

# NEW YORK STATE TEACHERS' RETIREMENT SYSTEM

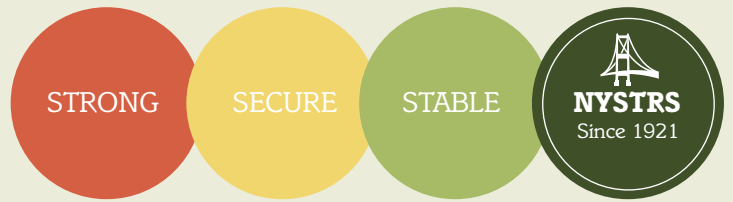
Building Bridges to Retirement Security





COMPREHENSIVE ANNUAL FINANCIAL REPORT  
Fiscal Years Ended June 30, 2016 and 2015



# NEW YORK STATE TEACHERS' RETIREMENT SYSTEM



 **Mission:** To provide our members with a secure pension.

 **Vision:** To be the model for pension fund excellence and exceptional customer service.

 **Values:**

- Integrity
- Excellence
- Respect
- Resourcefulness
- Diversity
- Diligence
- Balance

# TABLE OF CONTENTS



## Introduction

Page	
7	Board of Trustees
8	Organizational Structure
9	Executive Staff
10	Letter of Transmittal
14	President's Message
15	Summary of Benefits



## Financial

Page	
23	Independent Auditors' Report
25	Management's Discussion and Analysis
<b>Basic Financial Statements</b>	
31	- Statements of Fiduciary Net Position
32	- Statements of Changes in Fiduciary Net Position
33	- Notes to Financial Statements
<b>Required Supplementary Information</b>	
56	Schedule of Changes in the School Districts' Net Pension Liability (Asset)
57	Schedule of the School Districts' Net Pension Liability (Asset)
58	Schedule of the School Districts' Contributions
60	Notes to Required Supplementary Information
62	Schedule of Investment Returns
63	Schedule of NYSTRS' Proportionate Share of the Net Pension Liability (ERS)
64	Schedule of NYSTRS' Contributions to ERS
66	Other Post-Employment Benefit Schedule of Funding Progress
<b>Other Supplemental Schedules</b>	
67	Schedules of Administrative Expenses
68	Schedule of Investment Expenses



## Investments

Page	
71	Report on Investment Activity
78	Diversification of Investments
79	Asset Allocation
79	Annual Performance History
80	Investment Performance Results
82	Manager Investment Performance Results
86	Domestic Equity Distribution
86	Domestic Equity Externally Managed Style Distribution
87	Domestic Equity Holdings by Industry Distribution
87	Ten Largest Equity Holdings
88	Domestic Fixed Income Sector Distribution
88	Ten Largest Fixed Income Holdings
89	Domestic Fixed Income Quality Distribution
89	Domestic Fixed Income Average Maturity
89	Short-Term Sector Distribution
90	Global Fixed Income Quality Distribution
90	Global Fixed Income Sector Distribution
91	Private Equity Net Asset Value by Investment Type
91	Private Equity Net Asset Value by Geography
92	International Equity Style Distribution
92	International Equity Exposure Distribution
93	Real Estate Equity by Property Type
93	Real Estate Debt by Property Type
94	Breakdown of Real Estate Equity Portfolio
94	Breakdown of Real Estate Debt Portfolio
95	Geographic Distribution of the Real Estate Equity Portfolio
95	Geographic Distribution of the Real Estate Debt Portfolio
96	Corporate Governance
96	Securities Lending Program
97	Schedule of Investment Fees and Expenses
98	Investment Advisory Committee
98	Real Estate Advisory Committee
99	Investment Consultants
99	Master Custodian
99	External Investment Managers & Advisors



## Actuarial



## Statistical

### Page

105	Actuarial Certification Letter
107	Summary of Actuarial Methods and Assumptions
108	Actuarial Present Value of Future Benefits
<b>Funding Progress</b>	
109	- Funding Progress
	- Analysis of Funding Progress
	- Percent Funded
110	Solvency Test
110	Analysis of Financial Experience
111	History of Member Payroll and the Employer Contribution Rate
111	Schedule of Retired Members and Beneficiaries Added to and Removed from the Benefit Payroll
112	Independent Actuarial Review

### Page

#### Demographic & Economic Information

115	Number of Active Members and Retired Members
116	Distribution of Active Members by Age and Years of Service
116	Distribution of Active Members by Age
117	Distribution of Active Members by Service
118	Active Members and Annuitants 1922-2016
119	Number of Active Members by Tier
120	Retirement Statistics
122	Retirement Benefit Options and Percent of Election
122	Retired Members' Characteristics by Year of Retirement
123	Distribution of Benefits Paid by County
124	Distribution of Retired Members and Beneficiaries by Tier
124	Retired Members — Remaining Purchasing Power Through 2016
125	Retired Members and Beneficiaries With Monthly Benefits by Decade of Retirement
125	Distribution of the Annual Benefit of All Retired Members
126	Distribution of Monthly COLA Increase Commencing September 2016
126	Distribution of Cumulative Monthly COLA Commencing September 2016

#### Financial Trends Information

128	Changes in Fiduciary Net Position
129	Breakdown of Income Sources
130	Benefits and Return of Contributions by Type

#### Operating Information

133	Average Benefit Payments
134	Retired Members and Beneficiaries by Type of Benefit
136	Principal Participating Employers

# ACHIEVEMENTS

## GFOA Award



Government Finance Officers Association

### Certificate of Achievement for Excellence in Financial Reporting

Presented to

#### **New York State Teachers' Retirement System**

For its Comprehensive Annual  
Financial Report  
for the Fiscal Year Ended

**June 30, 2015**

A handwritten signature in black ink, appearing to read "Jeffrey R. Emery".

Executive Director/CEO

## PPCC Award



Public Pension Coordinating Council

### **Public Pension Standards Award For Funding and Administration 2015**

Presented to

#### ***New York State Teachers' Retirement System***

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

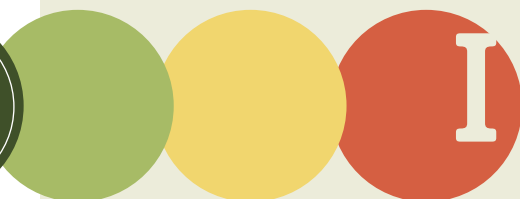
*Presented by the Public Pension Coordinating Council, a confederation of*

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

A handwritten signature in black ink, appearing to read "Alan H. Winkle".

Alan H. Winkle  
Program Administrator





# Introduction



# Introduction

## Page

7.....	Board of Trustees
8.....	Organizational Structure
9.....	Executive Staff
10.....	Letter of Transmittal
14.....	President's Message
15.....	Summary of Benefits



**Board of Trustees**



**R. Michael Kraus**  
*President*

East Aurora  
Insurance Executive  
Elected by Board of Regents  
First Elected 1992



**David P. Keefe**  
*Vice President*

Hempstead  
Retired Teacher Member  
Elected by NYSTRS Retirees  
First Elected 2004



**Jolene T. DiBrango**  
Pittsford  
Teacher Member  
Elected by Delegates  
First Elected 2014



**Paul J. Faraglia**  
Jordan-Elbridge  
Teacher Member  
Elected by Delegates  
First Elected 2009



**Dr. Phyllis S. Harrington**  
Oceanside  
Administrator  
Appointed by  
Commissioner of Education  
First Appointed 2010



**Daniel J. Hogarty Jr.**  
Troy  
Bank Executive  
Elected by  
Board of Regents  
First Elected 2005



**Michael J. Masse**  
Fayetteville  
Bank Executive  
Elected by  
Board of Regents  
First Elected 2009



**Dr. L. Oliver Robinson**  
Clifton Park  
Administrator  
Appointed by  
Commissioner of Education  
First Appointed 2010

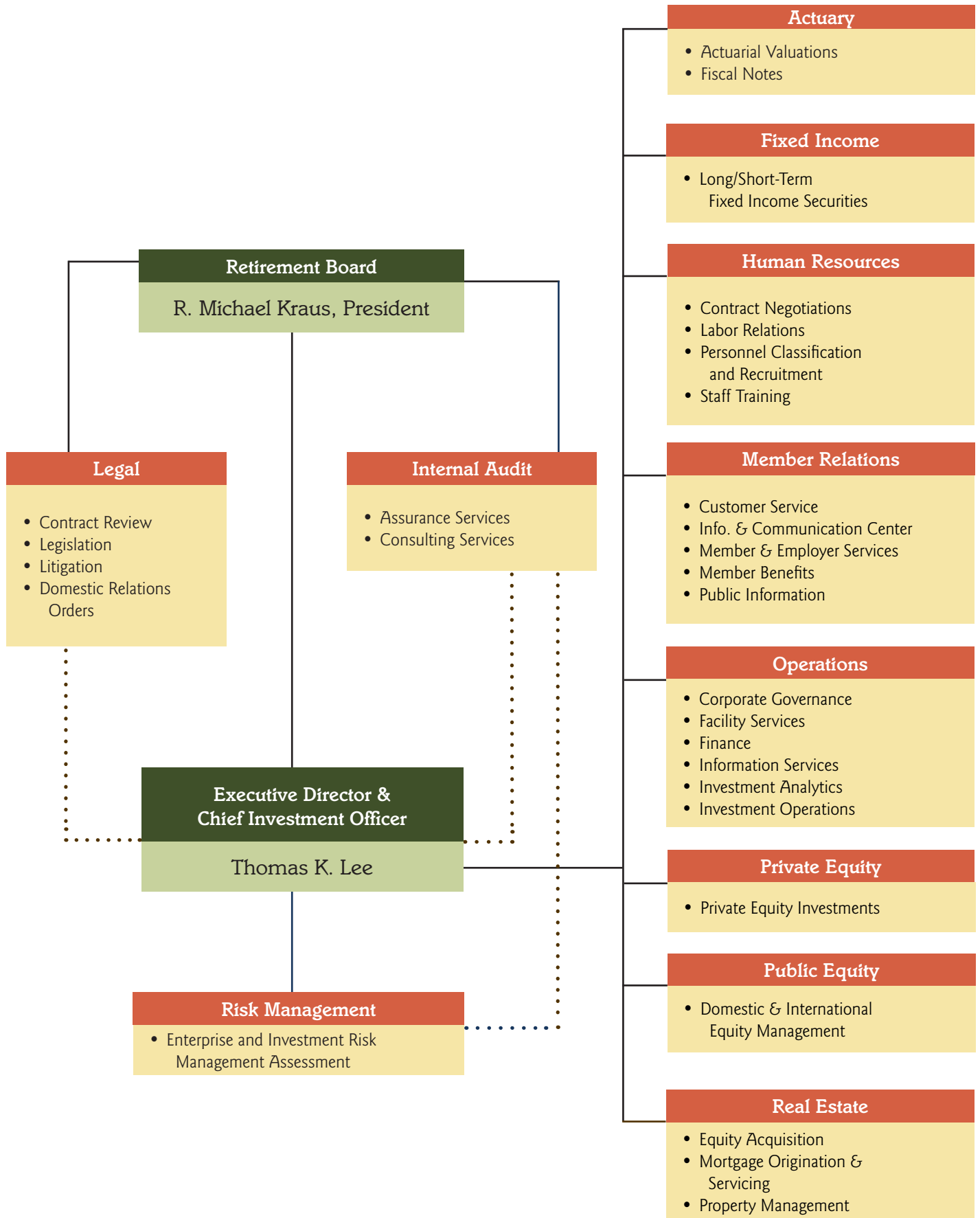


**Nicholas Smirensky**  
Delmar  
State Comptroller's  
Representative  
First Appointed 2007



**Timothy M. Southerton**  
Sayville  
Teacher Member  
Elected by Delegates  
First Elected 2011

## Organizational Structure



## Executive Staff



**Thomas K. Lee**  
*Executive Director &  
Chief Investment Officer*



**Beth M.  
Bonacquist**  
*Director of  
Human Resources*



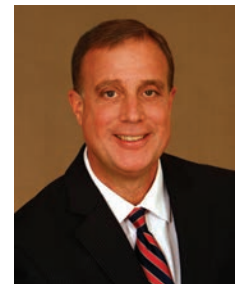
**Sheila O.  
Gardella**  
*Director of  
Member Relations*



**David C.  
Gillan**  
*Managing Director  
of Real Estate*



**Frederick W.  
Herrmann**  
*Managing Director  
of Public Equities*



**Joseph J.  
Indelicato Jr.**  
*General  
Counsel*



**Noreen  
Jones**  
*Director of  
Risk Management*



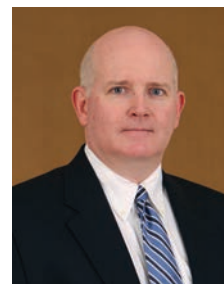
**Kenneth R.  
Kasper**  
*Director of  
Internal Audit*



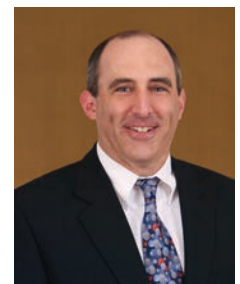
**Kevin J.  
Schaefer**  
*Managing Director  
of Operations*



**Gerald J.  
Yahoudy II**  
*Managing Director  
of Private Equity*



**Michael A.  
Wolfe Jr.**  
*Managing Director  
of Fixed Income*



**Richard A.  
Young**  
*Actuary*

## Letter of Transmittal



### New York State Teachers' Retirement System

10 Corporate Woods Drive  
Albany, NY 12211-2395  
(800) 348-7298 or (518) 447-2900

[NYSTRS.org](http://NYSTRS.org)

**Thomas K. Lee, Executive Director & CIO**

### RETIREMENT BOARD

R. Michael Kraus <i>President</i>	East Aurora
David P. Keefe <i>Vice President</i>	Hempstead
Jolene T. DiBrango	Pittsford
Paul J. Faraglia	Jordan-Elbridge
Phyllis S. Harrington	Oceanside
Daniel J. Hogarty Jr.	Troy
Michael J. Masse	Fayetteville
L. Oliver Robinson	Clifton Park
Nicholas Smirensky	Delmar
Timothy M. Southerton	Sayville

October 26, 2016

Trustees of the Retirement System Board:

On behalf of System staff, I present you with the Comprehensive Annual Financial Report (CAFR) of the New York State Teachers' Retirement System (NYSTRS or the System) for the fiscal years ended June 30, 2016 and 2015. This report complies with all requirements governing the preparation and contents of annual reports.

### History and Overview

Created in 1921 by an act of the state Legislature, NYSTRS administers the fund from which most New York State public school teachers and administrators receive retirement and ancillary benefits. Retirement benefits are provided in accordance with New York State law and may not under the New York Constitution be diminished or impaired. A summary of NYSTRS benefits is provided on pages 15-19 of this report.

The System is governed by a 10-member Board of Trustees, which sets policy and oversees operations consistent with its fiduciary obligations under applicable law. A staff of approximately 370 is responsible for the day-to-day administration. NYSTRS serves 821 employers — including public school districts, BOCES, institutions of higher education and charter schools that elect to participate. NYSTRS has approximately 427,500 active and retired members, including beneficiaries (*see accompanying chart*).

### Membership Figures — as of June 30, 2016

Active Members:	266,350
Retired Members:	155,163
Beneficiaries:	5,985
Total Membership:	427,498

*See page 115 for additional membership information.*

The retirement fund is one of the 10 largest public funds in the U.S. based on portfolio size. NYSTRS is also consistently among the top-performing and best-funded public pension funds. Consistent receipt of required employee and employer contributions; a disciplined, risk-controlled investment policy; and, relationships with top-performing fund managers are major contributing factors to this stability. As a long-term investor with liabilities often not payable for decades, Board and staff take a prudent approach to asset management.

## Letter of Transmittal (continued)

### Awards

Recognition from various industry organizations further demonstrates the System's commitment to excellence. Honors received within the most recently completed fiscal year include:

**Certificate of Achievement for Excellence in Financial Reporting**, awarded by the Government Finance Officers Association (GFOA) of the United States and Canada. Given in recognition of the System's 2015 Comprehensive Annual Financial Report, the award certifies the report was prepared in conformity with the highest standards in government accounting and financial reporting.

**Distinguished Budget Presentation Award** for the fiscal year July 1, 2015 through June 30, 2016, also awarded by GFOA. To be eligible for this recognition, the budget document must meet established criteria as a policy document, operations guide, financial plan and communications device.

**Public Pension Principles Achievement Award**, presented by the Public Pension Coordinating Council. The criterion to qualify for this award includes compliance with specific principles in the areas of benefits, actuarial valuation, financial reporting, investment and disclosure.

### Legislation

Chapter 41 of the Laws of 2016 amends Retirement and Social Security Law Section 1000 by removing existing requirements for military service to be performed during specified periods of war and certain hostilities. Eligible members may claim up to three years of service credit for military duty. A member must be honorably discharged from the military, have at least five years of credited service, be an active NYSTRS member on or after May 31, 2016 (the date the law took effect) and claim any possible military credit before the effective date of retirement in order to be eligible.

### Noteworthy Actions

#### Popular Annual Financial Report

The Popular Annual Financial Report (PAFR), which made its debut earlier this year, summarized finances for the fiscal year ended June 30, 2015. The PAFR uses data from our Comprehensive Annual Financial Report (CAFR), but relies more heavily on graphics and other visuals to tell the System's financial story, making the information more easily understood for those without a background in public finance.

#### Mobile App Upgrade

NYSTRS refreshed its mobile app for smartphones and tablets. Features added include: enhanced menu and navigation functionality; locations and dates for upcoming Pension & Retirement Education Program (PREP) seminars; key service credit milestones for each tier of membership; a video explaining steps to take if you're facing a life-threatening illness or surgery; and, a calendar of benefit payment dates for our retirees.

#### Technology Improvements

NYSTRS upgraded its trading platform and added trade allocation software to improve trade processing across its investment portfolio. We also implemented a two-factor login process for access to NYSTRS' secure member portal (MyNYSTRS), further strengthening the security of member data.

#### Significant Litigation

**New York State Teachers' Retirement System v. General Motors Company, et. al.** — The action commenced May 12, 2014. The final approval hearing for the settlement was on April 20, 2016. The \$300 million settlement is on behalf of a class of investors who purchased GM common stock from Nov. 17, 2010 – July 24, 2014 and concerns GM's alleged failures to disclose facts regarding ignition switch defects.



## Letter of Transmittal (continued)

### Financial Information

Members of the NYSTRS Board, who serve without pay, have a fiduciary responsibility to safeguard the fund used to pay guaranteed retirement and ancillary benefits to the System's members and beneficiaries. The System's long-term pension obligations for this population are well funded. Strict governmental requirements for transparency and public accountability as established by the Governmental Accounting Standards Board (GASB), as well as state and federal laws, are rigorously followed. Consistently favorable audits of System finances from a variety of independent sources affirm this.

The design, implementation and administration of appropriate internal controls protecting the security of assets are the responsibility of System management. 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 the cost of a control should not exceed the benefits likely to be derived, and that the valuation of costs and benefits require estimates and judgments by management. To ensure the validity of these controls, a system of both external and internal checks and balances exists. Financial information and internal controls are subject to audit by the New York State Department of Financial Services and the Retirement System's Internal Audit Department. In addition, KPMG LLP, an independent certified public accountant, whose unmodified opinion appears on page 23 of this report, audits the financial statements. An audit of our actuarial methods, assumptions and valuations was completed in 2015 by Gabriel Roeder Smith & Company, which concluded the actuarial valuation of the System fairly represented the actuarial position and funding requirements of the System. These oversight mechanisms provide scrupulous and transparent adherence to applicable regulations.

Major System expenses result from retirement benefit payments, death benefits and refunds of contributions to certain eligible members and beneficiaries. The increase in retirement benefit payments from 2015 to 2016 is attributable to a net increase of 2,690 retirees and beneficiaries (details are found on page 33 in the *Notes to Financial Statement-Plan Description*). Also see the *Benefits and Return of Contributions by Type* chart on pages 130-131 for more information.

For an overview of NYSTRS' financial activities for the fiscal year ended June 30, 2016, see *Management's Discussion and Analysis* beginning on page 25. This section provides explanations and further details of the information provided in the financial statements, its notes and required supplementary information.

Responsibility for both the accuracy of the data and the completeness and fairness of the presentation, including all disclosures, rests with the management of the System. To the best of our knowledge and belief, the enclosed data is accurate in all material respects and is reported in a manner designed to present fairly the financial position and results of operations of the System.

### Funding

Funds used to pay promised benefits come from employer contributions, member contributions and investment income. Assets are professionally managed and invested on a long-term basis using sound investment policies. See *Statements of Changes in Fiduciary Net Position* on page 32 for more information.

The employer contribution rate (ECR) — expressed as a uniform percentage of member payroll — is set annually at the level necessary to properly fund benefits. The rate is established in accordance with an actuarial valuation of System assets and liabilities. The most recently adopted ECR of 11.72% will apply to 2016-17 school year salaries. The payments associated with this rate will be collected in the fall of 2017. These contributions have been collected without fail throughout the System's history, keeping NYSTRS among the most secure plans in the country.



### Letter of Transmittal (continued)

The System's year-end net position was \$107.5 billion. During the same period, benefits paid to retirees and beneficiaries were approximately \$6.7 billion.

The plan's funded ratio as of June 30, 2015, the date of the most-recent annual actuarial valuation and calculated using the Actuarial Value of Assets, was 94.2%. Details of our funding progress may be obtained by turning to page 109.

### Investments

The System's assets are invested in the most prudent manner possible in order to achieve optimum long-term total returns with an appropriate level of risk. The System is committed to a disciplined, risk-controlled investment approach that focuses on thoughtful and prudent diversification of assets across a broad spectrum of capital market segments. The allocation of assets within the portfolio, as well as the fund's overall structure, are continuously reviewed and adjusted as appropriate to achieve these goals.

The System's total portfolio returned 2.35% net of fees for the fiscal year ended June 30, 2016. The positive return was top quartile among our peer's returns for the same period. Our 30-year rate of return is 8.86%, net of fees.

Refer to pages 71-102 for further information on NYSTRS' investments. A listing of our equity and fixed income holdings can be viewed on our website at NYSTRS.org.

### Acknowledgements

This Comprehensive Annual Financial Report is prepared by NYSTRS' staff and reviewed by external auditors prior to publication. The intent of the publication is to provide complete and reliable information for making management decisions, determining compliance with legal provisions and determining responsible stewardship of System assets.

The full report is available on the System's website at NYSTRS.org. A summary of the report is printed each year in the newsletters NYSTRS distributes to both its active and retired members. Printed copies are available upon request.

For nearly a century, NYSTRS has remained steadfast in its commitment to our primary mission: To provide members with a secure pension. Once again this year, System Board and staff have worked diligently to honor the work of the generations of members and stewards who have guided the System to excellence since its founding in 1921. One of these stewards, R. Michael Kraus, retired from the Board at the end of the fiscal year following more than two decades of service. The stability he brought to the Board during a period of unprecedented worldwide economic turmoil cannot be overlooked. His presence will be missed.

As responsible fiduciaries, we remain committed to our mission for the benefit of our active members, retirees and stakeholders throughout New York.

Respectfully submitted,



Thomas K. Lee  
Executive Director & Chief Investment Officer

## President's Message



Dear NYSTRS Members, Administrators and Teachers:

Time and time again I've seen reactionary investors seek an alternate route during turbulent economic periods and later lament the fact they did not stay the course. Any initial gains are eventually erased as it becomes clear the path taken was not a shortcut to long-term financial security.

Life truly is a marathon, not a race. Investing for retirement should be looked at through the same lens. On average our members work almost 30 years before they start collecting retirement benefits — more than sufficient time to accumulate the funds necessary to pay those benefits. So while our one-year return for the fiscal year ended June 30, 2016 was 2.35%, our long-term rates of return continue to exceed our 7.5% assumed rate. The 30-year rate, for example, is 8.86%, which also exceeds the corresponding benchmark of 8.77%.

At NYSTRS our aim is to generate returns for the next generation, not the next quarter. As the long-term averages indicate, time is on our side.

For the past 24 years I have enjoyed running the retirement marathon with the NYSTRS team, but the time has come to pass the baton. I have been a member of the NYSTRS Retirement Board for more than two decades and I served the last seven of those years as Board president. I have truly enjoyed my time in public service and I say with full confidence that I am leaving the Retirement System in the best of hands.

From my fellow Board members to the dedicated System staff, they truly own the responsibility of caring for the assets used to provide a secure retirement to NYSTRS' nearly half-million members. It has been an honor and pleasure to work with such caring, knowledgeable people who take their duty as fiduciaries to heart. The membership is extremely lucky to have them on their side.

The nearly 10-decade marathon the System has run is far from over. By remaining prudent and patient investors through good times and bad, NYSTRS will continue to provide members with the benefits they earn on time and in full without fail. Focusing on the long term is key in the pursuit of victory known as retirement security.

A handwritten signature in black ink that reads "R. Michael Kraus".

R. Michael Kraus  
Board President

## Summary of Benefits

### Types of Benefits

NYSTRS provides service, vested and disability retirement benefits, as well as death benefits.

### Membership Tiers

System members are organized using a tier structure based on date of membership. There are six tiers, each with different benefit structures and eligibility rules.

Tier 1: Membership prior to 7/1/73	Tier 4: Membership 9/1/83 — 12/31/09
Tier 2: Membership 7/1/73 — 7/26/76	Tier 5: Membership 1/1/10 — 3/31/12
Tier 3: Membership 7/27/76 — 8/31/83	Tier 6: Membership on or after 4/1/12

### Eligibility for Service Retirement

Under Tiers 1-4, members may retire and receive a service retirement benefit at age 55 if credited with five years of New York State service. Retirement for Tier 1 members is also possible with fewer years of service under certain circumstances. Tier 5 and 6 members may retire at age 55 with 10 years of state service credit.

Tier 1 members may retire at any age with 35 years of service.

Tier 3 members are also entitled to the benefits under Tier 4. Because of the improvements in Tier 4, most Tier 3 members retire under the provisions of Tier 4. When the benefits under one tier are obviously better, an eligible member will automatically receive the better benefits.

### Service Retirement Benefit

A Tier 1 member is eligible to retire at age 55 under the Career Plan without a reduction in benefits if credited with at least 20 years of state service. The pension for 20 years of New York State service rendered after July 1, 1959, is 40% of final average salary. With few exceptions, the maximum pension under the Career Plan is 79% of final average salary. This includes the two years of service added under the Benefit Enhancement legislation.

A Tier 2 member may retire at age 55 without a reduction in benefits if credited with at least 30 years of service. The pension for 30 years of service is 60% of final average salary. The maximum pension payable under Tier 2 is also 79% of final average salary, including two years of service added under the Benefit Enhancement legislation.

A Tier 4 member, and a Tier 3 member retiring under Tier 4, may retire at age 55 without a reduction in benefits if credited with at least 30 years of service. The pension for 30 years of service is 60% of final average salary. Each year beyond 30 years increases the pension 1½% of final average salary.

A Tier 5 member may retire at age 57 without a reduction in benefits if credited with at least 30 years of service. A Tier 6 member may retire at age 63 without a reduction in benefits.

### Benefit Enhancement (Article 19)

New York State law enacted in 2000 provides up to two additional years of service credit at retirement for Tier 1 and 2 members who meet the eligibility requirements. It also allows Tier 3 and 4 members to cease making 3% required contributions when they have been a member for 10 years or have 10 years of total service credit, whichever occurs first. Tier 5 and 6 members are not entitled to any Benefit Enhancement.

## Summary of Benefits (continued)

### Pension Formulas

A retirement benefit is determined by the following formula:

$$\text{Pension Factor} \times \text{Age Factor (if applicable)} \times \text{Final Average Salary} = \text{Maximum Annual Pension.}$$

The pension factor under each tier for a service retirement is calculated using the percentages as shown in the chart below.

### PENSION FORMULAS FOR SERVICE RETIREMENT

#### Tier 1

- 2% x years of NYS service since July 1, 1959, including any applicable benefit enhancement credit.
- 1.8% x years of NYS service before July 1, 1959.
- 1% x years of out-of-state service prior to NYSTRS membership (10-year maximum).\*
- 5% reduction in pension for each full year of NYS service under 20 years (prorated for partial years with a maximum reduction of 50%).

#### Tier 2

- Computed under the Tier 1 formula, including applicable benefit enhancement credit and/or the 5% reduction for each year of NYS service under 20 years. (Note: Tier 2 members cannot claim out-of-state service unless it was credited under a previous Tier 1 membership.)
- A prorated reduction of up to 27% when retirement occurs before age 62 with less than 30 years of NYS service.
- No reductions if the member is age 62 with at least 20 years of service, or at age 55 with 30 years or more.

#### Tier 3\*\*

- 1.67% x years of NYS service if credited with less than 20 years, or 2% x years of NYS service if credited with 20 to 30 years.
- 60% maximum for 30 years or more.
- A prorated reduction of up to 30% when retirement occurs before age 62 with less than 30 years of NYS service.
- No reductions if the member is age 62, or if credit totals 30 years or more.
- At age 62 (or at retirement, if older), benefit reduced by 50% of primary Social Security benefit accrued while in NYS public employment.

#### Tier 4

- 1.67% x years of NYS service if credited with less than 20 years, or 2% x years of NYS service if credited with 20 to 30 years.
- 60% plus 1.5% for each year of NYS service beyond 30 years.
- A prorated reduction of up to 27% when retirement occurs before age 62 with less than 30 years of NYS service.
- No reductions if the member is age 62, or if credit totals 30 years or more.

#### Tier 5

- 1.67% x years of NYS service if credited with less than 25 years, or 2% x years of NYS service if credited with 25 to 30 years.
- 60% plus 1.5% for each year of NYS service beyond 30 years.
- A prorated reduction of up to 38% when retirement occurs before age 62 with less than 30 years of service.
- No reduction if the member is age 62, or if credit totals 30 years or more of service and the member is at least age 57.

#### Tier 6

- 1.67% x years of NYS service if credited with less than 20 years, or 1.75% x years of NYS service if credited with 20 years.
- 35% plus 2% per year beyond 20 years of service.
- A prorated reduction of up to 52% when retirement occurs before age 63 regardless of your total service.

\*Any portion of this credit that brings the total service credit beyond 35 years is excluded from the pension calculation. Benefit Enhancement credit is not used to establish the 35-year threshold.

\*\*Tier 3 members are entitled to receive either the benefits under Tier 3 or 4, whichever are greater.

**Summary of Benefits (continued)**

**Final Average Salary**

Final average salary is generally defined as the average of the member’s three highest consecutive school years of regular salary, excluding termination pay, retirement bonuses, pay for unused sick leave or accumulated vacation, and increases in salary which exceed certain limitations. Tier 6 members are restricted to a five-year final average salary using regular salary.

Members who joined the System prior to June 17, 1971 are entitled to a five-year final average salary without the limitations of the three-year final average salary if the five-year final average salary is greater.

**Vested Retirement**

NYSTRS members who cease employment with five or more years of credited service are eligible for a vested retirement. Ten years are required for Tier 5 and 6 members. The vested benefit is payable at age 55 and is calculated using the same factors as a service retirement benefit. However, if vested members choose to withdraw their member contributions or transfer membership to another NYS public retirement system, they will not be eligible for a NYSTRS benefit. Tier 3-6 members with 10 or more years of service can only withdraw under the specific provisions of Chapter 553 of the Laws of 2011.

**Disability Retirement**

Generally, members credited with at least 10 years of New York State service (five years for Tier 3 members) who become disabled as defined by applicable statute are entitled to a disability retirement benefit from the System. In most cases, the minimum disability benefit is one-third of final average salary. For Tier 3-6 members who become disabled as the result of an accident sustained in the performance of their teaching duties, the five-year or 10-year eligibility requirement is waived.

The members of the Medical Board are:

<b>STEVEN D. KRONICK, M.D.</b>	<b>RICHARD T. MacDOWELL, M.D.</b>	<b>LAURA E. PICA, M.D.</b>
Psychiatrist Pine Bush Mental Health, LLP	Attending Surgeon at Albany Medical College	Diplomate of the National Board of Medical Examiners
Psychiatric Consultant Albany County Community Mental Health Center	Member of the American College of Surgeons	Diplomate of the American Board of Internal Medicine
Clinical Assistant Professor of Psychiatry Albany Medical College	Member of the American Board of Surgery	Member of the American College of Physicians
Diplomate of the National Board of Medical Examiners		Member of the American Society of Internal Medicine
Member of the American Board of Psychiatry and Neurology		St. Peter’s Health Partners Medical Association - Primary Care Physician - Internal Medicine
Member of the American Psychiatric Association		

## Summary of Benefits (continued)

### Member Contributions

Tier 3 and 4 members are mandated to contribute 3% of their salary to the Retirement System until they have been a member for 10 years or have 10 years of service credit, whichever occurs first. Tier 5 members are required to contribute 3.5% of their salary throughout their active membership. Tier 6 members are required to contribute at a variable rate based on earnings throughout their active membership. These contributions are not included in the member's gross income for federal income tax purposes until they are distributed or made available to the member, generally at retirement as part of a retirement benefit or upon withdrawal from the System. The member's gross salary is used in all benefit calculations.

Tier 1 and 2 members are not required to contribute to the System. Tier 1 and 2 members who have made contributions to the annuity savings fund (ASF) can withdraw them with interest upon retirement, or receive an annuity throughout retirement in addition to the employer-funded pension described earlier. The annuity is based on total member contributions, life expectancy, date of membership and choice of benefit.

### Transfer and Prior Service

Under certain circumstances, members are eligible to transfer membership to or from another New York State public retirement system, or request reinstatement of a former membership in a NYS public retirement system. Credit for NYS public employment prior to joining NYSTRS and active duty military service are also creditable in certain situations.

### Ordinary Death Benefits

An employer-funded death benefit is paid if a member dies in service and certain eligibility requirements are met. In addition, if a member dies before retirement, any contributions made by the member to the System, plus interest, are paid to the designated beneficiary.

#### **Tier 1 Death Benefit**

The amount of the employer-provided death benefit under Tier 1 is the greater of:

- a. One-twelfth (1/12) of the member's last 12 months of earnings (exclusive of any form of termination pay) for each year of credited New York State service to a maximum of three times such earnings with 36 or more years of New York State service,

OR

- b. The Death Gamble provision. Under the Death Gamble, if a member dies in active service while eligible for retirement without a benefit reduction, the beneficiary is entitled to the pension reserve which would have been used to pay the retirement benefit computed under Section 510 of the Education Law.

#### **Tiers 2-6 Death Benefit**

If a Tier 2, 3 or 4 member who joined prior to January 1, 2001, dies before retirement and a death benefit is payable, NYSTRS will pay to the beneficiary a death benefit calculated under Paragraph 2, unless the member selected Paragraph 1 and that calculation is higher. Tier 4 members joining on or after January 1, 2001, and all Tier 5 and 6 members, are covered only by Paragraph 2.

Paragraph 1 — One-twelfth (1/12) of the member's last 12 months of regular earnings for each year of credited New York State service to a maximum of three times such earnings with 36 or more years of New York State service, or the Death Gamble benefit.

Paragraph 2 — One year's salary after a year of member service, increasing each year to a maximum of three years' salary after three or more years of member service. This benefit declines after age 60 at the rate of 4% per year, but never falls below 60% of the original death benefit otherwise payable.



**Summary of Benefits (continued)**

Tier 2-6 members who teach until retirement will also have a survivor’s death benefit if death occurs after retirement. This is separate from any choice of a Maximum retirement benefit or option.

1st Year	50% of benefit at retirement
2nd Year	25% of benefit at retirement
3rd & Ensuing Years	10% of benefit at age 60, if any, or at retirement if earlier

**Accidental Death Benefit**

An accidental death benefit is payable in the form of a pension to the beneficiaries of Tier 3-6 members who die as the result of an accident sustained in the performance of their teaching duties.

**Vested Member Death Benefit**

A vested member death benefit is payable to the designated beneficiary or the estate of any member who has 10 or more years of credited service and does not meet the in-service eligibility requirement for an ordinary death benefit.

The amount of the benefit is half the amount of the ordinary death benefit which would have been paid if the member’s death had occurred on the last day of creditable service.

**Retirement Options**

At the time of retirement, a member may elect the Maximum retirement benefit with no protection for a beneficiary, or one of many actuarially equivalent options (i.e., lump sum, survivor, guarantee or alternative) providing protection for a beneficiary or beneficiaries.

**Cost-of-Living Adjustment (COLA)**

All eligible current and future retired members will receive an automatic COLA based on 50% of the Consumer Price Index increase from one March to the next. It will be a minimum of 1% and a maximum of 3% of the first \$18,000 of the retiree’s Maximum retirement benefit and is effective each September. Most service retirees must be age 62 and retired five years to be eligible.

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Financial



Page

23 ..... Independent Auditors' Report  
25 ..... Management's Discussion and Analysis

Basic Financial Statements

31 ..... - Statements of Fiduciary Net Position  
32 ..... - Statements of Changes in Fiduciary Net Position  
33 ..... - Notes to Financial Statements

Required Supplementary Information

56 ..... Schedule of Changes in the School Districts' Net Pension Liability (Asset)  
57 ..... Schedule of the School Districts' Net Pension Liability (Asset)  
58 ..... Schedule of the School Districts' Contributions  
60 ..... Notes to Required Supplementary Information  
62 ..... Schedule of Investment Returns  
63 ..... Schedule of NYSTRS' Proportionate Share of the Net Pension Liability (ERS)  
64 ..... Schedule of NYSTRS' Contributions to ERS  
66 ..... Other Post-Employment Benefit Schedule of Funding Progress

Other Supplemental Schedules

67 ..... Schedules of Administrative Expenses  
68 ..... Schedule of Investment Expenses

## Independent Auditors' Report



**KPMG LLP**  
515 Broadway  
Albany, NY 12207-2974

The Retirement Board  
New York State Teachers' Retirement System:

We have audited the accompanying financial statements of the New York State Teachers' Retirement System (the System), as of and for the years ended June 30, 2016 and 2015, and the related notes to the financial statements, which collectively comprise the System's basic financial statements as listed in the table of contents.

