisions or applicable law.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This report was prepared for STRS for the purposes described herein and for the use by the auditors in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Margaret A. Tempkin, FSA, MAAA, EA
Principal Consulting Actuary

Gaelle Gravot, FSA, MAAA
Principal Consulting Actuary

A separate annual valuation of the retiree health care coverage provided by STRS Ohio was performed as of June 30, 2019, by Cheiron.

Summary of Actuarial Assumptions and Methods — Health Care Plan

The assumptions for this valuation were selected based on recent experience and expectations for the future. Many of the demographic assumptions were selected by the prior actuary based on its prior experience study. Cheiron has not performed its own experience study but reviewed the reports and letters of the prior actuary and believe the assumptions to be reasonable.

Expected Return on Assets: 7.45%

Municipal Bond Yield: 3.50% as of June 30, 2019

Discount Rate: 7.45%, based on a blend of 3.50% municipal bond yield rate and the expected return on invested plan assets. The assets are sufficient to cover all expected benefits, thus the long-term rate of return is used.

Payroll Increase Rate: 3.00% per year for purposes of attributing individual costs under the Entry Age actuarial cost method.

Salary Increase Rate: Varies by age from 2.5% to 12.5%.

Per Person Health Care Cost Trend Rates:

	Medical		Prescription Drug	
Year	Pre-65	65+	Pre-65	65+
2020	5.87%	4.93%	7.73%	9.62%
2021	5.73%	4.87%	7.47%	8.06%
2022	5.60%	4.80%	7.20%	7.75%
2023	5.47%	4.73%	6.93%	7.44%
2024	5.33%	4.67%	6.67%	7.13%
2025	5.20%	4.60%	6.40%	6.81%
2026	5.07%	4.53%	6.13%	6.50%
2027	4.93%	4.47%	5.87%	6.19%
2028	4.80%	4.40%	5.60%	5.88%
2029	4.67%	4.33%	5.33%	5.56%
2030	4.53%	4.27%	5.07%	5.25%
2031	4.40%	4.20%	4.80%	4.94%
2032	4.27%	4.13%	4.53%	4.63%
2033	4.13%	4.07%	4.27%	4.31%
2034	4.00%	4.00%	4.00%	4.00%
2035+	4.00%	4.00%	4.00%	4.00%

Economic Assumption Changes Since Last Valuation: None

Retirement Rates: The same retirement rates were used in the June 30, 2019, pension valuation.

Rates of Termination/Withdrawal: The same rates of termination/withdrawal were used as in the June 30, 2019, pension valuation.

Rates of Mortality: The same rates of mortality were used as in the June 30, 2019, pension valuation.

Percent of Retirees Electing Health Care Coverage: 75% of future eligible service retirees and 65% of future eligible disabled retirees are assumed to elect health care coverage. 100% of Combined Plan and 50% of Defined Benefit Plan future inactive vested participants are assumed to cash out. 30% of inactive vested participants who do not cash out are assumed to elect health care coverage. Current and future participants for whom the value of the benefits received is less than their contribution are assumed to drop health care coverage.

Benefit Elections: Below is a summary of medical plan election rates for future retirees by Medicare status.

Pre-Medicare Medical Plans	Benefit Election Rate
Medical Mutual/Aetna Basic PPO	93.7%
AultCare PPO	3.2%
Paramount Health Care HMO	3.1%

Medicare Medical Plans	Benefit Election Rate
Aetna Medicare Advantage	93.7%
Medical Mutual/Aetna Basic PPO	4.3%
AultCare PPO	1.0%
Paramount Health Care HMO	1.0%

Spousal Coverage: Of those future retirees who elect to continue health coverage, 20% were assumed to have an eligible spouse who also opts for health care coverage at that time.

Dependent Age: For current retirees, the actual spouse date of birth was used when available. For future retirees, male retirees are assumed to be three years older than their partners, and female retires are assumed to be one year younger than their partners.

Administrative Expenses: Health plan administrative expenses are included in the per capita claims costs.

Changes Since the Last Valuation: Benefit percentage elections were updated to reflect current elections for blended premiums.

Claim and Expense Assumptions: The claims costs were developed based on actual medical and prescription drug claims paid from July 1, 2015 to June 30, 2017. An adjustment was made to the claims to account for the children of retirees. Additionally, 2018 contractual administrative expenses and an estimated CMS prescription drug plan subsidy were included. The resulting per person per month (PPPM) cost was then adjusted using age curves.

Average Annual Claims and Expense Assumptions: The following July 1, 2018–June 30, 2019, claims costs are shown for selected ages.

Average Claim and Expense Assumptions								
	Medical Pre-65		Prescription Drug Pre-65		Medical 65+		Prescription Drug 65+	
Age	Male	Female	Male	Female	Male	Female	Male	Female
40	$2,867	$5,202	$939	$1,164	$642	$578	$1,703	$1,632
50	$4,961	$6,200	$1,548	$1,643	$1,174	$1,057	$3,112	$2,982
60	$8,080	$8,936	$2,360	$2,233	$1,213	$1,092	$3,216	$3,081
65	$9,502	$8,989	$2,798	$2,529	$618	$566	$1,639	$1,598
70	$10,419	$9,967	$3,322	$2,887	$745	$642	$1,845	$1,673
80	$12,525	$12,253	$4,521	$3,684	$1,078	$900	$1,629	$1,551

Retiree Contributions: In 2019, non-Medicare retirees receive a subsidy of 1.944% per year of service to a maximum of 30 years and Medicare retirees receive a subsidy of 2.1% per year of service to a maximum of 30 years. In 2020, non-Medicare retirees receive a subsidy of 1.984% per year of service to a maximum of 30 years.

