

AN INDEPENDENT AGENCY OF THE COMMONWEALTH OF VIRGINIA

# HELPING MEMBERS TAKE CHARGE

COMPREHENSIVE  
ANNUAL  
FINANCIAL  
REPORT

For the Year Ended  
June 30, 2016



Virginia  
Retirement  
System

**VIRGINIA RETIREMENT SYSTEM**  
**FINANCIAL AND STATISTICAL HIGHLIGHTS – ALL PENSION TRUST FUNDS**

(DOLLARS IN THOUSANDS)

	2016	2015	% Change
<b>Activity for the Year:</b>			
Contributions	\$ 3,375,057	\$ 3,249,615	3.9%
Investment Income (Net of Investment Expenses)	\$ 1,136,898	\$ 2,920,607	-61.1%
Retirement Benefits	\$ 4,356,978	\$ 4,114,189	5.9%
Refunds	\$ 104,552	\$ 106,165	-1.5%
Administrative and Other Expenses (Net of Miscellaneous Income)	\$ 42,137	\$ 41,083	2.6%
Increase (Decrease) in Net Assets Held in Trust for Pension Benefits	\$ 8,288	\$ 1,908,785	-99.6%
Retirement Benefits as a Percentage of Contributions	129.1%	126.6%	
Retirement Benefits as a Percentage of Contributions and Investment Income	96.6%	66.7%	
<b>Net Position Held in Trust for Benefits at Fiscal Year-End:</b>			
Virginia Retirement System (VRS)	\$ 64,028,909	\$ 64,049,880	0.0%
State Police Officers' Retirement System (SPORS)	\$ 730,688	\$ 733,352	-0.4%
Virginia Law Officers' Retirement System (VaLORS)	\$ 1,211,446	\$ 1,191,353	1.7%
Judicial Retirement System (JRS)	\$ 468,302	\$ 456,472	2.6%
<b>Investment Performance:</b>			
One-Year Return on Investments	1.9%	4.7%	
Three-Year Return on Investments	7.3%	10.6%	
Five-Year Return on Investments	7.0%	10.3%	
<b>Participating Employers:</b>			
Counties/Cities/Towns	254	255	
Special Authorities	202	200	
School Boards*	145	145	
State Agencies	226	227	
Total Employers	827	827	0.0%
<b>Members/Retirees:</b>			
Active Members	341,671	340,576	0.3%
Retired Members	192,411	184,769	4.1%

\*Of the 145 school boards, 133 also provide coverage for non-professional employees.

Investment return calculations were prepared using a time-weighted return methodology based on market value and net of investment expenses.



# Virginia Retirement System

## Comprehensive Annual Financial Report

For the Year Ended June 30, 2016

### VRS CODE OF ETHICS

The VRS Code of Ethics is built on our commitment to upholding the highest standards of integrity, ethical principles and professional conduct.

#### INTEGRITY

Integrity is the ability to act with honesty and be consistent in administering benefits and managing investments. Integrity serves as the foundation for building trust with the public, retirees, members and employers as we provide services.

#### ACCOUNTABILITY

Accountability is being responsible for decisions made, actions taken and assignments completed. Accountability reinforces our commitment to ethically perform our duties to meet the goals of the agency.

#### CONFIDENTIALITY

Confidentiality is exercising discretion and performing our ethical duty to protect the personal information of our members, retirees, beneficiaries and employers. We safeguard personal data and sensitive VRS information that is viewed, acquired or otherwise accessible during the course of VRS employment.

#### INCLUSIVITY

Inclusivity is embracing a diversity of thinking that helps us reach solutions that achieve excellence and meet the needs of our customers. We encourage an open work environment and an ethical culture in which colleagues are treated with respect and are free to raise issues or concerns without fear of retaliation.

### AN INDEPENDENT AGENCY OF THE COMMONWEALTH OF VIRGINIA

This report was prepared by the financial, administrative and investment staff of the Virginia Retirement System.



Government Finance Officers Association

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

Presented to

**Virginia Retirement System**

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

**June 30, 2015**

Executive Director/CEO

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

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Virginia Retirement System for its *Comprehensive Annual Financial Report (CAFR)* for the fiscal year ended June 30, 2015. This was the 34th consecutive year that VRS achieved this prestigious recognition.

To be awarded the certificate, a government unit must publish an easily readable and efficiently organized comprehensive annual report. This report must satisfy both generally accepted accounting principles and applicable legal requirements. The certificate is valid for a period of one year.

The VRS *Comprehensive Annual Financial Report for FY 2016* continues to conform to the certificate of Achievement Program requirements and will be submitted to GFOA to determine its eligibility for another certificate.

**Public Pension Coordinating Council Recognition Award for Administration**

VRS received the 2015 Recognition Award for Administration from the Public Pension Coordinating Council (PPCC) in recognition of the agency's fulfillment of the public pension standards. Developed by PPCC, these standards are the benchmark for measuring excellence in defined benefit plan administration. This is the system's 12th award from PPCC.

The purpose of the PPCC's awards program is to promote high professional standards for public employee retirement systems and publicly commend systems that adhere to these standards. The PPCC is a coalition of the National Association of State Retirement Administrators (NASRA), the National Conference on Public Employee Retirement Systems (NCPERS) and the National Council on Teacher Retirement (NCTR).



Public Pension Coordinating Council

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

Presented to

**Virginia Retirement System**

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

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

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

Alan H. Winkle  
Program Administrator

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# 1 Introductory Section

Chairman's Letter  
Board of Trustees  
VRS Organization  
Investment Advisory Committee  
Executive Administrative Team  
Executive Investment Team  
Professional Consultants  
Letter of Transmittal





## Chairman's Letter



**Robert L. Greene**, Chairman  
**Patricia S. Bishop**, Director  
**Ronald D. Schmitz**, Chief Investment Officer

P.O. Box 2500 • 1200 East Main Street  
Richmond, Virginia 23218-2500  
Toll-free: 1-888-VARETIR (827-3847) • TDD: 804-289-5919

December 15, 2016

### **The Honorable Terence R. McAuliffe, Governor of Virginia, and Members of the General Assembly:**

I am pleased to present the Virginia Retirement System (VRS) *Comprehensive Annual Financial Report* for fiscal year 2016. VRS achieved a 1.9% net return on its investment portfolio for fiscal year 2016, exceeding the benchmark return and allowing the trust fund to end the year with a net position of \$68.2 billion.

During fiscal year 2016, the private equity program returned 6.6%; the real assets program returned 11.6%; the credit strategies program returned 1.2%; the fixed income program returned 6.8%; the public equity program returned -3.2%; and the strategic opportunities portfolio returned -2.4%. The portfolio included \$27.1 billion in public equity, \$12.5 billion in credit strategies, \$12.0 billion in fixed income, \$8.8 billion in real assets, \$5.2 billion in private equity and \$1.1 billion in the strategic opportunities portfolio, as of June 30, 2016.

Approximately 35% of the fund is managed internally and 65% of the fund is managed externally under VRS supervision. The VRS investment team's expertise provides considerable added value and fee savings for VRS members, retirees and beneficiaries. CEM Benchmarking, a firm specializing in benchmarking pension funds and other large pools of capital, reports that the skill exhibited by the VRS investment team in performing its internal and external investment functions in comparison with its public fund peers saves the portfolio about \$26 million annually in fees paid.

VRS is now in the fourth year of a five-year phase-in to a new asset allocation policy for the trust fund, in which we are increasing assets allocated to private equity and real assets and decreasing assets allocated to fixed income and credit strategies. Our goal is to achieve slightly higher returns at similar risk levels.

The VRS Board of Trustees takes an active role in setting policy as part of our fiduciary responsibility to those we serve. Although returns are subject to market conditions and may increase or decrease from year to year, we are in the market for the long term, not merely a five- or 10-year period, and we set policy with a wider perception of the broader time horizon.

VRS' funding levels continued to improve due to investment gains, as well as your support by increasing contributions to the plans. As of June 30, 2016, the Plan

Fiduciary Net Position stood at 83.67% for local political subdivisions (aggregate); 71.29% for state employees; 75.19% for judges; 68.28% for teachers; 67.20% for state police and 61.01% for Virginia law officers.

I wish to commend you for two significant actions during this fiscal year that are major advances toward full funding of contribution rates.

The 2016-17 budget contains an appropriation of \$189 million to accelerate and complete the 10-year repayment of the 2010-2012 biennium deferred contributions to the state plans. This repayment reduces the retirement contribution rates for state employees, State Police Officers' Retirement System (SPORS), Virginia Law Officers' Retirement System (VaLORS) and Judicial Retirement System (JRS) in fiscal years 2017-18, and will save approximately \$26.5 million in contributions over the next five years. It follows a special contribution of \$193 million to the teacher plan in 2015 toward the repayment of deferred contributions, which will save employers approximately \$34 million in contributions over the next five years.

The Appropriation Act also accelerates the full funding of contribution rates ahead of schedule. The act funds 100% of the VRS board-certified contribution rates in fiscal years 2017 and 2018 for state employees, SPORS, VaLORS and JRS. As a result, these plans are expected to recognize \$122 million in long-term savings over the next two decades. The act also funds 100% of the VRS-board certified other post-employment benefits (OPEBs) contribution rates in fiscal years 2017 and 2018 for the health insurance credit for state employees, group life insurance for state employees and the Virginia Sickness and Disability Program (VSDP). The act funds 89.84% of the board-certified contribution rates for the teacher plan in fiscal year 2017 and provides 100% funding of the rates in fiscal year 2018. As a result, the teacher plan is expected to recognize \$110 million in long-term savings over the next two decades. The act also funds 100% of the board-certified rates in fiscal years 2017 and 2018 for the employer share of group life insurance for teachers. And it funds 90% of board-certified contribution rates for the health insurance credit for teachers in fiscal year 2017, which rises to 100% funding in fiscal year 2018.

Starting with the Governor's budget proposal and continuing with the actions of the General Assembly, you demonstrated a unified commitment to strengthening the retirement system – a meaningful and tangible commitment that continues to be viewed positively by members, beneficiaries and other stakeholders. Not only are you meeting established goals, but you are accelerating their achievement well ahead of schedule. We are pleased that you recognize the importance of our shared goal of fully funding the rates.

On the administrative side, VRS moved forward with the launch of the enhanced myVRS website in spring 2016, offering online requests for refunds. With this step, we are opening the door for VRS members to perform more self-service transactions while taking advantage of retirement planning resources. We are tailoring education and counseling for members based on information in their records, aiding them in making informed decisions at each stage of their careers.

Additional self-service functionality for members will be released in 2017 and 2018, including the ability to purchase prior service, update beneficiaries and apply online for retirement benefits. As these releases launch, VRS is deploying a complement of identity authentication processes to help ensure the security of members' personal and financial account information.

In short, we are building a foundation to help members plan for tomorrow, today, by providing our members with additional channels for counseling information and opportunities for them to interact with VRS for answers to their questions throughout their careers.

VRS also continues to support participating employers with regular communications and resources to aid them in counseling members and financial reporting. In June 2015, the Governmental Accounting Standards Board (GASB) released two statements aimed at improving financial reporting by state and local governments of other post-employment benefits (OPEBs), such as group life and retiree health insurance credit: Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, and Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. To aid employers in meeting these and other standards set by GASB, VRS continues to maintain an online resource center that includes financial reporting guidelines and resources, GASB audit opinions and disclosure guidance, contribution rates and valuation reports.

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to VRS for the *Comprehensive Annual Financial Report (CAFR)* for the fiscal year ended June 30, 2015. This was the 34th consecutive year that VRS achieved this prestigious recognition.

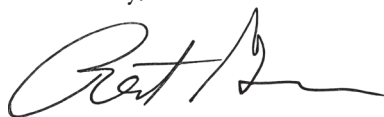
VRS also received the 2015 Recognition Award for Administration from the Public Pension Coordinating Council (PPCC) in recognition of the agency's fulfillment of the public pension standards. Developed by PPCC, these standards are the benchmark for measuring excellence in defined benefit plan administration. This is the system's 12th award from PPCC.

For its ongoing campaign to encourage Hybrid Retirement Plan members to increase voluntary contributions, VRS received a Leadership Award in the participant education/ effective communication category from the National Association of Government Defined Contribution Administrators (NAGDCA).

I am honored to continue my service as VRS Board Chairman, working with a distinguished board of trustees. I know that I speak for the entire board when I say we are grateful for the opportunity to serve VRS members, employers and retirees.

On behalf of the Board of Trustees and the VRS staff, I would like to thank you for your leadership and continuing support of our efforts. By working together, we ensure that the beneficiaries of the Virginia Retirement System have financial security in their retirement years.

Sincerely,



Robert L. Greene  
Chairman  
Virginia Retirement System

## Board of Trustees

### COMPOSITION OF THE BOARD

Nine members serve on the VRS Board of Trustees. Their appointment is shared between the executive and legislative branches of state government. The Governor appoints five members, including the chairman. The Joint Rules Committee of the Virginia General Assembly appoints four members. The General Assembly confirms all appointments.

Of the nine Board members, four must be investment experts, one must be experienced in employee benefit plans, one must be a local government employee, one must be an employee of a Virginia public institution of higher education, one must be a state employee and one must be a public school teacher. The public employee members may be either active or retired.

	TRUSTEE	BOARD SEAT HELD	APPOINTED BY	TERM EXPIRES	COMMITTEE ASSIGNMENTS
	<b>Robert L. Greene</b> <b>Chairman</b> National Association of Investment Companies	Employee Benefit Plans Professional	Governor	2/28/2017  As Chairman: 5/4/2017	Administration & Personnel (Chairman)  Audit & Compliance  Investment Policy (Chairman)
	<b>Diana F. Cantor</b> <b>Vice Chairman</b> Alternative Investment Management	Investment Professional	Governor	2/29/2020	Administration & Personnel (Vice Chairman)  Audit & Compliance  Investment Policy
	<b>The Hon. J. Brandon Bell II, CRPC</b> Brandon Bell Financial Partners	Investment Professional	Governor	2/28/2021	Defined Contribution Plans Advisory (Vice Chairman)  Investment Policy
	<b>Wallace G. "Bo" Harris, Ph.D.</b> University of Richmond	State Employee (Retired)	Joint Rules Committee	2/28/2021	Benefits & Actuarial (Vice Chairman)  Investment Policy

BOARD OF TRUSTEES, cont.

	TRUSTEE	BOARD SEAT HELD	APPOINTED BY	TERM EXPIRES	COMMITTEE ASSIGNMENTS
	<b>W. Brett Hayes</b> Wells Fargo Advisors Financial Network	Investment Professional	Joint Rules Committee	2/28/2018	Defined Contribution Plans Advisory (Chairman)  Investment Policy
	<b>William H. Leighty</b> Virginia Tech	Higher Education Representative	Governor	2/28/2019	Audit & Compliance (Chairman)  Investment
	<b>Joseph W. Montgomery</b> The Optimal Service Group, Wells Fargo Advisors	Investment Professional	Joint Rules Committee	2/28/2019	Administration & Personnel  Investment Policy
	<b>Mitchell L. Nason</b> Prince William County Department of Fire and Rescue	Local Government Employee	Governor	2/28/2018	Administration & Personnel  Benefits & Actuarial (Chairman)  Investment Policy
	<b>Troilen Gainey Seward, Ed.S.</b> Dinwiddie County Public Schools (Retired)	School Superintendent (Retired)	Joint Rules Committee	2/28/2017	Benefits & Actuarial  Investment Policy

## VRS Organization

### BOARD OF TRUSTEES

#### ADMINISTRATION



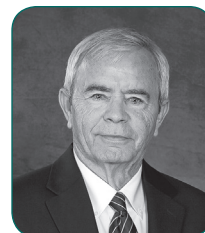
**Patricia S. Bishop**  
Director

#### INVESTMENTS



**Ronald D. Schmitz**  
Chief Investment Officer

#### INTERNAL AUDIT



**Franklin O. Berry**  
Internal Audit Director

## Investment Advisory Committee

#### MEMBER

#### TERM EXPIRES

**Rod Smyth**  
Chairman  
Chief Investment Strategist  
RiverFront Investment Group

6/20/2017  
As Chairman:  
6/20/2017

**Hance West**  
Vice Chairman  
Managing Director  
Investure

12/31/2017

**Deborah Allen Hewitt, Ph.D.**  
Clinical Professor  
The College of William and Mary

10/17/2016

**Michael Beasley**  
Retired Chairman Emeritus  
Strategic Investment Solutions, Inc.

6/20/2017

**Théodore Economou**  
Chief Investment Officer,  
Multi-Asset  
Lombard Odier Asset Management  
(Switzerland) SA

9/13/2016

**Thomas S. Gayner**  
President and Chief Investment Officer  
Markel Corporation

2/19/2017



L-R: Théodore Economou, W. Bryan Lewis, Larry Kochard, Michael Beasley, Rod Smyth, Hance West, Joe Grills, Deborah Allen Hewitt. Not pictured: Thomas Gayner.

#### MEMBER

#### TERM EXPIRES

**Joe Grills**  
Former Chief Investment Officer  
IBM Retirement Funds

6/17/2016

**Lawrence E. Kochard, Ph.D.**  
Chief Executive Officer  
and Chief Investment Officer  
University of Virginia Investment  
Management Company

2/17/2017

**W. Bryan Lewis**  
Chief Investment Officer  
Pennsylvania State Employees'  
Retirement System

3/03/2018

---

## Executive Administrative Team

---

**Patricia S. Bishop**  
Director

**Jeanne L. Chenault**  
Director of Public Relations

**LaShaunda B. King**  
Executive Assistant

**L. Farley Beaton Jr.**  
Chief Technology Officer

**Barry C. Faison**  
Chief Financial Officer

**Kenneth C. Robertson Jr.**  
Director of Human Resources

**Franklin O. Berry**  
Internal Audit Director

**Cynthia D. Wilkinson**  
Director of Policy,  
Planning and Compliance

---

## Executive Investment Team

---

**Ronald D. Schmitz**  
Chief Investment Officer

**Field H. Griffith, CFA**  
Director of Real Assets

**Kristina Koutrakos**  
Director, Portfolio Strategy

**John P. Alouf, CFA**  
Director of Private Equity

**Dane Honrado**  
Research Manager

**Matthew Lacy, CFA**  
Director, Internal Equity  
Management

**Bryan R. Gardiner, CFA**  
Director of Internal Fixed  
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**Kenneth C. Howell, CFA**  
Managing Director,  
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**Curtis M. Mattson, CPA**  
Chief Administrative Officer

**Charles W. Grant, CFA**  
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Portfolio Intelligence

**Ross M. Kasarda, CFA**  
Risk Manager

**Stephen R. McClelland, CFA, CAIA**  
Director of Credit Strategies

**John T. Grier, CFA**  
Director of Internal Equity  
Management

**Daniel B. Whitlock, CFA**  
Director of Global Equity

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## Professional Consultants

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### ACTUARY

**Thomas J. Cavanaugh, FSA,**  
**FCA, EA, MAAA**  
Chief Executive Officer  
Cavanaugh Macdonald  
Consulting, LLC

### AUDITOR

**Martha S. Mavredes, CPA**  
Auditor of Public Accounts  
Commonwealth of Virginia

### COMMONWEALTH OF VIRGINIA DEFERRED COMPENSATION PLAN

**Rod Alcázar**  
ICMA-RC

### COMMONWEALTH OF VIRGINIA VOLUNTARY GROUP LONG TERM CARE INSURANCE PROGRAM

**Becky Ball**  
Genworth Financial

### LEGAL COUNSEL

**Office of the Attorney General**  
Commonwealth of Virginia

### LIFE INSURANCE CARRIER

**Joseph K.W. Chang**  
Minnesota Life Insurance  
Company

### MASTER CUSTODIAN

**BNY Mellon**

### VIRGINIA SICKNESS AND DISABILITY PROGRAM AND VIRGINIA LOCAL DISABILITY PROGRAM

**Sally P. Kennedy**  
Reed Group

# Letter of Transmittal



**Patricia S. Bishop**, Director  
**Barry C. Faison**, Chief Financial Officer

P.O. Box 2500 • 1200 East Main Street  
Richmond, Virginia 23218-2500  
Toll-free: 1-888-VARETIR (827-3847) • TDD: (804) 289-5919

December 16, 2016

## To the Members of the Board of Trustees:

We are pleased to submit the *Comprehensive Annual Financial Report* (CAFR) of the Virginia Retirement System (the System) for the fiscal year ended June 30, 2016. In addition to the Introductory Section, the System's CAFR contains a Financial Section, Investment Section, Actuarial Section and Statistical Section. VRS' *Comprehensive Annual Financial Report* for fiscal year 2016 has been prepared in accordance with Section 51.1-1003 of the *Code of Virginia* (1950), as amended, which requires every retirement system to publish an annual report, and Section 4-11.00 of Chapter 665 of the 2015 Virginia Acts of Assembly, which requires an annual detailed statement of financial condition. The report has been mailed to the Governor, members of the Cabinet and the members of the Virginia General Assembly. The report also is available on the VRS website at [www.varetire.org](http://www.varetire.org).

## VRS Overview

VRS administers benefits and services for approximately 678,000 members, retirees and beneficiaries covered under the following systems:

- Virginia Retirement System (VRS) for teachers, state employees and employees of participating political subdivisions, including full-time local law enforcement officers, firefighters, emergency medical technicians and jail officers
- State Police Officers' Retirement System (SPORS)
- Virginia Law Officers' Retirement System (VaLORS)
- Judicial Retirement System (JRS)

Benefits administered by the System include:

- Hybrid Retirement Plan for members of VRS and JRS
- Plan 1 and Plan 2 defined benefit plans for members of VRS, SPORS, VaLORS and JRS
- Plan 1 and Plan 2 optional retirement defined contribution plans for political appointees, school superintendents and faculty members at Virginia's public colleges and universities, as elected by the participant
- Commonwealth of Virginia 457 Deferred Compensation and Cash Match Plans
- Hybrid 457 Deferred Compensation Plan
- Hybrid 401(a) Cash Match Plan
- Group Life Insurance Program
- Retiree Health Insurance Credit Program
- Virginia Sickness and Disability Program (VSDP) and VSDP Long-Term Care Plan
- Virginia Local Disability Program (VLDP) and VLDP Long-Term Care Plan
- Commonwealth of Virginia (COV) Voluntary Group Long-Term Care Insurance Program

More than 800 employers participate in VRS on behalf of their employees. They include state agencies, public colleges and universities, school boards, political subdivisions and special authorities.



## Fiduciary Responsibility of the Board

The VRS Board of Trustees (the Board) has full power to invest and reinvest the trust funds of the System.

To fulfill its responsibility, the Board has adopted various investment policies and guidelines. The Board's investment objective for the VRS portfolio is to maximize long-term investment returns while targeting an acceptable level of risk. Primary risk measures are volatility in the plan's assets, funded status and contribution rates. As set forth in Section 11 of Article X of the *Constitution of Virginia*, the funds of the retirement system shall be deemed separate and independent trust funds; shall be segregated from all other funds of the Commonwealth; and shall be invested and administered solely in the interests of members, retirees and beneficiaries. The Board retains a professional investment staff, as well as outside managers, to advise and assist in the implementation of these policies and objectives.

The assets of the System are invested in a prudent manner that is intended to provide for the adequate funding of VRS' pension liability. Section 51.1-124.30(C) of the *Code of Virginia* states that "... the Board shall invest the assets of the Retirement System 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 like aims."

Accordingly, the Board must sufficiently diversify the portfolio to minimize the risk of large losses unless, under the circumstances, it is clearly prudent not to do so.

## Accounting System and Internal Control

The financial statements included in the CAFR for fiscal year 2016 are the responsibility of the System's management and have been prepared in accordance with generally accepted accounting principles (GAAP) for government accounting and reporting under the Governmental Accounting Standards Board (GASB) and the Financial Accounting Standards Board (FASB).

The accrual basis of accounting is used in the preparation of the financial statements. Revenues are taken into account when they are earned and become measurable; expenses are recorded when the liabilities are incurred. Investments are reported at fair value as determined by the System's master custodian. Capital assets are recorded at cost and depreciated over their estimated useful life.

Contributions to the System are based on the principle of level-cost funding and are developed using the entry age normal cost method, with current service financed on a current basis and prior service amortized over a 20-year closed period. Legacy unfunded liability as of June 30, 2013, is being amortized over a 30-year closed period, while deferred contributions from the 2010-2012 biennium are being recognized over a 10-year closed period. In management's opinion, the financial statements fairly present the plan net position of the System at June 30, 2016, and the changes in its plan net position for the period then ended.

### VRS Milestones (1908-1990)

**1908** Retired Teachers Fund created.

**1942** Virginia Retirement System (VRS) created for teachers and state employees.

**1944** Political subdivisions have the option to join VRS.

**1950** State Police Officers' Retirement System (SPORS) created.

**1960** Group Life Insurance Program created.

**1970** Cost-of-Living Adjustment (COLA) established; Judicial Retirement System (JRS) created.

**1990** Health Insurance Credit for state retirees established.

GASB Statement Number 34 requires the System to include additional information in the CAFR. This information is provided in Management's Discussion and Analysis (MD&A) and includes an introduction as well as an overview and analysis of the System's financial activities for the current fiscal year and the two preceding years. The Letter of Transmittal is designed to complement and should be read in conjunction with the MD&A, found in the Financial Section immediately following the report of the independent auditor.

GASB Statement Number 67 addressed financial reporting for state and local pension administrators and is addressed in the Financial Section. GASB Statement Number 68 establishes new accounting and financial reporting requirements for state and local governments that provide their employees with pensions and prepare annual financial statements. To assist employers in meeting the new GASB 68 standard, VRS developed a resource center available to employers via the VRS website. The online resources included GASB 68 audit opinions and disclosure guidance, contribution rates, valuation reports and GASB guidance documents.

The System's management is responsible for maintaining a system of adequate internal accounting controls designed to provide reasonable assurance that transactions are executed in accordance with management's general or specific authorization, and are recorded as necessary to maintain accountability for assets and to permit preparation of financial statements in accordance with GAAP. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits that are likely to be derived from that control. The internal control system includes the organizational plan; the appropriate segregation of duties and responsibilities and sound practices in the performance of duties; and personnel with capabilities commensurate with their responsibilities.

The System also has an internal audit program that reports to the Audit Committee of the Board of Trustees, and the budget for the System's administrative expenses is approved by the Board and appropriated by the General Assembly of Virginia.

