State Teachers Retirement System of Ohio

# COMPREHENSIVE
# Annual Financial Report **2017**

Fiscal Years Ending June 30, 2017 and 2016

STRS OHIO

**STATE TEACHERS RETIREMENT SYSTEM OF OHIO**

# COMPREHENSIVE
# Annual Financial Report **2017**

Fiscal Years Ending June 30, 2017 and 2016

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, 2016**

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, The Segal Group, Inc., Chicago; and Performance Verification Consultants, ACA Performance Services LLP, New York. See Page 59 for a list of external managers.

# 2016–2017 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 September 2016, the governor reappointed Wade Steen, an investment expert, to the board. His term on the board will end Sept. 27, 2020.*

*In October 2016, Gary Russell was selected as Deputy Executive Director — Member Benefits and Chief Benefits Officer.*

*Carol Correthers was reelected to a contributing member seat in the May 2017 election. Retired teacher member and current board vice chair Robert Stein, as well as retired teacher Rita J. Walters, were unopposed for the two retired teacher seats on the board. The terms for these three seats run from Sept. 1, 2017, through Aug. 31, 2021.*

*In June 2017, Robert Stein was elected as vice chair and Mark Hill assumed the responsibility of board chair, effective Sept. 1, 2017.*

**Robert Stein, Chair**
Retired teacher member since 2009.

**Mark Hill, Vice Chair**
Contributing member since 2010.
Worthington City Schools, Franklin County

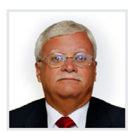
**Carol Correthers**
Contributing member since 2009.
Lorain City Schools, Lorain County

**Craig C. Brooks**
Appointed jointly by the Speaker of the House of Representatives and the Senate President in 2008.

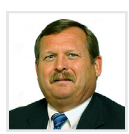
**Paolo DeMaria**
Superintendent of Public Instruction. Ex officio member of the board since 2016.

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

**Yoel Mayerfeld**
Appointed by the Treasurer of State in 2012.

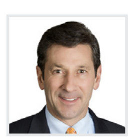


**James McGreevy**
Retired teacher member since 2009.



**Tim Myers**
Contributing member since 2008.
Elida Local Schools, Allen County

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



**Wade Steen**
Appointed by the Governor of the state in 2016.

**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,** General Counsel

**David Tackett,** Chief Audit Executive, Internal Audit

**Gregory A. Taylor,** Chief Information Officer

**Nicholas J. Treneff,** Director, Communication Services

STATE TEACHERS RETIREMENT SYSTEM OF OHIO

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



Dec. 8, 2017

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, 2017. 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 created by legislative act on May 8, 1919, as an alternative to separate, often unstable local school district retirement plans. 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

The pension reform legislation passed in 2012 to improve the financial condition of Ohio's pension systems continues to be implemented at STRS Ohio. The law also provides the Retirement Board with authority to make future changes depending on funding improvements. Pension reform changes implemented during fiscal year 2017 include an increase in the member contribution rate to 14% on July 1, 2016. This concludes the additional 4% phase-in that began in 2013. For retirement dates beginning on or after Aug. 1, 2017, increases age and service requirements to any age and 32 years of service; or age 65 and five years of service. The age and service requirements will increase to 35 years of service by Aug. 1, 2023, and a minimum age 60 requirement beginning Aug. 1, 2026.

This past year, the Retirement Board, as part of its ongoing focus on the financial condition of the pension fund, reviewed the results of two studies — an actuarial experience review and an asset-liability study — that are conducted every five years. These studies establish plan assumptions, measure the system's actuarial accrued liabilities (benefits earned by active and retired members) and help determine how to invest system assets and how fast these assets are expected to grow. The results of these studies 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.

Accordingly, at its March 2017 meeting the Retirement Board approved changes to the actuarial assumptions that are used to calculate pension liabilities. The assumption changes with the most significant financial impact were: (1) Reducing the investment rate of return to 7.45% from 7.75% to recognize projections for modest global economic growth and lower expected returns for capital markets; (2) Adopting new mortality assumptions that reflect members are living longer and STRS Ohio is paying benefits for a longer period of time than expected; and (3) Reducing the payroll growth assumption to recognize there will be less money coming into the fund through member and employer contributions than expected. The new assumptions added about $6.5 billion to STRS Ohio's accrued liabilities and pushed its funding period — the time it would take to reach 100% funded status — to more than 50 years. Ohio statute requires STRS Ohio to have a funding period of no more than 30 years or to submit a plan to reduce its funding period to reach this target.

Segal Consulting, the board's actuarial consultant, estimated that STRS Ohio would need to reduce benefits or the actuarial accrued liability by about $10 billion to meet the 30-year funding target. The $10 billion figure takes into account the additional $6.5 billion in liabilities mentioned above, lower expected payroll growth and market returns being lower than the assumed rate of investment return in fiscal 2015 and 2016. At the April 2017 meeting of the State Teachers Retirement Board, the board made the difficult but necessary decision to reduce cost-of-living increases 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 will not be affected by this change. The board also agreed to evaluate — not later than the next five-year actuarial experience review — whether an upward adjustment of the cost-of-living increase is possible without materially impairing the fiscal integrity of the retirement system.

For much of the past year, the Retirement Board and staff explored options to extend the life of STRS Ohio's Health Care Fund. The health care program is currently funded through premiums charged to plan enrollees, government reimbursements and investment earnings on the fund. STRS Ohio no longer allocates a portion of the employer contributions to the Health Care Fund, as all of the employer contributions are needed to fund pension benefits. While health care coverage is optional, the board recognizes that this coverage is important to STRS Ohio members and benefit recipients. At its October 2017 meeting, the board adopted a health care premium subsidy plan for 2019 and beyond that is designed to extend the life of the Health Care Fund. The newly adopted plan is projected to extend the solvency of the Health Care Fund to the year 2047. The fund previously was estimated to remain solvent through 2034.

For the ninth time in the past 19 years, STRS Ohio was ranked number one in member service, according to the CEM Pension Administration Benchmarking report for fiscal year 2016. STRS Ohio received the very top service level score among 52 participating pension systems, primarily in the United States and Canada. Member service improvements included new satisfaction surveying of online activities and faster than usual average speed of answer in the call center. STRS Ohio earned the highest service level score for Pension Payments, Call Center, One-on-One Counseling, Pension Estimates and Disaster Recovery. While the service level was at the top, the administrative cost per active member and annuitant decreased to $107 from $110. This continues a trend of reduced administrative costs. The reduction in administrative costs was primarily driven by staff reduction that reflects the increased usage of online applications and a reduction in retirements, counseling sessions and purchasable service activity.

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, 2016, 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 $101 million in 2016 by using the internal management approach. The savings is 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 of 9.7% was above the peer median of 8.8%.

## Management Responsibility

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.

## Investments

Total investments (including short-term investments) increased to $77.6 billion as of June 30, 2017. The Investment Review starting on Page 41 discusses the investment environment during fiscal 2017. The allocation of investment assets is designed to provide high long-term yields at optimal risk consistent with the expected long-term rate of return. 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. A schedule of U.S. stock brokerage commissions paid to external investment professionals who provide services to the system can be found on Page 57 and a schedule of external managers can be found on Page 59.

For the fiscal year ended June 30, 2017, the total fund returned 14.29%. STRS Ohio's annualized rate of return was 6.74% over the last three years and 10.06% for the last five years. Similar benchmark returns over the same one-, three- and five-year periods were 13.52%, 6.29% and 10.01%, 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. Effective July 1, 2016, the member contribution rate increased to 14% of payroll, concluding the increases in member contribution rates. Member contributions were $1.5 billion in 2017 and employer contributions were $1.6 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 4.50% of salaries to STRS Ohio to help pay for unfunded liabilities. Effective July 1, 2017, employers contribute 4.47% of salaries for ARP participants. In fiscal year 2017, STRS Ohio received $39.6 million in joint retirement revenue. Premiums received from health care recipients totaled $339.1 million in fiscal year 2017. STRS Ohio received $79.4 million in Medicare Part D 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 and optional health care coverage, totaled $7.8 billion. Service retirement payouts decreased 1.5% from fiscal year 2016 as a result of a reduction in the volume of partial lump-sum payments to newly retired members. Refunds decreased by 4.4% from fiscal year 2016, due largely to a decrease in defined benefit participant withdrawals.

### Funding

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 Segal Consulting. The July 1, 2017, valuation shows that the amortization period for the unfunded accrued liability decreased to 18.4 years from 26.6 the prior year, and the ratio of actuarial assets to total accrued liabilities increased to 75.1% from 69.6%.

A detailed discussion of funding is provided in the Actuarial Section of this report beginning on Page 60.

### Retiree Health Care Program

Health Care Plan assets increased 9.1% to $3.5 billion in fiscal 2017 from $3.2 billion in fiscal 2016 primarily as a result of increases in governmental reimbursements, decreases in health care benefit payments and higher than expected investment returns. Program changes, designed to build a long-term financial foundation for the health care program, continue to appear in fiscal 2017 results. The changes result in utilization of lower-cost plans, increases in the retiree's portion of premiums, decreases in Medicare Part B premium reimbursements and higher generic drug usage.

The results of the annual actuarial calcuation of the fund reflect a decrease in the funded ratio to 54.7% at Jan. 1, 2017, from 63.2% at Jan. 1, 2016. The unfunded actuarial accrued liability was $2.7 billion at Jan. 1, 2017, up from $1.9 billion at Jan. 1, 2016. Costs for the health care program are paid out of the Health Care Fund, which is currently funded through premiums charged to enrollees, government reimbursements and investment earnings on these funds.

In light of the continuation of rising health care costs, the Retirement Board and staff pursued options to extend the life of STRS Ohio's Health Care Fund. Health care trend projections used in the 2017 valuation showed expected cost increases (trend rate) over the next decade will be significant. Prescription drug costs alone are projected to increase 235% during that time frame. In October 2017, the board adopted a health care premium subsidy plan for 2019 and beyond that is estimated to extend the fund's solvency to 2047. The cost model the board selected maintains a higher premium subsidy percentage for Medicare enrollees than for non-Medicare enrollees.

### 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, 2016. 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 27 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 2017 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

CliftonLarsonAllen LLP
CLAconnect.com

**INDEPENDENT AUDITORS' REPORT**

The Retirement Board
State Teachers Retirement System of Ohio and
The Honorable Dave Yost, 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, 2017 and 2016, 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, 2017 and 2016, 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.

The Retirement Board
State Teachers Retirement System of Ohio and
The Honorable Dave Yost, Auditor of State
Page 2

***Other Matters***

*Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the 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, 2017 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, 2017

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, 2017 and 2016. 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 2017 *Comprehensive Annual Financial Report*.

***As of June 30, 2017, STRS Ohio held $75.8 billion in trust on behalf of about 493,000 active, inactive and retired educators. This represented a $5.4 billion increase in net position from the previous fiscal year-end. In fiscal 2016, STRS Ohio experienced a $4.4 billion decrease in net position from the previous fiscal year-end.***

***In 2012, the State Teachers Retirement Board took an important step to strengthen the financial condition of the pension fund by approving a plan that is designed to help fully fund the system. The multifaceted plan became effective in 2013 and will be fully phased-in by 2026. Following are key changes made to the pension plan:***

- ***Increased the eligibility requirements for FULL retirement — with an unreduced benefit — to age 60 with 35 years of service or age 65 with five years of service by Aug. 1, 2026 (phase-in began Aug. 1, 2015).***
- ***Increased the eligibility requirements for EARLY retirement — with an actuarially reduced benefit — to a minimum 30 years of service or age 60 with five years of service by Aug. 1, 2023.***
- ***Increased member contributions by 4% of compensation (to 14%), phased in 1% per year from July 1, 2013, through July 1, 2016.***
- ***Changed benefit formula to 2.2% for all years of service. The 35-year enhanced benefit formula was eliminated after July 1, 2015.***
- ***Changed final average salary calculation to the five highest years of earnings.***
- ***Reduced cost-of-living adjustment (COLA) to 2% for all retirees and delayed COLA for all new retirees for 60 months.***
- ***New members will have to work longer to be eligible for disability and survivor benefits.***

***Pension reform also granted the Retirement Board with authority to make future adjustments depending on the retirement system's funding progress.***

***In 2017, the board made the decision to reduce the COLA increases granted on or after July 1, 2017, to 0% to preserve the fiscal integrity of the retirement system.***

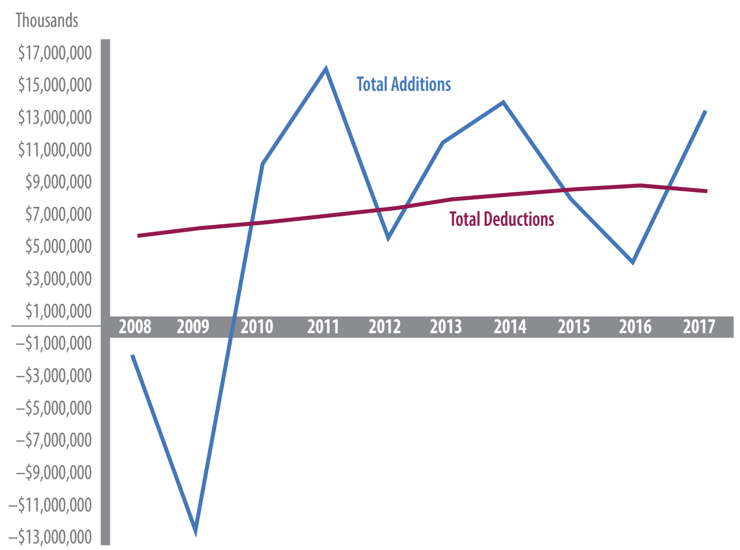
## Financial Highlights

Highlights of the fiscal year include:

- The total fund rate of return was 14.29% in fiscal 2017. The total fund rate of return for fiscal 2016 was 0.92%. Five- and 10-year total fund annualized returns are 10.06% and 5.48%, 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.
- Total net position increased 7.6% from the prior fiscal year, ending at $75.8 billion as of June 30, 2017. Net position decreased 5.8% during fiscal 2016, ending at $70.5 billion as of June 30, 2016.
- The post-employment health care net position was $3.5 billion as of June 30, 2017, an increase of 9.1% from the prior fiscal year. Program changes designed to build a long-term financial foundation for the health care program continue to appear in fiscal 2017 results. The changes resulted from utilization of lower-cost plans, increases in the retiree's portion of premiums, decreases in Medicare Part B premium reimbursements and higher generic drug use. The post-employment health care balance decreased 7.7% during fiscal 2016, ending at $3.2 billion as of June 30, 2016.
- Defined contribution accounts finished the year with $1.3 billion in net position, an increase of 21.2% from the end of fiscal 2016 due to investment performance and continued participant growth in the Defined Contribution Plan. The defined contribution accounts ended fiscal 2016, with $1.0 billion in net position, an increase of 9.4% from the end of fiscal 2015.
- Total benefit payments were $7.6 billion during fiscal 2017, a decrease of 2.7% from fiscal 2016. STRS Ohio paid members $6.9 billion in service retirement, disability and survivor benefits plus $566 million for health care coverage during fiscal 2017. Total benefit payments were $7.8 billion during fiscal 2016, an increase of 5.8% from fiscal 2015.

- Total additions to fiduciary net position were $13.2 billion during fiscal 2017. Net investment income (including securities lending) during fiscal 2017 totaled $9.7 billion. Total additions to fiduciary net position were $3.7 billion during fiscal 2016, including $390 million related to net investment income.

**Historical Plan Asset Additions and Deductions**
(years ended June 30)




**Contributions**
**Years Ended June 30, 2017 and 2016** (dollar amounts in thousands)

| | 2017 | 2016 | Percentage Change |
|---|---|---|---|
| Employer Contributions | $ 1,551,254 | $ 1,501,102 | 3.3% |
| Member Contributions | 1,537,677 | 1,372,033 | 12.1% |
| Health Care Premiums and Government Reimbursements | 418,413 | 398,739 | 4.9% |
| Other | 39,615 | 44,001 | −10.0% |
| **Total Additions** | **$ 3,546,959** | **$ 3,315,875** | **7.0%** |

**Benefits and Administration**
**Years Ended June 30, 2017 and 2016** (dollar amounts in thousands)

| | 2017 | 2016 | Percentage Change |
|---|---|---|---|
| Benefits (includes optional health care) | $ 7,555,127 | $ 7,767,030 | −2.7% |
| Refunds | 221,841 | 232,070 | −4.4% |
| Administrative Expenses | 66,149 | 64,726 | 2.2% |
| **Total Deductions** | **$ 7,843,117** | **$ 8,063,826** | **−2.7%** |

- Member contributions increased $166 million in fiscal 2017 as a result of increases in plan payroll and the member rate increasing to 14% from 13%, effective July 1, 2016. Employer contributions increased in line with the growth in plan payroll. Total member and employer contributions were $3.1 billion in fiscal 2017 compared to $2.9 billion in fiscal 2016.
- Other retirement systems' contributions decreased to $40 million in fiscal 2017 from $44 million in fiscal 2016, due to a reduction in Ohio retirement systems' joint service credit retirement activity.
- Administrative expenses increased 2.2% to $66.1 million for fiscal 2017. Investment expenses, which include salaries and benefits for investment personnel, increased 9.5% to $41.9 million in fiscal 2017. External asset management fees increased to $212.2 million in fiscal 2017 from $199.7 million in fiscal 2016 due primarily to increased commitments to alternative investments and higher equity market values throughout the year. In fiscal 2016, administrative expenses decreased 0.4% and investment expenses decreased 1.3%, as compared to 2015.

## Annual Financial Review

The total fund delivered a 14.29% rate of return in fiscal 2017. International equities led all investment categories by generating a 22.23% return. Domestic equities returned 19.59% and alternative investments had a 11.56% return. Real estate returned 4.67% and fixed income had a 1.85% return. The total fund annualized investment return for the past 10 fiscal years was 5.48%. 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.

Historical additions to and deductions from fiduciary net position indicate a pattern of steadily increasing deductions through 2016, with a slight decrease in 2017, compared to fluctuating additions due to investment volatility, as shown in the chart at the top of the page. Changes in contributions and benefits and administration for fiscal years ended June 30, 2017 and 2016, are shown in the tables to the left. Pension benefit payments and health care costs exceed member and employer contributions. STRS Ohio is dependent upon investment income to compensate for the difference between benefit payments and contributions.

Net position for post-employment health care increased to $3.5 billion at June 30, 2017, from $3.2 billion at June 30, 2016. Premiums received from health care recipients in fiscal 2017 decreased to $339.1 million from $339.9 million in fiscal 2016. Medicare Part D reimbursements of $79.4 million were received in fiscal 2017 to help offset prescription drug costs compared to $58.8 million in fiscal 2016. Health care coverage payments decreased 16.4% to $566 million from $677 million in fiscal 2016. In fiscal 2016, health care premiums increased to $339.9 million from $306.6 million. Health care coverage payments increased 0.7% in fiscal 2016 from fiscal 2015.

## 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 Post-employment Health Care.

- The Defined Benefit Plan is the largest fund and includes member contributions, employer contributions and investment earnings for DB 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 participants are eligible for disability and survivor benefits.
- The Defined Contribution Plan began on July 1, 2001. It is an optional plan available to new members. DC 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 Defined Benefit or Defined Contribution Plan, new members may elect the Combined Plan. Combined Plan participants allocate their member contributions among the same investment choices as DC 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 Combined Plan members are divided between the Defined Benefit Plan and the Defined Contribution Plan.
- Net position for post-employment health care consists of funds set aside to subsidize optional health care coverage for members enrolled in the Defined Benefit and Combined Plans.

The *Notes to Financial Statements* are a fundamental part of the financial statements and provide important information to augment the figures in 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*.