Beginning in 2021, the subsidy dollar amount for non-Medicare plans will be frozen at the 2020 levels. Annual increases in the subsidy dollar amount for Medicare plans will be based on the percentage increase in the Aetna Medicare Advantage Plan, limited at 6%.

For those who retire on or after August 2023, the first five years of service do not count towards the subsidy, so subsidy percentages are shifted five years and those with less than 20 years of service receive no subsidy.

A weighted average total cost across the medical plans is used as the STRS Ohio subsidy and is shown below. The amount is assumed to increase with health trend.

Weighted Average Premiums	
Pre-65 retirees	$11,615.83
Retirees age 65+	$4,087.78

Medicare Part D Subsidy: An estimate of $121.44 per Medicare participant is included in the fical 2019 rates.

Medicare Part B Premium Subsidy: Service retirees and disabled retirees who are enrolled in an STRS Ohio medical plan and who participate in Medicare Part B receive $29.90 monthly reimbursement towards the Part B premiums. This benefit will be eliminated Jan. 1, 2021.

Health Care Solvency Test, 2015–2019 (dollar amounts in thousands)

	Accrued Liability For:				Portion of Accrued Liability Covered by Fair Value of Assets:		
Actuarial Valuation Date	(1) Active Members	(2) Inactive Members	(3) Retirees, Survivors & Dependents	Fair Value of Assets	(1)	(2)	(3)
Jan. 1, 2015	$1,742,597	$15,459	$2,918,167	$3,454,000	100%	100%	58%
Jan. 1, 2016	$1,830,799	$19,435	$3,303,997	$3,258,197	100%	100%	43%
Jan. 1, 2017	$2,596,979	$18,783	$3,271,404	$3,222,093	100%	100%	19%
Jan. 1, 2018	$777,500	$2,424	$1,636,026	$3,691,399	100%	100%	178%
June 30, 2018	$784,921	$1,965	$1,327,565	$3,721,349	100%	100%	221%
June 30, 2019	**$872,892**	**$2,251**	**$1,340,775**	**$3,872,158**	**100%**	**100%**	**224%**

Summary of Membership Data

Valuation date	Jan. 1, 2015	Jan. 1, 2016	Jan. 1, 2017	Jan. 1, 2018	June 30, 2018	June 30, 2019
Active members	169,295	164,925	169,205	168,132	170,327	**170,004**
Inactive members	16,823	17,275	17,011	17,694	18,416	**18,762**

STRS Ohio Health Care Program Enrollees

	Jan. 1, 2017	Jan. 1, 2018	June 30, 2018	Added	Terminated	June 30, 2019
Retirees	99,835	98,231	97,830	2,600	4,195	**96,235**
Disabled retirees	4,131	3,939	3,823	94	278	**3,639**
Survivors	4,744	4,826	4,766	346	614	**4,498**
Spouses and dependents (excluding children)	16,376	15,458	14,913	508	1,267	**14,154**
Total	**125,086**	**122,454**	**121,332**	**3,548**	**6,354**	**118,526**
Annual allowance (in thousands)	$427,693	$351,457	$348,743	$15,080	$37,263	**$326,560**

Valuation date	Jan. 1, 2016	Jan. 1, 2017	Jan. 1, 2018	June 30, 2018	June 30, 2019
Average per health care participant annual benefit	$2,218	$2,205	$273	$667	**$772**

The objective of the statistical section is to provide financial statement users with historical perspective, context and detail to assist in using the information in the financial statements and the notes to the financial statements to better understand and assess STRS Ohio's economic condition.

The schedules on Pages 73–74 show financial trend information that assists users in understanding and assessing how STRS Ohio's financial position has changed over time. The financial trend schedules presented are:

- Changes in Fiduciary Net Position
- Net Position by Plan
- Benefit Expenses by Type

Demographic and economic information begins on Page 75. This information is intended to assist users in understanding the environment in which STRS Ohio operates and to provide information that facilitates comparisons of financial statement information over time and among governments. The demographic and economic information presented is:

- Actuarial Funded Ratio and Funding Period
- Selected Funding Information — Defined Benefit Plan
- Number of Benefit Recipients by Type
- Summary of Active Membership Data

Operating information, which begins on Page 77, is intended to provide contextual information about STRS Ohio's operation to assist in using financial statement information. The operating information presented is:

- Benefit Payments by Type
- Average Benefit Payments for Service Retirees
- Average Benefit Subsidy Payments for Retirees Enrolled in Health Care Plan
- Number of Reporting Employers by Type
- Principal Participating Employers

Changes in Fiduciary Net Position
Years Ending June 30, 2010–2019 (in thousands)

