

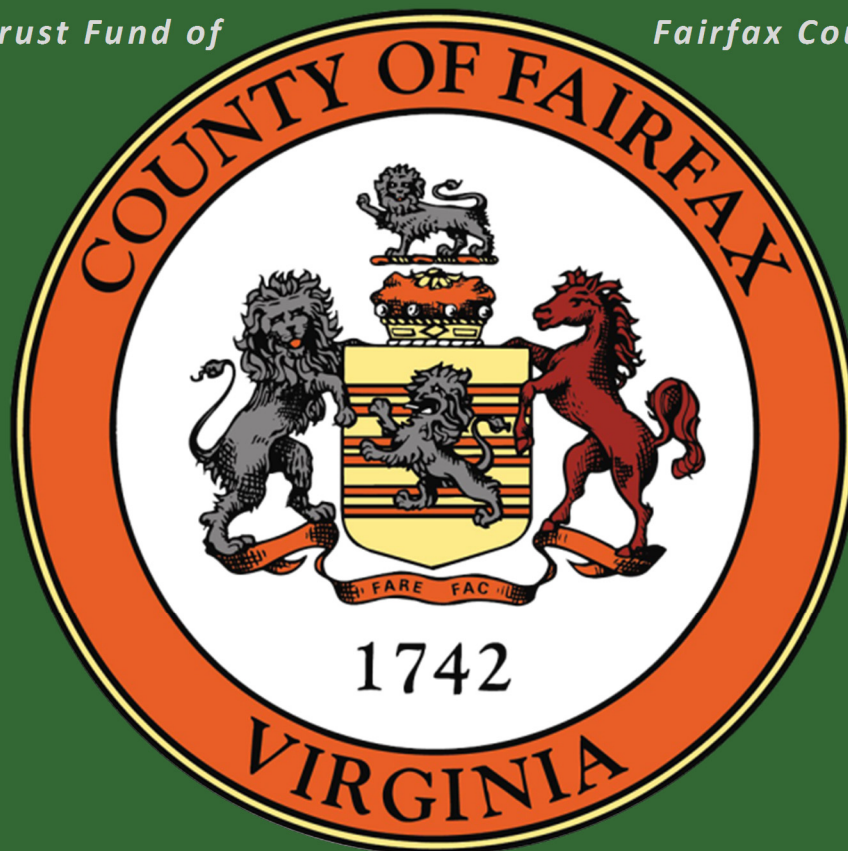
# Comprehensive Annual Financial Report

For the Fiscal Year Ended June 30, 2016

# FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM

*A Pension Trust Fund of*

*Fairfax County, Virginia*



# 2016

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## County of Fairfax, Virginia

To protect and enrich the quality of life for the people, neighborhoods and diverse communities of Fairfax County

November 22, 2016

Dear Members of the Board of Trustees:

I am pleased to submit to you the annual report of the Fairfax County Employees' Retirement System (System) for the fiscal year ended June 30, 2016. This annual report is provided as an aid to understanding the structure and evaluating the status of the System. The System's management is responsible for the accuracy of financial information contained herein. The Management's Discussion and Analysis provides further detail to the financial statements.

### Background

The Fairfax County Supplemental Retirement System was established on July 1, 1955. On February 26, 2001, the name of the System was changed to the Fairfax County Employees' Retirement System. In previous years, Fairfax County Employees' Retirement System reported the plan as a cost-sharing multiple employer defined benefit plan. With the implementation of GASB 67 in the previous fiscal year ended June 30, 2014, the System is now considered as a single employer public employee retirement system providing defined benefit pension plan coverage to full-time and certain part-time Fairfax County and Fairfax County Public Schools employees who are not covered by the Fairfax County Police Officers Retirement System, the Fairfax County Uniformed Retirement System, the Educational Employees' Supplementary Retirement System of Fairfax County (ERFC) or the Virginia Retirement System (VRS). There were 14,171 active members, 691 in the Deferred Retirement Option Program (DROP), 1,858 terminated vested, and 8,189 retirees participating in the System as of June 30, 2016. For calculations surrounding the Total Pension Liability and its components, Cheiron, the System's actuary, used June 30, 2016, as the measurement date which coincides with the actuarial valuation date.

### Provisions

The benefit provisions of the System are established by County Ordinance. The System provides normal service retirement and early service retirement benefits for members who attain age or service requirements. Coverage for service-connected disability benefits is immediate upon membership in the System. Ordinary (non-service-related) disability benefits are provided after the attainment of five years of service. Members are vested after five years of service and are eligible for benefits at the early or normal service retirement date.

### Capital Markets and Economic Conditions

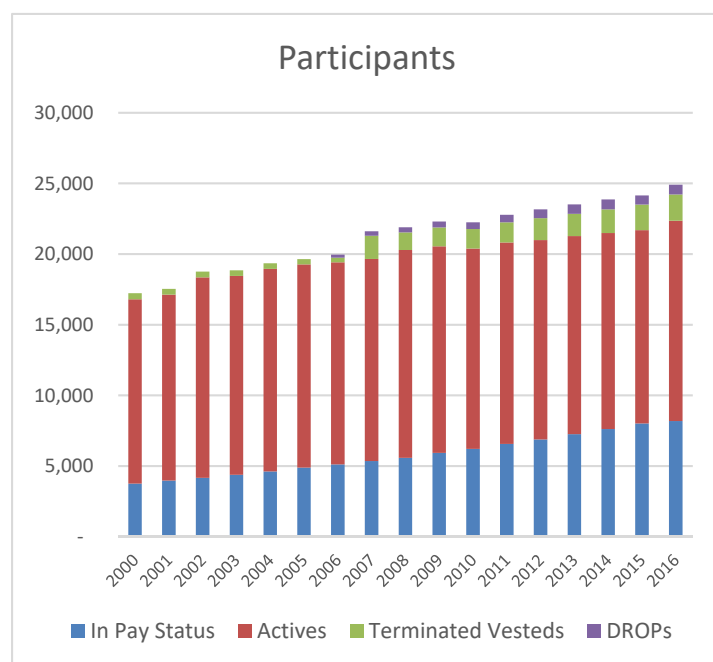
In fiscal year 2016, the System's investment returns were challenged by market downturns in a number of asset classes. The System's portfolio investment return for the year was 0.0% (-0.4 %, net of fees), lagging the long term return target of 7.25%. This return placed in the 66<sup>th</sup> percentile of the BNY Mellon universe of public funds. However, over the long term, returns compared more favorably, with investment returns for the ten-year period at 6.2% per year, ranking the fund in the top 6<sup>th</sup> percentile of all other public funds in the BNY Mellon universe.



### Fairfax County Retirement Systems

10680 Main Street \* Suite 280 \* Fairfax, VA 22030  
Phone: 703-279-8200 \* 1-800-333-1633 \* Fax: 703-273-3185  
[www.fairfaxcounty.gov/retirement/](http://www.fairfaxcounty.gov/retirement/)

Additional details on the markets and the System's investments are provided in the Investment Section.



### Internal and Budgetary Controls

The System's management is responsible for the financial information presented in this report in accordance with U.S. generally accepted accounting principles. Proper internal accounting controls exist to provide reasonable, but not absolute, assurance for both the safekeeping of assets and the fair presentation of the financial statements. 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 requires estimates and judgments by management.

### Investment Policies and Strategies

The Board of Trustees has an adopted Statement of Investment Objectives and Policy. This Statement establishes the investment goals, guidelines, constraints and performance standards that the Board of Trustees uses when exercising its fiduciary duties to manage the investment assets of the System. The Board operates in conformity with the standard of care required in making investments as stated in the Code of Virginia §51.1-803. Please see Footnote 3 in the Financial Section of this report for a description of this standard of care and details on the System's investment policies and strategies.

The Board receives quarterly reporting from staff to ensure compliance with its stated objectives and policy. Staff also monitors the performance of the System and its investment managers and updates the Board on a monthly basis throughout the year. Rate of return information is in the Investment Section prepared internally by staff using data from the System and investment managers.

Securities of the System, except for the pooled funds and the County's pooled cash and temporary investments, are held in safekeeping, on the System's behalf, by BNY Mellon Asset Servicing as agent. The BNY Mellon Financial Corporation, the parent company, carries Financial Institution bond insurance coverage including a Computer Crime Policy. An additional Excess Securities policy covers all risk of physical loss to securities.

### Funded Status

An actuarial valuation of the System to determine funding requirements is performed annually. The System's funding policy provides for periodic employer contributions at actuarially determined rates, which are calculated as a percentage of payroll, and are adjusted as necessary to accumulate sufficient assets to meet the costs of benefit payments when due. The valuation of the System performed as of June 30, 2016, indicated that the ratio of assets accumulated by the System to total actuarial accrued liabilities for benefits showed a decrease from 76.6% to 74.9%. The actuarial section contains further information on the results of the June 30, 2016, valuation. For purposes of calculating the Net Pension Liability as of June, 30, 2016, in accordance with Governmental Accounting Standards Board's (GASB) Statement Number 67, the System's funded status was 70.2%.

Based on the June 30, 2015, actuarial valuation, the employer contribution rate for 2016 following the adopted corridor-based funding policy was 21.99%, an increase of 1.81% from the 2015 rate of 20.18%. This was done to improve the funded level of the plan, accomplished by raising the target unfunded liability amortization level from 93% to 95%, and to fund an increase in service connected disability benefits (discussed further below).

### **Major Initiatives**

Working in concert with the County's Chief Financial Officer, the System's actuary (Cheiron), and other County staff, efforts continue to improve the funded status of the Plan. As a result of this work, and as referenced above, the County has increased the employer contribution rate above what was required by the adopted corridor-based funding policy for three consecutive years. This was accomplished by increasing the target amortization level for the unfunded liability from 90% in prior years to 91% in 2014, 93% in 2015 and 95% in 2016. This target was further increased to 97% for the County's 2017 adopted budget.

A five year actuarial experience study was completed by the System's actuary in early 2016, which entailed a detailed review of trends in salaries, decrement rates, inflation, mortality, investment returns, and other economic and demographic assumptions. The valuation data and data methodology were also reviewed.

Several major customer service-related initiatives were completed. The system's website received a major overhaul, in an effort to make it more user-friendly and to ensure that employees and retirees have access to relevant and understandable information. In addition, retirement training and outreach for our County and Schools employees was greatly expanded, again in an effort to ensure that they have all the information they need to plan for their retirement.

### **Awards**

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to The Fairfax County Employees' Retirement System for its comprehensive annual financial report for the fiscal year ended June 30, 2015. This was the sixth consecutive year that the System has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current annual financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

Fairfax County Retirement Systems received the Public Pension Standards Award for the fiscal year ended June 30, 2016, from the Public Pension Coordinating Council (PPCC), in recognition of meeting the professional standards for plan funding as set forth in the Public Pensions Standards. The PPCC is a confederation of the National Association of the State Retirement Administrators (NASRA), the National Conference on Public Employee Retirement Systems (NCPERS), and the National Council on Teacher Retirement (NCTR).

### **Other Information**

#### *Independent Audit and Actuarial Certifications*

Cherry Bekaert, LLP performed an annual audit of the financial statements of the System to obtain reasonable assurance about whether the financial statements are free from material misstatements, whether due to fraud or error.

Additionally, Cheiron performed an annual actuarial valuation to assess the plan's ability to meet future obligations. The independent auditors' report and certification from the actuary are included in this report.

### *Acknowledgements*

The annual report of the Employees' Retirement System was prepared by the System's staff under the leadership of the Board of Trustees, whom I have the privilege to serve. I must also acknowledge the entire Retirement Systems' team for their tireless work throughout the year to ensure that we continue to provide the best-possible service to and stewardship for the employees, retirees, and citizens of Fairfax County.

This report is intended to provide complete and reliable information for determining the financial status of the System. It is being submitted to the Board of Supervisors and other interested parties and is available to the public via the County's website located at [www.fairfaxcounty.gov/retirement/](http://www.fairfaxcounty.gov/retirement/).

Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. K. Weiler". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Jeffrey K. Weiler  
Executive Director



Government Finance Officers Association

**Certificate of  
Achievement  
for Excellence  
in Financial  
Reporting**

Presented to

**Fairfax County  
Employees' Retirement System  
Virginia**

For its Comprehensive Annual  
Financial Report  
for the Fiscal Year Ended

**June 30, 2015**

Executive Director/CEO



Public Pension Coordinating Council

***Recognition Award for Funding  
2016***

Presented to

***Fairfax County Employees'  
Retirement System***

In recognition of meeting professional standards for  
plan funding  
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, reading 'Alan H. Winkle'. The signature is fluid and cursive, with the first name 'Alan' being more prominent.

Alan H. Winkle  
Program Administrator



Ten members serve on the Fairfax County Employees' Retirement System. Four of the members are citizens appointed by the Fairfax County Board of Supervisors. Three of the members are elected by Fairfax County Government Employees, Fairfax County Public Schools Employees, and Fairfax County Retirees respectively. The Director of Human Resources, the Director of Finance, and the Director, Office of Benefit Services of Fairfax County Public Schools also serve as Ex Officio members.

### Board of Trustees



**John M. Yeatman**  
Vice Chairman  
Elected Retiree Trustee  
Term Expires: December 31, 2018



**Robert C. Carlson**  
Chairman  
Board of Supervisors Appointee  
Term Expires: August 30, 2017



**Christopher J. Pietsch**  
Treasurer  
Fairfax County Director of Finance  
Ex officio Trustee



**Randy R. Creller**  
Fairfax County Government  
Elected Member Trustee  
Term Expires: June 30, 2017



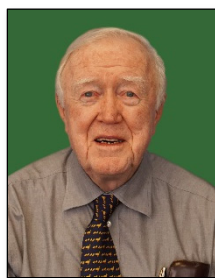
**De Hawley Brown**  
Director, Office of Benefit Services  
Fairfax County Public Schools  
Ex officio Trustee



**John A. Miskell, Jr.**  
Board of Supervisors Appointee  
Term Expires: July 31, 2018



**Catherine Spage**  
Fairfax County  
Director of Human Resources  
Ex officio Trustee



**Thomas M. Stanners**  
Board of Supervisors Appointee  
Term Expires: July 31, 2020



**David Swan**  
Fairfax County Public Schools  
Elected Member Trustee  
Term Expires: June 30, 2019



**Gordon R. Trapnell, FSA**  
Board of Supervisors Appointee  
Term Expires: June 30, 2019

**Administrative Organization**

**Administrative Staff**

Jeffrey K. Weiler  
*Executive Director*

Andrew J. Spellar  
*Senior Investment Officer*

**Professional Services**

**Actuary**

Cheiron  
Actuaries  
McLean, VA

**Auditor**

Cherry Bekaert, LLP  
Certified Public Accountants  
Tysons Corner, VA

**Investment Managers**

Aberdeen Asset Management Inc.  
Philadelphia, PA

AQR Capital Management  
Greenwich, CT

Axiom International Small Cap  
Greenwich, CT

BlackRock, Inc.  
San Francisco, CA

Brandywine Global Invest. Management, LLC  
Philadelphia, PA

Bridgewater Associates, Inc.  
Westport, CT

Cohen & Steers Capital Management, Inc.  
New York, NY

Columbia Wanger Asset Management, LLC  
Chicago, IL

Czech Asset Management, L.P.  
Old Greenwich, CT

DePrince, Race & Zollo  
Winter Park, FL

DoubleLine Capital, L.P.  
Los Angeles, CA

Eagle Trading Systems, Inc.  
Princeton, NJ

Emerging Sovereign Group  
New York, NY

First Eagle Investment Management  
New York, NY

Hoisington Management  
Austin, TX

JP Morgan Investment Management, Inc.  
New York, NY

**Investment Managers**  
**(continued)**

Lazard Asset Management, LLC  
 New York, NY

LSV Asset Management  
 Chicago, IL

Mackay Shields, LLC  
 New York, NY

Marathon Asset Management, LLP  
 London, UK

Marathon Asset Management, LP  
 New York, NY

Millennium Management, LLC  
 New York, NY

Nicholas Company  
 Milwaukee, WI

Neuberger Berman Group, LLC  
 New York, NY

Parametric Portfolio Advisors  
 Edina, MN

PIMCO  
 Newport Beach, CA

Post Advisory Group, LLC  
 Los Angeles, CA

QMA Investment Management  
 Newark, NJ 07102

QMS Capital Management, LP  
 Durham, NC

Research Affiliates  
 Newport Beach, CA

Sands Capital Management, Inc.  
 Arlington, VA

Shenkman Capital Management, Inc.  
 Arlington, VA

Standish Mellon Asset Management  
 Pittsburgh, PA

Stark Investments  
 Milwaukee, WI

WCM Investment Management  
 Laguna Beach, CA

**Custodian Bank**

BNY Mellon Asset Servicing  
 Pittsburgh, PA

## Organization Chart



### Board of Supervisors

*Left to right: Daniel G. Storck, John C. Cook, Catherine M. Hudgins, Jeffrey C. McKay, Sharon Bulova (Chairman At-Large), Penelope A. Gross (Vice Chairman), John W. Foust, Kathy L. Smith, Linda Q. Smyth, Pat Herrity*

### Board of Trustees

(Ten Members – see page 7)

*Robert C. Carlson, John M. Yeatman, Christopher J. Pietsch, Randy R. Creller, De Hawley Brown, John A. Miskell, Jr., Catherine Spage, Thomas M. Stanners, David Swan, Gordon R. Trapnell*



### Executive Director

*Jeffrey K. Weiler*



**Senior Investment Officer**  
*Andrew J. Spellar*



### Retirement Systems Management Team

*Back left to right: Wendy Zhi, CPA, Retiree Services; Vicky Panlaqui, Accounting and Financial Reporting; Pamela Taylor, Technology; Front: John Prather, Membership Services; Carol Patterson, Communications*



**Investment Analyst**  
*Damien Lee, CFA*



## Report of Independent Auditor

To Board of Supervisors  
County of Fairfax, Virginia

To the Board of Trustees  
Fairfax County Employees' Retirement System

### Report on the Financial Statements

We have audited the accompanying financial statements of the Fairfax County Employees' Retirement System (the "System"), a pension trust fund of the County of Fairfax, Virginia, as of and for the year ended June 30, 2016 and the related notes to the financial statements, as listed in the table of contents.

### *Management's Responsibility for the Financial Statements*

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

### *Auditors' Responsibility*

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the 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 auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly,

we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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

### **Opinion**

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the System as of June 30, 2016, and the changes in fiduciary net position thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

### **Other Matters**

#### ***Required Supplementary Information***

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis on pages 14-18 and required supplementary information on pages 37-39 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.

#### ***Supplementary and Other Information***

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the System's basic financial statements. The introductory section on pages 1-10, the other supplementary information on page 40, the investment section on pages 41-52, the actuarial section on pages 53-59, and the statistical section on pages 61-64 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The introductory section, schedule of investment and consultant expenses, schedule of administrative expenses, investment section, actuarial section, and statistical section have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

**Other Reporting Required by *Government Auditing Standards***

In accordance with *Government Auditing Standards*, we have also issued our report dated November 18, 2016, on our consideration of the System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the System's internal control over financial reporting and compliance.

A handwritten signature in black ink that reads "Cherry Bekaert LLP". The script is cursive and fluid.