### Management's Responsibility for the Financial Statements

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

### Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the New York State Teachers' Retirement System as of June 30, 2016 and 2015, and the changes in its fiduciary net position for the years then ended, in accordance with U.S. generally accepted accounting principles.

## Independent Auditors' Report (continued)

**Emphasis of Matter***Adoption of New Accounting Pronouncement*

As discussed in note 2(f) to the basic financial statements, in 2016, the System adopted Governmental Accounting Standards Board Statement No. 72, *Fair Value Measurement and Application*. Our opinion is not modified with respect to this matter.

**Other Matters***Required Supplementary Information*

U.S. generally accepted accounting principles require that the management's discussion and analysis and the schedules and related notes included under Required Supplementary Information in the accompanying table of contents be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

*Other Supplementary Information*

Our audits were conducted for the purpose of forming an opinion on the basic financial statements of the System. The accompanying Schedules of Administrative Expenses and Schedule of Investment Expenses as listed in the accompanying table of contents, and the Introduction, Investments, Actuarial, and Statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The Schedule of Administrative Expenses and Schedule of Investment Expenses are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. This information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Schedule of Administrative Expenses and Schedule of Investment Expenses are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The Introduction, Investments, Actuarial, and Statistical sections of this report have not been subjected to the auditing procedures applied in the audits of the basic financial statements and, accordingly, we express no opinion on them.



## Management's Discussion and Analysis

### June 30, 2016 and 2015

(Unaudited)

The following discussion and analysis of the financial performance of the New York State Teachers' Retirement System (NYSTRS or the System) provides an overview of its activities for the years ended June 30, 2016, 2015, and 2014. Its purpose is to provide explanations and insights into the information presented in the financial statements, notes to the financial statements, and required supplementary information.

### Financial Highlights

- The System's investments experienced appreciation of \$258 million in 2016, and \$3.3 billion and \$14.6 billion in 2015 and 2014, respectively.
- The net position of the System represents funds available to pay current and future benefits. Net position was \$107.5 billion at June 30, 2016, and \$109.7 billion and \$108.2 billion at June 30, 2015 and 2014, respectively.
- The 2016 net position decreased from 2015 by \$2.2 billion, or 2.0%, and 2015 net position increased from 2014 by \$1.6 billion, or 1.5%.
- Contributions from employers were \$2.0 billion in 2016, \$2.6 billion in 2015, and \$2.4 billion in 2014, consistent with the change in the employer contribution rate.
- The size of the System's active membership has declined over the past three years. However, the number of retired members and beneficiaries receiving benefits has increased, leading to an increase in the retirement benefits paid, rising from \$6.3 billion in 2014 to \$6.5 billion in 2015 and \$6.7 billion in 2016.
- The System's funded ratio, a comparison of the actuarial value of assets to the accrued pension benefit liability, was 94.2% as of the June 30, 2015 valuation. Valuations in 2014 and 2013 resulted in the System's funded ratio of 92.9% and 87.5%, respectively.

### Overview of Financial Statements

The following discussion and analysis is intended to assist the reader in better understanding the purpose and meaning of each of the key components of NYSTRS' basic financial statements, which comprise the following:

1. The Statements of Fiduciary Net Position present NYSTRS' assets and deferred outflows of resources and liabilities and deferred inflows of resources by major categories and may serve over time as a useful indicator of the System's financial position. The difference between assets and deferred outflows of resources and liabilities and deferred inflows of resources represents the net position restricted for pensions. The statements also compare assets and deferred outflows of resources and liabilities and deferred inflows of resources by class to the previous year, which offers the reader the opportunity to note changes in each class from year to year.
2. The Statements of Changes in Fiduciary Net Position provide information on the change in the System's net position during the current year. The majority of additions are normally derived from net investment income; primarily in the form of changes in the fair value of assets from the prior year. Deductions include retirement benefit payments, beneficiary payments, return of contributions, and administrative expenses. For comparison purposes, information pertaining to the previous year's Statement of Changes in Fiduciary Net Position is also provided.
3. The Notes to the Financial Statements are an essential part of the basic financial statements. They provide important background and detailed information about NYSTRS, the plan and the basic financial statements themselves.
4. The Required Supplementary Information (RSI) consists of information pertaining to NYSTRS' actuarial methods and assumptions and provides data on changes in the school districts' net pension liability, the school districts' net pension liability, the school districts' contributions, and NYSTRS' investment returns as well as data on the System's proportionate share of the net pension liability of the New York State and Local Employees' Retirement System (ERS), contributions to ERS and other postemployment benefits. Other supplemental information is also presented and includes the schedules of administrative expenses and investment expenses.

**Management's Discussion and Analysis** (continued)  
**June 30, 2016 and 2015**  
(Unaudited)

## Financial Analysis

Tables 1 and 2 summarize and compare the System's financial results for the years 2016, 2015, and 2014. It is important to note that the change from year to year in a particular investment category is attributable not only to the change in fair value but also to purchases and sales or maturities of that investment.

**Table 1 - Summary of Fiduciary Net Position**  
(dollars in thousands)

	June 30			Amount increase (decrease) 2015 to 2016	Percentage change of total 2015 to 2016
	2016	2015	2014		
Investments at fair value:					
Short-term	\$ 2,312,038	\$ 2,553,630	\$ 2,151,360	\$ (241,592)	(0.22)%
Domestic fixed income securities	18,145,635	17,897,983	16,247,824	247,652	0.23
Global fixed income securities	1,947,256	1,565,394	1,030,747	381,862	0.35
Domestic equities	42,772,784	43,193,027	43,694,509	(420,243)	(0.38)
International equities	18,129,116	19,995,307	21,581,642	(1,866,191)	(1.70)
Mortgages	3,786,206	3,776,802	3,467,991	9,404	0.01
Real estate	8,379,100	8,231,139	7,579,193	147,961	0.13
Alternative investments	9,671,168	9,528,078	9,641,818	143,090	0.13
Total investments	105,143,303	106,741,360	105,395,084	(1,598,057)	(1.45)
Net other assets, liabilities, and deferrals	2,362,839	2,977,557	2,759,999	(614,718)	(0.56)
<b>Net position restricted for pensions</b>	<b>\$107,506,142</b>	<b>\$109,718,917</b>	<b>\$108,155,083</b>	<b>\$(2,212,775)</b>	<b>(2.01)%</b>

**Table 2 - Summary of Changes in Fiduciary Net Position**  
(dollars in thousands)

	Years ended June 30			Amount increase (decrease) 2015 to 2016	Percentage change of total 2015 to 2016
	2016	2015	2014		
Net appreciation in fair value of investments	\$ 258,356	\$3,294,147	\$ 14,601,733	\$ (3,035,791)	(193.55)%
Other investment income	2,133,998	2,106,118	2,062,970	27,880	1.78
Contributions	2,175,163	2,756,306	2,522,513	(581,143)	(37.05)
Retirement benefits	(6,701,637)	(6,513,931)	(6,324,546)	(187,706)	(11.97)
Other deductions	(78,655)	(74,157)	(74,608)	(4,498)	(0.29)
<b>Net increase (decrease)</b>	<b>\$(2,212,775)</b>	<b>\$1,568,483</b>	<b>\$12,788,062</b>	<b>\$(3,781,258)</b>	<b>(241.08)%</b>

**Management's Discussion and Analysis** (continued)  
**June 30, 2016 and 2015**  
(Unaudited)

## Fiscal Year 2016

At the end of the 2016 fiscal year, the internally managed domestic fixed income portfolio market value was relatively unchanged when compared to 2015, as portfolio appreciation plus investments into the fixed income asset class were offset by maturities, sales and principal payments. The June 30, 2016 balance was approximately 15.8% of invested System assets, slightly higher than the 15.5% allocation at the end of the prior fiscal year and still within the allowable range of 13.0% to 22.0%. During the year, bond purchases of approximately \$2.2 billion were exceeded by the sum of bond maturities, sales, tenders, calls, and agency mortgage principal prepayments, by approximately \$280 million.

The yield curve bull flattened during the fiscal year; as the decline in rates at the long end of the curve was greater than that at the front of the curve, with the magnitude of the interest rate moves increasing as the maturity point on the curve increased. For instance at the 2-year point on the curve, yields declined by approximately 6 basis points year-over-year whereas the 30-year point on the curve declined by 84 basis points. The lower interest rates produced asset capital appreciation and when adding the interest income of the portfolio, resulted in a positive return for the fiscal year. The weighted average coupon of the domestic fixed income portfolio was relatively unchanged during the fiscal year increasing by only a handful of basis points as the maturity of older high coupon bonds were offset by maturities of lower coupon bonds that had shorter original tenors. The face amount of bonds held decreased year-over-year, however, the average portfolio balance during the 2016 fiscal year was higher than 2015, generating a small increase in interest income.

Exposure to global bonds continued to increase during the 2016 fiscal year due to price appreciation of portfolio assets, reinvestment of coupon and additional investments into the asset class in the early part of the fiscal year, resulting in a fiscal year-end total of \$1.95 billion invested in the two separately managed accounts. The global bond balance was approximately 1.9% of invested System assets at June 30, 2016, within the allowable range of 0% to 3.0%.

In domestic equities, net appreciation of \$558.3 million for the fiscal year was the result of positive market returns in both equities and domestic REITs within the equities portfolio, of 3.0% and 19.4%, respectively. The positive returns in domestic equities were offset by sales of approximately \$900.0 million and dividends of \$780.0 million, swept from the portfolio, contributing to a decrease in net position since the prior year for domestic equities of \$495.2 million. In domestic REITs, market gains along with reinvested dividend income of approximately \$85.1 million, offset by a withdrawal of \$250.0 million, contributed to an overall increase in net position for the domestic REIT portfolios of \$75.0 million. The combined year-over-year change in net position at June 30, 2016 was a decrease of \$420.2 million. The balance was approximately 38.8% of invested System assets at June 30, 2016, remaining within the allowable range of 32.0% to 42.0%.

International equities' net depreciation of \$2.2 billion was the result of poor market returns in 2016. Returns for international equities and international REITs were (9.6)% and (0.4)% , respectively. Returns in 2015 were (5.3)% for international equities and (2.2)% for international REITs, resulting in a continued decrease in combined market values since 2014. The balance was approximately 16.8% of invested System assets at June 30, 2016, remaining within the allowable range of 14.0% to 22.0%.

Real estate investments consist of a globally diversified portfolio of public and private commercial real estate assets. Net new investments, coupled with positive investment returns, resulted in net appreciation of \$307 million for the equity real estate portfolio and \$538 million for the debt real estate portfolio. The balance of equity real estate was approximately 11.1% of invested System assets at June 30, 2016, remaining in the allowable range of 6.0% to 14.0%. The debt real estate investments were approximately 5.8% of invested System assets at June 30, 2016, remaining in the allowable range of 5.0% to 11.0%. The debt real estate investments remain on the low end of the allowable range due to historically low yields available in the market. Commercial real estate values, as measured by the National Council of Real Estate Investment Fiduciaries (NCREIF), were positive during the year, but slowed from 1.9% in the first quarter of the fiscal year to 0.8% in the fourth quarter. Total unlevered appreciation for the fiscal year was 5.6%, down from 7.5% in the prior year.

In 2016, net appreciation in the private equity portfolio continued to remain positive as distributions from existing investments increased from the prior year. The System made \$1.2 billion in capital contributions to new and existing private equity funds and took \$2.1 billion in distributions from existing private equity investments. The balance was approximately 7.6% of invested System assets at June 30, 2016, within the allowable range of 4.0% to 12.0%. Nineteen new private equity commitments were made during the year.

Within the securities lending market, unconventional monetary policy initiatives implemented by global central banks continued during the 2016 fiscal year. Generally, rates remained suppressed in the U.S. despite one increase in the Fed Funds target in December 2015, as further improvement in unemployment data was balanced by inflation readings that had not reached the Federal Reserve's unofficial 2.0% target. Reinvestment opportunities during the fiscal year were limited in the beginning as money markets remained flooded with cash and issuers

**Management's Discussion and Analysis** (continued)  
**June 30, 2016 and 2015**  
(Unaudited)

termed out funding needs to take advantage of low rates and work towards achieving their regulatory financial targets. However, with the Fed rate hike in the middle of the fiscal year, plus pressure due to looming money market reform, as the end of the fiscal year approached, interest rates began to rise. This rise in interest rates helped to increase gross earnings from the prior fiscal year due to greater collateral reinvestment returns. Nevertheless, slightly lower demand for domestic equity securities and a smaller realized gain on cash collateral investments against the gain realized in 2015 caused marginally lower net earnings year-over-year. Lastly, the unrealized gain on cash collateral investments declined, due to the lower quoted price on a legacy asset and principal payments on securities with discount dollar prices continuing to pay off at par.

Investment expenses are primarily comprised of investment management fees that are based on the market value of assets managed and in some cases the returns achieved. The investment expense increase in 2016 from 2015 is primarily the result of activity within the System's alternative investments.

The change in employer contributions was a function of a decrease in the employer contribution rate from 17.53% in 2015 to 13.26% in 2016.

### **Fiscal Year 2015**

In 2015, as a result of asset allocation rebalancing, the internally managed domestic fixed income portfolio balance increased due to investments into the fixed income asset class. The June 30, 2015 balance was approximately 15.5% of invested System assets, higher than the 14.2% allocation at the end of the prior fiscal year and still within the allowable range of 13.0% to 22.0%. During the year, bond purchases of approximately \$3.6 billion exceeded the sum of bond maturities, sales, tenders, calls, and agency mortgage principal prepayments, by approximately \$1.6 billion.

The yield curve flattened during the fiscal year, as interest rates increased somewhat in the front part of the yield curve and declined slightly further out the curve in securities with maturities beyond 7 years. However, the magnitude of the interest rate moves was small; resulting in little capital depreciation to the long term bond portfolio and an overall positive return for the fiscal year primarily due to the interest income of the portfolio. The weighted average coupon of the domestic fixed income portfolio declined as higher coupon bonds matured while reinvestment of these maturities continued into lower coupon securities throughout the period. Due to the increase in the face value of bonds held there was a slight increase in interest income during 2015 despite the lower weighted average coupon of the domestic fixed income portfolio.

Exposure to global bonds continued to increase during the 2015 fiscal year due to additional investments into the asset class along with reinvestment of coupon resulting in a fiscal year-end total of \$1.6 billion invested in the two separately managed accounts. The global bond balance was approximately 1.5% of invested System assets at June 30, 2015, within the allowable range of 0% to 3.0%.

In domestic equities, net appreciation of \$2.3 billion for the fiscal year was the result of positive market returns in both equities and domestic REITs within the equities portfolio, of 7.3% and 6.9%, respectively. The positive returns in domestic equities were offset by sales of approximately \$2.3 billion, contributing to a decrease in net position for domestic equities of \$134.8 million. Domestic REIT activity included dividend income of approximately \$83.6 million which was reinvested within the portfolio, offset by sales of approximately \$560.0 million, resulting in an overall decrease in net position for domestic REITs of \$366.7 million. Returns in 2014 were 25.0% for domestic equities and 13.9% for domestic REITs, resulting in a decrease in net appreciation from the prior year of \$6.1 billion. The balance was approximately 38.7% of invested System assets at June 30, 2015, remaining within the allowable range of 32.0% to 42.0%.

International equities' net depreciation of \$1.3 billion was the result of withdrawals of \$550 million, combined with negative returns in international equities and international REITs of (5.3)% and (2.2)%, respectively. Returns in 2014 were 22.0% for international equities and 12.9% for international REITs, resulting in a decrease in net appreciation from the prior year, of \$4.8 billion. The balance was approximately 18.4% of invested System assets at June 30, 2015, remaining within the allowable range of 14.0% to 22.0%.

Real estate investments consist of a globally diversified portfolio of public and private commercial real estate assets. Net new investments coupled with positive investment returns, resulted in net appreciation of \$276 million for the equity real estate portfolio and \$379 million for the debt real estate portfolio. The balance of equity real estate was approximately 10.6% of invested System assets at June 30, 2015, remaining in the allowable range of 6.0% to 14.0%. The debt real estate investments were approximately 5.2% of invested System assets at June 30, 2015, remaining in the allowable range of 5.0% to 11.0%. The debt real estate investments remain on the low end of the allowable range due to historically low yields available in the market. Commercial real estate values, as measured by the National Council of Real Estate Investment Fiduciaries (NCREIF), continued to grow at a moderate pace of 1.3% to 2.3% per quarter for a total increase of 7.5% for the year.

**Management's Discussion and Analysis** (continued)  
**June 30, 2016 and 2015**  
(Unaudited)

In 2015, net appreciation in the private equity portfolio continued to remain positive as distributions from existing investments increased from the prior year. The System made \$1.0 billion in capital contributions to new and existing private equity funds and took \$2.3 billion in distributions from existing private equity investments. The balance was approximately 7.7% of invested System assets at June 30, 2015, within the allowable range of 4.0% to 12.0%. Fifteen new private equity commitments were made during the year.

Within the securities lending market, unconventional monetary policy initiatives implemented by global central banks continued during the 2015 fiscal year. Rates remained suppressed in the U.S. despite further improved unemployment figures which were equalized by inflation readings that had not reached the Federal Reserve's unofficial 2.0% inflation target. Attractive reinvestment opportunities during the fiscal year were limited as money markets continued to be flooded with cash and issuers termed out funding needs to take advantage of low rates as well as work towards meeting various regulatory targets. At the end of the fiscal year, however, interest rates were starting to reflect a small probability that the Federal Reserve might increase the Fed Funds rate in the 2015 calendar year. Gross earnings increased from the prior fiscal year even as front end yields continue to be at historic lows, driven by increased demand for equity securities reflecting an attractive risk-return trade-off. For this reason, as well as a realized gain on cash collateral investments, net earnings were higher than the prior fiscal year. Lastly, the unrealized loss on cash collateral investments reversed itself and became a gain, due to a change in amortization methodology and receipt of principal payments at par.

Investment expenses are primarily comprised of investment management fees that are based on the market value of assets managed and in some cases the returns achieved. The investment expense decrease in 2015 from 2014 is primarily the result of activity within the System's alternative investments.

The change in employer contributions was a function of an increase in the employer contribution rate from 16.25% in 2014 to 17.53% in 2015.

### Net Appreciation (Depreciation)

For the year ended June 30, 2016, NYSTRS reported net investment income of \$2.4 billion compared to \$5.4 billion in 2015 and \$16.7 billion in 2014. The most significant change was in appreciation (depreciation) on investments as follows:

**Table 3 - Net Appreciation (Depreciation) on Investments**  
(dollars in thousands)

	Years ended June 30			Amount
	2016	2015	2014	increase (decrease) 2015 to 2016
Short-term	\$ 6,186	\$ 1,931	\$ (66)	\$ 4,255
Domestic fixed income securities	294,280	(126,395)	21,152	420,675
Global fixed income securities	81,172	(3,422)	17,941	84,594
Domestic equities	558,265	2,263,543	8,344,471	(1,705,278)
International equities	(2,180,990)	(1,308,567)	3,487,949	(872,423)
Mortgages	112,055	(45,092)	32,325	157,147
Real estate	505,720	1,148,192	803,186	(642,472)
Alternative investments	881,668	1,363,957	1,894,775	(482,289)
<b>Totals</b>	<b>\$258,356</b>	<b>\$3,294,147</b>	<b>\$14,601,733</b>	<b>\$(3,035,791)</b>

**Management's Discussion and Analysis** (continued)  
**June 30, 2016 and 2015**  
(Unaudited)

## **Economic Factors**

The economic factor that is of primary significance to NYSTRS is the investment rate of return earned in the capital markets. Legislative, demographic, and actuarial assumption changes can also have a significant impact on the funded status of the plan. All of these factors are incorporated into the annual actuarial valuation, which determines the rate at which participating employers must contribute in order to appropriately fund member benefits. In terms of demographics, the System will likely continue to experience a shift toward a greater proportion of retirees relative to active members. This year, the System experienced a very slight overall appreciation in investments. Investment returns are smoothed (averaged) by NYSTRS over a five year period for purposes of computing the actuarial value of assets used to determine the employer contribution rate. Stronger investment returns since the 2008-09 financial crisis led to a decrease in the employer contribution rate, from 17.53% on 2014-15 member salaries to 13.26% on 2015-16 member salaries.

## **Requests for Information**

This financial report is designed to provide active members, retirees, employers and anyone else who is interested, with a general overview of the financial activities of NYSTRS. Questions about this report or requests for additional financial information should be addressed to the Public Information Office, New York State Teachers' Retirement System, 10 Corporate Woods Drive, Albany, NY 12211 or by email at [communit@nystrs.org](mailto:communit@nystrs.org).



**Statements of Fiduciary Net Position**  
**June 30, 2016 and 2015**  
(dollars in thousands)

Assets:	2016	2015
Investments — at fair value (note 4, 5 and 6):		
Short-term	<b>\$ 2,312,038</b>	\$ 2,553,630
Domestic fixed income securities	<b>18,145,635</b>	17,897,983
Global fixed income securities	<b>1,947,256</b>	1,565,394
Domestic equities	<b>42,772,784</b>	43,193,027
International equities	<b>18,129,116</b>	19,995,307
Mortgages	<b>3,786,206</b>	3,776,802
Real estate	<b>8,379,100</b>	8,231,139
Alternative investments	<b>9,671,168</b>	9,528,078
Total investments	<b>105,143,303</b>	106,741,360
Receivables:		
Employer	<b>2,049,687</b>	2,615,155
Employer incentives	<b>453</b>	10,415
Member contributions	<b>98,190</b>	96,033
Investment income	<b>7,462</b>	52,950
Investment sales	<b>6,180</b>	262,355
Total receivables	<b>2,161,972</b>	3,036,908
Other assets:		
Securities lending collateral — invested (note 5)	<b>1,892,369</b>	1,813,522
Member loans	<b>239,645</b>	229,810
Capital assets, net of depreciation	<b>26,158</b>	27,722
Miscellaneous assets	<b>51,929</b>	64,523
Total other assets	<b>2,210,101</b>	2,135,577
Total assets	<b>109,515,376</b>	111,913,845
Deferred outflows of resources:		
Changes in net pension liability (note 10)	<b>15,834</b>	793
Liabilities:		
Securities lending collateral — due to borrowers (note 5)	<b>1,890,030</b>	1,810,136
Investment purchases payable	<b>—</b>	263,888
Mortgage escrows and deposits — net of investments	<b>278</b>	413
Other liabilities (notes 5, 9 and 10)	<b>132,675</b>	121,284
Total liabilities	<b>2,022,983</b>	2,195,721
Deferred inflows of resources:		
Changes in net pension liability (note 10)	<b>2,085</b>	—
Net position restricted for pensions (note 3)	<b>\$107,506,142</b>	\$109,718,917

See accompanying notes to financial statements.

## Statements of Changes in Fiduciary Net Position Years Ended June 30, 2016 and 2015 (dollars in thousands)

Additions:	2016	2015
Investment income:		
Net appreciation in fair value of investments	\$ 258,356	\$ 3,294,147
Interest income	711,388	688,937
Dividend income	1,286,827	1,259,370
Real estate — net operating income	362,798	350,388
Securities lending — gross earnings	10,814	6,003
Other — net	(3,018)	13,896
	<b>2,627,165</b>	5,612,741
Less:		
Investment expenses	239,412	228,351
Securities lending:		
Broker rebates	(7,486)	(13,154)
Management fees	1,838	1,869
Depreciation (appreciation) of collateral	1,047	(4,590)
Net investment income	<b>2,392,354</b>	5,400,265
Contributions:		
Employer (note 1)	2,046,562	2,633,682
Member contributions	124,587	119,411
Transfers	4,014	3,213
Total contributions	<b>2,175,163</b>	2,756,306
Net additions	<b>4,567,517</b>	8,156,571
Deductions:		
Retirement benefit payments — periodic	6,644,785	6,461,313
Beneficiary payments	56,852	52,618
Return of contributions	18,229	17,209
Administrative expenses	60,426	56,948
Total deductions	<b>6,780,292</b>	6,588,088
Net increase (decrease) in net position	<b>(2,212,775)</b>	1,568,483
Net position restricted for pensions:		
Beginning of year	<b>109,718,917</b>	108,150,434
End of year	<b>\$107,506,142</b>	\$109,718,917

See accompanying notes to financial statements.

**Notes to Financial Statements**  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(1) Plan Description**

The New York State Teachers' Retirement System (NYSTRS or the System) was created and exists, pursuant to Article 11 of the New York State Education Law. The System is the administrator of a cost sharing, multiple employer public employee retirement system (PERS), administered by a 10-member Board to provide pension benefits for teachers employed by participating employers in the State of New York, excluding New York City. The System's Board is composed of:

- Three teacher members elected from the active membership.
- One retired member elected by a mail vote of all retired members.
- Two school administrators appointed by the Commissioner of Education.
- Two present or former school board members, experienced in the fields of finance and investment, elected by the Board of Regents. At least one of these individuals must have experience as an executive of an insurance company.
- One present or former bank executive elected by the Board of Regents.
- The State Comptroller or his/her designee.

As of June 30, the number of participating employers was:

	2016	2015
Public school districts	680	680
B.O.C.E.S.	37	37
S.U.N.Y.	31	31
Community colleges	30	30
Charter schools	24	25
Special act districts	10	10
Other	9	9
Total	<u>821</u>	<u>822</u>

As of June 30, the System's membership consisted of:

	2016	2015
Retired members and beneficiaries currently receiving benefits	161,148	158,458
Members:		
Active members	257,792	259,495
Terminated members entitled to but not yet receiving benefits	8,558	8,220
Subtotal	<u>266,350</u>	<u>267,715</u>
Total	<u>427,498</u>	<u>426,173</u>

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(a) Benefits**

The benefits provided to members of the System are established by New York State law and may be amended only by the Legislature with the Governor's approval. Benefit provisions vary depending on date of membership and are subdivided into the following six classes:

**Tier 1**

Members who last joined prior to July 1, 1973 are covered by the provisions of Article 11 of the Education Law.

**Tier 2**

Members who last joined on or after July 1, 1973 and prior to July 27, 1976 are covered by the provisions of Article 11 of the Education Law and Article 11 of the Retirement and Social Security Law (RSSL).

**Tier 3**

Members who last joined on or after July 27, 1976 and prior to September 1, 1983 are covered by the provisions of Article 14 and Article 15 of the RSSL.

**Tier 4**

Members who last joined on or after September 1, 1983 and prior to January 1, 2010 are covered by the provisions of Article 15 of the RSSL.

**Tier 5**

Members who joined on or after January 1, 2010 and prior to April 1, 2012 are covered by the provisions of Article 15 of the RSSL.

**Tier 6**

Members who joined on or after April 1, 2012 are covered by the provisions of Article 15 of the RSSL.

**(b) Service Retirements**

Tier 1 members are eligible, beginning at age 55, for a service retirement allowance of approximately 2% per year of credited service times final average salary.

Under Article 19 of the RSSL, eligible Tiers 1 and 2 members can receive additional service credit of one-twelfth of a year for each year of retirement credit as of the date of retirement or death up to a maximum of two additional years.

Tiers 2 through 5 are eligible for the same but with the following limitations: (1) Tiers 2 through 4 members receive an unreduced benefit for retirement at age 62 or retirement at ages 55 through 61 with 30 years of service or a reduced benefit for retirement at ages 55 through 61 with less than 30 years of service. (2) Tier 5 members receive an unreduced benefit for retirement at age 62 or retirement at ages 57 through 61 with 30 years of service. They receive a reduced benefit for retirement at ages 55 and 56 regardless of service credit, or ages 57 through 61 with less than 30 years of service.

Tier 6 members are eligible for a service retirement allowance of 1.75% per year of credited service for the first 20 years of service plus 2% per year for years of service in excess of 20 years times final average salary. Tier 6 members receive an unreduced benefit for retirement at age 63. They receive a reduced benefit at ages 55-62 regardless of service credit.

**(c) Vested Benefits**

Retirement benefits vest after 5 years of credited service except for Tiers 5 and 6 where 10 years of credited service are required. Benefits are payable at age 55 or greater with the limitations noted for service retirements above.

**(d) Disability Retirement**

Members are eligible for disability retirement benefits after 10 years of credited New York State service except for Tier 3 where disability retirement is permissible after 5 years of credited New York State service pursuant to the provisions of Article 14 of the RSSL. The Tier 3 benefit is integrated with Social Security.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(e) Death Benefits**

Death benefits are paid to the beneficiary of active members who die in service. The benefit is based on final salary and the number of years of credited service.

**(f) Prior Service**

After 2 years of membership, members of all tiers may claim and receive credit for prior New York State public or teaching service. Only Tiers 1 and 2 members may, under certain conditions, claim out-of-state service.

**(g) Tier Reinstatement**

In accordance with Chapter 640 of the Laws of 1998, any active member who had a prior membership may elect to be reinstated to their original date and Tier of membership.

**(h) Employer Contributions**

Pursuant to Article 11 of the New York State Education Law, employers are required to contribute at an actuarially determined rate adopted annually by the Retirement Board. The actuarially determined employer contribution rate applied to 2015-16 and 2014-15 member salaries is 13.26% and 17.53%, respectively. A reconciliation of total required employer contributions presented in the Schedule of the School Districts' Contributions and additions from employer contributions per the System's Statements of Changes in Fiduciary Net Position for fiscal years 2016 and 2015 is as follows:

	June 30	
	2016	2015
Total required employer contributions	\$2,046,152	\$2,633,244
Miscellaneous billing adjustments	410	438
Additions from employer contributions	\$2,046,562	\$2,633,682

In April 2013, the System's Retirement Board adopted a Stable Contribution Option (SCO) provided for under Chapter 57 of the Laws of 2013. Under the law, BOCES and public school districts participating in NYSTRS are offered the choice of either paying the actuarially determined contribution (ADC) or electing to participate in the SCO program, thereby paying a stable contribution rate for up to seven years beginning with the rate applied to the 2013-14 salaries and concluding with the rate applied to the 2019-20 salaries; deferring payment of the difference between the ADC and the contribution determined applying the SCO rate. Interest on deferred contribution amounts will be based on the monthly average yield on 10-year U.S. Treasury securities for the twelve-month period that proceeds August 1 of the applicable deferred year, plus 1%. Payments on 2016 deferred contributions and accumulated interest will be made over a five year period beginning in the fall of 2020. Should the System's funded status fall below 80%, the SCO will terminate and all participating employers will be required to resume payment of the ADC in addition to any outstanding deferred contributions, plus interest, over a period not to exceed five years. The SCO receivable balances at June 30, 2016 and 2015 were \$33,636, and \$40,493, respectively.

**(i) Member Contributions**

Tier 3 and Tier 4 members are required by law to contribute 3% of salary to the System. Effective October 2000, contributions were eliminated for Tiers 3 and 4 members with 10 or more years of service or membership. Effective January 1, 2010, Tier 5 members are required by law to contribute 3.5% of salary throughout their active membership. Effective April 1, 2012, Tier 6 members are required by law to contribute between 3% and 6% of salary throughout their active membership in accordance with a schedule based upon salary earned. Pursuant to Article 14 and Article 15 of the RSSL, those member contributions are used to help fund the benefits provided by the System. However, if a member dies or leaves covered employment with less than 5 years of credited service for Tiers 3 and 4, or 10 years of credited service for Tiers 5 and 6, the member contributions with interest calculated at 5% per annum are refunded to the employee or designated beneficiary. Eligible Tier 1 and Tier 2 members may make member contributions under certain conditions pursuant to the provisions of Article 11 of the Education Law and Article 11 of the RSSL. Upon termination of membership, such accumulated member contributions are refunded. At retirement, such accumulated member contributions can be withdrawn or are paid as a life annuity.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
 (dollars in thousands)

**(j) Permanent Cost-of-Living Adjustment (COLA)**

Section 532-a of the Education Law provides a permanent cost-of-living benefit to both current and future retired members. This benefit will be paid commencing September of each year to retired members who have attained age 62 and have been retired for 5 years or attained age 55 and have been retired for 10 years. Disability retirees must have been retired for 5 years, regardless of age, to be eligible. The annual COLA percentage is equal to 50% of the increase in the consumer price index, not to exceed 3% nor be lower than 1%. It is applied to the first eighteen thousand dollars of annual benefit. The applicable percentage payable beginning September 2016 is 1.0%, remaining unchanged from the 1.0% paid beginning September 2015.

Members who retired prior to July 1, 1970 are eligible for a minimum benefit of seventeen thousand five hundred dollars for 35 years of credited full-time New York State service. Certain members who retire pursuant to the provisions of Article 14 of the RSSL are eligible for automatic cost-of-living supplementation based on the increase in the consumer price index with a maximum per annum increase of 3%.

## (2) Summary of Significant Accounting Policies

**(a) Basis of Accounting**

The System's financial statements are prepared using the accrual basis of accounting. Plan member contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when due and the employer has a legal requirement to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. Investment purchases and sales are recorded on a trade-date basis.

**(b) Investments**

Plan investments are reported at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Refer to Note 6 for more detail regarding the methods used to measure the fair value of investments.

**(c) Capital Assets**

Capital assets of twenty-five thousand dollars or more are recorded at historical cost and capitalized over their useful life. Depreciation has been provided over the estimated useful lives using the straight line method. The estimated useful lives are as follows:

	Years
Building	50
Building improvements	Various
Roads and shrubbery	15
Office furniture and equipment	5 - 7
Computer equipment and software	3 - 5
Automobiles	5

**(d) Federal Tax Status**

The System is exempt from federal income taxes under section 501(a) of the IRC.

**(e) Use of Estimates**

Management of the System has made a number of estimates and assumptions relating to the reporting of assets and liabilities and in the disclosure of contingencies to prepare these financial statements in conformity with U.S. generally accepted accounting principles. The System's most significant estimates relate to assumptions made about future events as part of the annual actuarial valuation process, and the valuation of alternative investments. Due to the inherent nature of these estimates, actual results could differ from those estimates.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(f) Adoption of Accounting Pronouncements**

In 2016, the System adopted Governmental Accounting Standards Board (GASB) Statement No. 72 *Fair Value Measurement and Application* (GASB 72), GASB Statement No. 73, *Accounting and Financial Reporting for Pensions and Related Assets That Are Not Within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68* (GASB 73) and GASB Statement No. 82, *Pension Issues: An Amendment of GASB Statements No. 67, No. 68, and No. 73* (GASB 82).

GASB 72 addresses accounting and financial reporting issues related to fair value measurements of assets and liabilities. The statement also provides guidance for applying fair value to certain investments and disclosures related to all fair value measurements. The adoption of GASB 72 resulted in increased disclosures related to the fair value measurement of investments.

GASB 73 as it applies to the System includes clarification of information that is required to be presented as notes to the required supplementary information. The adoption of GASB 73 resulted in no significant changes to information reported in the System's financial statements.

GASB 82 addresses the presentation of payroll-related measures in RSI, 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 (plan member) contribution requirements. The adoption of this statement resulted in a change in classification of member contributions and changes in amounts reported for covered payroll in the RSI schedules to include only payrolls on which contributions to a pension plan are based.

**(g) Accounting Pronouncements Applicable to the System, Issued but Not Yet Effective**

In June 2015, GASB issued Statement No 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions* (GASB 75). The statement addresses accounting and financial reporting for other postemployment benefits (OPEB) that are provided to the employees of state and local governmental employers. GASB 75 establishes standards for recognizing and measuring liabilities, deferred outflows of resources, deferred inflows of resources, and expenses related to OPEB in the basic financial statements, in addition to requiring more extensive note disclosures and required supplementary information. GASB 75 will be effective for fiscal years beginning after June 15, 2017. The System is evaluating the impact of this new statement.

### (3) Funds

The following funds were established pursuant to the laws of the State of New York. All of the funds, with the exception of the Administrative Fund, are available for the payment of benefits to members or beneficiaries.

**(a) Annuity Savings Fund**

The fund in which contributions of Tiers 1 and 2 members covered by the provisions of Article 11 of the Education Law and Article 11 of the RSSL are accumulated.

**(b) Annuity Reserve Fund**

The fund from which the accumulated contributions of members covered by the provisions of Article 11 of the Education Law and Article 11 of the RSSL are paid as a life annuity.

**(c) Pension Accumulation Fund**

The fund in which all reserves for the payment of all benefits are accumulated with the exception of the annuity provided by the accumulated contributions of Tiers 1 and 2 members, supplemental retirement allowances, and group term life insurance.

**(d) Pension Reserve Fund**

The fund that pays pensions with the reserves transferred from the Pension Accumulation Fund.



**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(e) Group Life Insurance Fund**

Pursuant to Article 4-B of the RSSL, the Retirement Board established a Group Life Insurance Fund. The Group Life Insurance Fund provides a group term death benefit not to exceed fifty thousand dollars, payable upon the death of eligible members. Group term death benefits paid for the years ended June 30, 2016 and 2015 were \$15,785, and \$14,963, respectively. For reporting purposes below, this fund is combined with the Pension Accumulation Fund.

**(f) CO-ESC Member Contributions Fund**

Members covered by the provisions of Article 14 and Article 15 of the RSSL contributed a range of 3%-6% of salary depending on their tier to the System's CO-ESC Member Contribution Fund. Contributions to this fund were \$105,160 and \$105,871 for the years ended June 30, 2016 and 2015, respectively. For reporting purposes below, this fund is combined with the Pension Accumulation Fund.

**(g) Administrative Fund**

All operating expenses of the System are paid through this fund. The fund receives an allocation from employer contributions, which are designated by law to cover all noninvestment related operating expenses. Investment expenses are offset directly by investment income.