## Investment Performance

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

### 1-Year Returns (2017)[1]

| Asset Category | STRS Ohio Return | Index Name | Index Return |
|---|---|---|---|
| Domestic Equities | 19.59% | Russell 3000® Index[3] | 18.51% |
| International Equities | 22.23% | International Blended Benchmark[4] | 21.60% |
| Fixed Income | 1.85% | Bloomberg Barclays U.S. Universal Index[5] | 0.91% |
| Real Estate | 4.67% | Real Estate Blended Benchmark[6] | 5.64% |
| Alternative Investments | 11.56% | Alternative Investments Blended Relative Return Objective[7] | – |
| **Total Fund** | **14.29%** | **Total Fund Blended Benchmark[8]** | **13.52%** |

### 5-Year Returns (2013–2017)[1]

| Asset Category | STRS Ohio Return | Index Name | Index Return |
|---|---|---|---|
| Domestic Equities | 14.01% | Russell 3000® Index[3] | 14.59% |
| International Equities | 10.50% | International Blended Benchmark[4] | 9.04% |
| Fixed Income | 2.96% | Bloomberg Barclays U.S. Universal Index[5] | 2.73% |
| Real Estate | 11.49% | Real Estate Blended Benchmark[6] | 10.42% |
| Alternative Investments | 10.34% | Alternative Investments Blended Relative Return Objective[7] | 14.60% |
| **Total Fund** | **10.06%** | **Total Fund Blended Benchmark[8]** | **10.01%** |

### 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, 2008, through 2017, 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 the Frank Russell Company. Russell® is a trademark of the Frank Russell Company.

[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 effective Jan. 1, 2014. Prior to Jan. 1, 2014, the MSCI Emerging Markets Index was the Gross return.

[5]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.

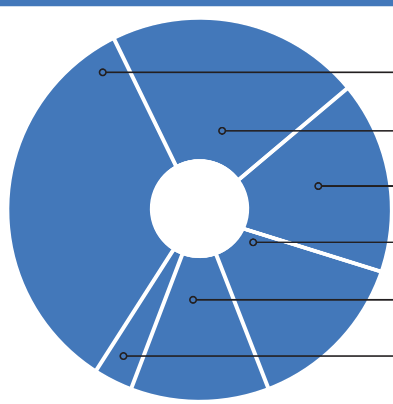
[6]The Real Estate Blended Benchmark is calculated quarterly using 85% NCREIF Property Index (NPI) and 15% FTSE NAREIT Equity REITs Index effective July 1, 2012.

[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: 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; 53.8% of the Russell 3000® Index plus 1% for PE and 46.2% of the Russell 3000® Index minus 1% for OD effective July 1, 2013; 54.5% of the Russell 3000® Index plus 1% for PE and 45.5% of the Russell 3000® Index minus 1% for OD effective Jan. 1, 2013; 50.0% of the Russell 3000® Index plus 1% for PE and 50.0% of the Russell 3000® Index minus 1% for OD effective July 1, 2012.

[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, 2017

(dollar amounts in thousands)



| | | |
|---|---|---|
| Domestic Equities: | $ 22,317,077 | 28.7% |
| International Equities: | $ 19,081,516 | 24.6% |
| Fixed Income: | $ 14,687,019 | 18.9% |
| Real Estate: | $ 9,826,605 | 12.7% |
| Alternative Investments: | $ 10,512,809 | 13.5% |
| Cash and Short-Term Investments: | $ 1,229,532 | 1.6% |
| **Total Investments:** | **$ 77,654,558** | |

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 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*.

*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 Allocation and Fiscal Year Performance

For fiscal 2017, the total fund rate of return was 14.29%. The relative benchmark for STRS Ohio returned 13.52%. 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. The target allocations for fiscal 2017, were 1% liquidity reserves, 18% fixed income, 31% domestic equities, 26% international equities, 10% real estate and 14% alternative investments. Amounts actually invested in these categories at the end of June 2017 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 costs, the cost to manage investments was $254 million in 2017 and $238 million in 2016.

## 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 net position increased 7.6% in fiscal 2017 and decreased 5.8% in fiscal 2016. The fluctuation of total net position for fiscal 2017 was primarily due to strong net investment income results in 2017. Conversely in 2016, net investment income and contributions were not sufficient to offset benefit payments.

The net book value of capital assets decreased from fiscal 2016 because depreciation expense in fiscal 2017 exceeded capital asset additions. The same was true from fiscal 2015 to fiscal 2016.

Net investment income was $9.7 billion in fiscal 2017 as compared to $390 million in fiscal 2016.

Employer contributions increased 3.3% in fiscal 2017, which is consistent with the increase in employer payroll, and increased 1.3% in fiscal 2016. Member contributions increased 12.1% in fiscal 2017 and 9.0% in fiscal 2016. Member contribution rates increased to 14% of earned compensation in fiscal 2017 and employer rates remained at 14%. Member and employer rates were at 13% and 14%, respectively for fiscal 2016 and 12% and 14%, respectively for fiscal 2015.

Health care premiums helped offset some of the increases in health care costs. Of the $566.0 million paid to health care providers in fiscal 2017, health care enrollees paid $339.1 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 $79.4 million also helped offset health care costs. No employer contributions were allocated to the health care fund in fiscal 2017 and 2016. For fiscal 2016, benefit recipients contributed $339.9 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.

Total deductions from net position were $7.8 billion in fiscal 2017, a 2.7% decrease compared to fiscal 2016. Total deductions from net position were $8.1 billion in fiscal 2016, a 5.7% increase over fiscal 2015. The largest deductions component is monthly benefit payments for service retirement, disability and survivor benefits. Total pension benefit payments decreased 1.5% in fiscal 2017 and increased 6.6% in fiscal 2016. The fiscal 2017 percentage decrease is a result of the reduction in amounts paid for partial lump sum payments.

Health care costs decreased 16.4% in 2017 due to decreases in Medicare Part B premium reimbursements paid by STRS Ohio and lower non-Medicare retiree health care enrollment. Health care costs increased 0.7% in fiscal 2016.

| Net Position (dollar amounts in thousands) | | | | | |
|---|---|---|---|---|---|
| | 2017 | 2016 | 2015 | Amount Increase (Decrease) From 2016 to 2017 | Amount Increase (Decrease) From 2015 to 2016 |
| Cash and investments | $ 77,654,558 | $ 72,095,635 | $ 76,238,691 | $ 5,558,923 | $ (4,143,056) |
| Receivables | 921,150 | 847,871 | 1,436,519 | 73,279 | (588,648) |
| Securities lending collateral | 1,347,863 | 1,356,392 | 1,429,438 | (8,529) | (73,046) |
| Net capital assets | 87,161 | 92,118 | 95,858 | (4,957) | (3,740) |
| Total assets | 80,010,732 | 74,392,016 | 79,200,506 | 5,618,716 | (4,808,490) |
| Total liabilities | 4,163,727 | 3,922,980 | 4,373,391 | 240,747 | (450,411) |
| **Net position** | **$ 75,847,005** | **$ 70,469,036** | **$ 74,827,115** | **$ 5,377,969** | **$ (4,358,079)** |

| Additions to Net Position (dollar amounts in thousands) | | | | | |
|---|---|---|---|---|---|
| | 2017 | 2016 | 2015 | Amount Increase (Decrease) From 2016 to 2017 | Amount Increase (Decrease) From 2015 to 2016 |
| **Contributions:** | | | | | |
| Member contributions | $ 1,537,677 | $ 1,372,033 | $ 1,259,135 | $ 165,644 | $ 112,898 |
| Employer contributions | 1,551,254 | 1,501,102 | 1,481,167 | 50,152 | 19,935 |
| Health care premiums | 339,056 | 339,927 | 306,569 | (871) | 33,358 |
| Other | 118,972 | 102,813 | 174,753 | 16,159 | (71,940) |
| Total contributions | 3,546,959 | 3,315,875 | 3,221,624 | 231,084 | 94,251 |
| Net investment income | 9,674,127 | 389,872 | 3,852,411 | 9,284,255 | (3,462,539) |
| **Total additions to net position** | **$ 13,221,086** | **$ 3,705,747** | **$ 7,074,035** | **$ 9,515,339** | **$(3,368,288)** |

| Deductions From Net Position (dollar amounts in thousands) | | | | | |
|---|---|---|---|---|---|
| | 2017 | 2016 | 2015 | Amount Increase (Decrease) From 2016 to 2017 | Amount Increase (Decrease) From 2015 to 2016 |
| **Deductions:** | | | | | |
| Benefit payments | $ 6,947,246 | $ 7,051,436 | $ 6,613,941 | $ (104,190) | $ 437,495 |
| Health care coverage | 565,962 | 676,993 | 672,615 | (111,031) | 4,378 |
| Refunds to members | 221,841 | 232,070 | 228,630 | (10,228) | 3,440 |
| Administrative expenses | 66,149 | 64,726 | 64,988 | 1,422 | (262) |
| Other | 41,919 | 38,601 | 47,055 | 3,318 | (8,454) |
| **Total deductions from net position** | **$ 7,843,117** | **$ 8,063,826** | **$ 7,627,229** | **$ (220,709)** | **$ 436,597** |

| Net Increase (Decrease) in Net Position (dollar amounts in thousands) | | | | | |
|---|---|---|---|---|---|
| | 2017 | 2016 | 2015 | Amount Increase (Decrease) From 2016 to 2017 | Amount Increase (Decrease) From 2015 to 2016 |
| **Net increase (decrease) in net position** | **$ 5,377,969** | **$ (4,358,079)** | **$ (553,194)** | **$ 9,736,048** | **$ (3,804,885)** |

## Funding Analysis

In fiscal 2017, the board reviewed two studies — an actuarial experience review and an asset-liability study — that are conducted every five years. These studies establish plan assumptions, measure the system's actuarial accrued liabilities and help determine how to invest system assets and how fast these assets are expected to grow. The results of these studies 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.

Accordingly, the board approved changes to the actuarial assumptions that are used to calculate pension liabilities and funded status. The new assumptions increased STRS Ohio's accrued liabilities and funding period, indicating that STRS Ohio would need to reduce benefits in order to meet the 30-year funding target required by Ohio statute.

In spring 2017, the board made the decision to reduce COLA increases granted on or after July 1, 2017, to 0% to preserve the fiscal integrity of the retirement system. The COLA change and the impact of the new actuarial assumptions are reflected in the July 1, 2017, valuation.

The unfunded actuarial accrued liability (UAAL) for STRS Ohio pension benefits was $23.9 billion as of July 1, 2017, down from $30.6 billion as of July 1, 2016, and $30.4 billion at July 1, 2015. Market changes in investment assets are smoothed over a four-year period for valuation purposes, except that the actuarial value of assets shall not be less than 91% nor more than 109% of market value. Valuation assets ended fiscal 2017 at $72.2 billion, up from $70.1 billion at fiscal year end 2016 and $68.7 billion at fiscal year end 2015. The present value of promised benefits to current and future benefit recipients (the actuarial accrued liability) at fiscal 2017, 2016 and 2015 was $96.1 billion, $100.8 billion and $99.0 billion, respectively. The funded ratio, which is valuation assets divided by actuarial accrued liability, was 75.1% at July 1, 2017. At July 1, 2016, the funded ratio was 69.6% and at July 1, 2015, the funded ratio was 69.3%. At July 1, 2017, the funding period was 18.4 years, down from 26.6 years at July 1, 2016, and 28.4 years at July 1, 2015.

## Financial Reporting Valuation

The actuarial valuation for financial reporting emphasizes the obligation an employer incurs to employees through the employment-exchange process. 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. To do so, GASB 67 requires a different approach for determining the reported net pension liability (NPL), as compared to the previously disclosed UAAL. Under GASB 67, the funded status is not presented in the notes or required supplementary information.

The UAAL mirrored the unfunded actuarial obligation calculated by STRS Ohio's external actuary for funding purposes and represented the excess of the actuarial accrued liability (AAL) over the actuarial value of assets (AVA). Under GASB 67, the UAAL has been replaced by the NPL, which represents the excess of the total pension liability over fiduciary net position.

A side-by-side comparison of the two calculations is as follows:

| GASB 67 Accounting Method | Funding Method |
|---|---|
| Total Pension Liability | Actuarial Accrued Liability (AAL) |
| – Fiduciary Net Position | – Actuarial Value of Assets (AVA) |
| = Net Pension Liability (NPL) | = Unfunded Actuarial Accrued Liability (UAAL) |

There are considerable differences between the two numbers. The UAAL is the method selected by the plan and used for funding purposes. The UAAL is determined using asset smoothing. The NPL is determined using fair value and is the method prescribed by GASB for accounting purposes.

Additionally, beginning with fiscal year 2017, STRS Ohio implemented GASB Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans* (OPEB). The new OPEB standards are designed to bring greater clarity to post-employment benefit liabilities, the most significant of which is retiree health insurance. GASB 74 parallels the GASB 67 pension standards issued in 2012.

## 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, 2017 | | | | June 30, 2016 | | | |
|---|---|---|---|---|---|---|---|---|
| | Defined Benefit | Defined Contribution | Post-employment Health Care | Totals | Defined Benefit | Defined Contribution | Post-employment Health Care | Totals |
| **Assets:** | | | | | | | | |
| Cash and short-term investments | $ 1,054,301 | $ 123,190 | $ 52,041 | $ 1,229,532 | $ 1,135,000 | $ 115,632 | $ 55,442 | $ 1,306,074 |
| **Receivables:** | | | | | | | | |
| Accrued interest and dividends | 194,399 | | 9,596 | 203,995 | 138,031 | | 6,742 | 144,773 |
| Member contributions | 207,747 | 320 | | 208,067 | 186,751 | 317 | | 187,068 |
| Employer contributions | 316,625 | 126 | | 316,751 | 286,684 | 63 | | 286,747 |
| Securities sold | 150,235 | | 7,416 | 157,651 | 193,147 | | 9,435 | 202,582 |
| Miscellaneous receivables | 34,686 | | | 34,686 | 26,701 | | | 26,701 |
| **Total receivables** | **903,692** | **446** | **17,012** | **921,150** | **831,314** | **380** | **16,177** | **847,871** |
| **Investments, at fair value:** | | | | | | | | |
| Fixed income | 13,750,396 | 257,897 | 678,726 | 14,687,019 | 10,676,184 | 208,151 | 521,509 | 11,405,844 |
| Domestic equities | 20,649,460 | 648,349 | 1,019,268 | 22,317,077 | 20,109,696 | 513,078 | 982,316 | 21,605,090 |
| International equities | 18,068,705 | 120,930 | 891,881 | 19,081,516 | 16,475,924 | 93,909 | 804,814 | 17,374,647 |
| Real estate | 9,267,452 | 101,707 | 457,446 | 9,826,605 | 9,803,324 | 102,155 | 478,871 | 10,384,350 |
| Alternative investments | 10,018,300 | | 494,509 | 10,512,809 | 9,552,987 | | 466,643 | 10,019,630 |
| **Total investments** | **71,754,313** | **1,128,883** | **3,541,830** | **76,425,026** | **66,618,115** | **917,293** | **3,254,153** | **70,789,561** |
| Invested securities lending collateral | 1,284,461 | | 63,402 | 1,347,863 | 1,293,221 | | 63,171 | 1,356,392 |
| Capital assets | 246,873 | | | 246,873 | 244,884 | | | 244,884 |
| Accumulated depreciation | (159,712) | | | (159,712) | (152,766) | | | (152,766) |
| Net capital assets | 87,161 | | | 87,161 | 92,118 | | | 92,118 |
| **Total assets** | **75,083,928** | **1,252,519** | **3,674,285** | **80,010,732** | **69,969,768** | **1,033,305** | **3,388,943** | **74,392,016** |
| **Liabilities:** | | | | | | | | |
| Securities purchased and other investment liabilities | 239,499 | | 11,822 | 251,321 | 213,438 | | 10,426 | 223,864 |
| Debt on real estate investments | 2,325,341 | | 114,780 | 2,440,121 | 2,116,125 | | 103,368 | 2,219,493 |
| Accrued expenses and other liabilities | 31,060 | | 1,533 | 32,593 | 29,540 | | 1,443 | 30,983 |
| Medical benefits payable | | | 6,994 | 6,994 | | | 24,915 | 24,915 |
| Obligations under securities lending program | 1,283,959 | | 63,377 | 1,347,336 | 1,293,061 | | 63,163 | 1,356,224 |
| Net pension liability | 85,362 | | | 85,362 | 67,501 | | | 67,501 |
| **Total liabilities** | **3,965,221** | | **198,506** | **4,163,727** | **3,719,665** | | **203,315** | **3,922,980** |
| **Fiduciary net position restricted for defined benefit, defined contribution and post-employment health care coverage:** | **$ 71,118,707** | **$ 1,252,519** | **$ 3,475,779** | **$ 75,847,005** | **$ 66,250,103** | **$ 1,033,305** | **$ 3,185,628** | **$ 70,469,036** |

See accompanying Notes to Financial Statements.

## Statements of Changes in Fiduciary Net Position (in thousands)

| | Year Ended June 30, 2017 | | | | Year Ended June 30, 2016 | | | |
|---|---|---|---|---|---|---|---|---|
| | Defined Benefit | Defined Contribution | Post-employment Health Care | Totals | Defined Benefit | Defined Contribution | Post-employment Health Care | Totals |
| **Additions:** | | | | | | | | |
| **Contributions:** | | | | | | | | |
| Member | $ 1,443,374 | $ 94,303 | | $ 1,537,677 | $ 1,289,809 | $ 82,224 | | $ 1,372,033 |
| Employer | 1,514,285 | 36,969 | | 1,551,254 | 1,466,938 | 34,164 | | 1,501,102 |
| Transfers between retirement plans | 15,034 | (15,034) | | | 11,440 | (11,440) | | |
| Government reimbursements | | | $ 79,357 | 79,357 | | | $ 58,812 | 58,812 |
| Benefit recipient health care premiums | | | 339,056 | 339,056 | | | 339,927 | 339,927 |
| Other retirement systems | 39,615 | | | 39,615 | 44,001 | | | 44,001 |
| **Total contributions** | **3,012,308** | **116,238** | **418,413** | **3,546,959** | **2,812,188** | **104,948** | **398,739** | **3,315,875** |
| **Income from investing activities:** | | | | | | | | |
| Net appreciation (depreciation) in fair value of investments | 7,918,787 | 135,356 | 383,117 | 8,437,260 | (895,212) | 11,624 | (42,090) | (925,678) |
| Interest | 347,920 | 681 | 16,833 | 365,434 | 396,614 | 229 | 18,648 | 415,491 |
| Dividends | 852,274 | | 41,234 | 893,508 | 859,331 | | 40,404 | 899,735 |
| Real estate income | 211,963 | | 10,255 | 222,218 | 215,604 | | 10,137 | 225,741 |
| Investment income | 9,330,944 | 136,037 | 451,439 | 9,918,420 | 576,337 | 11,853 | 27,099 | 615,289 |
| Less internal investment expenses | (39,363) | (677) | (1,904) | (41,944) | (36,051) | (549) | (1,695) | (38,295) |
| Less external asset management fees | (202,369) | | (9,791) | (212,160) | (190,741) | | (8,968) | (199,709) |
| Net income from investing activities | 9,089,212 | 135,360 | 439,744 | 9,664,316 | 349,545 | 11,304 | 16,436 | 377,285 |
| Securities lending income | 10,398 | | 503 | 10,901 | 13,357 | | 628 | 13,985 |
| Securities lending expenses | (1,040) | | (50) | (1,090) | (1,335) | | (63) | (1,398) |
| Net income from securities lending activities | 9,358 | | 453 | 9,811 | 12,022 | | 565 | 12,587 |
| Net investment income | 9,098,570 | 135,360 | 440,197 | 9,674,127 | 361,567 | 11,304 | 17,001 | 389,872 |
| **Total additions** | **12,110,878** | **251,598** | **858,610** | **13,221,086** | **3,173,755** | **116,252** | **415,740** | **3,705,747** |
| **Deductions:** | | | | | | | | |
| Benefits: | | | | | | | | |
| Service retirement | 6,612,638 | | | 6,612,638 | 6,714,014 | | | 6,714,014 |
| Disability benefits | 210,649 | | | 210,649 | 212,614 | | | 212,614 |
| Survivor benefits | 123,959 | | | 123,959 | 124,808 | | | 124,808 |
| Health care | | | 565,962 | 565,962 | | | 676,993 | 676,993 |
| Other | 41,919 | | | 41,919 | 38,601 | | | 38,601 |
| Total benefit payments | 6,989,165 | | 565,962 | 7,555,127 | 7,090,037 | | 676,993 | 7,767,030 |
| Refunds to members who have withdrawn | 190,517 | 31,324 | | 221,841 | 205,223 | 26,847 | | 232,070 |
| Administrative expenses | 62,592 | 1,060 | 2,497 | 66,149 | 61,038 | 1,033 | 2,655 | 64,726 |
| **Total deductions** | **7,242,274** | **32,384** | **568,459** | **7,843,117** | **7,356,298** | **27,880** | **679,648** | **8,063,826** |
| **Net increase (decrease) in net position** | **4,868,604** | **219,214** | **290,151** | **5,377,969** | **(4,182,543)** | **88,372** | **(263,908)** | **(4,358,079)** |
| **Fiduciary net position restricted for defined benefit, defined contribution and post-employment health care coverage:** | | | | | | | | |
| Beginning of year | 66,250,103 | 1,033,305 | 3,185,628 | 70,469,036 | 70,432,646 | 944,933 | 3,449,536 | 74,827,115 |
| **End of year** | **$ 71,118,707** | **$ 1,252,519** | **$ 3,475,779** | **$ 75,847,005** | **$ 66,250,103** | **$ 1,033,305** | **$ 3,185,628** | **$ 70,469,036** |

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 (Revised Code) 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. Intangible assets, such as internally developed software, are capitalized in accordance with GASB Statement No. 51 and STRS Ohio's capital asset policy.