The retirement funds held by the System are constitutionally established as independent trust funds dedicated to the exclusive benefit of its members, retirees and beneficiaries. In management's opinion, the internal controls in effect during the fiscal year ended June 30, 2016, adequately safeguard the System's assets and provide reasonable assurance regarding the proper recording of financial transactions.

#### VRS Milestones (1992-2016)

**1992** Health Insurance Credit for retired teachers and political subdivision employees established.

**1995** Optional Group Life Insurance Program established.

**1999** Virginia Sickness and Disability Program (VSDP) for state employees established; Virginia Law Officers' Retirement System (VaLORS) created.

**2002** VSDP Long-Term Care Plan established.

**2010** VRS Plan 2 created for members hired or rehired on or after July 1, 2010.

**2012** General Assembly passes legislation creating a Hybrid Retirement Plan with implementation in 2014; Virginia Local Disability Program (VLDP) created as a benefit for political subdivisions and schools with implementation in 2014.

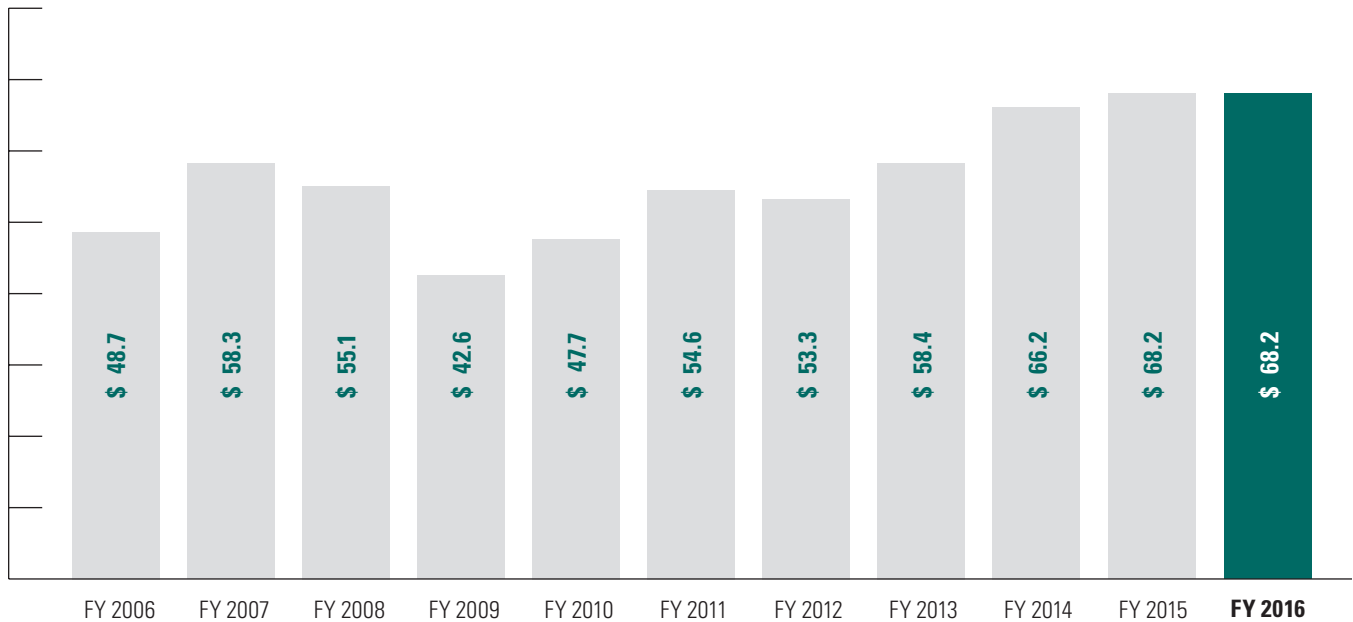
**2014** VRS Hybrid Retirement Plan, a combined defined benefit and defined compensation plan, becomes the retirement plan for new members (with the exception of hazardous duty members) hired on or after January 1, 2014.

**2016** The enhanced myVRS is launched, increasing self-service functionality for members.

## PLAN NET POSITION RESTRICTED FOR BENEFITS

AS OF JUNE 30

(EXPRESSED IN BILLIONS)



## Funding

### PENSION PLANS

Calculations for the System's defined benefit pension plans for financial reporting purposes were made in accordance with Governmental Accounting Standards Board Statement No. 67, *Financial Reporting for Pension Plans*, changes were made to the. The most recent valuation for this presentation was prepared as of June 30, 2016. The total pension liability was determined based on the actuarial valuation as of June 30, 2015, using updated actuarial assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2016.

Based on these calculations, the Plan Fiduciary Net Position as a percentage of the Total Pension Liability was 71.29% for the VRS State Plan, 68.28% for the VRS Teacher Plan, and 83.67% for the aggregate total of the VRS Political Subdivision Plans. For the SPORS, VaLORS and JRS plans, the Plan Fiduciary Net Position as a percentage of the Total Pension Liability was 67.22%, 61.01% and 75.19%, respectively.

For the VRS State Plan, the VRS Teacher Plan and the aggregate total of the VRS Political Subdivision Plans, there was a slight decline from their June 30, 2015, measurement date values of 72.81%, 70.68% and 86.70%, respectively. For SPORS and VaLORS, there was also a decline from their values of 68.89% and 62.64% at June 30, 2014, and for JRS there was a slight increase from their value of 72.51%. The decline in the Plan Fiduciary Net Position as a percentage of the Total Pension Liability is attributable to the lower market value of investments at June 30, 2016.

Contributions for fiscal year 2016 were based on the June 30, 2013, actuarial valuation. The contribution phase-in schedule included in the 2015 Appropriations Act required the General Assembly to fund roughly 80% of the VRS Board-certified rates. Effective August 10, 2015, the Governor and General Assembly accelerated the funding rate for the state, SPORS, VaLORS, and JRS plans to 90% of the Board-certified

rates. The teacher plan remained at the 80% funding level for the fiscal year 2016. Retirement contribution rates are discussed in further detail in the Financial Section.

## OTHER POST-EMPLOYMENT BENEFIT PLANS

The System's most recent actuarial valuation for the Other Post-Employment Benefit (OPEB) plans was prepared as of June 30, 2015. As expected, the funded ratios for these plans generally improved. This improvement was driven by the net investment gains recorded in fiscal year 2011, fiscal year 2013 and fiscal year 2014, which were above the assumed rate of return. Because of the "five-year smoothing" asset valuation method used by the VRS actuary, however, this was partially offset by the investment performance recorded in fiscal year 2015, which was lower than the assumed rate of return.

The Group Life Insurance Fund, the Retiree Health Insurance Credit Fund and the Disability Insurance Trust Fund were actuarially funded at 39.9%, 7.3% and 169.4%, respectively, based on the actuarial valuation as of June 30, 2015. For the Group Life Insurance Fund, the Retiree Health Insurance Credit Fund and the Disability Insurance Trust Fund, there was an increase from the June 30, 2014, funded ratios of 36.7%, 7.0% and 159.0%, respectively. There were no changes in the primary actuarial assumptions for salary growth or inflation. Further information on this valuation is included in the Financial Section and the Actuarial Section.

Contributions for fiscal year 2016 were based on the June 30, 2013, actuarial valuation. The rates certified by the VRS Board of Trustees for the OPEB plans were not fully funded by the Governor and General Assembly. Contribution rates for each of these OPEB plans are discussed in further detail in the Financial Section.

## Investments

At June 30, 2016, the total value of the VRS investment portfolio was \$68.9 billion, an increase from the investment balance of \$68.2 billion at June 30, 2015. The increase was due to increased contributions, despite losses in public equities and strategic opportunities. Private equity, real assets and investment-grade fixed income all exceeded the benchmarks set for those classes.

The System's net position restricted for benefits at June 30, 2016, totaled \$68.2 billion, representing no perceptible change from the net position of \$68.2 billion as of June 30, 2015.

## Legislative Initiatives

During the 2016 session, the Virginia General Assembly enacted the following bills that affect the Virginia Retirement System and retirees covered under VRS.

### 2016 BILLS

**HOUSE BILL 665: RETIREMENT STUDY COMMISSION.** Creates the Commission on Employee Retirement Security and Pension Reform. The commission will study and make recommendations on:

- Financial soundness, suitability and benefits of retirement plans covering state and local government employees, and strategies for reducing unfunded liabilities.

**34 Years of Excellence in Financial Reporting.** The *VRS Comprehensive Annual Financial Report* for fiscal year 2015 marked the 34th year of recognition from the Government Finance Officers Association of the United States and Canada (GFOA) for excellence in financial reporting.

- Attributes of retirement plans suitable for future employees.
- Impact on state and local governments of the anticipated retirement of experienced employees between 2016 and 2026.
- Strategies for replacing these employees.
- Compensation and benefits packages essential to attracting and retaining a highly productive state and local government workforce.

**HOUSE BILL 409 AND SENATE BILL 51: VRS TECHNICAL CORRECTIONS.** Makes technical corrections to the programs administered by VRS. Parts of the bill become effective January 1, 2017.

**HOUSE BILL 1245: JUDICIAL RETIREMENT SYSTEM.** Establishes age 73 as the mandatory retirement age for all judges regardless of when elected by the General Assembly. The bill has a delayed effective date of June 1, 2017.

**HOUSE BILL 1345: LINE OF DUTY ACT.** Revises the Line of Duty Act by transferring overall administration of eligibility determinations to VRS and administration of health insurance benefits to the Department of Human Resource Management (DHRM). Creates separate health benefits plans for all beneficiaries. Legislation becomes effective July 1, 2017, except that a final enactment requiring each nonparticipating employer to pay its pro rata share of estimated implementation costs to the VRS and the Department becomes effective July 1, 2016.

**HOUSE BILL 1343: VIRGINIA RESEARCH INVESTMENT COMMITTEE.** Establishes the Virginia Research Investment Committee to administer grants and loans from the Virginia Research Investment Fund and directs that a portion of the moneys, as allocated by the General Assembly, be invested by VRS.

## State Budget Provisions:

### STATE PLANS:

- Funds 100% of the VRS board-certified retirement contribution rates in fiscal years 2017 and 2018 for the state employee plan, State Police Officers' Retirement System (SPORS), Virginia Law Officers' Retirement System (VaLORS) and the Judicial Retirement System (JRS).
- Funds 100% of the VRS board-certified other post-employment benefits (OPEB) contribution rates in fiscal years 2017 and 2018 for the health insurance credit for state employees, group life insurance for state employees, and the Virginia Sickness and Disability Program (VSDP).

### TEACHERS PLAN:

- Funds 89.84% of the board-certified retirement contribution rates for the teacher plan in fiscal year 2017 and 100% funding of the rates in fiscal year 2018.
- Funds 100% of the VRS board-certified contribution rates in fiscal years 2017 and 2018 for the employer share of group life insurance for teachers.
- Funds 90% of the VRS board-certified contribution rates in fiscal year 2017 and 100% funding in fiscal year 2018 for the health insurance credit for teachers.

**DEFERRED CONTRIBUTION REPAYMENT OF \$189,482,547 (ITEM 475 OF CHAPTER 780 OF THE 2016 ACTS OF ASSEMBLY):** In the 2010-2012 budget, payment of contribution rates to the VRS Trust Fund for the teacher plan, state employees, SPORS, VaLORS and JRS was deferred. Amendments were made to the 2016-2017 budget to repay 2010-2012 biennium deferred contributions to the state plans. This accelerated payback of deferred contributions reduces the retirement contribution rates for state employees, SPORS, VaLORS and JRS in fiscal years 2017-18.

Approximately \$193 million was contributed last year to the teacher plan toward the 10-year payback of the 2010-2012 deferred contributions.

**Projected State Employer Contribution Rates**

	FY 2015	FY 2016	FY 2017	FY 2018
Employer Rates Based on Enrolled Budget & Deferred Contribution Repayment	12.33%	14.22%	13.49%*	13.49%*

\* Rates include 100% funding of board-certified rates in fiscal year 2017-18 as well as reduction due to full repayment of 10-year deferred contributions from fiscal year 2010-2012.

**Projected Teacher Employer Contribution Rates**

	FY 2015	FY 2016	FY 2017	FY 2018
Employer Rates Based on Enrolled Budget	14.50%	14.06%	14.66%	16.32%*

\* Teacher contribution rate is increased to 100% of board-certified rate in second year of biennium.

**NOTIFICATION OF LATE EMPLOYER CONTRIBUTIONS (ITEM 489 OF CHAPTER 780 OF THE 2016 ACTS OF ASSEMBLY):** Requires VRS to notify the chairmen of the House Appropriations and Senate Finance committees within 15 days if an employer becomes 60 days late in making a contribution payment to VRS.

**DEFAULT EMPLOYER CONTRIBUTION RATES (ITEM 475 OF CHAPTER 780 OF THE 2016 ACTS OF ASSEMBLY):** Relieves many VRS-participating political subdivisions from having to pass a resolution to pay the VRS board-certified employer contribution rate. Makes the VRS board-certified rate the default rate political subdivisions pay, unless the political subdivision elects the alternate rate by passing a resolution. In years past, a political subdivision had to pass a resolution regardless of the rate chosen.

**MEMBER AND RETIREE HIGHLIGHTS.** The total VRS membership increased from 659,770 members, retirees and beneficiaries in fiscal year 2015 to 678,263 in fiscal year 2016, representing an increase of 2.80%.

The following are highlights from the fiscal year:

- The number of active VRS members increased 0.32%, from 340,576 to 341,671.
- The number of retirees and beneficiaries increased 4.14% from 184,769 to 192,411.
- VRS paid \$4,356.9 million during fiscal year 2016, compared to \$4,114.2 million in retirement benefits in fiscal year 2015.

- The number of inactive and deferred members increased 7.26% from 134,425 to 144,181.
- A total of 76,863 members held accounts through the Commonwealth of Virginia Deferred Compensation Plan at the end of the fiscal year. Of these participants, 69,779 received a cash match through the Virginia Cash Match Plan.

**EXCEEDING BENCHMARKS.** VRS personnel continued to satisfy or exceed benchmarks for operating standards, as the following highlights show:

OPERATING STANDARDS	BENCHMARK	FY 2016 RESULT
<b>Retiree Payroll</b> ( <i>benefits paid each month to retirees and other annuitants</i> )	100% of all monthly retirement payrolls run no later than the first day of the month.	100.0% of monthly payrolls ran on time.
<b>Customer Counseling Center Abandoned Call Rate</b> ( <i>rate of incoming calls going unanswered</i> )	The averaged abandoned call rate is no greater than 7.5% for the year.	The averaged abandoned call rate was 7.8%.
<b>Service Retirements</b>	Service retirement applications are processed in an average of 45 days with a 95% accuracy rate.	Service retirement applications were processed in an average of 18 days with a 99.9% accuracy rate.
<b>Disability Retirements</b>	98% of disability retirement applications are processed within 40 days of approval by the VRS Medical Board.	99.7% of disability retirement applications were processed within 16.2 days of approval by the VRS Medical Board.
<b>Refunds</b>	95% of requests for refunds of member contributions are processed within 60 days.	99.7% of refunds were processed within 5 days.
<b>Benefit Estimates</b>	90% of requests for retirement benefit estimates are completed within 30 days.	98.6% of estimates were completed within 9 days.
<b>Workflow Imaging</b>	98% of documents VRS receives are imaged and available to customer service and operations personnel within 24 hours (one business day).	100.0% of documents were imaged and available within 24 hours.
<b>System Availability</b>	99.5% of planned system availability for all critical systems.	The system was available 99.7% of the time.

In addition to these achievements, VRS staff provided counseling, education, workshops and training opportunities for members and employers throughout the state:

- The Member Counseling Team assisted 4,197 members and retirees, responded to 8,728 emails and conducted 241 retirement education and group counseling sessions, special presentations, videoconferences, webinars and benefit fairs, reaching 16,757 members around the state. The Hybrid Counseling Team held 48 sessions and webinars, attended by 326 Hybrid Retirement Plan members; the team responded to 92 myVRS online assistance emails during the launch of the enhanced myVRS and to 104 hybrid-related emails during fiscal year 2016.
- The Member Education Program launched a new retirement readiness seminar series in spring 2016. The program provides a workshop that includes multiple seminars covering the four distinct stages of a member's career/life cycle:
  - Starting Point, Ready Set Go! (ages 20-25)
  - Looking Ahead – Building Retirement Security (ages 26-45)
  - Eye on the Prize, Almost There! Nearing Retirement (ages 46 and older)
  - Living in Retirement (retirees)
- The Member Education and Outreach program has expanded to include counselors responsible for regional coverage. Counselors partner with Employer Representatives and employers to bring tailored education and outreach to the field.
- The Retirement Counseling Center is now staffed by universal counselors (also known as “super counselors”) who can assist any customer regardless of plan type and status. Appointment availability has been expanded as well. The center has implemented the Benefit Calculation Engine, through which counselors can provide real-time benefit estimates by phone, as well as access to a quick view of counseling points.
- In 2016, the Employer Representatives continued to organize employer roundtables and conduct employer site visits, which focus on the full scope of VRS products and services. In total, they conducted 23 employer site visits and 43 roundtables, with 701 participants.
- In addition, the Employer Representatives assisted four political subdivisions joining VRS; four employers electing the Group Life Insurance Program; 10 employers electing the enhanced benefit for hazardous duty employees; five employers electing the enhanced retirement multiplier for hazardous duty employees; three employers electing the health insurance credit; three employers electing to offer the supplemental deferred compensation plan; three employers electing to offer tax-deferred purchase of prior service; one employer electing to provide unreduced retirement age eligibility at the age of 50 with 30 years of service credit and one employer electing to provide unreduced retirement age and service eligibility at age 50 with 25 years of service credit for hazardous duty employees.
- During fiscal year 2016, there were approximately 1,301,837 total page views to the VRS website at [www.varetire.org](http://www.varetire.org), reflecting an increase over the 1,222,270 total page views in fiscal year 2015. Except for the [varetire.org](http://www.varetire.org) homepage, myVRS, the secure online system, led again in page views as a top destination.
- The number of subscribers to the online Employer Update newsletter increased 5%, from 3,752 in fiscal year 2015 to 3,943 in fiscal year 2016. The average “open rate” was 36.4%.



## Innovations

VRS continued Phase 4 of Modernization with a major step forward in spring 2016, when it launched the enhanced myVRS system for members. The new myVRS includes a modernized user interface complete with a new landing page that provides a comprehensive view of a member's benefits, enhanced security features to protect the members' personal and financial information, and the ability to request a refund online.

Members are able to access their compensation and employment history easily and to request a refund with a simple online transaction. Integrated education and counseling helps ensure the member understands the options available as well as the impacts of taking a refund. In May 2016, the first month that online refunds were available, 27 refunds were paid. In June 2016, the volume of refunds requested by the member online increased 86%, to 191.

Retirement planning tools and software for calculating and managing purchases of service are scheduled for myVRS in 2017, with the ability to retire online and a myVRS portal for retirees scheduled for 2018. Our goal is to process 85% of all retirements online.

The new myVRS features intuitive tools and counseling to educate members as they review account information and pursue online transactions. Our objective is to inform members early and often during their careers, so that they can prepare for retirement and visualize future income needs with time to adjust their goals as necessary. These tools offer outreach education to all VRS members, wherever they live, and enable them to develop strategies for retirement planning.

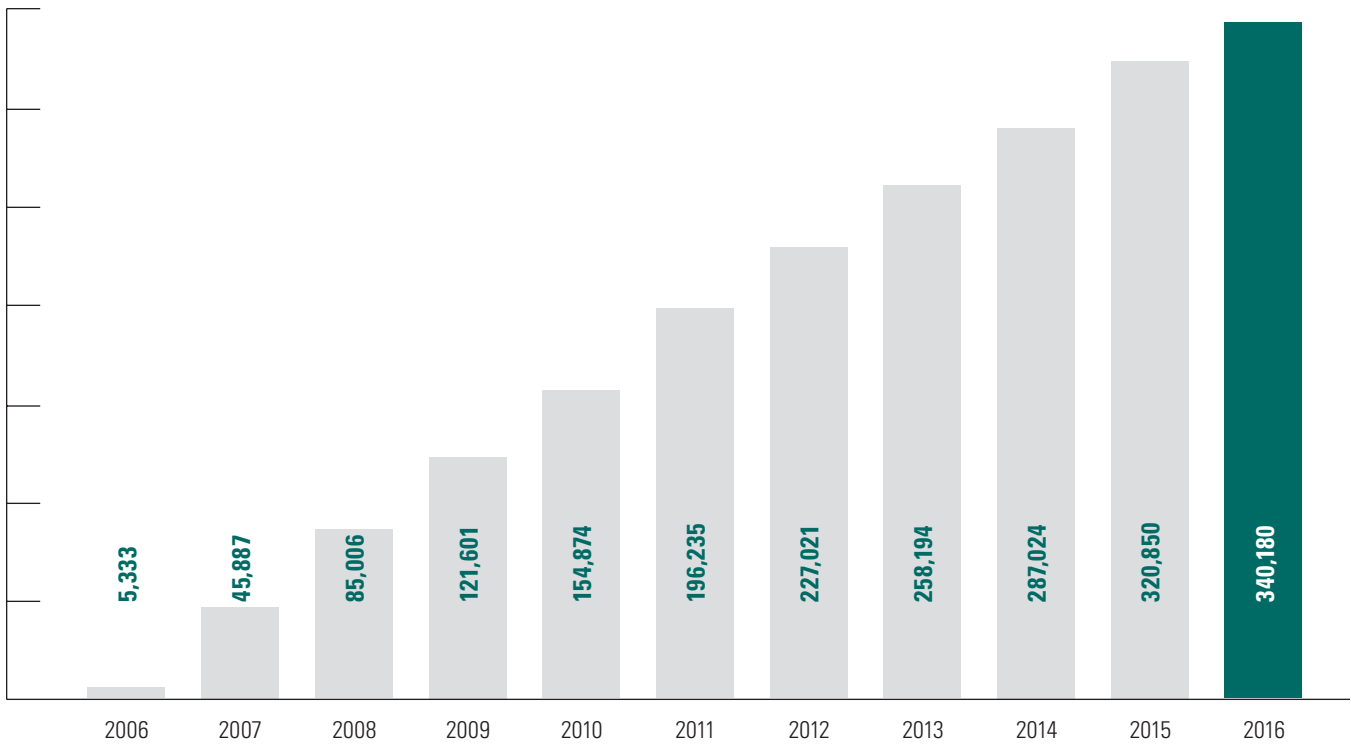
**myVRS CONTINUES TO ATTRACT USERS.** During the fiscal year, the secure online myVRS system continued to serve as a valuable resource for members, retirees and employers:

- By June 30, 2016, 22,754 members had registered for myVRS, bringing the total of registered users to 340,180 in fiscal year 2016, an increase from the 320,850 registered members at June 30, 2015.
- Members put myVRS planning tools to good use during the fiscal year, creating more than 388,301 estimates through the myVRS Benefit Estimator and 58,887 Quick and Detailed Plans through the myVRS Retirement Planner.
- Since 2008, when myVRS was opened to retirees, there have been 83,331 retiree registrations. Retirees completed more than 4,114 income tax transactions through the myVRS retiree tax tool during the fiscal year.
- By June 30, 2016, more than 7,232 participating employer contacts authorized to access member information had registered for myVRS for Employers. During the fiscal year, employers created more than 85,434 benefit estimates to help counsel employees getting ready to retire.

## Acknowledgments

VRS continues to focus on providing efficient and effective service while being accountable stewards of the funds in our care on behalf of our members, retirees and beneficiaries. These responsibilities remain integral to our mission in an era when retirement plans are experiencing a rapidly changing landscape.

## myVRS MEMBER USERS



Over the last several years, VRS has implemented a variety of pension-reform initiatives. The Hybrid Retirement Plan introduced defined contribution accounts to accompany the defined benefit component provided by VRS. The plan also provides opportunities for hybrid members to make voluntary contributions to their retirement savings and to select investment portfolios that best meet their individual needs. At the same time, VRS is grateful for the steadfast commitment of the Governor and General Assembly to increase contributions to the plans at a more rapid pace than anticipated.

Advancements gained from this multifaceted approach to pension reform are coalescing to improve the overall funded status of the plan and position VRS to serve its members for years to come.

Of course, this progress would not be possible without the high level of dedication and initiative exhibited by the VRS staff, the support of VRS' participating employers and business partners and the guidance and perseverance of the Board of Trustees. We express our sincere thanks and appreciation to each of these remarkable individuals and representatives.

Finally, we wish to thank Governor Terence R. McAuliffe and the members of the Virginia General Assembly for their continued commitment to the financial security of the members, retirees and beneficiaries of the Virginia Retirement System.

Respectfully submitted,

Patricia S. Bishop  
Director

Barry C. Faison  
Chief Financial Officer



## 2 Financial Section

Independent Auditor's Report

Management's Discussion and Analysis

Basic Financial Statements:

VRS Statement of Fiduciary Net Position: Defined Benefit  
Pension Trust Funds and Other Employee Benefit Trust Funds

VRS Statement of Changes in Fiduciary Net Position:  
Defined Benefit Pension Trust Funds and Other Employee  
Benefit Trust Funds

VRS Combining Statement of Fiduciary Net Position

VRS Combining Statement of Changes in Fiduciary Net Position

JRS Combining Statement of Fiduciary Net Position

JRS Combining Statement of Changes in Fiduciary Net Position

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and Plan

Schedule of Actuarial Methods and Significant Assumptions:  
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Schedule of Impact of Changes in Discount Rate

Schedule of Funding Progress: Other Post-Employment  
Benefit Plans

Schedule of Actuarial Methods and Significant Assumptions:  
Other Post-Employment Benefit Plans

Required Supplemental Schedule of Changes in Employers'  
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Required Supplemental Schedule of Employer Contributions:  
Pension Plans

Required Supplemental Schedule of Investment Returns

Required Supplemental Schedule of Funding Progress:  
Other Post-Employment Benefit Plans

Required Supplemental Schedule of Employer Contributions:  
Other Post-Employment Benefit Plans

Schedule of Administrative Expenses

Schedule of Professional and Consulting Services

Schedule of Investment Expenses



**HELPING MEMBERS  
TAKE CHARGE**

Early-career members represent a growing segment of the workforce. Although retirement may seem distant, it's essential that this group save early and regularly to prepare for future needs. Student loan payments and household expenses can take a bite out of a paycheck, but financial counseling can help an early-career member set up a savings plan and budget. The enhanced myVRS enables the digital generation to access and manage their retirement account in a personal, portable and immediate way.