**(h) Summary of Fund Balances**

Net position restricted for pensions at June 30, 2016 and 2015, consist of the following:

	2016	2015
Administrative Fund	\$ 60,157	\$ 58,851
Annuity Savings Fund	28	1,028
Annuity Reserve Fund	119,959	130,393
Pension Accumulation Fund	43,192,314	53,440,480
Pension Reserve Fund	64,133,684	56,088,165
Total	<u>\$107,506,142</u>	<u>\$109,718,917</u>

## (4) Pension Plan Investments

**(a) Investment Policy**

The System has been authorized by the New York State Legislature pursuant to the Banking Law, Section 235, the Education Law, Article 11, Section 508, the RSSL, Article 4-A, Sections 176 and 177, to invest in stocks, bonds, mortgages, real estate, and other investments. A specific investment within these broad asset classes may be subject to particular restrictions or limitations contained in the applicable statutory provision. The "Leeway Clause" of Section 177 provides that, subject to guidelines adopted by the Retirement Board, up to 25% of assets may be invested in types of assets not otherwise specifically authorized, provided the Retirement Board is satisfied such investments were made with the care, skill, prudence, and diligence of a prudent person acting in a like capacity and familiar with such matters. Pursuant to regulations promulgated by the New York State Department of Financial Services, investments must be made in a manner consistent with those of a reasonably prudent person exercising care, skill, and caution. In addition to applicable legal constraints, the Retirement Board has adopted policies governing the investments made by the System.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(b) Asset Allocation**

The System's asset allocation policy as of June 30, 2016 and 2015, as adopted by the Retirement Board is as follows:

Asset Class	Target	Range
Domestic equities	37%	32-42%
International equities	18	14-22
Real estate	10	6-14
Private equities	7	4-12
Total equities	72	
Domestic fixed income securities	17	13-22
Global fixed income securities	2	0-3
Mortgages	8	5-11
Short-term	1	0-4
Total fixed income	28	
Total	100%	

**(c) Rate of Return**

For the years ended June 30, 2016 and 2015, the annual money-weighted rate of return on System investments, net of pension plan investment expense, was 2.28% and 5.18%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

**(5) Deposit and Investment Risk Disclosure****(a) Credit Risk**

The quality ratings of investments in fixed income securities as described by nationally recognized statistical rating organizations at June 30, 2016 and 2015 are as follows:

Quality rating	2016		2015	
	Fair value	Percentage of portfolio	Fair value	Percentage of portfolio
Aaa/P-1*	\$ 6,632,395	29.71%	\$ 7,104,061	32.38%
Aa	1,762,658	7.90	1,619,147	7.38
A	3,913,391	17.53	3,468,119	15.81
Baa	2,474,621	11.09	1,989,266	9.07
Other	143,572	0.64	115,815	0.53
Total credit risk debt securities	14,926,637	66.87	14,296,408	65.17
U.S. government fixed income securities**	7,393,737	33.13	7,642,312	34.83
Total fixed income securities***	\$22,320,374	100.00%	\$21,938,720	100.00%

\* Moody's defines their P-1 rating as "issuers (or supporting institutions) rated Prime-1 have a superior ability to repay short-term debt obligations."

\*\* Obligations of the U.S. government or obligations explicitly guaranteed by the U.S. government are not considered to have credit risk and do not have purchase limitations.

\*\*\* Short-term, domestic fixed income securities and global fixed income securities on the Statements of Fiduciary Net Position at June 30, 2016 and 2015 include \$84,555 and \$78,287, respectively, in cash and commingled commercial mortgage backed securities.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(b) 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, the System 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 the System, and are held by either the counterparty or the counterparty's trust department or agent but not in the System's name.

The head of the Division of the Treasury in the New York State Department of Taxation and Finance (the Treasurer) is the statutory custodian of the funds of the System, and, in this capacity, has arranged to have bank accounts collateralized. Collateral is held in the name of the Treasurer as custodian for the System, by a bank that does not act as an agent for the System. The System's bank accounts were fully collateralized during the year. At June 30, 2016 and 2015, the System's bank balance was \$46 and \$(5,679), respectively, with the balance at June 30, 2015, representing a managed overdraft.

Consistent with the System's investment policy, all of the System's securities are held by the System's custodial bank in the System's name.

**(c) Concentration of Credit Risk**

Concentration of credit risk is the risk of loss attributed to the magnitude of the System's investment in a single issuer.

As of June 30, 2016 and 2015, the System did not hold investments in any one issuer that would represent 5% or more of fiduciary net position. Obligations issued or explicitly guaranteed by the U.S. government and pooled investments are not considered subject to concentration of credit risk.

Issuer limits for investments held by the System are established for each investment area by the RSSL Article 4-A, Sections 176-179.

Short-term fixed income investments are generally limited to the following investment types maturing in one year or less:

- Obligations issued by any Federal Home Loan Bank or obligations fully guaranteed as to principal and interest by Fannie Mae or Freddie Mac.
- Commercial paper that has the highest rating by two nationally recognized rating services.

Fixed income securities are generally limited to the following investment types with maturities longer than one year:

- Obligations payable in U.S. dollars issued by any department, agency, or political subdivision of the U.S. government or issued by any corporation, company, or other issuer of any kind or description created or existing under the laws of the U.S., any state of the U.S., District of Columbia or Commonwealth of Puerto Rico, and obligations of Canada or any province or city of Canada provided each obligation shall be rated investment grade by two nationally recognized rating services. The aggregate investment by the System in the obligations of any one issuer shall not exceed 2% of the assets of the System or 5% of the direct liabilities of the issuer.
- Notwithstanding the 5% limitation stated above, the System may invest not more than 2.5% of its assets in the obligations of any one railroad or industrial corporation, or any one corporation engaged directly and primarily in the production, transportation, distribution, or sale of electricity or gas or the operations of telephone and telegraph systems or waterworks or in some combination thereof.
- In no event may more than 30% of the System's assets be invested in bonds of electric and gas corporations. Equipment trust certificates, subject to the provisions of the law, are not to exceed 5% of the assets of the System.
- Obligations issued or guaranteed by the Inter-American Development Bank, Asian Development Bank, the African Development Bank, or the Youth Facilities Project Guarantee Fund and participations therein.
- Obligations of the Dominion of Canada, of any province of the Dominion of Canada, and of any city of the Dominion of Canada, payable in U.S. funds, provided that the aggregate unpaid principal amount of all such obligations at any time held by the System shall not exceed 5% of the System's assets.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

- Bonds of the Savings and Loan Bank of the State of New York, Federal Land Bank, Federal Intermediate Credit Banks, and Banks for Cooperatives.
- Bonds of Freddie Mac, Federal Home Loan Banks, Tennessee Valley Authority, Fannie Mae, and the United States Postal Service.
- Obligations issued or guaranteed by the International Bank for Reconstruction and Development, provided the aggregate unpaid principal amount of such obligations at any time held by the System shall not exceed 5% of the System's assets.
- Bonds and notes of any bank, trust company, savings bank, or savings and loan association organized under the laws of New York State having a net worth of at least \$10 million, which meet all applicable statutes, provided the aggregate unpaid principal amount of bonds and notes secured by conventional mortgages shall not exceed 5% of the assets of the System.
- Mortgage pass-through certificates, provided the certificates evidence ownership of undivided interests in pools or mortgage loans secured by first mortgages on real property located in New York State improved by one to four family residential dwellings, which meet all applicable statutes. The aggregate unpaid principal on conventional mortgages securing mortgage pass through certificates cannot exceed 10% of the assets of the System nor can the total unpaid principal on any single pool of conventional mortgages securing mortgage pass through certificates exceed 1% of the assets of the System.
- Collateralized Mortgage Obligations, which meet the requirements of applicable statutes.
- Private placements, where the purchase of unrated obligations is authorized by the Banking Law or the RSSL, governing fixed income obligations; if not so provided, private placements as well as other domestic fixed income securities not otherwise provided for may be purchased under the Leeway Clause.

The System may invest in domestic equity securities and interest-bearing obligations payable in U.S. funds, which are convertible into equity securities of any corporation created or existing under the laws of the U.S., any state of the U.S. District of Columbia, and the Commonwealth of Puerto Rico or any investment company, as defined by, and which is registered under, an act of Congress of the United States, entitled to the Investment Company Act of 1940, as amended, subject to certain limitations.

The System's international equity investments may not exceed 10% of the System's assets including emerging market equity securities. To the extent the 10% limitation is exceeded, the System's international equity securities may be invested in Leeway investments (which amount shall not exceed 25% of System assets).

The maximum amount invested within the System's equities, including domestic and international, may not exceed, in any one year, 15% of System assets or 70% of the total System assets in aggregate. The System may not own more than 5% of the total issued and outstanding equity securities of any one corporation.

The System's real estate investments will be diversified across geographic regions to allow for competitive portfolio performance in the event of a temporary weakness in any one region and to allow for differing urban and suburban market trends within any region. The System may invest in certain conventional mortgages constituting a first lien upon real property located in the U.S. pursuant to statute subject to certain provisions.

Alternative investments are made pursuant to the Leeway Clause of the RSSL. The System's investment in a limited partnership is valued based on the underlying value of the companies in which the partnership has invested.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(d) Interest Rate Risk**

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of the investment. The System is exposed to interest rate risk at June 30, 2016 and 2015 as follows:

Investment type	2016		2015	
	Fair value	Duration (in years)	Fair value	Duration (in years)
Short-term	\$ 2,312,038	0.071	\$ 2,553,630	0.087
Domestic fixed income*	18,105,399	3.656	17,858,271	3.647
Global fixed income	1,947,256	6.743	1,565,394	5.985
Total fair value	<u>\$22,364,693</u>		<u>\$21,977,295</u>	
Portfolio modified duration		3.550		3.400

\*Domestic fixed income on the Statements of Fiduciary Net Position at June 30, 2016 and 2015 include \$40,236 and \$39,712 respectively, in commingled commercial mortgaged backed securities.

Duration is a measure of a debt investment's exposure to fair value changes arising from changing interest rates. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates and vice versa. Duration is the measure of a bond price's sensitivity to a 100-basis point change in interest rates. A duration of 8 would mean that, given a 100-basis point change up/down in rates, a bond's price would move up/down by 8%.

**(e) Foreign Currency Risk**

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. The System has exposure through international holdings in commingled investment trust funds and separate accounts, international real estate investment trusts (REITs), global bonds, and alternatives. The "Alternatives" represent private equity and real estate investments denominated in foreign currency. With respect to global bond investments, the majority of currency risk inherent in non-U.S. dollar denominated bonds owned by the System in a separate account is hedged away by the managers through currency forwards. The System has an exposure to foreign currency fluctuation at June 30, 2016 and 2015 as follows (holdings valued in U.S. dollars):

Currency:	2016		2015	
	International Equities	Alternatives, Cash, and Global Fixed Income	International Equities	Alternatives, Cash, and Global Fixed Income
Euro	\$ 3,653,959	\$1,503,554	\$ 4,100,433	\$1,608,345
Japanese Yen	2,999,338	245,286	3,303,281	136,938
British Pound Sterling	2,511,811	290,698	2,978,880	282,654
Canadian Dollar	1,208,436	53,969	1,280,076	63,863
Swiss Franc	1,095,424	6,870	1,270,415	6,051
Hong Kong Dollar	833,856	—	989,471	—
Australian Dollar	875,799	55,169	921,588	38,179
South Korean Won	592,033	17,597	615,243	14,974
Swedish Krona	377,550	8,133	447,170	13,493
China Renminbi	472,718	—	493,836	—
Other	2,834,060	92,677	2,933,204	57,064
Totals	<u>\$17,454,984</u>	<u>\$2,273,953</u>	<u>\$19,333,597</u>	<u>\$2,221,561</u>

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(f) Securities Lending Transactions**

The RSSL authorizes the System to enter into securities lending transactions. Agreements to lend a security must be with a broker dealer or with New York State or nationally chartered banks and must not exceed a period of one year. The market value of securities loaned may not exceed 20% of the market value of the System's invested assets. Domestic and international bonds, domestic and international equities, and global REIT securities are loaned. Initial collateral of at least 102% of the market value of loaned securities is received from the borrower for domestic securities and 105% for international securities. Securities on loan are marked to market daily and collateral for the loan is required not to fall below 100%. The fair value of reinvested securities lending collateral is reported as an asset and collateral due to borrowers is reported as a liability on the Statement of Fiduciary Net Position. At June 30, 2016 and 2015, the fair value of the cash collateral invested exceeded the amount the System owed borrowers by approximately \$2.3 million and \$3.4 million, respectively. For each year end, the System had no credit risk exposure to borrowers because the amounts the System owes the borrowers (the collateral) exceeds the amounts borrowers owe the System (the loaned securities).

As of June 30, 2016 and 2015, JP Morgan Securities Lending (JP Morgan) acted as agent for the domestic equity and fixed income securities lending programs and State Street Bank and Trust Co. (State Street) acted as agent for the international equity, global bonds and global REIT securities lending program. Under the terms of the contract with the lending agents, the System is fully indemnified against failure of the borrowers to return the loaned securities (to the extent the collateral is inadequate to replace the loaned securities) or failure to pay the System for income distributions by the securities' issuers while the securities are on loan. There were no significant violations of legal or contractual provisions, no borrower or lending agent defaults, and no material recoveries of prior period losses during the year. The majority of securities on loan can be recalled by the System on demand or returned by the borrower at any time. Cash collateral is invested by the System's lending agents, in short term investment funds managed by the agent lenders. There is no direct match of the maturities of the collateral investments with the maturities of the securities loans. Investments are restricted to issuers with a short term credit rating issued by Standard & Poor's and Moody's Investors Service, not lower than A1/P1 or long term ratings not lower than A/A2, respectively, or the equivalent thereof. Non-cash collateral received is limited to high quality U.S. treasuries, agency securities and agency mortgage backed securities. At June 30, 2016 and 2015, the average effective duration of the funds managed by JP Morgan was 18 days and of those managed by State Street was 2 days compared to 21 days and 2 days, respectively. Securities loans and related collateral investments are monitored on a daily basis to ensure compliance with collateral requirements, limitations, and collateral investment guidelines.

Securities Lending Program	2016	2015
Fair value of securities on loan — cash collateral	\$1,850,640	\$1,766,742
Fair value of securities on loan — non-cash collateral	893,225	895,037
Total fair value of securities on loan	\$2,743,865	\$2,661,779
Fair value of cash collateral invested by System	\$1,892,369	\$1,813,522
Fair value of non-cash collateral held by System	914,363	914,459
Total collateral invested and held by the System	\$2,806,732	\$2,727,981
Fair value of liabilities to borrowers — cash collateral	\$1,890,030	\$1,810,136
Fair value of liabilities to borrowers — non-cash collateral	914,363	914,459
Total collateral due to borrowers	\$2,804,393	\$2,724,595

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

### (6) Fair Value Measurement

NYSTRS' investments measured and reported at fair value are classified according to the following hierarchy in which the levels are based on the nature of inputs used to measure the fair value of the investment:

Level 1 – Investments' fair values based on prices quoted in active markets for identical assets.

Level 2 – Investments' fair values based on observable inputs for the assets either directly or indirectly, other than those considered Level 1 inputs, which may include quoted prices for identical assets in markets that are not considered to be active, and quoted prices of similar assets in active or inactive markets.

Level 3 – Investments' fair values based upon unobservable inputs.

The categorization of investments within the hierarchy above is based solely upon the objectivity of the inputs used in the measurement of fair value of the investments and does not reflect the level of risk associated with the investments.

Investments classified in Level 1 of the fair value hierarchy are valued from predetermined external pricing vendors or primary dealers who source quoted prices in active markets which are readily attainable exit values of these securities. Investments classified in Level 2 are subject to alternative pricing sources, including a combination of price sources, descriptive data and pricing models based on attributes such as spread data, sector, quality, duration, and prepayment characteristics. Investments classified as Level 3 are valued using best available sources such as property appraisals, discounted cash flow models and public market comparable of similar assets where applicable. The values are supplied by advisors or general partners who hold those or similar assets in investments vehicles they oversee. These pricing sources may or may not be indicative of realizable exit value attainable for the assets.

NYSTRS' investments and securities lending collateral reinvested have the following fair value measurements as of June 30, 2016 and 2015, respectively:

Investments by Fair Value Level	6/30/2016	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Fixed income securities:</b>				
Short-term instruments	\$ 4,202,611	\$ -	\$ 4,198,431	\$ 4,180
Domestic fixed income securities	16,505,293	50,023	16,455,046	224
Domestic commercial mortgage backed securities	1,498,951	16,246	1,479,090	3,615
Global fixed income securities	1,904,428	163,385	1,741,043	-
Total fixed income securities	\$24,111,283	\$ 229,654	\$23,873,610	\$ 8,019
<b>Equity securities:</b>				
Domestic equities	\$42,616,820	\$42,616,820	\$ -	\$ -
International equities	17,162,613	17,162,552	-	61
Total equity securities	\$59,779,433	\$59,779,372	\$ -	\$ 61
<b>Mortgages:</b>	\$ 3,786,206	\$ -	\$ -	\$3,786,206
<b>Real estate:</b>				
Direct equity real estate investments	\$ 3,437,710	\$ -	\$ -	\$3,437,710
Timberland	324,663	-	-	324,663
Total real estate	\$ 3,762,373	\$ -	\$ -	\$3,762,373
<b>Total investments by fair value level</b>	<b>\$91,439,295</b>	<b>\$60,009,026</b>	<b>\$23,873,610</b>	<b>\$7,556,659</b>



**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**June 30, 2016 Investments Measured at the Net Asset Value (NAV):**

Commingled domestic fixed income fund	\$ 40,236
Commingled global fixed income funds	27,519
Commingled international equity funds	662,425
Privately held real estate investment trusts	1,642,310
Real estate commingled funds	3,299,080
Alternative investments	9,342,021
Total investments measured at the NAV	<u>\$ 15,013,591</u>
Investment related cash, receivables and payables not included in above	<u>582,786</u>
<b>Total investments and securities lending collateral reinvested</b>	<u><u>\$107,035,672</u></u>

Investments by Fair Value Level	6/30/2015	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Fixed income securities:</b>				
Short-term instruments	\$ 4,366,058	\$ -	\$ 4,357,686	\$ 8,372
Domestic fixed income securities	16,495,096	124,197	16,370,637	262
Domestic commercial mortgage backed securities	1,258,506	9,328	1,249,178	-
Global fixed income securities	1,537,369	63,139	1,474,230	-
Total fixed income securities	<u>\$23,657,029</u>	<u>\$ 196,664</u>	<u>\$23,451,731</u>	<u>\$ 8,634</u>
<b>Equity securities:</b>				
Domestic equities	\$43,070,080	\$43,069,602	\$ -	\$ 478
International equities	19,016,767	19,015,496	-	1,271
Total equity securities	<u>\$62,086,847</u>	<u>\$62,085,098</u>	<u>\$ -</u>	<u>\$ 1,749</u>
<b>Mortgages:</b>				
	<u>\$ 3,776,802</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$3,776,802</u>
<b>Real estate:</b>				
Direct equity real estate investments	\$ 3,303,100	\$ -	\$ -	\$3,303,100
Timberland	317,958	-	-	317,958
Total real estate	<u>\$ 3,621,058</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$3,621,058</u>
<b>Total investments by fair value level</b>	<u>\$93,141,736</u>	<u>\$62,281,762</u>	<u>\$23,451,731</u>	<u>\$7,408,243</u>

**Notes to Financial Statements (continued)**  
**June 30, 2016 and 2015**  
(dollars in thousands)

**June 30, 2015 Investments Measured at the Net Asset Value (NAV):**

Commingled domestic fixed income fund	\$ 39,713
Commingled global fixed income funds	23,263
Commingled international equity funds	704,059
Privately held real estate investment trusts	1,554,269
Real estate commingled funds	3,373,769
Alternative investments	9,206,588
Total investments measured at the NAV	<u>\$ 14,901,661</u>
Investment related cash, receivables and payables not included in above	511,485
<b>Total investments and securities lending collateral reinvested</b>	<u><u>\$108,554,882</u></u>

NYSTRS' investments measured at NAV as of June 30, 2016 and 2015, respectively, are as follows:

<b>Investments Measured at the NAV</b>	<b>6/30/2016</b>	<b>Unfunded Commitments</b>	<b>Redemption Frequency</b>	<b>Redemption Notice Period</b>
Commingled domestic fixed income fund (1)	\$ 40,236	\$ -	Daily	30 days
Commingled global fixed income fund (2)	27,519	-	Semi-monthly	15 days
Commingled international equity funds (3)	662,425	-	Daily or monthly	5-30 days
Privately held real estate investment trusts (4)	1,642,310	207,667	NA	NA
Real estate commingled funds (5)				
Close ended funds	2,230,343	1,365,296	NA	NA
Open ended funds	1,068,737	-	Quarterly	30-120 days
Alternative investments (6)	9,342,021	5,903,538	NA	NA
<b>Total investments measured at the NAV</b>	<u>\$15,013,591</u>	<u>\$7,476,501</u>		

<b>Investments Measured at the NAV</b>	<b>6/30/2015</b>	<b>Unfunded Commitments</b>	<b>Redemption Frequency</b>	<b>Redemption Notice Period</b>
Commingled domestic fixed income fund (1)	\$ 39,713	\$ -	Daily	30 days
Commingled global fixed income fund (2)	23,263	-	Semi-monthly	15 days
Commingled international equity funds (3)	704,059	-	Daily or monthly	5-30 days
Privately held real estate investment trusts (4)	1,554,269	232,667	NA	NA
Real estate commingled funds (5)				
Close ended funds	2,274,894	1,629,167	NA	NA
Open ended funds	1,098,875	-	Quarterly	30-120 days
Alternative investments (6)	9,206,588	5,239,108	NA	NA
<b>Total investments measured at the NAV</b>	<u>\$14,901,661</u>	<u>\$7,100,942</u>		

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

- (1) Commingled domestic fixed income fund consists of one commingled investment vehicle which primarily invests in publicly traded domestic commercial mortgage backed securities. The investment is valued at the net asset value of units held at the end of the period based upon the fair value of the underlying investments.
- (2) Commingled global fixed income fund consists of one commingled investment vehicle which invests primarily in publicly traded global fixed income securities. The investment is valued at the net asset value of units held at the end of the period based upon the fair value of the underlying investments.
- (3) Commingled international equity funds consist of three commingled investment vehicles which invest primarily in publicly traded global equity securities. The funds are valued at the net asset value of units held at the end of the period based upon the fair value of the underlying investments.
- (4) Privately held real estate investment trusts consist of two trusts which primarily invest in U.S. commercial real estate. The fair values of the investments in this group have been determined using the net asset value of units held at the end of the period based upon the property appraisals of the underlying assets. The trusts are perpetual in nature, making periodic operating distributions to shareholders. Capital calls and redemptions are determined by a unanimous vote of the trust board members.
- (5) Real estate commingled funds include equity real estate funds that invest primarily in U.S. commercial real estate. The investment structures are either open end funds or closed end funds. In these structures, NYSTRS commits funds along with other investors to create a pool of capital that the fund manager then invests according to an agreed upon strategy such as core, value add or opportunistic. The fair values of the investments in this group have been determined using the NAV per share (or its equivalent) of the Plan's ownership interest in partners' capital. Open end funds may be redeemed on a quarterly basis with notice. Closed end Funds are not redeemable, however distributions will be received as the underlying investments of the funds are liquidated, which on average can occur over the span of eight to ten years after final closing.
- (6) Alternative investments include private equity, debt funds, and real estate equity funds through limited partnership structures. Private equity (86% at 6/30/16, 90% at 6/30/15) consists of buyout, growth, venture capital, fund of funds, secondary, co-investment, mezzanine, distressed/turnaround, special situation and real estate funds. The debt funds (8% at 6/30/16, 4% at 6/30/15) consist of funds investing primarily in mezzanine debt. The real estate equity funds (6% at 6/30/16, 6% at 6/30/15) consist of global commercial real estate funds. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Plan's ownership interest in partners' capital. These funds are not eligible for redemption. Distribution is received as underlying investments within the funds are liquidated, which on average can occur over the span of 5 to 10 years.

### **(7) Net Pension Liability (Asset) of NYSTRS Participating School Districts**

The components of the net pension liability (asset) of the NYSTRS participating school districts at June 30, 2016 and 2015 were as follows:

	2016	2015
Total pension liability	\$108,577,184	\$ 99,332,104
Plan fiduciary net position	107,506,142	109,718,917
School districts' net pension liability (asset)	\$ 1,071,042	\$ (10,386,813)
Plan fiduciary net position as a percentage of total pension liability	99.01%	110.46%

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
 (dollars in thousands)

**(a) Actuarial Assumptions**

The total pension liability at June 30, 2016 was determined using an actuarial valuation as of June 30, 2015, with update procedures used to roll forward the total pension liability to June 30, 2016. Total pension liability at June 30, 2015 was determined by an actuarial valuation as of June 30, 2014, with update procedures used to roll forward the total pension liability to June 30, 2015.

The June 30, 2015 actuarial valuation used the following actuarial assumptions:

Inflation	2.5%										
Projected salary increases	Rates of increase differ based on service They have been calculated based upon recent NYSTRS member experience.										
	<table border="0"> <thead> <tr> <th style="text-align: center;"><u>Service</u></th> <th style="text-align: center;"><u>Rate</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">4.72%</td> </tr> <tr> <td style="text-align: center;">15</td> <td style="text-align: center;">3.46</td> </tr> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">2.37</td> </tr> <tr> <td style="text-align: center;">35</td> <td style="text-align: center;">1.90</td> </tr> </tbody> </table>	<u>Service</u>	<u>Rate</u>	5	4.72%	15	3.46	25	2.37	35	1.90
<u>Service</u>	<u>Rate</u>										
5	4.72%										
15	3.46										
25	2.37										
35	1.90										
Projected COLAs	1.5% compounded annually										
Investment rate of return	7.5% compounded annually, net of pension plan investment expense, including inflation.										
Mortality	Annuitant mortality rates are based on plan member experience, with adjustments for mortality improvements based on Society of Actuaries Scale MP2014, applied on a generational basis. Active member mortality rates are based on plan member experience.										
Experience Period	The actuarial assumptions were based on the results of an actuarial experience study for the period July 1, 2009 to June 30, 2014.										

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

The June 30, 2014 actuarial valuation used the following actuarial assumptions:

Inflation	3.0%		
Projected salary increases	Rates of increase differ based on age and gender. They have been calculated based upon recent NYSTRS member experience.		
	<u>Age</u>	<u>Female</u>	<u>Male</u>
	25	10.35%	10.91%
	35	6.26	6.27
	45	5.39	5.04
	55	4.42	4.01
Projected COLAs	1.625% compounded annually		
Investment rate of return	8.0% compounded annually, net of pension plan investment expense, including inflation.		
Mortality	Annuitant mortality rates are based on plan member experience, with adjustments for mortality improvements based on Society of Actuaries Scale AA.		
Experience Period	The actuarial assumptions were based on the results of an actuarial experience study for the period July 1, 2005 to June 30, 2010.		

The long-term expected rate of return on pension plan investments was determined in accordance with Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*. ASOP No. 27 provides guidance on the selection of an appropriate assumed investment rate of return. Consideration was given to expected future real rates of return (expected returns, net of pension plan investment expense and inflation) for each major asset class as well as historical investment data and plan performance.

Best estimates of arithmetic real rates of return for each major asset class included in the System's target asset allocation as of the valuation date of June 30, 2015 and June 30, 2014 (see the discussion of the pension plan's investment policy) are summarized in the following table:

Long-Term Expected Real Rate of Return*		
Asset Class	2015	2014
Domestic equities	6.1%	6.5%
International equities	7.3	7.7
Real estate	5.4	4.6
Alternative investments	9.2	9.9
Domestic fixed income securities	1.0	2.1
Global fixed income securities	0.8	1.9
Mortgages	3.1	3.4
Short-term	0.1	1.2

\*Real rate of return are net of the long-term inflation assumption of 2.1% for 2015 and 2.3% for 2014.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

**(b) Discount Rate**

The discount rate used to measure the total pension liability as of June 30, 2016 was 7.5%. Prior to June 30, 2016 the discount rate used was 8.0%. The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current member contribution rates and that contributions from school districts will be made at statutorily required rates, actuarially determined. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

**(c) Sensitivity of the Net Pension Liability (Asset) to Changes in the Discount Rate**

The following presents the net pension liability (asset) of the NYSTRS participating school districts calculated using the discount rate of 7.5% for June 30, 2016 and 8.0% for June 30, 2015, as well as what the school districts' net pension liability (asset) would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	School Districts' Net Pension Liability (Asset)		
	1% Decrease	Current Discount Rate	1% Increase
June 30, 2016	(6.5%)	(7.5%)	(8.5%)
	\$13,974,176	\$ 1,071,042	\$ (9,751,431)
June 30, 2015	(7.0%)	(8.0%)	(9.0%)
	\$ 708,515	\$(10,386,813)	\$(19,848,797)

**(8) Commitments and Contingencies**

The System, in the normal course of business, enters into commitments with off-balance-sheet risk. The System adheres to the same credit policies, financial and administrative controls, and risk limiting and monitoring procedures for commitments as for on balance sheet investments.

The commitments for loans on real estate or purchases of real estate are subject to satisfactory appraisals prior to closing. Once investments are made, the System's exposure to potential loss is determined by the value of the underlying collateral.

The future financial commitments outstanding at June 30, 2016 and 2015 respectively, were: real estate and real estate alternative investments of \$2.27 billion and \$2.34 billion; mortgages and real estate debt funds of \$490.1 million and \$470.9 million; and private equity investments of \$4.99 billion and \$4.55 billion.

**(9) Other Liabilities**

Other liabilities include amounts due to the System's bank for disbursements issued on previous business days, which are funded when presented for payment. At June 30, 2016 and 2015, total other liabilities were \$132,675 and \$121,284, respectively. The June 30, 2015 balance includes a managed overdraft of \$5,679.

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

## (10) System Employees' Pension Plan

### **(a) Plan Description**

As an employer, the System participates in the ERS, a cost sharing, multiple-employer defined benefit pension plan which falls under New York State and Local Retirement System (NYSLRS) and is administered by the Comptroller of the State of New York. ERS provides retirement, disability, withdrawal, and death benefits to plan members and beneficiaries as authorized by the RSSL of the State of New York. Benefits are guaranteed by the State Constitution and cannot be diminished or impaired. Benefits can be reduced for future members only by an act of the State Legislature. The NYSLRS issues a publicly available financial report that contains financial statements and required supplementary information for ERS. The report may be obtained on the Comptroller's website at [www.osc.state.ny.us/pension](http://www.osc.state.ny.us/pension).

### **(b) Benefits**

The classes of employees covered under the ERS range from Tiers 1–6. In order to be eligible for retirement, all members must be at least age 55 and have a minimum of 5 years of service for Tiers 2–4, and 10 years of service for Tiers 5 and 6. There is no minimum service requirement for Tier 1 members. Generally, all members are eligible for early retirement at age 55 with a benefit calculation of 1.67% of final average salary. Benefit calculations for Tiers 1 and 2 members with greater than 20 years of service credit, or Tiers 3–5 members between 20 and 30 years of service credit, is 2.0% of final average salary. Tiers 3–5 members are eligible for an additional 1.50% of final average salary applied to each year of service over 30 years. Generally, Tier 6 member retirement benefits are 1.75% of final average salary with 20 years of service, with an additional 2.0% of final average salary for each year of service over 20 years.

For Tiers 1–5, final average salary is the average of the wages earned in the three highest consecutive years of employment. Tier 6 final average salary is the average of the wages earned in the five highest consecutive years of employment.

Other benefits provided under the ERS include: ordinary disability, accidental disability, and post-retirement benefit increases.

### **(c) Funding Policy**

Funding of ERS is accomplished through member and employer contributions and investment earnings, according to the New York State RSSL.

Plan members who joined the System before July 27, 1976 are not required to make contributions. Those joining on or after July 27, 1976 and before January 1, 2010 who have less than 10 years of service or membership are required to contribute 3% of salary. Those joining on or after January 1, 2010, and before April 1, 2012, are required to contribute 3% throughout active service. Persons joining on or after April 1, 2012, are required to contribute between 3% and 6% throughout active service. Employers are required to contribute at an actuarially determined rate. An average employer contribution rate for the Tiers of 18.2% and 19.9% was applicable to the annual covered payroll for the years ended March 31, 2016 and March 31, 2015, respectively. The contributions paid to ERS during the System's years ended June 30, 2016 and 2015 were \$5,289 and \$5,131, respectively, and were 100% of the contributions required.

### **(d) Pension Liabilities, Pension Expense, Deferred Outflows of Resources, and Deferred Inflows of Resources Related to Pensions**

At June 30, 2016 and 2015, the System reported a liability of \$17.6 million and \$3.5 million, respectively, for its proportionate share of the ERS net pension liability measured as of March 31, 2016 and 2015, respectively. NYSTRS' proportion of the ERS net pension liability was based on the projection of the long-term share of contributions to ERS relative to the projected contributions of all participating employers, actuarially determined. At March 31, 2016 the System's proportion was 0.1095719% and 0.1028788% at March 31, 2015.

For the years ended June 30, 2016 and 2015, the System recognized pension expense of \$6.4 million and \$3.2 million, respectively.



**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

The following presents a summary of deferred outflows of resources and deferred inflows of resources at June 30, 2016 and 2015:

	2016	2015
Deferred outflows of resources:		
Difference between expected and actual experience	\$ 89	\$ 111
Changes of assumptions	4,690	-
Net differences between projected and actual investment earnings on pension plan investments	10,433	604
Changes in proportion and differences between employer contributions and proportionate share of contributions	622	78
	\$15,834	\$793
Deferred inflows of resources:		
Difference between expected and actual experience	\$ 2,085	\$ -

Amounts reported as deferred outflows of resources and deferred inflows of resources at June 30, 2016 related to pensions will be recognized in pension expense as follows:

Year ended June 30:	
2017	\$3,490
2018	\$3,490
2019	\$3,490
2020	\$3,279

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 the ERS and additions to/deductions from the ERS's fiduciary net position have been determined on the same basis as they are reported for the ERS by the NYSLRS. 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.

**(e) Actuarial Assumptions**

The total pension liability for the March 31, 2016 measurement date was determined by using an actuarial valuation as of April 1, 2015, with update procedures used to roll forward the total pension liability to March 31, 2016. The total pension liability for the March 31, 2015 measurement date was determined by using an actuarial valuation as of April 1, 2014, with update procedures used to roll forward the total pension liability to March 31, 2015. These actuarial valuations applied the following actuarial assumptions:

	2016	2015
Actuarial cost method	Entry age normal	Entry age normal
Inflation	2.5%	2.7%
Salary scale	3.8%, indexed by service	4.9%, indexed by service
Investment rate of return, including inflation	7.0% compounded annually, net of investment expenses	7.5% compounded annually, net of investment expenses
Cost-of-living adjustments	1.3% annually	1.4% annually
Decrements	Developed from the Plan's 2015 experience study of the period April 1, 2010 through March 31, 2015	Developed from the Plan's 2010 experience study of the period April 1, 2005 through March 31, 2010
Mortality improvement	Society of Actuaries Scale MP-2014	Society of Actuaries Scale MP-2014

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected return, net of investment expenses and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target allocation	Long-term expected real rate of return
Domestic equity	38%	7.30%
International equity	13	8.55
Private equity	10	11.00
Real estate	8	8.25
Absolute return strategies	3	6.75
Opportunistic portfolio	3	8.60
Real assets	3	8.65
Bonds and mortgages	18	4.00
Cash	2	2.25
Inflation-indexed bonds	2	4.00
	100%	

#### Discount Rate

The discount rate used to calculate the total pension liability was 7.0% and 7.5% for year ending June 30, 2016 and 2015, respectively. The projection of cash flows used to determine the discount rate assumes that contributions from plan members will be made at the current contribution rates and that contributions from employers will be made at statutorily required rates, actuarially determined. Based upon the assumptions, the ERS's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore the long term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

#### Sensitivity of the System's Proportionate Share of the ERS Net Pension Liability

The following presents the System's proportionate share of the ERS net pension liability calculated using the discount rate of 7.0% and 7.5% for years ending June 30, 2016 and 2015, respectively, as well as what the System's proportionate share of the ERS net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	System's Net Pension Liability (Asset)		
	1% Decrease	Current Discount Rate	1% Increase
June 30, 2016	(6.0%)	(7.0%)	(8.0%)
	\$39,657	\$17,587	\$ (1,062)
June 30, 2015	(6.5%)	(7.5%)	(8.5%)
	\$23,166	\$ 3,475	\$(13,148)

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

## (11) System Employees' Other Postemployment Benefits

### (a) Plan Description

The System adopted GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits other than Pensions* (GASB 45), for the fiscal year beginning July 1, 2007. The adoption necessitated the recognition of an actuarially determined annual required contribution (ARC) as an expense in the Statement of Changes in Fiduciary Net Position.

Pursuant to contractual agreement and policy, the System provides postemployment healthcare benefits to eligible System employees who retire from the System. The System is a voluntary participating employer in the New York State Health Insurance Program (NYSHIP), administered by the State of New York as an agent multiple-employer defined benefit plan. Article XI of the New York State Civil Service Law assigns the authority to NYSHIP to establish and amend the benefit provisions of the plan and to establish maximum obligations of the plan members to contribute to the plan. The System's Board is authorized to establish the contribution rates of System employees and retirees below those set by Civil Service Law, and they are set as part of the collective bargaining process.

In order to be eligible, employees must have worked for at least 10 years for the System, retire directly from System employment, and commence receipt of their pension from the ERS. Dependents may also be covered.