**Method Used to Value Investments** — Investments are reported at fair value. Short-term investments, with maturities less than one year, are reported at amortized cost, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price at the then current exchange rates. Fixed-income investments are valued based on their coupon rate relative to the coupon rate for similar securities. The fair value of real estate investments is based on independent appraisals and internal valuations. The fair value of alternative investments is determined by the alternative investment partnership based on the valuation methodology outlined in the partnership agreement.

**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. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans* (OPEB) was implemented for the year ended June 30, 2017. GASB Statement No. 74 uses terminology such as the total OPEB liability and net OPEB liability which has been modeled after GASB Statement No. 67 for pensions. The total OPEB liability is derived after validation of the plan discount rate. The OPEB plan's fiduciary net position is subtracted from the total OPEB liability to determine the net OPEB liability. While the Revised Code permits but does not mandate STRS Ohio to provide retiree health care benefits, STRS Ohio has provided supplementary schedules and footnote disclosures this year to comply with GASB Statement No. 74.

GASB Statement No. 75, *Postemployment Benefit Plans Other Than Pensions* will be effective for periods beginning after June 15, 2017. This accounting pronouncement will have an impact on the financial statements of contributing employer systems. One of the primary changes comes from the requirement for employers to record a net OPEB liability based on their proportionate share of STRS Ohio's total net OPEB liability. Management continues to prepare for the implementation of this pronouncement so employers can implement in their financial statements for the fiscal year ending June 30, 2018.

GASB Statement No. 82, *Pension Issues — An Amendment of GASB Statements No. 67, No. 68 and No. 73*, was issued March 2016. GASB No. 82 addresses certain issues with the presentation of payroll-related measures in required supplementary information, the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and the classification of payments made by employers to satisfy employee (member) contribution requirements. Upon review, it was determined that STRS Ohio is currently presenting information in accordance with the requirements of GASB Statement No. 82.

**Reclassifications** — Certain reclassifications of 2016 amounts were made to conform with the 2017 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 following tables.

**Member and Retiree Data at July 1, 2017 and 2016**

| | 2017 | 2016 |
|---|---|---|
| Current active members | 168,132 | 169,212 |
| Inactive members eligible for refunds only | 139,533 | 135,738 |
| Terminated members entitled to receive a benefit in the future | 18,403 | 17,627 |
| Retirees and beneficiaries currently receiving a benefit | 158,039 | 157,938 |
| Defined Contribution Plan members | 9,330 | 9,182 |
| Reemployed retirees | 25,009 | 26,228 |
| Total Plan Membership | 518,446 | 515,925 |

**Participating Employers at June 30, 2017 and 2016**

| | 2017 | 2016 |
|---|---|---|
| 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 | 61 | 62 |
| Community schools | 323 | 329 |
| State of Ohio | 1 | 1 |
| Other | 11 | 11 |
| Total | 1,145 | 1,152 |

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 Defined Benefit (DB) Plan, new members are offered a Defined Contribution (DC) Plan or a Combined Plan. The DC Plan allows members to allocate all their member contributions and employer contributions equal to 9.5% of earned compensation among various investment choices. The Combined Plan offers features of the DC Plan and the DB Plan. In the Combined Plan, member contributions less 1.5% of earned compensation are allocated among investment choices by the member. Effective July 1, 2016, 2% of earned compensation is applied to the defined benefit portion of the participant's account. Employer contributions and a portion of member contributions in the Combined 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 Combined 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 Revised Code. Any member may retire who has (1) five years of service credit and age 60; (2) 26 years of service credit and age 55; or (3) 31 years of service credit regardless of age. Eligibility changes will 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 .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 defined benefit plan.

The legislative changes that improve funding to STRS Ohio's defined benefit plan are: 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; reducing the cost-of-living adjustment (COLA); eliminating the COLA for fiscal year 2014; and deferring the COLA for future retirees. 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 Revised Code.

For members who select the DC Plan, all member contributions and employer contributions at a rate of 9.5% 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 4.5% of the 14.0% employer rate is allocated to the defined benefit unfunded liability.

A member is eligible to receive a retirement benefit at age 50 and termination of employment. The member may elect to receive a lifetime monthly annuity or 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.

**Combined Plan** — For members who select the Combined Plan, 12% of the 14% member contribution rate in fiscal 2017 and 11.5% of the 13% member contribution rate in fiscal 2016 was deposited into the member's defined contribution account and the remaining amount applied to the DB Plan. In the Combined 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 Combined Plan payment is payable to a member on or after age 60 with five years of service. The DC portion of the account may be taken as a lump sum or converted to a lifetime monthly annuity.

DC and Combined Plan members must actively select the Defined Benefit Plan during their fifth year of membership or their original selection is maintained. During fiscal 2017, $15.0 million was transferred from the DC and Combined Plan accounts to the Defined Benefit Plan. During fiscal 2016, $11.4 million was transferred from the DC and Combined Plan accounts to the Defined Benefit Plan.

**Death, Survivor and Disability Benefits** — A Defined Benefit Plan or Combined 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 Defined Benefit Plan. Death benefit coverage up to $2,000 can be purchased by participants in the DB, DC or Combined Plans. Various other benefits are available to members' beneficiaries.

**Health Care Coverage After Retirement** — Ohio law authorizes 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 Defined Benefit or Combined Plans and their eligible dependents.

Coverage under the current program includes hospitalization, physicians' fees and prescription drugs and reimbursement of monthly Medicare Part B premiums. Medicare Part B premium reimbursements will be discontinued effective Jan. 1, 2019. Pursuant to the Revised Code, 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 $339.1 million or 60% of the total health care costs in fiscal 2017 (excluding deductibles, coinsurance and copayments). For the year ended June 30, 2016, benefit recipients contributed $339.9 million or 50% 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 2017 and 2016, 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 health care plans include creditable prescription drug coverage. For the years ended June 30, 2017 and 2016, STRS Ohio received $79.4 million and $58.8 million in Medicare Part D reimbursements, respectively.

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

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

A Combined 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.

Defined Contribution Plan members receive their contributions plus any investment gains or losses until they have completed one year of membership. After one year of membership, members also receive 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 4.5% of payroll. For the years ended June 30, 2017 and 2016, the ARP participant payroll totaled $704.8 million and $672.0 million, respectively.

**Administrative Expenses** — The costs of administering the Defined Benefit and post-employment health care plans are financed by investment income. The administrative costs of the Defined Contribution 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, 2017 and 2016, was as follows:

**Net Pension Liability at June 30, 2017 and 2016**
(dollar amounts in thousands)

| | 2017 | 2016 |
|---|---|---|
| Total Pension Liability for STRS Ohio | $ 96,126,440 | $ 100,756,422 |
| Fiduciary Net Position | (72,371,226) | (67,283,408) |
| Net Pension Liability | $ 23,755,214 | $ 33,473,014 |
| Ratio of Fiduciary Net Position to the Total Pension Liability | 75.3% | 66.8% |

The total pension liability was determined by an actuarial valuation as of July 1, 2017, using actuarial assumptions related to inflation (2.50%), investment rate of return (7.45%), and 0% cost-of-living adjustments. Projected salary increases range from 2.50% at age 65 to 12.50% at age 20. For 2016, the total pension liability was determined by an actuarial valuation as of July 1, 2016, using assumptions related to inflation (2.75%), investment rate of return (7.75%) and cost-of-living adjustments (2%). Projected salary increases ranged from 2.75% at age 70 to 12.25% 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% |
| Total Fund | 100% | |

*The target allocation percentage is effective as of July 1, 2017. 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, 2017 and 2016. 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, 2017, and 7.75% was the long-term expected rate of return used to determine the total pension liability as of June 30, 2016.

**Sensitivity of the Net Pension Liability to the Discount Rate Assumption —** The following represents the net pension liability as of June 30, 2017 and 2016, 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 | Current Assumption | 1% Increase |
|---|---|---|---|
| | 6.75% | 7.75% | 8.75% |
| June 30, 2016 | $44,482,916 | $33,473,014 | $24,185,513 |
| | 6.45% | 7.45% | 8.45% |
| June 30, 2017 | $34,052,291 | $23,755,214 | $15,081,470 |

**Mortality Rates for Pension —** 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; and 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.

The 2016 year mortality rates were based on the RP-2000 Combined Mortality Table (Projection 2022–Scale AA) for Males and Females. Males' ages were set back two years through age 89 and no set back for age 90 and above. Females younger than age 80 were set back four years, one year set back from age 80 through 89 and no set back from age 90 and above.

**Experience Study —** The actuarial assumptions used in the June 30, 2017, valuation 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 Liability of Participating Employers

The components of the net OPEB liability of the participating employers as of June 30, 2017 and 2016, was as follows:

**Net OPEB Liability at June 30, 2017 and 2016**
(dollar amounts in thousands)

| | 2017 | 2016 |
|---|---|---|
| Total OPEB Liability for STRS Ohio | $ 7,377,410 | $ 8,533,654 |
| Fiduciary Net OPEB Position | 3,475,779 | 3,185,628 |
| Net OPEB Liability | $ 3,901,631 | $ 5,348,026 |
| Ratio of Fiduciary Net Position to the Total OPEB Liability | 47.1% | 37.3% |

The total OPEB liability at June 30, 2017, was determined by rolling forward the total OPEB liability at Jan. 1, 2017, to June 30, 2017, using actuarial assumptions related to the discount rate of return (4.13%), payroll increases of 3.0%, projected salary increases ranging from 2.5% to 12.5% and health care cost trend rates ranging from 6% to 11% initially and a 4.5% ultimate rate. The total OPEB liability at June 30, 2016, was determined by rolling forward the total OPEB liability at Jan. 1, 2016, to June 30, 2016, using actuarial assumptions related to the discount rate of return (3.26%), payroll increases of 3.5% through 2018 and 4% thereafter, projected salary increases ranging from 2.75% to 12.25% and health care cost trend rates ranging from 6.4% to 11% initially and a 5% ultimate rate.

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% |
| Total Fund | 100% | |

*The target allocation percentage is effective as of July 1, 2017. 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 health care fund. Based on these assumptions, the OPEB plan's fiduciary net position was not projected to be sufficient to make all projected future benefit payments of current plan members. Therefore, a blended discount rate of 4.13% which represents the long-term expected rate of return of 7.45% for the funded benefit payments and the Bond Buyer 20-year municipal bond rate of 3.58% for the unfunded benefit payments was used to measure the total OPEB liability at June 30, 2017. A blended discount rate of 3.26% which represents the long term expected rate of return of 7.75% for the funded benefit payments and the Bond Buyer 20-year municipal bond rate of 2.85% for the unfunded benefit payments was used to measure the total OPEB liability at June 30, 2016.

**Sensitivity of the Net OPEB Liability to the Discount Rate Assumption** — The following represents the net OPEB liability as of June 30, 2017, calculated using the current period discount rate assumption of 4.13%, as well as what the net OPEB 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. Also shown is the net OPEB liability as of June 30, 2017, 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 Liability at June 30, 2017** (in thousands)

| 1% Decrease in Discount Rate (3.13%) | Current Discount Rate (4.13%) | 1% Increase in Discount Rate (5.13%) |
|---|---|---|
| $5,237,877 | $3,901,631 | $2,845,560 |
| **1% Decrease in Trend Rates** | **Current Trend Rates** | **1% Increase in Trend Rates** |
| $2,710,686 | $3,901,631 | $5,469,054 |

**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, 2017, 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 Revised Code. The member rate is 14% and the employer rate is 14% of covered payroll effective July 1, 2016, and the member rate was 13% and the employer rate was 14% effective July 1, 2015.

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

The Teachers' Savings Fund (TSF) is used to accumulate member contributions in trust.

The Employers' Trust Fund (ETF) is used to accumulate employer contributions in trust. The ETF includes assets allocated to post-employment health care from which payments for health care coverage are made. Investment fair value changes for the Defined Benefit Plan and the health care program from year-to-year are recorded in the ETF.

The Annuity and Pension Reserve Fund (APRF) is the fund from which all annuities and pension payments to retired members are made. Reserves are transferred to this fund from the TSF and ETF funds at the time of retirement.

The Survivors' Benefit Fund is the fund from which all survivor benefit payments are made for which reserves have been transferred from the TSF and the ETF.

The Defined Contribution Fund accumulates DC member and employer contributions, Combined Plan member contributions, investment earnings and DC plan expenses.

The Guarantee Fund is used to accumulate income derived from gifts, bequests and investments for the year.

The Expense Fund is the fund from which all expenses for the administration and management of STRS Ohio are paid each year.

After interest is allocated to the various funds, the Guarantee Fund and the Expense Fund are closed into the ETF at year-end.

At June 30, 2017 and 2016, STRS Ohio's net position was included in the various funds as shown below.

**Fund Balances** (in thousands)

| | June 30, 2017 | June 30, 2016 |
|---|---|---|
| Teachers' Savings Fund | $ 13,668,834 | $ 12,498,469 |
| Employers' Trust Fund | (8,797,742) | (17,345,330) |
| Annuity and Pension Reserve Fund | 68,610,248 | 73,126,032 |
| Survivors' Benefit Fund | 1,113,146 | 1,156,560 |
| Defined Contribution Fund | 1,252,519 | 1,033,305 |
| Total | $ 75,847,005 | $ 70,469,036 |

## 6. Commitments and Contingencies

STRS Ohio has made commitments to fund various real estate investments totaling $769,530,000 as of June 30, 2017. The commitments as of June 30, 2017, have expected funding dates from September 2017 to April 2021.

STRS Ohio has made commitments to fund various alternative investments totaling $5,450,170,000 as of June 30, 2017. The expected funding dates for the commitments as of June 30, 2017, range from July 2017 to June 2023.

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.

## 8. Deposit and Investment Risk Disclosure

**Investment Authority** — The investment authority of the Retirement Board is governed by Section 3307.15 of the Revised Code 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, 2017, the annual time-weighted rate of return, net of investment expenses was 14.15%. The money-weighted rate of return expresses investment performance after consideration of the impact of the changing amounts actually invested. For the year ended June 30, 2017, the annual money-weighted rate of return, net of investment expenses, was 14.19%.

## Investments Measured at Fair Value at June 30, 2017 and 2016 (in thousands)

| | | Fair Value Measurements Using: | | | | Fair Value Measurements Using: | | |
|---|---|---|---|---|---|---|---|---|
| | June 30, 2017 | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) | June 30, 2016 | 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 | $ 1,207,007 | | $ 1,207,007 | | $ 1,273,432 | | $ 1,273,432 | |
| Short-term investment funds | 15,000 | | 15,000 | | 13,000 | | 13,000 | |
| **Fixed income** | | | | | | | | |
| U.S. government agency obligations | 319,438 | | 319,438 | | 234,984 | | 234,984 | |
| Corporate bonds | 4,092,293 | | 4,092,293 | | 3,910,519 | | 3,910,519 | |
| High yield and emerging markets | 1,627,525 | | 1,627,525 | | 1,712,166 | | 1,712,166 | |
| Mortgages and asset-backed | 2,830,428 | | 2,830,428 | | 2,635,719 | | 2,635,719 | |
| U.S. government obligations | 5,817,191 | | 5,817,191 | | 2,912,648 | | 2,912,648 | |
| **Domestic** | | | | | | | | |
| Common and preferred stock | 22,317,421 | 22,317,421 | | | 21,606,419 | 21,606,419 | | |
| **International** | | | | | | | | |
| Foreign stock | 17,542,167 | 17,151,650 | 390,517 | | 15,666,360 | 15,156,242 | 510,118 | |
| Foreign equity index funds | 1,592,863 | | 1,592,863 | | 1,610,886 | | 1,610,886 | |
| **Real estate** | | | | | | | | |
| Direct real estate assets | 7,700,786 | | | 7,700,786 | 8,028,181 | | | 8,028,181 |
| REITs | 1,095,194 | 1,095,194 | | | 1,266,135 | 1,266,135 | | |
| **Alternative investments** | | | | | | | | |
| Foreign stock held in alternative investments | 176,401 | 176,401 | | | 129,533 | 129,533 | | |
| Domestic stock held in alternative investments | 26,551 | 26,551 | | | 17,981 | 17,981 | | |
| Opportunistic diversified | 1,272,336 | 545,273 | | 727,063 | 1,304,411 | 509,707 | | 794,704 |
| **Total investments by fair value level** | **67,632,601** | **41,312,490** | **17,892,262** | **8,427,849** | **62,322,374** | **38,686,017** | **14,813,472** | **8,822,885** |
| **Investments measured at net asset value (NAV):** | | | | | | | | |
| **Real estate** | | | | | | | | |
| Commingled real estate fund | 95,760 | | | | 108,916 | | | |
| Real estate funds | 934,865 | | | | 981,118 | | | |
| **Alternative investments** | | | | | | | | |
| Hedge funds | 1,773,382 | | | | 2,011,093 | | | |
| Private equity | 4,987,826 | | | | 4,508,002 | | | |
| Opportunistic diversified | 2,275,854 | | | | 2,050,028 | | | |
| **Total investments measured at NAV** | **10,067,687** | | | | **9,659,157** | | | |
| **Investment derivatives:** | | | | | | | | |
| Options | (807) | (1,266) | 459 | | (3,282) | (1,864) | (1,418) | |
| Rights and warrants | 1,178 | | | 1,178 | 1,929 | | | 1,929 |
| Foreign currency forwards | (52,455) | | (52,455) | | 89,065 | | 89,065 | |
| Credit default swaps | | | | | (343) | | (343) | |
| Equity swaps | (1,171) | | (1,171) | | 7,093 | | 7,093 | |
| **Total investment derivatives** | **(53,255)** | **(1,266)** | **(53,167)** | **1,178** | **94,462** | **(1,864)** | **94,397** | **1,929** |
| **Cash** | 7,525 | | | | 19,642 | | | |
| **Total investments and cash** | **$ 77,654,558** | | | | **$ 72,095,635** | | | |

## Investments Measured at Net Asset Value (NAV) at June 30, 2017 and 2016 (in thousands)

| | June 30, 2017 | Unfunded Commitment | Redemption Frequency (if Currently Eligible) | Redemption Notice Period | June 30, 2016 | Unfunded Commitment | Redemption Frequency (if Currently Eligible) | Redemption Notice Period |
|---|---|---|---|---|---|---|---|---|
| **Commingled real estate fund total[1]** | $ 95,760 | | Quarterly | 60 days | $ 108,916 | | Quarterly | 60 days |
| **Real estate funds total[2]** | 934,865 | $ 542,439 | N/A | N/A | 981,118 | $ 641,529 | N/A | N/A |
| Hedge funds | | | | | | | | |
| Credit/Distressed[3] | 662,046 | | Quarterly | 60–90 days | 760,091 | | Quarterly, semiannually, annually | 60–90 days |
| Equity long/short[4] | 17,432 | | Quarterly | 60 days | 112,167 | | Quarterly | 60 days |
| Event driven[5] | 143,096 | | Quarterly | 65 days | 132,116 | | Quarterly | 65 days |
| Macro[6] | 296,618 | | Quarterly | 60 days | 313,792 | | Quarterly | 60 days |
| Market neutral[7] | 110,112 | | Quarterly | 60 days | 112,301 | | Quarterly | 60 days |
| Multi-strategy[8] | 544,078 | | Quarterly | 60–90 days | 580,626 | | Quarterly, annually | 60–95 days |
| **Hedge funds total** | 1,773,382 | | | | 2,011,093 | | | |
| **Private equity total[9]** | 4,987,826 | 3,406,670 | N/A | N/A | 4,508,002 | 2,773,243 | N/A | N/A |
| **Opportunistic diversified total[10]** | 2,275,854 | 2,043,500 | N/A | N/A | 2,050,028 | 2,315,005 | N/A | N/A |
| **Total investments measured at NAV** | $ 10,067,687 | | | | $ 9,659,157 | | | |

[1]**Commingled real estate fund total** — Consisting of one domestic real estate investment fund considered to be commingled in nature. The fund is valued at the net asset value, at the end of the period, based upon the fair value of the underlying assets.