Tysons Corner, Virginia  
November 18, 2016



## Management's Discussion and Analysis (Unaudited)

This section presents management's discussion and analysis of the Fairfax County Employees' Retirement System's ("System" or "Plan") financial performance and provides an overview of the financial activities for the fiscal year ended June 30, 2016. The information in this section should be reviewed in conjunction with the Letter of Transmittal located in the Introductory Section.

## Overview of Financial Statements and Accompanying Information

The financial presentation is composed of four parts: (1) the financial statement; (2) notes to the financial statements; (3) required supplementary information and (4) other supplementary information. Below is the summary of the information provided in each of these sections.

**Financial Statements.** The System presents the Statement of Fiduciary Net Position as of June 30, 2016 and Statement of Changes in Fiduciary Net Position for the fiscal year ended June 30, 2016. The Statement of Fiduciary Net Position provides a snapshot of the financial position. It reports the assets, liabilities and resulting net position restricted for pension benefits. The Statement of Changes in Fiduciary Net Position present the Plan's transactions under the categories of Additions and Deductions. Additions include contributions from the County and by participating employees, net appreciation in the fair value of investments, dividend and interest income. Investment income is reduced by investment-related expenses such as asset management fees, custody charges and consulting fees. Deductions includes outlays for monthly pension benefits, death benefits, refunds of contributions to employees and fees paid for professional services and administrative expenses.

**Notes to the Financial Statements.** The Notes to the Financial Statements are an integral part of the financial statements and include additional information and schedules to provide a better understanding of the fiduciary fund financial statements. The Notes to the Financial Statements include detailed information that are not readily evident in the financial statements such as the accounting policies, plan membership and benefits, and summary disclosures. Specifically:

Note 1 Describes significant accounting policies.

Note 2 Provides a description of the System, the funding policy, and member contributions and benefits.

Note 3 Describes investments and disclosures on fair value hierarchy, interest rate, credit quality, foreign currency risk, derivatives disclosures, and security lending.

Note 4 Describes the net pension liability, actuarial method and assumptions.

Note 5 Explains the System's tax status.

**Required Supplementary Information.** This section consist of historical trend exhibits such as the Schedule of Changes in Net Pension Liability and Related Ratios, Schedule of Net Pension Liability, Schedule of Employer Contributions accompanied by the Notes to Schedule of Employer Contributions and Schedule of Money-Weighted Rate of Return. These schedules will be presented over 10 years as information becomes available. A Summary of Significant Changes to the Pension System is also included.

**Other Supplementary Information.** This section includes the Schedule of Administrative Expenses and the Schedule of Investment and Consultant Expenses. The Required Supplementary Information and Additional Supplementary notes are immediately following the Notes to the Financial Statements.

## Financial Highlights

The net position restricted for pension benefits as of June 30, 2016, and June 30, 2015, were \$3,590.1 million and \$3,693.4 million, respectively. The net position representing assets available to pay for current and future member pension benefits, decreased by \$103.3 million or 2.8 percent.

Total additions to net position decreased by 7.6 percent from \$188.0 million in 2015 to \$173.7 million in 2016.

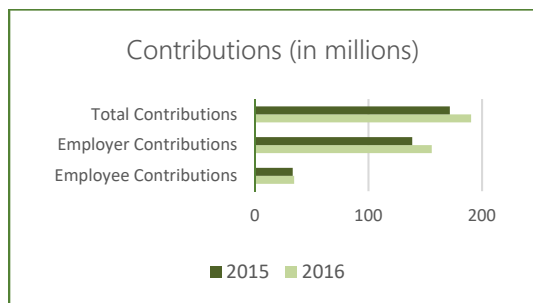
Net investment income decreased 210.2 percent from \$15.7 million in 2015 to -17.3 million in 2016. The net money-weighted rate of return on investments on a fair value basis was approximately -0.4 percent in fiscal year 2016, and has decreased from 0.5 percent in fiscal year 2015.



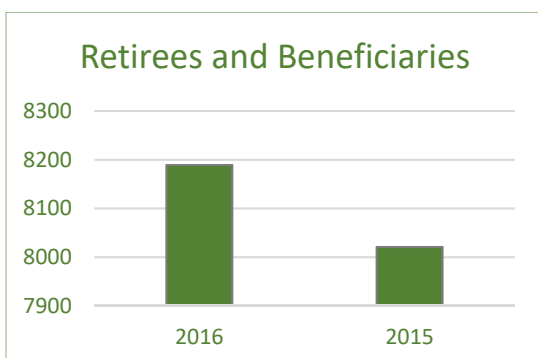
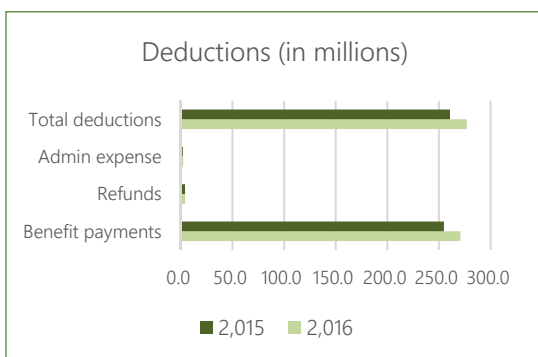
## Management's Discussion and Analysis

(continued)

Employer and employee contributions received totaled \$190.4 million, an increase of 10.9 percent or \$18.7 million compared to 2015 received contributions of \$171.7 million. The total employer contributions increased from \$138.5 million in fiscal year 2015 to \$155.8 million in fiscal year 2016.



Total deductions from fiduciary net position increased by \$16.3 million from \$260.7 million in 2015 to \$277.0 million in 2016. Member retirement benefit payments of \$270.8 million in 2016 make up the majority of total deduction and increased by \$15.9 million or 6.2 percent from \$254.9 million in 2015. The number of retired members and beneficiaries receiving a benefit payment increased 2.1 percent from 8,021 to 8,189 payees as of June 30, 2016.



The net pension liability as calculated per GASB 67 as of June 30, 2016, and June 30, 2015, were \$1,526.3 million and \$1,286.3 million, respectively. The net position as a percentage of total pension liability as of June 30, 2016, and June 30, 2015, were 70.2 percent and 74.2 percent, respectively. The net pension liability as a percentage of covered payroll has increased from 187.4 percent in 2015 to 215.5 percent in fiscal year 2016. The covered employee payroll increased from \$686.3 million in 2015 to \$708.4 million in 2016.

Administrative expenses have remained stable at 0.06 percent of the value of net position for fiscal year 2016.

	2016	2015
Net Pension Liability (in million)	\$1,526.3	\$1,286.3
Net Position as Percentage of TPL	70.2%	74.2%
Covered Employee Payroll (in million)	\$708.4	\$686.3
Net Pension Liability as Percentage of Covered Payroll	215.5%	187.4%

## Financial Analysis

**Plan Net Position.** When viewed over time, increases or decreases in plan net position can be used to measure the financial condition of a pension plan. As of June 30, 2016, The Employees' Retirement System held a net position of \$3,590.1 million restricted for pension benefits. Total assets as of June 30, 2016, were \$4,068.7 million, representing a decrease of \$59.4 million, or 1.4 percent over the previous fiscal year. The main component of the decrease was due to deductions exceeding contributions that led to a decline in total cash and investment of \$3,629.4 million in fiscal year 2016 as compared to \$3,715.0 million in fiscal year 2015.

For fiscal year 2016, the net position of the Employees' Retirement System decreased 2.8 percent resulting in a total net position value of \$3,590.1 million, reflecting a decrease of \$103.3 million over fiscal year 2015. The falling-off in net position was primarily due to deductions exceeding contributions and unfavorable investment performance that resulted in an investment loss from \$15.7 million in fiscal year 2015 to -\$17.3 million in fiscal year 2016.

## Management's Discussion and Analysis

(continued)

## Summary Schedule of Plan Fiduciary Net Position

Assets	2016	2015	Difference	Percentage of Change
Total cash and investments	\$3,629,372,588	\$3,715,008,164	(\$85,635,576)	-2.3%
Cash collateral, securities lending	301,316,481	259,247,449	\$42,069,032	16.2%
Capital assets, net	1,269	2,538	(1,269)	-50.0%
Total receivables	<u>138,028,693</u>	<u>153,838,233</u>	<u>(15,809,540)</u>	<u>-10.3%</u>
<b>Total assets</b>	<b>4,068,719,031</b>	<b>4,128,096,384</b>	<b>(59,377,353)</b>	<b>-1.4%</b>
<b>Liabilities</b>				
Purchase of investments	(169,419,443)	(168,142,424)	<u>(1,277,019)</u>	0.8%
Securities lending collateral	(301,316,481)	(259,247,449)	<u>(42,069,032)</u>	16.2%
Accounts payable and others	<u>(7,900,878)</u>	<u>(7,348,892)</u>	<u>(551,986)</u>	7.5%
<b>Total liabilities</b>	<b>(478,636,802)</b>	<b>(434,738,765)</b>	<b>(43,898,037)</b>	<b>10.1%</b>
<b>Net position restricted for pension</b>	<b><u>\$3,590,082,229</u></b>	<b><u>\$3,693,357,619</u></b>	<b><u>(\$103,275,390)</u></b>	<b><u>-2.8%</u></b>

## Net Position for Current and Prior Fiscal Year

Fiscal Year	Ending Balances (millions)	Net change in dollars (millions)	Net Change in Percent
2016	3,590.1	-103.3	-2.8%
2015	3,693.4	-72.7	-1.9%

Total liabilities as of June 30, 2016, were \$478.6 million, representing an increase of \$43.9 million, or 10.1 percent, over the previous year. The upturn in total liabilities is the result of an increased level of securities lending activity resulting in an increase in cash collateral received for securities on loan.

Securities lending cash collateral increased by \$42.1 million or 16.2 percent due to an increase in activities in the securities lending program. A separate account structure was implemented in fiscal year 2015 to replace a collective investment pool. The separate account now holds a large position in equity repurchase securities.

Receivables decreased by \$15.8 million or 10.3 percent due to the timing of investment for settled trades that occurred near year end.

The actuarial value of the assets as of the last valuation on June 30, 2016, was \$3,831.2 million while actuarial liabilities as of the same period were \$5,116.4 million.

For purposes of funding, this resulted in a funding ratio of 74.9 percent. However, for purposes of GASB 67, the Total Pension Liability as of June 30, 2016, was \$5,116.4 million compared to the Plan Fiduciary Net Position of \$3,590.1 million, which results in a funding ratio of 70.2 percent.

(Dollars in millions)	2016	2015
Actuarial Accrued Liability	\$5,116.4	\$4,906.5
Actuarial Value of Assets	<u>3,831.2</u>	<u>3,759.6</u>
Unfunded Actuarial Liability	<u>\$1,285.2</u>	<u>\$1,146.9</u>
Funding Ratio	74.9%	76.6%
Total Pension Liability	\$5,116.4	\$4,979.7
Plan Fiduciary Net Position	<u>3,590.1</u>	<u>3,693.4</u>
Net Pension Liability	<u>\$1,526.3</u>	<u>\$1,286.3</u>
Funding Ratio	70.2%	74.2%

## Management's Discussion and Analysis

(continued)

The Plan's investments are exposed to various risks including interest rate, market and credit risks. These risks may be influenced by changes in economic conditions and market conditions. Therefore, it is reasonable to assume that there will be changes in the

values of the investments held in trust which could materially affect the amounts reported in the financial statements. Detailed information on investment results are in the Investment Section of this report.

### Summary of Additions and Deductions

<u>Additions</u>	2016	2015	Difference	Percentage of Change
Employer contributions	\$155,780,373	\$138,493,099	\$17,287,274	12.5%
Plan member contributions	34,627,061	33,193,593	1,433,468	4.3%
Net income from investments	(17,335,793)	15,728,732	(33,064,525)	-210.2%
Net income from securities lending	<u>667,506</u>	<u>613,725</u>	<u>53,781</u>	<u>8.8%</u>
<b>Total Additions</b>	173,739,147	188,029,149	(14,290,002)	-7.6%
<b>Deductions</b>				
Benefit payments	270,800,631	254,875,795	15,924,836	6.2%
Refunds	4,101,311	3,958,786	142,525	3.6%
Administrative expense	<u>2,112,595</u>	<u>1,896,614</u>	<u>215,981</u>	<u>11.4%</u>
<b>Total deductions</b>	<u>277,014,537</u>	<u>260,731,195</u>	<u>16,283,342</u>	<u>6.2%</u>
<b>Net increase/(decrease)</b>	<u>(\$103,275,390)</u>	<u>(\$72,702,046)</u>	<u>(\$30,573,344)</u>	<u>42.1%</u>

**Additions and Deductions.** Total additions to the retirement fund consist of contributions from employers and active members and changes in the value of assets. Total additions decreased by \$14.3 million or 7.6 percent in fiscal year 2016 attributed primarily due to \$17.3 million investment loss. This is clearly a substantial decline compared to previous year's investment performance due to the unfavorable market environment in fiscal year 2016.

Total contributions for the fiscal year ended June 30, 2016, amounted to \$190.4 million. This was an increase of \$18.7 million when compared with the activity of fiscal year 2015. The employer contributions for fiscal year 2016 increased by 12.5 percent due primarily to an increase in the employer contribution rate from 20.18 percent to 21.99 percent of salary. Employee contributions increased by 4.2 percent, due to merit and COLA increases.

The system experienced a nearly 9.0 percent increase in net income from securities lending as a result of an upturn in lending activities during the year. Investment returns were lower for fiscal year 2016 than 2015

reflecting unfavorable returns in the capital markets. Net investment income dropped from \$15.7 million in fiscal year 2015 to -\$17.3 million in fiscal year 2016, which is consistent with the decrease in the net money-weighted investment rate of return from 0.5 percent for fiscal year 2015 to -0.4 percent for fiscal year 2016.

Total deductions to the retirement system consist of the payments of benefits to retirees and beneficiaries, the refund of contributions to former members, and the cost of administering the retirement system. The total deductions for fiscal year 2016 were \$277.0 million, an increase of \$16.3 million, or 6.2 per cent, over fiscal year 2015. Regular pension benefit payments increased as the number of retirees and beneficiaries receiving benefit payments climbed to 8,189 from 8,021 in fiscal year 2015. Benefit payments also increased due to a cost-of-living increase of 1.0 percent and higher average benefits for new retirees. Refunds reflected a 3.6 percent increase due to higher employee turnover and separation in the current fiscal year.

## Management's Discussion and Analysis

(continued)

Participant Counts	2016	2015
Actives	14,171	13,669
DROPS	691	644
Terminated vesteds	1,858	1,810
Retirees in payment status	<u>8,189</u>	<u>8,021</u>
Total	<u>24,909</u>	<u>24,144</u>

An actuarial valuation is performed annually by Cheiron. As of June 30, 2016, the date of the most recent actuarial valuation, the funded ratio of the system was 74.9 percent. This was a decrease of 1.7 percent from the July 1, 2015, valuation funded ratio of 76.6 percent. The combination of liabilities, investment results, and member and employer contributions over the last year led the funding ratio to decrease. Under GASB 67 calculation, using the December 31, 2015, data rolled forward to June 30, 2016, the plan fiduciary net position as a percentage of the total pension liability was 70.2 percent. It decreased from 74.2 percent in fiscal year 2015 primarily as a result of slower growth in the plan fiduciary net position due to low investment returns than forecasted.

### Contacting the System's Financial Management

This financial report is designed to provide our membership, the Board of Trustees and the County's Board of Supervisors with a general overview of the System's financial condition. If you have any questions about this report or need additional information, contact the Fairfax County Retirement System, 10680 Main Street, Suite 280, Fairfax, Virginia 22030. This report can also be found on the County's internet site at [www.fairfaxcounty.gov/retirement/](http://www.fairfaxcounty.gov/retirement/)

## Basic Financial Statements

## Statement of Fiduciary Net Position

as of June 30, 2016

Cash and short-term investments		
Equity in County's pooled cash and temporary investments	\$4,993,048	
Cash collateral received for securities on loan	301,316,481	
Short-term investments	<u>236,842,762</u>	
Total cash and short-term investments		\$543,152,291
Capital Assets		
Equipment, net	<u>1,269</u>	
Total capital assets		1,269
Receivables		
Accounts receivable	7,390,056	
Accrued interest and dividends	9,797,444	
Investment proceeds and other receivables	<u>120,841,193</u>	
Total receivables		138,028,693
Investments, at fair value		
Common and preferred stock	1,143,663,759	
Fixed income		
Asset-backed securities	160,353,573	
Corporate and other bonds	373,891,983	
U.S. Government obligations	106,026,000	
Pooled and mutual funds	<u>1,603,601,463</u>	
Total investments		<u>3,387,536,778</u>
Total assets		4,068,719,031
<b>Current Liabilities</b>		
Investment purchases and other liabilities	(169,419,443)	
Cash collateral received for securities on loan	(301,316,481)	
Accounts payable and accrued expenses	(7,716,391)	
Compensated absences, short term	(110,050)	
<b>Noncurrent Liabilities</b>		
Compensated absences, long term	<u>(74,437)</u>	
Total liabilities		<u>(478,636,802)</u>
<b>Net position restricted for pension benefits</b>		<b><u>\$3,590,082,229</u></b>

See accompanying notes to financial statements.

## Basic Financial Statements

(continued)

## Statement of Changes in Fiduciary Net Position

For the Year Ended June 30, 2016

**Additions**

## Contributions

Employer	\$155,780,373	
Plan members	<u>34,627,061</u>	
Total contributions		\$190,407,434

## Investment income

Net depreciation in fair value of investments	(65,935,675)	
Interest and other investment income	33,891,343	
Dividends	<u>28,398,477</u>	
Total investment income	(3,645,855)	

## Investment activity expense

Management fees	(12,308,034)	
Custodial fees	(141,336)	
Consulting fees	(257,313)	
Allocated administration expense	<u>(983,255)</u>	
Total investment expense	<u>(13,689,938)</u>	

Net income (loss) from investment activities		(17,335,793)
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## From securities lending activities

Securities lending income	1,084,468	
Securities lending expenses	<u>(416,962)</u>	

Net income from securities lending activities		<u>667,506</u>
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Total net investment income (loss)		<u>(16,668,287)</u>
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Total additions		173,739,147
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**Deductions**

Annuity benefits	257,182,159	
Disability benefits	7,854,392	
Survivor benefits	5,764,080	
Refunds of employee contributions	4,101,311	
Administrative expense	<u>2,112,595</u>	

Total deductions		<u>277,014,537</u>
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Net decrease		(103,275,390)
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## Net position restricted for pension benefits

Beginning of fiscal year		<u>3,693,357,619</u>
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End of fiscal year		<u>\$3,590,082,229</u>
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See accompanying notes to financial statements.

## Notes to the Financial Statements

The Fairfax County Employees' Retirement System is a single employer defined benefit pension plan considered part of the County of Fairfax, Virginia's ("County") reporting entity and its financial statements are included in the County's basic financial statements as a pension trust fund.

## Note 1. Summary of Significant Accounting Policies

### A. Basis of Accounting.

The System's financial statements have been prepared under the accrual basis of accounting in accordance with accounting principles applicable to governmental units in the United States of America. Member and employer contributions to the System are recognized in the period in which the contributions are due pursuant to legal requirements. Benefits and refunds are recognized when due in accordance with the terms of the System. The cost of administering the System is paid by the System.