System retirees are required to contribute toward the cost of their coverage. Employees who retire on or after July 1, 1985 contribute an amount equal to 12% of the premium paid by the System up to the premium of the Empire Plan option. If more expensive coverage is elected, the retiree pays 12% of the Empire Plan option and 100% of the difference between the two.

Employees who retire on or after April 1, 1991, are eligible to have accumulated unused sick leave converted into a credit to offset their contribution requirement.

As of June 30, 2016, 612 participants including 362 current employees, and 250 retired and/or spouses of retired employees participated in the healthcare plan. As of June 30, 2015, 623 participants including 379 current employees, and 244 retired and/or spouses of retired employees participated in the healthcare plan. NYSHIP does not issue a stand-alone financial report and NYSHIP's agent activities are included within the financial statements of the State of New York.

### (b) Funding

The System's Board established the New York State Teachers' Retirement System Retired Employee Health Benefits Trust (the Trust) in 2008. The Trust was created for the sole purpose of accepting irrevocable contributions from the System in order to provide postemployment health insurance benefits to current and future eligible retirees of the System in accordance with the terms of the healthcare plan. The Trust issues stand alone financial statements, which can be obtained by contacting the System.

The employer contribution, or funding, of the System's other postemployment benefit (OPEB) obligation is at the discretion of management and the Board. The System's current policy is to prefund benefits by contributing an amount that is, at a minimum, equal to the ARC, an amount actuarially determined in accordance with the parameters of GASB Statement No. 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities (or funding excess) over a period not to exceed 30 years.

The System's contributions and net OPEB obligation (NOO) for the past three fiscal years are as follows:

Actuarial Valuation Date	Fiscal Year Ending	Annual Required Contribution (a)	Interest On Existing NOO (b)	ARC Adjustment (c)	Annual OPEB Cost (a)+(b)+(c) (d)	Actual Contribution Amount (e)	Net Increase in NOO (d)-(e) (f)	NOO as of Fiscal Year End (g)
July 1, 2013	June 30, 2014	\$4,767	\$ -	\$ -	\$4,767	\$5,500	\$(733)	\$ (733)
July 1, 2014	June 30, 2015	4,542	(59)	43	4,526	5,500	(974)	(1,707)
July 1, 2015	June 30, 2016	4,782	(137)	100	4,746	5,500	(754)	(2,461)

**Notes to Financial Statements** (continued)  
**June 30, 2016 and 2015**  
(dollars in thousands)

The funded status of the System's OPEB as of the most recent actuarial valuation date is as follows:

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) – Entry Age Normal (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)
July 1, 2015	\$26,675	\$82,136	\$55,461	32.5%	\$26,507	209%

**(c) Actuarial Methods and Assumptions**

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and the healthcare cost trend. Actuarially determined amounts are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented as required supplementary information following the Notes to Financial Statements, presents multiyear trend information that shows whether the actuarial value of plan assets is increasing or decreasing over time relative to the AAL for benefits. The provisions of GASB Statement No. 45 require an actuarial valuation be performed at least biennially. Currently, the Trust has an actuarial valuation performed annually.

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and plan members) and include the types of benefits provided at the time of each valuation and the pattern of sharing of benefit costs between the employer and plan members to that point. Actuarial calculations reflect a long-term perspective and employ methods and assumptions that are designed to reduce short-term volatility in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations. Additional information as of the latest actuarial valuation is as follows:

Valuation date*	July 1, 2015
Actuarial cost method	Entry age normal
Amortization method	Level percentage of payroll, open
Amortization period	30 years
Asset valuation method	Market value
Actuarial assumptions:	
Investment rate of return**	8.0% compounded annually
Healthcare cost trend rate	9.0% initial, 5.0% ultimate

\*The results of a July 1, 2014 valuation using participant data and health care premium information as of July 1, 2014 was projected forward using standard actuarial techniques to obtain the July 1, 2015 valuation results.

\*\*Includes an inflation assumption of 3.0%.

## (12) Risk Management

The System is exposed to various risks of loss related to torts; theft of, damage to, and destruction of assets; errors and omissions; job-related illnesses or injuries to employees; and natural disasters for which the System carries commercial insurance. There were no settlements in the past two years that exceeded coverage. Management of the System believes there would be no material adverse effect on the financial statements as a result of the outcome of these matters if they existed.

## Required Supplementary Information

### Schedule of Changes in the School Districts' Net Pension Liability (Asset) (Unaudited)

Last Four Fiscal Years  
(dollars in thousands)

	2016	2015	2014	2013
<b>Total pension liability</b>				
Service cost	\$ 1,181,609	\$ 1,396,824	\$ 1,397,547	\$ 1,406,084
Interest	7,809,566	7,611,757	7,434,764	7,252,357
Changes of benefit terms	-	-	-	-
Differences between expected and actual experience	(111,652)	(161,043)	(181,834)	(128,194)
Changes of assumptions	7,085,423	-	-	-
Benefit payments, including refunds of member contributions	(6,719,866)	(6,531,140)	(6,343,538)	(6,139,718)
<b>Net change in total pension liability</b>	9,245,080	2,316,398	2,306,939	2,390,529
<b>Total pension liability — beginning</b>	99,332,104	97,015,706	94,708,767	92,318,238
<b>Total pension liability — ending (a)</b>	\$108,577,184	\$ 99,332,104	\$ 97,015,706	\$94,708,767
<b>Plan fiduciary net position</b>				
Contributions — employer	\$ 2,046,562	\$ 2,633,682	\$ 2,400,386	\$ 1,734,908
Contributions — member	124,587	119,411	120,762	128,903
Net investment income	2,392,354	5,400,265	16,664,703	11,636,480
Benefit payments, including refunds of member contributions	(6,719,866)	(6,531,140)	(6,343,538)	(6,139,718)
Administrative expenses	(60,426)	(56,948)	(55,616)	(54,338)
Other	4,014	3,213	1,365	4,522
<b>Net change in plan fiduciary net position</b>	(2,212,775)	1,568,483	12,788,062	7,310,757
<b>Plan fiduciary net position — beginning</b>	109,718,917	108,155,083	95,367,021	88,056,264
Cumulative effect of change in accounting principle	-	(4,649)	-	-
Beginning balance, as restated	109,718,917	108,150,434	95,367,021	88,056,264
<b>Plan fiduciary net position — ending (b)</b>	\$107,506,142	\$109,718,917	\$108,155,083	\$95,367,021
<b>School districts' net pension liability (asset) — ending (a) — (b)</b>	\$ 1,071,042	\$(10,386,813)	\$(11,139,377)	\$ (658,254)

Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

## Required Supplementary Information (continued)

## Schedule of the School Districts' Net Pension Liability (Asset) (Unaudited)

Last Four Fiscal Years

(dollars in thousands)

	2016	2015	2014	2013
Total pension liability	\$108,577,184	\$ 99,332,104	\$ 97,015,706	\$94,708,767
Plan fiduciary net position	107,506,142	109,718,917	108,155,083	95,367,021
School districts' net pension liability (asset)	\$ 1,071,042	\$(10,386,813)	\$(11,139,377)	\$ (658,254)
Plan fiduciary net position as a percentage of the total pension liability	99.01%	110.46%	111.48%	100.70%
Covered — employee payroll	\$15,431,009	\$ 15,021,357	\$ 14,771,301	\$ 14,647,830
School districts' net pension liability (asset) as a percentage of covered — employee payroll	6.94%	(69.15)%	(75.41)%	(4.49)%

Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

## Required Supplementary Information (continued)

### Schedule of the School Districts' Contributions (Unaudited)

Last 10 Fiscal Years  
(dollars in thousands)

	2016	2015	2014	2013
Actuarially determined contribution	\$ 2,046,152	\$ 2,633,244	\$ 2,400,378	\$ 1,734,303
Contributions in relation to the actuarially determined contribution	2,046,152	2,608,266	2,383,145	1,734,303
Contribution deficiency	\$ -	\$ 24,978	\$ 17,233	\$ -
Covered-employee payroll	\$15,431,009	\$15,021,357	\$14,771,301	\$14,647,830
Contributions as a percentage of covered-employee payroll	13.26%	17.36%	16.13%	11.84%

See accompanying independent auditors' report and notes to required supplementary information.



Required Supplementary Information (continued)

Schedule of the School Districts' Contributions (Unaudited)

Last 10 Fiscal Years  
(dollars in thousands)

2012	2011	2010	2009	2008	2007
\$ 1,626,589	\$ 1,269,976	\$ 915,632	\$ 1,096,155	\$ 1,195,148	\$ 1,125,138
1,626,589	1,269,976	915,632	1,096,155	1,195,148	1,125,138
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$14,640,764	\$14,732,895	\$14,792,116	\$14,366,387	\$13,690,128	\$13,083,004
11.11%	8.62%	6.19%	7.63%	8.73%	8.60%

See accompanying independent auditors' report and notes to required supplementary information.



## Required Supplementary Information (continued)

### Notes to Required Supplementary Information

#### Last 10 Fiscal Years

*Changes of benefit terms.* Chapter 504 of the Laws of 2009 created a new tier of membership (Tier 5) for members with a date of membership on or after January 1, 2010. The Tier 5 benefit structure represents a reduction in benefits from those of prior tiers and an increase in the required employee contribution rate. The Tier 5 benefit changes were first included in the 2010 actuarial valuation. Chapter 18 of the Laws of 2012 created a new tier of membership (Tier 6) for members who join on or after April 1, 2012. The Tier 6 benefit formula is slightly less generous than that of Tier 5, and the required employee contribution rate was increased further. The Tier 6 benefit changes were first included in the 2012 actuarial valuation.

*Changes of assumptions.* Actuarial assumptions are revised periodically to more closely reflect actual, as well as anticipated future experience. The actuarial assumptions used in the actuarial valuations prior to 2011 were adopted by the Retirement Board on October 26, 2006. Revised assumptions were adopted by the Retirement Board on October 27, 2011 and first used in the 2011 actuarial valuation. The actuarial assumptions were revised again in 2015. These assumptions were adopted by the Retirement Board on October 29, 2015 and first used in the 2015 actuarial valuation.

The System's valuation rate of interest of 7.5% is effective with the 2015 actuarial valuation. Prior to the 2015 actuarial valuation, the System's valuation rate of interest assumption was 8.0%.

Prior to the 2007 actuarial valuation, the asset valuation method used was a five-year market smoothing for equities, real estate, and alternative investments, based upon book values. The asset valuation method was changed effective with the 2007 actuarial valuation to use a five-year phased in deferred recognition of each year's realized and unrealized appreciation in excess of (or less than) an assumed inflationary gain of 3.0%. The asset valuation method was changed again effective with the 2015 actuarial valuation to recognize each year's net investment income/loss in excess of (or less than) 7.5% at a rate of 20% per year, until fully recognized after five years. For fiscal years ending prior to June 30, 2015, realized and unrealized appreciation in excess of (or less than) the assumed inflationary rate of 3.0% is recognized at a rate of 20% per year, until fully recognized after five years.

Prior to the 2011 actuarial valuation, COLAs were projected to increase at a rate of 1.75% annually. Effective with the 2011 actuarial valuation, COLAs were projected to increase at a rate of 1.625% annually. Effective with the 2015 actuarial valuation, COLAs are projected to increase at a rate of 1.50% annually.

*Method and assumptions used in calculations of school districts' actuarially determined contributions.* The actuarially determined contribution rates in the schedule of school districts' contributions are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported. Unless otherwise noted above, the following actuarial methods and assumptions were used to determine contribution rates reported in the Schedule of the School Districts' Contributions.

**Required Supplementary Information** (continued)**Notes to Required Supplementary Information** (continued)

Last 10 Fiscal Years

Actuarial cost method	Aggregate (level percent of payroll)*
Amortization method	n/a*
Remaining amortization period	n/a*
Asset valuation method	Five-year phased in deferred recognition of each year's net investment income/loss in excess of (or less than) 7.5% at a rate of 20% per year, until fully recognized after five years. For fiscal years ending prior to June 30, 2015, realized and unrealized appreciation in excess of (or less than) the assumed inflationary rate of 3.0% is subject to the five-year phase in.
Inflation	2.5%
Projected salary increases	Rates of increase differ based on service. They have been calculated based upon recent NYSTRS member experience.

<b>Service</b>	<b>Rate</b>
5	4.72%
15	3.46
25	2.37
35	1.90

Projected COLAs	1.5% compounded annually
Investment rate of return	7.5% compounded annually, net of pension plan investment expense, including inflation.

\*The System is funded in accordance with the Aggregate Cost Method, which does not identify nor separately amortize unfunded actuarial liabilities. Costs are determined by amortizing the unfunded present value of benefits over the average future working lifetime of active plan members, which currently for NYSTRS is approximately 13 years.

## Required Supplementary Information (continued)

Schedule of Investment Returns (Unaudited)  
Last Four Fiscal Years

	2016	2015	2014	2013
Annual money-weighted rate of return, net of investment expense	2.28%	5.18%	18.16%	13.73%

*Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.*

## Required Supplementary Information (continued)

**Schedule of NYSTRS' Proportionate Share of the Net Pension Liability (Unaudited)**

New York State and Local Employees' Retirement System (ERS)

Last Three Fiscal Years

(dollars in thousands)

	2016	2015	2014
System's proportion of the net pension liability	0.1095719%	0.1028788%	0.1028788%
System's proportionate share of the net pension liability	\$17,587	\$ 3,475	\$ 4,649
System's covered-employee payroll	\$28,251	\$28,067	\$26,188
System's proportionate share of the net pension liability as a percentage of covered-employee payroll	62.3%	12.4%	17.8%
ERS fiduciary net position as a percentage of the total pension liability	90.7%	97.9%	97.2%

*Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.*

Required Supplementary Information (continued)

**Schedule of NYSTRS' Contributions (Unaudited)**  
**New York State and Local Employees' Retirement System (ERS)**  
 Last 10 Fiscal Years  
 (dollars in thousands)

	2016	2015	2014	2013
Actuarially determined contribution	\$5,289	\$ 5,131	\$ 5,250	\$ 4,807
Contributions in relation to the actuarially determined contribution	5,289	5,131	5,250	4,807
Contribution deficiency	\$ -	\$ -	\$ -	\$ -
Covered-employee payroll	\$29,273	\$28,693	\$26,333	\$26,259
Contributions as a percentage of covered-employee payroll	18.07%	17.88%	19.94%	18.31%



Required Supplementary Information (continued)

Schedule of NYSTRS' Contributions (Unaudited)  
 New York State and Local Employees' Retirement System (ERS)  
 Last 10 Fiscal Years  
 (dollars in thousands)

2012	2011	2010	2009	2008	2007
\$ 3,740	\$ 2,903	\$ 1,802	\$ 1,918	\$ 2,125	\$ 2,017
3,740	2,903	1,802	1,918	2,125	2,017
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$25,830	\$24,931	\$24,916	\$24,155	\$23,000	\$21,790
14.48%	11.64%	7.23%	7.94%	9.24%	9.26%





## Required Supplementary Information (continued)

### Other Post-Employment Benefit Schedule of Funding Progress (Unaudited) June 30, 2016 (dollars in thousands)

Actuarial valuation date	Actuarial value of assets (a)	Actuarial accrued liability (AAL) – entry age normal (b)	Unfunded AAL (UAAL) (b-a)	Funded ratio (a/b)	Covered payroll (c)	UAAL as a percentage of covered payroll ((b-a)/c)
July 1, 2013	\$16,779	\$74,479	\$57,700	22.5%	\$26,500	218%
July 1, 2014	23,100	77,131	54,031	29.9	25,556	211
July 1, 2015	26,675	82,136	55,461	32.5	26,507	209

See accompanying independent auditors' report.

## Other Supplemental Schedules

**Schedules of Administrative Expenses**  
**Years ended June 30, 2016 and 2015**  
(dollars in thousands)

	2016	2015
<b>Salaries and benefits:</b>		
Salaries	\$ 29,299	\$ 29,406
Civil service	49	42
Employees retirement	5,128	5,172
Health and dental insurance	10,682	10,441
Overtime salaries	30	55
Social security	2,070	2,079
Total salaries and benefits	47,257	47,195
<b>Building occupancy expenses:</b>		
Building, grounds and equipment	1,685	1,472
Depreciation — building and improvements	1,495	1,475
Depreciation — equipment	310	264
Office supplies and expenses	189	169
Utilities and municipal assessments	826	964
Total building occupancy expenses	4,505	4,344
<b>Computer expenses:</b>		
Amortization/depreciation — computer micro	1,338	1,595
Computer hardware and software	2,657	2,199
Computer maintenance and supplies	48	30
Total computer expenses	4,043	3,824
<b>Personnel and meeting expenses:</b>		
Board — meetings, travel and education	85	92
Delegates meeting	52	62
Preretirement seminars	143	153
Professional development	715	609
Travel and automobile expense	166	163
Other personnel expenses	51	39
Total personnel and meeting expenses	1,212	1,118
<b>Professional and governmental services:</b>		
Auditors — financial	327	511
Auditors — insurance department	67	67
Disability medical examinations	96	155
Postage and cartage	810	846
Professional fees and services	565	419
Publications	269	319
Statutory custodian charges	120	117
Total professional and governmental services	2,254	2,434
Total administrative fund expenses	59,271	58,915
Reconciliation of contribution expense to pension expense	1,154	(1,967)
<b>Total Administrative Expenses</b>	<b>\$60,426</b>	<b>\$56,948</b>

See accompanying independent auditors' report.

## Other Supplemental Schedules (continued)

**Schedule of Investment Expenses**  
 Year ended June 30, 2016  
 (dollars in thousands)

Investment Category	Assets Serviced or Under Management	Expenses
Domestic fixed income securities	\$ 1,549,427	\$ 2,850
Global fixed income securities	1,947,256	3,725
Domestic equities	4,695,143	18,026
International equities	18,072,442	22,512
Mortgages	1,118,625	86
Real estate	8,374,100	63,815
Alternative investments	9,671,168	119,848
General	—	8,550
Totals	\$45,428,161	\$239,412

See accompanying independent auditors' report.



# Investments

INVESTMENTS

Page

71 ..... Report on Investment Activity

78 ..... Diversification of Investments

79 ..... Asset Allocation

79 ..... Annual Performance History

80 ..... Investment Performance Results

82 ..... Manager Investment Performance Results

86 ..... Domestic Equity Distribution

86 ..... Domestic Equity Externally Managed Style Distribution

87 ..... Domestic Equity Holdings by Industry Distribution

87 ..... Ten Largest Equity Holdings

88 ..... Domestic Fixed Income Sector Distribution

88 ..... Ten Largest Fixed Income Holdings

89 ..... Domestic Fixed Income Quality Distribution

89 ..... Domestic Fixed Income Average Maturity

89 ..... Short-Term Sector Distribution

90 ..... Global Fixed Income Quality Distribution

90 ..... Global Fixed Income Sector Distribution

91 ..... Private Equity Net Asset Value by Investment Type

91 ..... Private Equity Net Asset Value by Geography

92 ..... International Equity Style Distribution

92 ..... International Equity Exposure Distribution

93 ..... Real Estate Equity by Property Type

93 ..... Real Estate Debt by Property Type

94 ..... Breakdown of Real Estate Equity Portfolio

94 ..... Breakdown of Real Estate Debt Portfolio

95 ..... Geographic Distribution of the Real Estate Equity Portfolio

95 ..... Geographic Distribution of the Real Estate Debt Portfolio

96 ..... Corporate Governance

96 ..... Securities Lending Program

97 ..... Schedule of Investment Fees and Expenses

98 ..... Investment Advisory Committee

98 ..... Real Estate Advisory Committee

99 ..... Investment Consultants

99 ..... Master Custodian

99 ..... External Investment Managers & Advisors

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## Report on Investment Activity for Fiscal Year Ended June 30, 2016

### Overall Objectives and Performance

NYSTRS is one of the best-funded public pension plans in the nation. Our total net position was valued at \$107.5 billion as of June 30, 2016.

The financial markets resembled a rollercoaster during the fiscal year, alternating between bullish peaks and bearish valleys in reaction to a variety of domestic and world events. The unpredictable atmosphere made it difficult to realize significant gains. The fact that the Federal Reserve (Fed) continued to hold down short-term interest rates made conditions that much more challenging.

NYSTRS' total fund return, net of fees, for the fiscal year ended June 30, 2016 was 2.35%. While it marked the second consecutive year the System fell short of its expected rate of return of 7.5%, NYSTRS has posted positive returns for seven consecutive years. (Note: The 7.5% assumed rate of return was effective with the actuarial valuation as of June 30, 2015, representing a 0.5% decline from the previous assumed rate.) Our 25-year and 20-year annualized net rates of return were 8.69% and 7.61%, respectively.

Our focus remains on investing for the long term, utilizing a disciplined investment approach with a strong emphasis on risk control. The fund is managed at a very low cost compared to the value of assets, with approximately 63% of assets managed internally by System staff. Investment management expenses and fees for the externally managed or serviced portfolio equate to an annual cost of about 47 basis points, while the internally managed portfolio operates at an annual cost of approximately 5 basis points. Combined, the investment portfolio operates at an average annual cost of 23.9 basis points.

Following is an overview of how each System asset class performed during the past fiscal year.

### Public Equities

A weak macroeconomic outlook was the primary driver of global equity market performance during the fiscal year. Periodic spikes in volatility resulted in steep market declines followed by dramatic recoveries, with causes ranging from fears over China's economic slowdown in the first half of the year to the United Kingdom's surprising vote to leave the European Union (Brexit) in June. Commodity weakness persisted as oil prices also continued to fall before recovering modestly by the end of the period. In Europe and Japan, central bank intervention continued to drive interest rates lower and, in some instances, into negative territory in several developed markets.

International equities bore the brunt of bearish investor sentiment. Developed markets, as measured by the MSCI EAFE index, fell 10.2%, while the MSCI emerging markets index fell 12.1%. In contrast, domestic equities as measured by the S&P 1500 index rose 3.6%, as the Federal Reserve finally raised rates, albeit only incrementally. The increase came seven years after the global financial crisis, signaling that the world's largest economy may be strengthening.

A combination of rich asset valuations and low interest rates resulted in significant dispersion of returns by sector and by style. Investors seeking "bond substitutes" drove up prices for higher-yielding stocks in the utilities, consumer staples and telecom sectors. In the U.S., value stocks significantly underperformed as compared to their large-cap growth counterparts, particularly in the first half of the fiscal year. Cyclical stocks struggled globally, led by financials and energy. Both posted negative returns for the period.

The globally diversified NYSTRS public equity portfolio has exposure to domestic, developed and emerging international markets. Taking advantage of opportunities presented, staff raised approximately \$900 million for the domestic equity portfolio. Doing so helped reduce an overweight to that asset class while also ensuring the program remained within the ranges set by the System's asset allocation policy. During the fiscal year staff also launched a new internally managed active domestic strategy (All-Cap Disciplined Equity), targeting returns over a full market cycle in excess of its S&P 1500 benchmark. The strategy utilizes a quantitative stock selection model developed by staff that identifies undervalued stocks with improving earnings expectations.

## Report on Investment Activity for Fiscal Year Ended June 30, 2016 (continued)

Performance of the public equity program's internal and externally managed strategies was mixed during the period. Domestic active strategies all underperformed their respective benchmarks. International active managers fared somewhat better with most adding value to their respective benchmarks.

Overall, the System's domestic equity portfolio generated a positive return of 3.0% for the fiscal year, while the international equity portfolio was down 9.6%. Combined, the NYSTRS public equity program declined 1.1% for the fiscal year. Over the past five years, the System's public equity program has generated an average return of 8.6% per year.

### Fixed Income

For the first time in seven years, calendar year-end 2015 brought a Fed rate hike of 0.25%. The Federal Open Market Committee (FOMC) stated future rate hikes will occur gradually, contingent on the strength of U.S. economic data. However, despite solid domestic economic numbers, hopes of further rate hikes faded during the second half of the fiscal year, a repercussion of deteriorating economies outside of the U.S.

Globally, monetary policy continued on an accommodative path, relying on negative interest rates and bond purchases. The global economy was dominated by sluggish growth and low inflation during the fiscal year, marked by weakness in China and Europe, as well as by oil producing countries facing soft commodity prices. The profound lack of growth in the global economy and unconventional monetary policy collectively drove global yields lower throughout the fiscal year.

Another reason for diminished yields at the end of the fiscal year was the shocking Brexit vote. The U.K.'s decision drove investors into safe haven assets, resulting in yields for long maturity U.S. treasury hitting new all-time lows. However, U.S. treasuries continue to remain alluring to investors due to the yield advantage they offer when compared to sovereign debt in countries such as Japan, Switzerland and Germany.

Given the potential short- and long-term risks that Brexit presents to the global economy, the Fed is continuing to monitor fallout in the U.S., which is expected to be minimal near term. As has been their practice throughout this economic cycle, the Fed will make its federal funds rate decision one meeting at a time with an eye on fostering maximum employment and price stability in the U.S.

Fed policy continued to favorably influence key economic metrics such as the unemployment rate, manufacturing indices and consumer confidence levels — each of which impacted the fixed income markets. The U.S. unemployment rate declined to 4.9%, down from 5.3% at the end of the 2015 fiscal year. The underemployment rate continued to drop and the labor force participation rate improved, but neither has returned to pre-crisis levels. Economic and business activity measured by the Institute for Supply Management (ISM) indices revealed continued expansion in non-manufacturing sectors during the fiscal year. The manufacturing sectors also experienced expansion over the last four months of the fiscal year.

Inflation continues to run below the Fed's 2.0% objective despite average hourly earnings increasing by 2.6%. The U.S. Personal Consumption Expenditure Core Price Index (PCE) increased to 1.6% (compared to 1.4% at June 2015) as consumers benefited from gains in disposable income and household net worth. Consumer sentiment remained upbeat as measured by the University of Michigan's Survey of Consumers.

While the protracted period of low interest rates continues to be a challenge when managing fixed income, the System's focus remains on achieving the portfolio's primary objectives of generating cash flow to help meet the System's \$6.7 billion annual retirement benefit obligation and preserving capital. Both are accomplished within the context of receiving commensurate return for risk taken.

To mitigate risk, the System's internally and externally managed portfolios are well diversified by sector, issuer and exposure to different points on the maturity spectrum. Additionally, the System's external portfolio managers actively monitor and manage risk while striving to generate cash flow in excess of what could be earned in risk-free fixed income investments. Through it all, the managers seek to respond to market opportunities as they arise.



## Report on Investment Activity for Fiscal Year Ended June 30, 2016 (continued)

At fiscal year-end, roughly 64% of the internally managed domestic fixed income portfolio consisted of Aaa securities, the highest credit quality rating granted. Approximately 44% was invested in U.S. treasuries with the remaining 20% invested in very high quality U.S. agencies, agency mortgage-backed securities and supranational debt. A portion of the portfolio was invested in corporate bonds with a weighted average credit rating of mid-A. These positions, many of which are issued by multinational industry leaders, provide the System with yields greater than what could be gained by investing solely in the highest rated securities.

The externally managed global bond portfolios had a sizeable 28% allocation to the highest rated Aaa securities. These managers rely on their deep credit research resources to identify and invest in lower credit quality investment grade and non-investment grade bonds that provide additional yield. Roughly 92% of the combined portfolios were invested in investment grade bonds.

Domestic and global bond market performance during the fiscal year, as measured by the Barclays U.S. Aggregate Float Adjusted Bond Index and Barclays Global Aggregate Float Adjusted Index in U.S. dollars hedged to the U.S. dollar, returned 6.1% and 7.4%, respectively.

The best returns in the investment grade domestic fixed income market were achieved by investors who took on large U.S. treasury and corporate bond interest rate risk. Domestic bonds with maturities of one to three years returned 1.6% during the fiscal year, while bonds with maturities 10 years and greater returned 15.7%, driven by 19.3% returns in long maturity U.S. treasuries and over 14% returns in long maturity corporate bonds.

Those garnering the best returns in the global bond market were those unhedged to the U.S. dollar and who took on higher levels of interest rate risk but lower levels of credit risk. The unhedged Barclays Global Aggregate Float Adjusted Index returned 8.26%, outperforming the hedged version of the benchmark. Hedged global bonds with maturities greater than 10 years and a higher level of interest rate risk returned 18.06%, while bonds in the double and single-A rated categories outperformed with 8.84% and 8.88% returns during the fiscal year. Having a geographically diverse portfolio continued to be beneficial, as the hedged European and Asian portions of the global benchmark returned 8.47% and 9.33%, respectively, outpacing the U.S.

As of June 30, 2016, 15.78% of System investments were in the internally managed domestic fixed income portfolio. For the one- and three-year periods ended June 30, 2016, the System's long-term bond portfolio's annual return was 4.26% and 3.06%, respectively, versus the 6.12% and 4.07% for the benchmark. The one year underperformance is attributable to assuming less interest rate or duration risk for U.S. treasuries and corporate bonds as compared to the benchmark.

With respect to the externally managed global bond portfolios, as of June 30, 2016, 1.85% of System assets were invested in global bonds significantly hedged to U.S. dollars. Net of fees, global bonds returned 7.18%, compared to 7.37% for the benchmark. Country selection, duration positioning and currency positioning were the primary factors for underperforming the benchmark. Long-term, NYSTRS expects these managers will add investment diversification and help generate greater risk-adjusted fixed income returns.

### Short Term (Cash Equivalents)

The System's short-term fixed income portfolio consists of high-quality securities which can easily be converted into cash for the monthly payment of pension benefits, facilitating with asset allocation or supporting the operating commitments of the System. Securities held in this portfolio generally mature in 12 months or less. Securities that have maturities greater than 13 months at the time of purchase have a floating-rate coupon that resets every three months or less.

The short-term portfolio has an asset allocation target of 1%. As of June 30, 2016, the portfolio represented 2.2% of total invested System assets, well within the allowable range of 0–4%.

As of June 30, 2016, the portfolio's weighted average maturity and weighted average life were 26 and 32 days, respectively. For the 12 months ended June 30, 2016, the short-term portfolio returned 0.29%, versus the iMoneyNet Money Fund Averages/ All-Taxable Index benchmark, which returned 0.06%.

## Report on Investment Activity for Fiscal Year Ended June 30, 2016 (continued)

During the System's fiscal year, the Fed raised the target rate above 0.25% for the first time since December 2008. In their December 16, 2015 statement, the FOMC judged that there had been "considerable improvement in labor market conditions" and were "reasonably confident that inflation will rise, over the medium term, to its 2.0% objective." However, the rate hike did not end all monetary policy initiatives enacted after the world economic crisis that began in 2008. The FOMC continues its policy of rolling over maturities from its treasury holdings at auction and of reinvesting principal payments from its agency debt and agency mortgage backed securities into agency mortgage backed securities. This policy has resulted in maintaining an approximate \$4.5 trillion Federal Reserve balance sheet.

The FOMC's forecast of four rate hikes during the 2016 calendar year has been stymied by bouts of global financial market volatility, persistently low inflation expectations and inflation readings below the FOMC's 2.0% target for the PCE.

Regulatory pressures continue to impact markets for short-term debt instruments. Global financial institutions are subject to regulations under Basel III and Dodd-Frank that require higher levels of capital and liquidity, with the goal of reducing the impact market and economic shocks have on the financial system. At the same time both prime and government money market mutual funds continue to prepare for anticipated volatility arising from money market reform.

The outlook for the Fed target rate continues to be muddled by periodic bouts of global economic and financial market volatility, along with benign U.S. inflation and domestic growth concerns. The result: a divergence between FOMC and financial market expectations regarding the future path of interest rates.

### Real Estate

U.S. and global commercial real estate markets posted another strong year, buoyed by historically accommodative monetary policies throughout the world and demand from sovereign wealth and large U.S. core funds for hard assets with stable income streams in major global markets, primarily in the United States and Europe.

NYSTRS' domestic real estate portfolio continues to favor coastal gateway markets that attract multinational tenants and investors. By concentrating in markets like New York, Boston, Washington, D.C., San Francisco and Los Angeles, the System is able to benefit from densely populated locations with world-class education and health care centers that include diverse employment bases. Natural land limitations and local development constraints generally serve to limit the amount of competitive product that would otherwise put downward pressure on rents and existing property values.

In these primary markets, asset valuations of properties significantly exceed pre-recessionary peak levels — in most cases by 20-25% — due to a continued period of declining capital costs and global investors yearning for yield relative to their sovereign debt. Financing, although more restrictive for banks as a result of Basel III restrictions, remains cheap and plentiful through a number of sources.

U.S. labor markets have continued to add jobs at a healthy pace, although with no real wage growth. On the supply side, construction for commercial assets has been robust, with the exception of brick and mortar retail, where tenants continue to absorb the impact of online retailers.

In the property markets, multifamily demand has generally been strong, but rents are beginning to recede for Class A product while demand for lower priced units continues to increase — a reflection of the continued stagnation of real wage levels. In the major U.S. office markets, demand for space has been mixed with traditional tenants (e.g., financial services, law firms, etc.) generally contracting but technology and healthcare tenants showing consistent growth. In the retail sector, growth has been driven by discount stores while traditional anchors like Macy's, JC Penney and Sears continue to experience declining sales and store closures. The retail development pipeline is at historic lows as internet sales continue to penetrate market share and overall tenant margins. In the industrial markets, fundamentals continue to be strong as a result of demand from Amazon and other internet retailers. The focus is on large intermodal warehouses and "last-mile" distribution centers that continue to reduce the consumer's order-to-delivery timeframe.

## Report on Investment Activity for Fiscal Year Ended June 30, 2016 (continued)

U.S. public real estate securities, aided generally by debt markets and property class fundamentals, continued to perform well. Reforms which now allow non-U.S. pension funds to hold up to 10% of U.S. REITs and the recent inclusion of REITs as a separate sector in the broader S&P 500 index have been important demand drivers for this space.

On the lending side, regulations are constraining the ability for commercial banks to provide financing on construction, transitional assets and subordinate positions due to significantly increased reserve requirements. This has provided non-bank lenders (including NYSTRS) an opportunity to fill in the gap as \$1.7 trillion of commercial loans come due over the next several years.

The System has a globally diversified portfolio of public and private commercial real estate assets valued at \$17.7 billion. The portfolio is generally broken down into equity and debt components.

NYSTRS' \$11.7 billion equity portfolio consists primarily of core high-quality, cash flowing properties (including apartment projects, regional shopping malls, open-air shopping centers, warehouses and office buildings) located in major U.S. markets. International holdings account for 9.4% of the portfolio, primarily focused in the major European and Asian markets. For the fiscal year ended June 30, 2016, NYSTRS' overall equity portfolio returned 10.8%. The portfolio returned 7.6% over the last 10 years on an annualized basis, versus an overall benchmark of 5.8%.

For the fiscal year ended June 30, 2016, the U.S. core stabilized portfolio returned 9.3%. Additionally, the System invests in global opportunistic strategies where non-stabilized assets are purchased at a discount and repositioned for sale as core, cash-flowing assets. For the year ended June 30, 2016, the System's global opportunistic portfolio returned 11.2% on an annualized basis.

NYSTRS' global real estate securities portfolio consists of publicly traded REITs and real estate operating companies (REOCs) that manage top-tier commercial assets throughout the world. These assets provide the System with daily liquidity through the public markets and ongoing cash flow through dividends. For the year ended June 30, 2016, the domestic portfolio returned 19.4%, and the international portfolio returned -0.4%. The latter was significantly impacted by the weakening of the major developed market currencies relative to the U.S. dollar.

NYSTRS' \$6.0 billion real estate debt portfolio consists primarily of first mortgage positions on core properties located in major U.S. markets. International holdings, primarily in the U.K., account for approximately 2.4% of the portfolio. NYSTRS' debt portfolio returned 7.2% for the fiscal year and 5.7% over the last 10 years on an annualized basis, versus an overall benchmark of 6.1%.

The domestic first mortgage portfolio is focused on fixed-rate loans on high-quality, well-located, cash-flowing assets. For the year ended June 30, 2016, the System's mortgage portfolio returned 7.7% and had a weighted average yield to maturity of 3.3% with a duration of 5.0 years.

The System's commercial mortgage backed securities (CMBS) program is primarily comprised of investment-grade securities that are collateralized by commercial properties to provide the System with a current yield in a liquid environment. For the year ended June 30, 2016, the System's CMBS portfolio returned 5.5% and, at year end, the portfolio had a weighted average yield to maturity of 3.1% with a duration of 5.3 years.

NYSTRS' non-core debt strategies consist of higher yielding investments targeting short duration, floating rate loans on properties primarily in the U.S. The strategy seeks to supplement the overall debt portfolio with yield premiums significantly above our first mortgage and CMBS strategies. Investments are focused on transitional and senior mezzanine/subordinate positions on high quality assets in major markets. For the year ended June 30, 2016, the System's non-core debt portfolio returned 8.6%.

## Report on Investment Activity for Fiscal Year Ended June 30, 2016 (continued)

### Private Equity

NYSTRS made its first private equity investment in 1984 and formally committed to the asset class in 1999, establishing a target of 1.0% of investments. As of July 1, 2016, the target allocation is 8.0% with a range of 3.0% to 13.0%. The partnership structures generally cover periods of 10 years or more, with the goal to achieve higher long-term returns than available through marketable securities. The program seeks to outperform public equities by 500 basis points (S&P 500 plus 5.0%) over the long term.

Private equity activity continues to be characterized by a robust fundraising environment, largely driven by continued liquidity from strong public markets and increased interest from strategic buyers with strong balance sheets. Frothy capital markets and increased competition for assets continue to drive entry and leverage multiples higher. Given the current market environment, the System remains focused on investing with top-performing managers that have demonstrated an ability to prudently invest across varying macro-economic backdrops and cycles.

The Retirement System's private equity portfolio is comprised of buyout, growth, venture capital, fund of funds, secondary, co-investment, mezzanine, distressed/turnaround, special situation and real estate funds.