[2]**Real estate funds total** — Consisting of 35 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.

[3]**Credit/Distressed** — Consisting of four 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, 64% of the value of these investments is eligible for redemption in the next six months. The remaining 36% of the value of these investments remain restricted up to 14 months. In 2016, 70% of the value of the investments was eligible for redemption within six months and the remaining 30% remained restricted up to 14 months.

[4]**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.

[5]**Event driven** — Consisting of one fund, this strategy seeks to gain an advantage from pricing inefficiences 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.

[6]**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 in the next six months. The remaining 50% of the value of this investment remains restricted up to 14 months.

[7]**Market neutral** — Consisting of one fund, this strategy invests primarily in derivative instruments with the goal of benefitting from changes in the level of volatility across different asset classes and generating returns uncorrelated to the broader markets. This investment is valued at NAV per share. 100% of this investment is eligible for redemption within the next six months.

[8]**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. In 2016, due to contractual gating restrictions, 86% of the value of these investments was eligible for redemption within six months and the remaining 14% remained restricted up to 13 months.

[9]**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.

[10]**Opportunistic diversified** — Consisting of 54 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.

Investments held at fair value by STRS Ohio at June 30, 2017 and 2016, are summarized below.

**Investments and Invested Securities Lending Collateral Held at Fair Value by STRS Ohio at June 30, 2017 and 2016** (summarized and in thousands)

| Category | June 30, 2017 | June 30, 2016 |
|---|---|---|
| **Cash and short-term investments** | | |
| Cash | $ 7,525 | $ 19,642 |
| Short-term investment funds | 15,000 | 13,000 |
| U.S. Treasury bills | 1,207,007 | 1,273,432 |
| **Total cash and short-term** | **1,229,532** | **1,306,074** |
| **Fixed income** | | |
| U.S. government agency obligations | 319,438 | 234,984 |
| Corporate bonds | 4,092,293 | 3,910,519 |
| High yield and emerging market | 1,627,669 | 1,711,974 |
| Mortgages and asset-backed | 2,830,428 | 2,635,719 |
| U.S. government obligations | 5,817,191 | 2,912,648 |
| **Total fixed income** | **14,687,019** | **11,405,844** |
| **Domestic equities** | **22,317,077** | **21,605,090** |
| **International equities (See Note 9)** | **19,081,516** | **17,374,647** |
| **Real estate (See Note 10)** | | |
| East region | 3,231,999 | 3,258,615 |
| Midwest region | 1,356,331 | 1,268,170 |
| South region | 659,135 | 709,216 |
| West region | 2,453,321 | 2,697,295 |
| REITs | 1,095,194 | 1,266,136 |
| Non-core | 1,030,625 | 1,184,918 |
| **Total real estate** | **9,826,605** | **10,384,350** |
| **Alternative investments (See Note 11)** | **10,512,809** | **10,019,630** |
| **Invested securities lending collateral** | **1,347,863** | **1,356,392** |
| **Total investments and invested securities lending collateral** | **$ 79,002,421** | **$ 73,452,027** |

**Cash and Short-Term Investments** — Cash and short-term investments are combined for reporting purposes and include cash balances of $7,525,000 at June 30, 2017, and $19,642,000 at June 30, 2016, 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 2017 and 2016, 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, 2017 and 2016, the bank statement cash balances were approximately $15,514,000 and $26,945,000, 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 by weighted-average duration at June 30, 2017 and 2016.

**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, 2017 and 2016.

**Quality Ratings of Fixed-Income Investments Held at June 30, 2017 and 2016** (in thousands)

| Investment Type | Quality Rating | June 30, 2017 Fair Value | June 30, 2016 Fair Value |
|---|---|---|---|
| U.S. government agency obligations | Aaa | $ 84,417 | – |
| | Aa | 235,021 | $ 234,984 |
| **Total U.S. government agency obligations** | | **319,438** | **234,984** |
| Corporate bonds | Aaa | 130,261 | 203,207 |
| | Aa | 535,331 | 483,004 |
| | A | 1,959,171 | 1,630,897 |
| | Baa | 1,436,722 | 1,549,154 |
| | Ba | 10,554 | 4,975 |
| | NR | 20,254 | 39,282 |
| **Total corporate bonds** | | **4,092,293** | **3,910,519** |
| High yield and emerging markets fixed income | Aaa | 7,022 | 11,421 |
| | Aa | 5,709 | 4,533 |
| | A | 47,810 | 39,732 |
| | Baa | 121,092 | 156,056 |
| | Ba | 407,144 | 470,481 |
| | B | 614,605 | 570,679 |
| | Caa and below | 247,816 | 318,337 |
| | NR | 176,471 | 140,735 |
| **Total high yield and emerging markets fixed income** | | **1,627,669** | **1,711,974** |
| Mortgages and asset-backed | Aaa | 2,564,477 | 2,395,378 |
| | Aa | – | 96,267 |
| | A | 2,620 | 129,457 |
| | Baa | – | 1,379 |
| | Caa and below | 1,557 | 12,278 |
| | NR | 261,774 | 960 |
| **Total mortgages and asset-backed** | | **2,830,428** | **2,635,719** |
| **Credit risk debt securities** | | **8,869,828** | **8,493,196** |
| **U.S. government obligations** | | **5,817,191** | **2,912,648** |
| **Total fixed-income investments** | | **$ 14,687,019** | **$ 11,405,844** |

**Duration of Fixed-Income Investments Held at June 30, 2017 and 2016** (in thousands)

| | June 30, 2017 | | June 30, 2016 | |
|---|---|---|---|---|
| Investment Type | Fair Value | Weighted-Average Duration | Fair Value | Weighted-Average Duration |
| U.S. government agency obligations | $ 319,438 | 1.177 | $ 234,984 | 0.234 |
| Corporate bonds | 4,092,293 | 5.077 | 3,910,519 | 5.955 |
| High yield and emerging markets fixed income | 1,627,669 | 4.183 | 1,711,974 | 4.467 |
| Mortgages and asset-backed | 2,830,428 | 3.144 | 2,635,719 | 2.289 |
| U.S. government obligations | 5,817,191 | 6.185 | 2,912,648 | 5.517 |
| **Total fixed income** | **$ 14,687,019** | | **$ 11,405,844** | |

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.

***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. The use of leverage is prohibited. Underlying exposure of equity derivatives will not exceed 10% of total fund assets.

***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) 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.

***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).

***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. 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. Derivatives may be used and 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, 2017 and 2016 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.

**Exposure to Foreign Currency Risk Held at June 30, 2017 and 2016** (in thousands)

| | June 30, 2017 | | June 30, 2016 | |
|---|---|---|---|---|
| Foreign Currency Denomination | International | High Yield & Emerging Markets Fixed Income | International | High Yield & Emerging Markets Fixed Income |
| Argentine Peso | $ 1 | $ 899 | – | – |
| Australian Dollar | 283,825 | – | $ 364,542 | – |
| Brazilian Real | 260,681 | 2,436 | 219,948 | – |
| British Pound Sterling | 836,878 | – | 877,420 | $ 4,589 |
| Canadian Dollar | 354,174 | – | 327,298 | (64) |
| Chilean Peso | 64,276 | 1,457 | 68,445 | – |
| Chinese Yuan Renminbi | – | – | | |
| Colombian Peso | 110 | – | (739) | 3,986 |
| Czech Republic Koruna | 4,320 | – | 3,848 | – |
| Danish Krone | 143,792 | – | 175,697 | – |
| Egyptian Pound | 5,108 | – | 15,374 | – |
| European Union Euro | 1,534,152 | 22,023 | 1,020,501 | 7,942 |
| Hong Kong Dollar | 931,627 | – | 766,647 | – |
| Hungarian Forint | 32,671 | – | 36,386 | – |
| Indian Rupee | 271,375 | 1,411 | 234,921 | – |
| Indonesian Rupiah | 49,515 | 2,372 | 28,816 | 1,035 |
| Israeli Shekel | 8,553 | – | (28,574) | – |
| Japanese Yen | 1,351,547 | – | 902,461 | – |
| Kenyan Shilling | 1,555 | – | 1,897 | – |
| Malaysian Ringgit | 26,664 | – | 36,465 | – |
| Mexican Peso | 53,060 | 3,559 | 62,999 | 2,481 |
| Morocan Dirham | 1,439 | – | 751 | – |
| New Taiwan Dollar | 573,158 | – | 419,174 | – |
| New Zealand Dollar | 28,000 | – | 75,479 | – |
| Nigerian Naira | 14,546 | – | 9,358 | – |
| Norwegian Krone | 32,740 | – | 28,356 | – |
| Omani Rial | – | – | 1,808 | – |
| Peruvian Nuevo Sol | – | 4,727 | | |
| Philippines Peso | 19,917 | – | 32,168 | |
| Polish Zloty | 61,722 | – | 25,415 | – |
| Qatari Rial | – | – | – | – |
| Romanian Leu | 983 | – | | |
| Russian New Ruble | 29,293 | 2,953 | 10,361 | – |
| Singapore Dollar | 96,031 | – | 95,066 | – |
| South African Rand | 150,935 | – | 219,784 | – |
| South Korean Won | 695,787 | – | 535,267 | – |
| Swedish Krona | 169,290 | – | 116,722 | – |
| Swiss Franc | 458,926 | – | 437,064 | – |
| Thailand Baht | 95,462 | – | 102,041 | – |
| Tunisian Dinar | 689 | – | 626 | – |
| Turkish Lira | 105,067 | 1,183 | 71,114 | 1,042 |
| Uruguayan Peso Uruguayo | – | 555 | | |
| Vietnamese Dong | 4,611 | – | 529 | – |
| **Held In Foreign Currency** | 8,752,480 | 43,575 | **7,295,435** | **21,011** |
| **Held In U.S. Dollars** | **10,329,036** | **1,584,094** | **10,079,212** | **1,690,963** |
| **Total** | **$19,081,516** | **$1,627,669** | **$17,374,647** | **$ 1,711,974** |

**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 repurchase agreements, commercial paper and U.S. 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, 2017, the weighted average maturity of the invested cash collateral is 128 days. Because much of the cash collateral is invested in floating rate securities, the weighted average number of days interest rates reset is 17 days as of June 30, 2017. 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 approximately $1,315,766,000 and $1,327,607,000 as of June 30, 2017 and 2016, respectively. The fair value of the associated invested cash collateral as of June 30, 2017 and 2016, was $1,347,863,000 and $1,356,392,000, 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.

***Equity Swaps*** — Four EAFE and two Emerging Market Free (EMF) international equity swap agreements were contracted during fiscal 2017 with maturity dates in fiscal 2018. 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 $1.13 billion 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, 2017 and 2016, are shown below.

**Fair Values of International Investments Held at June 30, 2017 and 2016** (in thousands)

| | June 30, 2017 | June 30, 2016 |
|---|---|---|
| **Externally managed** | | |
| International stocks | $ 8,160,879 | $ 7,180,861 |
| International currency and liquidity reserves | 137,420 | 192,786 |
| Forward contracts | (14,705) | 70,061 |
| **Total externally managed** | **8,283,594** | **7,443,708** |
| **Internally managed** | | |
| Developed markets | 6,970,170 | 6,293,614 |
| Emerging markets | 2,194,843 | 1,921,219 |
| EAFE Index Fund | 1,592,863 | 1,610,886 |
| EAFE equity swaps | 8,420 | 19,357 |
| EMF equity swaps | 69,376 | 66,859 |
| Forward contracts | (37,750) | 19,004 |
| **Total internally managed** | **10,797,922** | **9,930,939** |
| **Total international** | **$ 19,081,516** | **$ 17,374,647** |

## 10. Real Estate Investments

**Direct** — STRS Ohio properties are diversified between 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 and Interest Rate Swaps** — 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. Of the debt on real estate investments, $290 million and $277 million was recourse debt as of June 30, 2017 and 2016, respectively. 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 at June 30, 2017 and 2016, is non-recourse debt, which means that in the event of default, the specific real estate holding is used as collateral for the loan and general assets of STRS Ohio are not pledged as collateral.

At June 30, 2017, the recourse loans of $290 million had maturity dates of May 2018 and June 2018. Interest on the recourse loans is based on LIBOR plus a spread, ranging from 2.53% to 3.93%.

Of the non-recourse debt at June 30, 2017, loan maturities range from July 2017 to December 2067. Non-recourse debt at June 30, 2016, had loan maturities ranging from January 2017 to December 2067.

The repayment schedule for real estate debt as of June 30, 2017, is shown in the table below.

**Real Estate Debt Repayment Schedule**
**As of June 30, 2017** (in thousands)

| By Fiscal Year | Principal | Interest |
|---|---|---|
| 2018 | $ 419,028 | $ 71,194 |
| 2019 | 164,568 | 59,219 |
| 2020 | 59,556 | 56,815 |
| 2021 | 9,108 | 55,339 |
| 2022 | 160,806 | 49,916 |
| 2023–2027 | 991,769 | 161,672 |
| 2028–2032 | 311,066 | 36,763 |
| 2033–2037 | 222,100 | 20,716 |
| 2038–2042 | – | 16,322 |
| 2043–thereafter | 102,120 | 16,666 |
| Total | $ 2,440,121 | $ 544,622 |

## 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 Swap Agreements** — As discussed in Note 9, STRS Ohio has entered into international equity swap agreements. 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, 2017. In addition, collateral is pledged between the parties during the term of the agreements to account for market movements. The notional amount of the contracts was $1.13 billion at June 30, 2017, and $1.06 billion at June 30, 2016. The fair value of the equity swap contracts of –$1.2 million at June 30, 2017, and $7.1 million at June 30, 2016, 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 –$52.5 million at June 30, 2017, and $89.1 million at June 30, 2016, 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 exposure to future and forward contracts at June 30, 2017 and 2016, is shown in the table below.

**Exposure to Future and Forward Contracts Held at June 30, 2017 and 2016** (in thousands)

| | June 30, 2017 | June 30, 2016 |
|---|---|---|
| **Forward contracts** | | |
| Externally managed | $ 4,811,186 | $ 4,915,529 |
| Internally managed | 5,221,254 | 5,239,475 |
| **Total forward contracts** | **$ 10,032,440** | **$ 10,155,004** |
| **Future contracts** | | |
| EAFE Index Fund | $ 32,470 | $ 20,642 |
| S&P Index Futures | – | 172,233 |
| **Total future contracts** | **$ 32,470** | **$ 192,875** |

**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. The notional value of the options contracts was $80.8 million at June 30, 2017, and $91.5 million at June 30, 2016. The fair value of the options contracts of –$1.3 million at June 30, 2017, and –$1.8 million at June 30, 2016, is included in the *Statements of Fiduciary Net Position*. Additionally, options were utilized by external managers with a notional value of $3.2 billion at June 30, 2017, and $2.7 billion at June 30, 2016. The fair value of $0.46 million at June 30, 2017, and –$1.4 million at June 30, 2016, 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 $1.2 million as of June 30, 2017, and $1.9 million at June 30, 2016, 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 no credit default swaps as of June 30, 2017, and held credit default swaps with notional values of $3.4 million as of June 30, 2016. The fair value of the credit default swaps of $0 at June 30, 2017, and –$0.34 million at June 30, 2016, is included in the *Statements of Fiduciary Net Position*.

## 13. Pension Plan for Employees of STRS Ohio

Substantially all STRS Ohio employees are required to participate in a contributory retirement plan administered by the Ohio Public Employees Retirement System of Ohio (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. Members may elect to change plans once during their career.

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 to determine 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 |
|---|---|---|
| 2015 | $7,669,000 | 100% |
| 2016 | $7,418,000 | 100% |
| 2017 | $7,787,000 | 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, 2017, and June 30, 2016.

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, benefit payments (including refunds of employee contributions) 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 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 obtained by writing to OPERS, 277 E. Town St., Columbus, OH 43215-4642.

OPERS also provides post-employment health care coverage and is considered an Other Post-Employment Benefit (OPEB) as described in GASB Statement No. 43. 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. Depending on pension funding, OPERS has the discretion to direct a portion of employer contributions to fund retiree health care. The Revised Code provides statutory authority for employer contributions. The employer rate set aside for post-employment health care was 2.0% for calendar years 2016 and 2015.

## Schedule of Changes in Employers' Net Pension Liability
## Fiscal Years Ending June 30, 2014–2017* (in thousands)

| | 2017 | 2016 | 2015 | 2014 |
|---|---|---|---|---|
| **Total pension liability** | | | | |
| Service cost | $ 1,067,687 | $ 1,058,987 | $ 1,111,078 | $ 1,094,986 |
| Interest | 7,611,942 | 7,472,169 | 7,272,034 | 7,137,686 |
| Benefit changes , due to COLA reduction | (12,353,691) | 0 | 0 | 0 |
| Difference between expected and actual experience | (239,322) | 527,725 | 1,355,347 | 292,708 |
| Changes in assumptions | 6,494,408 | 0 | 0 | 0 |
| Benefit payments, including refunds of employee contributions | (7,211,006) | (7,317,113) | (6,890,862) | (6,725,017) |
| Net change in total pension liability | (4,629,982) | 1,741,768 | 2,847,597 | 1,800,363 |
| **Total pension liability, beginning of year** | 100,756,422 | 99,014,654 | 96,167,057 | 94,366,694 |
| **Total pension liability, end of year** | **96,126,440** | **100,756,422** | **99,014,654** | **96,167,057** |
| **Fiduciary net pension position** | | | | |
| Member contributions | $ 1,537,677 | $ 1,372,033 | $ 1,259,135 | $ 1,193,808 |
| Employer contributions, including other retirement systems | 1,590,869 | 1,545,103 | 1,594,794 | 1,508,442 |
| Net investment income | 9,233,930 | 372,871 | 3,671,845 | 10,534,608 |
| Benefit payments | (7,211,006) | (7,322,107) | (6,890,863) | (6,725,017) |
| Administrative expenses | (63,652) | (62,071) | (61,183) | (60,991) |
| Net change in fiduciary net pension position | 5,087,818 | (4,094,171) | (426,272) | 6,450,850 |
| **Fiduciary net pension position, beginning of year** | 67,283,408 | 71,377,579 | 71,843,596 | 65,392,746 |
| Restatement of fiduciary net pension position** | N/A | N/A | (39,745) | N/A |
| **Restatement of fiduciary net pension position, beginning of year** | N/A | N/A | 71,803,851 | N/A |
| **Fiduciary net pension position, end of year** | **72,371,226** | **67,283,408** | **71,377,579** | **71,843,596** |
| **Net pension liability, end of year** | **$ 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 for 2014, fiduciary net position was not restated to reflect the adoption of GASB 68.

## Schedule of Employers' Net Pension Liability
## Fiscal Years Ending June 30, 2013–2017* (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%** |

*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.