# Commonwealth of Virginia

*Auditor of Public Accounts*

Martha S. Mavredes, CPA  
Auditor of Public Accounts

P.O. Box 1295  
Richmond, Virginia 23218

December 15, 2016

The Honorable Terence R. McAuliffe  
Governor of Virginia

The Honorable Robert D. Orrock, Sr.  
Chairman, Joint Legislative Audit  
And Review Commission

Board of Trustees  
Virginia Retirement System

## INDEPENDENT AUDITOR'S REPORT

### Report on Financial Statements

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

### Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with 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.

### Auditor's 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 of 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 financial statement presentation.

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

## Opinion

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

## Emphasis of Matter

### **Relationship to the Commonwealth of Virginia**

As discussed in Note 1, the basic financial statements of the System are intended to present the financial position and the changes in financial position of only that portion of the aggregate remaining fund information of the Commonwealth of Virginia that is attributable to the transactions of the System. They do not purport to, and do not, present fairly the Commonwealth of Virginia's overall financial position as of June 30, 2016, and the changes in its financial position and its cash flows, where applicable, for the year then ended in conformity with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

### **Change in Accounting Principles**

As discussed in Note 1 to the financial statements, the System implemented Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application*. Our opinion is not modified with respect to these matters.

## Other Matters

### **Prior-Year Summarized Comparative Information**

We have previously audited the System's 2015 financial statements, and we expressed an unmodified audit opinion on the respective financial statements in our report dated December 15, 2015. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2015, is consistent, in all material respects, with the audited financial statements from which it has been derived.

### **Required Supplementary Information**

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, Schedules of Changes in Employers' Net Pension Liability, Employer Contributions, Funding Progress, and Investment Returns on pages 31 through 41 and 113 through 119 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 the 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 accompanying supplementary information, such as the Schedules of Administrative Expenses, Professional and Consulting Services, and Investment Expenses, and other information, such as the Introductory, Investment, Actuarial, and Statistical sections, are presented for the purpose of additional analysis and are not a required part of the basic financial statements.

The Schedules of Administrative Expenses, Professional and Consulting Services, and Investment Expenses are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures

applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Schedules of Administrative Expenses, Professional and Consulting Services, and Investment Expenses are fairly stated, in all material respects, in relation to the basic financial statements taken as a whole.

The Introductory, Investment, Actuarial, and Statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

### Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we anticipate our report dated December 15, 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 to be issued in January 2017. 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 the 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.



AUDITOR OF PUBLIC ACCOUNTS



**T**he Virginia Retirement System (the System) administers pension and other employee benefit plans for approximately 678,000 members, retirees and beneficiaries. The purpose of the Financial Section is to present the plans' net position and changes in net position for the fiscal year through the audited Basic Financial Statements. In support of this information, the Financial Section includes Management's Discussion and Analysis of activity affecting the plans and the operations of the System during the current and previous fiscal years. It also includes the Notes to Financial Statements, providing additional detail about the statements, as well as required schedules regarding historical information and the administration of the plans.

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## Management's Discussion and Analysis (Unaudited)

Management's Discussion and Analysis provides highlights of the funding of the plans and the performance and operations of the System for the fiscal year ended June 30, 2016. The information provided in the Introductory, Investment, Actuarial and Statistical sections complements this discussion.

The System administers two defined benefit retirement benefit structures, Plan 1 and Plan 2, and a hybrid retirement benefit structure. While all of the following systems have employees with Plan 1 and Plan 2 benefits, only the VRS and JRS systems have employees with hybrid benefits. All of these systems are defined as pension trust funds:

- Virginia Retirement System (VRS) for state employees, teachers, other eligible school division employees, employees of participating political subdivisions and other qualifying employees.
- State Police Officers' Retirement System (SPORS) for state police officers.
- Virginia Law Officers' Retirement System (VaLORS) for non-local government Virginia law officers other than state police officers.
- Judicial Retirement System (JRS) for judges of state courts of record, state district courts and other qualifying employees.

The System also administers the Group Life Insurance Fund, Retiree Health Insurance Credit Fund, a Disability Insurance Trust Fund for state employees, a Disability Insurance Trust Fund for local government employees and the funding of the Line of Duty Act Trust Fund. All of these funds are defined as other employee benefit trust funds. Both the pension and other employee benefit trust funds are classified as fiduciary funds.

### FINANCIAL HIGHLIGHTS

- The combined total net position of the trust funds restricted for benefits was \$68.2 billion at June 30, 2016, representing an increase of \$65.9 million, or 0.1%, from the net position as of June 30, 2015. The increase was due to higher contribution rates; however, these were offset by smaller investment returns and increased expenses for benefit payments.
- The System's rate of return on investments during the fiscal year ended June 30, 2016, was 1.9% compared to a return of 4.7% for the fiscal year ending June 30, 2015. The decrease was due primarily to the performance of the public equity investments in the portfolio.
- The latest valuations of the pension plans were performed by Cavanaugh Macdonald Consulting, LLC, using the new GASB Statement No. 67 calculation processes. Using the June 30, 2015, data, rolled forward to June 30, 2016, the plan fiduciary net position as a percentage of the total pension liability was

71.29% for the VRS state plan, 68.28% for the VRS teacher plan, 83.67% for the aggregate total of the VRS political subdivision plans, 67,22% for SPORS, 61.01% for VaLORS and 75.19% for JRS. This compares to the June 30, 2014, data, rolled forward to June 30, 2015, when the plan fiduciary net position as a percentage of the total pension liability was 72.81% for the VRS state plan, 70.68% for the VRS teacher plan, 86.70% for the aggregate total of the VRS political subdivision plans, 68.89% for SPORS, 62.64% for VaLORS and 72.15% for JRS.

- The Group Life Insurance Fund, the Retiree Health Insurance Credit Fund and the Disability Insurance Trust Fund were actuarially funded at 39.9%, 7.3% and 169.4%, respectively, based on the actuarial valuation as of June 30, 2015. For the Group Life Insurance Fund, the Retiree Health Insurance Credit Fund and the Disability Insurance Trust Fund, there was an increase from the June 30, 2014, funded ratios of 36.7%, 7.0% and 159.0%, respectively. There were no changes in the primary actuarial assumptions for salary growth or inflation. The funded ratios of all the plans reflect the impact of the net investment gains recorded in fiscal year 2011, fiscal year 2013, fiscal year 2014 and fiscal year 2015 because of the “five-year smoothing” asset valuation method used by the VRS actuary; however, this was partially offset by the poor investment performance recorded in fiscal year 2012.
- The Virginia Local Disability Program was created in January 2014 to provide managed disability for Hybrid Retirement Plan members who were not covered by a local plan. The plan had no assets at June 30, 2014, and no funded ratio. At June 30, 2015, the plan had a funded ratio of 24.9%.
- The Line of Duty Act Trust Fund was created effective July 1, 2010, as a new trust fund and has actuarial valuations prepared to determine the actuarial accrued liability and to establish the appropriate contribution rates for the program. The fund had a funded ratio of 0.3% at June 30, 2015, a decline from the funded ratio of 3.1%

at June 30, 2014. The funded ratio reflects the payoff of the loan that was used for the initial funding and the ongoing pay-as-you-go funding of the program.

## Overview of the Financial Statements and Accompanying Information

The pension components of the fiscal year 2016 VRS financial statements, notes to the financial statements and required supplementary information were prepared in conformity with GASB Statement No. 67, *Financial Reporting for Pension Plans*, as modified by GASB Statement No. 82, *Pension Issues*. The other employee benefit plan components of the fiscal year 2016 financial statements, notes to the financial statements and required supplemental information were prepared in conformity with GASB Statement No. 43, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*.

**BASIC FINANCIAL STATEMENTS.** The System presents the Basic Financial Statements for the year ended June 30, 2016, with comparative information from the previous fiscal year. In addition, a set of combining statements is now added to show the amounts attributable to the state, teacher and local plans included in the VRS totals. The statements were prepared on the accrual basis of accounting and are used to account for the resources the System administers on behalf of plan members and beneficiaries. These statements include:

- **Statement of Fiduciary Net Position – Pension and Other Employee Benefit Trust Funds.** This statement reflects the balance of the resources available to pay benefits to members, retirees and beneficiaries at the end of the fiscal year.
- **Statement of Changes in Fiduciary Net Position – Pension and Other Employee Benefit Trust Funds.** This statement reflects the changes in the resources available to pay benefits to members, retirees and beneficiaries during the fiscal year.

A summary of the Basic Financial Statements is presented in Figures 2.1 and 2.2. The full statements follow Management’s Discussion and Analysis.

**NOTES TO FINANCIAL STATEMENTS.** The Notes to Financial Statements provide detailed information and are integral to the Basic Financial Statements.

**REQUIRED SUPPLEMENTARY SCHEDULES.** These schedules include:

- Required Supplemental Schedule of Changes in Employers' Net Pension Liability
- Required Supplemental Schedule of Employer Contributions: Pension Plans
- Required Supplemental Schedule of Investment Returns
- Required Supplemental Schedule of Funding Progress: Other Post-Employment Benefit Plans

- Required Supplemental Schedule of Employer Contributions: Other Post-Employment Benefit Plans

**ADDITIONAL FINANCIAL INFORMATION.** The following schedules provide additional information not included in the Basic Financial Statements:

- Schedule of Administrative Expenses
- Schedule of Professional and Consulting Services
- Schedule of Investment Expenses

**FIGURE 2.1: SUMMARY OF FIDUCIARY NET POSITION**

AT JUNE 30

(EXPRESSED IN MILLIONS)

	2016	Increase (Decrease)	2015	Increase (Decrease)	2014
<b>Assets:</b>					
Cash, Receivables and Capital Assets	\$ 2,268.4	\$ 63.5	\$ 2,204.9	\$ 339.7	\$ 1,865.2
Investments	68,926.6	776.5	68,150.1	967.3	67,182.8
Security Lending Collateral	5,023.0	1,644.8	3,378.2	(2,644.0)	6,022.2
<b>Total Assets</b>	<b>\$ 76,218.0</b>	<b>\$ 2,484.8</b>	<b>\$ 73,733.2</b>	<b>\$ (1,337.0)</b>	<b>\$ 75,070.2</b>
<b>Liabilities:</b>					
Accounts Payable	\$ 851.5	\$ 104.1	\$ 747.4	\$ 203.8	\$ 543.6
Investment Purchases Payable	2,095.5	670.8	1,424.7	(898.1)	2,322.8
Obligations Under Securities Lending	5,023.0	1,644.0	3,379.0	(2,643.1)	6,022.1
<b>Total Liabilities</b>	<b>\$ 7,970.0</b>	<b>\$ 2,418.9</b>	<b>\$ 5,551.1</b>	<b>\$ (3,337.4)</b>	<b>\$ 8,888.5</b>
<b>Total Net Position – Restricted for Benefits</b>	<b>\$ 68,248.0</b>	<b>\$ 65.9</b>	<b>\$ 68,182.1</b>	<b>\$ 2,000.4</b>	<b>\$ 66,181.7</b>

**FIGURE 2.2: SUMMARY OF CHANGES IN FIDUCIARY NET POSITION**

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN MILLIONS)

	2016	Increase (Decrease)	2015	Increase (Decrease)	2014
<b>Additions:</b>					
Member Contributions	\$ 970.0	\$ 63.9	\$ 906.1	\$ 57.5	\$ 848.6
Member Contributions Paid by Employer	25.8	(27.7)	53.5	(42.7)	96.2
Employer Contributions	2,782.1	105.2	2,676.9	547.4	2,129.5
Net Investment Income	1,169.8	(1,828.3)	2,998.1	(6,101.8)	9,099.9
Miscellaneous Revenue & Transfers	2.5	0.4	2.1	1.3	0.8
<b>Total Additions</b>	<b>\$4,950.2</b>	<b>\$ (1,686.5)</b>	<b>\$ 6,636.7</b>	<b>\$ (5,538.3)</b>	<b>\$12,175.0</b>
<b>Deductions:</b>					
Retirement Benefits	\$ 4,357.0	\$ 242.8	\$ 4,114.2	\$ 236.1	\$ 3,878.1
Refunds of Member Contributions	104.6	(1.6)	106.2	2.8	103.4
Insurance Premiums and Claims	173.8	(1.9)	175.7	16.3	159.4
Retiree Health Insurance Credit					
Reimbursements	153.9	5.9	148.0	5.4	142.6
Disability Insurance Benefits	39.3	1.6	37.7	3.9	33.8
Line of Duty Act Reimbursements	8.5	0.3	8.2	0.4	7.8
Administrative and Other Expenses	47.2	0.9	46.3	(5.4)	51.7
<b>Total Deductions</b>	<b>\$4,884.3</b>	<b>\$ 248.0</b>	<b>\$ 4,636.3</b>	<b>\$ 259.5</b>	<b>\$ 4,376.8</b>
<b>Net Increase (Decrease) in Net Position</b>	<b>\$ 65.9</b>	<b>\$ (1,934.5)</b>	<b>\$ 2,000.4</b>	<b>\$ (5,797.8)</b>	<b>\$ 7,798.2</b>

## Analysis of Financial Activities – Pension Plans

The System's funding objective is to meet its long-term benefit obligations through investment income and contributions. Accordingly, the collection of contributions and the income from investments provide the reserves needed to finance the benefits provided under the plans.

## MEMBERS, RETIREES, BENEFICIARIES AND EMPLOYERS

Approximately 341,671 active members were employed with 827 VRS-participating employers as of June 30, 2016. The number of retirees and other annuitants totaled approximately 192,411 at year-end. The distribution of active members, retirees and beneficiaries, and employers is shown in Figures 2.3, 2.4 and 2.5.

### FIGURE 2.3: DISTRIBUTION OF ACTIVE MEMBERS

AT JUNE 30

	2016		2015		2014	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
State Employees (VRS)	77,651	22.7%	78,204	23.0%	78,882	23.1%
Teachers (VRS)	146,854	43.0%	145,758	42.7%	145,421	42.5%
Political Subdivision Employees (VRS)	105,654	30.9%	105,431	31.0%	105,374	30.9%
State Police Officers (SPORS)	1,947	0.6%	2,000	0.6%	2,020	0.6%
Virginia Law Officers (VaLORS)	9,147	2.7%	8,779	2.6%	9,415	2.8%
Judges (JRS)	418	0.1%	404	0.1%	387	0.1%
<b>Total Members</b>	<b>341,671</b>	<b>100.0%</b>	<b>340,576</b>	<b>100.0%</b>	<b>341,499</b>	<b>100.0%</b>

Additional information about the membership is presented in Note 2 and in the Statistical Section.

### FIGURE 2.4: DISTRIBUTION OF RETIREES AND BENEFICIARIES

AT JUNE 30

	2016		2015		2014	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
State Employees (VRS)	54,034	28.1%	52,521	28.4%	51,051	28.8%
Teachers (VRS)	83,738	43.5%	80,436	43.5%	77,153	43.6%
Political Subdivision Employees (VRS)	48,827	25.4%	46,300	25.1%	43,801	24.7%
State Police Officers (SPORS)	1,242	0.6%	1,234	0.7%	1,201	0.7%
Virginia Law Officers (VaLORS)	4,066	2.1%	3,781	2.0%	3,429	1.9%
Judges (JRS)	504	0.3%	497	0.3%	491	0.3%
<b>Total Retirees and Beneficiaries</b>	<b>192,411</b>	<b>100.0%</b>	<b>184,769</b>	<b>100.0%</b>	<b>177,126</b>	<b>100.0%</b>

Additional information about retirees and beneficiaries is presented in the Statistical Section.

### FIGURE 2.5: DISTRIBUTION OF EMPLOYERS

AT JUNE 30

	2016	2015	2014
Cities and Towns	161	162	162
Counties	93	93	93
School Boards*	145	145	145
Special Authorities	202	200	198
State Agencies	226	227	226
<b>Total Employers</b>	<b>827</b>	<b>827</b>	<b>824</b>

\* Of the 145 school boards, 133 also provide for coverage for non-professional employees and are treated as political subdivisions. A list of VRS-participating employers and additional employer information is presented in the Statistical Section.

## CONTRIBUTIONS AND INVESTMENT EARNINGS

The retirement benefits provided by the plans are funded from pension trust fund revenue. As shown in Figure 2.6, the primary sources of revenue are contributions for active members made by members or their employers, contributions from employers and investment income generated from the investment of plan assets.

Total contributions and investment earnings for the year ended June 30, 2016, amounted to \$4,513.7 million. This was a decrease of \$1,658.2 million when compared with the activity for fiscal year 2015. It was also less than the contributions and investments earnings of \$11,572.5 million recorded in fiscal year 2014.

Total member contributions increased by \$32.9 million. The portion members paid increased by \$60.3 million. This was due primarily to a continuation in implementation of the statutory shift from employer-paid to member-paid contributions.

For fiscal year 2016, employer contributions increased by \$92.8 million due primarily to a slight increase in the covered payroll and the increase in the statutory percentage of the actuarial rate being contributed for state employee groups. The total of all contributions represented an increase of \$125.4 million from fiscal year 2015. Employer contributions for pensions are discussed further in Notes 2 and 12.

During fiscal year 2015, the System experienced an increase in total member contributions of \$13.1 million and an increase in employer contributions of \$539.5 million. This increase also reflects some payroll growth, the addition of some new local government employers and the election of enhanced hazardous duty or other coverage by some local governments. However, the increase was due primarily to an increase in the employer contribution rates for all employer groups and the increase in the statutory percentage of the actuarial rate being contributed for state employee groups and teachers.

## FIGURE 2.6: SUMMARY OF PENSION CONTRIBUTIONS, INVESTMENT EARNINGS AND MISCELLANEOUS REVENUES

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN MILLIONS)

	2016	Increase (Decrease)	2015	Increase (Decrease)	2014
Member Contributions	\$ 842.1	\$ 60.3	\$ 781.8	\$ 55.8	\$ 726.0
Member Contributions Paid by Employers	25.8	(27.7)	53.5	(42.7)	96.2
Employer Contributions	2,507.1	92.8	2,414.3	539.5	1,874.8
Net Investment Income	1,136.9	(1,783.7)	2,920.6	(5,954.4)	8,875.0
Miscellaneous Revenue and Transfers	1.8	0.1	1.7	1.2	0.5
<b>Total Contributions, Investment Earnings and Miscellaneous Revenues</b>	<b>\$ 4,513.7</b>	<b>\$ (1,658.2)</b>	<b>\$ 6,171.9</b>	<b>\$ (5,400.6)</b>	<b>\$ 11,572.5</b>

## INVESTMENTS

The System holds contributions from members and employers in a commingled pool, which is invested to provide for the payment of current and future benefits to members when they retire. Each plan – VRS-state, VRS-teacher, VRS-political subdivisions, SPORS, VaLORS and JRS – owns an equity position in the pool and receives a proportionate share of the total investment income or loss from the pool on a monthly basis.

As shown in Figure 2.6, net investment income for fiscal year 2016 of \$1,136.9 million represented a decrease of \$1,783.7 million from fiscal year 2015. This compares with the net investment income decrease of \$5,954.4 million in fiscal year 2015. Total pension trust fund investments were \$67,065.5 million at fair value at June 30, 2016. This was an increase of \$701.1 million from the fair value of \$66,364.4 million at June 30, 2015. The total pension trust fund investments also increased in fiscal year 2015 by \$889.3 million from their fair value of \$65,475.1 million at June 30, 2014. The total return on pension trust fund investments for the year ended June 30, 2016, was 1.9%. This represents an annualized return of 7.3% over the past three years and 7.0% over the past five years. An explanation of investment policies and strategies as well as the portfolio's composition is included in the Investment Section. A review of investment activity and results for fiscal year 2016 also is provided in that section.

## EXPENSES – DEDUCTIONS FROM PLAN NET POSITION

As shown in Figure 2.7, the primary expenses of the pension trust funds include annuity benefits for retirees and beneficiaries, refunds of contributions to former members and expenses associated with the administration of the retirement plans. Expenses for fiscal year 2016 totaled \$4,505.5 million, an increase of \$242.3 million, or 5.7%, over the 2015 period.

Benefit payments were \$4,357.0 million in fiscal year 2016. This is an increase of \$242.8 million compared to an increase of \$236.1 million in fiscal year 2015. The increase in fiscal year 2016 was due to continued growth in the number of retirees and beneficiaries receiving benefits. The fiscal year 2016 benefit payments also reflect a 1.62% cost-of-living adjustment (COLA) effective July 1, 2015, for Plan 1 retirees and Plan 2 retirees.

Refunds of contributions to members who terminated employment during fiscal year 2016 amounted to \$104.6 million (12,288 refunds), compared with \$106.2 million refunded (10,405 refunds) during fiscal year 2015 and \$103.4 million refunded (10,729 refunds) during fiscal year 2014. The change during fiscal year 2016 reflects an increase in the volume of refunds but a decline in the average refund amount compared to fiscal year 2015.

Administrative and other expenses for fiscal year 2016 were \$43.9 million, compared with \$42.8 million for fiscal year 2015 and \$47.9 million for fiscal year 2014.

**FIGURE 2.7: SUMMARY OF PENSION PLAN PRIMARY EXPENSES**

FOR THE YEARS ENDED JUNE 30

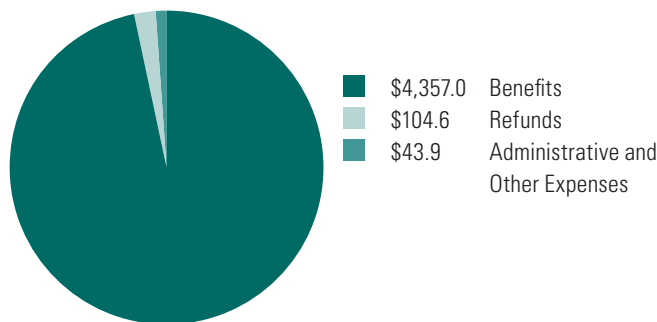
(EXPRESSED IN MILLIONS)

	2016	Increase (Decrease)	2015	Increase (Decrease)	2014
Benefits	\$ 4,357.0	\$ 242.8	\$ 4,114.2	\$ 236.1	\$ 3,878.1
Refunds	104.6	(1.6)	106.2	2.8	103.4
Administrative and Other Expenses	43.9	1.1	42.8	(5.1)	47.9
<b>Total Primary Expenses</b>	<b>\$ 4,505.5</b>	<b>\$ 242.3</b>	<b>\$ 4,263.2</b>	<b>\$ 233.8</b>	<b>\$ 4,029.4</b>

Administrative and other expenses increased by \$1.1 million for fiscal year 2016. This compares to a decrease in fiscal year 2015 of \$5.1 million. The increase for fiscal year 2016 reflects a slight increase in the administrative expenses and a slight decline in other expenses categories. This increase in administrative expenses includes additional depreciation of the capitalized software created as part of Modernization and pension reform and an increase in some of the other administrative expense categories partially offset by software development costs that were capitalized in fiscal year 2016. Other expenses decreased because of smaller investment income distributions to other accounts managed by the System. Further details are provided in the Schedule of Administrative Expenses following the Required Supplemental Schedules.

### PENSION PLAN ACTIVITY

FISCAL YEAR 2016 (EXPRESSED IN MILLIONS)



### RETIREMENT RESERVES

The funds accumulated by the pension plans to meet current and future obligations to retirees and beneficiaries are derived from the excess of revenues over expenses. The higher the level of funding a plan achieves, the larger the accumulation of assets and the greater the investment income potential. As shown in Figure 2.8, revenues exceeded expenses for fiscal year 2016, leading to a net increase of \$8.2 million in the retirement reserves held by the plans. This follows an increase of \$1,908.8 million in the retirement reserves in fiscal year 2015. The minor increase for fiscal year 2016 reflects a slight increase in contributions, an increase in benefit expenses, and a decline in net investment income.

### ACTUARIAL VALUATIONS AND FUNDING PROGRESS – PENSION PLANS

The System’s actuarial firm performs actuarial valuations of VRS, SPORS, VaLORS and JRS at least every two years to determine funding requirements. The funding policy provides for periodic employer contributions at actuarially determined rates that will remain relatively level over time as a percentage of payroll and will accumulate sufficient assets to meet the costs of all benefits when due.

FIGURE 2.8: SUMMARY OF PENSION PLAN RESERVE BALANCES

AT JUNE 30

(EXPRESSED IN MILLIONS)

	2016	Increase (Decrease)	2015	Increase (Decrease)	2014
Member Reserves	\$ 12,969.2	\$ 403.2	\$ 12,566.0	\$ 383.1	\$ 12,182.9
Employer Reserves	53,470.1	(395.0)	53,865.1	1,525.7	52,339.4
<b>Total</b>	<b>\$ 66,439.3</b>	<b>\$ 8.2</b>	<b>\$ 66,431.1</b>	<b>\$ 1,908.8</b>	<b>\$ 64,522.3</b>

*These balances also reflect transfers between the Member and Employer Reserves for interest credited to member accounts and member contributions transferred to the Employer Reserve upon a member’s retirement. For fiscal year 2016, the amount of interest credited to member accounts was \$475.7 million, and the amount of member balances transferred to the Employer Reserve for retirements was \$864.2 million. For fiscal year 2015, the interest and retirement transfers were \$461.8 million and \$820.8 million, respectively.*



The latest valuations of the pension plans were performed by Cavanaugh Macdonald Consulting, LLC, using the GASB Statement No. 67 calculation processes. Using the June 30, 2015, data, rolled forward to June 30, 2016, the plan fiduciary net position as a percentage of the total pension liability was 71.29% for the VRS state plan, 68.28% for the VRS teacher plan, 83.67% for the aggregate total of the VRS political subdivision plans, 67.22% for SPORS, 61.01% for VaLORS and 75.19% for JRS. The valuations reflect full pre-funding of the statutory cost-of-living adjustment (COLA) for retirees as well as other changes required in GASB Statement No. 67.

Additional information on plan funding is presented in Note 2 and in the Actuarial Section.