Defined Benefit Plan

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Additions:										
Member contributions	$ 1,066,483	$ 1,081,958	$ 1,049,709	$ 1,042,959	$ 1,134,899	$ 1,188,062	$ 1,289,809	$ 1,443,374	$ 1,479,151	$ 1,515,445
Employer contributions	1,374,327	1,379,104	1,349,561	1,327,862	1,325,141	1,449,165	1,466,938	1,514,285	1,565,679	1,614,188
Net investment income (loss)	6,641,516	11,924,753	1,094,829	7,984,266	10,418,170	3,644,151	361,567	9,098,570	6,625,382	4,768,116
Other	39,857	45,910	50,804	54,681	168,250	123,557	55,441	54,649	43,248	63,435
Total additions	9,122,183	14,431,725	3,544,903	10,409,768	13,046,460	6,404,935	3,173,755	12,110,878	9,713,460	7,961,184
Deductions:										
Benefit payments	4,900,418	5,244,407	5,741,042	6,152,335	6,504,676	6,662,232	7,090,037	6,989,165	7,052,642	7,040,052
Refunds	117,751	153,243	169,071	186,459	198,972	198,700	205,223	190,517	219,453	218,601
Administrative expenses	59,320	57,778	57,879	58,613	60,136	60,270	61,038	62,592	62,775	63,858
Total deductions	5,077,489	5,455,428	5,967,992	6,397,407	6,763,784	6,921,202	7,356,298	7,242,274	7,334,870	7,322,511
Net increase (decrease)	4,044,694	8,976,297	(2,423,089)	4,012,361	6,282,676	(516,267)	(4,182,543)	4,868,604	2,378,590	638,673
Net position held in trust, beginning of year	50,095,719	54,140,413	63,116,710	60,693,621	64,705,982	70,988,658	70,432,646	66,250,103	71,118,707	73,457,567
Prior period adjustment GASB 68 2015; GASB 75 2018	N/A	N/A	N/A	N/A	N/A	(39,745)	N/A	N/A	(39,730)	N/A
Beginning of year restated	N/A	N/A	N/A	N/A	N/A	70,948,913	N/A	N/A	71,078,977	N/A
Net position held in trust, end of year	**$54,140,413**	**$63,116,710**	**$60,693,621**	**$64,705,982**	**$70,988,658**	**$70,432,646**	**$66,250,103**	**$71,118,707**	**$73,457,567**	**$74,096,240**

Defined Contribution Plan

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Additions:										
Member contributions	$ 46,059	$ 47,935	$ 49,764	$ 52,331	$ 58,909	$ 71,073	$ 82,224	$ 94,303	$ 101,279	$ 107,650
Employer contributions	27,359	28,205	28,890	30,027	29,083	32,002	34,164	36,969	39,103	41,944
Net investment income (loss)	39,157	89,213	2,670	74,076	116,674	27,694	11,304	135,360	112,075	79,401
Transfers between retirement plans	(16,580)	(16,264)	(17,246)	(16,738)	(14,033)	(9,931)	(11,440)	(15,034)	(14,003)	(17,413)
Total additions	95,995	149,089	64,078	139,696	190,633	120,838	116,252	251,598	238,454	211,582
Deductions:										
Refunds	9,230	12,777	14,697	20,033	21,369	29,930	26,847	31,324	31,706	39,753
Administrative expenses	(35)	922	881	837	854	913	1,033	1,060	532	259
Total deductions	9,195	13,699	15,578	20,870	22,223	30,843	27,880	32,384	32,238	40,012
Net increase (decrease)	86,800	135,390	48,500	118,826	168,410	89,995	88,372	219,214	206,216	171,570
Net position held in trust, beginning of year	297,012	383,812	519,202	567,702	686,528	854,938	944,933	1,033,305	1,252,519	1,458,735
Net position held in trust, end of year	**$ 383,812**	**$ 519,202**	**$ 567,702**	**$ 686,528**	**$ 854,938**	**$ 944,933**	**$ 1,033,305**	**$ 1,252,519**	**$ 1,458,735**	**$ 1,630,305**

Post-Employment Health Care Plan

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Additions:										
Employer contributions	$ 103,415	$ 103,694	$ 101,025	$ 99,179	$ 98,330	$ 0	$ 0	$ 0	$ 0	$ 0
Health care premiums	222,316	222,130	246,264	261,903	277,477	306,569	339,927	339,056	329,305	312,841
Net investment income (loss)	348,311	608,969	54,990	402,110	524,484	180,566	17,001	440,197	328,965	244,700
Government reimbursements	38,156	70,556	92,213	41,200	46,132	61,127	58,812	79,357	107,197	84,789
Total additions	712,198	1,005,349	494,492	804,392	946,423	548,262	415,740	858,610	765,467	642,330
Deductions:										
Health care benefit payments	592,416	604,456	627,890	599,818	629,465	672,615	676,993	565,962	517,470	489,169
Administrative expenses	2,523	2,502	2,568	2,555	2,495	2,569	2,655	2,497	2,427	2,352
Total deductions	594,939	606,958	630,458	602,373	631,960	675,184	679,648	568,459	519,897	491,521
Net increase (decrease)	117,259	398,391	(135,966)	202,019	314,463	(126,922)	(263,908)	290,151	245,570	150,809
Net position held in trust, beginning of year	2,680,292	2,797,551	3,195,942	3,059,976	3,261,995	3,576,458	3,449,536	3,185,628	3,475,779	3,721,349
Net position held in trust, end of year	**$ 2,797,551**	**$ 3,195,942**	**$ 3,059,976**	**$ 3,261,995**	**$ 3,576,458**	**$ 3,449,536**	**$ 3,185,628**	**$ 3,475,779**	**$ 3,721,349**	**$ 3,872,158**