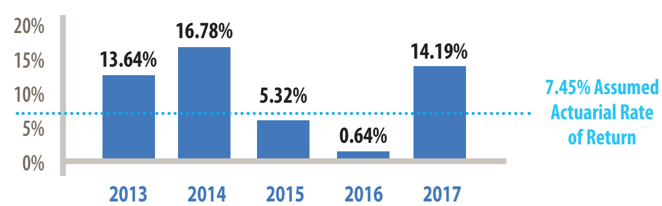
## Schedule of Employers' Contributions — Pension
### Fiscal Years Ending June 30, 2008–2017* (dollar amounts in thousands)

| Fiscal Year | Actuarial Determined Contribution | Employer Contributions* | Contribution Deficiency (Excess) | Covered-Employee Payroll** | Contributions as a Percentage of Covered-Payroll |
|---|---|---|---|---|---|
| 2008 | $1,329,498 | $1,305,027 | $24,471 | $9,834,206 | 13.27% |
| 2009 | $1,502,240 | $1,347,741 | $154,499 | $10,122,141 | 13.31% |
| 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%** |

*Employer contributions are the same as contractually required contributions.
**Excludes payroll from the Defined Contribution and Alternative Retirement Plans.

## Schedule of Investment Returns — Pension
### Fiscal Years Ending June 30, 2013–2017*

#### Money-Weighted Rate of Return, Net of Fees




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

*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, 2017 and 2016

| | | |
|---|---|---|
| Valuation date | July 1, 2017 | July 1, 2016 |
| Actuarial cost method | Entry age normal | Entry age normal |
| **Actuarial assumptions:** | | |
| Investment rate of return, net of investment expense, including inflation | 7.45% | 7.75% |
| Projected salary increases | 12.50% at age 20 to 2.50% at age 65 | 12.25% at age 20 to 2.75% at age 70 |
| Inflation assumption | 2.50% | 2.75% |
| Cost-of-living adjustments | None | 2% simple applied as follows: for members retiring before Aug. 1, 2013, 2% per year; for members retiring Aug. 1, 2013, or later, 2% COLA paid on fifth anniversary of retirement date |

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
## Fiscal Year Ended June 30, 2017* (in thousands)

| | 2017 |
|---|---|
| **Total OPEB liability** | |
| Service cost | $ 225,094 |
| Interest | 277,562 |
| Benefit changes | (1,065,891) |
| Difference between expected and actual experience | 262,764 |
| Changes in assumptions | (366,671) |
| Benefit payments, net of reimbursements, and administrative expenses | (489,102) |
| Net change in total OPEB liability | (1,156,244) |
| **Total OPEB liability, beginning of year** | 8,533,654 |
| **Total OPEB liability, end of year** | **7,377,410** |
| | |
| **Fiduciary net OPEB position** | |
| Member contributions | 339,056 |
| Employer contributions | 0 |
| Net investment income | 440,197 |
| Benefit payments, net of reimbursements | (486,605) |
| Administrative expenses | (2,497) |
| Net change in fiduciary net OPEB position | 290,151 |
| **Fiduciary net OPEB position, beginning of year** | 3,185,628 |
| **Fiduciary net OPEB position, end of year** | **3,475,779** |
| | |
| **Net OPEB liability, end of year** | **$ 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 and 2017* (dollar amounts in thousands)

| Fiscal Year Ending | Total OPEB Liability | Fiduciary Net OPEB Position | Net OPEB Liability | Ratio of Fiduciary Net OPEB Position to Total OPEB Liability | Covered Payroll | Net OPEB Liability 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%** |

*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.

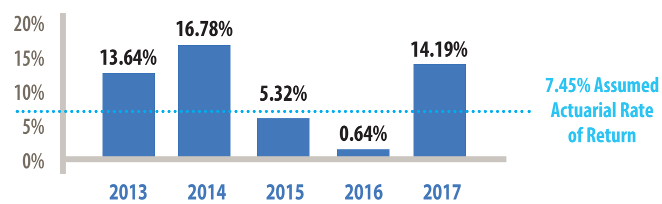
## Schedule of Employers' Contributions — OPEB
## Fiscal Year Ended June 30, 2017* (dollar amounts in thousands)

| Fiscal Year | Actuarial Determined Contribution | Employer Contributions* | Contribution Deficiency (Excess) | Covered-Employee Payroll | Contributions as a Percentage of Covered-Payroll |
|---|---|---|---|---|---|
| 2017 | $239,430 | $0 | $239,430 | $10,767,964 | 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, 2013–2017*

### Money-Weighted Rate of Return, Net of Fees




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

*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 Year Ended June 30, 2017

| | |
|---|---|
| Valuation date | Jan. 1, 2017 |
| Measurement date | June 30, 2017 |
| Amoritization method | Level percentage of payroll |
| Actuarial cost method | Entry age normal |
| **Actuarial assumptions:** | |
| Discount rate | 4.13% |
| Projected salary increases | 12.5% at age 25 to 2.50% at age 70 |
| Payroll increases | 3.00% |
| Trend rates | 6%–11% initial; 4.50% 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, 2017 and 2016

| | 2017 | 2016 |
|---|---|---|
| **Personnel** | | |
| Salaries and wages | $ 33,474,905 | $ 33,631,703 |
| Retirement contributions | 4,552,595 | 4,564,963 |
| Benefits | 5,891,960 | 6,438,253 |
| **Total personnel** | **43,919,460** | **44,634,919** |
| **Professional and technical services** | | |
| Computer support services | 738,328 | 909,323 |
| Health care services | 664,716 | 671,761 |
| Actuary | 513,257 | 266,450 |
| Auditing | 212,718 | 304,897 |
| Defined contribution administrative fees | 1,088,287 | 1,031,244 |
| Legal | 428,745 | 217,908 |
| Temporary employment services | 21,679 | 248 |
| **Total professional and technical services** | **3,667,730** | **3,401,831** |
| **Communications** | | |
| Postage and courier services | 1,163,425 | 1,128,331 |
| Printing and supplies | 1,339,382 | 1,285,885 |
| Telephone | 277,632 | 282,668 |
| **Total communications** | **2,780,439** | **2,696,884** |
| **Other expenses** | | |
| Equipment repairs and maintenance | 5,456,654 | 4,012,777 |
| Building utilities and maintenance | 1,534,216 | 1,312,988 |
| Transportation and travel | 192,087 | 197,655 |
| Recruitment fees | 35,106 | 33,676 |
| Depreciation | 7,049,399 | 6,796,125 |
| Member and staff education | 220,848 | 227,632 |
| Insurance | 616,383 | 624,123 |
| Memberships and subscriptions | 153,538 | 151,850 |
| Ohio Retirement Study Council | 227,678 | 204,103 |
| Miscellaneous | 295,216 | 431,827 |
| **Total other expenses** | **15,781,125** | **13,992,756** |
| **Total administrative expenses** | **$ 66,148,754** | **$ 64,726,390** |

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, 2017 and 2016

| | 2017 | 2016 |
|---|---|---|
| **Personnel** | | |
| Salaries and wages | $ 27,711,802 | $ 25,029,775 |
| Retirement contributions | 3,234,660 | 2,853,057 |
| Benefits | 2,702,891 | 2,784,523 |
| **Total personnel** | **33,649,353** | **30,667,355** |
| **Professional and technical services** | | |
| Investment research | 2,362,169 | 2,094,171 |
| Financial asset advisors | 792,187 | 737,348 |
| Banking fees | 2,412,245 | 2,089,968 |
| Investment quotation systems | 1,768,808 | 1,679,184 |
| Temporary employment services | 11,758 | 16,195 |
| **Total professional and technical services** | **7,347,167** | **6,616,866** |
| **Other expenses** | | |
| Printing and supplies | 3,746 | 4,085 |
| Building utilities and maintenance | 333,522 | 345,412 |
| Travel | 446,894 | 467,784 |
| Staff education | 9,103 | 12,488 |
| Memberships and subscriptions | 69,171 | 93,764 |
| Miscellaneous | 84,829 | 87,341 |
| **Total other expenses** | **947,265** | **1,010,874** |
| **Total internal investment expenses** | **$ 41,943,785** | **$ 38,295,095** |

See accompanying independent auditors' report.

## Schedules of External Asset Management Fees
## For the Years Ending June 30, 2017 and 2016

| | 2017 | 2016 |
|---|---|---|
| **Asset class** | | |
| Fixed income | $ 6,578,481 | $ 7,268,278 |
| Domestic equities | 11,996,315 | 10,551,376 |
| International equities | 31,003,372 | 29,489,760 |
| Real estate | 18,060,629 | 15,879,110 |
| Alternative investments | 144,521,277 | 136,520,633 |
| **Total external asset management fees** | **$ 212,160,074** | **$ 199,709,157** |

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, 2016, through June 30, 2017
## Prepared by STRS Ohio's Investments Associates

*(Performance is net of fees for external managed real estate and alternative investments and gross of fees on all other investments.)*

### Economic Environment

While the current economic expansion has advanced at a relatively slow pace compared to prior cycles, it is on track to become the second longest expansion in U.S. history by the end of fiscal 2018 — surpassed only by the 10-year-long 1991–2001 expansion. Real gross domestic product (GDP) growth through the end of fiscal 2017 has averaged an annualized 2.2% over the entire expansion. That average growth is half of the average growth rates from all post-World War II economic expansions. Nonetheless, the eight-year-long expansion far exceeds the post-war average length of five years and there is more to come for an economy that is fundamentally healthy and likely to receive a dose of stimulus from federal tax policy and regulatory changes later in fiscal 2018.

Much of the softer economic growth can be attributed to a significant slowing in productivity growth during the current economic expansion. Productivity has advanced by just an annualized 1% during the past eight years compared to a post-war expansion average of 2.4% and an entire post-war business cycle (including recessions) average of 2.1%. Indeed, the slow productivity growth of the current expansion is slightly less than the average 1.1% annualized gain in productivity seen during post-war recessions.

Disappointing business fixed investment and a workforce that has undergone a great deal of retirements from experienced baby boomers have been two of the primary reasons for the slowdown in productivity growth. The demographic challenges for the United States from retiring baby boomers and slower labor force growth will continue for decades to come, but there are emerging signs that business investment in capital equipment, structures and intellectual property are turning the corner toward more positive growth that could ultimately feed into stronger productivity gains.

Over the long term, productivity should improve to a nearly 2% pace from today's 1%, moving future growth back toward well-established trends from past business cycles. With a labor market input between 0.25% and 0.5% growth over coming decades, long-term potential real economic growth in the United States should average between 2.25–2.5%. Many forecasters expect slower potential growth because they believe productivity trends will remain lower. For instance, the nonpartisan Congressional Budget Office's projection for potential real GDP growth over the next 10 years is a weaker 1.83%. The STRS Ohio economics view is that projections like that understate the role better business fixed investment and an increasingly more experienced workforce after baby boomers largely retire will play in creating stronger productivity gains. Upcoming changes in the direction of fiscal and regulatory policies that have been signaled by the Trump administration and Republican Congress should also spark stronger business investment.

In fiscal 2017, economic activity was led by solid consumer spending, a surge in housing activity during the middle quarters of the year and a bounce in business investment during the second half. The country's trade position, slower government spending and pullback on inventory building slowed economic activity from what it displayed in fiscal 2016. In the upcoming fiscal year, consumer spending is expected to remain strong — particularly in the second half after personal income tax changes are likely implemented — and non-residential investment is expected to continue growing at a stronger pace. A key part of the Republican administration and Congress' tax policy changes will focus on the business sector by significantly lowering the corporate tax rate, providing incentives through a much lower tax rate to bring foreign profits home, allowing immediate expensing of capital equipment purchases and reducing regulations on how businesses operate. If the administration and Congress can agree on the tax change package, businesses would face a much friendlier climate to expand investment.

Though foreign economies are expected to generate marginally better growth, U.S. demand for foreign goods and services should remain high, leading to continued deterioration in the country's trade accounts. Government spending is expected to grow at a faster rate from fiscal stimulus but its impact on the economy should be relatively small. And, finally, while the housing sector remains in good shape, the recent acceleration in residential investment is expected to ease back toward the economy's long-term trend now that much of the pent-up demand following the Great Recession has been used up. For fiscal 2018, the STRS Ohio economic forecast expects economic activity in the United States will rise to 2.6% from 2.2% in fiscal 2017.

Inflation pressures should remain well behaved, though gradually advance later in the fiscal year toward the Federal Reserve's long-term target range around 2%. Monetary policymakers will continue to pursue their intermittent course of marginally raising short-term interest rates as labor markets tighten and wage pressures grow that threaten to spark higher future inflation. They will also start to reduce the size of the assets on the Federal Reserve's balance sheet from past quantitative easing.

The Federal Reserve has maintained a stimulative 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 (QE) led to an expansion of assets on the Federal Reserve's balance sheet from roughly $900 billion prior to the recession to roughly $4.5 trillion today. 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 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 QE 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 has raised interest rates an additional 0.75% to today's targeted range of 1.0–1.25% for the federal funds rate.

Federal Reserve policymakers would like to raise short-term interest rates further in fiscal 2018, but they will closely watch how the U.S. and foreign economies and financial markets react to less stimulative monetary policy within the United States. An intermittent course of gradually raising short-term interest rates is the most likely one from the Federal Reserve. The federal funds targeted rate could end fiscal 2018 in the 1.5–1.75% range. If the economic forecast is incorrect, it is more likely that economic growth is stronger, the labor market is tighter and inflation pressures are growing. Should that occur, the Federal Reserve could raise short-term interest rates beyond that built into the baseline economic forecast. Furthermore, the Federal Reserve will begin taking steps to reduce the assets on its balance sheet in fiscal 2018. Like the interest rate policy it has pursued since the Great Recession, the Federal Reserve will be cautious with a gradualist policy change for its balance sheet so as to not disrupt the financial markets or economy from its healthy course.

Risks to the forecast exist to either side of the trend-to-slightly-above-trend baseline economic projection. However, there are likely greater upside risks to U.S. economic growth than there are downside ones because the rest of the world has gradually overcome many of its intrinsic problems. The improved global economy provides a more stable base for our domestic economy with better upside potential.

## Fixed Income

Fiscal 2017 was a mixed year for fixed-income market returns, as measured by the Bloomberg Barclays U.S. Universal Index*, as economic and credit conditions improved. The first six months of the fiscal year, the return was –1.68%, while the second half of the fiscal year returned +2.63%. Fixed-income returns were below the yield of the Index as returns were driven by coupon income and a recovery in credit spreads, partially offset by an increase in interest rates. The highest returning sector was high yield (+12.70%), followed by emerging market debt (+5.57%), investment-grade corporate bonds (+2.28%) and

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asset-backed securities (+0.63%). Agency mortgage-backed securities (–0.06%), government-related (–0.18%), commercial mortgage-backed securities (–0.33%) and U.S. Treasuries (–2.32%) sectors had negative returns.

The STRS Ohio fixed-income asset class returned 1.85% versus the benchmark's return of 0.91%. Over the three prior fiscal years, the STRS Ohio fixed-income asset class returned an annual average of 3.03% versus the benchmark's return of 2.76%. The STRS Ohio performance over the prior five fiscal years was 2.96% versus the benchmark's 2.73%. A more complete report of STRS Ohio performance appears on Page 55.

### Domestic Equities

The U.S. equity market rose for the eighth consecutive year in fiscal 2017, largely since the general election in November, and reached an all-time high as the U.S. and global economies continued to grow and earnings rebounded from a two-year decline. The S&P 500 gained a very strong 17.9% on a total return basis, closing the year at 2423.41. Returns for the year were primarily driven by stronger corporate earnings growth. After a two-year decline, S&P 500 earnings grew approximately 18% during the fiscal year. The increase was led by a rebound in energy sector profits and improved financial sector earnings.

The STRS Ohio domestic equities asset class returned a robust 19.59% versus the Russell 3000® Index benchmark's return of 18.51%. Over the three prior fiscal years, the STRS Ohio domestic equities asset class returned an annualized 8.80% versus the benchmark's return of 9.10%. The STRS Ohio performance over the prior five fiscal years was 14.01% versus the benchmark return of 14.59%. A more complete report of STRS Ohio performance appears on Page 55.

### International Equities

The international markets recorded a robust return in fiscal 2017 with the emerging markets performing moderately better than the developed markets. The MSCI World ex-US Index (50% hedged) for developed markets increased 21.0% and the MSCI EM Index for emerging markets increased 23.7%. The overall international returns were positively impacted by a sustained global economic expansion that supported corporate earnings growth.

All of the developed markets except Israel were able to record positive returns in U.S. dollar terms. The best performing countries were Austria (+65.7%), Spain (+39.0%) and Italy (+32.1%). The three weakest markets were Israel (–1.8%), Belgium (+3.1%) and Denmark (+5.4%). The developed market returns were slightly impacted in a negative manner by currency movements as the U.S. dollar was modestly stronger overall against developed market currencies during the fiscal year.

The three best markets in emerging markets were Greece (+50.8%), Hungary (+44.4%) and Poland (+43.3%). The weakest markets were the Philippines (–5.7%), Qatar (–2.3%) and Egypt (–2.0%). The emerging markets were boosted by a combination of improving export activity, a stabilization in concerns about the near-term direction of several key factors for China's prospects and cheaper valuations available in the emerging markets compared to the developed markets.

The STRS Ohio international asset class returned 22.23% versus the benchmark's return of 21.60%. Over the past three fiscal years, the STRS Ohio international asset class returned an annualized 5.04% versus the benchmark's return of 3.36%. The STRS Ohio performance over the prior five years was 10.50% versus the benchmark's return of 9.04%. A more complete report of STRS Ohio performance appears on Page 55.

### Real Estate

The commercial real estate market is entering the mature phase of the real estate cycle. The operating fundamentals of core real estate — rents and occupancy — continue to be strong. Occupancy rates are at a 16-year high and net operating income growth, while slowing, is just above 5% versus its 3.2% long-term growth rate. Going forward, the increasing operating income will help to soften the impact on pricing from increases in interest rates. Fiscal 2017 price appreciation in the private market was 2.2%, down from fiscal 2016 at 5.6% but above the 10-year annual average of 0.8%. We expect fiscal 2018 to see continued moderation. Despite the potential price declines, significant capital is still attracted to the asset class though investors have been more active in secondary and tertiary markets in search of yield. While down slightly on a percentage basis from previous years, foreign capital is still being deployed in the United States.

Private market real estate turned in six consecutive years of double-digit total returns through fiscal 2016 — the longest on record. As expected, this came to an end in fiscal 2017 with a total return just under 7%. However, relative to other asset classes, real estate provides a strong income return with private market real estate enjoying an income return of 4.7% in fiscal 2017 — down just slightly from fiscal 2016. The income and stability real estate provides to overall asset class returns will continue to drive capital flows to the asset class.

Over the last three years, the real estate public market (REITs) has turned in a total return averaging 8.36% annually. However, REITs experienced a return of –1.7% in fiscal 20l7, making it the first negative year since the financial crisis. By comparison, the total return was 24.0% in fiscal 2016, illustrating the higher volatility in the public market over the short-term. This brings the 10-year annual average return at the end of fiscal 2017 down to 5.7% from 7.0% at year-end fiscal 2016.

The STRS Ohio total real estate asset class returned 4.67% versus the benchmark's return of 5.64% in fiscal 2017. Over the three prior fiscal years, the STRS Ohio real estate total asset class returned an annual average return of 10.68% versus the benchmark's return of 9.99%. The STRS Ohio performance over the prior five fiscal years was 11.49% versus the benchmark's 10.42%. 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 each portfolio is currently 7%, resulting in a combined target neutral weight for the alternative investments asset class of 14% of total fund.

Alternative investment managers continued to take advantage of the capital markets in order to exit their investments through strategic sales and IPOs and to return capital by recapitalizing some of the companies they held. During the fiscal year, this activity — along with redemptions in the hedge fund portfolio — generated distributions that exceeded the capital that was called.

The performance of the alternative investments asset class is measured against 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 8%. Over the 10 prior fiscal years, the STRS Ohio total alternative investment asset class returned an annual average return of 7.54%. That return was influenced by the global financial crisis compared to the blended benchmark return of 8.41% that included fiscal years prior to 2012 when the private equity objective was the Russell 3000® Index plus 3%. A more complete report of STRS Ohio performance appears on Page 55.