The Retirement System has a mature and cash-flow positive private equity program diversified by both investment strategy and geographic focus. The program continues to focus on recommitting to its top-performing partnerships, while strategically adding new relationships that provide increased exposure to particular strategies and geographies. Specifically, NYSTRS continues to de-emphasize large and mega buyout exposure, while increasing small and medium buyout exposure in both North America and Europe. Additionally, the System will continue to marginally increase exposure to sector-focused opportunities and mid-size distressed/turnaround managers. The program also seeks to supplement its venture portfolio through selective commitments to growth strategies. Increased exposure to Asia and Latin America is expected over the next five to 10 years through selective commitments with top-performing country-specific and pan-regional managers.

By fiscal year-end, the System had active commitments of \$19.0 billion with 85 fund sponsors. The private equity portfolio was valued at \$8.0 billion, representing 7.6% of the System's total assets. Unfunded commitments totaled \$5.0 billion. Over the last 10 years, the private equity program has returned 11.0%, versus the stated benchmark of 12.4%. Over the last 15 years, the private equity program has returned 11.2%, outperforming the benchmark of 10.8%.

### Other Programs

#### *Securities Lending*

The System's securities lending program generates incremental income by lending in-demand domestic and international equity and fixed income securities.

The System uses multiple agent lenders to manage the securities lending program. Each lending program is proactively monitored by NYSTRS staff to ensure it is managed in compliance with the System's contractual, statutory and risk guidelines.

The System earns a spread (the difference in income earned on reinvestment of cash collateral less the amount rebated to the borrower of the security) on loans collateralized by cash from demand and reinvestment components. The reinvestment portion of the spread is generated by investing the cash collateral received for securities loaned into high-quality, short-term fixed income securities. The demand piece of the spread is a function of borrower interest. The System also enters into non-cash loans collateralized by U.S. government and agency securities, whereby the System earns income via a fee paid by the borrower.

## Report on Investment Activity for Fiscal Year Ended June 30, 2016 (continued)

During the System's 2016 fiscal year, the money markets continued to face numerous pressures. Global financial institutions continue to be impacted by regulations such as Basel III and Dodd-Frank. The Federal Reserve Bank of New York continued to test various iterations of reverse repurchase agreements in an effort to put a floor under front-end rates and ease pressures in the money markets. Flows associated with SEC money market reform caused money market yields and spreads to increase for many issuers, notably financial institutions.

The System's securities lending program also felt the impact of more expensive counterparty borrowing costs brought about by regulatory changes. Borrowers continued to prefer pledging non-cash collateral over cash collateral in order to optimize their balance sheets and reduce capital charges. With the diminishing preference from borrowers for pledging cash collateral along with the risk-averse nature of the program, the lending agents maintained a low level of loan balances.

Aside from regulatory and technical pressures, front-end rates rose when the FOMC increased the federal funds target rate. NYSTRS' securities lending program is well insulated from a rise in rates as the risk-controlled program takes a value lending approach, with a short duration mismatch between the loan portfolio and the cash reinvestment portfolio.

The System's securities lending program continued to generate the majority of income from borrower demand, earning \$16.5 million for the fiscal year ended June 30, 2016, compared to \$17.3 million for the fiscal year ended June 30, 2015.

As of June 30, 2016, the securities lending portfolio was collateralized at approximately 102.2%, with 3.8% of the System's assets available to lend. That was up from 3.6% on loan at June 30, 2015,

The prior fiscal year's unrealized gain on investments in the System's cash collateral reinvestment portfolio receded during the 2016 fiscal year, settling at \$2.3 million (including unpaid income) as of June 30, 2016. The depreciation in unrealized gain is the result of a lower indicative price received from prospective bidders in the market as the illiquid security continues to experience burn-out. The System continues to receive monthly principal and interest payments, at par, from the underlying holdings of the security.

For information describing the securities lending process, please see the *Notes to Financial Statements* under the heading "Securities Lending Transactions."

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# INVESTMENTS

## Diversification of Investments June 30, 2016 and June 30, 2015 (dollars in thousands)

Investment type	2016	Percent	2015	Percent	Increase (Decrease)
<b>Short-term:</b>					
Government related*	\$ 229,375		\$ 79,998		\$ 149,377
Corporate	2,082,663		2,473,632		(390,969)
	<u>2,312,038</u>	2.20%	<u>2,553,630</u>	2.39%	<u>(241,592)</u>
<b>Domestic fixed income securities:</b>					
United States Treasury	7,232,770		7,559,009		(326,239)
Federal agency, notes & debentures	1,242,135		1,339,197		(97,062)
Federal agency mortgage backed	1,998,238		2,243,947		(245,709)
Commercial mortgage backed	1,549,427		1,317,603		231,824
Corporate	6,123,065		5,438,227		684,838
	<u>18,145,635</u>	17.26	<u>17,897,983</u>	16.77	<u>247,652</u>
<b>Global fixed income securities:</b>					
	1,947,256		1,565,394		381,862
	<u>1,947,256</u>	1.85	<u>1,565,394</u>	1.47	<u>381,862</u>
<b>Domestic equities:</b>					
Consumer Discretionary	5,136,093		5,459,409		(323,316)
Consumer Staples	3,980,047		3,503,815		476,232
Energy	2,801,991		3,029,205		(227,214)
Financials	8,514,295		8,784,486		(270,191)
Health Care	5,766,888		6,217,205		(450,317)
Industrials	4,408,453		4,471,694		(63,241)
Information Technology	7,964,741		7,975,701		(10,960)
Materials	1,542,659		1,644,741		(102,082)
Telecommunication Services	1,062,588		826,298		236,290
Utilities	1,487,201		1,164,689		322,512
Miscellaneous	107,828		115,784		(7,956)
	<u>42,772,784</u>	40.68	<u>43,193,027</u>	40.47	<u>(420,243)</u>
<b>International equities:</b>					
Commingled investments	7,735,615		8,578,102		(842,487)
Direct investments	9,975,190		10,999,568		(1,024,378)
REITs	418,311		417,637		674
	<u>18,129,116</u>	17.24	<u>19,995,307</u>	18.73	<u>(1,866,191)</u>
<b>Mortgages:</b>					
Conventional	3,784,963		3,775,423		9,540
Federal Housing Administration	1,243		1,379		(136)
	<u>3,786,206</u>	3.60	<u>3,776,802</u>	3.54	<u>9,404</u>
<b>Real estate:</b>					
Direct equity real estate investments	5,075,021		4,852,370		222,651
Commingled real estate investments	3,299,079		3,373,769		(74,690)
Other real estate owned	5,000		5,000		—
	<u>8,379,100</u>	7.97	<u>8,231,139</u>	7.71	<u>147,961</u>
<b>Alternative investments:</b>					
Private equity	8,020,833		8,258,252		(237,419)
Real estate equity funds	607,359		530,282		77,077
Real estate debt funds	718,313		421,586		296,727
Timberland	324,663		317,958		6,705
	<u>9,671,168</u>	9.20	<u>9,528,078</u>	8.92	<u>143,090</u>
<b>Total investments</b>	<b>\$105,143,303</b>	<b>100.00%</b>	<b>\$106,741,360</b>	<b>100.00%</b>	<b>\$(1,598,057)</b>

\*U.S. Treasury, agency, supranational, and sovereign debt issues.

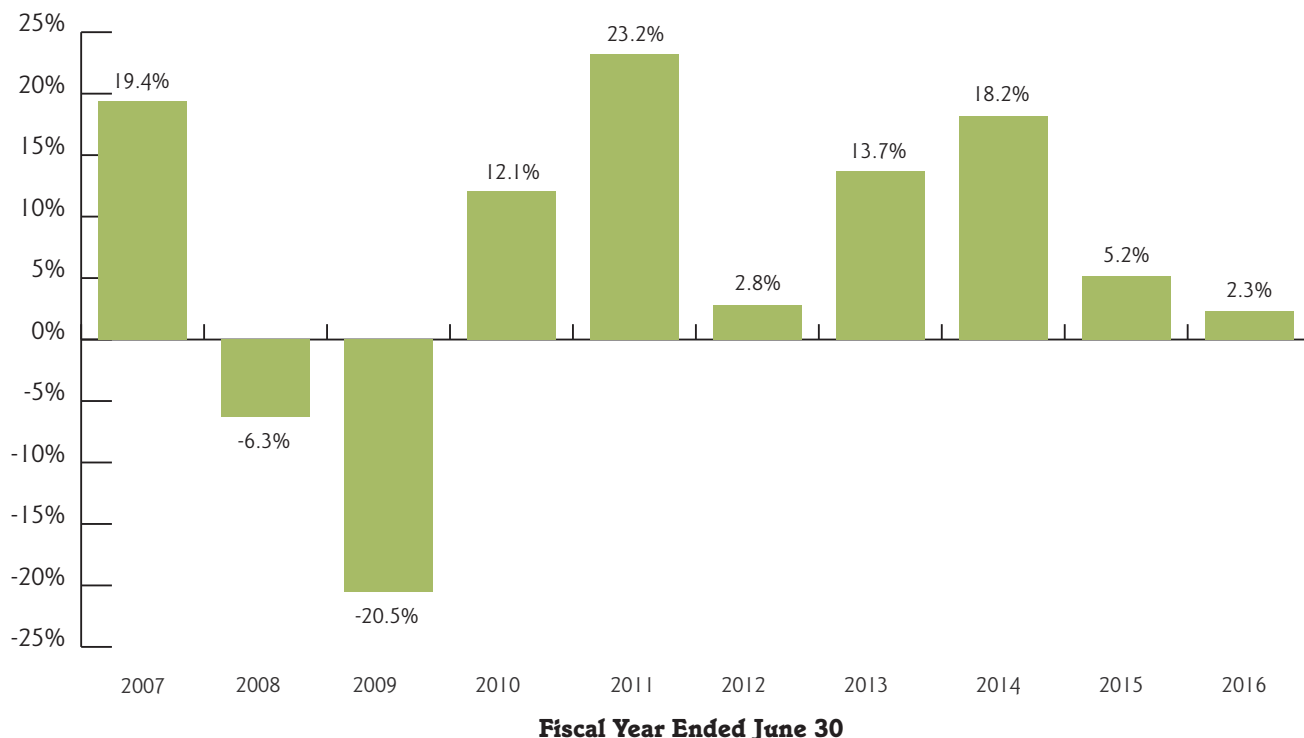


## Asset Allocation — as of June 30, 2016

The most significant contributor to a fund's long-term investment performance is the allocation decision among the various asset classes, including equities, fixed income and real estate. The allocation process helps control risk and sets the guidelines to diversify the System's portfolio. The asset allocation policy adopted by the Board allows ranges around an optimal target allocation. The Retirement Board, with the assistance of an external consultant, reviews the asset allocation policy on an annual basis to analyze recent and historical investment experience. Since this is a long-term plan, adjustments to the allocation are usually made on an annual basis when necessary. The current targets, ranges and actual allocations are detailed below:

	Target	Range	Actual
Domestic Equity	37%	32-42%	38.8%
International Equity	18%	14-22%	16.8%
Real Estate	10%	6-14%	11.1%
Private Equity	7%	4-12%	7.6%
<i>Total Equities</i>	<u>72%</u>		<u>74.3%</u>
Domestic Fixed Income	17%	13-22%	15.8%
Global Bonds	2%	0-3%	1.9%
Mortgages	8%	5-11%	5.8%
Cash Equivalents	1%	0-4%	2.2%
<i>Total Fixed Income</i>	<u>28%</u>		<u>25.7%</u>

## Annual Performance History





# INVESTMENTS

## Investment Performance Results — as of June 30, 2016

The System is a long-term investor and therefore can withstand some short-term volatility. The liabilities are generally long-term in nature and may not become payable for 30 or more years in the future. The time-weighted performance (net of fees) and associated benchmark returns are shown in the following table.

	Annualized Rates of Return			
	1-YR	3-YR	5-YR	10-YR
<b>Domestic Equities</b>				
NYSTRS AllCap Disc. Equity Fund	0.7%	- %	- %	- %
NYSTRS Growth Tilt2 Fund	2.2	11.3	11.8	-
NYSTRS Index2 Fund	3.6	11.5	12.0	-
NYSTRS Value Tilt2 Fund	2.6	11.4	12.1	-
Benchmark: S&P 1500*	3.6	11.5	11.9	-
NYSTRS S&P 100 Fund	4.6	11.3	12.1	-
Benchmark: S&P 100	4.6	11.3	12.2	-
NYSTRS S&P 500 Fund	4.0	11.6	12.2	-
Benchmark: S&P 500	4.0	11.7	12.1	-
NYSTRS S&P 600 Fund	0.0	10.3	11.2	-
Benchmark: S&P 600	0.0	10.2	11.2	-
Total Enhanced All Cap Management	-3.6	8.2	9.1	-
Benchmark: Russell 3000	2.1	11.1	11.6	-
Total Active All Cap Management	-4.6	8.0	8.6	-
Benchmark: S&P All Cap (Equal Weighted)	1.8	10.9	11.3	-
Total Enhanced Large Cap Management	3.9	11.9	12.2	-
Benchmark: S&P 500	4.0	11.7	12.1	-
Total Active Mid Cap Management	-8.5	9.3	11.5	10.5
Benchmark: Russell Midcap*	0.6	10.8	10.9	8.0
Total Domestic Equities	3.0	11.4	11.9	7.6
Benchmark: Blended S&P/Russell*	3.5	11.5	11.9	7.6
<b>International Equities</b>				
NYSTRS Canadian Index	-5.5	0.8	-	-
Benchmark: MSCI Canada	-6.3	0.1	-	-
Total External Passive Management	-9.9	1.5	0.6	0.9
Total Active Management	-8.6	2.3	2.4	2.3
Total International Equities	-9.6	1.6	0.8	1.2
Benchmark: Blended MSCI ACWI (ex-US)/EAFE*	-10.2%	1.2%	0.3%	0.9%

\*In a dynamic market, strategies and objectives evolve over time. Consequently, these benchmarks are blended due to historical investment strategy decisions.

## Investment Performance Results — as of June 30, 2016 (continued)

	Annualized Rates of Return			
	1-YR	3-YR	5-YR	10-YR
<b>Real Estate</b>	10.8%	13.7%	13.2%	7.6%
Benchmark: Blended NCREIF/REIT*	13.1	12.4	11.7	5.8
<b>Private Equity</b>	8.7	15.2	12.5	11.0
Benchmark: S&P 500 plus 5%	9.0	16.7	17.1	12.4
<b>Domestic Fixed Income</b>	4.3	3.1	3.0	4.7
Benchmark: Barclays Capital Aggregate Float Adj*‡	6.1	4.1	3.8	5.2
<b>Global Bonds</b>	7.2	4.8	-	-
Benchmark: Barclays Global Agg. Hedged (Flt. Adj.)‡	7.4	5.2	4.8	-
<b>Mortgages</b>	7.2	6.1	6.1	5.7
Benchmark: Blended GLCMPI/Barclays‡	7.4	5.6	5.2	6.1
<b>Short-Term</b>	0.3	0.2	0.2	1.2
Benchmark: iMoneyNet MONEY FUND AVERAGE™/Taxable (All)	0.1	0.0	0.0	0.9
<b>Total Fund</b>	<b>2.3%</b>	<b>8.4%</b>	<b>8.3%</b>	<b>6.2%</b>

\*In a dynamic market, strategies and objectives evolve over time. Consequently, these benchmarks are blended due to historical investment strategy decisions.  
 ‡See footnote on the Investments Divider page.

# INVESTMENTS

## Manager Investment Performance Results — as of June 30, 2016

The assets under management (at market), time-weighted performance results (at market) and appropriate benchmark or equity multiple for each manager/advisor are summarized in the following table.

	Assets Managed (\$ millions)	Rates of Return <sup>1</sup> from Inception		Inception Date
		Fund	Benchmark	
<b>Domestic Equities</b>				
Enhanced All Cap Management				
Progress	\$ 745.8	10.6%	12.9%	Nov-10
Active All Cap Management				
Leading Edge	420.3	9.6	12.2	Dec-10
Enhanced Large Cap Management				
T. Rowe Price	587.4	15.7	15.5	Jan-09
Active Mid Cap Management				
Iridian	1,009.9	10.1	5.2	Apr-99
<b>International Equities</b>				
Passive Management				
BlackRock ACWI	7,152.0	5.3	5.0	Dec-11
State Street ACWI	7,157.8	4.1	3.9	Jul-12
Active Management				
Aberdeen	485.3	1.8	1.0	Dec-10
AQR	536.4	5.2	3.3	Feb-12
Baillie Gifford	554.3	6.6	4.1	Sep-11
DFA	140.0	-2.9	-4.3	Feb-13
FIS	101.7	0.7	-0.8	May-13
LSV	523.7	1.4	0.3	Jul-11
Marathon	443.6	7.3	4.9	Jan-12
William Blair	559.3	4.9	1.7	Oct-10
<b>Global Bonds</b>				
Loomis Sayles	965.5	3.4	4.0	Nov-12
Wellington	981.7	5.4	5.6	Aug-13
<b>Mortgages</b>				
BlackRock: CMBS	527.4	5.6	5.8	Apr-01
Prima: CMBS	536.5	5.7	5.1	Nov-03
Torchlight: CMBS	445.3	5.2	5.8	Apr-01
Torchlight: Torchlight Value Fund	40.2	4.1	-1.0	Sep-05
<b>Real Estate</b>				
Direct Investments				
Bentall Kennedy	99.5	9.6	8.3	Apr-95
Clarion Partners	994.7	9.7	6.4	Jun-90
Invesco Realty Advisors (Industrial)	200.1	8.8	8.3	Nov-94
Invesco Realty Advisors (Multi-family)	94.4	11.4	7.6	Dec-98
JPMorgan Asset Management	3,279.1	11.1	6.6	Oct-90
Sentinel Real Estate	\$ 407.2	11.5%	8.4%	Mar-96

<sup>1</sup>Returns for periods over 1 year are annualized.

## Manager Investment Performance Results — as of June 30, 2016 (continued)

	Assets Managed (\$ millions)	Rates of Return <sup>1</sup> from Inception		Inception Date
		Fund	Benchmark	
<b>Direct Investments - Timber</b>				
Forest Investments: Adirondack Timber I	\$324.7	4.5%	5.8%	Dec-98
<b>Domestic Public Securities</b>				
Adelante Capital Management	342.1	11.2	10.7	Aug-98
Cohen & Steers: Equity Income	382.1	10.8	9.9	Jul-98
Cohen & Steers: REIT Preferred	183.6	9.6	8.1	Sep-07
Cohen & Steers: Total Return	622.6	12.6	11.5	Jun-95
Deutsche Asset & Wealth Management	401.3	12.0	10.7	Aug-98
<b>International Public Securities</b>				
Deutsche Asset & Wealth Management	291.7	0.2	1.1	Dec-06
LaSalle Investment Management	\$126.5	-1.1%	1.1%	Dec-06
	Assets Managed (\$ millions)	Inception Rate of Return <sup>1</sup>	Equity Multiple	Inception Date
<b>Commingled Funds</b>				
Abacus: Multi-Family Partners II	\$ 17.6	32.4%	1.7	Apr-13
Abacus: Multi-Family Partners III	21.1	24.0	1.1	Jun-15
Angelo, Gordon & Co.: AG Core Plus Realty Fund IV	11.5	2.9	1.0	Jun-15
Angelo, Gordon & Co.: AG Realty Fund VI	0.6	2.7	1.1	Sep-05
Angelo, Gordon & Co.: AG Realty Fund VII	7.8	13.7	1.6	Dec-07
Angelo, Gordon & Co.: AG Realty Fund VIII	33.2	17.9	1.5	Sep-11
Angelo, Gordon & Co.: AG Realty Fund IX	10.9	-0.8	1.0	Nov-15
Apollo: CPI Capital Partners North America	0.4	-7.7	0.7	Dec-06
Artemis: Real Estate Fund I	20.3	23.5	1.4	Jul-11
Artemis: Real Estate Fund II	18.2	5.1	1.0	May-14
BlackRock: Asia Fund II	3.9	-1.7	0.9	Apr-05
BlackRock: Asia Fund III	39.0	3.5	1.2	May-07
BlackRock: Europe Fund III	6.2	3.5	1.2	Jun-07
BlackRock: Europe Parallel Fund II	0.2	-11.8	0.5	Apr-05
BlackRock: Granite Property Fund	34.3	5.8	2.5	Dec-97
Blackstone RE Partners: Asia	129.0	15.2	1.3	Dec-13
Blackstone RE Partners: Europe IV	138.3	5.5	1.1	Apr-14
Blackstone RE Partners: Fund V TE.2	28.5	10.8	1.8	Jul-06
Blackstone RE Partners: Fund VI TE.2	57.9	12.6	1.9	Mar-07
Blackstone RE Partners: Fund VII	77.4	20.5	1.5	Dec-11
Blackstone RE Partners: Fund VIII	82.9	18.1	1.1	Aug-15
Brockton Capital: Fund III	19.2	5.6	1.1	Feb-16
Brookfield Properties: DC Office Partners	67.2	7.8	1.1	Jun-15
Brookfield Properties: DTLA Holdings	239.1	21.8	1.7	Oct-13
Brookfield Properties: Office Partners	\$225.7	8.8%	1.8	Oct-06

<sup>1</sup>Returns for periods over 1 year are annualized.

# INVESTMENTS

## Manager Investment Performance Results — as of June 30, 2016 (continued)

	Assets Managed (\$ millions)	Inception Rate of Return <sup>1</sup>	Equity Multiple	Inception Date
<b>Commingled Funds (continued)</b>				
Cabot Properties: Industrial Value Fund II	\$ 56.8	3.2%	1.3	Nov-05
Cabot Properties: Industrial Value Fund IV	52.7	10.8	1.1	Mar-14
CBRE: China Opportunity Fund	0.0	11.4	1.5	Dec-06
CBRE: Strategic Partners Europe Fund III	1.1	-17.5	0.3	Apr-07
CBRE: Strategic Partners U.K. Fund III	0.5	-23.8	0.2	May-07
CBRE: Strategic Partners U.S. Opport. 5	33.4	6.0	1.4	Dec-07
CBRE: Strategic Partners U.S. Value 6	31.3	14.4	1.4	Dec-11
CBRE: Strategic Partners U.S. Value 7	50.7	13.6	1.2	Sep-14
Cerberus: Institutional Real Estate Partners	0.5	9.7	1.2	May-04
Cerberus: Institutional Real Estate Partners - Series Two	8.4	17.4	1.5	May-08
Cerberus: Institutional Real Estate Partners III	54.9	15.6	1.3	Dec-12
Clarion Partners: Development Ventures III	13.4	13.5	1.7	Apr-09
Cornerstone: Apartment Venture I	0.3	65.2	2.5	Jul-03
Cornerstone: Apartment Venture III	0.0	4.3	1.2	Apr-07
DLJ: Real Estate Capital Partners III	42.6	-1.2	0.9	Jun-05
DLJ: Real Estate Capital Partners IV	59.6	2.5	1.1	Feb-08
Exeter Property Group: Industrial Value Fund	15.1	11.1	1.8	Nov-07
Exeter Property Group: Industrial Value Fund II	15.4	30.1	2.0	Dec-11
Exeter Property Group: Industrial Value Fund III	61.7	17.1	1.2	Sep-14
FCP: Realty Fund II	31.0	22.1	1.5	Feb-12
FCP: Realty Fund III	25.6	-5.1	1.0	May-15
GAW Capital: Gateway Real Estate Fund IV	79.6	13.4	1.2	Jun-13
GCM Grosvenor: NYSTRS RE Investment Partners	61.2	2.9	1.0	Jul-14
Hines Interests: Emerging Markets	1.2	19.8	1.9	Oct-99
Hines Interests: U.S. Office Value Added	0.0	17.3	1.5	Jan-05
Hines Interests: U.S. Office Value Added II	20.0	-5.0	0.7	Aug-07
JPMorgan: Excelsior II	22.0	-2.7	0.8	Dec-05
Landmark Partners: Real Estate Trust IV	0.3	19.6	1.6	Mar-02
LaSalle: Asia Opportunity Fund III	5.2	0.8	1.0	Mar-08
Lone Star: Fund III	0.8	31.9	2.1	Oct-00
Lone Star: Fund IV	1.4	30.8	2.3	Dec-01
Lone Star: Fund V	30.1	-0.5	1.0	Jan-05
Lone Star: Fund VI	10.5	12.0	1.6	Jul-08
Lone Star: Fund VII	10.9	48.2	1.8	Jun-11
Lone Star: Fund IX	48.3	7.3	1.0	Mar-15
Lone Star: Real Estate Fund II	16.3	26.6	1.5	Jun-11
Lone Star: Real Estate Fund III	28.1	17.7	1.2	May-14
Northwood Investors: Real Estate Partners Series VI	15.7	-5.2	1.0	Jan-16
O'Connor: North American Property Partners	20.7	-3.2	0.8	Sep-04
O'Connor: North American Property Partners II	11.9	-2.5	0.9	Oct-07
O'Connor: Peabody Global Real Estate	\$ 0.3	14.3%	1.5	Jul-99

<sup>1</sup>Returns for periods over 1 year are annualized.

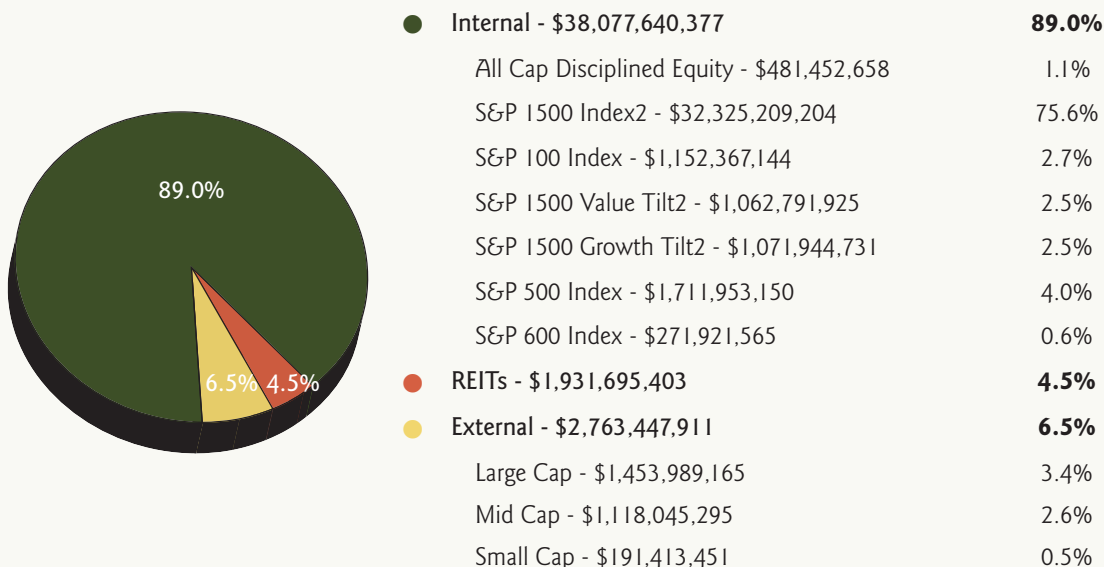
## Manager Investment Performance Results — as of June 30, 2016 (continued)

	Assets Managed (\$ millions)	Inception Rate of Return <sup>1</sup>	Equity Multiple	Inception Date
<b>Commingled Funds (continued)</b>				
Penwood RE: Calif. Select Industrial Partners	\$ 25.2	-6.5%	0.8	Dec-05
Penwood RE: Select Industrial Partners II	16.8	25.4	1.9	Aug-07
Penwood RE: Select Industrial Partners III	24.0	28.2	1.3	Jun-12
Penwood RE: Select Industrial Partners IV	23.5	-9.9	1.0	Jun-15
PGIM Real Estate: PLA Residential Fund III	11.1	-6.8	0.6	Mar-08
PGIM Real Estate: PRISA	309.2	6.5	4.7	Sep-85
PGIM Real Estate: PRISA II	257.6	7.7	2.6	Sep-89
PGIM Real Estate: PRISA III	109.4	8.5	1.8	Jun-03
PW Real Assets: Perella Weinberg Real Estate Fund I	2.9	13.1	1.5	Jan-08
PW Real Assets: Perella Weinberg Real Estate Fund II	23.1	5.0	1.1	Sep-13
Rockpoint: Core Plus RE Fund	39.9	16.1	1.1	Mar-15
Rockpoint: Finance Fund I	1.2	-7.4	0.6	Mar-07
Rockpoint: Heritage Fields	52.2	0.3	1.0	Jul-05
Rockpoint: Real Estate Fund I	0.2	11.9	1.2	Sep-04
Rockpoint: Real Estate Fund II	17.9	-2.6	0.9	Sep-05
Rockpoint: Real Estate Fund III	10.7	14.3	1.4	Dec-07
Rockpoint: Real Estate Fund IV	31.7	25.1	1.3	Dec-12
Rockpoint: Real Estate Fund V	5.7	-1.0	1.0	Jan-16
Rockwood: Fund V	1.0	12.3	1.4	Jul-03
Rockwood: Fund VI	22.8	1.8	1.1	Jun-05
Rockwood: Fund VII	37.7	-3.9	0.7	Oct-06
Rockwood: Fund VIII	10.1	19.7	1.7	Mar-09
Starwood: Distressed Opportunity Fund IX	43.8	27.7	1.5	Mar-13
Starwood: Opportunity Fund IV	0.1	16.9	2.2	Jan-97
Starwood: Opportunity Fund VII-A	19.6	-2.2	0.8	Jan-06
Starwood: Opportunity Fund X Global	58.7	27.3	1.2	Oct-15
UBS Realty: Trumbull Prop. Fund	358.4	7.1	5.4	Sep-85
Walton Street: Real Estate Fund VI	40.6	8.9	1.4	Apr-09
Westbrook: Real Estate Fund V	11.0	43.8	1.8	Feb-05
Westbrook: Real Estate Fund VI	30.7	0.6	1.0	May-06
Westbrook: Real Estate Fund VII	26.5	3.3	1.2	Dec-07
Westbrook: Real Estate Fund VIII	10.0	12.5	1.3	Jun-10
Westbrook: Real Estate Fund IX	\$ 42.9	12.1%	1.2	Jun-13

<sup>1</sup>Returns for periods over 1 year are annualized.

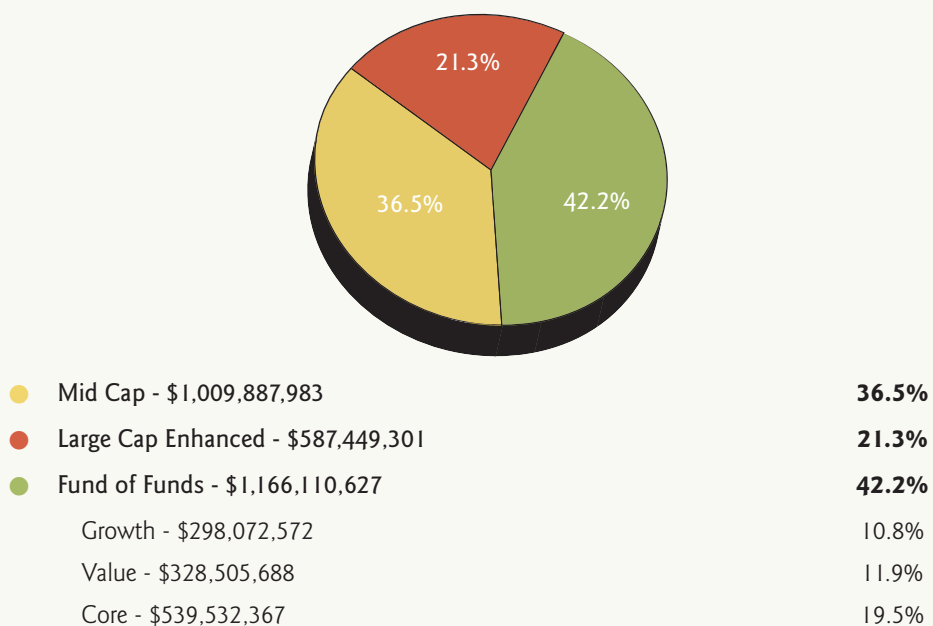
## Domestic Equity Distribution — as of June 30, 2016

\$42,772,783,691



## Domestic Equity Externally Managed Style Distribution — as of June 30, 2016

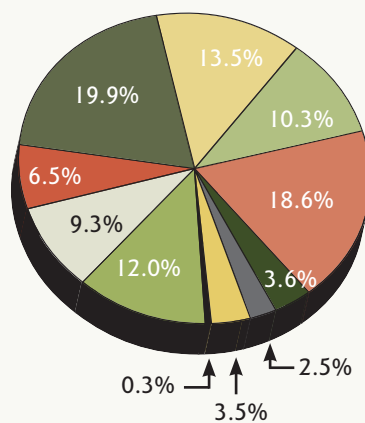
\$2,763,447,911





**Domestic Equity Holdings by Industry Distribution**  
— as of June 30, 2016

\$42,772,783,691



●	Consumer Discretionary - \$5,136,092,869	<b>12.0%</b>
○	Consumer Staples - \$3,980,047,018	<b>9.3%</b>
●	Energy - \$2,801,991,211	<b>6.5%</b>
●	Financials - \$8,514,295,109	<b>19.9%</b>
●	Health Care - \$5,766,887,889	<b>13.5%</b>
●	Industrials - \$4,408,453,491	<b>10.3%</b>
●	Information Technology - \$7,964,741,184	<b>18.6%</b>
●	Materials - \$1,542,659,396	<b>3.6%</b>
●	Telecommunication Services - \$1,062,587,605	<b>2.5%</b>
●	Utilities - \$1,487,201,257	<b>3.5%</b>
●	Miscellaneous - \$107,826,662	<b>0.3%</b>

**Ten Largest Equity Holdings — as of June 30, 2016**

Rank	Company	Cost	Market Value	Percent of Equities
1	Apple	\$ 88,729,973	\$ 1,041,021,100	2.0%
2	Alphabet Inc.	295,377,146	820,606,745	1.6%
3	Microsoft Corp.	312,326,640	806,944,202	1.5%
4	Exxon Mobil Corp.	142,353,681	778,033,374	1.5%
5	Johnson & Johnson	117,984,087	661,977,395	1.3%
6	General Electric	162,032,483	570,218,305	1.1%
7	Amazon.com Inc.	67,876,343	547,253,478	1.0%
8	Berkshire Hathaway Inc.	290,131,127	531,116,401	1.0%
9	Facebook Inc.	289,802,778	521,213,594	1.0%
10	AT&T Inc.	156,170,079	519,631,162	1.0%
<b>Total</b>		<b>\$1,922,784,337</b>	<b>\$6,798,015,756</b>	<b>13.0%</b>

A complete list of the System's holdings is available on our website (see "Investments" under the heading "About Us") or through the Public Information Office.



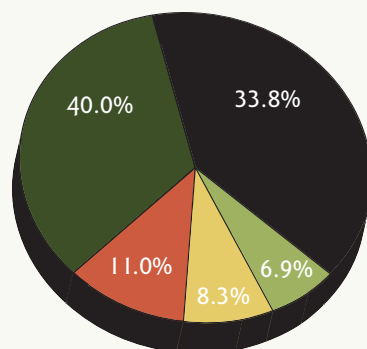
# INVESTMENTS

## Domestic Fixed Income Sector Distribution\*

— as of June 30, 2016

\$18,105,398,654

Yield to Maturity 1.4%



● U.S. Treasuries - \$7,232,770,224	<b>40.0%</b>
Yield to Maturity - 0.8%	
● Corporate - \$6,123,065,084	<b>33.8%</b>
Yield to Maturity - 1.8%	
● Federal Agency, Notes/Debentures - \$1,242,135,061	<b>6.9%</b>
Yield to Maturity - 1.0%	
● REIT & Commercial Mortgage Backed, Separate Account - \$1,509,191,086	<b>8.3%</b>
Yield to Maturity - 3.1%	
● Federal Agency, Mortgage Backed & Asset Backed - \$1,998,237,199	<b>11.0%</b>
Yield to Maturity - 1.5%	

\*Excluding CMBS Commingled Fund.

## Ten Largest Fixed Income Holdings\* — as of June 30, 2016

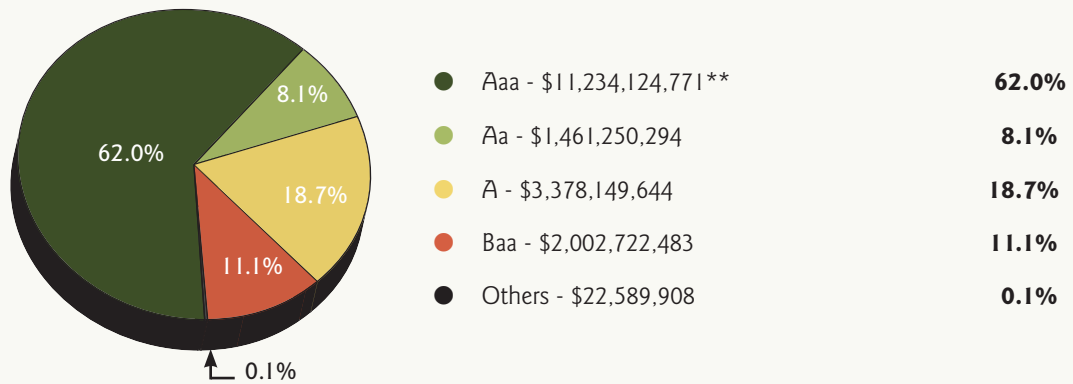
Rank	Issue	Market Value	Percent of Fixed Income Market Value
1	AID-Israel 5.50% Due 4/26/2024	\$ 127,644,056	0.6%
2	U.S. Treasury Note 0.625% Due 5/31/2017	125,779,278	0.6%
3	U.S. Treasury Note 3.625% Due 2/15/2020	111,403,454	0.5%
4	U.S. Treasury Note 1.50% Due 8/31/2018	84,521,342	0.4%
5	U.S. Treasury Note 2.75% Due 11/15/2023	82,939,217	0.4%
6	U.S. Treasury Note 1.75% Due 5/15/2022	77,666,629	0.4%
7	U.S. Treasury Note 0.75% Due 3/15/2017	75,305,632	0.4%
8	U.S. Treasury Note 0.875% Due 6/15/2017	75,286,539	0.4%
9	U.S. Treasury Note 0.625% Due 8/31/2017	75,224,025	0.4%
10	U.S. Treasury Note 0.50% Due 9/30/2016	75,122,162	0.4%
<b>Total</b>		<b>\$910,892,334</b>	<b>4.5%</b>

\*Excluding short-term portfolio holdings.