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

In February 2015, the Governmental Accounting Standards Board issued its standard on accounting and financial reporting issues related to fair value measurements. GASB no. 72, Fair Value Measurement and Application is applicable primarily to investments made by state and local governments, defines fair valuation and describes how fair value should be measured. This statement requires disclosures to be made about fair value measurements, the level of fair value hierarchy, and valuation techniques. In fiscal year 2016, the System implemented GASB Statement no. 72. Comprehensive footnote disclosures regarding this Statement is found on Note 3.

### B. Method Used to Value Investments.

Short-term investments are reported at cost, which approximates fair value. All other investments are reported at fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Asset-backed securities are valued on the basis of future principal and interest payments and are discounted at

prevailing interest rates for similar instruments. Because of the inherent uncertainty in valuing these securities, the fair value may differ from the values that would have been used had a ready market for such securities existed. Accordingly, the realized value received upon the sale of the assets may differ from the fair value. The System records investment purchases and sales as of the trade date. These transactions are not finalized until the settlement date, which occurs approximately three business days after the trade date. The amounts of trade receivables and payables are shown as receivables and payables on the Statement of Fiduciary Net Position. Cash received as collateral on securities lending transactions and investments made with such cash are reported as assets along with a related liability for collateral received. The fair values of private investments and direct real estate are lagged by one quarter due to the timing of receipt of private market valuations and information.

### C. Equity in County's Pooled Cash and Temporary Investments.

The System maintains cash with the County, which invests cash and allocates interest earned, net of a management fee, on a daily basis to the System based on the System's average daily balance of equity in pooled cash. As of June 30, 2016, the bank balance of the County's public deposits was either insured by the Federal Deposit Insurance Corporation or through the State Treasury Board pursuant to the provisions of the Security for Public Deposit Act. The County's investments are exposed to various risks such as interest rate risk, market and credit risks. Such risks, and the resulting investment security values, may be influenced by changes in economic conditions and market perceptions and expectations. Accordingly, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such change could materially affect the amounts reported in the financial statements.

## Notes to the Financial Statements

(continued)

*D. Compensated Absences*

Employees are granted vacation and sick leave based on their length of service. Unused annual and compensatory leave is payable to employees upon termination based on the employees' current rate of pay, up to certain limits. Sick leave does not vest with the employees; however, it is converted to years of service upon retirement. In addition, employees may accrue compensatory leave for hours worked in excess of their scheduled hours. Compensatory leave in excess of 240 hours is forfeited at the end of the calendar year.

Compensated Absences	
FY 2016 Beginning Balance	188,715
Leave Earned	118,758
Leave Used	122,986
FY 2016 Ending Balance	184,487
Due within one year	110,050

**Note 2. Summary of Plan Provision***A. Plan Description and Provision.*

The Employees' Retirement System is a single employer defined benefit pension plan which covers employees of the County and its component units. Benefit provisions are established and may be amended by County ordinance. All benefits vest at five years of service.

*Membership.*

The Plan covers full-time and certain part-time County, Public Schools, Economic Development Authority, Park Authority and Fairfax County Redevelopment and Housing Authority employees who are not covered by other plans of the County or the Virginia Retirement System.

The System consists of four plans, A, B, C and D, which have different employee contribution rates and slightly different benefits. Effective January 1, 2013, all new employees will be enrolled in either Plan C or D. The employee has the choice to enroll in either Plan within 30 days of employment. This choice is irrevocable. Employees who make no election are automatically enrolled in Plan C.

*Benefit.*

Plan A and C: The benefit is 1.8 percent of average final annual compensation (highest consecutive 78 pay periods) up to the Social Security Breakpoint times creditable service plus 2.0 percent of average final compensation which exceeds the Social Security Breakpoint times creditable service; and it is then increased by 3.0 percent. The Social Security Breakpoint is an average of Social Security wage bases for the last 35 years before a member reaches the age of eligibility for unreduced Social Security benefits.

Plan B and D: The benefit is 2.0 percent of average final annual compensation (highest consecutive 78 pay periods) times the creditable service; and it is then increased by 3.0 percent.

Plan A, B, C & D: In addition to the above, at the time of normal service retirement, a Pre-Social Security Benefit is payable at the rate of 1.0 percent of average final compensation up to the Social Security Breakpoint times creditable service; and it is then increased by 3.0 percent. This benefit will be payable until the member reaches the age of eligibility for unreduced Social Security benefits.

Benefit Limits: Benefits are limited to the maximum amounts for qualified plans as set forth in Section 415 of the Internal Revenue Code. A separate, nonqualified benefit restoration plan has been established for the payment of any benefit formula amounts in excess of the Section 415 limit.

*Normal Retirement.*

To be eligible for normal retirement, an individual must meet the following criteria: (a) attain the age of 65 with five years of service, (b) for Plan A and B, attain the age of 50 plus years of eligibility service being greater than or equal to 80, or (c) for Plan C and D, attain the age of 55 plus years of eligibility service being greater than or equal to 85. Normal retirement is calculated using average final compensation (i.e., the highest consecutive three years) and years, or partial years, of service at date of termination. The Plan provides that unused sick leave credit may be used in the calculation of average final compensation by projecting the final salary during the unused sick leave period (maximum of 2,080 hours of sick leave service credit for Plan C & D). Unused sick leave is also



## Notes to the Financial Statements

(continued)

used to increase years of service for calculating benefits and determining retirement eligibility.

#### *Early Retirement.*

For all 4 plans, a member is eligible for early retirement at age 50 or older when the member's age plus creditable service totals 75 or more. Reduction factors are applied to the basic formula for early retirement based on how far from age 65 the member is at early

retirement and no Pre-Social Security Benefit is payable.

#### *Deferred Retirement Option Program (DROP).*

Members who are eligible for normal retirement may participate in DROP for up to three years. While in DROP, the member continues to work and receive a salary. In lieu of continuing to earn service credit, DROP participants accumulate a lump sum, including interest, payable at retirement. For those in Plan C or D, the member does not receive the Pre-Social Security Benefit while in DROP.

#### *Contribution Rates*

Member	Plan A	The contribution rate for Plan A is 4.0% of base salary up to the maximum Social Security wage base plus 5.33% of base salary over the wage base.
	Plan B	The contribution rate for Plan B is 5.33% of base salary.
	Plan C	The contribution rate for Plan C is 4.0% of base salary up to the maximum Social Security wage base plus 5.33% of base salary over the wage base.
	Plan D	The contribution rate for Plan D is 5.33% of base salary.
Employer	Plan A, B, C, and D	The contribution rate for all four plans for Fiscal Year 2016 was 21.99%.

#### *Deferred Vested Retirement.*

Deferred vested retirement is available for vested members (vesting is at 5 years of service) who leave their contributions in the System when they terminate. These members are entitled to their normal retirement benefit, at age 65, based on service with the County or a reduced benefit earlier when they reach age 50 and age plus years of creditable service equal 75. The member also has the option to request a refund of member contributions and interest at any time prior to reaching age 65 or receiving retirement benefits.

three years) times the creditable service. The total benefit is then increased by 3.0 percent.

#### *Death Benefits.*

*If death occurs prior to retirement:* If the member is vested and the spouse is the listed beneficiary, the spouse may elect to receive 50.0 percent of the normal retirement benefit earned as of the date of the member's death. If the 50.0 percent of normal retirement benefit is not payable, a refund of the member's contribution plus interest will be paid to the named beneficiary or member's estate.

#### *Service-Connected Disability Retirement.*

Service-connected disability retirement is available for members, regardless of their length of service, who become disabled as a result of a job-related illness or injury. Benefits are 66.67 percent of average final compensation, less an offset for a workers' compensation award, less 15.0 percent of the initial award amount of a member's Social Security benefit.

*If death occurs after retirement:* A refund of any of the member's contributions and interest not already paid in benefits will be payable to the named beneficiary(ies) unless the member has elected the irrevocable Joint and Last Survivor Option which provides a benefit to the member's spouse for life. At retirement, the member may choose to have his or her spouse receive 50.0 percent, 66.67 percent, 75.0 percent or 100.0 percent of the member's reduced annuity upon the member's death. The member's annuity is reduced by a percentage based on the difference in age between the member and his or her spouse. If the spouse pre-deceases the member, the annuity is restored to what it would have been if this option had not been elected.

#### *Ordinary Disability Retirement.*

Ordinary disability retirement is available for vested members who become disabled due to an injury or illness that is not job-related. Benefits are 2.0 percent of average final compensation (highest consecutive

## Notes to the Financial Statements

(continued)

If death occurs because of a job-related illness or injury: A \$10,000 lump-sum payment is made to the beneficiary if the member's death is due to a job-related illness or injury.

*Cost of Living Benefit.*

Annual cost of living adjustments are provided to retirees and beneficiaries equal to the lesser of 4.0 percent or the percentage increase in the Consumer Price Index for the Metropolitan Statistical Area that includes Fairfax County.

**Note:** Detailed provisions may be found in the Retirement Handbook for Active Employees.

*B. Board of Trustees.*

Ten members serve on the Fairfax County Employees' Retirement System. Four of the members are citizens appointed by the Fairfax County Board of Supervisors. Three of the members are elected by Fairfax County Government Employees, Fairfax County Public Schools Employees, and Fairfax County Retirees respectively. The Director of Human Resources, the Director of Finance, and the Assistant Superintendent of Human Resources at the Fairfax County Public Schools also serve as Ex Officio members.

*C. Membership.*

At June 30, 2016, the date of the latest actuarial valuation, membership in the System consisted of:

Retirees and beneficiaries receiving benefits	8,189
Terminated plan members entitled to but not yet receiving benefits	1,858
Deferred Retirement Option Program (DROP) participants	691
Active plan members	<u>14,171</u>
<b>Total</b>	<b><u>24,909</u></b>

*D. Deferred Retirement Option Program.*

Members eligible for normal retirement may elect to enter the DROP. As a DROP member, he or she will continue to work and receive a salary for a maximum period of three years while an amount equal to what could have been received as a retirement benefit is credited to his or her DROP account. (No pre-Social

Security Supplements are paid into DROP accounts for Plans C & D). The monthly benefit that will be credited to the DROP account is determined by the years of service and Average Final Compensation at the DROP entry date. During the DROP period, the retirement plan accumulates his or her accrued monthly benefit which is payable at the end of the DROP period. The DROP account balance is credited at an annual interest rate of 5 percent, compounded monthly. At the end of the DROP period, the DROP member must terminate employment with the Fairfax County Government and will begin receiving his or her monthly retirement benefit. Upon DROP exit, the retiree can elect to receive the balance of the DROP account in the form of a lump sum distribution, a rollover to another qualified plan (or IRA), or as an addition to the monthly retirement annuity. The DROP balance as of June 30, 2016, was \$48,803,910.

*E. Contributions.*

The contribution requirements of the System members are established and may be amended by County ordinances. Employees hired prior to January 1, 2013 are members of Plan A or Plan B. All eligible employees whose County or school board employment commenced by reporting to work on or after January 1, 2013, may elect to join Plan C or Plan D. Plan A and C require member contributions of 4 percent of compensation up to the social security wage base and 5.33 percent of compensation in excess of the wage base. Plan B and D require member contributions of 5.33 percent of compensation. The County is required to contribute at an actuarially determined rate. The decision was made to commit additional funding and a rate of 21.99 percent was adopted for fiscal year 2016. Total contributions for the fiscal year ended June 30, 2016, amounted to \$190.4 million.

*F. Deductions.*

The deductions from the System included the payment of retiree and beneficiary payments, the refund of employee contributions to former members and administrative expenses. The total deductions for the fiscal year ended June 30, 2016, amounted to \$277.0 million.

## Notes to the Financial Statements

(continued)

**Note 3. Investments***A. Investment Policy.*

The authority to establish the System is set forth in Section 51.1-800 *Code of Virginia* (Code). Section 51.1-803 of the Code authorizes fiduciaries of the System to purchase investments *with the care, skill, prudence and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of like character and with the same aims. The Board shall also diversify such investments as to minimize the risk of large losses unless under the circumstances it is clearly prudent not to do so.*

The System's Board of Trustees has adopted the Employees' Retirement System Investment Policy Statement to provide a well-managed investment program to meet the long-term needs of the System. The Board of Trustees has the authority to amend the investment policy. Investment decisions for these assets are made by the Board of Trustees or investment managers selected by the Board. The overall investment policies do not address specific levels of credit risk, interest rate risk or foreign currency risk. The Board of Trustees believes that risks can be managed, but not eliminated, by establishing constraints on the investment portfolio and by properly monitoring the investment markets, the System's asset allocation and the investment managers hired by the System. Each individual investment portfolio is managed by an investment management firm selected by the Board. Each investment manager has a specific benchmark and investment guidelines appropriate for the type of mandate they are managing and that fit within the total risk tolerance of the fund.

The following was the System's adopted asset allocation policy as of June 30, 2016. Our asset allocation policy commonly exceeds 100 percent because we monitor the target exposures to both direct investments in asset classes plus notional exposure to asset classes through derivative positions such as Futures held at the portfolio level. We also commonly include notional exposures for select Investment Managers that have a mandate from the Board to provide the System with additional asset class exposure using leverage or derivatives.

<u>Asset Class</u>	<u>Target Exposure</u>
Global Equity	30.0%
Global Fixed Income	42.5%
Risk Parity	15.0%
Absolute Return	20.0%
Real Estate	8.5%
Commodity	4.0%

*B. Concentrations.*

The investment policy states that the securities of any one issuer shall not exceed 10.0 percent at fair value. At June 30, 2016, the System did not have investments (other than U.S. Government and U.S. Government guaranteed obligations) in any one issuer that represents 5.0 percent or more of net position available for benefits. All investments, except for the pooled and mutual funds, short-term investment fund and a short-term collateral investment pool are held by an unaffiliated custodian. There is no custodial credit risk since the custodian's records establish the System's interest in the securities.

The System's fixed income portfolio shall be, on average, comprised of high-quality issues and limits are imposed on investment manager's below-investment-grade holdings. Unless otherwise specified, if any security has a split rating, the higher of the two ratings is used for the purposes of meeting minimum quality standards.

*C. Rate of Return.*

For the year ended June 30, 2016, the annual money-weighted rate of return on pension plan investment, net of pension plan investment expense, was -0.4 percent. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

## Notes to the Financial Statements

(continued)

## D. Fair Value Hierarchy

	6/30/2016	Fair Value Measurements Using		
		Quoted Prices in Active markets for Identical Assets	Significant Other Observable Inputs	Significant Unobservable Inputs
		Level 1	Level 2	Level 3
Investments by Fair Value Level				
Asset-backed securities	\$160,353,573		\$160,353,573	
Convertible or exchangeable securities	274,815		274,815	
Corporate and other bonds	339,816,167		339,816,167	
Equity	1,137,157,244	\$1,137,109,520	47,708	\$16
Fixed income securities	13,430,988	8,581,606		4,849,382
Futures contracts	20,370,014	20,370,014		
Natural resources	3,965,700			3,965,700
Other (registered investment companies)	57,277,219	57,277,219		
Preferred securities	2,540,814	2,539,732		1,082
Short-term investments	233,713,329		30,431,660	203,281,669
US treasury bills	15,993,840	15,993,840		
US Government obligations	<u>106,026,000</u>	<u>106,026,000</u>		
<b>Total investment by fair value level</b>	<b>\$2,090,919,703</b>	<b>\$1,347,897,931</b>	<b>\$530,923,923</b>	<b>\$212,097,849</b>
Investment measured at the net asset value (NAV)				
Absolute Return	\$670,917,797			
Diversified Multi-Asset	328,837,417			
Global Equity	145,535,727			
Global Fixed Income	<u>401,033,302</u>			
<b>Total investments measured at the NAV</b>	<b>1,546,324,243</b>			
<b>Total investments measured at Fair Value</b>	<b><u>3,637,243,946</u></b>			

The System measures and records its investments using fair value hierarchy measurement guidelines established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and give the highest level to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest level to unobservable inputs (level 3 measurements).

- Level 1** Unadjusted quoted prices for identical instruments in active markets.
- Level 2** Observable inputs other than quoted market prices; and,
- Level 3** Valuation derived from valuation techniques in which significant inputs are unobservable.

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

In instances where inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation. The table above shows the fair value leveling of the investments.

Equities and fixed income securities classified in Level 1 are valued using prices quoted in the active markets for those securities. Securities in Level 2 and Level 3 are valued using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features and ratings. Matrix pricing is used to value securities based on the securities' relationships to benchmark quoted prices. Level 3 securities use proprietary information or single source pricing.

## Notes to the Financial Statements

(continued)

## Investment Measured at NAV

	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Absolute Return	\$670,917,797		Monthly, Quarterly	5 - 90 days
Diversified Multi-Asset	328,837,417		Monthly, Quarterly	3 - 30 days
Global Equity	145,535,727		Monthly	5 days
Global Fixed Income	<u>401,033,302</u>	<u>\$144,752,459</u>	None, Semi-Annually	N/A, 90 days
Total investment measured at NAV	<b>\$1,546,324,243</b>			

*Absolute Return:*

*Relative Value:* This type includes five hedge funds which implement long and short relative value strategies to capture these structural returns across multiple asset classes including: equity sectors, equity indices, fixed income, currency, and commodities. The fair values of each of this hedge fund has been determined monthly using the NAV per share of the investments.

*Global Macro:* This type includes four hedge funds that invest long/short across fixed income, currency, equity and commodity markets. The process is equally driven by analysis of the macro environment, flows of capital, the expected reaction to changes in interest rates, trend following and other drivers. This type also includes a macro event fund focused on identifying specific currency dislocations and their macro implications. The fair values of the investments in this type have been determined monthly using NAV per share (or its equivalent) of the investments.

*Diversified Multi-Asset:*

This type includes three funds that invests across asset classes using a risk balanced approach in their asset allocation of the Funds with the intent to balance risk across all four combinations of Rising and Falling Growth and Inflation. The main goal is to construct a portfolio that achieves the best risk adjusted return at a given expected level of volatility which varies by fund. This is achieved through the use of derivatives and liquid long positions across multiple asset classes. The fair values of the investments in this type have been determined monthly using NAV per share (or its equivalent) of the investments.

*Global Equity:*

This type includes three funds providing traditional long-only international equity exposure. The fair values of the investments in this type have been determined monthly using NAV per share (or its equivalent) of the investments.

*Global Fixed Income:*

*Fixed Income:* This type includes two funds providing leveraged exposure to US and international government issued inflation-linked bonds as a capital efficient way to gain the exposure. This type also includes a traditional long-only emerging market debt fund. The fair values of the investments in this type have been determined monthly using NAV per share (or its equivalent) of the investments.

*Direct Lending:* This type includes four private debt funds conducting middle market corporate and commercial mortgage direct lending with negotiated senior secured loans to borrowers that are too small to attract the attention of conventional banks and lenders. These investments cannot be redeemed. Instead, the nature of the investments in these private debt funds are that distributions are received through the liquidation of underlying assets of the funds over a period of years as per the terms of the fund. Loan payments are also distributed on a monthly or quarterly basis. The loans are held at book value unless a payment default has occurred at which time a third-party appraisal value is determined.

*Opportunistic Credit:* This type includes three opportunistic/distressed funds investing in public and private debt, equity and real estate as opportunities present themselves. These investments cannot be redeemed. Instead, the nature of the investments in

## Notes to the Financial Statements

(continued)

these private debt funds are that distributions are received through the liquidation of underlying assets of the funds over a period of years as per the terms of the fund. The fair values of the investments in this type have been determined monthly or quarterly using NAV per share (or its equivalent) of the investments.