## Total Fund

During fiscal year 2017, the STRS Ohio fund returned 14.29% versus the benchmark's return of 13.52%. Over the three prior fiscal years, the STRS Ohio fund returned an annual average of 6.74% versus the benchmark's return of 6.29% while the fund performance over the prior five fiscal years was 10.06% versus the benchmark's 10.01%. During the 10 past fiscal years, the STRS Ohio fund returned an annual average of 5.48% versus the benchmark's return of 5.50%. A more complete report of STRS Ohio fund performance appears on Page 55.

# Statement of Investment Objectives and Policy

**Effective May 18, 2017**

## 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 May 18, 2017.

## 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 risk 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 less risky 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 percentage 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 target weights.

[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 target weights.

[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 | Current | July 1, 2017 | Oct. 1, 2017 | April 1, 2018 | Oct. 1, 2018 | Oct. 1, 2018 |
|---|---|---|---|---|---|---|
| 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 risk 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 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 allocation 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. Indexed funds control costs, are useful tools for evaluating active management strategies, capture exposure to the more efficient markets and facilitate rebalancing to the policy asset mix.

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) 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 risk. 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 range 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 higher return but more risky equity investments. 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, 2016**

| 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 | 0.92% | 7.53% | 7.66% | 6.06% | 7.16% |
| 2. Actuarial discount rate | 7.75% | 7.75% | 7.80% | 7.90% | 7.80% |
| 3. Relative performance (1–2) | –6.83% | –0.22% | –0.14% | –1.84% | –0.65% |
| **Has plan been rewarded for capital market risk?** | | | | | |
| 4. Total fund blended benchmark return* | 0.67% | 7.53% | 7.69% | 6.05% | 7.16% |
| 5. Minimum risk/high opportunity cost policy of 91-day T-Bills | 0.19% | 0.09% | 0.09% | 0.91% | 2.26% |
| 6. Impact of asset mix policy (4–5) | 0.48% | 7.43% | 7.60% | 5.13% | 4.90% |
| **Has plan been rewarded for active management risk?** | | | | | |
| 7. Active management return (1–4)** | 0.25% | 0.01% | –0.03% | 0.02% | 0.00% |
| 8. Net active management return estimated*** | 0.11% | –0.312% | –0.15% | –0.10% | –0.11% |

* The total fund blended benchmark is a blend of the asset class benchmarks based on the total fund's target allocation for the respective asset classes. Effective Jan. 1, 2014, the total fund blended benchmark is 18% Bloomberg Barclays U.S. Universal Index 31% Russell 3000® Index, 26% International Blended Benchmark, 10% Real Estate Blended Benchmark, 14% Alternative Investment actual return and 1% BofA Merrill Lynch three-month U.S. Treasure Bill Index.

** 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 assets, external equity or external fixed income).

*** After all investment management costs deducted.

# Statement of Fund Governance

Effective May 18, 2017

## 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 May 8, 2017.

## 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, 2017, and (2) designed its policies and procedures to calculate and present performance in compliance with the GIPS standards as of June 30, 2017. 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, 2017, and
- Designed its policies and procedures to calculate and present performance in compliance with the GIPS standards as of June 30, 2017.

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 17, 2017

ACA Performance Services, LLC 1370 Broadway, 12th Floor New York, NY 10018
Phone: (212) 951-1030 www.acacompliancegroup.com/gips

## Investment Performance

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

### 1-Year Returns (2017)[1]

| Asset Category | STRS Ohio Return | Index Name | Index Return |
|---|---|---|---|
| Domestic Equities[9] | 19.59% | Russell 3000® Index[3] | 18.51% |
| International Equities[9] | 22.23% | International Blended Benchmark[4] | 21.60% |
| Fixed Income[9] | 1.85% | Bloomberg Barclays U.S. Universal Index[5] | 0.91% |
| Real Estate[9] | 4.67% | Real Estate Blended Benchmark[6] | 5.64% |
| Alternative Investments[9] | 11.56% | Alternative Investments Blended Relative Return Objective[7] | – |
| **Total Fund** | **14.29%** | **Total Fund Blended Benchmark[8]** | **13.52%** |

### 3-Year Returns (2015–2017)[1]

| Asset Category | STRS Ohio Return | Index Name | Index Return |
|---|---|---|---|
| Domestic Equities[9] | 8.80% | Russell 3000® Index[3] | 9.10% |
| International Equities[9] | 5.04% | International Blended Benchmark[4] | 3.36% |
| Fixed Income[9] | 3.03% | Bloomberg Barclays U.S. Universal Index[5] | 2.76% |
| Real Estate[9] | 10.68% | Real Estate Blended Benchmark[6] | 9.99% |
| Alternative Investments[9] | 6.89% | Alternative Investments Blended Relative Return Objective[7] | – |
| **Total Fund** | **6.74%** | **Total Fund Blended Benchmark[8]** | **6.29%** |

### 5-Year Returns (2013–2017)[1]

| Asset Category | STRS Ohio Return | Index Name | Index Return |
|---|---|---|---|
| Domestic Equities[9] | 14.01% | Russell 3000® Index[3] | 14.59% |
| International Equities[9] | 10.50% | International Blended Benchmark[4] | 9.04% |
| Fixed Income[9] | 2.96% | Bloomberg Barclays U.S. Universal Index[5] | 2.73% |
| Real Estate[9] | 11.49% | Real Estate Blended Benchmark[6] | 10.42% |
| Alternative Investments[9] | 10.34% | Alternative Investments Blended Relative Return Objective[7] | 14.60% |
| **Total Fund** | **10.06%** | **Total Fund Blended Benchmark[8]** | **10.01%** |

### 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, 2017: Liquidity Reserves 1.6%, Fixed Income 18.2%, Domestic Equities 29.8%, International Equities 26.9%, Real Estate 9.8% and Alternative Investments 13.7%. 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, 2017, the actuarial rate of return was 7.75%; effective July 1, 2017, the actuarial rate of return is 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, 2017 and 2016, debt as a percentage of these assets was 29.1% and 25.0%, 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, 2008, through 2017, 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 the Frank Russell Company. Russell® is a trademark of the Frank Russell Company.

[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 effective Jan. 1, 2014. Prior to Jan. 1, 2014, the MSCI Emerging Markets Index was the Gross return.

[5]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 effective July 1, 2012.

[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: 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; 53.8% of the Russell 3000® Index plus 1% for PE and 46.2% of the Russell 3000® Index minus 1% for OD effective July 1, 2013; 54.5% of the Russell 3000® Index plus 1% for PE and 45.5% of the Russell 3000® Index minus 1% for OD effective Jan. 1, 2013; 50.0% of the Russell 3000® Index plus 1% for PE and 50.0% of the Russell 3000® Index minus 1% for OD effective July 1, 2012.

[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.

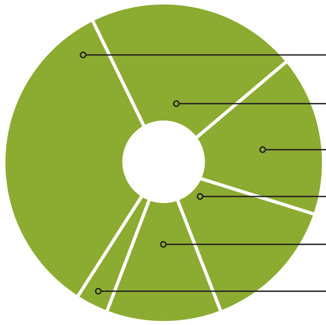
[9]Returns are supplemental to the Total Fund composite returns.

## Summary of Investments and Cash
### As of June 30, 2017 and 2016 (dollar amounts in thousands)

| | June 30, 2017 | Percentage of Assets | June 30, 2016 | Percentage of Assets |
|---|---|---|---|---|
| **Cash and short-term investments** | | | | |
| Cash | $ 7,525 | 0.0% | $ 19,642 | 0.0% |
| Short-term investment funds | 15,000 | 0.0% | 13,000 | 0.0% |
| U.S. Treasury bills | 1,207,007 | 1.6% | 1,273,432 | 1.8% |
| **Total cash and short-term investments** | **1,229,532** | **1.6%** | **1,306,074** | **1.8%** |
| **Fixed income** | | | | |
| U.S. government agency obligations and U.S. government obligations | 6,136,629 | 7.9% | 3,147,632 | 4.4% |
| Corporate bonds | 4,092,293 | 5.3% | 3,910,519 | 5.4% |
| High yield and emerging market | 1,627,669 | 2.1% | 1,711,974 | 2.4% |
| Mortgages and asset-backed | 2,830,428 | 3.7% | 2,635,719 | 3.6% |
| **Total fixed income** | **14,687,019** | **18.9%** | **11,405,844** | **15.8%** |
| **Domestic equities** | **22,317,077** | **28.7%** | **21,605,090** | **30.0%** |
| **International equities** | **19,081,516** | **24.6%** | **17,374,647** | **24.1%** |
| **Real estate** | | | | |
| East region | 3,231,999 | 4.2% | 3,258,615 | 4.5% |
| Midwest region | 1,356,331 | 1.7% | 1,268,170 | 1.8% |
| South region | 659,135 | 0.9% | 709,216 | 1.0% |
| West region | 2,453,321 | 3.2% | 2,697,295 | 3.7% |
| REITs | 1,095,194 | 1.4% | 1,266,136 | 1.8% |
| Non-core | 1,030,625 | 1.3% | 1,184,918 | 1.6% |
| **Total real estate** | **9,826,605** | **12.7%** | **10,384,350** | **14.4%** |
| **Alternative investments** | **10,512,809** | **13.5%** | **10,019,630** | **13.9%** |
| **Total investments and cash** | **$77,654,558** | **100.00%** | **$72,095,635** | **100.0%** |

Investment schedule excludes invested securities lending collateral.

## Investment Distribution by Fair Value — as of June 30, 2017




## Ohio Investment Profile — as of June 30, 2017
(in thousands)

*STRS Ohio continues to engage in quality Ohio investments. As of June 30, 2017, STRS Ohio investments in companies with headquarters in Ohio are valued at more than $1.2 billion.*

| | |
|---|---|
| Fixed income | $ 178,513 |
| Domestic equities | 627,295 |
| Real estate | 280,303 |
| Alternative investments | 155,007 |
| **Total Ohio-headquartered investments** | **$ 1,241,118** |

## Schedule of U.S. Stock Brokerage Commissions Paid
(for the year ended June 30, 2017)

| Brokerage Firm | Shares Traded* | Commissions Paid | Average Cents Per Share |
|---|---|---|---|
| ITG, Inc. | 47,420,049 | $ 2,095,560 | 4.4 |
| Nomura (Instinet LLC) | 47,206,637 | 1,638,096 | 3.5 |
| Susquehanna Financial Group LLP | 55,954,007 | 982,047 | 1.8 |
| JP Morgan Securities LLC | 26,804,063 | 653,663 | 2.4 |
| Cantor Fitzgerald & Company | 13,514,551 | 472,946 | 3.5 |
| Weeden And Co | 9,842,817 | 393,713 | 4.0 |
| Baird (Robert W.) & Company Inc. | 8,425,723 | 363,959 | 4.3 |
| Barclays Capital Inc. | 9,739,231 | 325,605 | 3.3 |
| KeyBanc Capital Markets | 6,800,350 | 306,344 | 4.5 |
| Evercore ISI Institutional Equities | 6,526,596 | 289,027 | 4.4 |
| Credit Suisse Securities (Usa) LLC | 6,706,652 | 267,705 | 4.0 |
| Citi Capital Markets Inc. | 10,908,840 | 249,040 | 2.3 |
| Deutsche Bank Securities Inc. | 5,515,882 | 246,746 | 4.5 |
| RBC Capital Markets LLC | 5,509,649 | 243,924 | 4.4 |
| Goldman, Sachs & Company | 5,506,888 | 237,401 | 4.3 |
| UBS Securities LLC | 6,542,869 | 232,842 | 3.6 |
| O'Neil Securities Inc. | 5,095,067 | 203,735 | 4.0 |
| Cowen & Company LLC | 3,920,094 | 175,986 | 4.5 |
| Merrill Lynch, Pierce, Fenner & Smith Inc. | 6,149,802 | 175,279 | 2.9 |
| Morgan Stanley & Company LLC | 4,310,931 | 169,546 | 3.9 |
| Raymond James & Associates Inc. | 6,808,205 | 161,420 | 2.4 |
| Jefferies & Company Inc. | 3,620,217 | 160,260 | 4.4 |
| Liquidnet Inc. | 3,939,500 | 157,580 | 4.0 |
| Northcoast Research Partners LLC | 3,673,906 | 155,979 | 4.2 |
| Wells Fargo Securities LLC | 2,562,468 | 112,324 | 4.4 |
| Others (includes 43 brokerage firms and external managers) | 115,744,464 | 2,564,379 | 2.2 |
| **Totals** | **428,749,457** | **$ 13,035,107** | **3.0** |

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

## Schedule of Largest Investment Holdings* (as of June 30, 2017)

### Domestic Equities — Top 20 Holdings

| | Shares | Fair Value |
|---|---|---|
| Apple Computer Inc. | 4,530,479 | $652,479,586 |
| Microsoft Corp. | 7,120,441 | $490,811,998 |
| Amazon Com Inc. | 366,124 | $354,408,032 |
| Facebook Inc.-A | 2,256,188 | $340,639,264 |
| Alphabet Inc . | 304,131 | $282,744,508 |
| Alphabet Inc. Cl C | 3,064,870 | $280,129,118 |
| JPMorgan Chase & Co. | 288,269 | $261,958,668 |
| Exxon Mobil Corp. | 3,185,014 | $257,126,180 |
| Visa Inc. Cl A | 1,774,467 | $234,744,239 |
| Johnson & Johnson | 2,399,777 | $225,051,087 |
| Comcast Corp. Cl A | 3,285,990 | $219,767,011 |
| Berkshire Hathaway Inc. Class B | 1,266,227 | $214,460,867 |
| Unitedhealth Group Inc. | 1,146,721 | $212,625,008 |
| Procter & Gamble Co. | 8,555,381 | $207,553,543 |
| Citigroup Inc. | 3,595,178 | $199,208,813 |
| ChevronTexaco Corp. | 1,892,788 | $197,474,572 |
| Bank Of America Corp. | 4,911,170 | $191,142,736 |
| AT&T Inc. | 6,031,736 | $188,793,337 |
| Cisco Systems | 4,938,979 | $186,347,678 |
| Wells Fargo Company | 2,059,761 | $179,508,171 |

### International Equities — Top 20 Holdings

| | Shares | Fair Value |
|---|---|---|
| Samsung Electronics Co. LTD (South Korea) | 137,769 | $286,218,514 |
| Roche Holding Ag (Switzerland) | 770,638 | $196,512,086 |
| Taiwan Semiconductor Manufacturing Co. LTD (Taiwan) | 27,094,607 | $185,707,612 |
| Novartis AG (Switzerland) | 2,209,103 | $184,082,305 |
| HSBC Holdings (United Kingdom) | 18,284,503 | $169,033,407 |
| British American Tobacco PLC (United Kingdom) | 2,342,982 | $159,292,412 |
| SAP SE (Germany) | 1,519,023 | $158,439,104 |
| BNP Paribas (France) | 1,833,582 | $131,876,867 |
| Nippon Telegraph & Telephone Corp. (Japan) | 2,565,832 | $121,258,169 |
| ING Groep NV (Netherlands) | 6,876,094 | $118,422,185 |
| Canadian National Railway Co. (Canada) | 1,452,980 | $117,719,686 |
| Nestle SA (Switzerland) | 1,346,249 | $117,312,671 |
| Banco Santander (Spain) | 17,333,087 | $114,503,507 |
| Aia Group LTD (Hong Kong) | 13,767,038 | $100,610,331 |
| Mitsubishi Ufj Financial Group Inc. (Japan) | 14,358,811 | $96,458,086 |
| Kering (France) | 275,205 | $93,600,524 |
| Hon Hai Precision (Taiwan) | 24,319,583 | $93,536,858 |
| Pernod Ricard NPV (France) | 664,935 | $88,921,415 |
| Novo-Nordisk (Denmark) | 2,058,577 | $88,042,472 |
| Experian Ord (Ireland) | 4,216,786 | $86,268,955 |

### Fixed Income — Top 20 Holdings

| | Par Value | Fair Value |
|---|---|---|
| Treasury Bill, 1.033%, 11/9/2017, Aaa | 235,000,000 | $234,127,352 |
| U.S. Treasury N/B, 2/15/2026, Aaa | 183,818,000 | $174,707,980 |
| Treasury Bill, 10/12/2017, Aaa | 172,000,000 | $171,523,741 |
| U.S. Treasury N/B, 2/15/2025, Aaa | 158,838,000 | $156,669,861 |
| U.S. Treasury N/B, 10/31/2023, Aaa | 159,400,000 | $155,265,164 |
| Treasury Bill, 9/28/2017, Aaa | 141,000,000 | $140,685,827 |
| Treasury Bill, 10/5/2017, Aaa | 140,000,000 | $139,645,717 |
| U.S. Treasury N/B, 5/15/2026, Aaa | 143,592,000 | $136,158,242 |
| U.S. Treasury N/B, 12/31/2019, Aaa | 122,450,000 | $121,456,930 |
| U.S. Treasury N/B, 8/31/2020, Aaa | 118,867,000 | $120,800,966 |
| U.S. Treasury N/B, 11/15/2026, Aaa | 123,520,000 | $120,464,115 |
| U.S. Treasury N/B, 11/15/2019, Aaa | 121,400,000 | $120,131,370 |
| U.S. Treasury N/B, 5/15/2023, Aaa | 112,400,000 | $110,729,736 |
| Federal Home LN BKS FLTG , 6/28/2019, Aaa | 100,000,000 | $100,001,000 |
| Treasury Bill, 8/31/2017, Aaa | 100,000,000 | $99,861,429 |
| Treasury Bill, 7/27/2017, Aaa | 96,000,000 | $95,947,890 |
| U.S. Treasury N/B, 7/15/2019, Aaa | 94,998,000 | $93,787,725 |
| U.S. Treasury N/B, 11/15/2024, Aaa | 92,208,000 | $92,729,897 |
| U.S. Treasury N/B, 12/15/2019, Aaa | 90,500,000 | $90,324,430 |
| FHLB CONS BD DTD 10/21/2016 FLTG Rate , 10/19/2018, Aaa | 90,000,000 | $89,987,400 |

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

## Schedule of External Managers (as of June 30, 2017)

### Domestic Equities

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

### 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
BlackRock Realty Advisors, Inc.
Blackstone Real Estate Advisors Europe, LP
Blackstone Real Estate Advisors LP
Carlyle Investment Management LLC
CBRE Global Investment Partners Asia, Pte. Ltd.
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
Normandy Real Estate Partners
Patria Brazil Real Estate Fund General Partner II, Ltd.
Patria Brazil Retail Property Fund General Partner, Ltd.
Pramerica Investment Management Limited
SCREP V Management , LLC
Strategic Partners Fund Solutions Advisors LP
Westbrook Realty Management IX, LP
Westbrook Realty Management V, LP
Westbrook Realty Management VI, LP
Westbrook Realty Management VII, LP
Westbrook Realty Management VIII, 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
ArcLight Capital Partners, LLC
Ares Management, LLC
Athenian Venture Partners
Avenue Capital Group
Avenue Capital Management II, LP
Axiom Asia Private Capital
Bain Capital, LLC
Baker Capital Corp.
Beacon Capital Partners, LLC
Berkshire Partners, LLC
Blue Chip Venture Company, Ltd.
Bridgepoint Capital, Ltd.
Brookside Capital, LLC
C B Health Ventures, LLC
Cantor Fitzgerald
Cardinal Partners
CID Capital, Inc.
Claren Road Asset Management, LLC
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
H.I.G. Capital Management
Hamilton Bancorp Incorporated
HarbourVest Partners, LLC
Heartland Industrial Partners
Hellman & Friedman LLC
Hermes GPE LLP
HSBC Group
Ionic Capital Advisors, LLC
King Street Advisors, LLC
Leonard Green & Partners, LP
Lighthouse Capital Partners
Lime Rock Partners, LLC
Linsalata Capital Partners
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)
Oak Hill Capital Management, Inc.
Oaktree Capital Management Limited
Oaktree Capital Management, LLC
Och-Ziff Capital Management Group
Ohio Innovation Fund
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
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
Thoma Bravo, LLC
TowerBrook Capital Partners, LP
Triton Partners
Veritas Capital Fund Management, LLC
Vista Equity Partners Management, LLC
Warburg Pincus LLC
WL Ross & Co, LLC (Invesco)

Segal Consulting
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November 10, 2017

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

Ladies and Gentlemen:

This report presents the results of the annual valuation of the assets and liabilities of the State Teachers Retirement System of Ohio (STRS Ohio or System) as of July 1, 2017, prepared in accordance with Section 3307.51 of Chapter 3307 of the Ohio Revised Code. This valuation takes into account all of the pension and survivor benefits to which members are entitled. A separate valuation of the retiree health care benefits provided by the System is performed as of January 1 of each year.