## Analysis of Financial Activities – Other Employee Benefit Plans

### GROUP LIFE INSURANCE PROGRAM

The Group Life Insurance Program provides basic group life insurance coverage for natural death, accidental death, accidental dismemberment and other life insurance benefits to the majority of members covered under the pension plans, as well as to other qualifying employees. Employers and their covered employees pay the premiums for group life insurance coverage; many employers pay the employee's portion.

During fiscal year 2016, the System remitted \$173.8 million to the insurer for claims and administrative costs. This is a slight decrease from the \$175.8 million remitted for fiscal year 2015. Approximately 359,679 active members were covered under the Group Life Insurance Program at June 30, 2016.

The difference between the amounts collected and paid by the System is added to the reserve established to pre-fund group life insurance coverage for retirees.

The reserve had a fiduciary net position restricted for benefits of \$1,224.9 million at June 30, 2016.

Investment income, including net securities lending income, was \$23.4 million during the fiscal year. For fiscal year 2015, this reserve had investment income of \$52.2 million and ended the year with a reserve balance of \$1,162.6 million, an increase from the balance of \$1,079.3 million at June 30, 2014.

For fiscal year 2016, the increase in the reserve balance was primarily the result of an increase in contributions, a decline in investment income, a reduction in the program's claims, and stable administrative expenses and other costs. Employer contributions for the Group Life Insurance Program are discussed further in Note 12.

Approximately 169,786 retirees were covered under the Group Life Insurance Program at June 30, 2016.

Members covered under the Basic Group Life Insurance Program are eligible to elect additional coverage through the Optional Group Life Insurance Program. This program provides life insurance, accidental death and accidental dismemberment coverage as a supplement to the basic group plan. Members also may cover their spouses and dependent children. Members pay the premiums through payroll deduction. Approximately 67,493 active members and 2,874 retirees were enrolled in the Optional Group Life Insurance Program at June 30, 2016. Additional information about the Group Life Insurance Program is provided in Note 3.

### RETIREE HEALTH INSURANCE CREDIT PROGRAM

The Retiree Health Insurance Credit Program provides a tax-free reimbursement for the portion of health insurance premiums eligible retirees pay for single coverage under qualifying health insurance plans. During fiscal year 2016, the System collected \$151.9 million in retiree health insurance credit contributions from participating employers and provided reimbursements to retirees of \$153.9 million. During fiscal year 2015, the System collected \$144.8 million in retiree health insurance credit contributions from participating employers and provided reimbursements of \$148.0 million.

There was no change in the contribution rates for any of the employer groups in fiscal year 2016. Employer contributions for the Retiree Health Insurance Credit Program are discussed further in Note 12. The growth in health insurance credit reimbursements reflects an increase in the number of eligible retirees. The Retiree Health Insurance Credit Fund reserve had a fiduciary net position restricted for benefits of \$173.2 million at June 30, 2016. Investment income, including net securities lending income, was \$2.4 million for the fiscal year. The reserve balances at June 30, 2015, and June 30, 2014, were \$173.2 million and \$170.0 million, respectively. Approximately 116,408 retirees were receiving the health insurance credit at June 30, 2016. Additional information is provided in Note 3.

#### VIRGINIA SICKNESS AND DISABILITY PROGRAM

The Virginia Sickness and Disability Program (VSDP), also known as the Disability Insurance Trust Fund, provides eligible state employees with sick, family and personal leave and short-term and long-term disability benefits for non-work-related and work-related illnesses and injuries. The System is responsible for administering the disability program and the payment of long-term disability benefits. Employers are responsible for administering the leave program and the payment of short-term disability benefits.

During fiscal year 2016, the System collected \$24.5 million in VSDP contributions from participating employers and paid disability premiums and benefits of \$38.0 million. This was an increase from the \$37.1 million in benefits paid in fiscal year 2015. Administrative and other expenses decreased from fiscal year 2015. Employer contributions for the Virginia Sickness and Disability Program are discussed further in Note 12.

The benefit costs reflect continued stability in the number of members receiving long-term disability

benefits, the amount of these benefits, the costs of the long-term care benefits and the operating costs of the program. The Disability Insurance Trust Fund reserve had a fiduciary net position restricted for benefits of \$407.8 million at June 30, 2016. Investment income, including net securities lending income, was \$6.9 million during the fiscal year. The reserve balances at June 30, 2015, and June 30, 2014, were \$414.5 million and \$410.1 million, respectively. At June 30, 2016, approximately 74,657 active members were participating in the program and approximately 2,844 former members were receiving benefits. Additional information is provided in Note 3.

#### LINE OF DUTY ACT PROGRAM

The Line of Duty Act Program was a new program for the System in fiscal year 2011. The System is responsible for identifying eligible individuals, having the VRS actuary prepare an actuarial valuation, collecting contributions, reimbursing the Commonwealth of Virginia's Department of Accounts (DOA) for claims and administrative costs and managing the assets of the program. DOA is responsible for the administration of the benefits under the program and the payment of claims for death benefits and health insurance reimbursements for eligible state employees and local government employees, including volunteers, who die or become disabled as the result of the performance of their duties as a public safety officer.

During fiscal year 2016, the cost for the benefits provided by this program was \$8.5 million. This is an increase from the \$8.2 million in benefit costs for fiscal year 2015 and reflects the impact of the stabilization of the program's participation and claims levels. The reserve balance at June 30, 2016, was \$2.7 million, an increase over the reserve balance of \$0.7 million at June 30, 2015. Additional information is provided in Note 3.

### VIRGINIA LOCAL DISABILITY PROGRAM

The Virginia Local Disability Program (VLDP) was a new program for the System in fiscal year 2014. The program provides eligible local government employees who are members of the Hybrid Retirement Plan with sick, family and personal leave and short-term and long-term disability benefits for non-work-related and work-related illnesses and injuries. The System is responsible for administering the disability program and the payment of long-term disability benefits. Employers are responsible for administering the leave program and the payment of short-term disability benefits.

During fiscal year 2016, the cost for the benefits provided by this program was \$1.3 million. This is an increase from the \$645 thousand in benefit costs for fiscal year 2015 and reflects an increasing number of participants covered under this program. At June 30, 2016, approximately 9,699 active members were participating in the program and approximately three former members were receiving benefits. Additional information is provided in Note 3.

### ACTUARIAL VALUATIONS AND FUNDING PROGRESS – OTHER EMPLOYEE BENEFIT PLANS

The System’s actuarial firms perform actuarial valuations of other employee benefit plans administered by the System at least every two years to determine funding requirements. The funding policy provides for periodic employer contributions at actuarially determined rates that will remain relatively level over time as a percentage of payroll and will accumulate sufficient assets to meet the costs of all benefits when due.

According to the latest valuations of these plans performed by Cavanaugh Macdonald Consulting, LLC, as of June 30, 2015, the ratio of assets accumulated by the plans to their total actuarial accrued liabilities for benefits was 39.9% for the Group Life Insurance Fund, 7.3% for the Retiree Health Insurance Credit Fund, 169.4% for the Disability Insurance Trust Fund, 0.3% for the Line of Duty Act Trust Fund and 24.9% for the Virginia Local Disability Program. Funding progress for these

plans is presented in the Required Supplemental Schedule of Funding Progress – Other Post-Employment Benefit Plans.

### Market Volatility

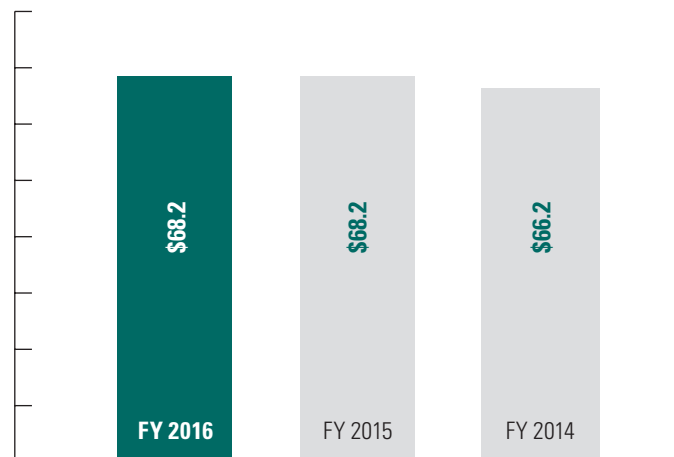
The System’s investment performance for the fiscal year ended June 30, 2016, was 1.9%, and partially contributed to an increase in the net position restricted for benefits. As noted in this section, in the Introductory Section and in the Chief Investment Officer’s letter in the Investment Section, the investment markets continue to be extremely volatile.

The amount of assets and reserves required to meet future obligations is based, in part, on estimated or expected long-term investment returns. While management cannot predict future market returns, the changes in assets reflect the volatility in the market.

### SYSTEM NET ASSETS

AT JUNE 30

(EXPRESSED IN BILLIONS)



### REQUEST FOR INFORMATION

This financial report is designed to provide an overview of the System’s finances. Questions concerning the information provided in this report or requests for additional information should be addressed to the Chief Financial Officer, Virginia Retirement System, P.O. Box 2500, Richmond, VA 23218-2500.

**VIRGINIA RETIREMENT SYSTEM STATEMENT OF FIDUCIARY NET POSITION:  
DEFINED BENEFIT PENSION TRUST FUNDS AND OTHER EMPLOYEE BENEFIT TRUST FUNDS**

AS OF JUNE 30, 2016, WITH COMPARATIVE INFORMATION AS OF JUNE 30, 2015

	Pension Trust Funds				
	Virginia Retirement System	State Police Officers' Retirement System	Virginia Law Officers' Retirement System	Judicial Retirement System	Total Pension Trust Funds
<b>Assets:</b>					
Cash (Note 5)	\$ 161,577	\$ 1,853	\$ 3,066	\$ 1,184	\$ 167,680
Receivables:					
Contributions	261,781	1,433	4,055	1,509	268,778
Interest and Dividends	205,760	2,359	3,905	1,508	213,532
Receivable for Security Transactions	1,136,206	13,025	21,559	8,324	1,179,114
Other Investment Receivables	299,173	3,430	5,678	2,192	310,473
Other Receivables	502	8	1	–	511
<b>Total Receivables</b>	<b>1,903,422</b>	<b>20,255</b>	<b>35,198</b>	<b>13,533</b>	<b>1,972,408</b>
Investments: (Note 5)					
Bonds and Mortgage Securities	19,507,081	223,662	370,204	142,932	20,243,879
Stocks	19,894,274	228,101	377,552	145,769	20,645,696
Fixed Income Commingled Funds	1,105,595	12,677	20,982	8,101	1,147,355
Index and Pooled Funds	7,952,334	91,179	150,919	58,268	8,252,700
Real Estate	7,187,577	82,410	136,405	52,665	7,459,057
Private Equity	8,488,507	97,327	161,094	62,197	8,809,125
Short-Term Investments	417,951	4,792	7,932	3,062	433,737
Hybrid Defined Contribution Investments	73,031	–	–	882	73,913
<b>Total Investments</b>	<b>64,626,350</b>	<b>740,148</b>	<b>1,225,088</b>	<b>473,876</b>	<b>67,065,462</b>
Collateral on Loaned Securities	4,709,368	53,996	89,374	34,506	4,887,244
Property, Plant, Furniture and Equipment (Note 6)	32,097	–	–	–	32,097
<b>Total Assets</b>	<b>71,432,814</b>	<b>816,252</b>	<b>1,352,726</b>	<b>523,099</b>	<b>74,124,891</b>
<b>Liabilities:</b>					
Retirement Benefits Payable	332,106	5,092	8,068	3,371	348,637
Refunds Payable	5,227	–	15	–	5,242
Accounts Payable and Accrued Expenses	26,865	268	444	171	27,748
Compensated Absences Payable	2,455	–	–	–	2,455
Insurance Premiums and Claims Payable	–	–	–	–	–
Payable for Security Transactions	1,966,289	22,245	36,819	14,216	2,039,569
Other Investment Payables	345,659	3,963	6,560	2,533	358,715
Other Payables	15,936	–	–	–	15,936
Obligations Under Security Lending Program	4,709,368	53,996	89,374	34,506	4,887,244
<b>Total Liabilities</b>	<b>7,403,905</b>	<b>85,564</b>	<b>141,280</b>	<b>54,797</b>	<b>7,685,546</b>
<b>Net Position – Restricted for Benefits (Note 4)</b>	<b>\$ 64,028,909</b>	<b>\$ 730,688</b>	<b>\$ 1,211,446</b>	<b>\$ 468,302</b>	<b>\$ 66,439,345</b>

The accompanying Notes to Financial Statements are an integral part of this statement.

(EXPRESSED IN THOUSANDS)

Other Employee Benefit Trust Funds						Totals	
Group Life Insurance	Retiree Health Insurance Credit	Disability Insurance Trust Fund	Line of Duty Act Trust Fund	Virginia Local Disability Program	Total Other Employee Benefit Plans	2016	2015
\$ 3,207	\$ 429	\$ 1,016	\$ 6	\$ —	\$ 4,658	\$ 172,338	\$ 13,570
18,607	15,905	1,434	32	775	36,753	305,531	298,411
4,084	547	1,294	7	—	5,932	219,464	224,154
22,547	3,018	7,145	41	—	32,751	1,211,865	1,451,027
5,938	795	1,882	10	—	8,625	319,098	176,313
—	6	7,174	348	7	7,535	8,046	11,569
<b>51,176</b>	<b>20,271</b>	<b>18,929</b>	<b>438</b>	<b>782</b>	<b>91,596</b>	<b>2,064,004</b>	<b>2,161,474</b>
387,169	51,824	122,697	710	—	562,400	20,806,279	21,007,185
394,854	52,853	125,132	724	—	573,563	21,219,259	23,686,079
21,944	2,936	6,954	40	—	31,874	1,179,229	745,010
157,835	21,127	50,019	289	—	229,270	8,481,970	6,978,380
142,656	19,095	45,209	261	—	207,221	7,666,278	6,983,580
168,477	22,551	53,392	308	—	244,728	9,053,853	8,154,219
8,296	1,110	2,629	15	—	12,050	445,787	572,381
—	—	—	—	—	—	73,913	23,253
<b>1,281,231</b>	<b>171,496</b>	<b>406,032</b>	<b>2,347</b>	<b>—</b>	<b>1,861,106</b>	<b>68,926,568</b>	<b>68,150,087</b>
93,470	12,511	29,621	171	—	135,773	5,023,017	3,378,240
—	—	—	—	—	—	32,097	29,889
<b>1,429,084</b>	<b>204,707</b>	<b>455,598</b>	<b>2,962</b>	<b>782</b>	<b>2,093,133</b>	<b>76,218,024</b>	<b>73,733,260</b>
—	—	—	—	—	—	348,637	324,173
—	178	—	—	—	178	5,420	4,148
464	12,735	3,773	1	—	16,973	44,721	44,389
—	—	—	—	—	—	2,455	2,819
64,856	—	—	—	—	64,856	64,856	64,072
38,507	5,154	12,203	70	—	55,934	2,095,503	1,424,730
6,861	918	2,174	12	—	9,965	368,680	305,800
—	—	—	—	782	782	16,718	2,034
93,470	12,511	29,622	171	—	135,774	5,023,018	3,378,981
<b>204,158</b>	<b>31,496</b>	<b>47,772</b>	<b>254</b>	<b>782</b>	<b>284,462</b>	<b>7,970,008</b>	<b>5,551,146</b>
<b>\$ 1,224,926</b>	<b>\$ 173,211</b>	<b>\$ 407,826</b>	<b>\$ 2,708</b>	<b>\$ —</b>	<b>\$ 1,808,671</b>	<b>\$ 68,248,016</b>	<b>\$ 68,182,114</b>

**VIRGINIA RETIREMENT SYSTEM STATEMENT OF CHANGES IN FIDUCIARY NET POSITION:  
DEFINED BENEFIT PENSION TRUST FUNDS AND OTHER EMPLOYEE BENEFIT TRUST FUNDS**

FOR THE YEAR ENDED JUNE 30, 2016, WITH COMPARATIVE INFORMATION FOR THE YEAR ENDED JUNE 30, 2015

	Pension Trust Funds				
	Virginia Retirement System	State Police Officers' Retirement System	Virginia Law Officers' Retirement System	Judicial Retirement System	Total Pension Trust Funds
<b>Additions:</b>					
Contributions:					
Members	\$ 817,652	\$ 5,759	\$ 17,574	\$ 1,154	\$ 842,139
Member Paid by Employers	23,463	–	–	2,349	25,812
Employers	2,352,150	33,655	79,392	41,909	2,507,106
<b>Total Contributions</b>	<b>3,193,265</b>	<b>39,414</b>	<b>96,966</b>	<b>45,412</b>	<b>3,375,057</b>
<b>Investment Income:</b>					
Interest, Dividends and Other Investment Income	1,221,940	13,955	22,723	8,736	1,267,354
Net Appreciation/(Depreciation) in Fair Value of Investments	221,421	2,643	4,602	1,870	230,536
Securities Lending Income	33,046	377	616	237	34,276
Total Investment Income Before Investment Expenses	1,476,407	16,975	27,941	10,843	1,532,166
<b>Investment Expenses:</b>					
Direct Investment Expenses	(376,940)	(4,292)	(6,965)	(2,676)	(390,873)
Securities Lending Management Fees and Borrower Rebates	(4,238)	(48)	(79)	(30)	(4,395)
Total Investment Expenses	(381,178)	(4,340)	(7,044)	(2,706)	(395,268)
<b>Net Investment Income</b>	<b>1,095,229</b>	<b>12,635</b>	<b>20,897</b>	<b>8,137</b>	<b>1,136,898</b>
Miscellaneous Revenue	1,789	–	–	–	1,789
Transfers In	–	–	–	–	–
<b>Total Additions</b>	<b>4,290,283</b>	<b>52,049</b>	<b>117,863</b>	<b>53,549</b>	<b>4,513,744</b>
<b>Deductions:</b>					
Retirement Benefits	4,169,852	53,515	92,270	41,341	4,356,978
Refunds of Member Contributions	99,444	584	4,524	–	104,552
Insurance Premiums and Claims	–	–	–	–	–
Retiree Health Insurance Reimbursements	–	–	–	–	–
Disability Insurance Premiums and Benefits	–	–	–	–	–
Line of Duty Benefits	–	–	–	–	–
Administrative Expenses	39,695	591	938	363	41,587
Other Expenses	2,263	23	38	15	2,339
Transfers Out	–	–	–	–	–
<b>Total Deductions</b>	<b>4,311,254</b>	<b>54,713</b>	<b>97,770</b>	<b>41,719</b>	<b>4,505,456</b>
Net Increase (Decrease)	(20,971)	(2,664)	20,093	11,830	8,288
Net Position – Restricted for Benefits – Beginning of Year	64,049,880	733,352	1,191,353	456,472	66,431,057
<b>Net Position – Restricted for Benefits – End of Year</b>	<b>\$ 64,028,909</b>	<b>\$ 730,688</b>	<b>\$ 1,211,446</b>	<b>\$ 468,302</b>	<b>\$ 66,439,345</b>

The accompanying Notes to Financial Statements are an integral part of this statement.

(EXPRESSED IN THOUSANDS)

Other Employee Benefit Trust Funds						Totals	
Group Life Insurance	Retiree Health Insurance Credit	Disability Insurance Trust Fund	Line of Duty Act Trust Fund	Virginia Local Disability Program	Total Other Employee Benefit Plans	2016	2015
\$ 127,846	\$ —	\$ —	\$ —	\$ —	\$ 127,846	\$ 969,985	\$ 906,129
—	—	—	—	—	—	25,812	53,541
86,411	151,916	24,497	10,881	1,341	275,046	2,782,152	2,676,902
<b>214,257</b>	<b>151,916</b>	<b>24,497</b>	<b>10,881</b>	<b>1,341</b>	<b>402,892</b>	<b>3,777,949</b>	<b>3,636,572</b>
23,715	2,932	7,793	84	—	34,524	1,301,878	1,312,047
6,405	323	1,358	63	—	8,149	238,685	2,063,169
647	79	210	2	—	938	35,214	24,940
30,767	3,334	9,361	149	—	43,611	1,575,777	3,400,156
(7,238)	(903)	(2,400)	(26)	—	(10,567)	(401,440)	(398,991)
(84)	(10)	(27)	2	—	(119)	(4,514)	(3,098)
(7,322)	(913)	(2,427)	(24)	—	(10,686)	(405,954)	(402,089)
<b>23,445</b>	<b>2,421</b>	<b>6,934</b>	<b>125</b>	<b>—</b>	<b>32,925</b>	<b>1,169,823</b>	<b>2,998,067</b>
—	—	659	—	10	669	2,458	2,075
—	—	—	—	—	—	—	10
<b>237,702</b>	<b>154,337</b>	<b>32,090</b>	<b>11,006</b>	<b>1,351</b>	<b>436,486</b>	<b>4,950,230</b>	<b>6,636,724</b>
—	—	—	—	—	—	4,356,978	4,114,189
—	—	—	—	—	—	104,552	106,165
173,843	—	—	—	—	173,843	173,843	175,760
—	153,914	—	—	—	153,914	153,914	147,989
—	—	37,996	—	1,313	39,309	39,309	37,731
—	—	—	8,545	—	8,545	8,545	8,213
81	401	774	275	38	1,569	43,156	42,267
1,469	5	12	206	—	1,692	4,031	4,018
—	—	—	—	—	—	—	10
<b>175,393</b>	<b>154,320</b>	<b>38,782</b>	<b>9,026</b>	<b>1,351</b>	<b>378,872</b>	<b>4,884,328</b>	<b>4,636,342</b>
62,309	17	(6,692)	1,980	—	57,614	65,902	2,000,382
1,162,617	173,194	414,518	728	—	1,751,057	68,182,114	66,181,732
<b>\$ 1,224,926</b>	<b>\$ 173,211</b>	<b>\$ 407,826</b>	<b>\$ 2,708</b>	<b>\$ —</b>	<b>\$ 1,808,671</b>	<b>\$ 68,248,016</b>	<b>\$ 68,182,114</b>

## VIRGINIA RETIREMENT SYSTEM COMBINING STATEMENT OF FIDUCIARY NET POSITION

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	State Employee Plan	Teacher Employee Plan	Political Subdivision Plans	Hybrid Defined Contribution Plan	Total VRS Plans
<b>Assets:</b>					
Cash (Note 5)	\$ 41,418	\$ 76,185	\$ 43,974	\$ —	\$ 161,577
Receivables:					
Contributions	50,706	144,247	64,639	2,189	261,781
Interest and Dividends	52,744	97,018	55,998	—	205,760
Receivable for Security Transactions	291,203	535,645	309,175	183	1,136,206
Other Investment Receivables	76,688	141,063	81,422	—	299,173
Other Receivables	128	236	137	1	502
<b>Total Receivables</b>	<b>471,469</b>	<b>918,209</b>	<b>511,371</b>	<b>2,373</b>	<b>1,903,422</b>
Investments: (Note 5)					
Bonds and Mortgage Securities	5,000,364	9,197,756	5,308,961	—	19,507,081
Stocks	5,099,616	9,380,320	5,414,338	—	19,894,274
Fixed Income Commingled Funds	283,404	521,297	300,894	—	1,105,595
Index and Pooled Funds	2,038,468	3,749,594	2,164,272	—	7,952,334
Real Estate	1,842,434	3,389,004	1,956,139	—	7,187,577
Private Equity	2,175,908	4,002,404	2,310,195	—	8,488,507
Short-Term Investments	107,136	197,067	113,748	—	417,951
Hybrid Defined Contribution Investments	—	—	—	73,031	73,031
<b>Total Investments</b>	<b>16,547,330</b>	<b>30,437,442</b>	<b>17,568,547</b>	<b>73,031</b>	<b>64,626,350</b>
Collateral on Loaned Securities	1,207,180	2,220,507	1,281,681	—	4,709,368
Property, Plant, Furniture and Equipment (Note 6)	8,228	15,134	8,735	—	32,097
<b>Total Assets</b>	<b>18,275,625</b>	<b>33,667,477</b>	<b>19,414,308</b>	<b>75,404</b>	<b>71,432,814</b>
<b>Liabilities:</b>					
Retirement Benefits Payable	95,191	165,746	71,169	—	332,106
Refunds Payable	1,351	1,876	2,000	—	5,227
Accounts Payable and Accrued Expenses	6,886	12,667	7,312	—	26,865
Compensated Absences Payable	629	1,158	668	—	2,455
Insurance Premiums and Claims Payable	—	—	—	—	—
Payable for Security Transactions	504,030	927,122	535,137	—	1,966,289
Other Investment Payables	88,605	162,981	94,073	—	345,659
Other Payables	3,911	7,209	4,162	654	15,936
Obligations Under Security Lending Program	1,207,180	2,220,507	1,281,681	—	4,709,368
<b>Total Liabilities</b>	<b>1,907,783</b>	<b>3,499,266</b>	<b>1,996,202</b>	<b>654</b>	<b>7,403,905</b>
<b>Net Position – Restricted for Benefits (Note 4)</b>	<b>\$ 16,367,842</b>	<b>\$ 30,168,211</b>	<b>\$ 17,418,106</b>	<b>\$ 74,750</b>	<b>\$ 64,028,909</b>

The accompanying Notes to Financial Statements are an integral part of this statement.