*Private Equity:* This type includes two private equity funds. One fund purchases private equity stakes in investment management firms and thus a share of the

firm's revenues and capital appreciation. The second fund owns and operates a fleet of commercial container and tanker vessels. These investments cannot be redeemed. Instead, the nature of the investments in these private debt funds are that distributions are received through the liquidation of underlying assets of the funds over a period of years as per the terms of the fund. The fair values of the investments in this type have been determined quarterly using NAV per share (or its equivalent) of the investments.

E. The System's investment quality ratings at June 30, 2016, were as follows:

Type of Investment	Fair Value	Ratings	Percent of Fixed
US Government obligations	\$106,026,000	AA	16.6%
Corporate and Other Bonds	6,430,048	AAA	1.0%
	32,804,987	AA	5.1%
	30,810,670	A	4.8%
	24,509,498	BBB	3.8%
	92,253,009	BB	14.4%
	88,547,851	B	13.8%
	21,743,178	CCC	3.4%
	6,207,936	CC	1.0%
	215,000	D	0.0%
	70,369,806	NR	11.0%
Asset-backed securities	4,600,909	AAA	0.7%
	48,003,616	AA	7.5%
	5,075,040	A	0.8%
	4,636,818	BBB	0.7%
	1,150,139	BB	0.2%
	2,673,804	B	0.4%
	12,522,050	CCC	2.0%
	2,257,079	CC	0.4%
	27,682,947	D	4.3%
	<u>51,751,171</u>	NR	<u>8.1%</u>
<b>Total fixed income</b>	<b>\$640,271,556</b>		<b>100.0%</b>
<b>Short-term investments</b>			
Cash and cash equivalents	\$17,567,253	Unrated	
Employees' STIF*	203,281,669	Unrated	
US Treasury bill	<u>15,993,840</u>	AA	
	<b>\$236,842,762</b>		

\*Short-term investment funds

As of June 30, 2016, the fixed income portfolio, excluding pooled funds, consisted of 41.0 percent invested in investment grade securities, 39.9 percent invested in below-investment-grade securities and 19.1 percent was invested in unrated securities.

The Barclays Capital Aggregate Bond Index (BCAG) is the standard benchmark against which the industry and the System's Board measures its fixed income portfolio performance and volatility. The System's fixed income managers have discretion, within circumscribed limits, to extend the duration of their portfolios beyond that of the BCAG if they forecast falling interest rates (and thus higher bond prices). Conversely, if managers anticipate that the general level of interest rates will rise, they have the ability to shorten the duration of their portfolio, thus reducing the portfolio's sensitivity to rising rates.

## Notes to the Financial Statements

(continued)

F. The System's investments' sensitivity to interest rates at June 30, 2016 rates were as follows:

Investment Type	Fair Value	Option Adjusted Duration (yrs)	Percentage of Fixed
US Government obligations	\$106,026,000	19.1	16.6%
Corporate and other bonds	373,891,983	4.6	58.3%
Asset-backed securities	<u>160,353,573</u>	<u>3.0</u>	<u>25.1%</u>
Total fixed income	<u>\$640,271,556</u>	<u>6.6</u>	<u>100%</u>
<b>Short-term investments</b>			
Cash and cash equivalents	17,567,253	0.2	
Employees' STIF	203,281,669	0.1	
US Treasury bill	<u>15,993,840</u>	0.1	
	<u>\$236,842,762</u>		

\*Short-term investment funds

The duration of the System's overall fixed income portfolio excluding pooled fund was 6.6 years compared with the 5.47 years duration of the BCAG.

G. Short term investments of \$236.8 million includes a position of \$203.3 million of uninvested cash held by our investment managers and cash held by the system in an enhanced short term investment fund managed by our custodian.

H. Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of the investment. The System's investments at June 30, 2016, held in currencies other than U.S. dollars were as follows:

International Securities	Short-Term Investments & Other	Convertible & Fixed Income	Equity	Total
Australian Dollar	\$149,115	\$10,985,091	\$21,517,159	\$32,651,365
Brazil Real	1	7,338,807	34,877	7,373,685
Canadian Dollar	(396,777)	1,075,050	17,092,440	17,770,713
Danish Krone	68,368	1,707,288	11,707,791	13,483,447
Euro Currency Unit	(64,621)	8,966,511	82,569,458	91,471,348
Hong Kong Dollar	9,933	-	22,487,456	22,497,389
Hungarian Forint	1,109	4,819,756	-	4,820,865
Indonesian Rupiah	-	6,346,495	3,509,754	9,856,249
Israeli Shekel	325	-	2,878,125	2,878,450
Japanese Yen	2,565,292	41,186	84,387,720	86,994,198
Malaysian Ringgit	-	6,558,718	763,351	7,322,069
Mexican Peso	41,188	21,699,688	4,078,013	25,818,889
New Zealand Dollar	6,383	5,791,562	196,018	5,993,963
Norwegian Krone	64,342	-	1,777,729	1,842,071
Philippines Peso	-	-	1,842,637	1,842,637
Polish Zloty	-	3,084,707	-	3,084,707
Pound Sterling	(936,761)	10,020,052	49,667,234	58,750,525
Singapore Dollar	12,947	1,575,691	3,911,699	5,500,337
South African Rand	23	4,414,909	996,444	5,411,376
South Korean Won	-	-	2,530,985	2,530,985
Swedish Krona	-	-	5,526,718	5,526,718
Swiss Franc	-	-	12,576,706	12,576,706
Thailand Baht	1,943,466	-	2,461,146	4,404,612
Turkish Lira	<u>1</u>	<u>-</u>	<u>107,510</u>	<u>107,511</u>
	<u>\$3,464,334</u>	<u>\$94,425,511</u>	<u>\$332,620,971</u>	<u>\$430,510,815</u>



## Notes to the Financial Statements

(continued)

*I. Derivative Financial Instruments.*

In accordance with the Board's investment policies, the System regularly invests in derivative financial instruments in the normal course of its investing activities to enhance return on investment and manage exposure to certain risks within the System. The System also enters into derivative transactions to gain exposure to currencies and markets where derivatives are the most cost-effective instrument. Derivative instruments are financial contracts whose values depend on the values of one or more underlying assets, reference rates or financial indices. During fiscal year 2016, the System had exposure to various derivatives including asset-backed securities, collateralized mortgage obligations, exchange-traded futures contracts, forward currency contracts, options, swaps, and floating rate securities. Some securities, such as structured notes, can have derivative-like characteristics where the return may be linked to one or more indexes. Asset-backed securities, such as collateralized mortgage obligations (CMOs), are sensitive to changes in interest rates and prepayments. It should also be noted that the System also has exposure to derivatives indirectly through its ownership interests in certain hedge funds, mutual funds and commingled funds which may use, hold, or write derivative financial instruments.

Derivative investments may involve, to varying degrees, elements of credit and market risk in excess of amounts recognized on the financial statements. Market risk results from fluctuations in interest rates and currency rates. The credit risk of these investments is associated with the creditworthiness of the related parties to the contracts. The System could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. Holders of futures contracts look to the exchange for performance under the contract and not to the other party holding the offsetting futures position. Accordingly, the amount at risk due to nonperformance of counterparties to futures contracts is minimal. For counterparties involving over the counter derivatives, the Board seeks to control this risk through counterparty credit evaluations, counterparty credit limits, and exposure monitoring procedures conducted by investment managers and staff. To address counterparty risk, the System instructs our investment managers who use swaps, forwards, and options to only enter into contracts with counterparties rated at investment grade of BBB or

better by at least one nationally recognized rating agency.

At June 30, 2016, the System held the following four types of derivative financial instruments: futures, currency forwards, options and swaps. Futures, currency forwards, options, and swaps contracts provide the System with the opportunity to build passive benchmark positions, enhance returns, and gain market exposure to various indices in a more efficient way and at lower transaction costs. Credit risks depend on whether the contracts are exchange-traded or exercised over-the-counter. Market risks arise from adverse changes in market prices, interest rates, and foreign exchange rates.

Investment managers are prohibited from purchasing securities on margin or using leverage unless specifically permitted within the investment manager's guidelines. Derivative instruments covered under the scope of GASB 53 are reported at fair value. The changes in fair value of derivative instruments that are used for investment purposes are reported within the investment revenue classification. Gains and losses on derivative securities are determined based upon fair values as determined by our custodian and recorded in the Statement of Changes in Fiduciary Net Position.



## Notes to the Financial Statements

(continued)

Futures.

Futures contracts are contracts to deliver or receive securities at a specified future date and at a specified price or yield. Futures contracts are traded on organized exchanges (exchange-traded) and typically require an initial margin (collateral) in the form of cash or marketable securities. The net change in the futures contract value is settled daily, in cash, with the exchanges. The net gains or losses resulting from the daily settlements are included in the System's financial statements. Holders of futures contracts look to the exchange for performance under the contract and not to the entity holding the offsetting futures position. Accordingly, the amount at risk posed by nonperformance of counterparties to futures contracts is minimal. The notional value of the System's investment in futures contracts at June 30, 2016, is as follows:

Types of Futures	Base Exposure	Notional Cost
Cash and cash equivalents		
Long	\$4,717,938	\$4,708,150
Short	(209,288,371)	(212,411,212)
Commodity		
Long	101,705,614	96,200,898
Short	(36,715,391)	(35,098,975)
Equity		
Long	53,718,140	52,617,668
Short	(28,346,760)	(27,421,173)
Fixed income securities		
Long	575,986,152	566,047,680
Short	(1,173,852)	(1,167,943)
Other		
Long	550,935	527,310
Short	(148,925)	(114,660)
<b>Total</b>	<b><u>\$461,005,480</u></b>	<b><u>\$443,887,743</u></b>

Swaps.

The System enters into several types of swap contracts, in which two counterparties agree to exchange one stream of payments for another over some agreed to period of time. Swaps are used to manage risk and enhance returns. All counterparties are rated A or better. The following is the information on the System's swap contracts outstanding at June 30, 2016:

	Base Exposure	Fair Value
<b>Equity Swaps</b>		
Total Return Swaps	\$100,380	\$0
<b>Fixed Income Securities Swaps</b>		
Cleared Interest Rate Swaps	333,230	306,553
Credit Default Swaps	(13,661)	(13,661)
Inflation Swaps	(3,749)	(3,749)
Interest Rate Swaps	(222,441)	(399,987)
Total Return Swaps	<u>592,676</u>	<u>0</u>
<b>Total</b>	<b><u>\$786,435</u></b>	<b><u>(\$110,844)</u></b>

## Notes to the Financial Statements

(continued)

Currency Forwards.

Currency forwards represent foreign exchange contracts and are used to effect settlements and to protect the base currency value of portfolio assets denominated in foreign currencies against fluctuations in the exchange rates of those currencies or to gain exposure to the change in fair value of a specific currency. A forward foreign currency exchange contract is a commitment to purchase or sell a foreign currency at a future date and at a negotiated price. The credit risk of currency contracts that are

exchange-traded lies with the clearinghouse of the exchange where the contracts are traded. The credit risk of currency contracts traded over-the counter lies with the counterparty, and exposure usually is equal to the unrealized profit on in-the money contracts. All counterparties are rated A or better. The market risk in foreign currency contracts is related to adverse movements in currency exchange rates. The following is summary information on the System's currency forward contracts at June 30, 2016 follows:

Foreign Currency Contracts Purchased	Notional (local currency)	Fair Value Payable in U.S. Dollars	Unrealized Gain/(loss)
Chinese Yuan Renminbi	(\$6,274,512)	(\$939,997)	\$18,734
Danish Krone	(11,428,974)	(1,724,000)	1,558
Euro Currency Unit	(3,637,000)	(4,044,316)	16,283
Japanese Yen	(497,086,000)	(4,851,999)	(172,086)
Mexican Peso	(15,568,245)	(839,638)	19,965
New Zealand Dollar	(94,000)	(66,814)	(2,965)
Pound Sterling	<u>(953,000)</u>	<u>(1,274,131)</u>	<u>61,037</u>
		(\$13,740,895)	(\$57,474)
Foreign Currency Contracts Sold	Notional (local currency)	Fair Value Receivable in U.S. Dollars	Unrealized Gain/(loss)
Chilean Peso	\$4,325,400,000	\$6,510,789	\$255,060
Euro Currency Unit	9,035,000	10,047,979	(231,994)
Indian Rupee	410,000,000	5,995,573	(54,213)
Japanese Yen	90,000,000	877,305	(5,914)
Norwegian Krone	34,500,000	4,122,826	(68,824)
Pound Sterling	412,000	550,764	2,598
Swedish Krona	85,700,000	<u>10,127,085</u>	<u>(408,693)</u>
		\$38,232,321	(\$511,980)
Net Unrealized gain/(loss) on foreign currency spot and forward contracts			<u>(\$569,454)</u>

## Notes to the Financial Statements

(continued)

Options.

Option contracts may be exchanged traded or negotiated directly in over the counter transaction between two counterparties. Options holders have the right, but not the obligation, to purchase (call) or sell (put) a financial instrument at a future price and time. The System can both purchase and write options.

Exchange traded options rely on the exchange for performance and the risk to non-performance of counterparties is minimal. All counterparties for over the counter options are rated A or better. The following table provides information on the System's option contracts at June 30, 2016:

Option Types	Position	Call/Put	Cost	Fair Value	Total Unrealized Gain (loss)
Cash & cash equivalents					
	Purchased	Call	\$2,180	\$0	(\$2,180)
	Purchased	Put	0	184	184
	Written	Call	(7,912)	(6,681)	1,231
	Written	Put	(849)	(3,343)	(2,494)
Commodity					
	Purchased	Call	184,592	293,247	108,655
	Written	Call	(180,443)	(223,106)	(42,663)
	Written	Put	(57,111)	(93,366)	(36,255)
Equity					
	Purchased	Put	86,490	102,232	15,742
	Written	Call	(16,554)	(5,399)	11,155
	Written	Put	(44,690)	(49,124)	(4,434)
Fixed income securities					
	Purchased	Call	52,578	45,181	(7,397)
	Purchased	Put	207,713	115,798	(91,915)
	Written	Call	(49,102)	(60,231)	(11,129)
	Written	Put	<u>(183,680)</u>	<u>(168,695)</u>	<u>14,985</u>
<b>Total Options</b>			<b><u>(\$6,788)</u></b>	<b><u>(\$53,303)</u></b>	<b><u>(\$46,515)</u></b>

## Notes to the Financial Statements

(continued)

*J. Securities Lending.*

Board of Trustee policies permit the System to lend its securities to broker-dealers and other entities (borrowers) for collateral that will be returned for the same securities in the future. The System's custodian is the agent in lending the plan's domestic securities for collateral of 102.0 percent and international securities of 105.0 percent of fair value. The custodian receives cash or securities as collateral from the borrower. All securities loans can be terminated on demand by either the System or the borrower. Securities received as collateral are not reported as assets and liabilities on balance sheet since the Retirement Administration Agency does not have the ability to pledge or sell the collateral securities absent borrower default.

The System did not impose any restrictions during fiscal 2016 on the amounts of loans the lending agent made on its behalf. At June 30, 2016, the System had

no credit risk exposure to borrowers because the amounts the System owed the borrowers exceeded the amounts the borrowers owed the System. The custodian provides full indemnification to the System for any losses that might occur in the program due to the failure of a broker/dealer to return a borrowed security or failure to pay the System income earned on the securities while on loan. Cash collateral is invested in a separate account with the lending agent which includes a larger allocation to equity repurchase securities. At June 30, 2016, Cash collateral had a weighted-average maturity of one day. The maturities of the resulting investments generally match the maturities of the securities lending arrangements. While the System bears no credit risk from the failure of the borrower to return a borrowed security, it does bear risk from investing the collateral. The following represents the balances relating to the securities lending transactions at June 30, 2016:

Securities Lent	Underlying Securities	Cash Collateral Investment Value	Securities Collateral Investment Value
Lent for Cash Collateral			
Corporate and other bonds	\$47,072,318	\$48,223,630	
Common and preferred stock	246,379,314	253,092,851	
Lent for Securities Collateral			
US Government securities	37,463,356		\$38,260,290
Corporate and other bonds	385,610		394,063
Common and Preferred Stock	<u>180,892,162</u>		<u>196,582,640</u>
<b>Total Securities lent</b>	<b><u>\$512,192,760</u></b>	<b><u>\$301,316,481</u></b>	<b><u>\$235,236,993</u></b>

## Notes to the Financial Statements

(continued)

**Note 4. Net Pension Liability, Actuarial Method and Assumptions***A. Net Pension Liability.*

The components of the net pension liability at June 30, 2016, were as follows:

Total pension liability	\$5,116,417,171
Plan fiduciary net position	<u>3,590,082,229</u>
Net pension liability	<u>\$1,526,334,942</u>
Plan fiduciary net position as a percentage of the total pension liability	70.2%

*B. Actuarial Methods and Assumptions.*

The Total Pension Liability was determined by an actuarial valuation as of June 30, 2016, using the following actuarial assumptions, applied to all periods included in the measurement.

Discount rate, net of plan investment expenses	7.25%
Inflation	2.75%
Salary increases, including inflation	2.75% + merit
Investment rate of return, net of plan investment expenses	7.25%
Municipal bond rate	N/A
Projected period of unfunded benefit payments	None

The actuarial assumptions used have been recommended by the actuary and adopted by the System's Board of Trustees based on the most recent review of the System's experience completed in 2016. In the Schedule of Changes in Net Pension Liability, the beginning of year amount differs from the actuarial accrued liability listed in the July 1, 2015, actuarial valuation report because GASB 67 disclosures used a rollforward methodology and did not include the liability gain that was measured in the 2015 valuation.

The rate of employer contributions to the System is composed of normal cost, amortization of the unfunded actuarial accrued liability and an allowance

for administrative expenses. The normal cost is a level percent of payroll cost which, along with the member contributions, will pay for projected benefits at retirement for each plan participant. The actuarial accrued liability is that portion of the present value of projected benefits that will not be paid by future normal employer costs or member contributions. The difference between this liability and the funds accumulated as of the same date is the unfunded actuarial accrued liability. The allowance for administrative costs is based upon the System's actual administrative expenses.

The County is required to contribute at an actuarially determined rate; the rate for the year ended June 30, 2016, was 18.71 percent of annual covered payroll. The decision was made to commit additional funding and a rate of 21.99 percent was adopted for fiscal year 2016. Since the ERS's adjusted funded ratio (the ratio of the sum of the actuarial value of assets and commitments already made to fund changes to the actuarial accrued liability) has fallen below 90.0 percent, the contribution rate includes a margin to amortize this shortfall back to the 90.0 percent level. In fiscal year 2011 the target was increased to a 91.0 percent level, with the 2015 fiscal year contribution it was increased to 93.0 percent, and with the 2016 fiscal year contribution it will be increased again to 95.0 percent. The intent of the County is to continue increasing the amortization target until full actuarial funding has been restored. The goal is to reach an amortization to 100 percent in contributions at or before fiscal year 2020.

Mortality rates with adjustments for mortality improvements were based on 100% and 110% of the RP-2014 Healthy Annuitant Mortality Table for males and females respectively, projected using the RPEC-2015 model, with an ultimate rate of 0.75% for ages 20-85 grading down to an ultimate rate of 0% for ages 115-120 and convergence to the ultimate rate in the year 2015. 5% of deaths are assumed to be service-connected.