**Actuarial Assumptions and Methods**

The valuation was based on the actuarial assumptions and methods as adopted by the Board of Trustees, reflecting the five-year experience review covering the period July 1, 2011 through June 30, 2016. In our opinion, the actuarial assumptions as approved by the Board are reasonable, taking into account the experience of the Plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience of the Plan. The actuarial assumptions and methods used for funding purposes meet the parameters set by Actuarial Standards of Practice.

**Assets and Membership Data**

STRS Ohio reported to the actuary the individual data for members of the System as of the valuation date. The amount of assets in the trust fund taken into account in the valuation was based on statements prepared by STRS Ohio.

**Funding Adequacy**

The member and employer contribution rates are established by statute. The member contribution rate is 14% of salary as of July 1, 2017. The employer contribution rate is 14% of payroll. For members participating in the Combined Plan, 2% of the 14% member contribution rate is allocated to the Defined Benefit portion as of July 1, 2017. For fiscal 2018, the total contribution rate is 28% of payroll for the Defined Benefit Plan and 16% for the Combined Plan. In the past, the Board has allocated the total contribution rate between pension and survivor benefits and health care. Beginning in fiscal 2016, the Board allocated the total contribution rate toward pension and survivor benefits and made no allocation to health care.

The valuation indicates that the pension and survivor benefits contribution rate of 28% for the Defined Benefit Plan and 16% for Combined Plan for fiscal 2018 and beyond is sufficient to provide for the payment of the pension and survivor benefits. This is because the funding period is 18.4 years and, if all assumptions are realized, the funding period is expected to decrease by one year in each future year. This funding period calculation reflects all assumption changes as approved by the Board and the reduction of the annual cost-of-living adjustments (COLA) to zero effective July 1, 2017.

The valuation indicates that for the fiscal year ending June 30, 2017, the actuarial experience of STRS Ohio was favorable generating a net actuarial gain of $1,268 million. This gain is the net result of a $857 million gain due to favorable investment return experience in prior years and a $411 million gain due to favorable net demographic experience in fiscal 2017.

**Financial Results**

This report shows detailed summaries of the financial results of the valuation used in preparing this valuation. The actuary prepared the following supporting schedules 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 the Employers' Net Pension Liability
  - Schedule of Employers' Contributions
- **Actuarial**
  - Schedule of Valuation Data — Active Members
  - Schedule of Valuation Data — Retirees/Beneficiaries
  - Solvency Test
  - Analysis of Financial Experience
- **Statistical**
  - Actuarial Funded Ratio and Funding Period
  - Selected Funding Information — Defined Benefit Plan
  - Number of Benefit Recipients by Type
  - Summary of Active Membership Data
  - Benefit Payments by Type

**Actuarial Certification**

In preparing the results presented in this report, we have relied upon information STRS Ohio provided to us regarding the benefit provisions, System members, benefit payments and unaudited plan assets. While the scope of our engagement did not call for us to perform an audit or independent verification of this information, we have reviewed this information for reasonableness. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented also comply with Chapter 3307 of the Ohio Revised Code, and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. Both are Fellows of the Society of Actuaries, Enrolled Actuaries, and Members of the American Academy of Actuaries, and both are experienced in performing valuations for large public retirement systems. They both meet the Qualification Standards of the American Academy of Actuaries.

Respectfully submitted,

Segal Consulting, a Member of the Segal Group

By: Kim Nicholl

Kim Nicholl, FSA, MAAA, EA
Senior Vice President and Actuary

Matthew A. Strom

Matthew A. Strom, FSA, MAAA, EA
Vice President and 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 July 1, 2017, prepared by its actuary, Segal Consulting, 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.

***Assumption Changes Since Prior Valuation:***

- Inflation assumption lowered from 2.75% to 2.50%;
- Investment return assumption lowered from 7.75% to 7.45%;
- Total salary increases rates lowered by decreasing the merit component of the individual salary increases, as well as by 0.25% due to lower inflation;
- Payroll growth assumption lowered to 3.00%;
- Updated the healthy and disabled mortality assumption to the "RP-2014" mortality tables with generational improvement scale MP-2016 ;
- Rates of retirement, termination and disability were modified to better reflect anticipated future experience.

See the July 1, 2016, actuarial valuation report for the details of actuarial assumptions used for the prior valuation.

**Rationale for Assumptions**: The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Review dated March 3, 2017.

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

**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 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 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% |

**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).

**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.)

**Asset Valuation Method:** 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 Cost Method:** Normal cost and actuarial accrued liability are calculated on an individual basis and are allocated by salary. Entry age is determined as the age at member's enrollment in STRS Ohio. The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is the excess of the actuarial accrued liability over the actuarial value of assets.

**Amortization Period and 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.

**Census and Assets:** The valuation was based on members of the System as of July 1, 2017, and does not take into account future members. All census and asset data was supplied by the System.

**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.

## Benefit Recipients Added to and Removed From the Rolls, 2008–2017

| 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) |
|---|---|---|---|---|---|---|---|---|
| 2008 | 122,934 | $4,124,657 | 7,182 | $373,385 | 3,610 | $79,243 | 126,506 | $4,418,799 |
| 2009 | 126,506 | $4,418,799 | 6,675 | $366,645 | 3,522 | $78,480 | 129,659 | $4,706,964 |
| 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** |

## Schedule of Valuation Data — Active Members, 2008–2017

| Valuation Date* | Number of Active Members | Annualized Salaries (in thousands) | Annual Average Pay | % Increase in Average Pay |
|---|---|---|---|---|
| 2008 | 173,327 | $9,187,562 | $53,007 | 2.0% |
| 2009 | 174,807 | $9,502,701 | $54,361 | 2.6% |
| 2010 | 175,842 | $9,633,355 | $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 | $9,118,035 | $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 | $9,562,237 | $56,510 | 2.9% |
| **2017** | **168,132** | **$9,842,388** | **$58,540** | **3.6%** |

*For valuations prior to July 1, 2010, active members are defined as participants who earned 0.25 years of service credit or more, in the valuation year. Starting with the July 1, 2010, figures, 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.

## Schedule of Valuation Data — Retirees/Beneficiaries, 2008–2017

| Valuation Date | Number of Retirees/Beneficiaries | Annual Allowances (in thousands) | % Increase in Annual Allowances | Average Annual Allowances |
|---|---|---|---|---|
| 2008 | 126,506 | $4,418,800 | 7.1% | $34,930 |
| 2009 | 129,659 | $4,706,964 | 6.5% | $36,303 |
| 2010 | 133,103 | $4,957,960 | 5.3% | $37,249 |
| 2011 | 138,088 | $5,393,372 | 8.8% | $39,057 |
| 2012 | 143,256 | $5,815,407 | 7.8% | $40,594 |
| 2013 | 149,221 | $6,190,182 | 6.4% | $41,483 |
| 2014 | 152,208 | $6,397,535 | 3.3% | $42,032 |
| 2015 | 158,116 | $6,801,181 | 6.3% | $43,014 |
| 2016 | 157,938 | $6,896,162 | 1.4% | $43,664 |
| **2017** | **158,039** | **$6,955,309** | **0.9%** | **$44,010** |

## Solvency Test, 2008–2017 (dollar amounts in thousands)

| Valuation Date | Accrued Liability For: (1) Active Member Contributions | (2) Retirees and Beneficiaries | (3) Active Members (Employer-Financed Portion) | Valuation Assets* | Portion of Accrued Liabilities Covered by Valuation Assets: (1) | (2) | (3) |
|---|---|---|---|---|---|---|---|
| 2008 | $9,737,926 | $51,874,103 | $25,820,319 | $69,198,008 | 100% | 100% | 29% |
| 2009 | $10,295,816 | $54,909,046 | $26,236,093 | $54,902,859 | 100% | 81% | 0% |
| 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%** |

*Excludes health care assets.

## Analysis of Financial Experience

Gains and Losses in Accrued Liabilities Resulting From Differences Between Assumed Experience and Actual Experience (in thousands)

| Type of Activity | Gain (loss) for year ended June 30: 2017 | 2016 | 2015 | 2014 | 2013 |
|---|---|---|---|---|---|
| Investment income. If there is greater investment income than assumed, there is a gain. If less, there is a loss. | $ 857,418 | $ 774,260 | $ 1,068,184 | $ 3,333,931 | $ 2,483,140 |
| Payroll growth. If more contributions from payroll growth are received than expected, there is a gain. If less, there is a loss. | 7,091 | (40,874) | (26,173) | (51,750) | (36,193) |
| Salary increases. If there are smaller salary increases than assumed, there is a gain. If greater increases, there is a loss. | 279,058 | 236,054 | 21,385 | 413,619 | 816,457 |
| 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. | (316,922) | (333,342) | (1,064,240) | (327,782) | (1,199,362) |
| Death after retirement. If retirees live shorter than expected, there is a gain. If retirees live longer than assumed, there is a loss. | 27,307 | (336,967) | (223,251) | (185,841) | 39,580 |
| Final plan reselection. If the account value from defined contribution accounts is greater than the reestablished defined benefit account balance, there is a gain. | (1,403) | (9,569) | (8,240) | (3,807) | (11,124) |
| Gain (or loss) during year from financial experience | 852,549 | 289,562 | (232,335) | 3,178,370 | 2,092,498 |
| Actuarial gain (or loss) due to assumption changes/plan amendments | 415,862 | 0 | 0 | 0 | 15,662,266 |
| **Composite gain (or loss) during the year** | **$ 1,268,411** | **$ 289,562** | **$ (232,335)** | **$ 3,178,370** | **$17,754,764** |

## Summary of Benefit and Contribution Provisions — Defined Benefit Plan

### Eligibility for Membership

Immediate upon commencement of employment.

### Service Retirement

***Eligibility :*** Age 60 with five years of qualifying service credit, or age 55 with 26 years of service, or 31 years of service regardless of age. Age and service requirements for retirement increase until Aug. 1, 2026, 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.

For members who were eligible to retire on Aug. 1, 2015, or later, annual amount will be greater of (a) the benefit amount calculated upon retirement under the current benefit formula, or (b) the benefit amount as of July 1, 2015 under the previous formula.

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.

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

Prior to July 1, 2015, if the member has less than 30 years of service at retirement and is younger than age 65, the following reduction factors apply:

| Attained Age | Years of Ohio Service Credit | % of Base Amount |
|---|---|---|
| 58 | 25 | 75% |
| 59 | 26 | 80% |
| 60 | 27 | 85% |
| 61 | | 88% |
| | 28 | 90% |
| 62 | | 91% |
| 63 | | 94% |
| | 29 | 95% |
| 64 | | 97% |
| 65 | 30 or more | 100% |

Effective Aug. 1, 2015, 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, 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 :*** 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.

### Contribution

***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:*** 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.

### 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.

### Contribution

***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 is used to fund the defined benefit formula.

## 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:*** Employer contributions and earnings on the member's account are vested after the first anniversary of membership. Effective July 1, 2013, 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.

### Contribution

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

***By Employers:*** 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.

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Nov. 15, 2017

## ACTUARIAL CERTIFICATION

This is to certify that Segal Consulting, a Member of The Segal Group, Inc. has conducted an actuarial valuation of certain benefit obligations of the State Teachers Retirement System of Ohio's other postemployment benefit programs as of January 1, 2017, in accordance with generally accepted actuarial principles and practices.

The actuary prepared the following supporting schedules included in the Financial and Actuarial Sections of the System's *Comprehensive Annual Financial Report:*

- Actuarial
  - Health Care Solvency Test
  - Key Methods and Assumptions Used in Health Care Actuarial Valuation
  - Summary of Membership Data

The actuarial valuation is completed on an annual basis and is based on the plan of benefits and participant, premium, claims and expense data provided by the System or from vendors employed by the System. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

With the exception of the retirement rates, the valuation was based on demographic assumptions adopted by the Board of Trustees, reflecting the three-year experience review covering the period July 1, 2008 through June 30, 2011. The retirement rates were modified with the January 1, 2014, valuation to reflect plan changes that were adopted with the pension reform legislation. The actuary reviewed all health-specific assumptions and updated them as appropriate. The actuarial assumptions and methods used for funding purposes meet the parameters set by Actuarial Standards of Practice.

The actuarial computations made are for purposes of fulfilling the Actuarially Defined Contribution (ADC). Determinations for purposes other than this may be significantly different from the results reported here. Accordingly, additional determinations may be needed for other purposes, such as meeting financial accounting requirements, judging benefit security at termination of the plan, or determining short-term cash flow requirements.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience or rates of return on assets differing from that anticipated by the assumptions; changes in assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. The scope of the assignment did not include performing an analysis of the potential changes of such future measurements except where noted.

To the best of our knowledge, this report is complete and accurate and in our opinion presents the information necessary to comply determine the ADC respect to the benefit obligations addressed. The signing actuaries are members of the Society of Actuaries, the American Academy of Actuaries, and other professional actuarial organizations and collectively meet their "General Qualification Standards for Statements of Actuarial Opinions" to render the actuarial opinion contained herein.

Yori Rubinson

Yori Rubinson, FSA, MAAA
Retiree Health Actuary

Barbara Zaveduk

Barbara Zaveduk, EA, MAAA
Vice President and Actuary

A separate annual valuation of the retiree health care coverage provided by STRS Ohio was performed as of Jan. 1, 2017, by Segal Consulting.

## Summary of Actuarial Assumptions and Methods — Health Care Plan

The assumptions below were adopted by the State Teachers Retirement Board after consulting with the actuary and apply to the Jan. 1, 2017 valuation.

**GASB Statement No. 43:** Provides STRS Ohio's responsibility for accounting and financial reporting for all post-employment benefits other than pension. Such benefits are commonly referred to as "other post-employment benefits" (OPEB).

**Valuation Basis:** Covers the retiree health care coverage that STRS Ohio offers to its members and their dependents. Plan coverage includes:

- Medical and prescription drug coverage
- Reimbursement of a portion of Medicare Part B premiums

The valuation includes the following membership groups:

- Active members
- Inactive nonretired members
- Retired members
- Survivors of active and retired members
- Dependents
- Disabled retirees

With the exception of the retirement rates, the valuation was based on demographic assumptions adopted by the State Teachers Retirement Board, reflecting the three-year experience review covering the period July 1, 2008 through June 30, 2011. The retirement rates were modified in the Jan. 1, 2014, valuation to reflect plan changes that were adopted with the pension reform legislation. Segal reviewed all health-specific assumptions and updated them as appropriate.

The GASB Statement No. 43 discount rate is the expected rate of return on the assets used to pay the benefits. If the retiree health care coverage is not prefunded, GASB Statement No. 43 specifies the use of a discount rate that reflects the expected return on the general assets of the plan sponsor. If the coverage is fully prefunded, the discount rate is based on the expected return on the assets that supports the benefits. If the coverage is partially prefunded, the discount rate is a blend of the expected return on the sponsor's general assets and the plan assets. The discount rate is updated each year based on the plan's funded ratio.

**Plan Changes —** The following changes were effective Jan. 1, 2017:

- The HealthSpan HMO plans were eliminated.
- The subsidy multiplier for non-Medicare benefit recipients was reduced to 1.9% per year of service from 2.1%.
- Medicare Part B premium reimbursements were discontinued for survivors and beneficiaries who were age 65 by 2008 and either receiving a benefit or named as a beneficiary as of Jan. 1, 2008.
- The remaining Medicare part B premium reimbursements will be discontinued effective Jan. 1, 2019.
- Express Scripts Prescription Drug program: Various deductibles, out-of-pocket limits, coinsurance percentages and copayments were increased.
- Medical Mutual Basic PPO. Aetna Basic PPO, Paramount HMO plans: Various copayments were increased.
- Aetna Medicare Advantage plan: Various copayments were increased.

**Assumption Changes —** The following changes were updated since the Jan. 1, 2017, health care plan valuation. An actuarial experience study was completed and adopted effective July 1, 2017.

- The discount rate was changed from 6.90% to 4.51% based on the methodology defined under GASB 74.
- Valuation-year per capita health costs were updated.
- The percentage of future retirees electing each options was updated based on current data.
- The assumed future trend rates were modified.

Other:

- The portion of the prescription drug rebates allocated toward retiree contribution rates was reduced.

**Results:** The Actuarially Determined Contribution (ADC) as of June 30, 2017, is 2.13% of projected payroll, compared to 1.64% of projected payroll as of June 30, 2016. For the year ended Dec. 31, 2016, the return on the Health Care Fund assets was approximately 7.8%.

## Health Care Solvency Test, 2015–2017 (dollar amounts in thousands)

| Actuarial Valuation Date | Accrued Liability For: (1) Active Members | (2) Inactive Members | (3) Retirees, Survivors & Dependents | Fair Market Value of Assets | Portion of Accrued Liability Covered by Fair Value of Assets: (1) | (2) | (3) |
|---|---|---|---|---|---|---|---|
| Jan. 1, 2015 | $1,742,597 | $15,459 | $2,918,167 | $3,454,371 | 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%** |

## Key Methods and Assumptions Used in Health Care Actuarial Valuation

| | |
|---|---|
| Valuation date | Jan. 1, 2017 |
| Actuarial cost method | Entry age normal, level percent of pay |
| Amortization method | 30 years, open, level percent of pay |
| Asset valuation method | Fair market value |
| **Actuarial Assumptions:** | |
| Investment rate of return | 4.51% |
| Salary increase rate | Varies by age from 2.75%–12.25% |
| Payroll increase rate | 3.50% through 2018; 4.00% thereafter |

### Health Care Cost Trend Rates

| Year ending 12/31 | Medical Pre-65 | Medical 65+ | Prescription drug | Year ending 12/31 | Medical Pre-65 | Medical 65+ | Prescription drug |
|---|---|---|---|---|---|---|---|
| 2017 | 7.00 | 6.00 | 11.00 | 2025 | 5.64 | 5.20 | 7.32 |
| 2018 | 6.83 | 5.90 | 10.54 | 2026 | 5.47 | 5.10 | 6.86 |
| 2019 | 6.66 | 5.80 | 10.08 | 2027 | 5.30 | 5.00 | 6.40 |
| 2020 | 6.49 | 5.70 | 9.62 | 2028 | 5.13 | 4.90 | 5.94 |
| 2021 | 6.32 | 5.60 | 9.16 | 2029 | 4.96 | 4.80 | 5.48 |
| 2022 | 6.15 | 5.50 | 8.70 | 2030 | 4.79 | 4.70 | 5.02 |
| 2023 | 5.98 | 5.40 | 8.24 | 2031 | 4.62 | 4.60 | 4.56 |
| 2024 | 5.81 | 5.30 | 7.78 | 2032+ | 4.50 | 4.50 | 4.50 |

## Summary of Membership Data

| Valuation date | Jan. 1, 2015 | Jan. 1, 2016 | Jan. 1, 2017 |
|---|---|---|---|
| Active members | 169,295 | 164,925 | **169,205** |
| Inactive members | 16,823 | 17,275 | **17,011** |

### STRS Ohio Health Care Program Enrollees

| | Jan. 1, 2015 | Jan. 1, 2016 | Added | Terminated | Jan. 1, 2017 |
|---|---|---|---|---|---|
| Retirees | 98,087 | 101,539 | 2,260 | 3,964 | **99,835** |
| Disabled retirees | 4,378 | 4,300 | 109 | 278 | **4,131** |
| Survivors | 4,006 | 4,880 | 395 | 531 | **4,744** |
| Spouses and dependents (excluding children) | 18,667 | 17,722 | 577 | 1,923 | **16,376** |
| **Total** | **125,138** | **128,441** | **3,341** | **6,696** | **125,086** |
| Annual allowance (in thousands) | $399,801 | $426,730 | $19,691 | $18,728 | **$427,693** |

| Valuation date | Jan. 1, 2015 | Jan. 1, 2016 | Jan. 1, 2017 |
|---|---|---|---|
| Average per health care participant annual benefit | $2,218 | $2,115 | **$2,205** |