## VIRGINIA RETIREMENT SYSTEM COMBINING STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

FOR THE YEAR ENDED JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	State Employee Plan	Teacher Employee Plan	Political Subdivision Plans	Hybrid Defined Contribution Plan	Total VRS Plans
<b>Additions:</b>					
Contributions:					
Members	\$ 200,061	\$ 365,794	\$ 223,114	\$ 28,683	\$ 817,652
Member Paid by Employers	123	14,520	8,820	–	23,463
Employers	722,617	1,062,338	543,947	23,248	2,352,150
<b>Total Contributions</b>	<b>922,801</b>	<b>1,442,652</b>	<b>775,881</b>	<b>51,931</b>	<b>3,193,265</b>
Interest, Dividends and Other Investment Income	309,415	576,666	335,854	5	1,221,940
Net Appreciation/(Depreciation) in Fair Value of Investments	55,615	103,646	60,362	1,798	221,421
Securities Lending Income	8,367	15,596	9,083	–	33,046
Total Investment Income Before Investment Expenses	373,397	695,908	405,299	1,803	1,476,407
Investment Expenses					
Direct Investment Expenses	(95,158)	(177,204)	(103,139)	(1,439)	(376,940)
Securities Lending Management Fees and Borrower Rebates	(1,073)	(2,000)	(1,165)	–	(4,238)
Total Investment Expenses	(96,231)	(179,204)	(104,304)	(1,439)	(381,178)
<b>Net Investment Income</b>	<b>277,166</b>	<b>516,704</b>	<b>300,995</b>	<b>364</b>	<b>1,095,229</b>
Miscellaneous Revenue	456	846	487	–	1,789
Transfers In	–	–	–	–	–
<b>Total Additions</b>	<b>1,200,423</b>	<b>1,960,202</b>	<b>1,077,363</b>	<b>52,295</b>	<b>4,290,283</b>
<b>Deductions:</b>					
Retirement Benefits	1,195,198	2,081,069	893,585	–	4,169,852
Refunds of Member Contributions	25,240	35,067	37,380	1,757	99,444
Insurance Premiums and Claims	–	–	–	–	–
Retiree Health Insurance Reimbursements	–	–	–	–	–
Disability Insurance Premiums and Benefits	–	–	–	–	–
Line of Duty Benefits	–	–	–	–	–
Administrative Expenses	10,140	18,859	10,696	–	39,695
Other Expenses	578	1,068	617	–	2,263
Transfers Out	–	–	–	–	–
<b>Total Deductions</b>	<b>1,231,156</b>	<b>2,136,063</b>	<b>942,278</b>	<b>1,757</b>	<b>4,311,254</b>
Net Increase (Decrease)	(30,733)	(175,861)	135,085	50,538	(20,971)
Net Position – Restricted for Benefits – Beginning of Year	16,398,575	30,344,072	17,283,021	24,212	64,049,880
<b>Net Position – Restricted for Benefits – End of Year</b>	<b>\$ 16,367,842</b>	<b>\$30,168,211</b>	<b>\$ 17,418,106</b>	<b>\$ 74,750</b>	<b>\$64,028,909</b>

The accompanying Notes to Financial Statements are an integral part of this statement.

## JUDICIAL RETIREMENT SYSTEM COMBINING STATEMENT OF FIDUCIARY NET POSITION

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	Judicial Retirement System	Hybrid Defined Contribution Plan	Total JRS Plans
<b>Assets:</b>			
Cash (Note 5)	\$ 1,184	\$ —	\$ 1,184
Receivables:			
Contributions	1,478	31	1,509
Interest and Dividends	1,508	—	1,508
Receivable for Security Transactions	8,324	—	8,324
Other Investment Receivables	2,192	—	2,192
Other Receivables	—	—	—
<b>Total Receivables</b>	<b>13,502</b>	<b>31</b>	<b>13,533</b>
Investments: (Note 5)			
Bonds and Mortgage Securities	142,932	—	142,932
Stocks	145,769	—	145,769
Fixed Income Commingled Funds	8,101	—	8,101
Index and Pooled Funds	58,268	—	58,268
Real Estate	52,665	—	52,665
Private Equity	62,197	—	62,197
Short-Term Investments	3,062	—	3,062
Hybrid Defined Contribution Investments	—	882	882
<b>Total Investments</b>	<b>472,994</b>	<b>882</b>	<b>473,876</b>
Collateral on Loaned Securities	34,506	—	34,506
Property, Plant, Furniture and Equipment (Note 6)	—	—	—
<b>Total Assets</b>	<b>522,186</b>	<b>913</b>	<b>523,099</b>
Liabilities:			
Retirement Benefits Payable	3,371	—	3,371
Refunds Payable	—	—	—
Accounts Payable and Accrued Expenses	171	—	171
Compensated Absences Payable	—	—	—
Insurance Premiums and Claims Payable	—	—	—
Payable for Security Transactions	14,216	—	14,216
Other Investment Payables	2,533	—	2,533
Other Payables	—	—	—
Obligations Under Security Lending Program	34,506	—	34,506
<b>Total Liabilities</b>	<b>54,797</b>	<b>—</b>	<b>54,797</b>
<b>Net Position – Restricted for Benefits (Note 4)</b>	<b>\$ 467,389</b>	<b>\$ 913</b>	<b>\$ 468,302</b>

The accompanying Notes to Financial Statements are an integral part of this statement.

## JUDICIAL RETIREMENT SYSTEM COMBINING STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

FOR THE YEAR ENDED JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	Judicial Retirement System	Hybrid Defined Contribution Plan	Total JRS Plans
<b>Additions:</b>			
Contributions:			
Members	\$ 887	\$ 267	\$ 1,154
Member Paid by Employers	2,349	–	2,349
Employers	41,502	407	41,909
<b>Total Contributions</b>	<b>44,738</b>	<b>674</b>	<b>45,412</b>
Investment Income:			
Interest, Dividends and Other Investment Income	8,736	–	8,736
Net Appreciation/(Depreciation) in Fair Value of Investments	1,843	27	1,870
Securities Lending Income	237	–	237
Total Investment Income Before Investment Expenses	10,816	27	10,843
Investment Expenses:			
Direct Investment Expenses	(2,674)	(2)	(2,676)
Securities Lending Management Fees and Borrower Rebates	(30)	–	(30)
Total Investment Expenses	(2,704)	(2)	(2,706)
<b>Net Investment Income</b>	<b>8,112</b>	<b>25</b>	<b>8,137</b>
Miscellaneous Revenue	–	–	–
Transfers In	–	–	–
<b>Total Additions</b>	<b>52,850</b>	<b>699</b>	<b>53,549</b>
<b>Deductions:</b>			
Retirement Benefits	41,341	–	41,341
Refunds of Member Contributions	–	–	–
Insurance Premiums and Claims	–	–	–
Retiree Health Insurance Reimbursements	–	–	–
Disability Insurance Premiums and Benefits	–	–	–
Line of Duty Benefits	–	–	–
Administrative Expenses	363	–	363
Other Expenses	15	–	15
Transfers Out	–	–	–
<b>Total Deductions</b>	<b>41,719</b>	<b>–</b>	<b>41,719</b>
Net Increase (Decrease)	11,131	699	11,830
Net Position – Restricted for Benefits – Beginning of Year	456,258	214	456,472
<b>Net Position – Restricted for Benefits – End of Year</b>	<b>\$ 467,389</b>	<b>\$ 913</b>	<b>\$ 468,302</b>

The accompanying Notes to Financial Statements are an integral part of this statement.

# Notes to Financial Statements

JUNE 30, 2016 AND 2015

## 1. Summary of Significant Financial Policies, Administration and Management

### A. FINANCIAL REPORTING ENTITY

The Virginia Retirement System (the System) is an independent agency of the Commonwealth of Virginia. The System administers two defined benefit retirement benefit structures, Plan 1 and Plan 2, and a hybrid retirement benefit structure. Although all of the following systems have employees with Plan 1 and Plan 2 benefits, only the VRS and JRS systems have employees with hybrid benefits. All of these systems are defined as pension trust funds:

- Virginia Retirement System (VRS) for state employees, teachers, other eligible school division employees, employees of participating political subdivisions and other qualifying employees.
- State Police Officers' Retirement System (SPORS) for state police officers.
- Virginia Law Officers' Retirement System (VaLORS) for non-local government Virginia law officers other than state police officers.
- Judicial Retirement System (JRS) for judges of state courts of record, state district courts and other qualifying employees.

The System also administers the Group Life Insurance Fund, Retiree Health Insurance Credit Fund, a Disability Insurance Trust Fund for state employees, the Virginia Local Disability Program Trust Fund and the funding of the Line of Duty Act Trust Fund. All of these funds are defined as other employee benefit trust funds. Both the pension and other employee benefit trust funds are classified as fiduciary funds and are included in the basic financial

statements of the Commonwealth of Virginia. As required by generally accepted accounting principles (GAAP), the System's financial statements include all funds for which financial transactions are recorded in its accounting system and for which the Board of Trustees exercises administrative responsibility.

Effective January 1, 1997, the *Constitution of Virginia* was amended to strengthen the independence of the Virginia Retirement System. As set forth in Section 11 of Article X, the funds of the retirement system shall be deemed separate and independent trust funds, segregated from all other funds of the Commonwealth, and invested and administered solely in the interests of members, retirees and beneficiaries.

### B. ADMINISTRATION AND MANAGEMENT

#### 1. Pension Plans and Other Employee Benefit Plans.

The Board of Trustees (the Board) is responsible for the general administration and operation of the pension plans and other employee benefit plans.

The Board has full power to invest and reinvest the trust funds of the System through the adoption of investment policies and guidelines that fulfill the Board's investment objective to maximize long-term investment returns while targeting an acceptable level of risk.

The Board consists of five members appointed by the Governor and four members appointed by the Joint Rules Committee of the Virginia General Assembly, all subject to confirmation by the General Assembly.

The Board appoints a director to serve as the chief administrative officer of the System and a chief investment officer to direct, manage and administer the investment of the System's funds. The Board also retains outside managers to advise and assist in the implementation of these policies. The Board of Trustees has appointed BNY Mellon as the custodian of designated assets of the System.

The Virginia Retirement System (VRS), the State Police Officers' Retirement System (SPORS), the Virginia Law Officers' Retirement System (VaLORS) and the Judicial Retirement System (JRS) are administered in accordance with Title 51.1, Chapters 1, 2, 2.1, 3 and 4, respectively, of the *Code of Virginia* (1950), as amended. The Group Life Insurance Fund, the Retiree Health Insurance Credit Fund, the Disability Insurance Trust Fund for state employees and the Virginia Local Disability Program Trust Fund are administered in accordance with Title 51.1, Chapters 5, 14, 11 and 11.1, respectively, of the *Code of Virginia* (1950), as amended. The Line of Duty Act Trust Fund was created by and is administered in accordance with the provisions of the 2010 Appropriation Act (Item 258, Chapter 874, 2010 Virginia Acts of Assembly) and most recently confirmed in the 2016 Appropriation Act (Item 269, Chapter 780, 2016 Virginia Acts of Assembly).

The Optional Life Insurance Fund is administered in accordance with Sections 51.1- 512 and 51.1- 512.1 of the *Code of Virginia* (1950), as amended. Optional life insurance is an insured product, and the premium collection is handled by the insurer. The Board provides only oversight for the program with limited administrative responsibility.

State statutes governing the plans administered by the System may be amended only by the General Assembly of Virginia. Additional information about the plans is provided in Notes 2 and 3.

### **Fiduciary Responsibility of the VRS**

**Board of Trustees** – As stated in Section 51.1-124.30(C) of the *Code of Virginia*:

“... the Board shall invest the assets of the Retirement System 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 like aims.” Accordingly, the Board must sufficiently diversify the portfolio to minimize the risk of large losses unless, under the circumstances, it is clearly prudent not to do so. Primary risk measures are volatility in the plan's assets, funded status and contribution rates.

**2. Other Plans Established by the Commonwealth of Virginia.** The Board has oversight, but limited administrative and investment responsibility, for several other plans of the Commonwealth. Because of the Board's limited role, the financial transactions of these other plans are not recorded in the System's financial statements. Therefore, these programs are not included in the System's Basic Financial Statements:

- Commonwealth of Virginia 457 Deferred Compensation Plan and the Virginia Cash Match Plan for state employees and employees of participating political subdivisions. Additional information about the 457 and Cash Match Plans is provided in the Statistical Section.
- Commonwealth of Virginia (COV) Voluntary Group Long-Term Care Insurance Program, an employee-paid program for eligible employees.
- Defined contribution plans, referred to as the Optional Retirement Plans 1 and 2 for political appointees, certain employees of public institutions of higher education and certain employees of public school divisions and teaching hospitals.
- Commonwealth Health Research Fund, which provides financial support for human health research on behalf of citizens of the Commonwealth.

- Commonwealth’s Attorneys Training Fund, which provides financial support for the training of Commonwealth’s Attorneys and their staffs.
- Volunteer Firefighters’ and Rescue Squad Workers’ Service Award Fund, which provides service awards to eligible volunteer firefighters and rescue squad workers.

### C. ACCOUNTING BASIS

The accounting and presentation of the pension plans and other employee benefit plans use the flow of economic resources measurement focus and the accrual basis of accounting.

Under the accrual basis, revenues are recognized when earned, and expenses are recognized when liabilities are incurred, regardless of the timing of related cash flows. Member and employer contributions are recognized as revenues when due, pursuant to formal commitments as well as statutory or contractual requirements. Investment income is recognized as earned by the plans. Benefits and refunds are recognized when due and payable in accordance with the terms of the plans.

### D. ACTUARIAL BASIS AND CONTRIBUTION RATES

The funding policy for the pension plans provides for periodic employer contributions at actuarially determined rates, which will remain relatively level over time as a percentage of payroll and will accumulate sufficient assets to meet the cost of all benefits when due. Member and employer contributions are required by Title 51.1 of the *Code of Virginia* (1950), as amended.

Contribution rates are developed using the entry age normal cost method for both normal cost and amortization of the unfunded actuarial accrued liability. Gains and losses are reflected in the unfunded Actuarial Accrued Liability (AAL), which is being amortized as a level percentage of covered payroll within 30 years or less.

In addition to determining contribution requirements, actuarial computations present an estimate of the discounted present value of the prospective accrued liability contributions that employers will have to pay to ensure that such contributions – when combined with the assets on hand, the normal contributions to be made in the future by employers and members, and investment income – will be sufficient to pay all benefits due to current members in the future as well as to annuitants and designated beneficiaries. Actuarial valuations estimate the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include future employment, mortality and the use of the benefit. Actuarially determined amounts are subject to revision as actual results are compared with past expectations and new estimates are made about the future. The Required Supplemental Schedules follow the Notes to Financial Statements. For pension plans, the schedules present historical information about the increase or decrease in the employer’s fiduciary net position over time related to the employer’s net pension liability. For other employee benefit plans, the schedules present historical information about the increase or decrease of the actuarial values of the plans’ assets over time relative to the AAL for benefits.

## E. GOVERNMENTAL ACCOUNTING STANDARDS BOARD (GASB) STATEMENTS

- Governmental Accounting Standards Board (GASB) Statement No. 40, *Deposit and Investment Risk Disclosures*, requires disclosures related to deposits, authorized investments and investment risk. Required investment risk disclosures address interest rate risk; credit risk, to include custodial credit risk and concentrations of credit risk; and foreign currency risk. The statement also requires disclosures of custodial credit risk and foreign currency risk for depository accounts. Information about the System's deposits and investment risk is provided in Note 5.
- GASB Statement No. 43, *Financial Reporting for Post-employment Benefit Plans Other Than Pension Plans*, requires additional reporting and disclosures for other post-employment benefits (OPEBs). The statement became effective for VRS-administered OPEBs beginning with the fiscal year ended June 30, 2007. The Required Supplemental Schedules of funding progress and employer contributions for other employee benefit plans present information about contributions in comparison to the annual required contribution (ARC), which is actuarially determined in accordance with the parameters of GASB Statement No. 43. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover the normal cost for each year and amortize any unfunded actuarial liabilities or funding excess over a period not to exceed 30 years.
- GASB Statement No. 51, *Accounting and Financial Reporting for Intangible Assets*, establishes a "specific conditions" approach to recognizing intangible assets, specifically computer software. The statement became effective beginning with the fiscal year ended June 30, 2010. Capitalized costs are incurred during the Application Development Stage and consist of design of chosen path, including software configuration and software interfaces; coding; installation of hardware; testing, including the parallel processing phase; and data conversion to the extent that the data are necessary to make the computer software operational. Other costs incurred before or after the Application Development Stage are expensed when incurred. Additional disclosures resulting from the implementation of this statement are presented in Note 6.
- GASB Statement No. 53, *Accounting and Financial Reporting for Derivative Instruments*, establishes accounting and financial reporting standards for governments that enter into derivative instruments. The statement became effective beginning with the fiscal year ended June 30, 2010. The objective of the statement is to enhance the usefulness and comparability of derivative financial instrument information reported by state and local governments. It provides a comprehensive framework for the measurement, recognition and disclosure of derivative instrument transactions. Additional disclosures resulting from the implementation of this statement are presented in Note 5.

- GASB Statement No. 59, *Financial Instruments Omnibus*, clarifies the definition of items that should be included in the reporting required by Statement No. 53. The statement became effective beginning with the fiscal year ended June 30, 2010. This is reflected in the disclosures in Note 5.
- GASB Statement No. 63, *Financial Reporting of Deferred Outflows of Resources, Deferred Inflows of Resources and Net Position*, establishes standards for reporting deferred outflows of resources, deferred inflows of resources and net position. The statement became effective beginning with the fiscal year ended June 30, 2013. The financial statement presentations have been updated to reflect the impact of this standard.
- GASB Statement No. 64, *Derivative Instruments: Application of Hedge Accounting Termination Provisions – An Amendment of GASB Statement No. 53*, clarifies the circumstances in which hedge accounting should continue when a swap counterparty, or a swap counterparty's credit support provider, is replaced. The statement became effective beginning with the fiscal year ended June 30, 2012. This is reflected in the disclosures in Note 5.
- GASB Statement No. 67, *Financial Reporting for Pension Plans*, replaces the requirements of Statements No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans*, and No. 50, *Pension Disclosures*, as they relate to pension plans that are administered through trusts and that meet certain criteria. The statement became effective beginning with the fiscal year ended June 30, 2014, and required changes in the presentation of the financial statements, notes to the financial statements and required supplementary information. Significant changes include an actuarial calculation of total and net pension liability. These are presented in Note 2.C. The changes also include comprehensive footnote disclosure regarding the pension liability, the sensitivity of the net pension liability to the discount rate and increased investment activity disclosures. The implementation of GASB Statement No. 67 did not significantly impact the accounting for accounts receivable and investment balances.
- GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, an amendment of GASB Statement No. 27. The statement became effective for fiscal years beginning after June 30, 2014, and required changes in the presentation of the financial statements, notes to the financial statements and required supplementary information for the employers that participate in the VRS-administered pension plans. The information reported by the employers is their share of the information reported by VRS in fiscal year 2014 under GASB Statement No. 67.
- GASB Statement No. 71, *Pension Transition for Contributions Made Subsequent to the Measurement Date*, an amendment of GASB Statement No. 68, became effective simultaneously with the provision of GASB Statement No. 68. The statement clarified the adjustments necessary to the beginning deferred outflows of resources and limited that adjustment to contributions made subsequent to the measurement date.
- GASB Statement No. 72, *Fair Value Measurement and Application*. The Statement became effective for the fiscal years beginning after June 15, 2015. The Statement addresses accounting and financial reporting issues related to fair value measurements. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Statement provides guidance for determining a fair value measurement for financial reporting



purposes. The Statement also provides guidance for applying fair value to certain investments and disclosures related to all fair value measurements. This new information is presented in Note 5.B.2 and Figures 2.16 and 2.17.

- GASB Statement No. 79, *Certain External Investment Pools and Pool Participants*. The Statement became effective for the fiscal years beginning after June 30, 2015. The Statement addresses accounting and financial reporting for certain external investment pool and pool participants. Specifically, it establishes criteria for an external investment pool to qualify for making the election to measure all investments at amortized cost for financial reporting purposes. This Statement impacts the VRS presentations related to the short-term investments in the Commonwealth of Virginia's Local Government Investment Pool.
- GASB Statement No. 82, *Pension Issues*, an amendment of GASB Statements No. 67, No. 68, and No. 73. This Statement addressed certain issues that were raised during the implementation of these Standards. Specifically, the Statement addresses the issues regarding (1) the presentation of payroll-related measures in the required supplementary information, (2) the selection of assumptions and the treatment of deviations from guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements. While this Statement was effective for reporting periods beginning after June 15, 2016, VRS has elected to implement it early and provided disclosure guidance to participating employers based on this Statement.

## F. INVESTMENTS

**1. Investment Valuation.** Cash equivalents and other short-term, highly liquid investments of the System are reported at amortized cost as follows:

- 1) Money market investments and participating interest-earning investment contracts that have a remaining maturity at the time of purchase of one year or less are reported at amortized cost.
- 2) The System is a party to short-term contracts to buy and sell securities known as repurchase and reverse repurchase agreements. Agreements to repurchase securities that have been sold to a counterparty are valued at the contract price, exclusive of interest, at which the securities will be repurchased. Securities purchased pursuant to agreements to resell are carried at fair value.
- 3) The System participates in the Commonwealth's Local Government Investment Pool (LGIP), which is managed by the State Treasurer. The State Treasurer reports that the LGIP complies with or exceeds all of the criteria in GASB Statement No. 79, *Accounting and Reporting for Certain External Investment Pools and Pool Participants*, to be eligible to use amortized cost for financial reporting and transacting shares. The System likewise measures its investment in the LGIP at amortized cost as per Statement 79. The LGIP imposes no limitations or restrictions on the System's ability to withdraw invested funds.

Long-term investments of the System are reported at fair value. Fair value is the amount that one can reasonably expect to receive for an investment in a current sale between a willing buyer and a willing seller; that is, other than a forced or liquidation sale. The fair value for the System's defined benefit investments is determined by the System's master custodian, BNY Mellon, from its Global Pricing System. This system assigns a price source, based on asset type and the vendor pricing products to which the master custodian subscribes, for every security held immediately following its acquisition. The master custodian monitors prices supplied by these sources daily.

When a pricing source is unable to provide a price, quotes are sought from major investment brokers and market-making dealers; or internal calculations are applied, if feasible. As a last resort, the master custodian will contact investment managers for a price. The master custodian prices commingled funds, partnerships and real estate assets from statements received from the funds, partnerships or investment managers.

The pricing sources used by the master custodian provide daily prices for equity securities; corporate, government and mortgage-backed fixed income securities; private placement securities; futures and options on futures; open-ended funds; and foreign exchange rates. Depending on the vendor, collateralized mortgage obligations (CMOs), adjustable rate mortgages (ARMs) and asset-backed securities are priced daily, weekly or twice a month as well as at month end. Municipal fixed income securities and options on U.S. Treasury/GNMA securities are priced at month end.

Defined contribution plan assets for hybrid plan members are held in self-directed investments for both the member and employer contributions. Contributions must be invested in the investment accounts approved by the VRS Board of Trustees.

**2. Investment Transactions and Income.** Security transactions and related gains and losses are recorded on a trade-date basis. The cost of investments sold is the average cost of the aggregate holding of the specific investment sold. Dividend income is recorded on the ex-dividend date, and interest income is accrued as earned. Futures contracts are valued daily, with the resulting adjustments recorded as realized gains or losses arising from the daily settlement of the variation margin. Gains and losses related to forward contracts and options are recognized at the

time the contracts are settled. Investments in limited partnerships are accounted for on the equity method of accounting, and their earnings or losses for the period are included in investment income using the equity method.

**3. Investment Policy.** The System's defined benefit assets are pooled for investment purposes in a Pooled Assets portfolio. The allocation of investment assets within the Pooled Assets portfolio is approved by the Board of Trustees as outlined in the Board's Investment Policy. Plan assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided through the defined benefit plans.

**4. Rate of Return.** For the fiscal year ended June 30, 2016, the annual money-weighted rate of return for the Pooled Assets portfolio, net of investment expenses, was 1.83%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. For the VRS Pooled Assets portfolio, the fiscal year 2016 money-weighted rate of return differs only slightly from the time-weighted rate of return because the flow of cash for contributions and benefit payments is fairly consistent over the fiscal year.

## **G. PROPERTY, PLANT, FURNITURE, EQUIPMENT AND INTANGIBLE ASSETS**

Tangible capital assets are recorded at cost at the time of acquisition and are reported net of accumulated depreciation. The System capitalizes all property, plant and equipment that have a cost or value greater than \$5,000. Depreciation is computed on the straight-line basis over the estimated useful life of the property, ranging from five years to 40 years.

Intangible capital assets for the System include internal and external costs incurred during VRS' current Application Development Stage. These costs are being depreciated over the software's useful life, which is estimated at seven years.

#### H. ACCUMULATED LEAVE AND DISABILITY CREDITS

Employees of the System participate in the Commonwealth's annual leave program and in its sick leave program or the Virginia Sickness and Disability Program (VSDP), which is administered by the System. Additional information about VSDP is presented in Note 3. Unused annual leave may be accumulated and is paid at the time of permanent separation from service up to the maximum calendar-year limit. For vested employees who are not covered under VSDP, unused sick leave is paid at a rate of 25% of the amount accumulated, not to exceed \$5,000, at the time of permanent separation. VSDP-covered employees with unused disability credits converted from sick leave at the time of enrollment may be paid in the same manner as for non-VSDP employees or may convert these credits to service credit at a rate of 173 disability credits to one month of service.

The accrued liability for unused annual leave, sick leave and disability credits for System employees at June 30, 2016 and 2015, was computed using salary rates in effect at those times and represents annual and sick leave earned up to the allowable ceilings as well as unused, converted disability credits. This information is included in the Statement of Fiduciary Net Position: Pension and Other Employee Benefit Trust Funds.

#### I. ADMINISTRATIVE EXPENSES AND BUDGET

The Board of Trustees approves expenses related to the administration and management of the trust fund. These expenses are included in a budget prepared in compliance with the Commonwealth's biennial budgetary system (cash basis).

Appropriations are controlled at the program level and lapse at the end of the fiscal year. Administrative expenses are funded exclusively from investment income. Expenses for goods and services received but not paid for prior to the System's fiscal year-end are accrued for financial reporting purposes in accordance with generally accepted accounting principles (GAAP). A reconciliation of the difference between the GAAP basis and budgeted basis is presented in the Schedule of Administrative Expenses following the Required Supplemental Schedules.

#### J. INVESTMENT INCOME ALLOCATION

Income earned on investments is distributed monthly to the VRS, SPORS, VaLORS and JRS retirement plans; the Group Life Insurance Fund; the Retiree Health Insurance Credit Fund; the Disability Insurance Trust Fund; the Line of Duty Trust Fund; and the Virginia Local Disability Program. Distribution of investment income is based on the respective equity of each trust fund in the common investment pool.

The retirement plans distribute their cumulative investment income, net of administrative expenses, in the following manner:

- Investment income is distributed to each individual member contribution account based on a rate of 4.00% applied to each member's cumulative balance as of the close of the preceding fiscal year.
- The remaining portion is allocated monthly to the participating employers' retirement allowance accounts based on the ratio of their member account and employer account balances to the total of all such balances.

## K. USE OF ESTIMATES

The preparation of financial statements, in conformity with accounting principles generally accepted in the United States of America, requires management to make estimates and assumptions that affect the reported amounts of net position restricted for benefits at June 30, 2016. Actual results could differ from those estimates.