Net Position by Plan
Years Ending June 30, 2010–2019 (in thousands)

Fiscal Year	Defined Benefit Plan	Defined Contribution Plan	Post-Employment Health Care Plan	Total Net Position
2010	$54,140,413	$383,812	$2,797,551	$57,321,776
2011	$63,116,710	$519,202	$3,195,942	$66,831,854
2012	$60,693,621	$567,702	$3,059,976	$64,321,299
2013	$64,705,982	$686,528	$3,261,995	$68,654,505
2014	$70,988,658	$854,938	$3,576,458	$75,420,054
2015	$70,432,646	$944,933	$3,449,536	$74,827,115
2016	$66,250,103	$1,033,305	$3,185,628	$70,469,036
2017	$71,118,707	$1,252,519	$3,475,779	$75,847,005
2018	$73,457,567	$1,458,735	$3,721,349	$78,637,651
2019	**$74,096,240**	**$1,630,305**	**$3,872,158**	**$79,598,703**

Benefit Expenses by Type
Years Ending June 30, 2010–2019 (in thousands)

Fiscal Year	Service Retirement	Disability	Survivor	Other	Total
2010	$4,579,805	$205,989	$103,114	$11,510	$4,900,418
2011	$4,908,718	$207,245	$113,531	$14,913	$5,244,407
2012	$5,401,457	$208,929	$115,473	$15,183	$5,741,042
2013	$5,792,657	$211,755	$124,656	$23,267	$6,152,335
2014	$6,135,563	$211,945	$121,089	$36,079	$6,504,676
2015	$6,280,983	$211,425	$121,533	$47,055	$6,660,996
2016	$6,714,014	$212,614	$124,808	$38,601	$7,090,037
2017	$6,612,638	$210,649	$123,959	$41,919	$6,989,165
2018	$6,673,049	$206,969	$124,756	$47,868	$7,052,642
2019	**$6,669,115**	**$201,726**	**$123,971**	**$45,240**	**$7,040,052**

Actuarial Funded Ratio and Funding Period, 2010–2019 (dollar amounts in thousands)

As of June 30	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Funding Period
2010	$55,946,259	$94,720,669	$38,774,410	59.1%	Infinite years
2011	$58,110,495	$98,766,204	$40,655,709	58.8%	Infinite years
2012	$59,489,508	$106,301,841	$46,812,333	56.0%	Infinite years
2013	$62,590,786	$94,366,694	$31,775,908	66.3%	40.2 years
2014	$66,657,175	$96,167,057	$29,509,882	69.3%	29.5 years
2015	$68,655,999	$99,014,654	$30,358,655	69.3%	28.4 years
2016	$70,114,637	$100,756,422	$30,641,785	69.6%	26.6 years
2017	$72,216,212	$96,126,440	$23,910,228	75.1%	18.4 years
2018	$73,115,358	$96,904,057	$23,788,698	75.5%	17.8 years
2019	**$74,411,836**	**$97,840,944**	**$23,429,109**	**76.1%**	**16.6 years**

Selected Funding Information — Defined Benefit Plan, 2010–2019

		Employer Contribution Rate					
As of June 30	Member Contribution Rate	Employer Normal Cost	Health Care	Unfunded Actuarial Accrued Liability	Total Employer Rate	Interest Rate Assumption	Payroll Growth Assumption
2010	10.00%	4.30%	1.00%	8.70%	14.00%	8.00%	3.50%
2011	10.00%	3.98%	1.00%	9.02%	14.00%	8.00%	3.50%
2012	10.00%	5.94%	1.00%	7.06%	14.00%	7.75%	3.50%
2013	11.00%	1.03%	1.00%	11.97%	14.00%	7.75%	3.50%
2014	12.00%	–0.17%	0.00%	14.17%	14.00%	7.75%	3.50%
2015	13.00%	–1.54%	0.00%	15.54%	14.00%	7.75%	3.50%
2016	14.00%	–3.05%	0.00%	17.05%	14.00%	7.75%	3.50%
2017	14.00%	–3.16%	0.00%	17.16%	14.00%	7.45%	3.00%
2018	14.00%	–3.09%	0.00%	17.09%	14.00%	7.45%	3.00%
2019	**14.00%**	**–3.17%**	**0.00%**	**17.17%**	**14.00%**	**7.45%**	**3.00%**

Number of Benefit Recipients by Type, 2010–2019

As of June 30	Service Retirement	Disability	Beneficiaries Receiving Optional Allowances	Survivor	Total
2010	112,483	6,104	8,619	5,897	133,103
2011	117,138	6,028	9,012	5,910	138,088
2012	122,136	5,951	9,300	5,869	143,256
2013	127,797	5,890	9,621	5,913	149,221
2014	130,521	5,825	9,945	5,917	152,208
2015	136,019	5,736	10,437	5,924	158,116
2016	135,638	5,640	10,767	5,893	157,938
2017	135,446	5,498	11,135	5,960	158,039
2018	134,718	5,314	11,486	5,904	157,422
2019	**134,465**	**5,183**	**11,880**	**5,890**	**157,418**

Summary of Active Membership Data, 2010–2019 (dollars in thousands)