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 are:

- 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, 2008–2017 (in thousands)

### Defined Benefit Plan

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Additions:** | | | | | | | | | | |
| Member contributions | $ 1,017,720 | $ 1,041,248 | $ 1,066,483 | $ 1,081,958 | $ 1,049,709 | $ 1,042,959 | $ 1,134,899 | $ 1,188,062 | $ 1,289,809 | $ 1,443,374 |
| Employer contributions | 1,305,027 | 1,347,741 | 1,374,327 | 1,379,104 | 1,349,561 | 1,327,862 | 1,325,141 | 1,449,165 | 1,466,938 | 1,514,285 |
| Net investment income (loss) | (3,926,797) | (14,371,713) | 6,641,516 | 11,924,753 | 1,094,829 | 7,984,266 | 10,418,170 | 3,644,151 | 361,567 | 9,098,570 |
| Other | 37,945 | 35,324 | 39,857 | 45,910 | 50,804 | 54,681 | 168,250 | 123,557 | 55,441 | 54,649 |
| Total additions | (1,566,105) | (11,947,400) | 9,122,183 | 14,431,725 | 3,544,903 | 10,409,768 | 13,046,460 | 6,404,935 | 3,173,755 | 12,110,878 |
| **Deductions:** | | | | | | | | | | |
| Benefit payments | 4,338,617 | 4,613,751 | 4,900,418 | 5,244,407 | 5,741,042 | 6,152,335 | 6,504,676 | 6,662,232 | 7,090,037 | 6,989,165 |
| Refunds | 133,832 | 121,863 | 117,751 | 153,243 | 169,071 | 186,459 | 198,972 | 198,700 | 205,223 | 190,517 |
| Administrative expenses | 59,467 | 58,679 | 59,320 | 57,778 | 57,879 | 58,613 | 60,136 | 60,270 | 61,038 | 62,592 |
| Total deductions | 4,531,916 | 4,794,293 | 5,077,489 | 5,455,428 | 5,967,992 | 6,397,407 | 6,763,784 | 6,921,202 | 7,356,298 | 7,242,274 |
| Net increase (decrease) | (6,098,021) | (16,741,693) | 4,044,694 | 8,976,297 | (2,423,089) | 4,012,361 | 6,282,676 | (516,267) | (4,182,543) | 4,868,604 |
| Net position held in trust, beginning of year | 72,935,433 | 66,837,412 | 50,095,719 | 54,140,413 | 63,116,710 | 60,693,621 | 64,705,982 | 70,988,658 | 70,432,646 | 66,250,103 |
| Prior period adjustment, GASB 68 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | (39,745) | N/A | N/A |
| Beginning of year restated | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 70,948,913 | N/A | N/A |
| **Net position held in trust, end of year** | **$66,837,412** | **$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** |

### Defined Contribution Plan

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Additions:** | | | | | | | | | | |
| Member contributions | $ 40,829 | $ 44,490 | $ 46,059 | $ 47,935 | $ 49,764 | $ 52,331 | $ 58,909 | $ 71,073 | $ 82,224 | $ 94,303 |
| Employer contributions | 24,471 | 26,873 | 27,359 | 28,205 | 28,890 | 30,027 | 29,083 | 32,002 | 34,164 | 36,969 |
| Net investment income (loss) | (31,120) | (59,251) | 39,157 | 89,213 | 2,670 | 74,076 | 116,674 | 27,694 | 11,304 | 135,360 |
| Transfers between retirement plans | (14,399) | (14,644) | (16,580) | (16,264) | (17,246) | (16,738) | (14,033) | (9,931) | (11,440) | (15,034) |
| Total additions | 19,781 | (2,532) | 95,995 | 149,089 | 64,078 | 139,696 | 190,633 | 120,838 | 116,252 | 251,598 |
| **Deductions:** | | | | | | | | | | |
| Refunds | 9,086 | 7,427 | 9,230 | 12,777 | 14,697 | 20,033 | 21,369 | 29,930 | 26,847 | 31,324 |
| Administrative expenses | 240 | 256 | (35) | 922 | 881 | 837 | 854 | 913 | 1,033 | 1,060 |
| Total deductions | 9,326 | 7,683 | 9,195 | 13,699 | 15,578 | 20,870 | 22,223 | 30,843 | 27,880 | 32,384 |
| Net increase (decrease) | 10,455 | (10,215) | 86,800 | 135,390 | 48,500 | 118,826 | 168,410 | 89,995 | 88,372 | 219,214 |
| Net position held in trust, beginning of year | 296,772 | 307,227 | 297,012 | 383,812 | 519,202 | 567,702 | 686,528 | 854,938 | 944,933 | 1,033,305 |
| **Net position held in trust, end of year** | **$ 307,227** | **$ 297,012** | **$ 383,812** | **$ 519,202** | **$ 567,702** | **$ 686,528** | **$ 854,938** | **$ 944,933** | **$ 1,033,305** | **$ 1,252,519** |

### Post-Employment Health Care Plan

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Additions:** | | | | | | | | | | |
| Employer contributions | $ 98,342 | $ 101,221 | $ 103,415 | $ 103,694 | $ 101,025 | $ 99,179 | $ 98,330 | $ 0 | $ 0 | $ 0 |
| Health care premiums | 214,700 | 225,627 | 222,316 | 222,130 | 246,264 | 261,903 | 277,477 | 306,569 | 339,927 | 339,056 |
| Net investment income (loss) | (217,501) | (778,556) | 348,311 | 608,969 | 54,990 | 402,110 | 524,484 | 180,566 | 17,001 | 440,197 |
| Government reimbursements | 36,915 | 37,956 | 38,156 | 70,556 | 92,213 | 41,200 | 46,132 | 61,127 | 58,812 | 79,357 |
| Total additions | 132,456 | (413,752) | 712,198 | 1,005,349 | 494,492 | 804,392 | 946,423 | 548,262 | 415,740 | 858,610 |
| **Deductions:** | | | | | | | | | | |
| Health care provider payments | 540,493 | 558,344 | 592,416 | 604,456 | 627,890 | 599,818 | 629,465 | 672,615 | 676,993 | 565,962 |
| Administrative expenses | 2,913 | 3,349 | 2,523 | 2,502 | 2,568 | 2,555 | 2,495 | 2,569 | 2,655 | 2,497 |
| Total deductions | 543,406 | 561,693 | 594,939 | 606,958 | 630,458 | 602,373 | 631,960 | 675,184 | 679,648 | 568,459 |
| Net increase (decrease) | (410,950) | (975,445) | 117,259 | 398,391 | (135,966) | 202,019 | 314,463 | (126,922) | (263,908) | 290,151 |
| Net position held in trust, beginning of year | 4,066,687 | 3,655,737 | 2,680,292 | 2,797,551 | 3,195,942 | 3,059,976 | 3,261,995 | 3,576,458 | 3,449,536 | 3,185,628 |
| **Net position held in trust, end of year** | **$ 3,655,737** | **$ 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** |

## Net Position by Plan
### Years Ending June 30, 2008–2017 (in thousands)

| Fiscal Year | Defined Benefit Plan | Defined Contribution Plan | Post-Employment Health Care Plan | Total Net Position |
|---|---|---|---|---|
| 2008 | $66,837,412 | $307,227 | $3,655,737 | $70,800,376 |
| 2009 | $50,095,719 | $297,012 | $2,680,292 | $53,073,023 |
| 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** |

## Benefit Expenses by Type
### Years Ending June 30, 2008–2017 (in thousands)

| Fiscal Year | Service Retirement | Disability | Survivor | Other | Total |
|---|---|---|---|---|---|
| 2008 | $4,029,937 | $201,949 | $94,167 | $12,564 | $4,338,617 |
| 2009 | $4,299,310 | $204,939 | $99,139 | $10,363 | $4,613,751 |
| 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** |

## Actuarial Funded Ratio and Funding Period, 2008–2017 (dollar amounts in thousands)

| As of July 1 | Actuarial Value of Assets | Actuarial Accrued Liability | Unfunded Actuarial Accrued Liability | Funded Ratio | Funding Period |
|---|---|---|---|---|---|
| 2008 | $69,198,008 | $87,432,348 | $18,234,340 | 79.1% | 41.2 years |
| 2009 | $54,902,859 | $91,440,955 | $36,538,096 | 60.0% | Infinite years |
| 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** |

## Selected Funding Information — Defined Benefit Plan, 2008–2017

| | | Employer Contribution Rate | | | | | |
|---|---|---|---|---|---|---|---|
| As of July 1 | Member Contribution Rate | Employer Normal Cost | Health Care | Unfunded Actuarial Accrued Liability | Total Employer Rate | Interest Rate Assumption | Payroll Growth Assumption |
| 2008 | 10.00% | 4.24% | 1.00% | 8.76% | 14.00% | 8.00% | 3.50% |
| 2009 | 10.00% | 4.34% | 1.00% | 8.66% | 14.00% | 8.00% | 3.50% |
| 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%** |

## Number of Benefit Recipients by Type, 2008–2017

| As of July 1 | Service Retirement | Disability | Beneficiaries Receiving Optional Allowances | Survivor | Total |
|---|---|---|---|---|---|
| 2008 | 106,099 | 6,417 | 8,151 | 5,839 | 126,506 |
| 2009 | 109,031 | 6,340 | 8,387 | 5,901 | 129,659 |
| 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** |

## Summary of Active Membership Data, 2008–2017 (dollars in thousands)

### Defined Benefit Plan

| | Females | | | | Males | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| As of July 1 | Active Members | Annual Salaries | Average Age | Average Service | Active Members | Annual Salaries | Average Age | Average Service | Active Members | Annual Salaries | Average Age | Average Service |
| 2008 | 120,514 | $6,176,798 | 44.05 | 13.12 | 48,500 | $2,837,340 | 44.95 | 13.37 | 169,014 | $9,014,138 | 44.31 | 13.19 |
| 2009 | 121,544 | $6,402,337 | 43.98 | 13.09 | 48,763 | $2,909,210 | 44.90 | 13.18 | 170,307 | $9,311,547 | 44.24 | 13.12 |
| 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** |

### Combined Plan

| | Females | | | | Males | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| As of July 1 | Active Members | Annual Salaries | Average Age | Average Service | Active Members | Annual Salaries | Average Age | Average Service | Active Members | Annual Salaries | Average Age | Average Service |
| 2008 | 3,387 | $132,008 | 37.91 | 4.91 | 926 | $41,416 | 40.86 | 4.79 | 4,313 | $173,424 | 38.54 | 4.88 |
| 2009 | 3,528 | $145,617 | 38.46 | 5.39 | 972 | $45,537 | 41.24 | 5.22 | 4,500 | $191,154 | 39.06 | 5.35 |
| 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** |

### Total Active Membership

| | Females | | | | Males | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| As of July 1 | Active Members | Annual Salaries | Average Age | Average Service | Active Members | Annual Salaries | Average Age | Average Service | Active Members | Annual Salaries | Average Age | Average Service |
| 2008 | 123,901 | $6,308,806 | 43.88 | 12.90 | 49,426 | $2,878,756 | 44.87 | 13.21 | 173,327 | $9,187,562 | 44.16 | 12.99 |
| 2009 | 125,072 | $6,547,954 | 43.82 | 12.87 | 49,735 | $2,954,747 | 44.83 | 13.02 | 174,807 | $9,502,701 | 44.11 | 12.92 |
| 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** |

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 July 1, 2017

| Age Last Birthday | Number | Annual Allowance (in thousands) | Average Annual Allowance |
|---|---|---|---|
| **Service Retirees** | | | |
| Under 60 | 7,793 | $ 390,999 | $ 50,173 |
| 60–64 | 19,895 | 1,008,639 | 50,698 |
| 65–69 | 36,352 | 1,815,493 | 49,942 |
| 70–74 | 28,797 | 1,389,698 | 48,258 |
| 75–79 | 18,404 | 812,170 | 44,130 |
| Over 79 | 24,205 | 859,215 | 35,497 |
| **Total** | **135,446** | **$ 6,276,215** | **$ 46,337** |
| **Beneficiaries Receiving Optional Allowances** | | | |
| Under 60 | 481 | $ 12,763 | $ 26,535 |
| 60–64 | 476 | 17,978 | 37,769 |
| 65–69 | 1,021 | 39,455 | 38,644 |
| 70–74 | 1,535 | 56,782 | 36,991 |
| 75–79 | 1,862 | 65,026 | 34,922 |
| Over 79 | 5,760 | 150,935 | 26,204 |
| **Total** | **11,135** | **$ 342,939** | **$ 30,798** |
| **Survivor Benefit Recipients** | | | |
| Under 60 | 1,620 | $ 23,080 | $ 14,247 |
| 60–64 | 550 | 13,919 | 25,308 |
| 65–69 | 878 | 23,091 | 26,299 |
| 70–74 | 900 | 22,946 | 25,496 |
| 75–79 | 716 | 16,825 | 23,498 |
| Over 79 | 1,296 | 26,211 | 20,224 |
| **Total** | **5,960** | **$ 126,072** | **$ 21,153** |
| **Disability Benefit Recipients** | | | |
| Under 60 | 1,254 | $ 48,254 | $ 38,480 |
| 60–64 | 885 | 34,512 | 38,997 |
| 65–69 | 1,139 | 47,544 | 41,742 |
| 70–74 | 960 | 38,724 | 40,337 |
| 75–79 | 573 | 20,754 | 36,219 |
| Over 79 | 687 | 20,295 | 29,541 |
| **Total** | **5,498** | **$ 210,082** | **$ 38,211** |
| **Grand Total** | **158,039** | **$ 6,955,309** | **$ 44,010** |

## Average Benefit Payments for Service Retirees
## July 1–June 30, 2008–2017

| | | Years of Service Credit | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30+ | Average/Total |
| 2008 | Average monthly benefit | $406 | $831 | $1,352 | $2,024 | $2,600 | $4,309 | $3,611 |
| | Average final average salary | $30,224 | $40,804 | $49,447 | $60,033 | $64,959 | $71,113 | $66,378 |
| | Number of recipients | 200 | 182 | 314 | 366 | 551 | 4,288 | 5,901 |
| 2009 | Average monthly benefit | $431 | $822 | $1,382 | $2,193 | $2,697 | $4,497 | $3,754 |
| | Average final average salary | $28,623 | $38,507 | $51,590 | $64,199 | $67,168 | $73,260 | $68,136 |
| | Number of recipients | 199 | 158 | 288 | 310 | 429 | 3,698 | 5,082 |
| 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** |

## Average Benefit Subsidy Payments for Retirees Enrolled in Health Care Plan, 2010–2017

| | | 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** |

*A minimum of 15 years of service credit is currently required for enrollment into the STRS Ohio Health Care Program. The subsidy amounts listed for years of service credit less than 15 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, 2008–2017

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 2008 | 194 | 370 | 59 | 49 | 49 | 36 | 73 | 272 | 9 | 1,111 |
| 2009 | 194 | 370 | 58 | 49 | 49 | 36 | 71 | 280 | 10 | 1,117 |
| 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** |

## Principal Participating Employers For the Year Ended June 30, 2017

| Employer | Covered Members | Prior Year Rank | Percentage of Membership |
|---|---|---|---|
| The Ohio State University | 5,457 | 2 | 2.21% |
| Columbus City Schools | 5,420 | 1 | 2.19% |
| Cleveland Metropolitan Schools | 4,359 | 3 | 1.76% |
| University of Cincinnati | 3,417 | 4 | 1.38% |
| Cincinnati Public Schools | 3,278 | 6 | 1.33% |
| Kent State University | 3,183 | 5 | 1.29% |
| ESC Council of Governments | 2,886 | 7 | 1.17% |
| Akron Public Schools | 2,667 | 8 | 1.08% |
| Toledo Public Schools | 2,667 | 9 | 1.08% |
| Cuyahoga Community College | 2,355 | 10 | 0.95% |
| All Others | 211,436 | | 85.56% |
| **Total Covered Members** | **247,125*** | | **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 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.*

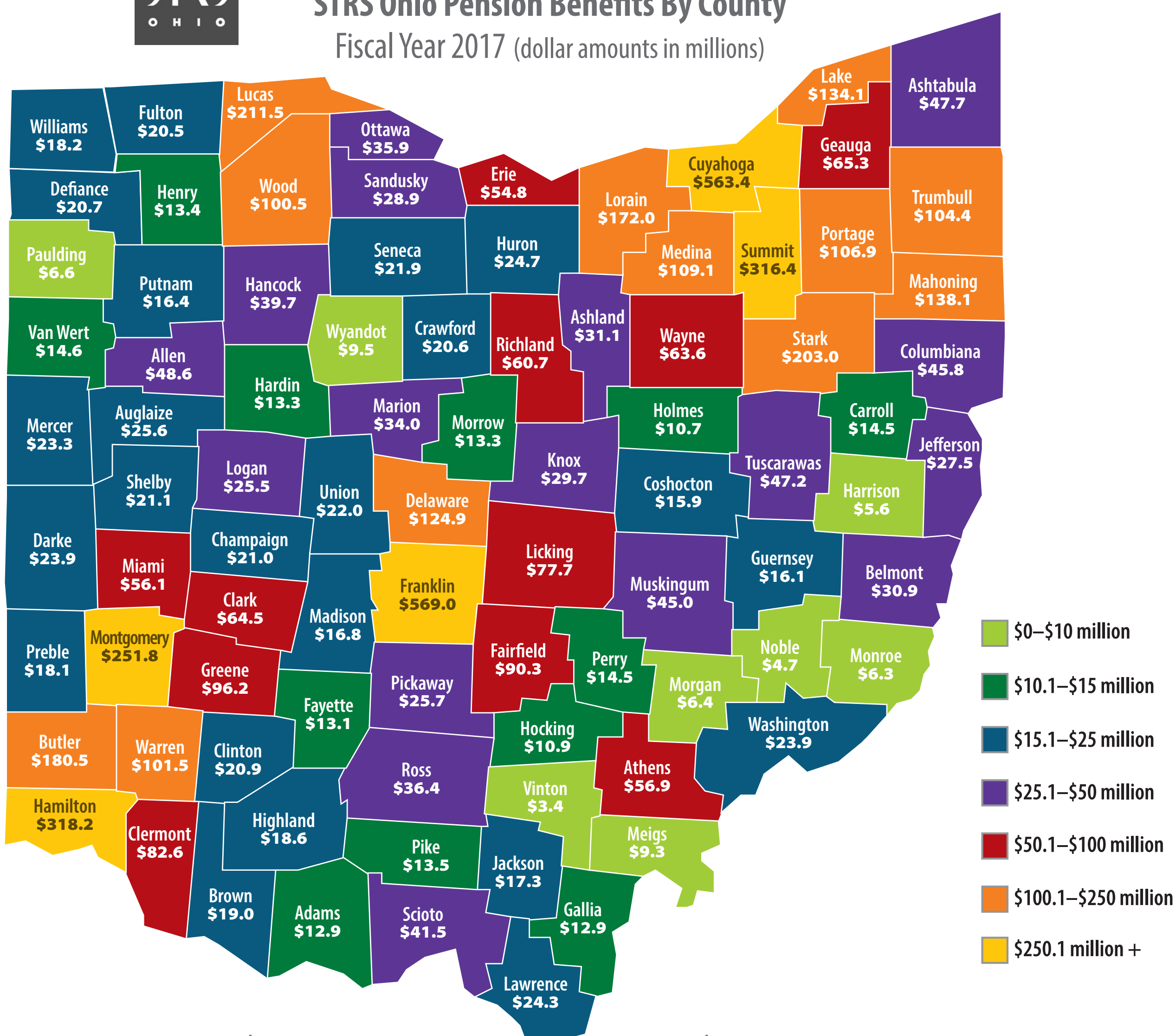
*Ohio's pension systems share one common goal: **to provide retirement security for the thousands of public servants who have made a career out of serving others.** These pension systems are major economic drivers for the state; are administratively efficient and economical; and provide a stable retirement 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 2017 (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

50-143, 12/17/50