The actuarial assumptions used in the June 30, 2016, valuation were based on the results of an actuarial experience study for the period July 1, 2010 to June 30, 2015.

## Notes to the Financial Statements

(continued)

*C. Long Term Expected Rate of Return.*

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 returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Best estimates of arithmetic real rates of return for each major asset class included in the System's target asset allocation as of June 30, 2016, are summarized below:

<u>Asset Class</u>	<u>Long Term Expected Real Rate of Return</u>
U.S. Equities	4.65%
International Equities	4.50%
Core Fixed Income	2.40%
High Yield	4.20%
Real Estate	4.65%
Commodity	4.65%
Risk Parity	6.00%
Absolute Return	9.85%

*D. Discount Rate.*

The discount rate used to measure the total pension liability was 7.25 percent. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that County contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the pension plan'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.

In making this determination, we assumed the outflows would equal the anticipated benefit payments from the 2015 actuarial valuation. The

administrative expenses attributable to current active were assumed to equal 0.20 percent of covered payroll. The inflows to the plan were assumed to continue at the average aggregate rate for the 2015 active population of 4.71 percent of payroll and County contributions were projected at 21.99 percent for fiscal year 2016, 22.90 percent for fiscal years 2017, and 26.08 percent for fiscal years 2018 through 2033. After that time the County contribution was assumed to drop to the normal cost plus expenses (9.36 percent) since the unfunded actuarial liability is expected to be fully funded by that time.

We also used the actual Fiduciary Net Position at June 30, 2016, in the projections.

*E. Sensitivity of the Net Pension Liability to Changes in the Discount Rate.*

The following presents the net pension liability of the County, calculated using the discount rate of 7.25 percent, as well as what the County's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25 percent) or 1-percentage-point higher (8.25 percent) than the current rate.

## Sensitivity of Net Pension Liability to Changes in Discount Rate

	1% Decrease <u>6.25%</u>	Discount Rate <u>7.25%</u>	1% Increase <u>8.25%</u>
Net Pension Liability	\$2,188,632,631	\$1,526,334,942	\$1,040,779,300
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	62.1%	70.2%	77.5%

**Note 5. Income Taxes**

The Internal Revenue Service issued the System a determination letter which stated that the System and its underlying trust qualify under the applicable provisions of the Internal Revenue Code and therefore are exempt from federal income taxes.

## Required Supplementary Information (Unaudited)

Schedule of Changes in the Net Pension Liability and Related Ratios			
	Year Ended June 30		
	2016	2015	2014
Total Pension Liability			
Service cost	\$85,498,714	\$84,153,689	\$84,074,831
Interest	361,073,638	353,621,871	340,919,519
Changes in benefit terms	773,066	1,462,698	0
Differences between expected and actual experience	(104,260,427)	(8,616,589)	0
Changes in assumptions	68,573,373	0	0
Benefit payments, including refunds of member contributions	(274,901,942)	(258,834,581)	(238,560,893)
Net Change in Total Pension Liability	<u>\$136,756,422</u>	<u>\$171,787,088</u>	<u>\$186,433,457</u>
Total Pension Liability - beginning	<u>4,979,660,749</u>	<u>4,807,873,661</u>	<u>4,621,440,204</u>
Total Pension Liability - ending (a)	<u>\$5,116,417,171</u>	<u>\$4,979,660,749</u>	<u>\$4,807,873,661</u>
Plan Fiduciary Net Position			
Contributions - employer	\$155,780,373	\$138,493,099	\$129,618,309
Contributions - member	34,627,061	33,193,593	32,758,587
Net investment income	(16,668,287)	16,342,457	490,196,386
Benefit payments, including refunds of member contributions	(274,901,942)	(258,834,581)	(238,560,893)
Administrative expenses	<u>(2,112,595)</u>	<u>(1,896,614)</u>	<u>(1,884,827)</u>
Net Change in Plan Fiduciary Net Position	(103,275,390)	(72,702,046)	412,127,562
Plan Fiduciary Net Position - beginning	<u>3,693,357,619</u>	<u>3,766,059,665</u>	<u>3,353,932,103</u>
Plan Fiduciary Net Position - ending (b)	<u>3,590,082,229</u>	<u>3,693,357,619</u>	<u>3,766,059,665</u>
Net Pension Liability (Asset) - ending (a)-(b)	<u>\$1,526,334,942</u>	<u>\$1,286,303,130</u>	<u>\$1,041,813,996</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	70.2%	74.2%	78.3%
Covered Employee Payroll	<u>\$708,414,611</u>	<u>\$686,288,895</u>	<u>\$671,597,456</u>
Net Pension Liability as a Percentage of Covered Employee Payroll	215.5%	187.4%	155.1%

The total pension liability contained in this schedule was calculated by Cheiron, the System's Actuary. The net pension liability is measured as the total pension liability less the amount of the fiduciary net position of the Employees' Retirement System.

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

## Required Supplementary Information

(continued)

## Schedule of Net Pension Liability

Year Ended June 30

	2016	2015	2014
Total Pension Liability	\$5,116,417,171	\$4,979,660,749	\$4,807,873,661
Plan Fiduciary Net Position	<u>3,590,082,229</u>	<u>3,693,357,619</u>	<u>3,766,059,665</u>
Net Pension Liability	<u>\$1,526,334,942</u>	<u>\$1,286,303,130</u>	<u>\$1,041,813,996</u>
Plan Fiduciary Net Position as a Percentage of the Total Plan Liability	70.2%	74.2%	78.3%
Covered Employee Payroll	\$708,414,611	\$686,288,895	\$671,597,456
Net Pension Liability as a Percentage of Covered Payroll	215.5%	187.4%	155.1%

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

## Schedule of Money-Weighted Rate of Return

<u>Fiscal Year</u>	Annual Money-Weighted Rate of Return, Net of Investment Expense
2016	-0.4%
2015	0.5%
2014	14.9%

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

## Schedule of Employer Contributions

Fiscal Year	Actuarial Determined Contribution	Contributions in Relations to the Actuarial Determined Contribution	Contribution Deficiency (Excess)	Covered Employee Payroll	Contributions as a Percentage of Covered Payroll
2016	\$155,780,373	\$155,780,373	\$-	\$708,414,611	21.99%
2015	138,493,099	138,493,099	-	686,288,895	20.18%
2014	129,618,309	129,618,309	-	671,597,456	19.30%
2013	127,448,018	127,448,018	-	669,018,467	19.05%
2012	114,682,538	114,682,538	-	666,758,942	17.20%
2011	96,607,535	96,607,535	-	657,194,116	14.70%
2010	64,069,102	64,069,102	-	659,825,973	9.71%
2009	65,110,832	65,110,832	-	676,827,775	9.62%
2008	62,636,121	62,636,121	-	653,139,948	9.59%
2007	57,452,711	57,452,711	-	621,110,389	9.25%



## Required Supplementary Information

(continued)

## Notes to Schedule

Valuation Date	6/30/2014
Timing	Actuarially determined contribution rates are calculated based on the actuarial valuation one year prior to the beginning of the plan year.
<u>Key Methods and Assumptions used to Determine Contribution Rates</u>	
Actuarial Cost Method	Entry Age
Asset Valuation Method	3-year smoothed market
Amortization Method	Corridor method, amortize liability outside 95% corridor over an open 15-year period with level % of payroll.
Discount Rate	7.5%
Amortization Growth Rate	3.0%
Price Inflation	3.0%
Salary Increases	3.0% plus merit component based on employee's years of service
Mortality	Sex distinct RP-2000 Combined Mortality projected to 2015 using scale AA

A complete description of the methods and assumptions used to determine contribution rates for the year ending June 30, 2016, can be found in the June 30, 2014 actuarial valuation report.

## Summary of Significant Changes to the Pension System

The summary of employer and employee contribution rates during the past 5 years and other significant changes in the pension system are as follows:

Contribution Rates

Fiscal Year	Employer	Employee
2016	21.99%	4%, 5 <sup>1</sup> / <sub>3</sub> %
2015	20.18%	4%, 5 <sup>1</sup> / <sub>3</sub> %
2014	19.30%	4%, 5 <sup>1</sup> / <sub>3</sub> %
2013	19.05%	4%, 5 <sup>1</sup> / <sub>3</sub> %
2012	17.20%	4%, 5 <sup>1</sup> / <sub>3</sub> %
2011	14.70%	4%, 5 <sup>1</sup> / <sub>3</sub> %

**January 2014** Service-Connected Disability Social Security offset was reduced from 25.0 percent to 15.0 percent.

**January 2013** Employees hired on or after January 1, 2013, will be automatically enrolled in Option C or elect to switch to Option D within 30 days of employment. The maximum amount of accrued sick leave is capped at 2,080 hours. Eligibility for normal service retirement is at age 55 or older if age plus years of service total 85 years or more; DROP does not include the Pre-Social Security benefit.

## Other Supplementary Information

**Schedule of Investment & Consultant Expenses**

For the Year Ended June 30, 2016

Investment Activity Expenses	
Investment manager fees	\$12,308,034
Custodial fees	141,336
Consultant Expenses	
Consultant expenses	<u>257,313</u>
Total investment and consulting expenses	<u>\$12,706,683</u>

**Schedule of Administrative Expenses**

June 30, 2016

Personnel services		
Salaries and wages	\$1,047,305	
Fringe benefits	<u>466,943</u>	
Total personnel services		\$1,514,248
Professional services		
Actuarial	134,211	
Audit	29,289	
Legal	<u>14,937</u>	
Total professional services		178,437
Communications		
Phone charges	23,819	
Printing, binding and copying	9,682	
Postage	<u>16,743</u>	
Total communications		50,244
Supplies		
Office supplies	<u>10,686</u>	
Total supplies		10,686
Other services and charges		
Board and staff travel and development	24,773	
Professional membership	3,778	
Professional subscriptions	1,541	
Insurance	36,816	
Building rent	88,115	
Depreciation expense	846	
Computer system	170,420	
Other operating	<u>32,691</u>	
Total other services and charges		<u>358,980</u>
Total Administrative Expenses		<u>\$2,112,595</u>



## County of Fairfax, Virginia

To protect and enrich the quality of life for the people, neighborhoods and diverse communities of Fairfax County

November 14, 2016

Dear Members of the Board of Trustees:

U.S. equity markets provided mixed returns in the fiscal year 2016 as episodes of heightened market volatility interrupted an otherwise positive market environment. Domestic bond markets proved attractive during these periods of disruption providing a desired safe haven for investors and delivering strong returns. On the international side, non-U.S. developed equities edged lower as U.S. dollar strength cut into returns and political turmoil led by the U.K.'s decision to leave the EU sent a wave of volatility through the market. Despite easy policy from central banks in Europe and Japan, continuing growth concerns also contributed to negative equity returns.

The U.S. economy appeared to exhibit continued resilience in the face of global market conditions and geo-political events. More consistently positive economic news for the U.S. helped push domestic equity prices higher. Notwithstanding, yields on most fixed income securities narrowed on greater demand for safe haven assets, even as the economy grew at a moderately-healthy pace and unemployment receded further. The large-cap domestic equity market, as measured by the S&P 500 Index, capped off the fiscal year with a +4.0% return even as most smaller-cap domestic indices posted losses. The domestic bond market, as measured by the Barclays Aggregate Bond Index, returned +6.0% over the same period. The global equity market, as measured by the MSCI All Country World Index (net), returned -3.7% for the fiscal year, reflecting a blend of the positive results in the U.S. and the negative performance in the non-U.S. developed markets (MSCI EAFE down -10.2% for the trailing year) and emerging markets (MSCI EM down 12.1%).

During the quarter ended September 30, 2015, international equities contracted sharply with developed markets down around 10% and emerging markets losing nearly 18%. Fear of a pending rate hike by the Fed and negative headlines from China and Greece helped fuel the selloff. Greece and Brazil were among the hardest hit emerging economies, trading down 35% and 33%, respectively. Emerging market small-cap stocks continued to outpace their larger-cap peers. Within developed markets, European equities were down 8%, while Japanese stocks lost 10%. At home, equities suffered their worst quarterly loss in four years. The S&P 500 Index declined 6.4% in the third quarter, erasing its gains for the year; the Russell 2000 Index lost 11.9%. Within large-cap stocks, growth bested value, while value stocks lost less in the small-cap space.



**Fairfax County Retirement Systems**  
 10680 Main Street \* Suite 280 \* Fairfax, VA 22030  
 Phone: 703-279-8200 \* 1-800-333-1633 \* Fax: 703-273-3185  
[www.fairfaxcounty.gov/retirement/](http://www.fairfaxcounty.gov/retirement/)

Overall, energy and healthcare were among the worst performing sectors. Within the U.S., Treasuries and other high-grade assets rallied as lower quality securities sold off amid the market volatility. To this end, the Barclays U.S. Aggregate Bond Index gained 1.2% in the third quarter. Risk premiums widened with U.S. investment-grade corporate spreads increasing 24 basis points to 169 basis points. High-yield bond spreads spiked 160 basis points to 630 basis points with the Barclays U.S. Corporate High Yield Index losing 4.8%. The Treasury curve flattened over the quarter; the yield on the 30-year Treasury fell 24 basis points to 2.90%, while the yield on the one-year Treasury increased by six basis points to 0.34%. Outside the U.S., developed market bonds rallied as investors shunned risk; the Citigroup WGBI Index rose 1.7% in the third quarter. Meanwhile, emerging market debt faced headwinds. Weakening currencies continue to be the principal drag on emerging market debt. Consequently, debt denominated in local currency declined the most, losing 10.5%, while hard-currency sovereign debt fell 1.7%, according to the JP Morgan EMBI Index. In general, the debt of exporters of oil and commodities underperformed during the quarter. Brazilian debt was also sharply lower, rocked by a ratings downgrade by Standard & Poor's Ratings Services and continued economic weakness.

U.S. equities ended a volatile 2015 on a strong note. Despite a solid fourth quarter, the year saw the lowest gains for the S&P 500 since 2008 and for the Russell 2000 since 2011. Earlier in the quarter, equities rallied amid robust corporate earnings and macroeconomic data. Subsequently, stocks faltered amid plunging oil prices and concerns around the impact of a stronger U.S. dollar as the Fed tightens monetary policy. The consumer discretionary sector led performance in large caps in 2015 while healthcare dominated small caps; energy was the worst performing sector in both. Growth bested value in large and small equities. Meanwhile, developed markets recouped a portion of their third quarter losses, gaining 4.8% in the last quarter. For the calendar year, international equities were down around 0.4%. The energy and materials sectors drove losses, trading down over 16% in 2015; consumer staples and healthcare were the strongest performers, up over 8%. Emerging economies returned 0.7% as the Fed's 25 basis points rate hike—its first since 2006—drove markets lower; healthcare and consumer discretionary sectors gained during the quarter while industrials and staples lagged. For 2015, the materials sector—down over 20%—was a major detractor of performance. Brazil traded off 41% as the real declined sharply amid the country's political and economic problems. At home, the Fed's well telegraphed rate hike drove government yields higher in the fourth quarter, resulting in losses for Treasuries with maturities of less than one year. Within corporate credit, the precipitous selloff in commodity-related sectors was unrelenting. Consequently, high-yield debt was the worst performer during the quarter and in 2015, losing 2.07% and 4.47%, respectively; in high yield, energy and metals and mining lost nearly 25% last year. Investment-grade credit spreads widened 34 basis points over the course of 2015 to 165 basis points; contributors included global growth concerns, falling commodity prices, and record issuance of \$1.3 trillion which hampered liquidity. Abroad, emerging market debt remained hindered by a strengthening U.S. dollar, causing the local currency index to lose 0.01% compared to returns of 1.25% for the dollar-denominated index. Within developed markets, weakening currencies aided losses of 1.23%, according to the Citigroup WGBI Index.

Concerns around global growth and the precipitous decline in oil prices roiled stocks initially in the first quarter of 2016 but reassuring economic data triggered a dramatic reversal in March. The Standard & Poor's 500 Index posted its best return in March since 2009, putting it back in the black for the year. The S&P 500 ended the quarter with gains of 1.3%, while the Russell 2000 Index was down 1.5%. Returns were generally driven by the beaten down areas of the market, including smaller, lower-quality and commodity-related equities; however, high-quality stocks still lead for the year. Defensive bond-proxy sectors, for instance, telecom and utilities, were the best performers; value outperformed growth. Across the pond, developed markets also sold off earlier in the year and then rebounded following further rate cuts by the European Central Bank and comments from the Federal Reserve on a slowing pace for raising rates that fueled a weaker dollar. Non-U.S. markets lost 3%, according to the MSCI EAFE Index. European banks were hit the hardest during the quarter leading to losses of 9.6% for the financial sector. Energy, a laggard in 2015, was the best performing sector with returns of 4.7%. Japan experienced the worst results, selling off 6.5% in the first quarter. Similarly, emerging markets started the year with a sharp selloff, subsequently reversing course. As a result, emerging markets returned 13% in March—their best month since 2011. For the quarter, emerging markets gained 5.7%, besting other equity markets. Strongest performers included Brazil with gains of 27.4%. Global fixed-income markets staged a dramatic comeback in the second half of the quarter. Global yields were pushed lower with the ECB and Bank of Japan cutting rates deeper into negative territory. Further stimulus from the ECB, a dovish Fed statement and

improvements in macroeconomic data bolstered performance. Global investment-grade spreads tightened during the period led by the industrials sector, while global high-yield debt sharply rebounded; at home, high-yield issues gained 3.2%. Given the rebound in commodities, commodity-related sectors led performance. Returns were positive across emerging markets with local sovereign debt markets leading the way as rates fell and currencies appreciated.

Markets witnessed quite a surprise in the second quarter of 2016 as the United Kingdom voted to leave the European Union. Concerns of increased political risk in the U.K. and Europe briefly jolted equity and currency markets across the globe. Risk assets sharply sold off but quickly reversed as market concerns abated. U.S. markets followed suit and ultimately continued their rally as the S&P 500 ended the quarter up 2.5%. Outside the U.S., emerging markets demonstrated resiliency to finish the quarter in positive territory. Developed market equities modestly recovered with the MSCI EAFE down only 1.5%. The Russell 2000 had a strong quarter as 9 out of the 10 economic sectors registered positive returns. From a sector basis, the more defensive sectors led the market higher with energy, telecommunications, utilities and health care. Sectors lagging in the quarter were consumer discretionary, information technology and industrials. Across the developed world, equity markets declined following the U.K.'s decision to leave the EU before rallying in the final days of the quarter. Ireland and Italy led developed markets lower, selling off 9.9% and 9.7%, respectively. In local terms, Japanese equity markets declined nearly 7%, while, for U.S. dollar investors, Japan equities returned a positive 1% as the yen approached a 2 year high against the dollar. The yen has rallied considerably for the year and continues to benefit from its perceived safe-haven status. Similar to the U.S., energy was the top sector in developed markets, returning roughly 11.5% while consumer discretionary stocks were one of the weakest returning -8.2% for the quarter. Within emerging markets, investors looked past the Brexit fears and recognized ongoing positive developments. Latin America was a particular focus, where favorable election results in Peru and further progress in the impeachment process in Brazil led to those markets returning 16.9% and 13.3%, respectively. In contrast, China equity markets continued to waver, trailing the broader benchmark with a return of -1.7%. From a sector perspective, consumer staples stocks performed the best, returning 4.2% for the quarter. The second quarter illustrated the current dichotomy within fixed income: safe-haven assets rallied significantly, while risky assets also outperformed as investors continued to search for yield. Globally, the 10 year German bund broke into negative territory, falling 28 bps to -0.13%. In Japan, 10-year bond yields continued to move lower, settling at -0.22%. At home, the U.S. 10 year Treasury yield compressed 29 bps, nearing its all-time low at 1.49%. The Barclays Aggregate returned 2.2%, while U.S. High Yield returned 5.5% for the quarter. Overall, credit was broadly supported by lower quality sectors. Non-credit risk assets also performed well, as emerging market local debt returned 2.7% in the quarter with a strong rebound in June of 5.9%. For the year, emerging local debt remains one of the best performing risk assets in fixed income, returning over 14%.