Defined Benefit Plan

	Females				Males				Total			
As of June 30	Active Members	Annual Salaries	Average Age	Average Service	Active Members	Annual Salaries	Average Age	Average Service	Active Members	Annual Salaries	Average Age	Average Service
2010	122,730	$6,509,962	43.97	12.89	48,609	$2,921,391	44.81	13.01	171,339	$9,431,353	44.21	12.92
2011	123,721	$6,481,816	43.67	12.38	49,562	$2,914,809	44.59	12.42	173,283	$9,396,625	43.94	12.39
2012	119,931	$6,269,684	43.61	12.42	48,442	$2,839,622	44.58	12.39	168,373	$9,109,306	43.89	12.41
2013	117,359	$6,116,458	43.27	12.17	47,698	$2,765,389	44.24	11.97	165,057	$8,881,847	43.55	12.11
2014	116,748	$6,128,826	43.18	12.19	47,280	$2,762,322	44.23	12.07	164,028	$8,891,148	43.49	12.15
2015	113,852	$6,059,671	42.75	11.81	45,474	$2,715,670	43.91	11.84	159,326	$8,775,341	43.08	11.82
2016	116,728	$6,404,312	42.96	12.01	46,532	$2,849,489	44.11	12.02	163,260	$9,253,801	43.29	12.02
2017	115,925	$6,600,162	43.25	12.42	46,131	$2,913,921	44.41	12.39	162,056	$9,514,083	43.58	12.41
2018	117,692	$6,881,822	43.54	12.68	46,246	$2,999,599	44.72	12.69	163,938	$9,881,421	43.87	12.68
2019	**117,646**	**$7,082,124**	**43.75**	**12.98**	**45,833**	**$3,062,544**	**45.06**	**13.08**	**163,479**	**$10,144,667**	**44.12**	**13.01**

Combined Plan

	Females				Males				Total			
As of June 30	Active Members	Annual Salaries	Average Age	Average Service	Active Members	Annual Salaries	Average Age	Average Service	Active Members	Annual Salaries	Average Age	Average Service
2010	3,518	$154,180	38.98	6.08	985	$47,821	42.11	5.80	4,503	$202,001	39.67	6.02
2011	3,611	$163,273	39.51	6.59	1,003	$49,825	42.30	6.29	4,614	$213,098	40.11	6.53
2012	3,642	$168,991	39.94	7.15	1,029	$52,548	42.55	6.67	4,671	$221,539	40.52	7.04
2013	3,819	$180,102	40.30	7.51	1,069	$56,086	42.72	6.97	4,888	$236,188	40.83	7.39
2014	4,126	$196,090	40.22	7.61	1,141	$61,201	42.56	7.13	5,267	$257,291	40.73	7.51
2015	4,367	$213,263	40.41	7.78	1,232	$68,491	42.85	7.25	5,599	$281,754	40.95	7.66
2016	4,657	$234,432	40.48	7.95	1,295	$74,004	42.82	7.55	5,952	$308,436	40.99	7.86
2017	4,754	$250,040	40.88	8.35	1,322	$78,265	43.20	7.93	6,076	$328,305	41.38	8.26
2018	5,005	$271,250	41.02	8.64	1,384	$84,633	43.28	8.18	6,389	$355,883	41.51	8.54
2019	**5,102**	**$288,624**	**41.14**	**9.04**	**1,423**	**$90,315**	**43.51**	**8.56**	**6,525**	**$378,939**	**41.66**	**8.94**

Total Active Membership

	Females				Males				Total			
As of June 30	Active Members	Annual Salaries	Average Age	Average Service	Active Members	Annual Salaries	Average Age	Average Service	Active Members	Annual Salaries	Average Age	Average Service
2010	126,248	$6,664,142	43.83	12.70	49,594	$2,969,212	44.75	12.86	175,842	$9,633,354	44.09	12.74
2011	127,332	$6,645,089	43.55	12.22	50,565	$2,964,634	44.54	12.29	177,897	$9,609,723	43.84	12.24
2012	123,573	$6,438,675	43.50	12.26	49,471	$2,892,170	44.54	12.27	173,044	$9,330,845	43.80	12.26
2013	121,178	$6,296,561	43.17	12.02	48,767	$2,821,475	44.20	11.86	169,945	$9,118,036	43.47	11.98
2014	120,874	$6,324,915	43.08	12.03	48,421	$2,823,523	44.19	11.95	169,295	$9,148,438	43.40	12.01
2015	118,219	$6,272,934	42.66	11.66	46,706	$2,784,161	43.89	11.72	164,925	$9,057,095	43.01	11.68
2016	121,385	$6,638,743	42.86	11.86	47,827	$2,923,493	44.08	11.90	169,212	$9,562,236	43.21	11.87
2017	120,679	$6,850,202	43.15	12.26	47,453	$2,992,186	44.38	12.26	168,132	$9,842,388	43.50	12.26
2018	122,697	$7,153,072	43.43	12.52	47,630	$3,084,232	44.68	12.56	170,327	$10,237,304	43.78	12.53
2019	**122,748**	**$7,370,749**	**43.64**	**12.81**	**47,256**	**$3,152,858**	**45.01**	**12.94**	**170,004**	**$10,523,607**	**44.02**	**12.85**

Note: Members enrolled in STRS Ohio's Defined Contribution Plan and reemployed retirees are not reflected in the above figures.