## L. SUMMARIZED COMPARATIVE DATA/ RECLASSIFICATIONS

The Basic Financial Statements include certain prior year summarized comparative information in total, but not at the level of detail required for a presentation in conformity with generally accepted accounting principles. Accordingly, such information should be read in conjunction with the System's financial statements for the year ended June 30, 2015, from which the summarized information was derived.

## 2. Pension Plans

### A. PLAN DESCRIPTIONS

**1. Establishment of the System.** The Virginia Retirement System (the System) was established March 1, 1952, as the administrator of governmental retirement plans qualified under Section 401(a) of the Internal Revenue Code. Its mission is to provide retirement benefits for state employees, teachers, other eligible school employees and employees of political subdivisions that elect to participate in the System.

The System is comprised of the following pension trust funds:

- The Virginia Retirement System (VRS), established March 1, 1952, as the Virginia Supplemental Retirement System, was renamed

VRS in 1990 in response to the Federal Tax Reform Act of 1986. VRS includes a single-employer plan for state employees, a multiple-employer cost-sharing plan for teachers and an agent multiple-employer plan for employees of participating political subdivisions.

- State Police Officers' Retirement System (SPORS), established July 1, 1950, is a single-employer plan for state police officers.
- Virginia Law Officers' Retirement System (VaLORS), established October 1, 1999, is a single-employer plan for non-local government Virginia law officers other than state police.
- Judicial Retirement System (JRS), established July 1, 1970, is a single-employer plan for judges of a court of record or a district court of the state and other eligible judicial employees.

The System is required by law to use the plans' accumulated assets to pay benefits when due to eligible members, retirees and beneficiaries. Full-time permanent, salaried employees of participating employers are covered automatically under VRS, SPORS, VaLORS or JRS upon employment; some part-time permanent, salaried state employees also are covered under VRS. Information regarding the membership is presented in Figure 2.9. Teaching, research and administrative faculty of the state's public colleges and universities who elect an optional retirement plan, as well as permanent, salaried employees of the state's two public teaching hospitals, are not covered under the VRS retirement plans.

## FIGURE 2.9: ACTIVE, RETIRED AND TERMINATED MEMBERS AND BENEFICIARIES

AT JUNE 30

	VRS State Employees	VRS Teachers	VRS Political Subdivision Employees	SPORS	VaLORS	JRS	2016 Total	2015 Total
Retirees and Beneficiaries Receiving Benefits	54,034	83,738	48,827	1,242	4,066	504	192,411	184,769
Terminated Employees Entitled to Benefits but not Receiving Them	10,947	22,886	12,054	100	655	2	46,644	43,865
<b>Total</b>	<b>64,981</b>	<b>106,624</b>	<b>60,881</b>	<b>1,342</b>	<b>4,721</b>	<b>506</b>	<b>239,055</b>	<b>228,634</b>
Active Members:								
Vested	54,828	105,846	70,249	1,525	5,532	324	238,304	241,571
Non-Vested	22,823	41,008	35,405	422	3,615	94	103,367	99,005
<b>Total</b>	<b>77,651</b>	<b>146,854</b>	<b>105,654</b>	<b>1,947</b>	<b>9,147</b>	<b>418</b>	<b>341,671</b>	<b>340,576</b>

**2. Pension Plan Provisions and Requirements.** Under Plan 1, Plan 2 and the Hybrid Retirement Plan, members are vested in the defined benefit pension after attaining five years of service credit. They become eligible to retire with an unreduced or reduced benefit when they meet the age and service requirements for their plan. The unreduced benefit is actuarially reduced to calculate the reduced benefit amount. A cost-of-living adjustment (COLA), based on changes in the Consumer Price Index for all Urban Consumers, is granted on July 1 of the second calendar year after retirement and is effective each July 1 thereafter, when provided.

Members not covered under the Virginia Sickness and Disability Program (VSDP) for state employees (see Note 3) or the Virginia Local Disability Program (VLDP) for local government employees are eligible to be considered for disability retirement.

If a member dies while in active service, his or her beneficiary or survivor may qualify for a death-in-service benefit. Provisions for the retirement plans are presented in Figure 2.10.

## FIGURE 2.10: RETIREMENT PLAN PROVISIONS

AS ESTABLISHED BY TITLE 51.1 OF THE *CODE OF VIRGINIA* (1950), AS AMENDED

All full-time, salaried permanent (professional) employees of state agencies, public school divisions and employees of participating employers are automatically covered by a pension plan upon employment. Members qualify for retirement when they become vested and meet the age and service requirements for their plan, as shown in the following table. The System administers three different benefit structures for government employees: Plan 1, Plan 2 and the Hybrid Retirement Plan. Each of these is called a plan in statute and each has different provisions with a specific eligibility and benefit structure. These different benefit structures are set out in the following table:

FIGURE 2.10: RETIREMENT PLAN PROVISIONS, cont.

RETIREMENT PLAN PROVISIONS		
PLAN 1	PLAN 2	HYBRID RETIREMENT PLAN
<p><b>About Plan 1</b> Plan 1 is a defined benefit plan. The retirement benefit is based on a member's age, creditable service and average final compensation at retirement using a formula. Employees are eligible for Plan 1 if their membership date is before July 1, 2010, and they were vested as of January 1, 2013.</p>	<p><b>About Plan 2</b> Plan 2 is a defined benefit plan. The retirement benefit is based on a member's age, creditable service and average final compensation at retirement using a formula. Employees are eligible for Plan 2 if their membership date is on or after July 1, 2010, or their membership date is before July 1, 2010, and they were not vested as of January 1, 2013.</p>	<p><b>About the Hybrid Retirement Plan</b> The Hybrid Retirement Plan combines the features of a defined benefit plan and a defined contribution plan. Most members hired on or after January 1, 2014, are in this plan, as well as Plan 1 and Plan 2 members who were eligible to opt into the plan during a special election window (see "Eligible Members").</p> <ul style="list-style-type: none"> <li>• The defined benefit is based on a member's age, creditable service and average final compensation at retirement using a formula.</li> <li>• The benefit from the defined contribution component of the plan depends on the member and employer contributions made to the plan and the investment performance of those contributions.</li> <li>• In addition to the monthly benefit payment payable from the defined benefit plan at retirement, a member may start receiving distributions from the balance in the defined contribution account, reflecting the contributions, investment gains or losses and any required fees.</li> </ul>
<p><b>Eligible Members</b> Employees are in Plan 1 if their membership date is before July 1, 2010, and they were vested as of January 1, 2013.</p> <p><b>Hybrid Opt-In Election</b> VRS non-hazardous duty-covered Plan 1 members were allowed to make an irrevocable decision to opt into the Hybrid Retirement Plan during a special election window held January 1 through April 30, 2014.</p> <p>The Hybrid Retirement Plan's effective date for eligible Plan 1 members who opted in was July 1, 2014.</p> <p>If eligible deferred members returned to work during the election window, they were also eligible to opt into the Hybrid Retirement Plan.</p> <p>Members who were eligible for an optional retirement plan (ORP) and had prior service under Plan 1 were not eligible to elect the Hybrid Retirement Plan and remain as Plan 1 or ORP.</p>	<p><b>Eligible Members</b> Employees are in Plan 2 if their membership date is on or after July 1, 2010, or their membership date is before July 1, 2010, and they were not vested as of January 1, 2013.</p> <p><b>Hybrid Opt-In Election</b> Eligible Plan 2 members were allowed to make an irrevocable decision to opt into the Hybrid Retirement Plan during a special election window held January 1 through April 30, 2014. The Hybrid Retirement Plan's effective date for eligible Plan 2 members who opted in was July 1, 2014. Members who were eligible for an optional retirement plan (ORP) and have prior service under Plan 2 were not eligible to elect the Hybrid Retirement Plan and remain as Plan 2 or ORP.</p>	<p><b>Eligible Members</b> Employees are in the Hybrid Retirement Plan if their membership date is on or after January 1, 2014. This includes:</p> <ul style="list-style-type: none"> <li>• State employees*</li> <li>• School division employees</li> <li>• Political subdivision employees*</li> <li>• Judges appointed or elected to an original term on or after January 1, 2014, regardless if vested to VRS Plan 1 or VRS Plan 2.</li> </ul> <p><b>*Non-Eligible Members</b> Some employees are not eligible to participate in the Hybrid Retirement Plan. They include:</p> <ul style="list-style-type: none"> <li>• Members of the State Police Officers' Retirement System (SPORS)</li> <li>• Members of the Virginia Law Officers' Retirement System (VaLORS)</li> <li>• Political subdivision employees who are covered by enhanced benefits for hazardous duty employees</li> </ul> <p>Those employees eligible for an optional retirement plan (ORP) must elect the ORP plan or the Hybrid Retirement Plan. If these members have prior service under Plan 1 or Plan 2, they are not eligible to elect the Hybrid Retirement Plan and must select Plan 1 or Plan 2 (as applicable) or ORP.</p>

FIGURE 2.10: RETIREMENT PLAN PROVISIONS, cont.

PLAN 1	PLAN 2	HYBRID RETIREMENT PLAN
<p><b>Retirement Contributions</b>            State employees, excluding state elected officials, judges in Plan 1 or Plan 2 and optional retirement plan participants, contribute 5% of their compensation each month to their member contribution account through a pre-tax salary reduction. Some school divisions and political subdivisions elected to phase in the required 5% member contribution; all employees will be paying the full 5% by July 1, 2016. Member contributions are tax-deferred until they are withdrawn as part of a retirement benefit or as a refund. The employer makes a separate actuarially determined contribution to VRS for all covered employees. VRS invests both member and employer contributions to provide funding for the future benefit payment.</p>	<p><b>Retirement Contributions</b>            State employees contribute 5% of their compensation each month to their member contribution account through a pre-tax salary reduction. Some school divisions and political subdivisions elected to phase in the required 5% member contribution; all employees will be paying the full 5% by July 1, 2016.</p>	<p><b>Retirement Contributions</b>            A member's retirement benefit is funded through mandatory and voluntary contributions made by the member and the employer to both the defined benefit and the defined contribution components of the plan. Mandatory contributions are based on a percentage of the employee's creditable compensation and are required from both the member and the employer. Additionally, members may choose to make voluntary contributions to the defined contribution component of the plan, and the employer is required to match those voluntary contributions according to specified percentages. Mandatory member contributions and the employer match on the mandatory and voluntary member contributions are recorded in a 401(a) account, along with the accrued net investment income. The voluntary member contributions and accrued net investment income are recorded in a 457(b) account. Members are responsible for investing their accounts using the various investment options that are available.</p>
<p><b>Creditable Service</b>            Creditable service includes active service. Members earn creditable service for each month they are employed in a covered position. It also may include credit for prior service the member has purchased or additional creditable service the member was granted. A member's total creditable service is one of the factors used to determine eligibility for retirement and to calculate the retirement benefit. It also may count toward eligibility for the health insurance credit in retirement, if the employer offers the health insurance credit.</p>	<p><b>Creditable Service</b>            Same as Plan 1.</p>	<p><b>Creditable Service</b>  <i>Defined Benefit Component:</i>            Under the defined benefit component of the plan, creditable service includes active service.</p> <p>Members earn creditable service for each month they are employed in a covered position. It also may include credit for prior service the member has purchased or additional creditable service the member was granted. A member's total creditable service is one of the factors used to determine eligibility for retirement and to calculate the retirement benefit. It also may count toward eligibility for the health insurance credit in retirement, if the employer offers the health insurance credit.</p> <p><i>Defined Contribution Component:</i>            Under the defined contribution component, creditable service is used to determine vesting for the employer contribution portion of the plan.</p>
<p><b>Vesting</b>            Vesting is the minimum length of service a member needs to qualify for a future retirement benefit. Members become vested when they have at least five years (60 months) of creditable service. Vesting means members are eligible to qualify for retirement if they meet the age and service requirements for their plan. Members also must be vested to receive a full refund of their member contribution account balance if they leave employment and request a refund. Members are always 100% vested in the contributions that they make.</p>	<p><b>Vesting</b>            Same as Plan 1.</p>	<p><b>Vesting</b>  <i>Defined Benefit Component:</i>            Defined benefit vesting is the minimum length of service a member needs to qualify for a future retirement benefit. Members are vested under the defined benefit component of the Hybrid Retirement Plan when they reach five years (60 months) of creditable service. Plan 1 or Plan 2 members with at least five years (60 months) of creditable service who opted into the Hybrid Retirement Plan remain vested in the defined benefit component.</p>

FIGURE 2.10: RETIREMENT PLAN PROVISIONS, cont.

PLAN 1	PLAN 2	HYBRID RETIREMENT PLAN
		<p><i>Vesting, cont.</i></p> <p><i>Defined Contribution Component:</i>                      Defined contribution vesting refers to the minimum length of service a member needs to be eligible to withdraw the employer contributions from the defined contribution component of the plan. Members are always 100% vested in the contributions that they make.</p> <p>Upon retirement or leaving covered employment, a member is eligible to withdraw a percentage of employer contributions to the defined contribution component of the plan, based on service.</p> <ul style="list-style-type: none"> <li>• After two years, a member is 50% vested and may withdraw 50% of employer contributions.</li> <li>• After three years, a member is 75% vested and may withdraw 75% of employer contributions.</li> <li>• After four or more years, a member is 100% vested and may withdraw 100% of employer contributions.</li> </ul> <p>Distribution is not required by law until age 70½.</p>
<p><b>Calculating the Benefit</b>                      The Basic Benefit is calculated based on a formula using the member’s average final compensation, a retirement multiplier and total service credit at retirement. It is one of the benefit payout options available to a member at retirement.</p> <p>An early retirement reduction factor is applied to the Basic Benefit if the member retires with a reduced retirement benefit or selects a benefit payout option other than the Basic Benefit.</p>	<p><b>Calculating the Benefit</b>                      See definition under Plan 1.</p>	<p><b>Calculating the Benefit</b>  <i>Defined Benefit Component:</i>                      See definition under Plan 1.</p> <p><i>Defined Contribution Component:</i>                      The benefit is based on contributions made by the member and any matching contributions made by the employer, plus net investment earnings on those contributions.</p>
<p><b>Average Final Compensation</b>                      A member’s average final compensation is the average of the 36 consecutive months of highest creditable compensation as a covered employee.</p>	<p><b>Average Final Compensation</b>                      A member’s average final compensation is the average of the 60 consecutive months of highest creditable compensation as a covered employee.</p>	<p><b>Average Final Compensation</b>                      Same as Plan 2. It is used in the retirement formula for the defined benefit component of the plan.</p>
<p><b>Service Retirement Multiplier</b>                      VRS and JRS Plan 1: The retirement multiplier is a factor used in the formula to determine a final retirement benefit. The retirement multiplier for non-hazardous duty members is 1.70%.</p> <p>SPORS, sheriffs and regional jail superintendents: The retirement multiplier for sheriffs and regional jail superintendents is 1.85%.</p> <p>VaLORS: The retirement multiplier for VaLORS employees is 1.70% or 2.00%. Members hired before July 1, 2001, have a 1.70% multiplier and are eligible for a hazardous duty supplement. They also had the option to elect the 2.00% multiplier and no supplement. Members hired on or after July 1, 2001, have a 2.00% multiplier and no supplement.</p>	<p><b>Service Retirement Multiplier</b>                      VRS and JRS Plan 2: Same as Plan 1 for service earned, purchased or granted prior to January 1, 2013. For non-hazardous duty members, the retirement multiplier is 1.65% for creditable service earned, purchased or granted on or after January 1, 2013.</p> <p>SPORS, sheriffs and regional jail superintendents: Same as Plan 1.</p> <p>VaLORS: The retirement multiplier for VaLORS employees is 2.00%.</p> <p>Political subdivision hazardous duty employees: Same as Plan 1.</p>	<p><b>Service Retirement Multiplier</b>  <i>Defined Benefit Component:</i>                      VRS and JRS: The retirement multiplier for the defined benefit component is 1.00%.</p> <p>For members who opted into the Hybrid Retirement Plan from Plan 1 or Plan 2, the applicable multipliers for those plans will be used to calculate the retirement benefit for service credited in those plans.</p> <p>SPORS, sheriffs and regional jail superintendents: Not applicable.</p>



FIGURE 2.10: RETIREMENT PLAN PROVISIONS, cont.

PLAN 1	PLAN 2	HYBRID RETIREMENT PLAN
<p><i>Service Retirement Multiplier, cont.</i></p> <p>Political subdivision hazardous duty employees: The retirement multiplier of eligible political subdivision hazardous duty employees other than sheriffs and regional jail superintendents is 1.70% or 1.85% as elected by the employer.</p>		<p><i>Service Retirement Multiplier, cont.</i></p> <p>VaLORS: Not applicable.</p> <p>Political subdivision hazardous duty employees: Not applicable.</p> <p><i>Defined Contribution Component:</i> Not applicable.</p>
<p><b>Normal Retirement Age</b> VRS: Age 65.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Age 60.</p> <p>JRS: Age 65.</p>	<p><b>Normal Retirement Age</b> VRS: Normal Social Security retirement age.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Same as Plan 1.</p> <p>JRS: Same as Plan 1.</p>	<p><b>Normal Retirement Age</b> <i>Defined Benefit Component:</i> VRS: Same as Plan 2.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Not applicable.</p> <p>JRS: Same as Plan 1.</p>
<p><i>Defined Contribution Component:</i> Members are eligible to receive distributions upon leaving employment, subject to restrictions.</p>		<p><i>Defined Contribution Component:</i> Members are eligible to receive distributions upon leaving employment, subject to restrictions.</p>
<p><b>Earliest Unreduced Retirement Eligibility</b> VRS: Age 65 with at least five years (60 months) of creditable service or at age 50 with at least 30 years of creditable service.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Age 60 with at least five years of creditable service or age 50 with at least 25 years of creditable service.</p> <p>JRS: Age 65 with at least five years of creditable service or at age 60 with at least 30 years of creditable service. Service earned under JRS is weighted. The weighting factors under Plan 1 are:</p> <ul style="list-style-type: none"> <li>• 3.5 for JRS members appointed or elected before January 1, 1995.</li> <li>• 2.5 for JRS members appointed or elected on or after January 1, 1995.</li> </ul>	<p><b>Earliest Unreduced Retirement Eligibility</b> VRS: Normal Social Security retirement age with at least five years (60 months) of creditable service or when their age and service equal 90.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Same as Plan 1.</p> <p>JRS: Same as Plan 1. Service earned under JRS is weighted. The weighting factors under Plan 2 are:</p> <ul style="list-style-type: none"> <li>• 1.5 for JRS members appointed or elected before age 45.</li> <li>• 2.0 for JRS members appointed or elected between ages 45 and 54.</li> <li>• 2.5 for JRS members appointed or elected at age 55 or older.</li> </ul>	<p><b>Earliest Unreduced Retirement Eligibility</b> <i>Defined Benefit Component:</i> VRS: Normal Social Security retirement age and have at least five years (60 months) of creditable service or when their age and service equal 90.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Not applicable.</p> <p>JRS: Same as Plan 2. Service earned under JRS is weighted. The weighting factors under Plan 2 are:</p> <ul style="list-style-type: none"> <li>• 1.5 for JRS members appointed or elected before age 45.</li> <li>• 2.0 for JRS members appointed or elected between ages 45 and 54.</li> <li>• 2.5 for JRS members appointed or elected at age 55 or older.</li> </ul>
<p><i>Defined Contribution Component:</i> Members are eligible to receive distributions upon leaving employment, subject to restrictions.</p>		<p><i>Defined Contribution Component:</i> Members are eligible to receive distributions upon leaving employment, subject to restrictions.</p>
<p><b>Earliest Reduced Retirement Eligibility</b> VRS: Age 55 with at least five years (60 months) of creditable service or age 50 with at least 10 years of creditable service.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Age 50 with at least five years of creditable service.</p> <p>JRS: Age 55 with at least five years of creditable service.</p>	<p><b>Earliest Reduced Retirement Eligibility</b> VRS: Age 60 with at least five years (60 months) of creditable service.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Same as Plan 1.</p> <p>JRS: Same as Plan 1.</p>	<p><b>Earliest Reduced Retirement Eligibility</b> <i>Defined Benefit Component:</i> VRS: Age 60 with at least five years (60 months) of creditable service.</p> <p>SPORS, VaLORS and political subdivision hazardous duty employees: Not applicable.</p> <p>JRS: Same as Plan 1.</p>
<p><i>Defined Contribution Component:</i> Members are eligible to receive distributions upon leaving employment, subject to restrictions.</p>		<p><i>Defined Contribution Component:</i> Members are eligible to receive distributions upon leaving employment, subject to restrictions.</p>

FIGURE 2.10: RETIREMENT PLAN PROVISIONS, cont.

PLAN 1	PLAN 2	HYBRID RETIREMENT PLAN
<p><b>Cost-of-Living Adjustment (COLA) in Retirement</b></p> <p>The Cost-of-Living Adjustment (COLA) matches the first 3% increase in the Consumer Price Index for all Urban Consumers (CPI-U) and half of any additional increase (up to 4%) up to a maximum COLA of 5%.</p> <p><i>Eligibility:</i> For members who retire with an unreduced benefit or with a reduced benefit with at least 20 years of creditable service, the COLA will go into effect on July 1 after one full calendar year from the retirement date.</p> <p>For members who retire with a reduced benefit and who have fewer than 20 years of creditable service, the COLA will go into effect on July 1 after one calendar year following the unreduced retirement eligibility date.</p> <p><i>Exceptions to COLA Effective Dates:</i> The COLA is effective July 1 following one full calendar year (January 1 to December 31) under any of the following circumstances:</p> <ul style="list-style-type: none"> <li>• The member is within five years of qualifying for an unreduced retirement benefit as of January 1, 2013.</li> <li>• The member retires on disability.</li> <li>• The member is involuntarily separated from employment for causes other than job performance or misconduct and is eligible to retire under the Workforce Transition Act or the Transitional Benefits Program.</li> <li>• The member dies in service and the member's survivor or beneficiary is eligible for a monthly death-in-service benefit. The COLA will go into effect on July 1 following one full calendar year (January 1 to December 31) from the date the monthly benefit begins.</li> </ul>	<p><b>Cost-of-Living Adjustment (COLA) in Retirement</b></p> <p>The Cost-of-Living Adjustment (COLA) matches the first 2% increase in the CPI-U and half of any additional increase (up to 2%), for a maximum COLA of 3%.</p> <p><i>Eligibility:</i> Same as Plan 1.</p> <p><i>Exceptions to COLA Effective Dates:</i> Same as Plan 1.</p>	<p><b>Cost-of-Living Adjustment (COLA) in Retirement</b></p> <p><i>Defined Benefit Component:</i> Same as Plan 2.</p> <p><i>Defined Contribution Component:</i> Not applicable.</p> <p><i>Eligibility:</i> Same as Plan 1 and Plan 2.</p>
<p><b>Disability Coverage</b></p> <p>For members who are eligible to be considered for disability retirement and retire on disability, the retirement multiplier is 1.7% on all service, regardless of when it was earned, purchased or granted.</p> <p>Most state employees are covered under the Virginia Sickness and Disability Program (VSDP) and are not eligible for disability retirement.</p>	<p><b>Disability Coverage</b></p> <p>For members who are eligible to be considered for disability retirement and retire on disability, the retirement multiplier is 1.65% on all service, regardless of when it was earned, purchased or granted.</p> <p>Most state employees are covered under the Virginia Sickness and Disability Program (VSDP) and are not eligible for disability retirement.</p>	<p><b>Disability Coverage</b></p> <p>Employees of political subdivisions and school divisions (including Plan 1 and Plan 2 opt-ins) participate in the Virginia Local Disability Program (VLDP) unless their local governing body provides an employer-paid comparable program for its members.</p> <p>State employees (including Plan 1 and Plan 2 opt-ins) participating in the Hybrid Retirement Plan are covered under the Virginia Sickness and Disability Program (VSDP), and are not eligible for disability retirement.</p>

FIGURE 2.10: RETIREMENT PLAN PROVISIONS, cont.

PLAN 1	PLAN 2	HYBRID RETIREMENT PLAN
<p><b>Purchase of Prior Service</b> Members may be eligible to purchase service from previous public employment, active duty military service, an eligible period of leave or VRS refunded service as creditable service in their plan. Prior creditable service counts toward vesting, eligibility for retirement and the health insurance credit. Only active members are eligible to purchase prior service. When buying service, members must purchase their most recent period of service first. Members also may be eligible to purchase periods of leave without pay.</p>	<p><b>Purchase of Prior Service</b> Same as Plan 1.</p>	<p><b>Purchase of Prior Service</b> <i>Defined Benefit Component:</i> Same as Plan 1, with the following exceptions:</p> <ul style="list-style-type: none"> <li>• Hybrid Retirement Plan members are ineligible for ported service.</li> <li>• The cost for purchasing refunded service is the higher of 4% of creditable compensation or average final compensation.</li> <li>• Plan members have one year from their date of hire or return from leave to purchase all but refunded prior service at approximate normal cost. After that one-year period, the rate for most categories of service will change to actuarial cost.</li> </ul> <p><i>Defined Contribution Component:</i> Not applicable.</p>

## B. CONTRIBUTIONS

Members and employers are required to contribute to the retirement plans as provided by Title 51.1 of the *Code of Virginia* (1950), as amended. The member contribution is 5.00% of compensation, contributed by members or employers each month to members' contribution accounts. Members leaving covered employment are eligible to request a refund of their member contribution account balance. Vested members and those involuntarily separated from employment for causes other than job performance or misconduct are eligible for a full refund. Non-vested members are eligible for a refund of their account balance, excluding any member contributions made by employers to their accounts after July 1, 2010, and the interest on those contributions.

Each participating employer is required to contribute the remaining amounts necessary to fund the pension plans using the entry age normal actuarial cost method adopted by the Board of Trustees. The System's actuary, Cavanaugh Macdonald Consulting, LLC, computed the amount of contributions to be provided by state agency, state police and Virginia law officer employers; each participating political subdivision employer; and state judicial employers.

The contribution rates for fiscal years 2016 and 2015 were based on the actuary's valuation as of June 30, 2013. In addition, the actuary computed a separate contribution requirement for the employers in the teacher cost-sharing pool for each year using the same valuation dates.