### Employees' System

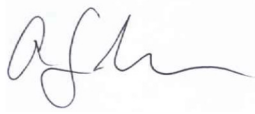
The Employees' Retirement System operates a balanced and diversified investment program with disciplined asset re-balancing to achieve strategic long-term goals. This disciplined investment process has been effective in achieving a long-term record of consistent asset growth.

For fiscal year 2016, investments provided a return of 0.0%, gross of fees (-0.4%, net of fees). The System's annualized rates of return, gross of fees, were 5.1% (4.8%, net of fees) over the last three years and 6.5%, (6.1%, net of fees), over the last five years, 6.6%, (6.2%, net of fees), over the last ten years. The System's returns ranked in the 66th percentile of The Bank of New York Mellon universe of public plans in 2016, in the 89th percentile for the latest 3-year period, in the 54th percentile for the last 5 years, and in the 6th percentile of public plans for the past 10 years (performance are calculated using time-weighted rate of return).

During the past twelve months, we continue to focus on overall portfolio management, monitoring the financial markets and maintaining a high quality group of investment managers. Axiom International Investors was added to the Global Equity manager lineup replacing Pzena Investment Management to expand the international allocation within the Global Equity manager lineup. The PIMCO Tactical Opportunities fund was added to the Fixed Income manager lineup replacing the PIMCO Distressed Senior Credit Opportunities fund. In addition, within the Fixed Income manager lineup, the Doubleline Opportunistic Mortgage-Backed Securities fund was redeemed and the Bridgewater

All Weather fund was restructured to support further diversification within the Global Fixed Income and Diversified Multi-Asset. Dyal Capital Partners, Hoisington Investment Management Company, Marathon European Credit Opportunity Fund III were added to the Global Fixed Income manager lineup. AQR Global Risk Premium fund, BlackRock Market Advantage fund, and Bridgewater Optimal Portfolio were added to the Diversified Multi-Asset manager lineup. Furthermore, additional diversification was achieved by adding Emerging Sovereign Group, Millennium Management, and QMS Global Marco fund to the Absolute Return manager lineup.

Sincerely,

A handwritten signature in dark ink, appearing to read 'ASpellar', is positioned above the printed name.

Andrew Spellar  
Senior Investment Officer

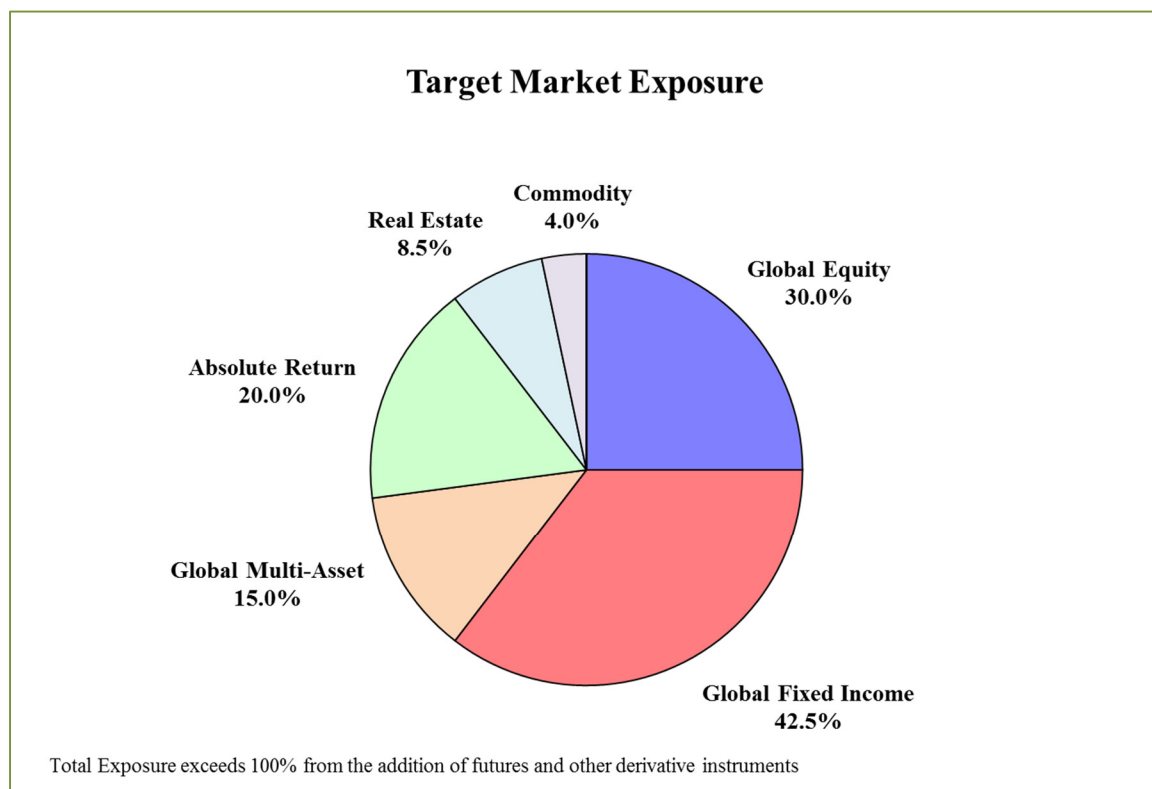
Investments by Category and Investment Manager**				
June 30, 2016				
Asset	Manager	Investment Style	Total Fair Values	% of Total Portfolio
<b>Global Equity</b>				
	Columbia Wanger Asset Management	U.S. Small/Mid Cap Core	\$136,920,480	3.81%
	DePrince, Race & Zollo	U.S. Large Cap Value	148,970,380	4.15%
	Nicholas Company	U.S. Large Cap Growth	141,970,027	3.95%
	Sands Capital Management	U.S. Large Cap Growth	119,097,769	3.32%
	Aberdeen Asset Management*	Int'l Emerging Markets	48,012,879	1.34%
	Axiom International Investors	Int'l Developed Small Cap	96,539,633	2.69%
	First Eagle Investment Management	Int'l Developed Markets Value	57,205,894	1.59%
	LSV Asset Management	Int'l Developed Markets Value	69,176,243	1.93%
	Marathon Asset Management*	Int'l Developed Markets	48,987,193	1.36%
	Quantitative Management Associates*	Int'l Emerging Markets	48,535,655	1.35%
	WCM Investment Management	Int'l Developed Markets Growth	80,995,942	2.26%
<b>Global Fixed Income</b>				
	Brandywine Asset Management	Global Bonds	149,474,159	4.16%
	Bridgewater Associates*	TIPS Index	123,657,196	3.44%
	Czech Asset Management*	Direct Lending	51,083,262	1.42%
	DoubleLine Capital	Mortgage-Backed Securities	165,110,744	4.60%
	DoubleLine Capital*	Commercial Mortgage-Backed	17,767,748	0.49%
	Dyal Capital Partners*	Multi-Strategy	14,336,012	0.40%
	Hoisington Investment Management Company	Macro Fixed Income	79,788,039	2.22%
	JPMorgan Global Maritime Fund*	Distressed Opportunity	14,936,311	0.42%
	Lazard Asset Management*	Emerging Markets Debt	69,557,519	1.94%
	MacKay Shields	High Yield Bonds	1,141,908	0.03%
	Marathon European Credit Opportunity Fund III*	Distressed Opportunity	24,629,638	0.69%
	PIMCO BRAVO II*	Distressed Opportunity	48,041,986	1.34%
	PIMCO Tactical Opportunities*	Distressed Opportunity	37,023,731	1.03%
	Post Advisory	High Yield Bonds	73,538,130	2.05%
	Shenkman Capital Management	High Yield Bonds	144,033,098	4.01%
<b>Real Estate and Commodity</b>				
	Cohen & Steers Capital Management	Int'l Real Estate Securities	90,581,496	2.52%
	Cohen & Steers Capital Management	U.S. Real Estate Inv. Trusts	225,317,956	6.28%
	PIMCO	Collateralized Commodity Futures	72,578,898	2.02%
<b>Diversified Multi-Asset</b>				
	AQR Global Risk Premium*	Multi-Asset Real Return	50,092,281	1.40%
	BlackRock Market Advantage*	Multi-Asset Real Return	114,655,491	3.19%
	Bridgewater Optimal Portfolio*	Multi-Asset Real Return	164,089,645	4.57%
	PIMCO All Asset All Authority*	Multi-Asset Real Return	57,277,219	1.60%
<b>Absolute Return</b>				
	AQR Style Premia*	Global Macro Absolute Return	68,551,012	1.91%
	BlackRock GlobalAlpha Fund*	Multi-Strategy Absolute Return	70,227,586	1.96%
	Bridgewater Pure Alpha*	Global Macro Absolute Return	147,667,461	4.11%
	Deephaven Capital Management*	Multi-Strategy Absolute Return	42,350	0.00%
	Eagle Trading Systems*	Global Macro Absolute Return	67,857,646	1.89%
	Emerging Sovereign Group*	Global Macro Absolute Return	30,314,135	0.84%
	Millennium Management*	Global Macro Absolute Return	71,060,305	1.98%
	PIMCO Global Credit Opportunity*	Multi-Strategy Absolute Return	74,921,141	2.09%
	PIMCO PARS IV*	Global Macro Absolute Return	70,736,669	1.97%
	QMS Global Macro*	Global Macro Absolute Return	69,539,492	1.94%
<b>Short-term</b>				
	BNY Mellon Cash Investment Strategies	Plan Level Cash Accounts	41,111,092	1.14%
	Cash Held at County Treasurer	Operating Cash Account	5,012,273	0.14%
	Parametric	Policy Implementation Overlay	<u>88,426,058</u>	<u>2.46%</u>
<b>Total Investments</b>			<b>\$3,590,591,782</b>	<b>100.00%</b>
* Pooled fund		**See Pages 8-9 for complete listing of investment professionals.		

## Employees' Retirement System – Allocation of Market Exposures

### Target Market Exposures

The asset structure shown below represents the Trustees' assessment of their optimal asset allocation as of June 30, 2016. The target asset allocation provides a reasonable expectation that the System's investment objectives can be achieved based on historical relationships of asset class performance.

The pie chart below details the target asset mix, consistent with the achievement of the long-term objectives of the System, as of June 30, 2016.

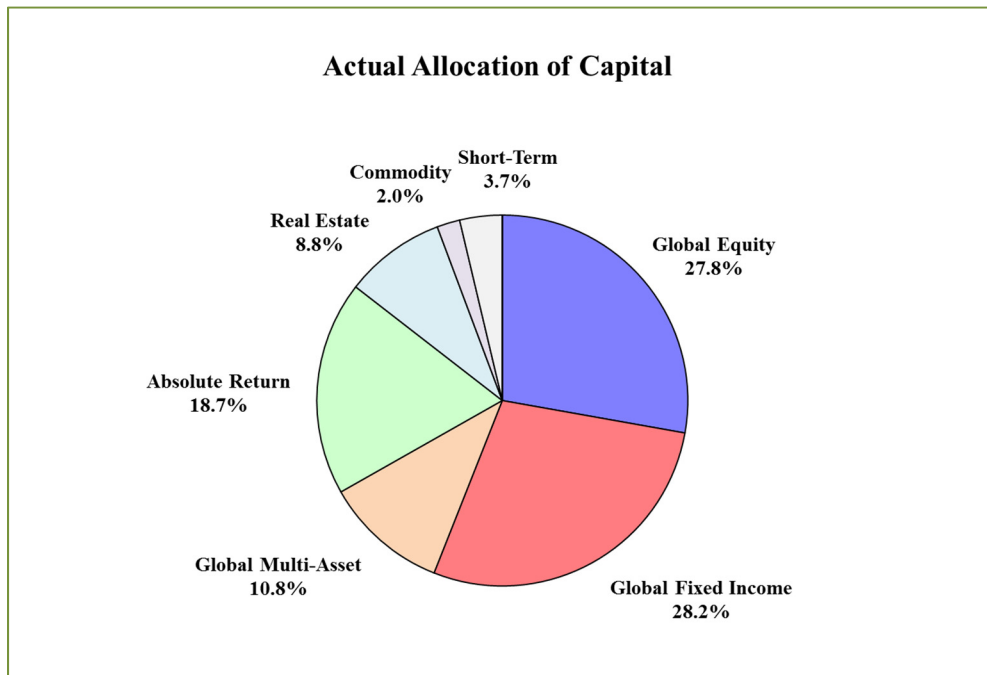
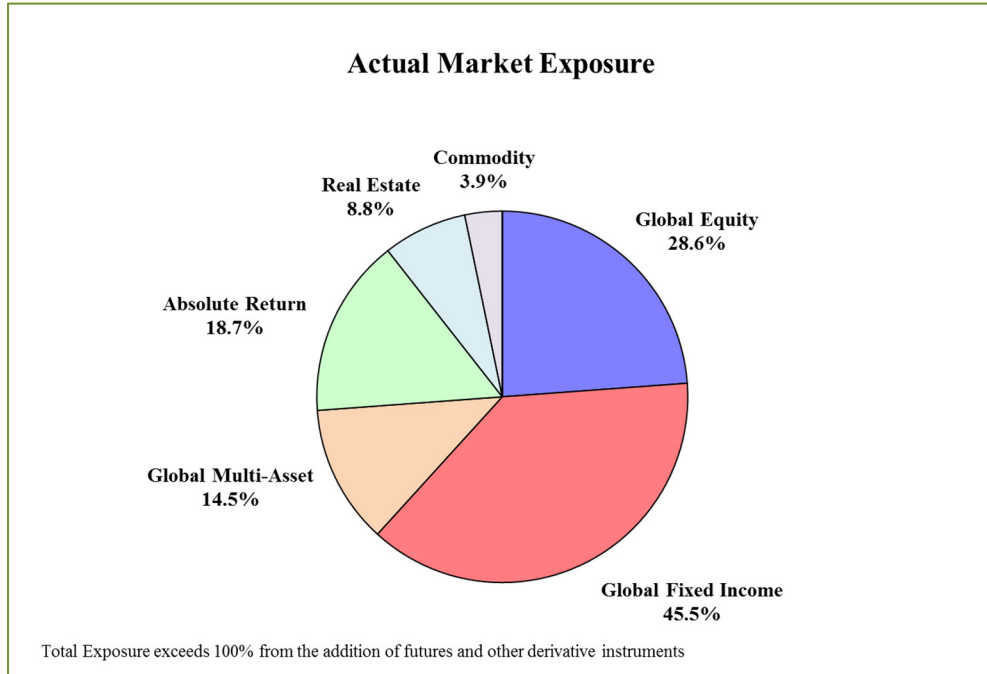




### Actual Allocations as of June 30, 2016

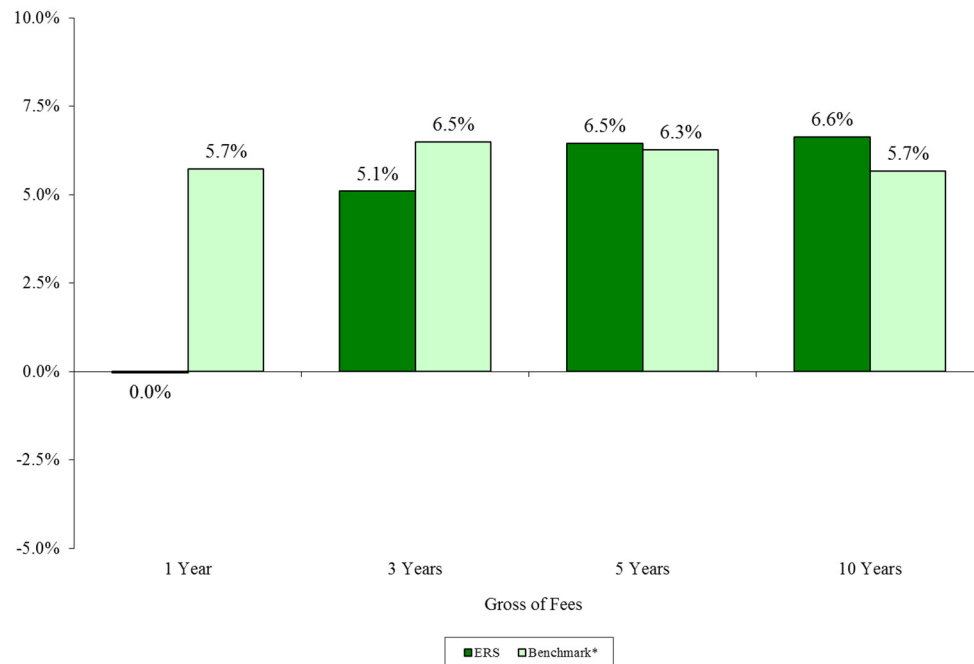
The asset structure of ERS has historically reflected a proper balance of the System's needs for liquidity, growth of assets, and risk tolerance. The System's investment policy is designed to continue to meet its long-term investment objectives while, at the same time, providing sufficient flexibility to meet short-term funding requirements.

The pie chart below details the actual asset allocations as of June 30, 2016.