Benefit Payments by Type
As of June 30, 2019

Age Last Birthday	Number	Annual Allowance (in thousands)	Average Annual Allowance
Service Retirees			
Under 60	5,528	$ 276,747	$ 50,063
60–64	15,009	743,978	49,569
65–69	33,024	1,629,475	49,342
70–74	33,285	1,646,980	49,481
75–79	21,402	982,191	45,892
Over 79	26,217	987,486	37,666
Total	**134,465**	**$ 6,266,857**	**$ 46,606**
Disability Benefit Recipients			
Under 60	1,167	$ 42,633	$ 36,532
60–64	724	28,030	38,715
65–69	926	38,714	41,808
70–74	1,011	42,245	41,785
75–79	649	24,695	38,051
Over 79	706	22,062	31,249
Total	**5,183**	**$ 198,379**	**$ 38,275**
Beneficiaries Receiving Optional Allowances			
Under 60	35	$ 1,288	$ 36,800
60–64	154	6,407	41,604
65–69	680	28,420	41,794
70–74	1,410	58,755	41,670
75–79	1,748	65,456	37,446
Over 79	7,853	220,967	28,138
Total	**11,880**	**$ 381,293**	**$ 32,095**
Survivor Benefit Recipients			
Under 60	1,345	$ 16,269	$ 12,096
60–64	424	9,148	21,575
65–69	851	21,735	25,541
70–74	889	22,595	25,416
75–79	781	19,323	24,741
Over 79	1,600	35,556	22,223
Total	**5,890**	**$ 124,626**	**$ 21,159**
Grand Total	**157,418**	**$ 6,971,155**	**$ 44,284**

Average Benefit Payments for Service Retirees July 1–June 30, 2010–2019

		Years of Service Credit						
		5–9	10–14	15–19	20–24	25–29	30+	Average/Total
2010	Average monthly benefit	$455	$934	$1,349	$2,030	$2,780	$4,680	$3,887
	Average final average salary	$30,030	$46,509	$50,407	$59,781	$67,794	$74,810	$69,522
	Number of recipients	174	155	282	359	543	3,833	5,346
2011	Average monthly benefit	$480	$992	$1,540	$2,377	$2,890	$4,689	$3,937
	Average final average salary	$33,330	$46,727	$55,904	$68,932	$70,775	$75,724	$71,591
	Number of recipients	171	201	365	438	685	4,595	6,455
2012	Average monthly benefit	$496	$946	$1,625	$2,385	$2,965	$4,727	$3,921
	Average final average salary	$31,235	$45,473	$58,519	$68,884	$72,224	$77,181	$72,706
	Number of recipients	204	241	450	674	960	5,463	7,992
2013	Average monthly benefit	$482	$945	$1,714	$2,407	$3,144	$4,796	$3,886
	Average final average salary	$33,742	$47,370	$62,954	$68,669	$75,864	$79,557	$74,643
	Number of recipients	203	280	541	724	1,198	5,113	8,059
2014	Average monthly benefit	$488	$951	$1,681	$2,419	$3,268	$4,808	$3,885
	Average final average salary	$36,506	$48,294	$61,904	$70,372	$78,726	$81,516	$76,213
	Number of recipients	157	225	417	549	817	3,703	5,868
2015	Average monthly benefit	$524	$960	$1,729	$2,410	$3,132	$4,722	$3,795
	Average final average salary	$42,757	$49,494	$64,257	$69,568	$75,754	$80,543	$75,610
	Number of recipients	149	269	514	683	1,246	4,400	7,261
2016	Average monthly benefit	$540	$989	$1,562	$2,440	$3,359	$5,052	$3,805
	Average final average salary	$45,268	$52,092	$59,616	$71,777	$81,463	$87,829	$79,495
	Number of recipients	92	147	347	500	686	1,990	3,762
2017	Average monthly benefit	$505	$1,150	$1,619	$2,453	$3,253	$4,534	$3,460
	Average final average salary	$44,471	$60,384	$62,461	$74,083	$80,735	$83,139	$77,032
	Number of recipients	75	119	237	282	366	1,204	2,283
2018	Average monthly benefit	$483	$1,067	$1,690	$2,416	$3,325	$4,861	$3,454
	Average final average salary	$37,558	$54,811	$63,271	$71,915	$81,491	$88,886	$78,110
	Number of recipients	80	111	304	344	406	1,030	2,275
2019	**Average monthly benefit**	**$584**	**$1,088**	**$1,778**	**$2,480**	**$3,300**	**$4,764**	**$3,637**
	Average final average salary	**$45,300**	**$57,695**	**$66,023**	**$72,714**	**$80,278**	**$86,760**	**$79,278**
	Number of recipients	**75**	**127**	**279**	**380**	**447**	**1,475**	**2,783**

Average Benefit Subsidy Payments for Retirees Enrolled in Health Care Plan, 2010–2019