A complete list of the System's holdings is available on our website (see "Investments" under the heading "About Us") or through the Public Information Office.

## Domestic Fixed Income Quality Distribution — as of June 30, 2016

\$18,098,837,100\*



\*Excluding CMBS portfolio cash/short-term investment fund and CMBS commingled fund.

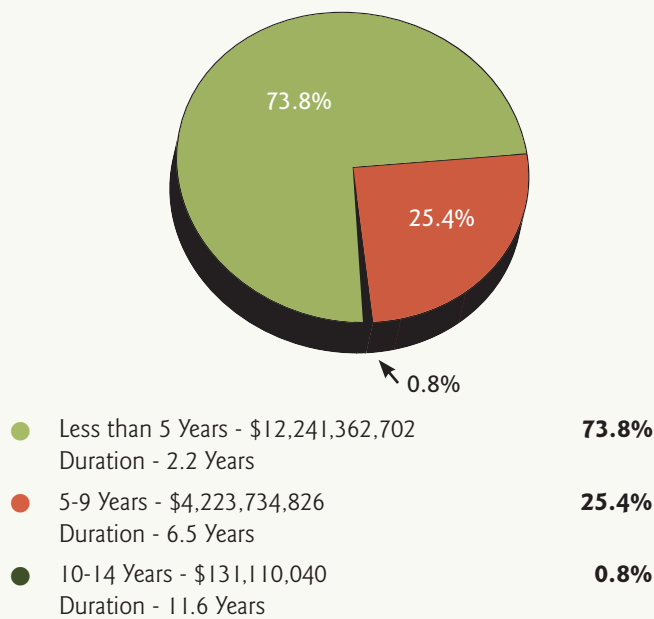
\*\*Includes explicitly and implicitly guaranteed debt issued by the U.S. government and its agencies.

## Domestic Fixed Income Average Maturity — as of June 30, 2016

\$16,596,207,568

Internally Managed

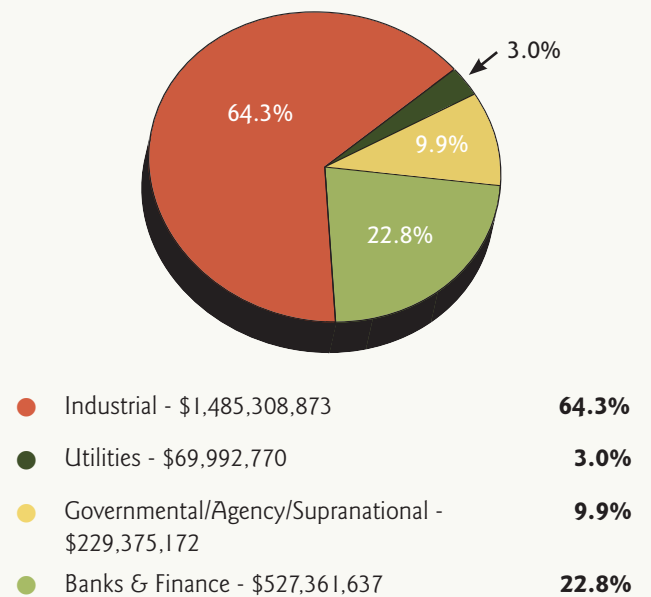
Effective Duration 3.4 Years



## Short-Term Sector Distribution — as of June 30, 2016

\$2,312,038,452

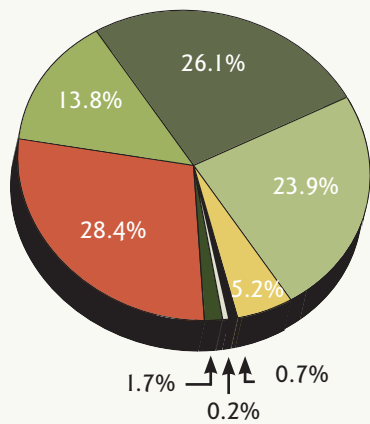
Internally Managed



# INVESTMENTS

## Global Fixed Income Quality Distribution — as of June 30, 2016

\$1,947,256,040

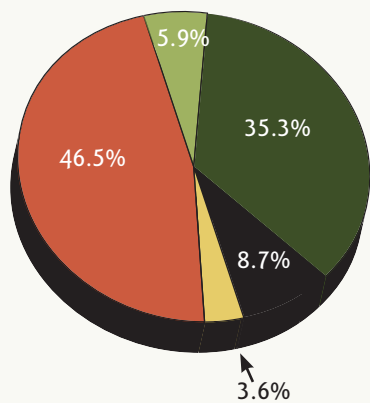


● Aaa - \$552,754,311	<b>28.4%</b>
● Aa - \$267,926,046	<b>13.8%</b>
● A - \$509,124,417	<b>26.1%</b>
● Baa - \$464,632,524	<b>23.9%</b>
● Ba - \$101,996,606	<b>5.2%</b>
● B - \$13,696,785	<b>0.7%</b>
○ Caa - \$3,869,262	<b>0.2%</b>
● Not Rated - \$33,256,089*	<b>1.7%</b>

\*Includes cash (U.S. dollar equivalents) and State Street Government Short Term Investment Fund.

## Global Fixed Income Sector Distribution — as of June 30, 2016

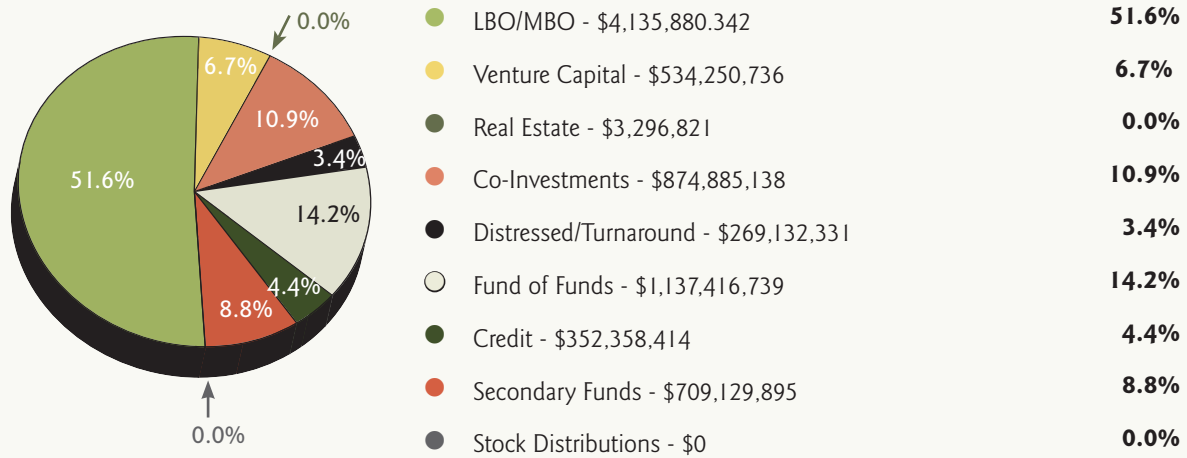
\$1,947,256,040



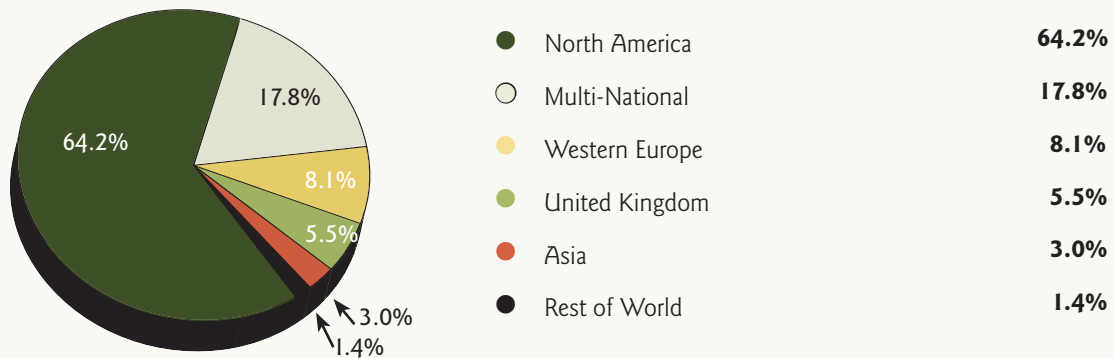
● Global Treasuries - \$905,084,607	<b>46.5%</b>
● Government Related - \$115,472,283	<b>5.9%</b>
● Corporate - \$688,160,285	<b>35.3%</b>
● Securitized - \$169,021,824	<b>8.7%</b>
● Other - \$69,517,041	<b>3.6%</b>

## Private Equity Net Asset Value by Investment Type — as of June 30, 2016

**\$8,016,350,416**



## Private Equity Net Asset Value by Geography\* — as of June 30, 2016

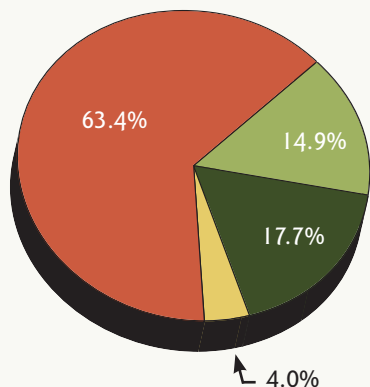


\*Excluding fund of funds and secondary funds.

# INVESTMENTS

## International Equity Style Distribution — as of June 30, 2016

\$17,710,805,649

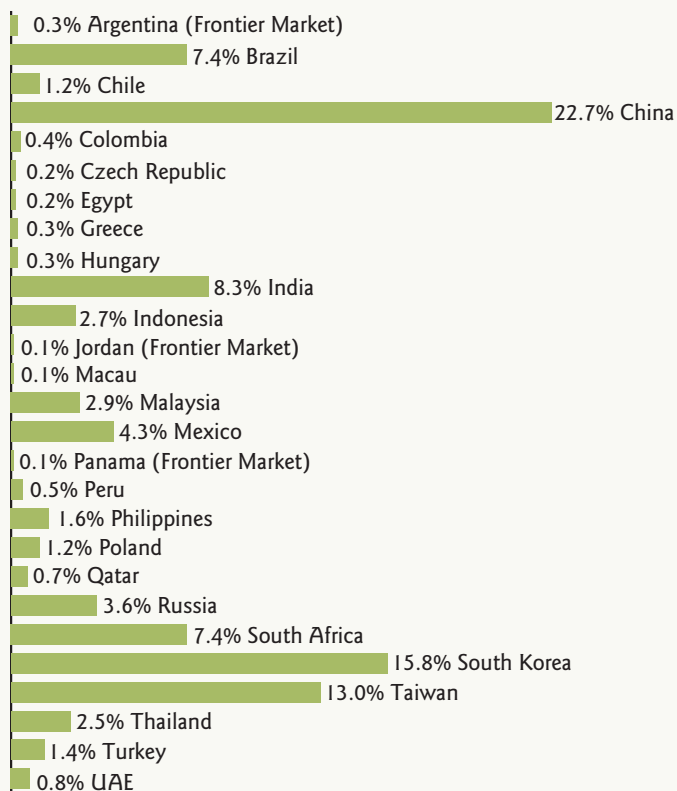
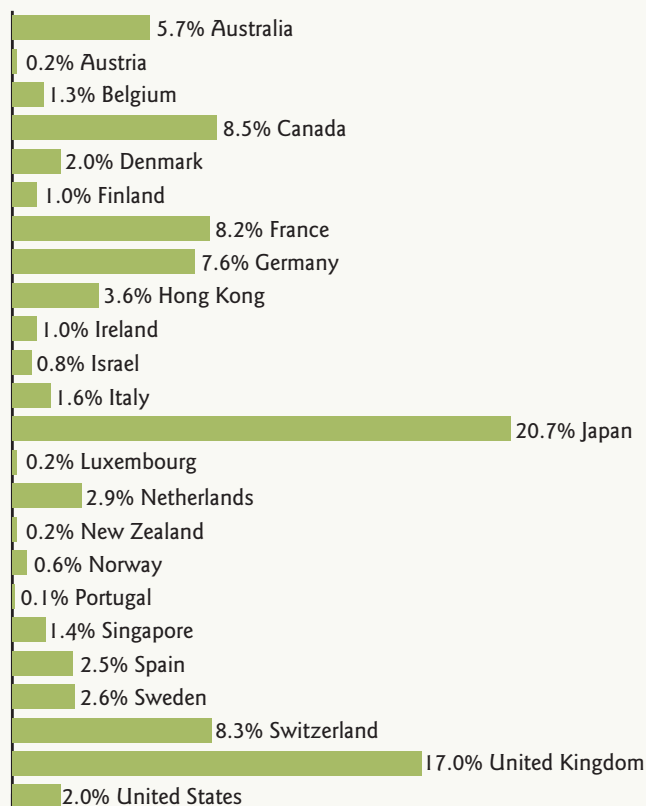


Developed Markets - Passive - \$11,232,120,769	<b>63.4%</b>
Developed Markets - Active - \$2,639,302,308	<b>14.9%</b>
Emerging Markets - Passive - \$3,134,344,650	<b>17.7%</b>
Emerging & Frontier Markets - Active - \$705,037,922	<b>4.0%</b>

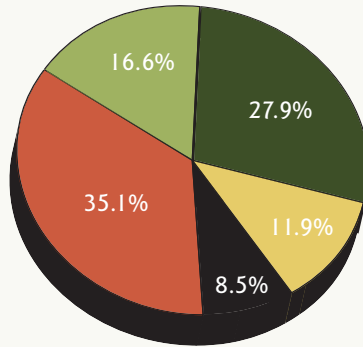
## International Equity Exposure Distribution — as of June 30, 2016

Percentage of Portfolio for Developed Countries  
\$13,871,423,077

Percentage of Portfolio for Emerging & Frontier Markets  
\$3,839,382,572

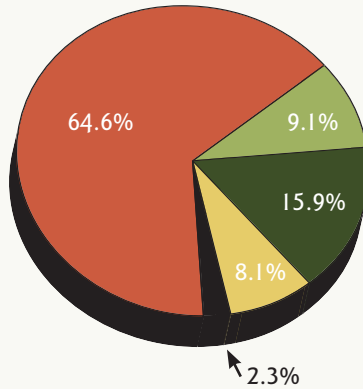


**Real Estate Equity by Property Type**  
— as of June 30, 2016



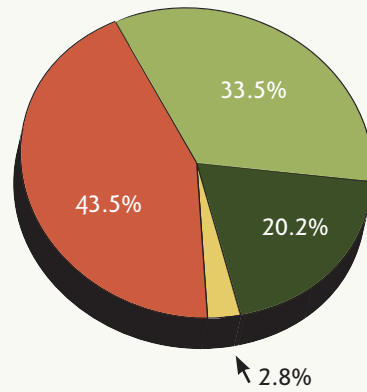
● Office	<b>35.1%</b>
● Residential	<b>16.6%</b>
● Retail	<b>27.9%</b>
● Hotel/Other	<b>11.9%</b>
● Industrial/R&D	<b>8.5%</b>

**Real Estate Debt by Property Type**  
— as of June 30, 2016



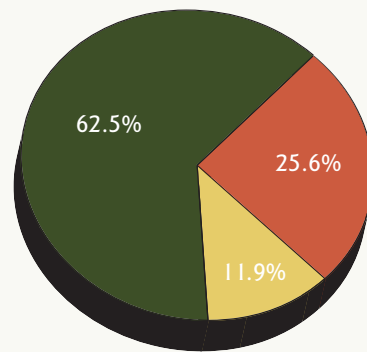
● Office	<b>64.6%</b>
● Residential	<b>9.1%</b>
● Retail	<b>15.9%</b>
● Mixed Use/Other	<b>8.1%</b>
● Industrial/R&D	<b>2.3%</b>

**Breakdown of Real Estate Equity Portfolio**  
— as of June 30, 2016



● Direct Investments	<b>43.5%</b>
● Private Securities	<b>33.5%</b>
● Public Securities	<b>20.2%</b>
● Timber Investments	<b>2.8%</b>

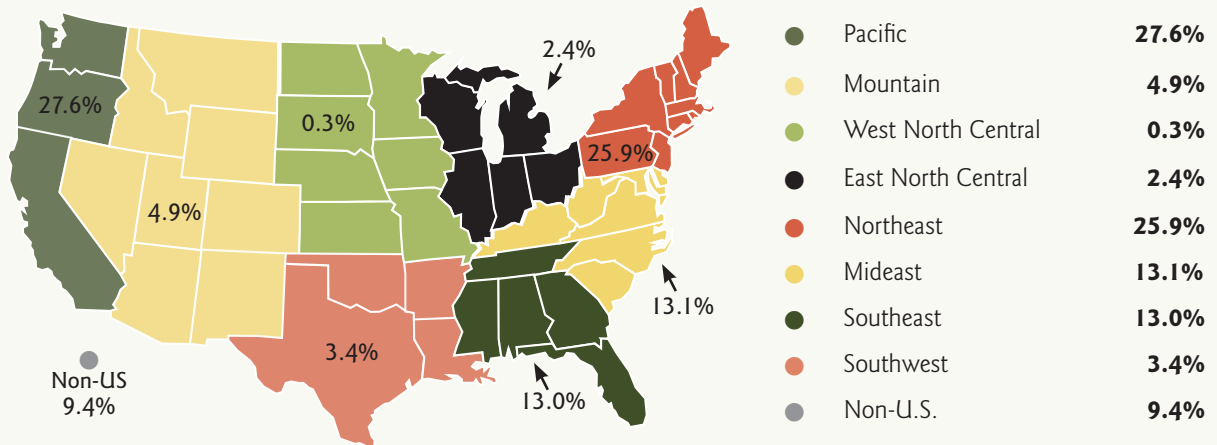
**Breakdown of Real Estate Debt Portfolio**  
— as of June 30, 2016



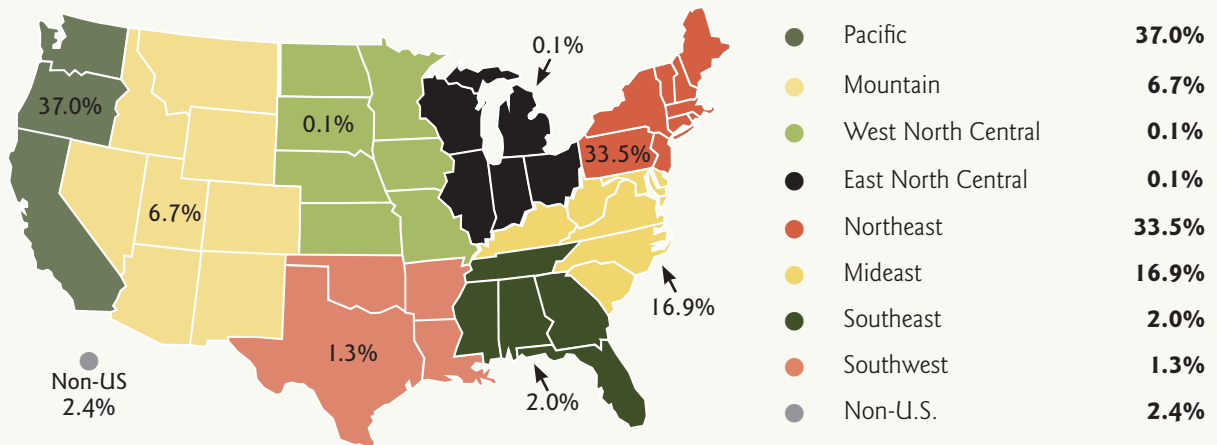
● Conventional Mortgages	<b>62.5%</b>
● CMBS	<b>25.6%</b>
● Mezzanine Debt	<b>11.9%</b>



## Geographic Distribution of the Real Estate Equity Portfolio — as of June 30, 2016



## Geographic Distribution of the Real Estate Debt Portfolio — as of June 30, 2016



# INVESTMENTS

## Corporate Governance — as of June 30, 2016

Shareholder responsibility is fundamental to good corporate governance, which recognizes an appropriate balance between the rights of shareholders (the owners of the corporation) and the need for management and the Board to direct the corporation's affairs with a long-term perspective. The System's shareholder voting rights must be managed with the same care as any of its other assets. Therefore, the Retirement Board has established a formal proxy voting policy reflecting three objectives: to protect the System's rights; to promote responsible corporate policies and activities; and, to enhance long-term value.

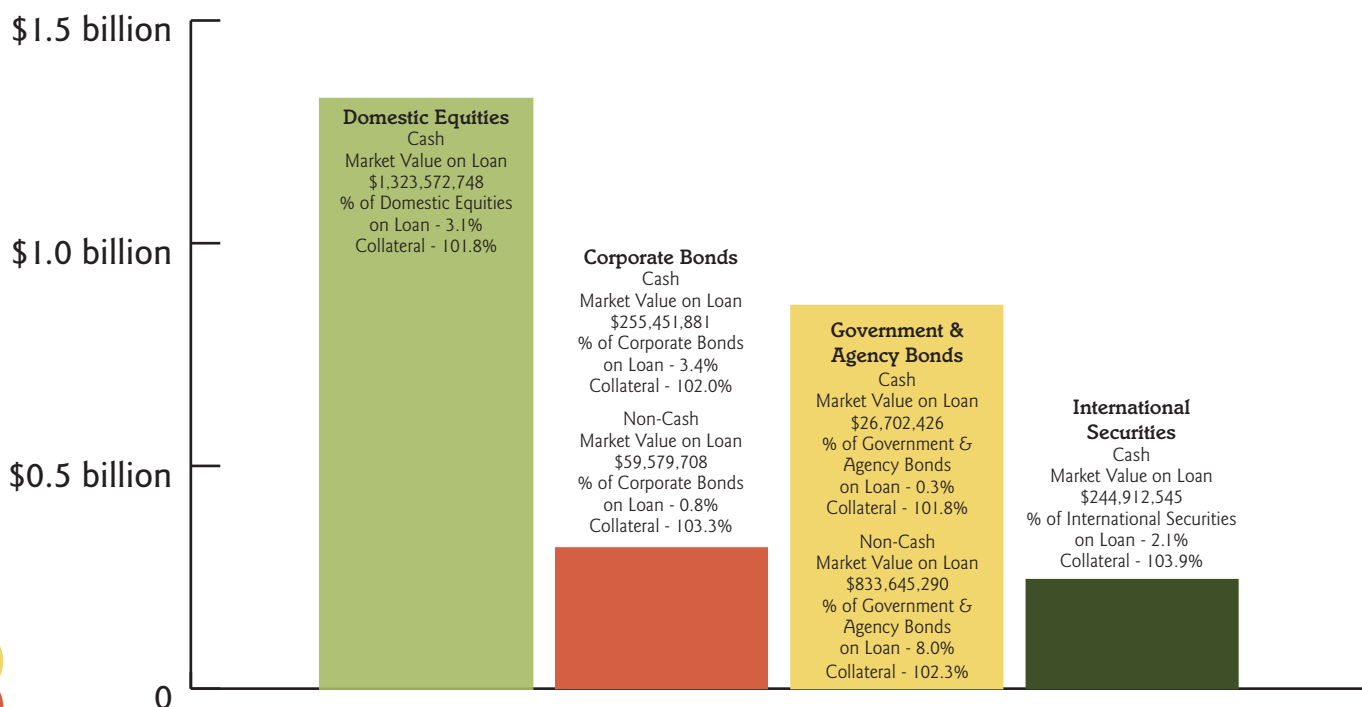
For the 2015 calendar year, a total of 20,560 proposals were voted on, representing 2,162 meetings for the companies it owns in the System's equity portfolio. Many of the proxies focused on auditors/CPA and board-related issues, and executive compensation. System policies generally support management if the position is reasonable, is not detrimental to the long-term economic prospects of the company, and does not tend to diminish the rights of shareholders.

Management Proposals (19,924)			Shareholder Proposals (636)		
Position	Number of Proposals	Percentage of Position	Position	Number of Proposals	Percentage of Position
For	17,809	89.4%	For	269	42.3%
Against	2,066	10.4%	Against	365	57.4%
Abstain	49	0.2%	Abstain	2	0.3%

## Securities Lending Program — as of June 30, 2016

### Market Value on Loan

Cash: \$1,850,639,600 – Non-Cash: \$893,224,998 – Total: \$2,743,864,598



**Schedule of Investment Fees and Expenses**  
**Year ended June 30, 2016**  
(dollars in thousands)

Fund Manager	Investment Management Expenses 2015-2016	Fund Manager	Investment Management Expenses 2015-2016
<b>Domestic Fixed Income Securities:</b>		<b>Real Estate:</b>	
BlackRock Financial Management	\$ 937	Bentall Kennedy	\$ 364
Prima Capital Advisors	859	Clarion	3,000
Torchlight Investors	1,054	Invesco	1,117
Total Domestic Fixed Income:	\$ 2,850	JPMorgan	8,480
<b>Global Fixed Income Securities:</b>		Sentinel	2,324
Loomis, Sayles & Company	\$ 1,669	Real Estate Separate Accounts/Commingled	48,530
Wellington Management Company	2,056	Total Real Estate:	\$ 63,815
Total Global Fixed Income:	\$ 3,725	<b>Alternative Investments:</b>	
<b>Domestic Equities:</b>		Private Equity	\$ 99,985
Adelante Capital Management	\$ 1,050	Real Estate	19,863
Cohen & Steers	2,663	Total Alternative Investments:	\$ 119,848
Iridian Asset Management	5,345	<b>General Expenses:</b>	
Leading Edge Investment Advisors	2,572	Advisory Committee - Investment	\$ 61
Progress	3,521	Advisory Committee - Real Estate	42
RREEF America	1,293	Aon Hewitt Investment Consulting Inc.	616
T. Rowe Price	1,582	Baker & Hostetler	3
Total Domestic Equities:	\$18,026	Callan Associates	616
<b>International Equities:</b>		Groom Law Group	60
Aberdeen Asset Management	\$ 2,472	Hirschler Fleischer	30
AQR Capital Management	2,590	International Equity - Market Fees	87
Baillie Gifford	2,183	Investment Information Services	3,964
BlackRock ACWI Index	2,162	JPMorgan Chase	84
Dimensional Fund Advisors	724	K&L Gates	103
FIS Group	659	Morgan, Lewis & Bockius	184
LaSalle Investment Management	683	Nixon Peabody	52
LSV Asset Management	2,713	Real Estate Origination Costs	181
Marathon Asset Management	2,613	Real Estate Professional Fees	235
RREEF America	1,566	Real Estate Service Costs	29
State Street Global Advisors	2,042	Robinson Bradshaw	81
William Blair & Co.	2,104	Seyfarth Shaw	18
Total International Equities:	\$22,511	State Street Corporation	1,248
<b>Mortgages:</b>		Stockbridge Risk Management	24
Deutsche Bank	\$ 1	TorreyCove	832
FHA Mortgages	1	Total General Expenses:	\$ 8,550
GEMSA	29	<b>Total Investment Fees and Expenses: \$239,412</b>	
NY Life	56		
Total Mortgages:	\$ 87		

(continued)

## Investment Advisory Committee

### David L. Brigham, Chairman

*Trustee*

Church Pension Fund  
New York, New York

### Howard J. Bicker

*Executive Director/CIO (Retired)*

Minnesota State Board of Investment  
Saint Paul, Minnesota

### Johanna Fink

*Chief Operating Officer*

Leducq Corporation  
Boston, Massachusetts

### Geoffrey Gerber, Ph.D.

*President & Founder*

TWIN Capital Management Inc.  
McMurry, Pennsylvania

### Leonade D. Jones

*Director*

American Funds Group  
Washington, D.C.

### Robert Levine, CFA

*Chief Investment Officer (Retired)*

Nomura Corporate Research and  
Asset Management Inc.  
New York, New York

### James W. O'Keefe

*Managing Director (Retired)*

UBS Realty Investors LLC  
Hartford, Connecticut

### Robert G. Wade Jr.

*Director (Retired)*

Chancellor LGT Asset Management  
New York, New York

## Real Estate Advisory Committee

### James O'Keefe, Chairman

*Managing Director (Retired)*

UBS Realty Investors LLC  
Hartford, Connecticut

### Herman Bulls

*President & Chief Executive Officer*

Bulls Advisory Group LLC  
McLean, Virginia

### Eileen Byrne

*Managing Director (Retired)*

BlackRock Inc.  
New York, New York

### Paul J. Dolinoy

*President (Retired)*

Equitable Real Estate/Lend Lease  
Atlanta, Georgia

### Blake Eagle

*Chief Executive Officer (Retired)*

National Council of Real Estate Investment Fiduciaries  
Chicago, Illinois

### Maureen A. Ehrenberg

*Executive Managing Director*

Jones Lang LaSalle  
Chicago, Illinois

### Jill S. Hatton

*Managing Director (Retired)*

BlackRock Inc.  
Boston, Massachusetts

## Investment Consultants

**Aon Hewitt Investment Consulting Inc.**  
Chicago, Illinois

**Elkins/McSherry LLC**  
New York, New York

**Callan Associates**  
San Francisco, California

**TorreyCove Capital Partners**  
San Diego, California

## Master Custodian

**State Street Bank & Trust Co.**  
Boston, Massachusetts

## External Investment Managers & Advisors

### Domestic Equities:

#### Active All Cap

Leading Edge Investment Advisors  
(Manager of Managers)

#### Active Mid Cap

Iridian Asset Management LLC

#### Enhanced All Cap

Progress Investment Management Co.  
(Manager of Managers)

#### Enhanced Large Cap

T. Rowe Price Associates Inc.

### Global Fixed Income Securities:

#### Active

Loomis Sayles & Company  
Wellington Management Company LLP

### International Equities:

#### Active

Aberdeen Asset Management Inc.  
AQR Capital Management LLC  
Baillie Gifford Overseas Ltd.  
Dimensional Fund Advisors  
FIS Group Inc.  
LSV Asset Management  
Marathon Asset Management LLP (Marathon-London)  
William Blair & Company

#### Passive

State Street Global Advisors  
BlackRock Institutional Trust Co. N.A.

### Securities Lending:

JPMorgan Chase Bank N.A.  
State Street Bank & Trust Co.

## External Investment Managers & Advisors (continued)

### Private Equity - Limited Partnerships:

Abbott Select Buyouts Fund  
 Abbott Select Buyout Fund II  
 ABRV Advanced Securities Fund II  
 ABRV Advanced Securities Fund III LP  
 ABRV Mezzanine Partners  
 ABRV Partners Fund V  
 ABRV Partners Fund VI  
 ABRV Partners Fund VII  
 ABRV Partners Fund VIII  
 ABRV Senior Equity Fund II  
 ABRV Senior Equity Fund III  
 ABRV Senior Equity Fund IV  
 AG Capital Recovery Partners VII LP  
 Aisling Capital II LP  
 Aisling Capital III LP  
 Alchemy Plan (Empire)  
 Apex V  
 Apex V Secondary  
 Apex VI  
 Apollo Real Estate Fund IV  
 Ares Corporate Opportunities Fund II LP  
 Ares Corporate Opportunities Fund III  
 Ares Corporate Opportunities Fund IV LP  
 Ares Corporate Opportunities Fund V LP  
 Avenue Special Situations Fund V LP  
 Blackstone Capital Partners IV LP  
 Blackstone Capital Partners V LP  
 Caltius Partners IV LP  
 CapStreet IV LP  
 Carlyle Asia Partners IV LP  
 Carlyle European Partners III LP  
 Carlyle Partners IV LP  
 Carlyle Partners V LP  
 Carlyle/Riverstone Global Energy & Power Fund III LP  
 Charterhouse Capital Partners VII  
 Charterhouse Capital Partners VIII  
 Charterhouse Capital Partners IX  
 Chisholm Partners III  
 Cinven III  
 Cinven IV  
 Cinven V  
 Cinven VI  
 Clayton Dubilier & Rice VI  
 Clearlake Capital Partners III LP  
 Clearlake Capital Partners IV LP  
 Clearlake Opportunities Partners LP  
 Close Brothers Private Equity Fund VII  
 Co-Investment Partners (NY) LP  
 Co-Investment Partners (NY) II LP  
 Co-Investment Partners (NY) III LP  
 Co-Investment Partners Europe LP  
 Compass Partners European Equity Fund  
 Cortec Group Fund V LP  
 Cortec Group Fund VI LP  
 Cressey & Co. V LP  
 CVC Capital Partners Asia Pacific IV LP  
 CVC Capital Partners VI LP  
 CVC European Equity Partners V LP  
 Doughty Hanson & Co. V  
 Energy Capital Partners II LP  
 Energy Capital Partners III LP  
 Fairview Ventures Fund II  
 Fairview Ventures Fund III  
 FirstMark Capital II LP  
 FirstMark Capital III LP  
 GCM Grosvenor Cleantech  
 GCM Grosvenor Seasoned Primaries  
 GCM Grosvenor Seasoned Primaries II  
 GCM Grosvenor Seasoned Primaries III  
 General Catalyst Group VII LP  
 Gilde Buy-Out Fund V C.V.  
 Green Equity Investors V  
 GTCR Fund VIII  
 GTCR Fund IX  
 GTCR Fund X  
 GTCR Fund XI LP  
 HarbourVest International PEP IV  
 HarbourVest International PEP V  
 HarbourVest International PEP VI - Asia Pacific Fund  
 HarbourVest Partners VII-Mezzanine Fund  
 HarbourVest Partners VII-Venture Fund  
 HarbourVest Partners VIII-Venture Fund  
 HarbourVest VI - Partnership Fund  
 HarbourVest/NYSTRS Co-Investment Fund  
 HarbourVest/NYSTRS Co-Investment Fund II LP  
 Hellman & Friedman Capital Partners VIII LP  
 Hellman & Friedman V  
 Hellman & Friedman VI  
 Hellman & Friedman VII  
 Highland Capital Partners IX LP  
 HIPEP Select Asia Fund LP  
 HIPEP Select Asia II LP  
 Horsley Bridge VII  
 Hutton Collins Capital Partners II LP  
 Hutton Collins Capital Partners III LP  
 ICG Europe Fund V LP  
 ICG Europe Fund VI LP  
 IK Fund VII LP

## External Investment Managers &amp; Advisors (continued)

## Private Equity - Limited Partnerships: (continued)

Industri Kapital 2007 Fund	Pine Brook Capital Partners II LP
Inflexion 2010 Buyout Fund	Rhone Partners IV LP
Inflexion Buyout Fund IV LP	Rhone Partners V LP
Inflexion Enterprise Fund IV LP	Riverstone/Carlyle Global Energy and Power Fund IV
Inflexion Partnership Capital Fund LP	Silver Lake Partners II
Inflexion Supplemental Fund IV LP	Silver Lake Partners III
Institutional Venture Partners XIV LP	Silver Lake Partners IV LP
Institutional Venture Partners XV LP	Siris Partners III LP
JC Flowers II LP	Spark Capital Growth Fund II LP
JLL Partners Fund V LP	Spark Capital Partners IV LP
JLL Partners Fund VI LP	Spark Capital Partners V LP
Kelso Investment Associates VII	StepStone Pioneer Capital Buyout Fund I
Kelso Investment Associates VIII	StepStone Pioneer Capital Europe I LP
KKR Asian Fund II LP	StepStone Pioneer Capital Europe II LP
KRG Capital Fund III	StepStone Pioneer Capital Fund II LP
KRG Capital Fund IV	StepStone Pioneer Capital Fund III LP
Lexington Capital Partners V	Sterling Group Partners III LP
Lexington Capital Partners VI	Sterling Group Partners IV LP
Lexington Capital Partners VII	Strategic Partners II
Lexington Emerging Partners LP	Strategic Partners III - Venture
Lexington Middle Market Investors	Strategic Partners III LP
Lexington Middle Market Investors II	Strategic Partners IV LP
Lightspeed Venture Partners IX LP	Strategic Partners IV - VC LP
Lightspeed Venture Partners X LP	Strategic Partners V LP
Lightspeed Venture Partners Select LP	Sun Capital Partners V LP
Lyceum Capital Fund III LP	TCV IX LP
Madison Dearborn Capital Partners IV	Technology Crossover Ventures IV
Madison Dearborn Capital Partners V	Technology Crossover Ventures V
Madison Dearborn Capital Partners VI	Technology Crossover Ventures VI
Metalmark Capital Partners LP	Technology Crossover Ventures VII
Monomoy Capital Partners III LP	Tenex Capital Partners II LP
Nautic Partners VIII LP	The First Capital Access Fund LP
Nautic V	The Resolute Fund II LP
Nautic VI	The Resolute Fund III LP
Nautic VII	Thoma Bravo Discover Fund LP
Oaktree European Principal Fund III LP	Thoma Bravo Fund X
Olympus Growth Fund IV	Thoma Bravo Fund XI LP
Olympus Growth Fund V	Thoma Bravo Fund XII LP
Olympus Growth Fund VI	Thoma Bravo Special Opportunities Fund I LP
P123 Ltd	Thoma Bravo Special Opportunities Fund II LP
Pacific Equity Partners Fund V LP	Thomas H. Lee VI
Patria - Brazilian Private Equity Fund V LP	TPG Partners III
PEG Pooled Venture Capital Institutional Investors II LLC	TPG Partners IV
PEG Pooled Venture Capital Institutional Investors III LLC	TPG Partners V
Peninsula Fund V LP	TPG Partners VI
Permira IV	TSG4 (TSG Consumer Partners)
Phoenix Equity Partners 2010 Fund	TSG5
Phoenix Equity Partners 2016 LP	TSG6 LP
Pine Brook Capital Partners LP	TSG7 A LP

## External Investment Managers & Advisors (continued)

### Private Equity - Limited Partnerships: (continued)

TSG7 B LP	Waud Capital Partners III LP
Valhalla Partners II LP	Waud Capital Partners IV LP
VantagePoint NY Venture Partners	WCAS Capital Partners IV
VantagePoint Venture Partners 2006	Welsh, Carson, Anderson, & Stowe IX
VantagePoint Venture Partners IV	Welsh, Carson, Anderson, & Stowe X
VCFA Private Equity Partners IV	Welsh, Carson, Anderson, & Stowe XI
Vista Equity Partners Fund IV	Wynnchurch Capital Partners III LP
Warburg Pincus Private Equity VIII	

### Real Estate Advisors

#### Equity:

Bentall Kennedy  
 Clarion Partners  
 Forest Investment Associates  
 Invesco Advisers Inc.  
 JPMorgan Asset Management  
 Sentinel Real Estate Corporation

#### Debt:

BlackRock Financial Management Inc.  
 Blackstone Real Estate Advisors  
 Brookfield Real Estate Financial Partners LLC  
 C-III Capital Partners LLC  
 Capri Capital Advisors LLC  
 Cornerstone Real Estate Advisers LLC  
 Grosvenor Capital Management  
 Latitude Management Real Estate Investors Inc.  
 Madison Realty Capital  
 PCCP LLC  
 PGIM Real Estate  
 Prima Capital Advisors LLC  
 Talmage  
 Torchlight Investors

#### REITs:

Adelante Capital Management LLC  
 Cohen & Steers Capital Management Inc.  
 Deutsche Asset & Wealth Management  
 LaSalle Investment Management

#### Commingled:

Abacus Capital Group LLC  
 Angelo, Gordon & Co.  
 Apollo Global Real Estate  
 Artemis Real Estate Partners  
 BlackRock Inc.  
 Blackstone Real Estate Advisors  
 Brockton Capital LLP  
 Brookfield Office Properties Inc.  
 Cabot Properties Inc.  
 CBRE Global Investors  
 Cerberus Capital Management LP  
 Clarion Partners  
 Cornerstone Real Estate Advisers LLC  
 DLJ Real Estate Capital Partners Inc.  
 Essex Property Trust Inc.  
 Exeter Property Group  
 Federal Capital Partners  
 Gaw Capital Partners  
 Grosvenor Capital Management  
 Hines Interests Limited Partnership  
 JPMorgan Asset Management  
 Landmark Partners Inc.  
 LaSalle Investment Management  
 Lone Star Funds  
 Northwood Investors LLC  
 O'Connor Capital Partners  
 Penwood Real Estate Investment Management LLC  
 PGIM Real Estate  
 PW Real Assets LLP  
 Rockpoint Group LLC  
 Rockwood Capital Corporation  
 Starwood Capital Group LLC  
 UBS Realty Investors LLC  
 Walton Street Capital  
 Westbrook Partners





Actuarial



Page

105 ..... Actuarial Certification Letter  
107 ..... Summary of Actuarial Methods and Assumptions  
108 ..... Actuarial Present Value of Future Benefits

Funding Progress

109 ..... - Funding Progress  
                  - Analysis of Funding Progress  
                  - Percent Funded  
110 ..... Solvency Test  
110 ..... Analysis of Financial Experience  
111 ..... History of Member Payroll and the Employer Contribution Rate  
111 ..... Schedule of Retired Members and Beneficiaries Added to and  
                  Removed from the Benefit Payroll  
112 ..... Independent Actuarial Review

## Actuarial Certification Letter



### New York State Teachers' Retirement System

10 Corporate Woods Drive  
Albany, NY 12211-2395  
(800) 348-7298 or (518) 447-2900

[NYSTRS.org](http://NYSTRS.org)

**Thomas K. Lee, Executive Director & CIO**

**Office of the Actuary**

September 30, 2016

Retirement Board  
New York State Teachers' Retirement System  
10 Corporate Woods Drive  
Albany, New York 12211-2395

Dear Members of the Board:

The financial objective of the New York State Teachers' Retirement System is to properly fund the retirement and ancillary benefits of members in order to ensure sufficient assets are being accumulated in order to pay benefits as they become due. Employer contributions are made by participating employers in accordance with an actuarially determined employer contribution rate. This rate is determined by an actuarial valuation made as of each June 30. Members contribute in accordance with a fixed rate schedule as required by statute.