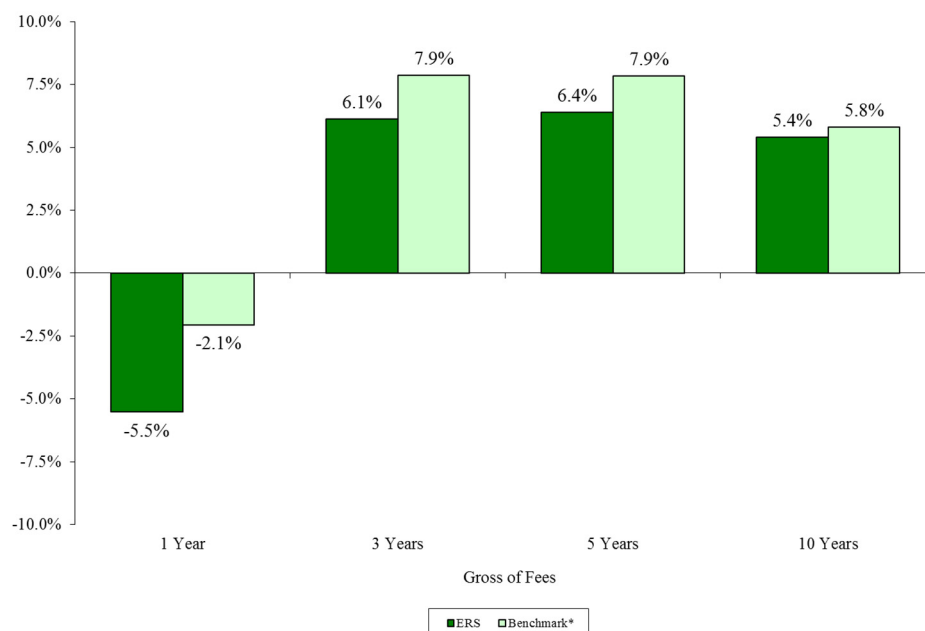


**Investment Results**

(Time weighted return, gross of fees)

**Total Fund:**

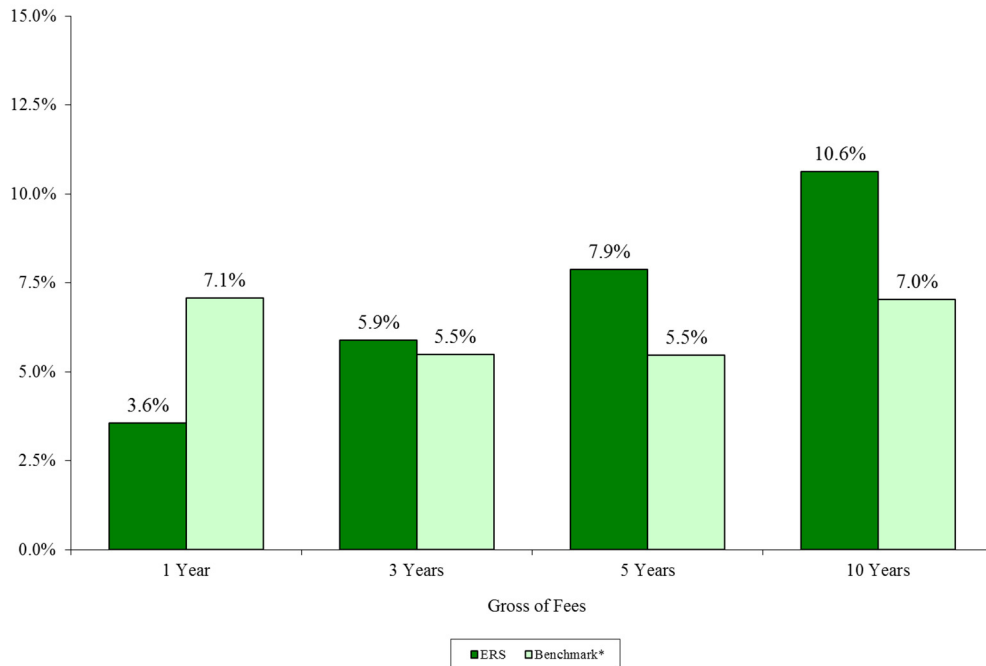
\*Current Benchmark: 20% Russell 3000, 7% EAFE, 3% MSCI EMI, 3.75% CSFB High Yield, 3.75% ML High Yield Master, 50% Barclays Agg x 1.5 – 3 Month LIBOR x 0.5, 7.5% NAREIT, 5% Bloomberg Commodity (Benchmark has been revised through time)

**Global Equity:**

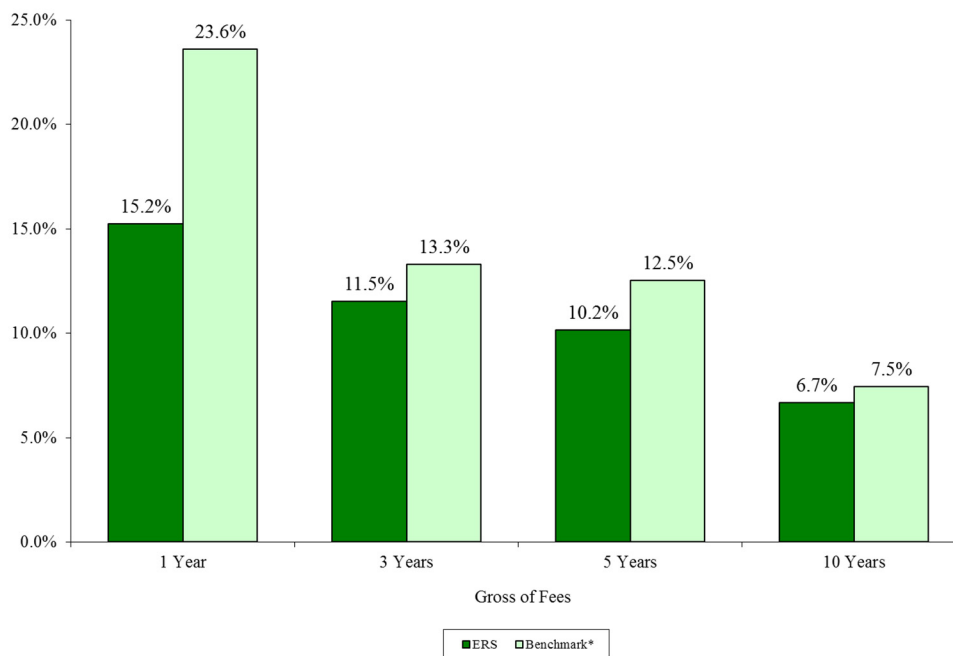
\*Current Benchmark: 67% Russell 3000, 22% MSCI EAFE, 11% MSCI Emerging Markets (\$Gross) (Benchmark has been revised through time)

**Investment Results**

(Time weighted return, gross of fees)

**Global Fixed Income:**

\*Current Benchmark: 71% Barclays Agg \* 1.33 – 3 Month LIBOR \* 0.33, 29% Barclays HY (Benchmark has been revised through time)

**Real Estate:**

\*Current Benchmark: NAREIT Equity Share Price Index (Benchmark has been revised through time)

## Schedule of Ten Largest Equity &amp; Fixed Income Holdings\*

Ten Largest Equity Holdings*				
No. Shares	Description	Cost	Fair Value	% of Total Portfolio
124,493	Simon Property Group Inc	\$17,952,377	\$27,002,532	0.75%
332,080	UDR Inc	9,117,764	12,260,394	0.34%
144,000	Visa Inc	3,910,503	10,680,480	0.30%
89,500	Facebook Inc	4,032,218	10,228,060	0.28%
25,551	Equinix Inc	6,678,555	9,906,889	0.28%
197,630	Prologis Inc	8,608,287	9,691,775	0.27%
116,400	Salesforce.com Inc	3,392,621	9,243,324	0.26%
68,730	Chubb Ltd	6,429,731	8,983,698	0.25%
39,371	Essex Property Trust inc	9,127,943	8,980,131	0.25%
244,414	HCP Inc	<u>8,704,318</u>	<u>8,647,367</u>	<u>0.24%</u>
	<b>Total</b>	<b><u>\$77,954,317</u></b>	<b><u>\$115,624,650</u></b>	<b><u>3.22%</u></b>

Ten Largest Fixed Income Holdings*				
Par Value	Description	Cost	Fair Value	% of Total
28,980,000	U.S. Treasury Bond, 2.500%, 02/15/2045	\$26,705,991	\$30,171,947	0.84%
20,100,000	U.S. Treasury Bond, 2.500%, 02/15/2045	20,004,211	22,570,089	0.63%
10,840,000	U.S. Treasury Bond, 2.500%, 02/15/2045	11,075,743	12,459,604	0.35%
11,475,000	U.S. Treasury Bond, 2.500%, 02/15/2045	11,417,932	11,957,753	0.33%
10,100,000	U.S. Treasury Bond, 2.500%, 02/15/2045	10,317,192	11,612,677	0.32%
138,200,000	Mexican Bonos, 7.750%, 11/13/2042	11,184,743	8,713,141	0.24%
5,795,000	United Kingdom Gilt Regs, 1.250%, 07/22/2018	8,545,318	7,916,302	0.22%
94,000,000	Mexican Bonos, 8.500%, 11/18/2038	7,804,521	6,338,013	0.18%
9,300,000	Puerto Rico Cmwlt, 8.000%, 07/01/2035	7,337,875	6,207,936	0.17%
84,720,000	Mexican Bonos, 8.500%, 05/31/2029	<u>7,642,079</u>	<u>5,529,676</u>	<u>0.15%</u>
	<b>Total</b>	<b><u>\$122,035,605</u></b>	<b><u>\$123,477,138</u></b>	<b><u>3.43%</u></b>

\*Full disclosure of holdings is available upon request.

## Schedule of Brokerage Commissions

For Year Ended June 30, 2016

Broker Name	Base Volume	Total Shares	Base Commission	Commission Percentage
Carnegie Bank As, Copenhagen	\$4,818,740	75,240	\$7,127	0.15%
Citigroup Gbl Mkts/Salomon, New York	7,273,558	2,514,068	10,579	0.15%
Goldman Sachs & Co, Ny	179,064,239	2,698,819	243,074	0.14%
Mizuho Securities Usa Inc. New York	8,769,896	252,885	11,839	0.13%
Wells Fargo Securities Llc, Charlotte	15,137,473	216,945	18,870	0.12%
Credit Lyonnais Secs, Singapore	4,909,248	159,267	6,115	0.12%
Daiwa Secs Amer Inc, New York	19,157,179	1,084,385	23,190	0.12%
Barclays Capital Le, Jersey City	34,208,117	929,775	39,142	0.11%
William Blair & Co, Chicago	16,409,848	393,665	18,634	0.11%
Rbc Dominion Secs Inc, Toronto (Doma)	5,359,388	511,062	6,066	0.11%
Instinet Europe Limited, London	4,108,816	124,055	4,537	0.11%
Oppenheimer & Co Inc, New York	7,554,100	259,932	8,307	0.11%
J P Morgan Secs Ltd, London	12,572,287	729,716	13,599	0.11%
Merrill Lynch Intl London Equities	14,565,508	3,229,855	15,674	0.11%
Deutsche Bk Secs Inc, Ny	20,059,585	1,387,601	20,853	0.10%
Merrill Lynch Gilts Ltd, London	6,064,504	275,832	6,268	0.10%
Baird, Robert W & Co Inc, Milwaukee	9,305,931	255,254	8,774	0.09%
Barclays Capital Inc, New York	3,813,206	108,064	3,514	0.09%
Citigroup Gbl Mkts Inc, New York	34,688,734	1,062,114	30,369	0.09%
Morgan Stanley & Co Inc, Ny	81,624,888	9,836,755	69,416	0.09%
Converge Llc, New York	25,483,002	1,002,119	21,012	0.08%
Isi Group Inc, Ny	5,962,223	135,585	4,806	0.08%
Piper Jaffray & co, Minneapolis	6,748,391	114,732	5,378	0.08%
Bny Converqex, New York	7,765,219	204,189	6,117	0.08%
Raymond James & Assoc Inc, St Petersburg	15,335,786	276,800	11,992	0.08%
J P Morgan Securities Inc, Brooklyn	18,562,058	538,160	14,428	0.08%
Stifel Nicolaus	14,609,704	363,826	11,082	0.08%
Jonestrading Instl Svcs Llc, Westlake	6,643,788	264,181	5,031	0.08%
Liquidnet Inc, New York	18,113,981	463,085	13,176	0.07%
Ubs Securities Llc, Stamford	22,107,843	669,748	14,336	0.06%
Knight Direct Llc, Jersey City	13,439,230	575,835	8,638	0.06%
Credit Suisse, New York	27,807,577	2,162,045	17,804	0.06%
J.P. Morgan Clearing Corp, New York	80,642,800	3,759,611	50,347	0.06%
Liquidnet Inc, Brooklyn	6,675,913	153,742	4,137	0.06%
Merrill Lynch Professional Clrg, Purchas	6,992,474	261,646	4,073	0.06%
National Finl Svcs Corp, New York	14,862,920	315,025	8,657	0.06%
Rbc Capital Markets Llc, New York	12,940,438	378,661	7,171	0.06%
Bny Converqex / Ljr, Houston	30,288,542	743,393	16,138	0.05%
Ubs Warburg Asia Ltd, Hong Kong	22,060,378	6,143,431	11,731	0.05%
Leerink Swann & Co, Jersey City	10,835,761	279,970	5,599	0.05%
Goldman Sachs Execution & Clearing, Ny	9,006,480	231,960	4,639	0.05%
Credit Suisse (Europe), London	4,713,311	235,195	2,325	0.05%
Bernstein Sanford C & Co, New York	29,840,422	632,306	12,415	0.04%
Merrill Lynch Pierce Fenner Smith Inc Ny	152,860,583	5,048,915	63,457	0.04%
Bloomberg Tradebook Llc, New York	73,349,266	2,000,823	29,133	0.04%
Cantor Fitzgerald & Co Inc, New York	8,342,544	165,487	3,199	0.04%
Jefferies & Co Inc, New York	25,642,821	843,413	9,456	0.04%
Citation Group/Bcc Clrg, New York	8,047,546	84,040	1,831	0.02%
Bny Converqex Execution Sol, New York	30,105,357	1,735,101	6,202	0.02%
Weeden & Co, New York	5,036,273	56,282	955	0.02%
Other Brokers	112,304,197	18,406,733	119,515	0.11%
<b>Total</b>	<b>\$1,316,592,073</b>	<b>74,351,328</b>	<b>\$1,060,727</b>	<b>0.08%</b>

Investment Summary				
(Based on Capital Allocation)				
	As of June 30, 2015		As of June 30, 2016	
	Fair Value	% Fair Value	Fair Value	% Fair Value
Global Equity	\$1,087,580,710	29.40%	\$996,412,095	27.75%
Global Fixed Income	1,163,957,151	31.50%	1,014,119,481	28.24%
Global Multi-Asset	469,334,098	12.70%	386,114,636	10.76%
Absolute Return	484,918,079	13.20%	670,917,797	18.69%
Real Estate	275,496,413	7.50%	315,899,452	8.80%
Commodity	86,636,763	2.30%	72,578,898	2.02%
Short Term	<u>127,053,592</u>	<u>3.40%</u>	<u>134,549,423</u>	<u>3.74%</u>
<b>Total</b>	<b><u>\$3,694,976,806</u></b>	<b><u>100.00%</u></b>	<b><u>\$3,590,591,782</u></b>	<b><u>100.00%</u></b>



November 1, 2016

Fairfax County Employees'  
Retirement System  
10680 Main Street, Suite 280  
Fairfax, Virginia 22030-3812

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Fairfax County Employees' Retirement System as of June 30, 2016. The full results and analysis of that annual valuation will be presented in a full actuarial valuation report. The purpose of this actuarial section is to provide key information from that report and support the disclosure of Total Pension Liability that is presented in the Financial Section of this CAFR. For a more complete analysis, please see the full report.

#### ***Funding Objective***

The funding objective of the System is to establish contribution rates that will remain level as a percentage of payroll over time. In order to achieve a more stable contribution rate, the County implemented a corridor funding method on July 1, 2002 (based on the July 1, 2001 valuation results). Under this approach, the current contribution rate is based on the normal cost rate and expense rate developed in the current valuation combined with an unfunded actuarial liability rate (UAL rate) based on assumption and plan changes since July 1, 2001 and a 15-year amortization of any amount by which the System's funded ratio is outside the corridor. The County is taking steps to increase the bottom of the corridor from the originally established 90% up to 100% by 2020. The Fiscal Year (FY) 2016 contribution was developed in the 2014 valuation report and was based on a corridor level of 95%.

#### ***Assumptions***

The actuarial assumptions used in performing the June 30, 2016 valuation were recommended by the actuary and adopted by the Board of Trustees based on our most recent review of the System's experience for the five-year period ending June 30, 2015. The assumptions reflect our understanding of the likely future experience of the System and the assumptions both individually and as a whole represent our best estimate for the future experience of the System. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the underlying assumptions, the results would vary accordingly.

#### ***Reliance on Others***

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

#### ***Supporting Schedules***

As a part of the 2015 actuarial valuation, Cheiron prepared the Analysis of Financial Experience, Schedule of Retirants and Beneficiaries Added to and Removed from the Rolls and Solvency Test provided in this Actuarial Section.

We are also responsible for the disclosures of Net Pension Liability and its components in the Financial Section. The information provided in Note 4 of the Financial Section comes from the Actuarial Valuation as of June 30, 2016.

***Compliance with Code of Virginia §51.1-800***

Code of Virginia §51.1-800 requires that the benefits provided to a retiree at age 65 from a local retirement system equal or exceed two-thirds of the allowance to which the employee would be entitled under the provisions of the Virginia Retirement System (VRS).

Although there is no formal procedure for making this comparison, we compared the least valuable rate under the Employees' System to the most valuable accrual rate under the VRS, making adjustments for the fact that employee contributions are required in excess of the VRS 5% rate. We found that the employer-provided accrual rates do exceed two-thirds of the most valuable employer-provided accrual rates under the VRS plan.

We certify that, to the best of our knowledge and understanding, the Fairfax County Employees' Retirement System satisfies the requirements of the Code of Virginia §51.1-800.

***Certification***

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

This section was prepared for the Fairfax County Employees' Retirement System for the purposes described herein and for the use by the plan auditor in completing an audit related to the matters herein. Other users of this section are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,  
Cheiron



Fiona E. Liston, FSA  
Principal Consulting Actuary



Coralie A. Milligan, FSA  
Associate Actuary

Attachment





### Summary of Valuation Results

The Actuarially Determined Contribution Rate for fiscal year (FY) 2016 was developed in the 2014 valuation report and was based on a corridor floor of 95%. For more information on the Corridor method please see the Funding Method section of this report.

Amounts disclosed in Note 4 of the Financial Section were developed in conjunction with the 2016 valuation. Prior to performing the 2016 valuation, a full experience study was performed using data from 2010-2015. As a result of this study many of the actuarial assumptions have been changed since the 2015 financial reporting. The impact of the changes can be found in the Schedule of Changes in the Net Pension Liability, as disclosed in the Financial Section. For more detail on the changes and analysis we would refer you to the experience study report.

The System historically used a July 1 date for both funding calculations and for accounting disclosures. While the System and the County disclosed liabilities under the Governmental Accounting Standards Board (GASB) Statements Numbers 25 and 27, this was an appropriate technique because this statement allowed for disclosure of liability and assets as of the prior year. Once GASB's Statements Numbers 67 and 68 required the System to disclose their best estimate of the liability as of the plan year-end, along with assets at the same date, the disclosure of year-end liabilities was moved to using rollforward techniques. This has led to a situation where the June 30, 2015 TPL was estimated while the July 1, 2015 actuarial liability was calculated using more recent data. The two liability measures no longer match one another.

In order to address this discrepancy, starting with 2016 the Board has elected to use a June 30 valuation date based on collecting data and valuing liabilities figures as of December 31 and adjusting the resulting liabilities for a six month period to the following June 30. These June 30 liability figures are then compared to the June 30 assets for purposes of both the funding and financial accounting disclosures. The same liability results will now be used for both the actuarial funding valuation and financial reports removing that level of confusion.

### Summary of Actuarial Assumptions and Methods

#### **Funding Method**

The entry age normal funding method is used to determine costs. Under this method, the County contribution has three components: the normal cost, the payment toward the unfunded actuarial liability, and the expense rate.

The normal cost is a level percent of pay cost which, along with the member contributions, will pay for projected benefits at retirement for each plan participant.

The actuarial liability is that portion of the present value of future benefits that will not be paid by future County normal costs or member contributions. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability.

The expense rate is added to cover the System's administrative expenses.