		Years of Service Credit						
		5–9*	10–14*	15–19	20–24	25–29	30+	Average/Total
Jan. 1, 2010	Average monthly subsidy	$34	$38	$141	$189	$254	$353	$309
	Number of recipients	1,755	1,887	4,292	6,100	10,891	68,945	93,870
Jan. 1, 2011	Average monthly subsidy	$34	$39	$154	$208	$274	$379	$334
	Number of recipients	1,640	1,778	4,315	6,139	11,024	71,203	96,099
Jan. 1, 2012	Average monthly subsidy	$34	$39	$155	$208	$271	$365	$325
	Number of recipients	1,536	1,665	4,347	6,256	11,253	74,274	99,331
Jan. 1, 2013	Average monthly subsidy	$33	$39	$148	$197	$253	$329	$296
	Number of recipients	1,427	1,553	4,359	6,386	11,554	76,616	101,895
Jan. 1, 2014	Average monthly subsidy	$34	$40	$157	$209	$266	$341	$308
	Number of recipients	1,325	1,447	4,497	6,532	11,948	79,367	105,116
Jan. 1, 2015	Average monthly subsidy	$33	$38	$163	$211	$264	$333	$303
	Number of recipients	1,198	1,288	4,409	6,564	12,141	80,871	106,471
Jan. 1, 2016	Average monthly subsidy	$39	$55	$167	$216	$273	$324	$300
	Number of recipients	1,167	1,301	4,172	6,746	12,700	84,633	110,719
Jan. 1, 2017	Average monthly subsidy	$34	$48	$157	$197	$246	$289	$268
	Number of recipients	1,074	1,170	4,017	6,610	12,494	83,345	108,710
Jan. 1, 2018	Average monthly subsidy	$33	$47	$158	$199	$248	$288	$268
	Number of recipients	950	1,019	4,019	6,489	12,262	82,257	106,996
Jan. 1, 2019	**Average monthly subsidy**	**$33**	**$47**	**$158**	**$198**	**$248**	**$278**	**$262**
	Number of recipients	**832**	**885**	**3,908**	**6,220**	**11,925**	**82,649**	**106,419**

*Members who retired before Jan. 1, 2004, with less than 15 years of service credit have access to the STRS Ohio Health Care Program, but pay the full cost of their premium. Members who retire on or after Jan. 1, 2004, and before Aug. 1, 2023, must have at least 15 years of qualifying service credit to access coverage. Members who retire on or after Aug. 1, 2023, must have at least 20 years of qualifying service credit to access coverage. The subsidy amounts listed for years of service credit less than fifteen years are reflective of the Medicare Part B Premium reimbursements, which currently require a minimum of five years of service credit, and some other subsidy situations.

Number of Reporting Employers by Type, 2010–2019

Fiscal Year Ended	City School Districts	Local School Districts	County Educational Service Centers	Exempted Village School Districts	Joint Vocational Schools	Colleges and Universities	County Boards of Developmental Disabilities	Community Schools	Other	Total
2010	194	370	57	49	49	36	69	273	10	1,107
2011	194	370	56	49	49	36	69	291	10	1,124
2012	194	370	56	49	49	36	69	312	10	1,145
2013	194	369	55	49	49	36	67	322	12	1,153
2014	194	371	55	49	49	36	65	352	12	1,183
2015	194	370	53	49	49	36	64	337	12	1,164
2016	194	369	52	49	49	36	62	329	12	1,152
2017	194	369	52	49	49	36	61	323	12	1,145
2018	194	369	52	49	49	36	61	318	12	1,140
2019	**194**	**369**	**52**	**49**	**49**	**36**	**59**	**302**	**11**	**1,121**

Principal Participating Employers For the Year Ended June 30, 2019

Employer	Covered Members	Prior Year Rank	Percentage of Membership
The Ohio State University	5,426	1	2.24%
Columbus City Schools	5,263	2	2.17%
Cleveland Metropolitan Schools	4,385	3	1.81%
Cincinnati Public Schools	3,489	5	1.44%
University of Cincinnati	3,411	4	1.41%
ESC Council of Governments	3,128	7	1.29%
Kent State University	2,988	6	1.23%
ESC of Northeast Ohio	2,878	10	1.19%
Toledo Public Schools	2,691	8	1.11%
Akron Public Schools	2,635	9	1.09%
All Others	206,255		85.02%
Total Covered Members	**242,549***		**100.00%**

*Covered members include any participant in STRS Ohio who made contributions through a reporting employer during the fiscal year. Part-time teachers working in multiple school districts are included within each school's payroll data and, consequently, are reported more than once. Participating employers include every publicly funded school in Ohio employing a licensed teacher. A complete listing of participating employers is available upon request. Years prior to the current year are not reflected since the participating employers do not change substantially from year to year.

STRS Ohio Plays a Critical Role in Supporting and Sustaining the State of Ohio

STRS Ohio is one of Ohio's five statewide public pension systems and plays a critical role in supporting and sustaining the State of Ohio. Together, Ohio's statewide public retirement systems serve over a million of the state's citizens, both working and retired. The five systems provide a stable source of revenue for local economies, paying more than $15 billion annually in pension and health care benefits and invest in Ohio, too — holding more than $3 billion in investments in companies with a major presence in the state.