As shown in Figure 2.11, contributions for the fiscal years ended June 30, 2016 and 2015, totaled \$3,375,057,000 and \$3,249,615,000, respectively, in accordance with statutory requirements.

Employer contributions to the VRS cost-sharing pool for teachers represented 14.06% of covered payrolls. Employer contributions for state employees represented 12.33% of covered payrolls for July 2015, 13.28% for August 2015 and 14.22% for the remaining months of the fiscal year. Each political subdivision's contributions ranged from zero (0.00%) to 36.18% of covered payrolls. State employer contributions to SPORS, VaLORS and JRS represented 25.82%, 17.67% and 49.62%, respectively for July 2015; 26.83%, 18.34% and 49.82%, respectively, for August 2015; and 27.83%, 19.00% and 50.02%, respectively, for the remainder of the fiscal year. For state and teacher employers and a small number of political subdivisions, these rates

reflected the normal cost and the amortization of a portion of the unfunded actuarial accrued liability of each of the plans based on the June 30, 2013, actuarial valuation and using modified actuarial assumptions. This is discussed further in Note 12.

In June 2016, there was a transfer of \$189.5 million in additional contributions from the Commonwealth to the four state employee plans. These additional contributions were an expedited payment of the

deferred contribution from the 2010-12 biennium. Contributions in the amount of \$162.4 million were applied to the VRS State Employee Plan, \$2.1 million to the SPORS plan, \$16.5 million to the VaLORS plan and \$8.5 million to the JRS plan. These additional contributions are reflected in the Net Pension Liability calculations at June 30, 2016. Member contributions for both years represented 5.00% of covered payrolls.

## FIGURE 2.11: MEMBER AND EMPLOYER CONTRIBUTIONS

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN THOUSANDS)

Fiscal Year	System/Plan	Member Contributions*	Member Contributions Paid By Employer	Employer Contributions*	2016 Total
<b>2016</b>	VRS – State	\$ 209,369	\$ 123	\$ 729,553	\$ 939,045
	VRS – Teacher	377,144	14,520	1,072,482	1,464,146
	VRS – Political Subdivisions	231,139	8,820	550,115	790,074
<b>Totals VRS</b>		<b>817,652</b>	<b>23,463</b>	<b>2,352,150</b>	<b>3,193,265</b>
	SPORS	5,759	–	33,655	39,414
	VaLORS	17,574	–	79,392	96,966
	JRS	1,154	2,349	41,909	45,412
<b>2016</b>	<b>Total</b>	<b>\$ 842,139</b>	<b>\$ 25,812</b>	<b>\$ 2,507,106</b>	<b>\$ 3,375,057</b>
<b>2015</b>	<b>Total</b>	<b>\$ 781,759</b>	<b>\$ 53,537</b>	<b>\$ 2,414,319</b>	<b>\$ 3,249,615</b>

\* For fiscal year 2016, member and employer contributions for the VRS plans include \$28,683,000 and \$23,248,000, respectively in Hybrid Defined Contribution Plan contributions. Member and employer contributions for the JRS plan includes \$267,000 and \$407,000, respectively in Hybrid Defined Contribution Plan contributions. This compares with fiscal year 2015 member contributions for the VRS plans and the JRS plan of \$13,194,000 and \$159,000, respectively, and fiscal year 2015 employer contributions of \$10,464,000 and \$57,000, respectively, for the VRS plans and the JRS plan.

### C. EMPLOYERS' NET PENSION LIABILITY: PENSION PLANS

The most recent actuarial valuation to determine the net pension liabilities for the VRS pension plans was prepared as of June 30, 2016. The total pension

liability was determined based on an actuarial valuation as of June 30, 2015, using updated actuarial assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2016.

## SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY BY SYSTEM AND PLAN

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Employers' Net Pension Liability/ (Asset) (a-b)	Plan Fiduciary Net Position as a % of the Total Pension Liability (b/a)	Covered Payroll* (c)	Net Pension Liability/ (Asset) as a % of the Covered Employee Payroll (a-b)/(c)
<b>Virginia Retirement System:</b>						
State	\$ 22,958,593	\$ 16,367,842	\$ 6,590,751	71.29%	\$ 3,977,759	165.69%
Teacher	44,182,326	30,168,211	14,014,115	68.28%	7,624,612	183.80%
Political Subdivision	20,817,088	17,418,106	3,398,982	83.67%	4,628,806	73.43%
<b>Total Virginia Retirement System</b>	<b>87,958,007</b>	<b>63,954,159</b>	<b>24,003,848</b>		<b>16,231,177</b>	
State Police Officers' Retirement System	1,086,958	730,688	356,270	67.22%	114,395	311.44%
Virginia Law Officers' Retirement System	1,985,618	1,211,446	774,172	61.01%	345,504	224.07%
Judicial Retirement System	621,605	467,389	154,216	75.19%	66,621	231.48%
<b>Grand Total</b>	<b>\$91,652,188</b>	<b>\$66,363,682</b>	<b>\$25,288,506</b>		<b>\$16,757,697</b>	

\* This represents only the payroll reported by the employer and covered by the pension benefit.

## SCHEDULE OF ACTUARIAL METHODS AND SIGNIFICANT ASSUMPTIONS – PENSION PLANS

	VRS					
	State	Teacher	Political Subdivisions	SPORS	VaLORS	JRS
Valuation Date	June 30, 2015	June 30, 2015	June 30, 2015	June 30, 2015	June 30, 2015	June 30, 2015
Actuarial Cost Method	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Actuarial Assumptions:						
Investment Rate of Return*	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Projected Salary Increases*:						
State Employees/Teachers	3.50% to 5.35%	3.50% to 5.95%	N/A	3.50% to 4.75%	3.50% to 4.75%	4.50%
Political Subdivision – Non-Hazardous Duty Employees	N/A	N/A	3.50% to 5.35%	N/A	N/A	N/A
Political Subdivision – Hazardous Duty Employees	N/A	N/A	3.50% to 4.75%	N/A	N/A	N/A
Post-Retirement Benefits Increases**						
Plan 1	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Plan 2	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%

\* Includes inflation at 2.50%.

\*\* Compounded annually.

## D. CHANGES IN DISCOUNT RATE

The discount rate used to measure the total pension liability was 7.00%. The projection of cash flows used to determine the discount rate assumed that contributions from participating employers will be based on the actuarially determined rates based on the Board's funding policy, which certifies the required rates under Title 51.1 of the *Code of Virginia* (1950), as amended. Based on those assumptions, the fiduciary net position was projected to be available to make all of the 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 the projected benefit payments to determine the total pension liability. In accordance with GASB Statement No. 67, regarding the disclosure of the sensitivity of the net pension liability to changes in the discount rate, the table below presents the employers' net pension liability for each of the plans calculated using the discount rate of 7.00%, as well as what the employers' net pension liability would be if it were calculated using a discount rate that is 1.00% lower (6.00%) or 1.00% higher (8.00%) than the current rate.

## SCHEDULE OF IMPACT OF CHANGES IN DISCOUNT RATE

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	Net Pension Liability		
	1.00% Decrease	Current Discount Rate	1.00% Increase
System/Plan	(6.00%)	(7.00%)	(8.00%)
Virginia Retirement System			
State	\$ 9,275,322	\$ 6,590,751	\$ 4,336,889
Teacher	19,977,164	14,014,115	9,102,001
Political Subdivision	6,108,168	3,398,982	1,145,636
Total Virginia Retirement System	35,360,654	24,003,848	14,584,526
State Police Officers' Retirement System	484,962	356,270	248,328
Virginia Law Officers' Retirement System	1,036,078	774,172	558,356
Judicial Retirement System	210,584	154,216	105,200
<b>Grand Total</b>	<b>\$ 37,092,278</b>	<b>\$ 25,288,506</b>	<b>\$ 15,496,410</b>

## 3. Other Employee and Post-Employment Benefit Plans (OPEBs)

### A. PLAN DESCRIPTIONS

The System administers other employee and postemployment benefit plans for active, deferred and retired members of VRS, SPORS, VaLORS and JRS. These plans are the Group Life Insurance Program, the Retiree Health Insurance Credit Program, the Virginia Sickness and Disability Program (VSDP) and the Virginia Local Disability Program (VLDP).

The System also manages the assets of the Line of Duty Act Fund; the Department of Accounts (DOA) administers the benefits and payment of claims under the program.

Contributions and payments for other employee benefit plans for active members occur on a current basis; therefore, the System does not record the net position of these plans and is not required to report their funding progress and employer contributions. However, the System does record

plan net position and reports funding progress and employer contributions for post-employment benefit plans. This information is provided in the Required Supplemental Schedules following the Notes to Financial Statements. Additional information also is presented in the Statistical Section.

**1. Group Life Insurance Program.** The Group Life Insurance Program is a cost-sharing, multiple-employer plan. Members whose employers participate in the Group Life Insurance Program are covered automatically under the Basic Group Life Insurance Program upon employment. They also are eligible to elect additional coverage for themselves as well as a spouse or dependent children through the Optional Group Life Insurance Program.

Participating employers and covered employees are required by Title 51.1 of the *Code of Virginia* (1950), as amended, to contribute to the cost of group life insurance benefits. Employers may assume employees' contributions. The premium contributions collected during members' active careers, less the amount required to cover current life insurance premiums and claims plus administrative and other expenses, are retained in the Group Life Insurance Advance Premium Deposit Reserve to fund the claims for eligible retired and deferred members.

Approximately 359,679 active members and 169,786 retirees were covered under the Basic Group Life Insurance Program at June 30, 2016.

For members who elect optional group life insurance coverage, the insurer bills employers directly for the premiums. Employers deduct the premiums from members' paychecks and pay the premiums to the insurer. Premiums are based on members' ages and are approved by the Board of Trustees. Any differences and adjustments are settled between the employer and the insurer. Approximately 67,493 active members and 2,874 retirees were covered under the Optional Group Life Insurance Program at June 30, 2016.

**2. Retiree Health Insurance Credit Program.** The Retiree Health Insurance Credit Program is an agent, multiple-employer plan. It provides eligible retirees a tax-free reimbursement for health insurance premiums for single coverage under qualifying health plans, including coverage under a spouse's plan, not to exceed the amount of the monthly premium or the maximum credit, whichever is less. Premiums for health plans covering specific conditions are ineligible for reimbursement. Employers are required by Title 51.1 of the *Code of Virginia* (1950), as amended, to contribute to the program. The amount is financed based on employer contribution rates determined by the System's actuary. Approximately 116,408 retirees were covered under the health insurance credit program at June 30, 2016.

**3. Virginia Sickness and Disability Program.** The Virginia Sickness and Disability Program (VSDP) is a single-employer plan. It provides state employees with sick, family and personal leave and short-term and long-term disability benefits. State agencies are required by Title 51.1 of the *Code of Virginia* (1950), as amended, to contribute to the cost of providing long-term disability benefits and administering the program. Approximately 74,657 members were covered under VSDP at June 30, 2016, and approximately 2,844 former members were receiving benefits from the program during the fiscal year.

**4. Virginia Local Disability Program.** The Virginia Local Disability Program (VLDP) is composed of two multiple-employer cost-sharing pools, one for teachers and one for employees of political subdivisions. It provides eligible employees with short-term and long-term disability benefits. Local government employers are required by Title 51.1 of the *Code of Virginia* (1950), as amended, to provide long-term disability benefits for their Hybrid employees, either through a local plan or through VLDP. Approximately 9,699 members were covered under VLDP at June 30, 2016, and three former members received benefits from the program during the fiscal year.

**5. Line of Duty Act Program.** A new program in fiscal year 2011, the Line of Duty Act Program is a cost-sharing, multiple-employer plan. It provides death and health insurance reimbursement benefits to eligible state employees and local government employees, including volunteers, who die or become disabled as a result of the performance of their duties as a public safety officer.

As required by statute, the System is responsible for managing the assets of the program. Participating

employers made contributions to the program beginning in fiscal year 2012. The employer contribution rate was determined by the System's actuary using the anticipated program costs and the number of covered individuals associated with all participating employers.

Provisions for other employee benefit and post-employment benefit plans are presented in Figure 2.12.

**FIGURE 2.12: OTHER EMPLOYEE BENEFIT AND POST-EMPLOYMENT BENEFIT PLAN PROVISIONS**

AS ESTABLISHED BY TITLE 51.1 OF THE *CODE OF VIRGINIA* (1950), AS AMENDED

	<b>Eligible Employees</b>	<b>Coverage</b>
<b>VRS Group Life Insurance Program: Basic Coverage</b>	<p>The VRS Group Life Insurance Program was established July 1, 1960, for state employees, teachers and employees of political subdivisions that elect the program, including the following employers that do not participate in VRS for retirement:</p> <p>City of Richmond, City of Portsmouth, City of Roanoke, City of Norfolk and Roanoke City School Board.</p> <p>Basic group life insurance coverage is automatic upon employment. Coverage ends for employees who leave their position before retirement eligibility or who take a refund of their member contributions and accrued interest.</p>	<ul style="list-style-type: none"> <li>• Natural death benefit equal to the employee's compensation rounded to the next highest thousand and then doubled.</li> <li>• Accidental death benefit, which is double the natural death benefit.</li> <li>• Accidental dismemberment benefit, safety belt benefit, repatriation benefit, felonious assault benefit and accelerated death benefit option.</li> <li>• Continuation of death benefit and accelerated death benefit option for employees who retire or who have met the age and service requirements for retirement upon termination.</li> </ul> <p>Coverage begins to reduce by 25% on the January 1 following one calendar year of retirement or termination and reduces by 25% each January 1 until it reaches 25% of its original value.</p> <p>If a member has at least 30 years of creditable service, coverage cannot reduce below \$8,000. This minimum will be increased annually based on the VRS Plan 2 cost-of-living adjustment calculation.</p>



FIGURE 2.12: OTHER EMPLOYEE BENEFIT AND POST-EMPLOYMENT BENEFIT PLAN PROVISIONS, cont.

	Eligible Employees	Coverage
<p><b>Optional Group Life Insurance Program</b></p>	<p>Employees covered under the VRS Group Life Insurance Program are eligible to elect additional coverage for themselves as well as a spouse or dependent children through the Optional Group Life Insurance Program. Employees pay the premiums through payroll deduction.</p> <p>Spousal coverage ends if the employee's coverage ends or the couple divorce. Coverage for dependent children ends if the employee's coverage ends or when the children marry, become self-supporting, reach age 21 or reach age 25 as a dependent attending college full time. Coverage continues for dependent unmarried children who are disabled.</p>	<p>The program provides natural death and accidental death or dismemberment coverage:</p> <ul style="list-style-type: none"> <li>• Employees select one, two, three or four times their compensation, not to exceed \$750,000.</li> <li>• Spouses may be covered for up to half the maximum amount of the employees' coverage, not to exceed \$375,000. Dependent children who are at least 15 days old may be covered for \$10,000, \$20,000 or \$30,000, depending on the option employees select.</li> <li>• Accidental death and dismemberment coverage ends upon retirement. A retired employee may elect within 31 days of retirement to continue optional life coverage provided he or she has 60 months of coverage prior to leaving service. As a retiree, the participant can elect either one or two times his or her compensation, not to exceed \$275,000 or the amount of coverage in place when the employee left service. Coverage begins to reduce beginning with the retiree's normal retirement age under his or her plan and all coverage ends at age 80. Upon retirement, spouse coverage can continue at one-half the amount of the retiree's coverage and dependent coverage can continue at the same level previously covered prior to retirement. Premiums for coverage are at the same rates as active employees. If the retiree previously had coverage exceeding \$275,000, he or she can elect to convert the excess over this amount to an individual policy with individual rates.</li> <li>• If an employee terminates with less than 60 months of optional life coverage, he or she may convert the policy and any spouse and/or dependent coverage to an individual policy (without evidence of insurability if done within 31 days of termination). However, it may be at higher premiums than those paid by active employees.</li> </ul>

**FIGURE 2.12: OTHER EMPLOYEE BENEFIT AND POST-EMPLOYMENT BENEFIT PLAN PROVISIONS, cont.**

**Retiree Health Insurance Credit Program**

The Retiree Health Insurance Credit Program was established January 1, 1990, for retired state employees covered under VRS, SPORS, VaLORS and JRS who retire with at least 15 years of service credit. The program was opened to teachers and eligible employees of participating political subdivisions on July 1, 1993. The health insurance credit is a tax-free reimbursement in an amount set by the General Assembly for each year of service credit against qualified health insurance premiums retirees pay for single coverage, excluding any portion covering a spouse or dependents. The credit cannot exceed the amount of the premiums and ends upon the retiree's death.

**Health Insurance Credit Dollar Amounts at Retirement**

	Amount per Year of Service	Maximum Credit per Month*
State employees	\$ 4.00	No Cap
Teachers and other professional school employees	\$ 4.00	No Cap
General registrars and their employees, constitutional officers and their employees, and local social service employees	\$ 1.50	\$ 45.00
General registrars and their employees, constitutional officers and their employees and local social service employees, if the political subdivision elects the \$1.00 enhancement	\$ 2.50	\$ 75.00
Other political subdivision employees as elected by the employer	\$ 1.50	\$ 45.00

**Health Insurance Credit Dollar Amounts at Disability Retirement and for VSDP Long-Term Disability**

Employees who retire on disability or go on long-term disability under the Virginia Sickness and Disability Program (VSDP) are eligible for the health insurance credit.\*\*

Eligible Employees	Coverage
State employees other than state police officers	\$120 per month or \$4 per year of service credit per month, whichever is higher.
State police officers	Non-work-related disability: \$120 per month or \$4 per year of service credit per month, whichever is higher. Work-related disability: No health insurance credit for premiums qualified under the Virginia Line of Duty Act; may receive the credit for premiums paid for other qualified health plans.
Teachers and other professional school employees	Either (a) \$4 multiplied by twice the amount of service credit per month; or (b) \$4 multiplied by the amount of service earned had the employee been active until age 60 per month, whichever is higher.
Political subdivision employees as elected by the employer	\$45 per month.

\* Not to exceed the individual premium amount.

\*\* Not to exceed the individual premium amount. State employees who retire from being on long-term disability under VSDP must have at least 15 years of service credit to qualify for the health insurance credit as a retiree.

FIGURE 2.12: OTHER EMPLOYEE BENEFIT AND POST-EMPLOYMENT BENEFIT PLAN PROVISIONS, cont.

Virginia Sickness and Disability Program (VSDP)	Eligible Employees	Coverage
	<p>VSDP, also known as the Disability Insurance Trust Fund, was established January 1, 1999, to provide short-term and long-term disability benefits for non-work-related and work-related disabilities. Eligible employees are enrolled automatically upon employment. They include:</p> <ul style="list-style-type: none"> <li>• Full-time and part-time permanent, salaried state employees covered under VRS, SPORS and VaLORS (members new to VaLORS following its creation on October 1, 1999, have been enrolled since the inception of VSDP).</li> <li>• State employees hired before January 1, 1999, who elected to transfer to VSDP rather than retain their eligibility to be considered for VRS disability retirement.</li> <li>• Public college and university faculty members who elect the VRS defined benefit plan. They may participate in VSDP or their institution's disability program, if offered. If the institution does not offer the program or the faculty member does not make an election, he or she is enrolled in VSDP.</li> </ul>	<ul style="list-style-type: none"> <li>• Sick, family and personal leave.</li> <li>• Short-term disability benefit beginning after a seven-calendar-day waiting period from the first day of disability. The benefit provides income replacement beginning at 100% of the employee's pre-disability income, reducing to 80% and then 60%.</li> <li>• Long-term disability benefit beginning after 125 workdays of short-term disability and continuing until the employee reaches his or her normal retirement age. The benefit provides income replacement of 60% of the employee's pre-disability income. If an employee becomes disabled within five years of his or her normal retirement age, the employee will receive up to five years of VSDP benefits, provided he or she remains medically eligible.</li> <li>• Income replacement adjustment to 80% for catastrophic conditions.</li> <li>• VSDP Long-Term Care Plan, a self-funded program that assists with the cost of covered long-term care services.</li> </ul>

*Note:*

- Employees hired or rehired on or after July 1, 2009, must satisfy eligibility periods before becoming eligible for non-work-related short-term disability coverage and certain income replacement levels.
- A state employee who is approved for VSDP benefits on or after the date that is five years prior to his or her normal retirement date is eligible for five years of VSDP benefits.
- Employees on work-related short-term disability receiving only a workers' compensation payment may be eligible to purchase service credit for this period if retirement contributions are not being withheld from the workers' compensation payment. The rate will be based on 5.00% of the employee's compensation.

FIGURE 2.12: OTHER EMPLOYEE BENEFIT AND POST-EMPLOYMENT BENEFIT PLAN PROVISIONS, cont.

	<b>Eligible Employees</b>	<b>Coverage</b>
<p><b>Virginia Local Disability Program (VLDP)</b></p>	<p>VLDP was implemented January 1, 2014, to provide short-term and long-term disability benefits for non-work-related and work-related disabilities. Eligible employees are enrolled automatically upon employment, unless their employer has elected to provide comparable coverage.</p> <p>Eligible employees include:</p> <ul style="list-style-type: none"> <li>• Teacher or other professional employee of a local public school division</li> <li>• General employee of a VRS-participating political subdivision such as a city, county, town, authority or commission</li> <li>• Local law enforcement officer, firefighter or emergency medical technician if the employer does not provide enhanced hazardous duty benefits.</li> </ul>	<p>Short-term disability benefit beginning after a seven-calendar day waiting period from the first day of disability. Employees become eligible for non-work-related short-term disability coverage after one year of continuous participation in VLDP with their current employer.</p> <ul style="list-style-type: none"> <li>• Eligibility for work-related short-term disability coverage begins upon employment.</li> <li>• During the first five years of continuous participation in VLDP with their current employer, employees are eligible for 60% of their pre-disability income if they go on non-work-related or work-related short-term disability. Once the eligibility period is satisfied, employees are eligible for higher income replacement levels.</li> <li>• VLDP long-term benefit beginning after 125 workdays of short-term disability. Members are eligible if they are unable to work at all or are working fewer than 20 hours a week.</li> <li>• Members approved for long-term disability will receive 60% of their pre-disability income. If approved for work-related long-term disability, the VLDP benefit will be offset by the workers' compensation benefit. Members will not receive a VLDP benefit if their workers' compensation is greater than the VLDP benefit amount.</li> <li>• Members approved for short-term or long-term disability at age 60 or older will be eligible for a benefit provided they remain medically eligible.</li> <li>• VLDP Long-Term Care Plan, a self-funded program that assists with the cost of covered long-term care services.</li> </ul>

FIGURE 2.12: OTHER EMPLOYEE BENEFIT AND POST-EMPLOYMENT BENEFIT PLAN PROVISIONS, cont.

	Eligible Employees	Coverage
<b>Commonwealth of Virginia (COV) Voluntary Group Long-Term Care Insurance Program</b>	<p>The following members between the ages of 18 and 79 are eligible to apply:</p> <ul style="list-style-type: none"> <li>• State employees and public college and university faculty members</li> <li>• Employees of school divisions and political subdivisions whose employers have elected to participate in the program</li> <li>• Vested deferred members and retirees (their employers are not required to have elected the program)</li> <li>• Select family members of eligible members</li> </ul>	<p>The program provides assistance with covered long-term care expenses at group rates. Active members pay the premiums for themselves and any covered family members through payroll deduction or directly to Genworth Life Insurance Company, the insurer, provided the employer has arranged for payroll deductions with Genworth Life. All other participants pay the premiums directly to Genworth.</p>
<b>Line of Duty Act Program</b>	<p>Paid employees and volunteers in hazardous duty positions in Virginia localities, including hazardous duty employees covered under VRS, SPORS and VaLORS.</p>	<p>Coverage provides death and health insurance benefits, which are administered by the Virginia Department of Accounts. The System is responsible for managing the assets of the Line of Duty Act Fund.</p>

SCHEDULE OF FUNDING PROGRESS – OTHER POST-EMPLOYMENT BENEFIT PLANS

AS OF JUNE 30, 2015

(DOLLARS IN THOUSANDS)

	Actuarial Value of Assets (a)	Actuarial Accrued Liability AAL – (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (b-a)/(c)
Group Life Insurance Fund	\$ 1,128,876	\$ 2,829,104	\$ 1,700,228	39.9%	\$ 17,813,570	9.5%
Retiree Health Insurance Credit Fund	173,933	2,379,464	2,205,531	7.3%	15,267,479	14.4%
Disability Insurance Trust Fund	398,609	235,247	(163,362)	169.4%	3,627,297	(4.5%)
Virginia Local Disability Program	78	313	235	24.9%	192,437	0.1%
Line of Duty Act Trust Fund*	696	245,808	245,112	0.3%	**	N/A

\* The Virginia Local Disability Program was new effective January 1, 2014, as part of the Hybrid Retirement Plan for eligible non-state employers.

\*\* The Line of Duty Act Program was established and set up as a trust fund effective July 1, 2010. Contributions into the trust fund will be based on the number of participants in the program using a per capita-based contribution versus a payroll-based contribution.

## B. FUNDED STATUS AND FUNDING PROGRESS – OTHER POST-EMPLOYMENT BENEFIT PLANS

The most recent actuarial valuations prepared for other post-employment benefit plans administered by the System are as of June 30, 2015. Actuarial valuations for these plans involve estimates of the value of reported amounts and assumptions about the probability of events far into the future. Actuarially determined amounts are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future.

The calculations in these actuarial valuations are based on the benefits provided under the terms of the plans as of June 30, 2015, and on the pattern of cost sharing between the employers and plan members at that point. These calculations reflect a long-term perspective. The actuarial methods and assumptions used in these valuations include techniques that are designed to reduce short-term volatility in the actuarial accrued liabilities and the actuarial value of assets.

The Retiree Health Insurance Credit benefit is based on a member's employer eligibility and his or her years of service. The monthly maximum credit amount cannot exceed the member's actual health insurance premium costs. The actuarial valuation for this plan assumes the maximum credit is payable for each eligible member. Because this benefit is a flat dollar amount multiplied by the member's years of service and the maximum benefit is assumed, no assumption relating to health care cost trend rates is needed or applied.

The following schedule presents selected information from that valuation report. Additional information is presented in the Required Supplemental Schedule of Funding Progress: Other Post-Employment Benefit Plans following the Notes to Financial Statements, as well as in the Actuarial Section.