Under the corridor funding method, the County's total contribution rate is equal to the normal cost rate plus the UAL amortization rates for changes due to assumption changes or amendments passed since July 1, 2001 plus the expense rate as long as the System's actuarial funded ratio remains within a corridor of 90% to 120%. If the funded ratio falls outside this corridor, a credit (if above 120%) or charge (if below 90%) will be established based on a 15-year amortization equal to the amount necessary to re-enter the corridor. Once the funded ratio is within the corridor, the contribution rate will return to the normal cost rate plus amortization of post-2001 changes plus expense rate. The County is taking steps to increase the bottom of the corridor from the originally established 90% up to 100% by 2020. The Fiscal Year (FY) 2016 contribution was based on a corridor level of 95%.

#### **Actuarial Value of Assets**

For purposes of determining the County contribution to the System, we use an actuarial value of assets. The asset adjustment method dampens the volatility in asset values that could occur because of fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process.

In determining the actuarial value of assets, we calculate an expected actuarial value based on cash flow for the year and imputed returns at the actuarial assumption. This expected value is compared to the market value, and one-third of the difference is added to the preliminary actuarial value to arrive at the final actuarial value.

#### Changes since Last Valuation

The funding liabilities are calculated as of December 31 of the prior year and adjusted using standard actuarial techniques to the June 30 valuation date.

#### Long Term Assumptions Used to Determine System Costs and Liabilities

##### Demographic Assumptions Healthy Mortality

Annual Deaths Per 10,000 Members Mortality Projected to 2016		
Age	Male	Female
20	6	2
25	6	2
30	5	2
35	6	3
40	8	5
45	13	8
50	52	29
55	67	38
60	90	59
65	139	98
70	223	156
75	364	251
80	605	414
85	1,032	726
90	1,768	1,281
95	2,720	2,072
100	3,788	3,022

\* Post-retirement mortality shown

110% and 100% of the RP-2014 Healthy Annuitant Mortality Table for males and females respectively, projected using the RPEC-2015 model, with an ultimate rate of 0.75% for ages 20-85 grading down to an ultimate rate of 0% for ages 115-120 and convergence to the ultimate rate in the year 2015. 5% of deaths are assumed to be service-connected.

##### Disabled Mortality

Annual Deaths Per 1,000 Disabled Members Mortality Projected to 2016		
Age	Male	Female
45	19	11
50	22	14
55	23	15
60	25	19
65	31	25
70	42	34
75	58	50
80	82	74

100% and 115% of the RP-2014 Disabled Annuitant Mortality Table for males and females respectively, projected using the RPEC-2015 model, with an ultimate rate of 75% for ages 20-85 grading down to an ultimate rate of 0% for ages 115-120 and convergence to the ultimate rate in the year 2015.

##### Termination of Employment (Prior to Normal Retirement Eligibility)

Annual Termination Rates Per 1,000 Members - County	
Service	Termination
0	176
5	72
10	39
15	19
20	10
25	4
30	0

Annual Termination Rates Per 1,000 Members - Schools Service Termination	
0	250
5	45
10	28
15	18
20	12
25	10
30	0

It is assumed that members who terminate before the earlier of age 45 or with age plus service equal to 60 elect to receive a refund of contributions instead of vested benefits.

Termination rates drop to zero three years prior to reaching Rule of 80 (or Rule of 85 for Plans C and D) retirement.

Disability		
Annual Disabilities Per 10,000 Members*		
Age	Male	Female
25	2	1
30	2	1
35	2	1
40	3	2
45	7	6
50	14	11
55	21	17
60	27	21

\*30% of disabilities are assumed to be service-connected. Of these, 5% are assumed to receive Social Security benefits and 31% are assumed to receive Workers' Compensation benefits.

No disability is assumed to occur once members reach eligibility for retirement.

Retirement/Drop	
Annual Retirements/DROPs Per 1,000 Eligible Members* (Male and Female)	
Age	Normal
50	190
51	200
52	200
53	230
54	240
55	275
56	250
57	300
58	250
59	250
60	250
61	275
62	300
63	250
64	350
65	400
66	250
67	250
68	200
69	250
70	250
71	250
72	250
73	250
74	250
75	1,000

\*Those who leave under this decrement are assumed to DROP in accordance with the percentages below. Those who do not take DROP are assumed to take immediate retirement. DROP participants are assumed to remain in DROP for three years and receive interest at 5% per annum on their DROP deferrals.

**Probability of taking DROP**

Age	DROP
50	70%
55	68
60	63
65	30
70	30
75	30

**Merit/Seniority Salary Increase**

(in addition to across-the-board increase)

**County**

Service	Merit/Seniority Increase
0	4.00%
5	1.55
10	1.30
15	1.05
20	0.80
25	0.55
30	0.50

**Schools**

Service	Merit/Seniority Increase
0	5.20%
5	2.10
10	1.50
15	1.10
20	0.80
25	0.70
30	0.60

**Family Composition**

For purposes of valuing the pre-retirement death benefit, an assumption is made that 80% of employees are married at death while active and that the female spouse is three years younger than the male spouse.

**Sick Leave Credit**

Unused sick leave balances as reported for each active member is used as of the valuation date. Future sick leave accruals are assumed to accrue at 100% of each participant's annual average, but capped at 124 hours per year for members hired on or after January 1, 2013.

**Economic Assumptions**

Investment Return:	7.25% compounded per annum.
Rate of General Wage Increase:	2.75% compounded per annum.*
Rate of Increase in Cost of Living:	2.50% compounded per annum.**
Total Payroll Increase (for Amortization):	2.75% compounded per annum.
Administrative Expenses:	0.25% of payroll.

\*General Wage Increase assumption applies for projecting contributions and developing Social Security benefits.

\*\* Benefit increases are limited to 4% per year

**Changes since Last Valuation**

All assumptions have been updated in accordance with the 2015 experience study.

Please see the experience study report for details on the analysis and the assumptions before and after adoption.

## Analysis of Financial Experience

Gain and Loss in Accrued Liability during Years Ended June 30<sup>1</sup>

## Resulting from Differences between Assumed Experience and Actual Experience

Type of Activity	Investment Income	Combined Liability Experience	Gain (or Loss) During Year from Financial Experience	Non-Recurring Items	Composite Gain (or Loss) During Year
2010	(\$83,485,934)	(\$74,720,305)	(\$158,206,239)	\$0	(\$158,206,239)
2011	71,698,746	(79,444,131)	(7,745,385)	(1,602,061)	(9,347,446)
2012	59,620,255	(74,547,089)	(14,926,834)	0	(14,926,834)
2013	46,004,262	(39,401,877)	6,602,385	(727,193)	5,875,192
2014	113,443,149	3,445,687	116,888,836	(1,462,698)	115,426,138
2015	(33,127,096)	73,129,057	40,001,961	0	40,001,961
2016	(120,548,533)	34,314,735	(86,233,798)	(69,346,439)	(155,580,237)

<sup>1</sup> Schedule comes from the Actuarial Valuation as of July 1, 2015

## Schedule of Retirees and Beneficiaries

## Added To and Removed From Rolls

Year Ended June 30,	Added to Rolls		Removed From Rolls		On Rolls @ Yr. End		% Increase Allowance	Average Allowance
	No.	Annual Allowance	No.	Annual Allowance	No.	Annual Allowance		
2010	450	14,483,584	163	2,748,741	6,218	156,867,413	8.09%	25,228
2011	518	18,345,093	168	2,885,600	6,568	172,326,906	9.86%	26,237
2012	472	17,441,822	152	2,971,259	6,888	186,797,469	8.40%	27,119
2013	559	17,469,060	184	3,336,404	7,263	200,930,125	7.57%	27,665
2014	547	17,306,458	184	3,482,147	7,626	214,754,436	6.88%	28,161
2015	625	18,026,882	230	4,321,038	8,021	22,860,280	6.38%	28,483
2016	307	9,011,712	139	3,011,824	8,189	234,460,168	2.63%	28,483

Solvency Tests<sup>2</sup>

Aggregate Accrued Liabilities For							
Valuation Date June 30,	-1	-2	-3	Reported Assets	-1	-2	-3
	Active Member Contributions	Retirees, Vested Terms, Beneficiaries & DROP	Active Members (County Financed Portion)		Portion of Accrued Liabilities by Reported Assets		
2010	\$329,166,585	\$1,985,373,546	\$1,456,519,392	\$2,636,051,959	100%	100%	22%
2011	339,170,151	2,177,027,867	1,502,726,115	2,841,466,151	100%	100%	22%
2012	332,723,684	2,411,862,623	1,519,589,131	3,053,412,085	100%	100%	20%
2013	355,254,873	2,587,007,980	1,531,567,801	3,261,923,577	100%	100%	21%
2014	363,335,228	2,769,188,984	1,668,195,558	3,614,067,515	100%	100%	29%
2015	372,037,954	2,884,906,681	1,649,587,057	3,759,611,811	100%	100%	30%
2016	396,434,811	2,987,100,852	1,732,881,508	3,831,179,295	100%	100%	26%

<sup>2</sup> Schedule uses actuarial value of assets. Results would be different if market value of assets were used. Despite the name of this exhibit, the liabilities presented in this schedule are not an appropriate measurement of the settlement value of the System.

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The Statistical Section presents historical information regarding the retirement plan. This information includes a ten-year analysis of the sources of change in plan net assets, benefit payments, the number of retired members and average monthly benefits. Sources of additions include employer and plan member contributions and net investment income; deductions include benefit payments to retirees and beneficiaries, refunds of employee contributions and administrative expenses. The amounts of benefits paid, the count of benefit recipients and the average benefit payments are provided by type of benefit, including service retirement annuities, service-connected and ordinary disability benefits and survivor benefits.

### Schedule of Additions by Source

Fiscal Year	Plan Member Contributions	Employer Contributions	Employer Contributions % of Covered Payroll	Net Investment Income (loss)	Total Additions
2007	\$29,805,266	\$57,452,711	9.25%	\$358,779,626	\$446,037,603
2008	31,583,496	62,636,121	9.59%	23,018,667	117,238,284
2009	33,927,190	65,110,832	9.62%	(653,558,145)	(554,520,123)
2010	31,733,516	64,069,102	9.71%	506,165,571	601,968,189
2011	31,041,076	96,607,535	14.70%	577,459,169	705,107,780
2012	31,702,075	114,682,538	17.20%	246,376,212	392,760,825
2013	32,551,927	127,448,018	19.05%	245,374,617	405,374,562
2014	32,758,587	129,618,309	19.30%	490,196,386	652,573,282
2015	33,193,593	138,493,099	20.18%	16,342,457	188,029,149
2016	34,627,061	155,780,373	21.99%	(16,668,287)	173,739,147

### Schedule of Deductions by Type

Fiscal Year	Benefit Payments	Refunds of Contributions	Administrative Expenses	Total Deductions
2007	\$117,885,907	\$3,935,886	\$1,866,410	\$123,688,203
2008	130,453,013	4,376,612	1,832,903	136,662,528
2009	165,529,137	3,256,153	1,519,846	170,305,136
2010	166,271,110	4,075,162	1,593,223	171,939,495
2011	183,800,128	3,884,082	1,640,016	189,324,226
2012	199,503,336	3,781,497	1,687,040	204,971,873
2013	219,229,038	2,988,397	1,877,620	224,095,055
2014	235,204,611	3,356,282	1,884,827	240,445,720
2015	254,875,795	3,958,786	1,896,614	260,731,195
2016	270,800,631	4,101,311	2,112,595	277,014,537

## Schedule of Benefit Payments by Type

Fiscal Year	Service Annuity	Service-Connected Disability	Ordinary Disability	Survivor Benefit	Total
2007	\$108,782,484	\$2,768,116	\$3,646,607	\$2,688,700	\$117,885,907
2008	120,689,116	2,958,765	3,835,111	2,970,020	130,453,012
2009	155,179,988	3,200,844	3,845,105	3,303,200	165,529,137
2010	155,512,982	3,232,803	3,939,896	3,585,429	166,271,110
2011	172,362,105	3,176,876	4,232,345	4,028,802	183,800,128
2012	187,702,064	3,187,892	4,353,983	4,259,397	199,503,336
2013	206,701,293	3,436,007	4,490,924	4,600,814	219,229,038
2014	222,547,552	3,416,714	4,412,110	4,828,235	235,204,611
2015	241,694,202	3,498,363	4,444,633	5,238,597	254,875,795
2016	257,182,159	3,482,679	4,371,713	5,764,080	270,800,631

## Schedule of Retired Members by Benefit Type

Fiscal Year	Service Annuity	Service-Connected Disability	Ordinary Disability	Survivor Benefit	Total
2007	4,566	167	386	236	5,355
2008	4,791	161	383	250	5,585
2009	5,133	153	383	262	5,931
2010	5,392	157	389	280	6,218
2011	5,712	153	400	303	6,568
2012	6,030	152	396	310	6,888
2013	6,392	153	390	328	7,263
2014	6,757	149	374	346	7,626
2015	7,139	149	368	365	8,021
2016	7,300	149	359	381	8,189

## Schedule of Average Monthly Benefit Amounts

Fiscal Year	Service Annuity	Service-Connected Disability	Ordinary Disability	Survivor Benefit	Average
2007	\$2,061	\$1,502	\$816	\$1,030	\$1,908
2008	2,144	1,619	845	1,070	1,991
2009	2,187	1,710	841	1,092	2,039
2010	2,250	1,708	872	1,193	2,102
2011	2,339	1,761	896	1,225	2,186
2012	2,409	1,857	935	1,247	2,260
2013	2,450	1,913	941	1,274	2,305
2014	2,503	2,105	968	1,284	2,364
2015	2,506	2,148	988	1,323	2,376
2016	2,521	2,272	1,005	1,360	2,396



Schedule of Average Benefit Payments							
Years of Credited Service*	2 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+
<b><u>Period 7/1/2006 to 6/30/2007</u></b>							
Average Monthly Benefit **	\$303	\$446	\$828	\$1,509	\$2,068	\$2,964	\$2,775
Average of Final Monthly Salaries	3,289	3,096	3,828	4,385	5,093	5,770	4,682
Number of Retirees	36	50	55	66	69	59	27
<b><u>Period 7/1/2007 to 6/30/2008</u></b>							
Average Monthly Benefit **	190	530	1,026	1,712	2,255	2,819	3,229
Average of Final Monthly Salaries	2,997	3,539	4,093	5,045	5,276	5,652	5,317
Number of Retirees	26	60	43	70	69	58	31
<b><u>Period 7/1/2008 to 6/30/2009</u></b>							
Average Monthly Benefit **	199	541	911	1,732	2,298	3,150	3,603
Average of Final Monthly Salaries	3,118	4,098	3,923	5,046	5,539	6,082	6,064
Number of Retirees	32	72	46	81	101	92	48
<b><u>Period 7/1/2009 to 6/30/2010</u></b>							
Average Monthly Benefit **	196	496	928	1,553	2,205	2,945	3,880
Average of Final Monthly Salaries	3,088	3,451	4,034	4,678	5,409	5,646	6,346
Number of Retirees	24	60	47	66	87	43	34
<b><u>Period 7/1/2010 to 6/30/2011</u></b>							
Average Monthly Benefit **	243	564	972	1,823	2,504	2,940	3,633
Average of Final Monthly Salaries	3,317	3,772	4,278	5,416	5,796	5,855	6,164
Number of Retirees	29	57	59	75	112	67	46
<b><u>Period 7/1/2011 to 6/30/2012</u></b>							
Average Monthly Benefit **	259	525	970	1,690	2,565	3,042	3,699
Average of Final Monthly Salaries	3,712	3,764	4,147	5,145	6,145	6,060	6,252
Number of Retirees	25	52	54	65	89	80	30
<b><u>Period 7/1/2012 to 6/30/2013</u></b>							
Average Monthly Benefit **	207	581	990	1,832	2,514	3,123	4,569
Average of Final Monthly Salaries	2,847	4,114	4,278	5,430	5,860	6,300	7,428
Number of Retirees	34	66	54	69	113	77	37
<b><u>Period 7/1/2013 to 6/30/2014</u></b>							
Average Monthly Benefit **	243	538	1,012	1,746	2,512	3,173	3,918
Average of Final Monthly Salaries	3,693	3,835	4,501	5,445	5,964	6,214	6,543
Number of Retirees	30	68	69	57	88	88	39
<b><u>Period 7/1/2014 to 6/30/2015</u></b>							
Average Monthly Benefit **	243	598	1,035	1,784	2,596	3,061	4,010
Average of Final Monthly Salaries	3,146	4,053	4,450	5,328	6,108	6,071	6,532
Number of Retirees	20	79	70	68	108	110	42
<b><u>Period 7/1/2015 to 12/31/2015</u></b>							
Average Monthly Benefit **	171	532	1,132	1,708	2,423	3,316	3,540
Average of Final Monthly Salaries	2,784	3,682	4,751	5,117	5,640	6,581	5,826
Number of Retirees	7	37	42	34	55	51	19
* The Years of Credited Service is the service used in the determination of benefits, which may be different than service for eligibility.							
** Does not include supplements.							

## Active Participants Count by Age/Service

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	125	86	0	0	0	0	0	0	211
25 to 29	246	439	92	1	0	0	0	0	778
30 to 34	275	508	367	109	5	0	0	0	1,264
35 to 39	224	443	354	270	61	3	0	0	1,355
40 to 44	253	449	363	303	188	36	9	0	1,601
45 to 49	231	552	439	341	263	159	176	16	2,177
50 to 54	203	591	523	383	334	207	250	52	2,543
55 to 59	146	466	508	400	308	165	106	50	2,149
60 to 64	98	312	370	324	200	64	43	25	1,436
65 & up	31	132	215	131	83	19	29	17	657
Total	1,832	3,978	3,231	2,262	1,442	653	613	160	14,171

## Active Participants Total Salary by Age/Service

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$3,541,476	\$3,165,131	\$0	\$0	\$0	\$0	\$0	\$0	\$6,706,607
25 to 29	8,776,898	19,525,052	4,030,749	37,419	0	0	0	0	32,370,118
30 to 34	9,988,115	24,255,880	17,668,546	5,433,281	229,512	0	0	0	57,575,334
35 to 39	7,679,736	20,761,704	18,499,069	14,728,991	3,563,243	173,169	0	0	65,405,912
40 to 44	7,280,788	18,217,374	18,436,425	16,657,550	12,387,930	2,603,312	672,250	0	76,255,629
45 to 49	5,929,884	20,680,637	20,988,682	18,761,704	17,515,080	12,130,239	13,302,768	1,295,868	110,604,862
50 to 54	5,170,001	19,858,203	22,841,250	20,880,736	21,393,589	15,315,926	20,354,356	4,211,476	130,025,537
55 to 59	4,169,709	17,829,966	21,878,994	21,010,862	19,118,426	11,858,919	8,961,050	4,277,737	109,105,663
60 to 64	2,248,106	10,645,157	15,304,364	16,000,382	12,478,980	4,162,324	3,703,192	2,726,397	67,268,902
65 & up	697,952	3,639,005	7,292,134	5,736,968	4,715,875	1,284,657	2,018,528	1,722,016	27,107,135
Total	\$55,482,665	\$158,578,109	\$146,940,213	\$119,247,893	\$91,402,635	\$47,528,546	\$49,012,144	\$14,233,494	\$682,425,699

# FAIRFAX COUNTY EMPLOYEES' RETIREMENT SYSTEM



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FAIRFAX COUNTY  
**Retirement**SYSTEMS  
EMPLOYEES' POLICE Officers UNIFORMED

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