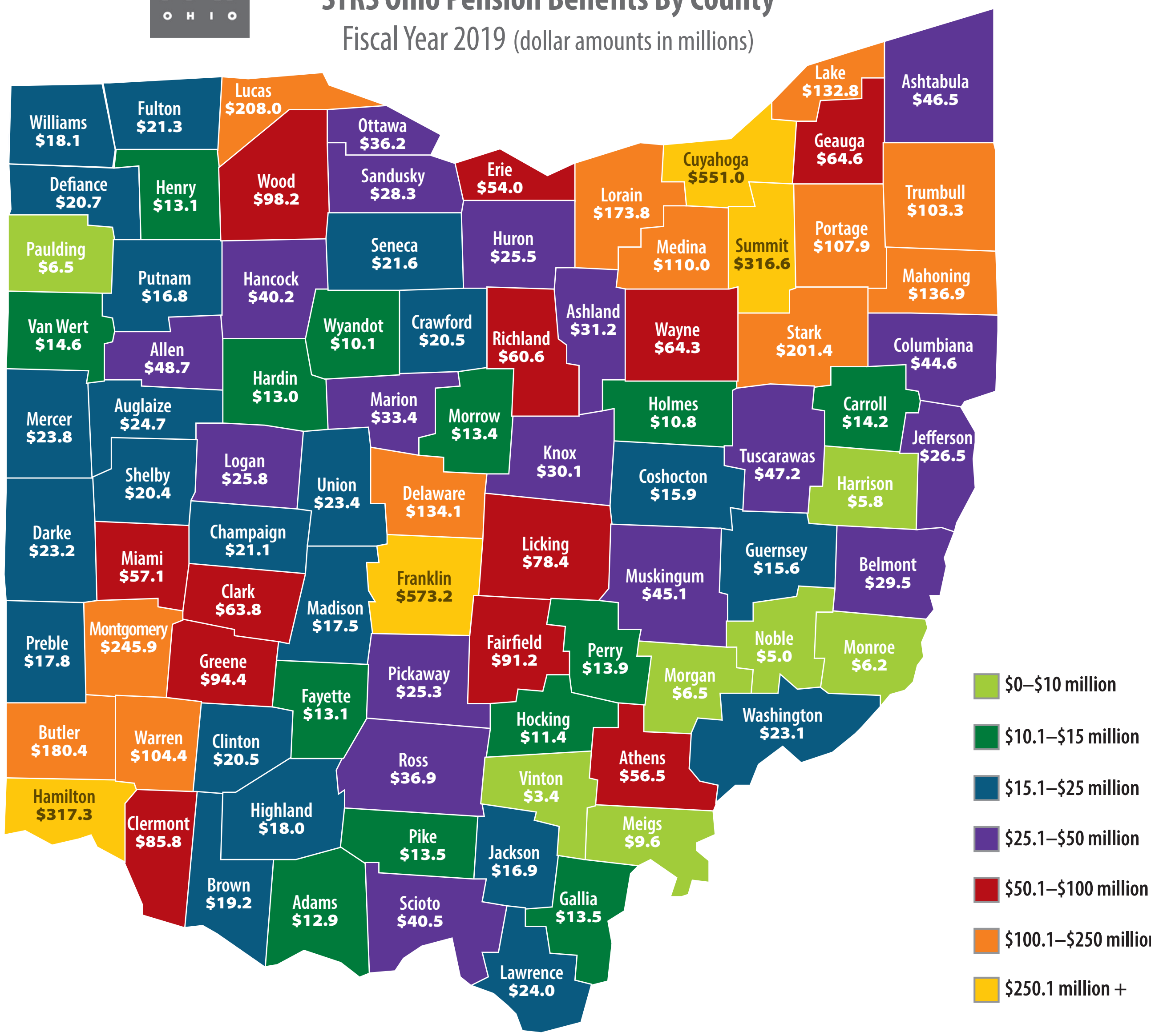
*Ohio's pension systems share one common goal: **to provide retirement security for the thousands of public servants who have made a career out of serving others**. These pension systems are major economic drivers for the state; are administratively efficient and economical; and provide a stable retirement income for public workers in Ohio, thereby reducing the burden on taxpayers and Social Security. In fact, these earned pensions represent good public policy for helping to maintain financial security for Ohio's older citizens.*

STRS OHIO

Economic Impact on the State of Ohio

STRS Ohio Pension Benefits By County

Fiscal Year 2019 (dollar amounts in millions)



$5.8 BILLION STRS Ohio benefits distributed among Ohio's **88** counties

82% STRS Ohio benefit recipients **live in Ohio**

$1.2 BILLION STRS Ohio **investments** with companies headquartered in **Ohio**

State Teachers Retirement System of Ohio
275 E. Broad St., Columbus, OH 43215-3771 • 614.227.4090 • www.strsoh.org

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INDEPENDENT AUDITORS' REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

The Retirement Board
State Teachers Retirement System of Ohio and
The Honorable Keith Faber, Auditor of State
Columbus, Ohio

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of State Teachers Retirement System of Ohio (STRS Ohio), which comprise the statement of fiduciary net position as of June 30, 2019 and changes in fiduciary net position for the year then ended, and the related notes to the financial statements, and have issued our report thereon dated December 6, 2019.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered STRS Ohio's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of STRS Ohio's internal control. Accordingly, we do not express an opinion on the effectiveness of STRS Ohio's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether STRS Ohio's financial statements are free of material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards.*

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the result of that testing, and not to provide an opinion on the effectiveness of STRS Ohio's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering STRS Ohio's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

CliftonLarsonAllen LLP

CliftonLarsonAllen LLP

Toledo, Ohio
December 6, 2019

OHIO AUDITOR OF STATE
KEITH FABER

STATE TEACHERS RETIREMENT SYSTEM OF OHIO

FRANKLIN COUNTY

CLERK'S CERTIFICATION

This is a true and correct copy of the report which is required to be filed in the Office of the Auditor of State pursuant to Section 117.26, Revised Code, and which is filed in Columbus, Ohio.

Susan Babbitt

CLERK OF THE BUREAU

CERTIFIED
JANUARY 21, 2020