The most recently completed actuarial valuation was made as of June 30, 2015. This valuation relies on member data provided by the participating employers to the Retirement System. The administrative and actuarial staffs review this data for reasonability as well as reconcile it against prior data. In addition, the valuation relies on financial data provided by the Retirement System's Finance Department. The Retirement System's independent auditors provide reasonable assurances of the data provided by the Finance Department as part of the annual audit.

Actuarial assumptions, as adopted by the Retirement Board, are reviewed each year against experience on both an annual and quinquennial basis and changes are recommended when warranted. The current actuarial assumptions were adopted by the Retirement Board in October 2015 and first effective with the June 30, 2015 actuarial valuation. These new assumptions included a decrease in the System's assumed rate of return from 8.00% to 7.50%. The actuarial funding method is the Aggregate Cost Method and is specified in statute. In this method, actuarial gains and losses are not separately amortized, but are spread over the average future working lifetime of active members and included in the annual normal rate calculation. A summary of the actuarial methods and assumptions used in the actuarial valuation is included later in this section. More detail on the valuation and actuarial methods and assumptions is available in the System's Actuarial Valuation Report.

The System's market value rate of return on assets for the fiscal year ending June 30, 2015 was 5.2%. The System's five-year annualized rate of return decreased to 12.4%. The June 30, 2015 actuarial valuation produced a required employer contribution rate of 11.72% of payroll, representing a decrease of approximately 12% over the prior year's rate of 13.26%. This was the second consecutive decrease in the employer contribution rate following five years of increases. The new actuarial assumptions resulted in an increase in the rate, however the recognition of prior years' investment gains in the actuarial value of assets more than offset this increase, resulting in an overall decrease in the rate.

## Actuarial Certification Letter (continued)

Looking ahead to next year, however, the capital markets produced weak returns during the fiscal year ending June 30, 2016, and the System achieved a net rate of return of 2.3% for the fiscal year. This is the second straight year the return is below the assumed rate of return. The actuarial value of assets smoothing process, however, will recognize these recent returns over a five year period thereby moderating the impact on the next employer contribution rate.

The plan's funded ratio as of June 30, 2015, calculated using the Actuarial Value of Assets (AVA) was 94.2% and calculated using the Market Value of Assets (MVA) was 104.1%. The primary reason for this healthy funded ratio is that the System has collected the actuarially-required contribution annually from employers. The significance of this cannot be overstated. Various exhibits in this section provide further information on the actuarial assets, liabilities, and the funding level.

All actuarial calculations have been prepared in accordance with the Statements of the Governmental Accounting Standards Board, where applicable, and generally accepted actuarial principles, procedures, and standards of practice as prescribed by the Actuarial Standards Board. All schedules in the Actuarial and Statistical sections except "Changes in Fiduciary Net Position" and "Benefits and Return of Contributions by Type" were prepared under my direction, as was the actuarial material in the Required Supplementary Information and the Notes to the Financial Statements in the Financial section. I meet the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,



Richard A. Young, A.S.A., E.A., M.A.A.A., F.C.A.  
Actuary

cc: T. Lee

## Summary of Actuarial Methods and Assumptions — as of June 30, 2015

### Methods

Actuarial funding method: Aggregate Cost Method (gains and losses are smoothed over the average future working lifetime of active members). All benefits are included in the actuarial valuation. See *Summary of Benefits* in the Introduction.

Actuarial asset valuation method: Five-year phased in deferred recognition of each year's net investment income/loss, in excess of (or less than) an assumed gain of 7.5%.

### Assumptions

Assumptions are computed by the Actuary and adopted by the Retirement Board. They are based upon recent NYSTRS member experience. Selected sample rates are shown below. Adoption dates shown in parentheses. Detailed assumption information may be found in NYSTRS' annual Actuarial Valuation Report.

### Economic

#### Valuation Rate of Interest (10/2015)

7.5% compounded annually.  
The valuation rate of interest contains a 2.5% assumed annual rate of inflation.

#### Rates of Salary Increase (10/2015) Including Cost-of-Living, Merit and Productivity

Years of Service	
5	4.72%
15	3.46
25	2.37
35	1.90

#### Projected COLA Rate (10/2015)

1.5% annually

### Demographic

#### Base Rates of Mortality (10/2015)

Male Age	Active Members	Male Age	Retired Members & Beneficiaries	Male Age	Disabled Members
30	0.03%	20	0.03%	30	18.00%
40	0.05	40	0.05	40	13.29
50	0.08	60	0.39	60	4.26
60	0.20	80	4.04	80	7.56
Female Age		Female Age		Female Age	
30	0.01%	20	0.01%	30	10.65%
40	0.02	40	0.04	40	8.19
50	0.06	60	0.29	60	3.13
60	0.10	80	2.82	80	7.40

#### Rates of Withdrawal (10/2015) Ten-Year Ultimate Rates

Male Age	
35	0.85%
40	0.75
45	0.87
50	0.92
Female Age	
35	1.88%
40	1.15
45	1.01
50	0.94

#### Rates of Service Retirement (10/2015)

Male Age	Tier 1 & Tiers 2-4 age 62 or with 30 years of service & Tier 5 age 62	Tiers 2-4 less than age 62 & less than 30 years of service	Tier 5 less than age 62 & less than 30 years of service	Tier 5 less than age 62 & with 30 years of service	Tier 6
55	30.67%	3.20%	1.60%	1.60%	1.60%
60	31.10	6.36	3.18	25.94	3.18
65	20.97	-	-	-	25.24
70	16.36	-	-	-	27.03
Female Age					
55	31.40%	3.46%	1.73%	1.73%	1.73%
60	27.94	7.04	3.52	26.10	3.52
65	23.83	-	-	-	26.95
70	22.93	-	-	-	25.72

#### Rates of Disability Retirement (10/2015)

Male Age	
35	0.01%
40	0.02
45	0.05
50	0.09
Female Age	
35	0.01%
40	0.02
45	0.05
50	0.10

## Actuarial Present Value of Future Benefits — as of June 30, 2015 and June 30, 2014 (in thousands)

Each year an actuarial valuation determines the actuarial present value of future benefits (PVB), which is the present value of retirement and ancillary benefit payments, excluding group life insurance benefits, that the Retirement System can expect to pay in the future to current retirees and members. The PVB is based upon both service and salary projected to retirement. The results of the two most recent actuarial valuations are displayed in the following table.

	2015	2014
<b>Present Value of Benefits Currently Being Paid:</b>		
Service Retirement Benefits	\$ 58,061,673	\$ 53,207,739
Disability Retirement Benefits	322,369	287,227
Death Benefits	1,869	3,039
Survivor Benefits	883,930	778,357
Cost-of-Living Allowance	4,990,575	4,695,873
<b>Total Present Value of Benefits Currently Being Paid</b>	<b>64,260,416</b>	<b>58,972,236</b>
<b>Present Value of Benefits Payable in the Future to Current Active Members:</b>		
Service Retirement Benefits	48,422,365	49,824,429
Disability Retirement Benefits	202,511	228,420
Termination Benefits	1,955,951	1,823,736
Death and Survivor Benefits	349,156	448,673
Cost-of-Living Allowance	1,255,059	1,027,072
<b>Total Active Member Liabilities</b>	<b>52,185,042</b>	<b>53,352,330</b>
<b>Present Value of Benefits Payable in the Future to Current Inactive (Vested) Members:</b>		
Retirement Benefits	315,058	265,413
Death Benefits	300	359
Cost-of-Living Allowance	26,660	5,471
<b>Total Vested Liabilities</b>	<b>342,018</b>	<b>271,243</b>
Unclaimed Funds	13,098	12,687
<b>Total Actuarial Present Value of Future Benefits</b>	<b>\$116,800,574</b>	<b>\$112,608,496</b>

Note: Totals may not sum due to rounding.

## Funding Progress

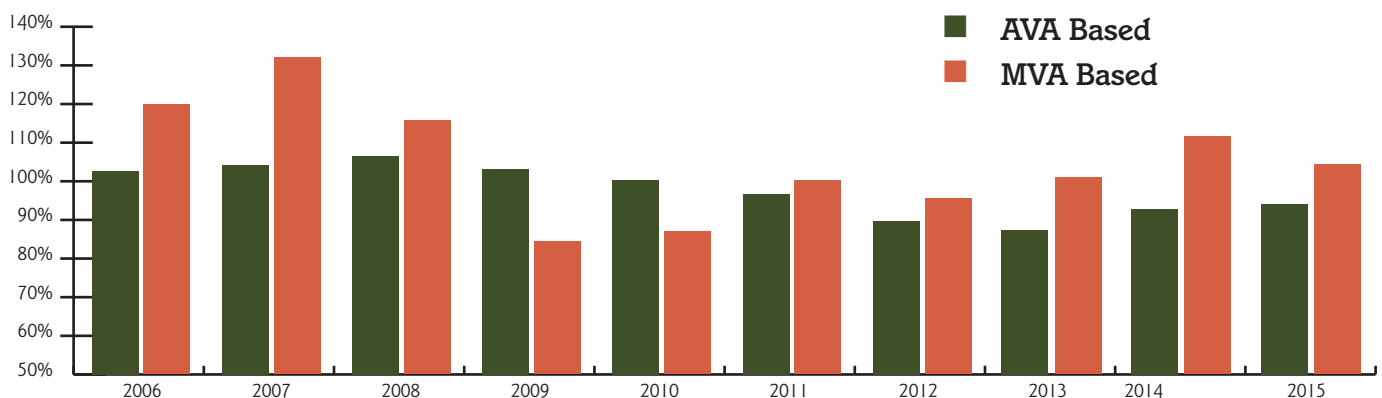
The portion of the actuarial present value of future benefits that is attributed to service rendered as of the valuation date is known as the actuarial accrued liability. In order to effectively assess the funding progress of a retirement system, it is necessary to compare the ratio of plan assets to the actuarial accrued liability over a period of time. Plan assets can be expressed as the market value of assets or as the actuarial value of assets. The market value of assets represents the market value of investments as of a particular date. The actuarial value of assets smooths the volatility inherent in the market value of assets by phasing in unexpected gains and losses over a period of five years, and represents more of an average value.

The Retirement System’s funding method has allowed the accumulation of assets appropriate for the funding of its liabilities in a systematic and reasonable manner.

## Analysis of Funding Progress (in millions)

Fiscal Year Ended	Market Value of Assets (MVA)	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability <sup>1</sup>	Percent Funded Based On	
				MVA	AVA
2006	\$ 91,492.2	\$78,335.8	\$ 76,353.0	119.8%	102.6%
2007	104,912.9	82,858.9	79,537.2	131.9	104.2
2008	95,769.3	88,254.7	82,777.5	115.7	106.6
2009	72,471.8	88,805.5	86,062.0	84.2	103.2
2010	76,844.9	88,544.4	88,318.8	87.0	100.3
2011	89,889.7	86,892.2	89,824.9	100.1	96.7
2012	88,056.3	82,871.4	92,250.9	95.5	89.8
2013	95,367.0	82,742.5	94,583.8	100.8	87.5
2014	108,155.1	90,007.1	96,904.5	111.6	92.9
2015	109,718.9	99,301.8	105,401.8	104.1	94.2

## Percent Funded



<sup>1</sup> Effective June 30, 2006, the Actuarial Accrued Liability is calculated under the Entry Age Normal Cost Method as was required by Governmental Accounting Standards Board (GASB) Statement No. 50 prior to its replacement by GASB Statement No. 67. The Retirement System is funded in accordance with the Aggregate Cost Method. GASB Statement No. 50 required that the Entry Age Normal Cost Method be used to calculate the accrued liability for purposes of presenting the funded percentage.



## Solvency Test (in millions)

Fiscal Year Ended	Aggregate Accrued Liabilities* for:			Actuarial Value of Assets	Percentage of Aggregate Accrued Liabilities Covered by Actuarial Value of Assets		
	Active Member Accumulated Contributions	Current Retired Members and Beneficiaries	Service Rendered by Active Members (Employer-Financed Portion)		(A)	(B)	(C)
	(A)	(B)	(C)		(D)	(A)	(B)
2010	\$4,016.4	\$50,546.3	\$33,756.1	\$88,544.4	100.0%	100.0%	100.7%
2011	4,111.2	54,635.2	31,078.5	86,892.2	100.0%	100.0%	90.6%
2012	4,256.4	56,197.6	31,796.9	82,871.4	100.0%	100.0%	70.5%
2013	4,366.3	57,681.9	32,535.6	82,742.5	100.0%	100.0%	63.6%
2014	4,457.8	59,190.2	33,256.5	90,007.1	100.0%	100.0%	79.3%
2015	4,555.1	64,504.9	36,341.8	99,301.8	100.0%	100.0%	83.2%

\*NYSTRS is funded in accordance with the Aggregate Cost Method. The accrued liabilities in this chart are calculated in accordance with the Entry Age Normal Cost Method for purposes of disclosing the funded ratio.

## Analysis of Financial Experience

The table below shows, for each potentially significant experience source, the effect on the employer contribution rate due to the difference between actual experience and that predicted by the actuarial assumptions.

Experience Source	Change in the Employer Contribution Rate During Fiscal Year Ended June 30, 2015
Revised Actuarial Assumptions:	+2.00%
Salary/Service:	-0.62
Net Investment Gain:	-2.69
New Entrants:	-0.13
Withdrawal:	-0.03
Mortality:	+0.02
Retirement:	-0.01
Pension Payments:	-0.01
Cost-of-Living Adjustment:	-0.07
<b>Total Change in Employer Contribution Rate</b>	<b>-1.54%</b>



### History of Member Payroll and the Employer Contribution Rate

Fiscal Year Ended	Active Members	Annual Member Payroll (in millions)	Percent Increase In Annual Member Payroll	Average Full-Time Member Salary	Employer Contribution Rate (Percent of Payroll)
2007	270,045	\$13,083.0	4.5%	\$64,651	8.60%
2008	274,901	13,690.1	4.6	66,488	8.73
2009	280,338	14,366.4	4.9	68,737	7.63
2010	285,774	14,792.1	3.0	71,225	6.19
2011	280,435	14,732.9	-0.4	72,947	8.62
2012	277,273	14,640.8	-0.6	74,922	11.11
2013	273,328	14,647.8	0.0	76,348	11.84
2014	270,039	14,771.3	0.8	77,585	16.25
2015	267,715	15,021.4	1.7	78,695	17.53
2016	266,350	15,431.0	2.7	N/A	13.26

### Schedule of Retired Members and Beneficiaries Added to and Removed from the Benefit Payroll\*

Fiscal Year Ended	Number of Retired Members and Beneficiaries		Annual Benefit of Retired Members and Beneficiaries		Total Number of Retired Members and Beneficiaries	Total Annual Benefit	Percentage Increase in Total Annual Benefit	Average Annual Benefit
	Added During the Year	Removed During the Year	Added During the Year	Removed During the Year				
2007	7,291	3,522	\$346,344,571	\$ 77,056,365	133,356	\$4,779,637,995	5.97%	\$35,841
2008	6,711	3,361	330,202,139	76,893,575	136,706	5,032,946,559	5.30	36,816
2009	6,047	3,456	308,528,053	85,339,178	139,297	5,256,135,434	4.43	37,733
2010	5,879	3,460	287,886,459	88,868,015	141,716	5,455,153,878	3.79	38,494
2011	8,873	3,746	469,318,353	97,889,187	146,843	5,826,583,044	6.81	39,679
2012	6,463	3,494	319,324,379	96,522,713	149,812	6,049,384,710	3.82	40,380
2013	6,776	3,766	327,889,400	104,595,554	152,822	6,272,678,556	3.69	41,046
2014	7,003	3,894	332,495,800	110,681,561	155,931	6,494,492,795	3.54	41,650
2015	6,679	4,152	314,972,220	123,973,317	158,458	6,685,491,698	2.94	42,191
2016	6,719	4,029	318,693,577	122,540,821	161,148	6,881,644,453	2.93	42,704

\*Computed on the Maximum annual benefit including supplementation and COLA.

## Independent Actuarial Review



KPMG LLP  
515 Broadway  
Albany, NY 12207-2974

Retirement Board  
New York State Teachers' Retirement System:

As part of our audit of the financial statements of the New York State Teachers' Retirement System (the System) as of and for the year ended June 30, 2016, we performed procedures over the actuarial assumptions, methods, and procedures used by the System's Actuary to calculate the employer contributions for the System to determine the reasonableness of the employer contributions reported in the System's June 30, 2016 basic financial statements. As part of those procedures, an actuary from our firm reviewed the following for reasonableness as compared to Actuarial Standard of Practice (ASOP) NO. 4, Measuring Pension Obligations, as adopted by the American Academy of Actuaries:

- The actuarial assumptions, methods and procedures described in the System's Actuarial Valuation Report as of June 30, 2014, used to derive the resultant employer contribution rate of 13.26% applied to employer payroll for the fiscal year ended June 30, 2016.
- The methodology used to estimate the payroll as of June 30, 2016, from which the employer contributions for the fiscal year ended June 30, 2016 and the related employer contribution receivable as of June 30, 2016 are derived.
- The System's Experience Studies as of June 30, 2014, and the opinions of the System's Actuary presented thereon.

Based on the results of the above procedures, we determined that the methods, procedures, and actuarial assumptions used to develop the employer contributions reported in the System's 2016 basic financial statements appeared reasonable in the context of ASOP No. 4.

This report is intended solely for the use of the New York State Teachers Retirement System and should not be used for any other purpose.

**KPMG LLP**

October 26, 2016



Statistical



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, notes to financial statements, and required supplementary information to better understand and assess the economic condition of NYSTRS.

### **Demographic & Economic Information**

The schedules on pages 115-127 are intended to assist users in understanding the environment within which NYSTRS operates and to provide information that facilitates comparisons of financial statement information over time and among similar entities. The demographic and economic information schedules presented are:

#### **Page**

115	Number of Active Members and Retired Members
116	Distribution of Active Members by Age and Years of Service
116	Distribution of Active Members by Age
117	Distribution of Active Members by Service
118	Active Members and Annuitants 1922-2016
119	Number of Active Members by Tier
120	Retirement Statistics
122	Retirement Benefit Options and Percent of Election
122	Retired Members' Characteristics by Year of Retirement
123	Distribution of Benefits Paid by County
124	Distribution of Retired Members and Beneficiaries by Tier
124	Retired Members — Remaining Purchasing Power Through 2016
125	Retired Members and Beneficiaries With Monthly Benefits by Decade of Retirement
125	Distribution of the Annual Benefit of All Retired Members
126	Distribution of Monthly COLA Increase Commencing September 2016
126	Distribution of Cumulative Monthly COLA Commencing September 2016

### **Financial Trends Information**

The schedules on pages 128-132 are intended to assist users in understanding and assessing how the financial position of NYSTRS has changed over time. The financial trend schedules presented are:

#### **Page**

128	Changes in Fiduciary Net Position
129	Breakdown of Income Sources
130	Benefits and Return of Contributions by Type

### **Operating Information**

The schedules on pages 133-138 are intended to provide contextual information about the operations and resources of NYSTRS to assist readers in using financial statement information. The operating information schedules are:

#### **Page**

133	Average Benefit Payments
134	Retired Members and Beneficiaries by Type of Benefit
136	Principal Participating Employers

**Active Members:**

	Male	Female	Total
June 30, 2015.....	63,531	204,184	<b>267,715</b>
Changes During Year:			
Added.....	2,422	8,624	<b>11,046</b>
Withdrawn .....	1,277	4,694	<b>5,971</b>
Retired .....	1,315	4,930	<b>6,245</b>
Died.....	64	131	<b>195</b>
June 30, 2016.....	63,297	203,053	<b>266,350</b>

**Members Retired for:**

	Service*			Disability			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
June 30, 2015.....	50,144	100,360	150,504	479	1,625	2,104	<b>50,623</b>	<b>101,985</b>	<b>152,608</b>
Changes During Year:									
Retired.....	1,292	4,829	6,121	23	101	124	<b>1,315</b>	<b>4,930</b>	<b>6,245</b>
Died.....	1,393	2,009	3,402	32	69	101	<b>1,425</b>	<b>2,078</b>	<b>3,503</b>
Lump Sum.....	44	143	187	0	0	0	<b>44</b>	<b>143</b>	<b>187</b>
Restored to Active Membership.....	0	0	0	0	0	0	<b>0</b>	<b>0</b>	<b>0</b>
June 30, 2016.....	49,999	103,037	153,036	470	1,657	2,127**	<b>50,469</b>	<b>104,694</b>	<b>155,163</b>

**Beneficiaries of Deceased:**

	Service Annuitants			Disability Annuitants			Active Members			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
June 30, 2015.....	1,219	4,219	5,438	102	171	273	28	111	139	<b>1,349</b>	<b>4,501</b>	<b>5,850</b>
Changes During Year:												
Added.....	137	325	462	5	7	12	0	0	0	<b>142</b>	<b>332</b>	<b>474</b>
Died.....	99	220	319	4	9	13	1	6	7	<b>104</b>	<b>235</b>	<b>339</b>
June 30, 2016.....	1,257	4,324	5,581	103	169	272	27	105	132	<b>1,387</b>	<b>4,598</b>	<b>5,985</b>

**Summary:**

	Male	Female	Total
Active Members.....	63,297	203,053	<b>266,350</b>
Retired Members.....	50,469	104,694	<b>155,163</b>
Beneficiaries.....	1,387	4,598	<b>5,985</b>
Total.....	115,153	312,345	<b>427,498</b>

\*Also includes vested retirees.

\*\*Includes 22 males and 49 females retired for disability who receive a service benefit.

# STATISTICAL

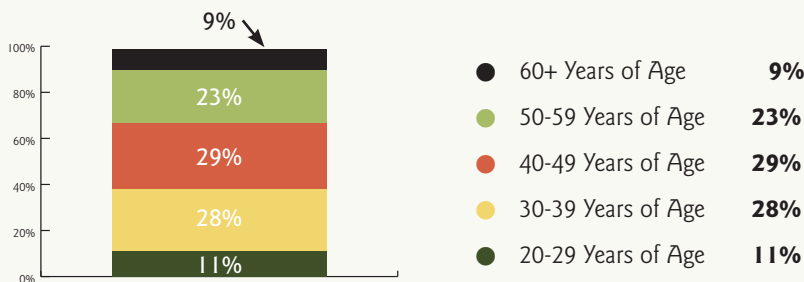
## Distribution of Active Members by Age and Years of Service\* — as of June 30, 2015

Age	Years of Credited Service				
	0-5	6-10	11-15	16-20	21-25
<b>20-24</b>	<b>5,025</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<i>Average Salary</i>	\$37,728	\$0	\$0	\$0	\$0
<b>25-29</b>	<b>24,043</b>	<b>1,770</b>	<b>0</b>	<b>0</b>	<b>0</b>
<i>Average Salary</i>	\$47,960	\$59,228	\$0	\$0	\$0
<b>30-34</b>	<b>18,321</b>	<b>15,138</b>	<b>2,620</b>	<b>0</b>	<b>0</b>
<i>Average Salary</i>	\$51,886	\$64,521	\$75,976	\$0	\$0
<b>35-39</b>	<b>9,081</b>	<b>9,732</b>	<b>17,288</b>	<b>2,175</b>	<b>1</b>
<i>Average Salary</i>	\$52,286	\$67,391	\$80,931	\$89,440	\$106,592
<b>40-44</b>	<b>6,822</b>	<b>6,516</b>	<b>11,131</b>	<b>13,098</b>	<b>1,064</b>
<i>Average Salary</i>	\$48,722	\$64,431	\$83,384	\$92,702	\$96,213
<b>45-49</b>	<b>6,498</b>	<b>5,912</b>	<b>7,177</b>	<b>9,657</b>	<b>8,214</b>
<i>Average Salary</i>	\$44,817	\$57,921	\$78,049	\$91,958	\$98,123
<b>50-54</b>	<b>5,210</b>	<b>4,863</b>	<b>6,133</b>	<b>5,381</b>	<b>5,301</b>
<i>Average Salary</i>	\$42,783	\$52,044	\$69,475	\$85,117	\$96,712
<b>55-59</b>	<b>3,574</b>	<b>3,098</b>	<b>4,639</b>	<b>4,619</b>	<b>3,642</b>
<i>Average Salary</i>	\$45,734	\$51,217	\$64,449	\$77,667	\$89,871
<b>60-64</b>	<b>2,072</b>	<b>1,532</b>	<b>2,329</b>	<b>3,269</b>	<b>2,917</b>
<i>Average Salary</i>	\$51,340	\$52,720	\$66,435	\$79,151	\$88,828
<b>65-69</b>	<b>869</b>	<b>492</b>	<b>598</b>	<b>769</b>	<b>725</b>
<i>Average Salary</i>	\$68,969	\$50,023	\$63,592	\$77,761	\$84,935
<b>70+</b>	<b>456</b>	<b>119</b>	<b>129</b>	<b>131</b>	<b>115</b>
<i>Average Salary</i>	\$30,961	\$53,660	\$59,739	\$63,397	\$87,936
<b>Total</b>	<b>81,971</b>	<b>49,172</b>	<b>52,044</b>	<b>39,099</b>	<b>21,979</b>
<i>Average Salary</i>	\$48,400	\$62,277	\$77,422	\$88,108	\$94,627

\*Average salary data is for the 182,857 members who earned a full year of service.

The average salary for all active members, full-time and part-time, is \$69,069.

### Distribution of Active Members by Age — as of June 30, 2015



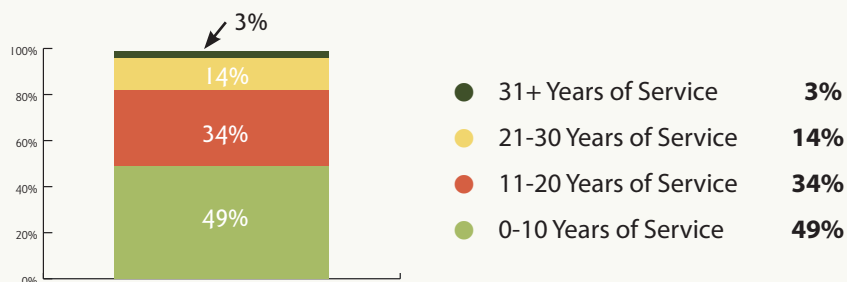
### Averages — as of June 30, 2015

Gender	Age	Years of Service
Female	44	12
Male	43	12

Distribution of Active Members by Age and Years of Service\* — as of June 30, 2015 (continued)

Years of Credited Service							Total
26-30	31-35	36-40	41-45	46-50	51+		
0	0	0	0	0	0	5,025	
\$0	\$0	\$0	\$0	\$0	\$0	\$37,728	
0	0	0	0	0	0	25,813	
\$0	\$0	\$0	\$0	\$0	\$0	\$49,774	
0	0	0	0	0	0	36,079	
\$0	\$0	\$0	\$0	\$0	\$0	\$63,015	
0	0	0	0	0	0	38,277	
\$0	\$0	\$0	\$0	\$0	\$0	\$75,985	
2	0	0	0	0	0	38,633	
\$135,112	\$0	\$0	\$0	\$0	\$0	\$83,635	
1,078	0	0	0	0	0	38,536	
\$99,993	\$0	\$0	\$0	\$0	\$0	\$85,226	
7,011	935	2	0	0	0	34,836	
\$101,305	\$104,501	\$48,635	\$0	\$0	\$0	\$84,701	
4,603	3,012	316	1	0	0	27,504	
\$101,317	\$106,730	\$112,739	\$122,286	\$0	\$0	\$84,058	
2,748	1,200	816	98	1	0	16,982	
\$98,981	\$107,928	\$116,174	\$131,307	\$185,137	\$0	\$86,666	
646	302	159	152	32	0	4,744	
\$92,134	\$111,024	\$116,286	\$123,717	\$140,424	\$0	\$85,529	
100	96	40	39	43	18	1,286	
\$76,428	\$93,326	\$104,959	\$110,314	\$121,738	\$111,292	\$81,173	
16,188	5,545	1,333	290	76	18	267,715	
\$100,326	\$106,629	\$114,992	\$124,453	\$130,440	\$111,292	\$78,695	

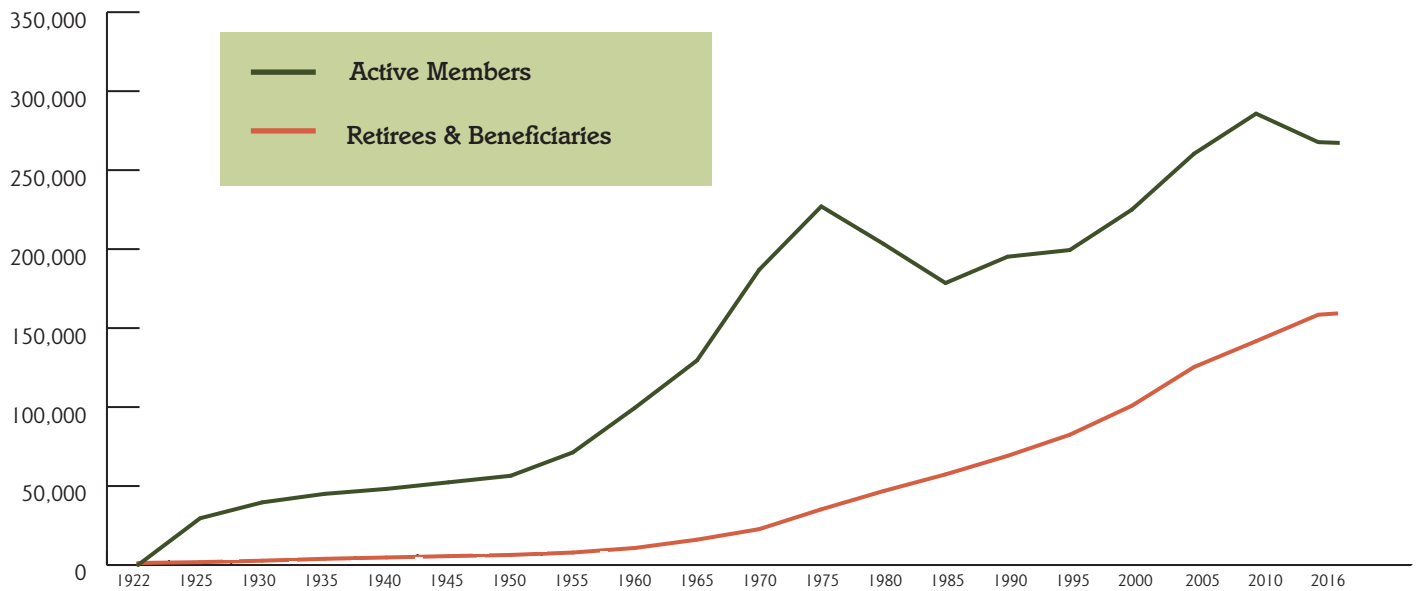
Distribution of Active Members by Service — as of June 30, 2015



## Active Members and Annuitants 1922-2016

As of June 30	Active Members	Retirees & Beneficiaries	As of June 30	Active Members	Retirees & Beneficiaries
1922	-	1,296	1970	186,914	22,700
1925	29,057	1,815	1975	227,038	35,252
1930	39,663	2,732	1980	203,330	46,812
1935	45,031	3,919	1985	178,516	57,366
1940	48,193	4,771	1990	195,194	69,127
1945	52,359	5,637	1995	199,398	82,459
1950	56,504	6,374	2000	224,986	100,839
1955	71,273	7,897	2005	260,356	125,325
1960	99,555	10,796	2010	285,774	141,716
1965	129,543	16,043	2015	267,715	158,458
			2016	266,350	161,148

See related graph below.





## Number of Active Members by Tier

As of June 30	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Total
1997	53,502	16,186	23,861	110,167	--	--	203,716
1998	49,266	15,860	23,302	120,652	--	--	209,080
1999	50,859	15,776	20,726	128,906	--	--	216,267
2000	47,234	15,700	20,159	141,893	--	--	224,986
2001	41,169	15,472	19,914	157,795	--	--	234,350
2002	35,601	15,121	19,674	172,438	--	--	242,834
2003	28,327	14,463	19,083	185,374	--	--	247,247
2004	22,986	13,947	18,835	198,747	--	--	254,515
2005	17,901	13,210	18,535	210,710	--	--	260,356
2006	13,621	12,084	18,173	220,532	--	--	264,410
2007	10,838	10,178	17,743	231,286	--	--	270,045
2008	8,630	8,171	17,007	241,093	--	--	274,901
2009	6,943	6,752	16,111	250,532	--	--	280,338
2010	5,582	5,706	14,942	255,966	3,578	--	285,774
2011	3,814	4,137	12,690	247,530	12,264	--	280,435
2012	2,756	3,253	11,180	239,199	19,969	916	277,273
2013	1,968	2,447	9,450	231,258	19,452	8,753	273,328
2014	1,439	1,810	7,753	222,545	19,124	17,368	270,039
2015	1,116	1,348	6,222	214,020	18,878	26,131	267,715
2016	832	974	4,920	204,912	18,540	36,172	266,350

## Members Retired in 2015-2016 for:

	Service*	Disability
<b>Number Retired.....</b>	<b>6,121</b>	<b>124</b>
<b>Age at Retirement:</b>		
Average.....	61 yrs., 2 mos.	50 yrs., 7 mos.
Median.....	61 yrs., 7 mos.	50 yrs., 10 mos.
<b>Years of Service:</b>		
Average.....	25 yrs., 0 mos.	18 yrs., 2 mos.
Median.....	27 yrs., 0 mos.	16 yrs., 8 mos.
<b>**Benefit:</b>		
Average.....	\$44,215	\$27,116
Median.....	\$45,200	\$24,306
<b>Final Average Salary (FAS):</b>		
Average.....	\$84,308	\$74,341
Median.....	\$83,908	\$71,999
<b>***Benefit as % of FAS:</b>		
Average.....	47.02%	35.30%
Median.....	52.41%	33.33%

## Members Retired in 2015-2016 for Service\* With:

	Less Than 20 Yrs. N.Y.	Between 20 Yrs. N.Y. and 35 Yrs. Total	35 Yrs. Total or More
<b>Number Retired.....</b>	<b>1,532</b>	<b>3,981</b>	<b>608</b>
<b>Age at Retirement:</b>			
Average.....	61 yrs., 6 mos.	60 yrs., 10 mos.	62 yrs., 9 mos.
Median.....	61 yrs., 10 mos.	61 yrs., 4 mos.	62 yrs., 1 mo.
<b>Years of Service:</b>			
Average.....	12 yrs., 2 mos.	27 yrs., 8 mos.	38 yrs., 3 mos.
Median.....	12 yrs., 3 mos.	29 yrs., 4 mos.	37 yrs., 1 mo.
<b>**Benefit:</b>			
Average.....	\$9,654	\$51,685	\$82,389
Median.....	\$6,752	\$50,698	\$76,382
<b>Final Average Salary (FAS):</b>			
Average.....	\$48,594	\$93,758	\$112,418
Median.....	\$41,945	\$90,299	\$105,165
<b>***Benefit as % of FAS:</b>			
Average.....	18.12%	54.17%	73.00%
Median.....	17.83%	58.00%	71.17%

\*Also includes vested retirees.

\*\*The Maximum, even though the member may have chosen an option.

\*\*\*The average and median of individual benefits as percentages of final average salary.

**All Retirees as of June 30, 2016 Retired for:**

	Service*	Disability
<b>Number Retired.....</b>	<b>153,107</b>	<b>2,056</b>
Age at Retirement:		
Average.....	58 yrs., 8 mos.	49 yrs., 6 mos.
Median.....	57 yrs., 7 mos.	50 yrs., 3 mos.
Years of Service:		
Average.....	28 yrs., 2 mos.	18 yrs., 4 mos.
Median.....	30 yrs., 3 mos.	17 yrs., 6 mos.
**Benefit:		
Average.....	\$41,192	\$19,872
Median.....	\$41,220	\$18,254
Final Average Salary (FAS):		
Average.....	\$70,007	\$54,663
Median.....	\$68,853	\$52,783
***Benefit as % of FAS:		
Average.....	54.49%	35.61%
Median.....	60.44%	33.33%

**All Retirees as of June 30, 2016 Retired for Service\* With:**

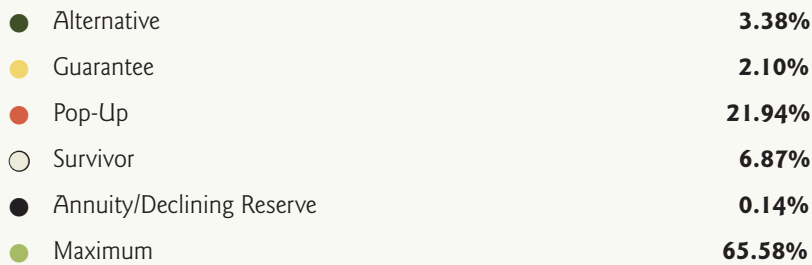
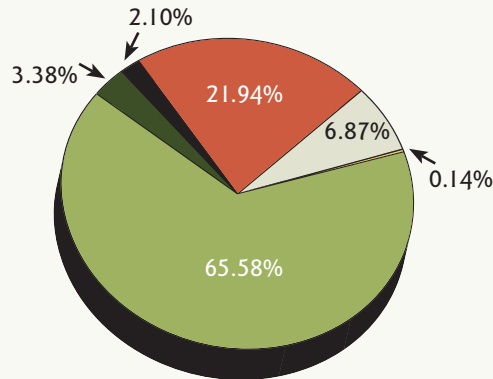
	Less Than 20 Years N.Y.	Between 20 Yrs. N.Y. and 35 Yrs. Total	35 Yrs. Total or More
<b>Number Retired.....</b>	<b>26,064</b>	<b>91,611</b>	<b>35,432</b>
Age at Retirement:			
Average.....	58 yrs., 11 mos.	58 yrs., 5 mos.	58 yrs., 11 mos.
Median.....	57 yrs., 5 mos.	57 yrs., 2 mos.	58 yrs., 4 mos.
Years of Service:			
Average.....	13 yrs., 6 mos.	28 yrs., 7 mos.	37 yrs., 5 mos.
Median.....	13 yrs., 8 mos.	30 yrs., 0 mos.	36 yrs., 8 mos.
**Benefit:			
Average.....	\$8,282	\$41,318	\$65,073
Median.....	\$6,188	\$40,345	\$61,033
Final Average Salary (FAS):			
Average.....	\$39,299	\$72,017	\$87,399
Median.....	\$32,821	\$69,690	\$82,614
***Benefit as % of FAS:			
Average.....	20.64%	56.50%	74.21%
Median.....	19.54%	59.78%	73.56%

\*Also includes vested retirees.

\*\*The Maximum, even though the member may have chosen an option.

\*\*\*The average and median of individual benefits as percentages of final average salary.

## Retirement Benefit Options and Percent of Election 2012-2016 Retirees



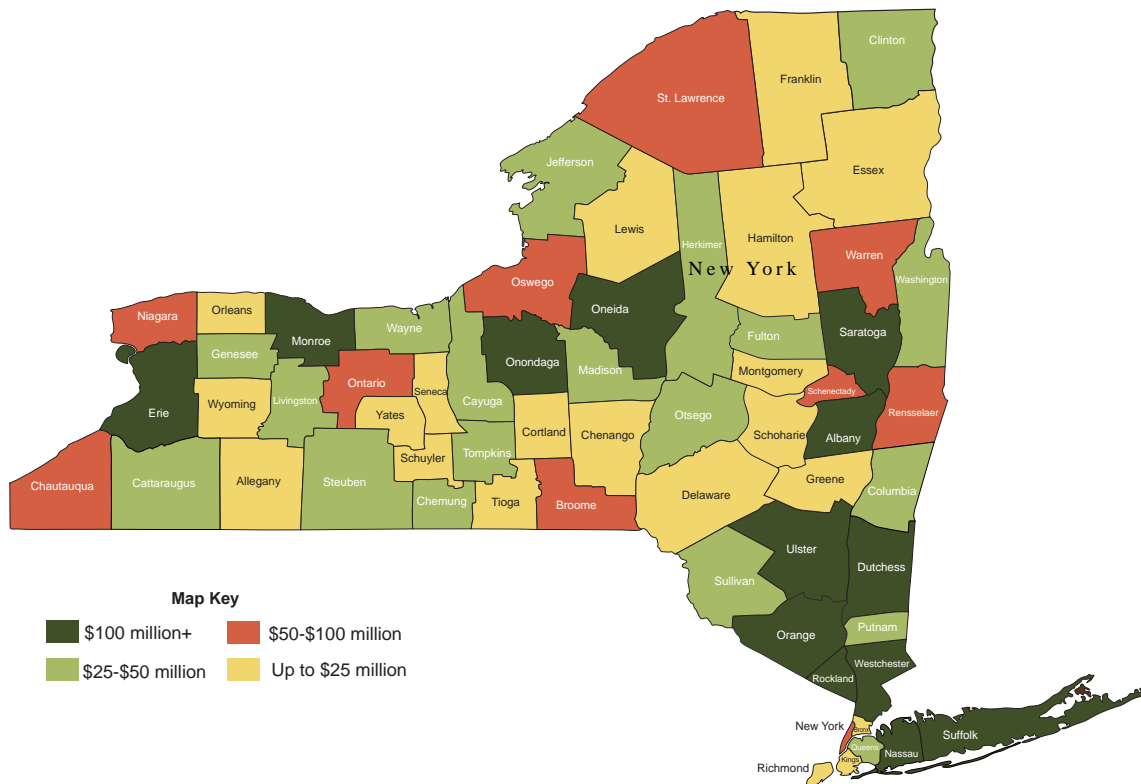
Percentages may not sum to 100% due to rounding.

## Retired Members' Characteristics\* By Year of Retirement

Retired in Fiscal Year Ended	Number of Retired Members	Average Age at Retirement (yrs.- mos.)	Average Service at Retirement (yrs.- mos.)	Average Final Average Salary	Average Maximum Annual Benefit
2007	6,900	58-7	28-1	\$74,185	\$44,204
2008	6,330	58-11	27-8	77,066	45,779
2009	5,644	59-6	27-7	78,050	46,061
2010	5,501	60-0	27-5	79,615	46,489
2011	8,423	60-3	28-7	85,010	51,200
2012	6,033	60-9	26-3	82,461	45,759
2013	6,330	60-10	25-6	81,987	44,768
2014	6,547	61-0	25-4	84,545	44,978
2015	6,161	60-11	25-4	84,362	44,487
2016	6,245	61-2	25-0	84,308	44,215

\*Averages are for service and vested retirees.

Distribution of Benefits Paid by County\* — as of June 30, 2016



County	Retired Members and Beneficiaries	Annual Benefit Paid	County	Retired Members and Beneficiaries	Annual Benefit Paid	County	Retired Members and Beneficiaries	Annual Benefit Paid
Albany	2,945	\$114,804,662	Jefferson	1,284	\$46,966,872	St. Lawrence	1,611	\$55,107,590
Allegany	645	\$21,393,708	Kings	215	\$9,501,375	Saratoga	3,257	\$131,792,634
Bronx	259	\$12,706,687	Lewis	331	\$11,458,083	Schenectady	1,703	\$64,581,136
Broome	2,287	\$83,147,673	Livingston	909	\$34,130,715	Schoharie	389	\$13,992,059
Cattaraugus	913	\$34,224,525	Madison	940	\$34,368,750	Schuyler	249	\$8,174,255
Cayuga	993	\$35,889,525	Monroe	8,409	\$329,637,811	Seneca	428	\$15,309,757
Chautauqua	1,862	\$72,051,596	Montgomery	538	\$20,038,197	Steuben	1,361	\$47,048,206
Chemung	1,070	\$37,285,451	Nassau	9,151	\$494,679,852	Suffolk	16,623	\$944,009,755
Chenango	658	\$21,717,733	New York	1,258	\$56,995,911	Sullivan	797	\$34,010,734
Clinton	1,185	\$43,118,990	Niagara	2,233	\$93,957,142	Tioga	533	\$19,073,757
Columbia	740	\$28,883,513	Oneida	3,083	\$112,814,044	Tompkins	980	\$30,996,496
Cortland	698	\$24,769,620	Onondaga	6,419	\$232,986,654	Ulster	2,537	\$107,527,347
Delaware	618	\$20,364,462	Ontario	1,788	\$67,533,157	Warren	1,341	\$51,739,441
Dutchess	3,072	\$135,407,327	Orange	3,108	\$143,050,310	Washington	744	\$26,351,957
Erie	10,475	\$440,026,959	Orleans	441	\$17,908,490	Wayne	1,221	\$44,666,714
Essex	599	\$19,832,708	Oswego	1,579	\$55,931,817	Westchester	6,373	\$335,757,443
Franklin	668	\$23,009,213	Otsego	1,054	\$34,561,499	Wyoming	469	\$17,237,618
Fulton	795	\$29,714,818	Putnam	940	\$49,512,199	Yates	403	\$14,025,015
Genesee	758	\$29,261,805	Queens	819	\$41,454,574			
Greene	494	\$17,937,269	Rensselaer	1,546	\$59,013,311	Out of State	38,814	\$1,324,502,646
Hamilton	136	\$5,055,701	Richmond	49	\$2,073,060			
Herkimer	1,040	\$35,058,119	Rockland	2,311	\$111,676,808	<b>Grand Total</b>	<b>161,148</b>	<b>\$6,631,817,255</b>

\*Computed on the optional annual benefit including supplementation and COLA.

## Distribution of Retired Members and Beneficiaries by Tier — as of June 30, 2016

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Total
<b>Members Retired for:</b>							
Service*	93,309	16,749	17,128	(234)**	25,839	9	153,036
Disability	710	181	260	(33)**	976	0	2,127
<b>Beneficiaries of Deceased:</b>							
Service Annuitants	4,854	268	212	(4)**	247	0	5,581
Disability Annuitants	170	25	27	(5)**	50	0	272
Active Members	130	1	1	(0)**	0	0	132
<b>Total</b>	<b>99,173</b>	<b>17,224</b>	<b>17,628</b>	<b>(276)**</b>	<b>27,112</b>	<b>9</b>	<b>161,148</b>

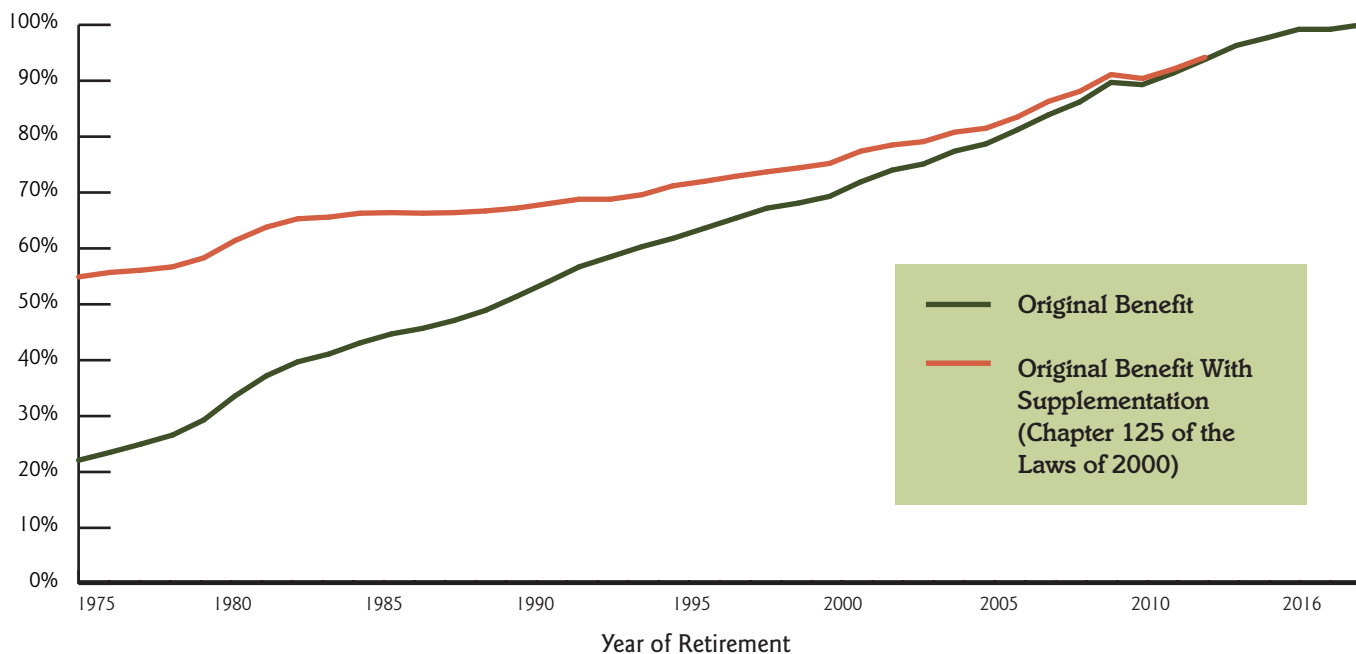
\*Also includes vested retirees.

\*\*Those receiving an Article 14 (Tier 3) benefit. The remainder are receiving an Article 15 (Tier 4) benefit.

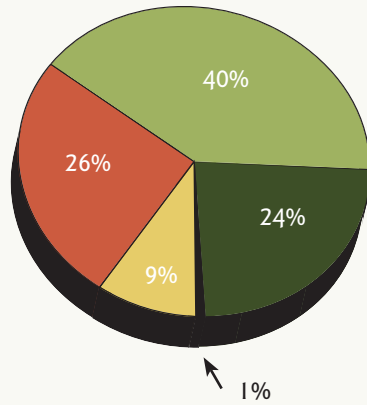
Tier 3 members receive the better of the two benefits.

## Retired Members — Remaining Purchasing Power Through 2016

Inflation annually erodes the purchasing power of our retired members' benefits. The chart below illustrates the percentage of purchasing power remaining of the original benefit, and the original benefit plus supplementation including the cost-of-living adjustment, payable beginning September 2016 in accordance with Chapter 125 of the Laws of 2000.



### Retired Members and Beneficiaries With Monthly Benefits by Decade of Retirement — as of June 30, 2016

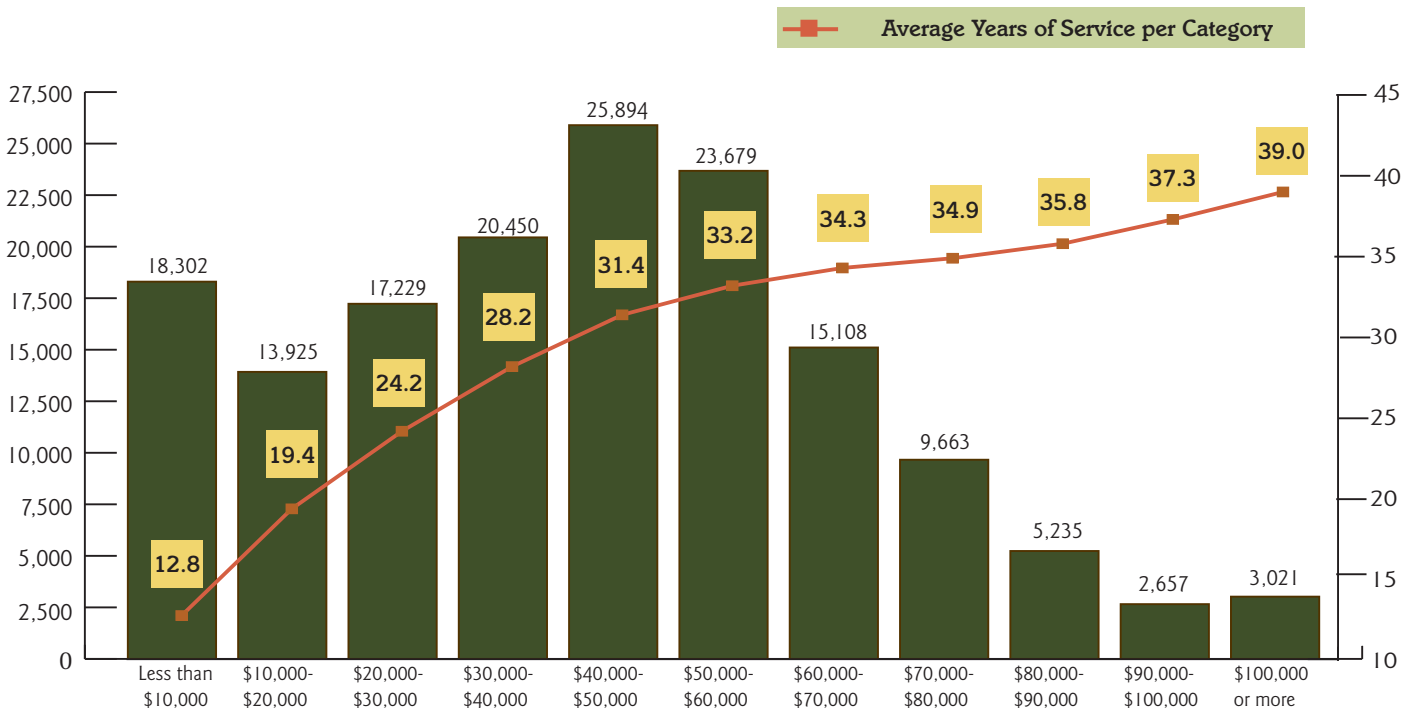


● 1979 and earlier: 1,928	1%
\$830*	
\$1,562**	
● 1980-1989: 13,862	9%
\$1,510*	
\$2,026**	
● 1990-1999: 41,136	26%
\$2,865*	
\$3,154**	
● 2000-2009: 65,039	40%
\$3,868*	
\$3,980**	
● 2010-2016: 39,051	24%
\$3,932*	
\$3,937**	

\* Average monthly benefit (based on the Maximum benefit).

\*\*Average total monthly benefit including supplementation and COLA (based on the Maximum benefit).

### Distribution of the Annual Benefit\* of All Retired Members — as of June 30, 2016



\*Maximum annual retirement benefit including supplementation and COLA.

## Distribution of Monthly COLA Increase Commencing September 2016

Monthly COLA Increase	Number of Retired Members and Beneficiaries
\$15.00	104,882
\$12.50 - \$14.99	3,243
\$10.00 - \$12.49	3,122
\$7.50 - \$9.99	7,840
\$5.00 - \$7.49	4,273
\$2.50 - \$4.99	6,079
\$0.01 - \$2.49	3,024
\$0 (currently ineligible)	28,685
<b>Total</b>	<b>161,148</b>

Commencing September	Year Ended March 31 CPI Percentage Change	Applicable COLA Percentage	Maximum Annual Base Benefit Amount	Maximum Monthly COLA Increase	Cumulative Maximum Monthly COLA	Average Monthly COLA Increase	Cumulative Average Monthly COLA
2001	2.92%	1.5%	\$18,000	\$22.50	\$22.50	\$18.80	\$18.80
2002	1.48%	1.0%	\$18,000	\$15.00	\$37.50	\$12.64	\$31.44
2003	3.02%	1.6%	\$18,000	\$24.00	\$61.50	\$20.32	\$51.76
2004	1.74%	1.0%	\$18,000	\$15.00	\$76.50	\$12.85	\$64.61
2005	3.15%	1.6%	\$18,000	\$24.00	\$100.50	\$20.68	\$85.29
2006	3.36%	1.7%	\$18,000	\$25.50	\$126.00	\$22.09	\$107.38
2007	2.78%	1.4%	\$18,000	\$21.00	\$147.00	\$18.29	\$125.67
2008	3.98%	2.0%	\$18,000	\$30.00	\$177.00	\$26.24	\$151.91
2009	-0.38%	1.0%	\$18,000	\$15.00	\$192.00	\$13.17	\$165.08
2010	2.31%	1.2%	\$18,000	\$18.00	\$210.00	\$15.86	\$180.94
2011	2.68%	1.4%	\$18,000	\$21.00	\$231.00	\$18.55	\$199.49
2012	2.65%	1.4%	\$18,000	\$21.00	\$252.00	\$18.59	\$218.08
2013	1.47%	1.0%	\$18,000	\$15.00	\$267.00	\$13.30	\$231.38
2014	1.51%	1.0%	\$18,000	\$15.00	\$282.00	\$13.32	\$244.70
2015	-0.07%	1.0%	\$18,000	\$15.00	\$297.00	\$13.36	\$258.06
2016	0.85%	1.0%	\$18,000	\$15.00	\$312.00	\$13.36	\$271.42

## Distribution of Cumulative Monthly COLA Commencing September 2016

Cumulative Monthly COLA	Number of Retired Members and Beneficiaries
\$312.00	27,285
\$260.00 - \$311.99	10,313
\$208.00 - \$259.99	17,386
\$156.00 - \$207.99	17,562
\$104.00 - \$155.99	16,296
\$52.00 - \$103.99	21,970
\$0.01 - \$51.99	21,651
\$0 (currently ineligible)	28,685
<b>Total</b>	<b>161,148</b>



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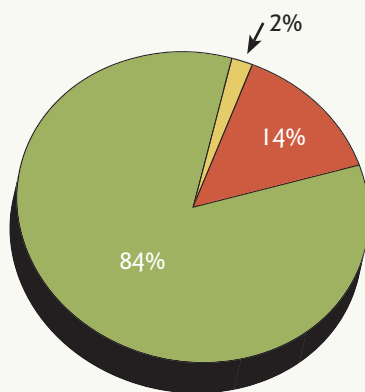
**Changes in Fiduciary Net Position**  
**Last Ten Fiscal Years**  
 (dollars in thousands)

<b>Additions:</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Net investment income (loss)	\$16,863,349	\$(5,531,807)	\$(19,363,140)	\$8,702,215
Employer contributions	1,104,010	1,188,140	1,096,117	925,506
Member contributions	168,462	177,959	181,723	139,369
Transfers	7,260	2,349	5,665	6,037
Total additions (reductions) to net position restricted for pensions	18,143,081	(4,163,359)	(18,079,635)	9,773,127
<b>Deductions: (See Benefits and Return of Contributions by Type on pages 130-131)</b>				
Benefit payments	4,661,665	4,908,446	5,151,463	5,333,788
Return of contributions	16,819	22,792	17,080	17,071
Administrative expenses	43,893	49,016	49,401	49,088
Total deductions from fiduciary net position	4,722,377	4,980,254	5,217,944	5,399,947
Change in fiduciary net position restricted for pensions.	\$13,420,704	\$(9,143,613)	\$(23,297,579)	\$4,373,180

**Changes in Fiduciary Net Position** (continued)  
**Last Ten Fiscal Years**  
 (dollars in thousands)

2011	2012	2013	2014	2015	2016
\$17,250,415	\$ 2,375,262	\$11,636,480	\$16,664,703	\$5,400,265	\$ 2,392,354
1,389,415	1,628,491	1,734,908	2,400,386	2,633,682	2,046,562
154,327	138,583	128,903	120,762	119,411	124,587
2,144	4,188	4,522	1,365	3,213	4,014
18,796,301	4,146,524	13,504,813	19,187,216	8,156,571	4,567,517
5,681,007	5,907,795	6,118,849	6,324,546	6,513,931	6,701,637
20,348	19,732	20,869	18,992	17,209	18,229
50,159	52,457	54,338	55,616	56,948	60,426
5,751,514	5,979,984	6,194,056	6,399,154	6,588,088	6,780,292
\$13,044,787	\$(1,833,460)	\$ 7,310,757	\$12,788,062	\$1,568,483	\$(2,212,775)

**Breakdown of Income Sources**  
 Fiscal Years Ended 1997-2016



- Investment Income **84%**
- Member Contributions **2%**
- Employer Contributions **14%**

**Benefits and Return of Contributions by Type**  
**Last Ten Fiscal Years**  
 (dollars in thousands)

Type of Benefit	2007	2008	2009	2010
<b>Age and service benefits:</b>				
Retirees	\$4,579,829	\$4,817,594	\$5,045,738	\$5,237,032
Survivors	26,964	30,500	27,674	38,516
Death in service benefits	17,033	21,382	38,119	20,244
<b>Disability benefits:</b>				
Ordinary	37,544	38,671	39,565	37,628
Accidental	295	299	367	368
Total benefits	\$ 4,661,665	\$4,908,446	\$5,151,463	\$5,333,788
<b>Type of Return of Contributions</b>				
Death	\$ 1,609	\$ 1,735	\$ 1,905	\$ 2,287
Separation from service	15,210	21,057	15,175	14,784
Total return of contributions	\$ 16,819	\$ 22,792	\$ 17,080	\$ 17,071

**Benefits and Return of Contributions by Type** (continued)  
**Last Ten Fiscal Years**  
 (dollars in thousands)

2011	2012	2013	2014	2015	2016
\$5,593,968	\$5,811,739	\$6,023,506	\$6,233,619	\$6,419,576	\$6,601,664
28,237	29,153	32,879	28,918	31,888	34,051
22,852	29,266	23,666	21,634	20,730	22,801
35,667	37,350	38,507	39,871	41,251	42,591
283	287	291	504	486	530
\$5,681,007	\$5,907,795	\$6,118,849	\$6,324,546	\$6,513,931	\$6,701,637
\$ 2,240	\$ 2,393	\$ 2,434	\$ 2,325	\$ 2,350	\$ 3,011
18,108	17,339	18,435	16,667	14,859	15,218
\$ 20,348	\$ 19,732	\$ 20,869	\$ 18,992	\$ 17,209	\$ 18,229

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Average Benefit Payments — July 1, 2006 – June 30, 2016

Retirement Effective Dates	Years of Credited Service							
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35+
<b>Period 7/1/2006 to 6/30/2007</b>								
Average monthly benefit	\$118	\$257	\$558	\$1,264	\$2,222	\$3,336	\$4,629	\$5,831
Average final average salary	\$24,409	\$28,422	\$37,416	\$52,612	\$65,663	\$76,566	\$84,377	\$94,039
Number of retired members	65	415	537	491	722	831	2,152	1,687
<b>Period 7/1/2007 to 6/30/2008</b>								
Average monthly benefit	\$136	\$264	\$559	\$1,326	\$2,358	\$3,587	\$4,767	\$6,064
Average final average salary	\$25,781	\$30,873	\$38,528	\$55,668	\$69,848	\$81,072	\$87,087	\$97,266
Number of retired members	67	397	529	422	721	761	1,753	1,680
<b>Period 7/1/2008 to 6/30/2009</b>								
Average monthly benefit	\$153	\$255	\$654	\$1,343	\$2,427	\$3,632	\$4,780	\$6,169
Average final average salary	\$25,513	\$29,713	\$42,093	\$56,606	\$71,239	\$81,388	\$88,817	\$98,228
Number of retired members	38	369	455	359	739	717	1,505	1,462
<b>Period 7/1/2009 to 6/30/2010</b>								
Average monthly benefit	\$146	\$298	\$736	\$1,419	\$2,405	\$3,839	\$4,779	\$6,361
Average final average salary	\$29,089	\$32,606	\$46,779	\$58,769	\$69,544	\$85,340	\$90,489	\$100,436
Number of retired members	46	377	438	360	770	752	1,351	1,407
<b>Period 7/1/2010 to 6/30/2011</b>								
Average monthly benefit	\$166	\$301	\$710	\$1,386	\$2,571	\$3,924	\$5,017	\$6,877
Average final average salary	\$38,073	\$33,593	\$44,505	\$58,067	\$72,641	\$86,710	\$94,654	\$106,004
Number of retired members	38	403	507	431	1,128	1,705	2,103	2,108
<b>Period 7/1/2011 to 6/30/2012</b>								
Average monthly benefit	\$196	\$371	\$818	\$1,402	\$2,748	\$3,807	\$5,142	\$6,992
Average final average salary	\$43,570	\$39,131	\$50,185	\$59,356	\$77,772	\$85,469	\$96,934	\$108,825
Number of retired members	44	431	571	444	1,079	840	1,604	1,020
<b>Period 7/1/2012 to 6/30/2013</b>								
Average monthly benefit	\$201	\$326	\$782	\$1,513	\$2,721	\$3,910	\$5,285	\$7,061
Average final average salary	\$33,171	\$34,780	\$47,730	\$62,797	\$76,501	\$89,200	\$100,095	\$110,455
Number of retired members	48	501	705	452	1,061	954	1,709	900
<b>Period 7/1/2013 to 6/30/2014</b>								
Average monthly benefit	\$221	\$367	\$837	\$1,571	\$2,836	\$4,140	\$5,275	\$7,305
Average final average salary	\$41,966	\$38,623	\$51,493	\$65,104	\$80,215	\$93,124	\$100,079	\$115,852
Number of retired members	47	484	649	562	1,133	1,161	1,778	733
<b>Period 7/1/2014 to 6/30/2015</b>								
Average monthly benefit	\$255	\$306	\$842	\$1,543	\$2,879	\$4,163	\$5,277	\$6,887
Average final average salary	\$35,508	\$33,815	\$51,353	\$64,139	\$82,057	\$92,745	\$100,927	\$110,667
Number of retired members	37	400	615	521	1,081	1,255	1,660	592
<b>Period 7/1/2015 to 6/30/2016</b>								
Average monthly benefit	\$188	\$321	\$873	\$1,532	\$2,873	\$4,280	\$5,353	\$6,907
Average final average salary	\$35,355	\$34,747	\$51,987	\$63,932	\$81,515	\$94,402	\$102,221	\$112,592
Number of retired members	32	491	589	582	1,079	1,223	1,676	573

## Retired Members and Beneficiaries by Type of Benefit — as of June 30, 2016

Amount of Monthly Benefit	Number of Retired Members	Type of Retirement					
		1	2	3	4	5	6
<b>\$1 - \$500</b>	13,602	7,950	5,069	144	309	28	102
<b>\$501 - \$1,000</b>	12,324	6,944	4,351	432	509	76	12
<b>\$1,001 - \$1,500</b>	11,056	7,395	2,476	460	653	64	8
<b>\$1,501 - \$2,000</b>	10,827	7,670	2,106	395	610	44	2
<b>\$2,001 - \$2,500</b>	11,350	8,674	1,800	307	539	27	3
<b>\$2,501 - \$3,000</b>	11,816	9,570	1,472	189	568	13	4
<b>\$3,001 - \$3,500</b>	13,509	11,782	1,107	94	516	9	1
<b>\$3,501 - \$4,000</b>	15,474	14,169	774	56	472	3	0
<b>\$4,001 - \$4,500</b>	15,336	14,334	543	27	425	7	0
<b>\$4,501 - \$5,000</b>	12,354	11,687	339	10	318	0	0
<b>over \$5,000</b>	33,500	32,362	462	13	662	1	0
<b>Total</b>	<b>161,148</b>	<b>132,537</b>	<b>20,499</b>	<b>2,127</b>	<b>5,581</b>	<b>272</b>	<b>132</b>

Type of retirement:

- 1 - Normal retirement for age and service
- 2 - Early retirement\*
- 3 - Disability retirement
- 4 - Beneficiary payment, normal or early retirement
- 5 - Beneficiary payment, disability retirement
- 6 - Beneficiary payment, death in service

\*Tiers 2-5: retirement at age less than 62 and service less than 30 years.

Tier 6: retirement at age less than 63.



Retired Members and Beneficiaries by Type of Benefit — as of June 30, 2016 (continued)

Option Selected					
1	2	3	4	5	6
10,308	754	1,025	656	555	304
8,703	864	1,512	574	456	215
7,651	848	1,533	490	380	154
7,579	868	1,579	387	269	145
8,008	892	1,728	372	207	143
8,173	1,000	1,971	317	194	161
9,309	1,122	2,387	345	124	222
10,458	1,184	3,095	356	130	251
10,128	1,180	3,304	328	103	293
7,912	1,046	2,811	238	73	274
20,115	3,082	8,447	612	148	1,096
<b>108,344</b>	<b>12,840</b>	<b>29,392</b>	<b>4,675</b>	<b>2,639</b>	<b>3,258</b>

Option selected:

- 1 - Unmodified; Single life annuity (Maximum)
- 2 - Joint and survivor
- 3 - Joint and survivor with pop-up
- 4 - Guarantee period
- 5 - Declining reserve / Annuity reserve
- 6 - Alternative

## Principal Participating Employers Current Year and Nine Years Ago

Participating Employer	Covered Employees	2016	
		Rank	Percentage of Total System**
Buffalo Public Schools	4,708	1	1.77%
Rochester City School District	4,038	2	1.52%
Syracuse City School District	2,705	3	1.02%
Yonkers Public Schools	2,111	4	0.79%
Brentwood Union Free Schools	1,763	5	0.66%
Greece Central Schools	1,417	6	0.53%
Sachem Central Schools	1,288	7	0.48%
Newburgh City School District	1,259	8	0.47%
Wappingers Central Schools	1,178	9	0.44%
Eastern Suffolk I BOCES	1,164	10	0.44%
All Other*	244,719		91.88%
<b>Total</b>	<b>266,350</b>		<b>100.00%</b>

\*In 2016, "All Other" consisted of:

Type	Number	Covered Employees
Public School Districts	671	223,629
BOCES	36	12,769
SUNY	31	2,774
Community Colleges	30	3,031
Charter Schools	24	1,345
Special Act Districts	10	662
Other	9	509
<b>Total "All Other"</b>	<b>811</b>	<b>244,719</b>
Top 10 Participating Employers	10	21,631
<b>Total</b>	<b>821</b>	<b>266,350</b>

\*\*Percentages may not sum to 100% due to rounding.

**Principal Participating Employers** (continued)  
 Current Year and Nine Years Ago

Participating Employer	Covered Employees	2007	
		Rank	Percentage of Total System**
Rochester City School District	4,664	1	1.73%
Buffalo Public Schools	4,446	2	1.65%
Syracuse City School District	3,530	3	1.31%
Yonkers Public Schools	2,427	4	0.90%
Brentwood Union Free Schools	1,903	5	0.70%
Suffolk I BOCES	1,705	6	0.63%
Sachem Central Schools	1,647	7	0.61%
Greece Central Schools	1,640	8	0.61%
East Ramapo Central Schools	1,513	9	0.56%
Newburgh City School District	1,507	10	0.56%
All Other	245,063		90.74%
<b>Total</b>	<b>270,045</b>		<b>100.00%</b>

\*\*Percentages may not sum to 100% due to rounding.



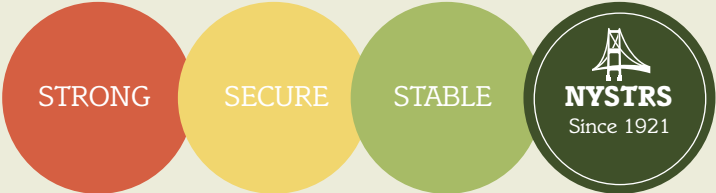
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## Acknowledgements:

NYSTRS' Public Information Office wishes to acknowledge the following departments for assisting with the preparation of this report:

- Actuary
- Finance
- Fixed Income
- Internal Audit
- Investment Operations
- Member Relations
- Private Equity
- Public Equities
- Real Estate



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