Actuarial methods and assumptions for other post-employment benefit plans are presented in the Actuarial Section. The following schedule presents selected information as of the latest actuarial valuation:

**SCHEDULE OF ACTUARIAL METHODS AND SIGNIFICANT ASSUMPTIONS: OTHER POST-EMPLOYMENT BENEFIT PLANS**

	Group Life Insurance Fund	Retiree Health Insurance Credit Fund	Disability Insurance Fund Trust Fund	Line of Duty Act Trust Fund	Virginia Local Disability Program
<b>Valuation Date</b>	June 30, 2015	June 30, 2015	June 30, 2015	June 30, 2015	June 30, 2015
<b>Actuarial Cost Method</b>	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
<b>Amortization Method</b>	Level Percent of Pay Closed	Level Percent of Pay Closed	Level Percent of Pay Closed	Level Percent of Pay Open	Level Percent of Pay Closed
<b>Payroll Growth Rate:</b>					
State Employees	3.00%	3.00%	3.00%	3.00%	N/A
Teachers	3.00%	3.00%	N/A	N/A	3.00%
Political Subdivision Employees	3.00%	3.00%	N/A	3.00%	3.00%
State Police and Virginia Law Officers	3.00%	3.00%	3.00%	3.00%	N/A
Judges	3.00%	3.00%	N/A	N/A	N/A
<b>Effective Amortization Period*</b>					
State Employees	28.6 Years	28.0 Years	25.9 Years	30 Years	N/A
Teachers	28.6 Years	27.8 Years	N/A	N/A	20.1 Years
Political Subdivision Employee	28.6 Years	27.8 Years	N/A	30 Years	17.9 Years
<b>Asset Valuation Method</b>					
State Employees and Teachers	5-Year, Smoothed Market	5-Year, Smoothed Market	5-Year, Smoothed Market	Market Value	5-Year, Smoothed Market
Political Subdivision Employees and State-Funded Local Employees	5-Year, Smoothed Market	Market Value	N/A	Market Value	5-Year, Smoothed Market
<b>Actuarial Assumptions</b>					
Investment Rate of Return**	7.00%	7.00%	7.00%	4.75%	7.00%
Projected Salary Increases:***					
State Employees	3.50% to 5.35%	3.50% to 5.35%	3.50% to 5.35%	N/A	N/A
Teachers	3.50% to 5.95%	3.50% to 5.95%	N/A	N/A	3.50% to 5.95%
Political Subdivision Non-Hazardous Duty Employees	3.50% to 5.35%	3.50% to 5.35%	N/A	N/A	3.50% to 5.35%
Political Subdivision Hazardous Duty Employees	3.50% to 4.75%	3.50% to 4.75%	N/A	N/A	N/A
State Police and Virginia Law Officers	3.50% to 4.75%	3.50% to 4.75%	3.50% to 4.75%	N/A	N/A
Judges	4.50%	4.50%	N/A	N/A	N/A
Medical Trend Assumptions (Under Age 65)	N/A	N/A	N/A	7.50% to 5.00%	N/A
Medical Trend Assumptions (Ages 65 and Older)	N/A	N/A	N/A	5.50% to 5.00%	N/A
Year of Ultimate Trend Rate	N/A	N/A	N/A	2020	N/A

\* The amortization period of the Unfunded Actuarial Accrued Liability (UAAL) was a closed 30-year period for the June 30, 2013, balance and closed 20-year period for each subsequent year. The Line of Duty Act Program amortization period is 30 years for the UAAL.

\*\* Includes inflation at 2.50%. The Line of Duty Act Program uses 4.25% for the investment rate of return.

\*\*\* Projected salary increases for the Retiree Health Insurance Credit Fund are used in the application of the actuarial cost method. Projected salary increase factors are not applicable to the Line of Duty Act Program since neither the benefit nor the cost is salary-based.

## 4. Reserve Accounts

The reserve account balances available for benefits at June 30, 2016 and 2015, are presented in Figure 2.13. These funds are required by Titles 51.1 and 2.2 of the *Code of Virginia* (1950), as amended, to provide for the payment of current and future benefits as follows:

- Member and employer contributions and investment income fund the member and employer reserves. Each member has a member contribution account that accumulates member contributions plus annual interest of 4.00%. Each employer has a retirement allowance account that accumulates employer contributions, transfers of investment income less administrative expenses incurred in operating the retirement plans and transfers of member contributions and accrued interest upon a member's retirement. Benefit payments are charged to employers' retirement allowance accounts.
- The Group Life Insurance Advance Premium Deposit Reserve accumulates a portion of insurance premium contributions collected during members' active careers and their investment earnings, and is charged for life insurance benefits paid and expenses incurred in operating the Group Life Insurance Program.
- Employer contributions and investment income fund the Retiree Health Insurance Credit Reserve. It is charged for credit reimbursements applied to the monthly health insurance premiums of eligible retired members and expenses incurred in operating the Retiree Health Insurance Credit Program.
- Employer contributions and investment income fund the Disability Insurance Trust Fund. It is charged for long-term disability benefits and expenses incurred in operating the Virginia Sickness and Disability Program (VSDP).
- Employer contributions and investment income fund the Line of Duty Act Trust Fund. It is charged for Line of Duty Act death and health insurance benefits and expenses incurred in operating the Line of Duty Act Program.

- Employer contributions and investment income fund the Local Disability Insurance Trust Fund. It is charged for long-term disability benefits and expenses incurred in operating the Virginia Local Disability Program (VLDP). The program was new in fiscal year 2014 and has no net position.

**FIGURE 2.13: NET POSITION RESTRICTED FOR BENEFITS**

	(EXPRESSED IN THOUSANDS)	
AT JUNE 30	2016	2015
<b>Virginia Retirement System</b>		
Member Reserve	\$12,592,933	\$12,200,743
Employer Reserve	51,435,976	51,849,137
<b>Total VRS</b>	<b>64,028,909</b>	<b>64,049,880</b>
<b>State Police Officers' Retirement System</b>		
Member Reserve	100,291	95,394
Employer Reserve	630,397	637,958
<b>Total SPORS</b>	<b>730,688</b>	<b>733,352</b>
<b>Virginia Law Officers' Retirement System</b>		
Member Reserve	237,416	232,824
Employer Reserve	974,030	958,529
<b>Total VaLORS</b>	<b>1,211,446</b>	<b>1,191,353</b>
<b>Judicial Retirement System</b>		
Member Reserve	38,561	36,998
Employer Reserve	429,741	419,474
<b>Total JRS</b>	<b>468,302</b>	<b>456,472</b>
<b>Group Life Insurance Advance Premium Deposit Reserve</b>	<b>1,224,926</b>	<b>1,162,617</b>
<b>Retiree Health Insurance Credit Reserve</b>	<b>173,211</b>	<b>173,194</b>
<b>Disability Insurance Trust Fund (VSDP)</b>	<b>407,826</b>	<b>414,518</b>
<b>Line of Duty Act Trust Fund</b>	<b>2,708</b>	<b>728</b>
<b>Disability Insurance Trust Fund (VLDP)</b>	<b>—</b>	<b>—</b>
<b>Total Pension and Other Employee Benefit Reserves</b>	<b>\$68,248,016</b>	<b>\$68,182,114</b>



## 5. Deposits and Investment Risk Disclosures

### A. DEPOSITS

Deposits of the System maintained by the Treasurer of Virginia at June 30, 2016 and 2015, as shown in Figure 2.14, were entirely insured under the Virginia Security for Public Deposits Act, Section 2.2-4400 et seq. of the *Code of Virginia* (1950), as amended, which provides for an assessable, multiple financial institution collateral pool. Deposits with the System's master custodian, BNY Mellon, were entirely insured by federal depository insurance coverage.

**FIGURE 2.14: DEPOSITS**

AT JUNE 30	(EXPRESSED IN THOUSANDS)	
	2016 Carrying Amount	2015 Carrying Amount
Treasurer of Virginia	\$ 90,549	\$ —
Master Custodian	81,789	13,570
<b>Total Deposits</b>	<b>\$172,338</b>	<b>\$ 13,570</b>

### B. INVESTMENTS

**1. Authorized Investments.** The Board of Trustees of the System has full power to invest and reinvest the trust funds in accordance with Section 51.1-124.30 of the *Code of Virginia* (1950), as amended. This section requires the Board to discharge its duties solely in the interests of members, retirees and beneficiaries. It also requires the Board to invest the assets 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 a like character and with like aims.

Investment value and earnings of the investment pool are proportionally allocated among the System's trust funds on the basis of each fund's equity interest in the common investment pool. An Investment Summary is included in the Investment Section. The equity interest of each fund as of June 30, 2016 and 2015, is presented in Figure 2.15.

**FIGURE 2.15: EQUITY INTERESTS**

AT JUNE 30 Fund	2016	2015
Virginia Retirement System	93.76%	93.88%
State Police Officers' Retirement System	1.07%	1.08%
Virginia Law Officers' Retirement System	1.78%	1.75%
Judicial Retirement System	0.69%	0.67%
Group Life Insurance Fund	1.86%	1.77%
Retiree Health Insurance Credit Fund	0.25%	0.25%
Disability Insurance Trust Fund (VSDP)	0.59%	0.60%
Line of Duty Act Trust Fund	0.00%	0.00%
Virginia Sickness and Disability Program	0.00%	0.00%
<b>Total Equity Interests</b>	<b>100.00%</b>	<b>100.00%</b>

**2. Fair Value Measurements.** The System categorizes the fair value measurements within the hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The System's master custodian uses a proprietary matrix based on asset class as the basis for the Fair Value Hierarchy, which utilizes industry standard asset categories to assign a fair value level to each investment.

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

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

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

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

value hierarchy. Cash equivalent investments that are measured at amortized cost also 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 in the valuation. The System's assessment of significant particular inputs to these fair value measurements requires judgment and considers factors specific to each asset or liability. Figure 2.16 shows the fair value leveling of the investments for the System and the following recurring fair value measurements as of June 30, 2016 and June 30, 2015:

**FIGURE 2.16: INVESTMENTS AND DERIVATIVE INSTRUMENTS MEASURED AT FAIR VALUE**

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	June 30, 2016	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Investments By Fair Value Level:</b>				
Debt Securities:				
U.S. Government Securities	\$ 3,724,823	\$ 3,301,632	\$ 423,191	\$ —
Agencies	3,253,654	—	3,253,654	—
Municipal Securities	160,388	—	160,388	—
Asset-Backed Securities	651,664	—	651,664	—
Collateralized Mortgage Obligations	256,314	—	256,314	—
Commercial Mortgages	271,303	—	271,303	—
Corporate and Other Bonds	10,280,499	16,359	10,261,984	2,156
Fixed Income Mutual and Commingled Funds	196,848	—	—	196,848
<b>Total Debt Securities</b>	<b>18,795,493</b>	<b>3,317,991</b>	<b>15,278,498</b>	<b>199,004</b>
Equity Securities:				
Common and Preferred Stocks	21,212,117	21,087,991	123,415	711
<b>Total Equity Securities</b>	<b>21,212,117</b>	<b>21,087,991</b>	<b>123,415</b>	<b>711</b>
Credit Strategies Funds	69,122	—	—	69,122
Private Equity Funds	844,964	—	—	844,964
Real Estate and Real Asset Funds	3,243,646	—	—	3,243,646
<b>Total Investments by Fair Value Level</b>	<b>44,165,342</b>	<b>24,405,982</b>	<b>15,401,913</b>	<b>4,357,447</b>
<b>Investments Measured at the Net Asset Value (NAV):</b>				
Hedge Funds	7,195,859			
Credit Strategies Funds	3,761,182			
Private Equity Funds	4,378,586			
Equity International Commingled Funds	1,286,111			
Fixed Income Mutual and Commingled Funds	994,895			
Real Estate and Real Asset Funds	4,422,633			
<b>Total Investments Measured at the NAV</b>	<b>22,039,266</b>			
<b>Total Investments Measured at Fair Value</b>	<b>66,204,608</b>			
<b>Investment Derivative Instruments:</b>				
Foreign Currency Forwards	\$ 51,100	\$ —	\$ 51,100	
Futures Contracts	9,913	9,913	—	
Credit Default Swaps	(494)	—	(494)	
Interest Rate Swaps	(21,871)	—	(21,871)	
Total Return Swaps	(100)	—	(100)	
<b>Total Investment Derivative Instruments</b>	<b>\$ 38,548</b>	<b>\$ 9,913</b>	<b>\$ 28,635</b>	

FIGURE 2.16: INVESTMENTS AND DERIVATIVE INSTRUMENTS MEASURED AT FAIR VALUE, cont.

AS OF JUNE 30, 2015

(EXPRESSED IN THOUSANDS)

	June 30, 2015	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Investments By Fair Value Level:</b>				
Debt Securities:				
U.S. Government Securities	\$ 4,249,454	\$ 3,651,536	\$ 597,918	\$ —
Agencies	2,868,413	—	2,868,413	—
Municipal Securities	162,382	—	162,382	—
Asset-Backed Securities	348,126	—	348,126	—
Collateralized Mortgage Obligations	328,420	—	328,420	—
Commercial Mortgages	396,007	—	396,007	—
Corporate and Other Bonds	10,652,974	69,725	10,430,961	152,288
Fixed Income Mutual and Commingled Funds	117,728	—	—	117,728
<b>Total Debt Securities</b>	<b>19,123,504</b>	<b>3,721,261</b>	<b>15,132,227</b>	<b>270,016</b>
Equity Securities:				
Common and Preferred Stocks	23,698,318	23,599,212	98,903	203
<b>Total Equity Securities</b>	<b>23,698,318</b>	<b>23,599,212</b>	<b>98,903</b>	<b>203</b>
Credit Strategies Funds	11,474	—	—	11,474
Private Equity Funds	628,722	—	—	628,722
Real Estate and Real Asset Funds	2,682,625	15,741	—	2,666,884
<b>Total Investments by Fair Value Level</b>	<b>46,144,643</b>	<b>27,336,214</b>	<b>15,231,130</b>	<b>3,577,299</b>
<b>Investments Measured at the Net Asset Value (NAV):</b>				
Hedge Funds	6,711,031			
Credit Strategies Funds	3,370,166			
Private Equity Funds	4,143,858			
Equity International Commingled Funds	251,608			
Fixed Income Mutual and Commingled Funds	627,282			
Real Estate and Real Asset Funds	4,316,696			
<b>Total Investments Measured at the NAV</b>	<b>19,420,641</b>			
<b>Total Investments Measured at Fair Value</b>	<b>\$65,565,284</b>			
<b>Investment Derivative Instruments:</b>				
Foreign Currency Forwards	\$ (4,888)	\$ —	\$ (4,888)	\$ —
Futures Contracts	(10,871)	(10,871)	—	—
Fixed Income Options	(49)	(49)	—	—
Swaptions	(63)	(63)	—	—
Credit Default Swaps	(2,232)	—	(2,232)	—
Interest Rate Swaps	3,491	—	3,491	—
Total Return Swaps	(18,849)	—	(18,849)	—
<b>Total Investment Derivative Instruments</b>	<b>\$ (33,461)</b>	<b>\$ (10,983)</b>	<b>\$ (22,478)</b>	<b>\$ —</b>

## Description of Investments Measured at Fair Value

Equity and debt securities classified in Level 1 are valued using quoted prices in active markets for those securities.

Debt securities classified in Level 2 are valued using a proprietary matrix pricing technique. This pricing technique defines a primary source and secondary sources to be used if the primary pricing source does not provide a value. Typically, these securities are valued using bid evaluations. Valuation techniques may include market participants' assumptions, quoted prices for similar assets, benchmark yield curves, market corroborated inputs and other data inputs. Those classified in Level 3 are valued using proprietary information.

Equity securities in Level 2 are typically valued using bid evaluations. Equity securities in Level 3 are valued using proprietary information.

Credit Strategies mezzanine funds have been assigned a Level 3, as they have unobservable inputs. When observable inputs are not available for these securities, one or more valuation techniques (e.g., the market approach and/or the income approach) are utilized for which sufficient and reliable data is available. Within Level 3, the use of the market approach generally consists of the net present value of the estimated future cash flows. See further details below for Credit Strategies measured at NAV.

Private Equities have been assigned a Level 3, as they have unobservable inputs. They consist of many fund categories including: Venture Capital, Buyout, Subordinate Debt, Growth Capital, Turnaround, Energy and Special Situations. These Level 3 investments may include common and preferred

equity securities, corporate debt, partnership and member interests and other privately issued securities. When observable inputs are not available for these securities, one or more valuation techniques (e.g., the market approach and/or the income approach) are utilized for which sufficient and reliable data is available. Within Level 3, the use of the market approach generally consists of using comparable market transactions or other data, while the use of the income approach generally consists of the net present value of estimated future cash flows. See further details below for Private Equities measured at the NAV.

Real Assets have been assigned a Level 3, as they have unobservable inputs. They consist of many fund categories including: Private Investment Real Estate, Real Estate Investment Trusts, Infrastructure and Natural Resources. When observable inputs are not available for these securities, one or more valuation techniques (e.g., the market approach and/or the income approach) are utilized for which sufficient and reliable data is available. Within Level 3, the use of the market approach generally consists of using comparable market transactions or other data, while the use of the income approach generally consists of the net present value of estimated future cash flows. See further details below for Real Assets measured at the NAV.

Derivative instruments classified as Level 1 of the Fair Value Hierarchy are valued using price quoted in active markets for those securities. The derivative instruments in Level 1 consist of futures contracts on U.S. Treasury bond and notes and futures contracts on U.S. equity indexes. Derivative instruments classified as Level 2 are valued using a number of modeling approaches that take into account observable market levels, benchmark rates and foreign exchange rates.

**FIGURE 2.17: INVESTMENTS MEASURED AT THE NAV**

AT JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	Fair Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
<b>Hedge Funds:</b>				
Equity Long/Short Funds			Monthly, Quarterly, Semi-Annually, Annually	45-90 Days
Equity Long-Only Funds	\$ 3,973,154		Daily, Quarterly	14-90 Days
Credit Funds	1,151,966		Annually	45-90 Days
Multi-Strategy Funds	888,274		Monthly	30-90 Days
Terminated Funds	1,166,652		N/A	N/A
	15,813			
<b>Total Hedge Funds</b>	<b>7,195,859</b>			
<b>Credit Strategies Funds:</b>				
Bank Loan and Direct Lending	2,190,795	\$ 350,598		
Distressed Debt Funds	267,520	298,521		
Mezzanine Debt Funds	322,837	339,830		
Multi-Strategy Funds	217,299	1,044,191		
Opportunistic Funds	762,731	137,907		
<b>Total Credit Strategies Funds</b>	<b>3,761,182</b>	<b>2,171,047</b>		
<b>Private Equity Funds:</b>				
Buyout Funds	2,207,355	1,393,401		
Energy Funds	264,948	457,769		
Growth Funds	397,214	61,080		
International Buyout Funds	408,991	283,327		
Special Situations Funds	821,817	882,983		
Subordinated Debt Funds	67,104	32,924		
Turnaround Funds	107,280	176,222		
Venture Capital Funds	103,877	15,789		
<b>Total Private Equity Funds</b>	<b>4,378,586</b>	<b>3,303,495</b>		
<b>Equity International Commingled Funds</b>	<b>1,286,111</b>			
<b>Fixed Income Mutual and Commingled Funds</b>	<b>994,895</b>			
<b>Real Estate and Real Asset Funds:</b>				
Infrastructure Funds	574,413	192,796		
Natural Resource Funds	357,055	141,353		
Private Investment Real Estate	3,202,191	297,996		
Real Estate Investment Trusts	288,974	—		
<b>Total Real Estate and Real Asset Funds</b>	<b>4,422,633</b>	<b>632,145</b>		
<b>Total Investments Measured at the NAV</b>	<b>\$22,039,266</b>	<b>\$6,106,687</b>		

FIGURE 2.17: INVESTMENTS MEASURED AT THE NAV, cont.

AT JUNE 30, 2015

(EXPRESSED IN THOUSANDS)

	Fair Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
<b>Hedge Funds:</b>				
Equity Long/Short Funds			Monthly, Quarterly, Semi-Annually, Annually	45-90 Days
Equity Long-Only funds	\$ 3,799,659		Daily, Quarterly	14 Days
Credit Funds	1,509,944		Annually	45-90 Days
Multi-Strategy Funds	928,480		Monthly	30 Days
Terminated Funds	453,849		N/A	N/A
	19,099			
<b>Total Hedge Funds</b>	<b>6,711,031</b>			
<b>Credit Strategies Funds:</b>				
Bank Loan and Direct Lending	2,110,732	\$ 248,866		
Distressed Debt Funds	216,807	293,876		
Mezzanine Debt Funds	315,326	394,386		
Multi-Strategy Funds	46,247	953,753		
Opportunistic Funds	681,054	71,381		
<b>Total Credit Strategies Funds</b>	<b>3,370,166</b>	<b>1,962,262</b>		
<b>Private Equity Funds:</b>				
Buyout Funds	1,811,019	1,637,613		
Energy Funds	353,353	528,807		
Growth Funds	447,690	93,280		
International Buyout Funds	385,897	382,170		
Special Situations Funds	794,258	1,016,590		
Subordinated Debt Funds	74,241	29,116		
Turnaround Funds	143,792	211,446		
Venture Capital Funds	133,608	18,414		
<b>Total Private Equity Funds</b>	<b>4,143,858</b>	<b>3,917,436</b>		
<b>Equity International Commingled Funds</b>	<b>251,608</b>			
<b>Fixed Income Mutual and Commingled Funds</b>	<b>627,282</b>			
<b>Real Estate and Real Asset Funds:</b>				
Infrastructure Funds	471,493	269,451		
Natural Resource Funds	330,412	165,244		
Private Investment Real Estate	3,233,334	432,346		
Real Estate Investment Trusts	281,457	10,045		
<b>Total Real Estate and Real Asset Funds</b>	<b>4,316,696</b>	<b>877,086</b>		
<b>Total Investments Measured at the NAV</b>	<b>\$19,420,641</b>	<b>\$6,756,784</b>		

## Description of Investments Measured at the NAV

Figure 2.17 presents the investments measured at the net asset value (NAV) per share (or its equivalent). Below are the valuation methods used for those investments:

### HEDGE FUNDS:

- **Equity Long/Short Hedge Funds:** This type included investments in 11 hedge funds at June 30, 2016, and 10 hedge funds at June 30, 2015, that invest in global long and short equity positions. Management of each hedge fund has the ability to invest from value to growth strategies, from small to large capitalization stocks and may vary net exposure considerably. The fair values of the investments in this type have been determined using the NAV per share of the investments. Investments representing nearly 47% of the value of the investments in this type of fund cannot be redeemed because they include restrictions that do not allow redemptions in the first 12 to 60 months after acquisition. The restriction period for the remaining investments ranged from one to 11 months at June 30, 2016.
- **Equity Long-Only Hedge Funds:** This type included investments in three hedge funds at both June 30, 2016, and June 30, 2015, which invest in global long-only equity positions. These hedge funds are generally fully invested and only very occasionally take short positions for hedging purposes. The fair values of the investments in this type have been determined using the NAV per share of the investments. At June 30, 2016, investments representing nearly 78% of the value of the investments in this type of fund cannot be redeemed because they include restrictions that do not allow redemptions in the first 36 to 60 months after acquisition. The remaining restriction period for these investments was less than 12 months at June 30, 2016.
- **Credit Hedge Funds:** This type included investments in three hedge funds at both June 30, 2016, and June 30, 2015, which invest in event-driven, distressed and special situation credit opportunities. The fair values of the investments in this type have been determined using the NAV per share of the investments. At June 30, 2016, investments representing nearly 32% of the value of the investments in this type of fund cannot be redeemed because they include restrictions that do not allow redemptions in the first 12 to 24 months after acquisition. The remaining restriction period for these investments was less than 12 months at June 30, 2016.
- **Multi-Strategy Hedge Funds:** This type included investments in four hedge funds at June 30, 2016, and three hedge funds at June 30, 2015, which invest in multiple asset classes, combining exposure to balance risks. Such exposure can include traditional and alternative investments. The fair values of the investments in this type have been determined using the NAV per share of the investments. Investments representing nearly 45% of the value of the investments in this type of fund cannot be redeemed because they include restrictions that do not allow redemptions in the first 60 months after acquisition. The remaining restriction period for these investments was one to three months at June 30, 2016.
- **Terminated Hedge Funds:** This type included investments in three hedge funds at June 30, 2016, and five hedge funds at June 30, 2015, from which the System is awaiting final payment of the redemption proceeds. Liquidity is not applicable for these funds because VRS has already submitted redemption requests. The fair values of the investments in this type have been determined using the NAV per share of the investments.



- **Credit Strategies Funds:** This type consists of many fund categories including: bank loan and direct lending funds, distressed debt funds, mezzanine debt funds, multi-strategy funds and opportunistic funds. The fair value of the investments in these funds have been determined using the NAV per share of the investments. The nature of the investments in this type is that distributions are received through the liquidation of the underlying assets in the fund. If these investments were held, it is expected that the underlying assets in the fund would be liquidated over three to five years.
  - **Private Equity Funds:** This type consists of many fund categories including Venture Capital, Buyout, Subordinate Debt, Growth Capital, Turnaround, Energy and Special Situations. The fair value of the investments in these funds have been determined using the NAV per share of the investments. The nature of the investments involves receiving distributions through liquidation of the underlying fund assets. It is expected that hold periods for the underlying fund assets will range from three to eight years.
  - **Equity International Commingled Funds:** This type includes investments in three institutional investment funds at June 30, 2016, that invest in international equities. One fund employs a long/short strategy in global equities; a second fund employs a long-only strategy in companies whose prospects are linked to the internal growth of emerging markets; and a third fund invests in international frontier markets. The fair values of the investments in these funds have been determined using the NAV per share of the investments. Redemptions can be made from these funds, given the appropriate notice, any regular trading day on the NYSE.
  - **Fixed Income Mutual and Commingled Funds:** This type consists of one mutual fund that invests in a diversified portfolio of fixed income instruments of varying maturities and two institutional investment funds that invest in investment-grade and high-yield U.S. private placements. The fair values of the investments in these funds have been determined using the NAV per share of the investments.
  - **Real Assets:** This type includes investments in many fund categories including Private Investment Real Estate, Real Estate Investment Trusts, Infrastructure and Natural Resources. The fair value of the investments in these funds have been determined using the NAV per share of the investments. The nature of the investments in this type is that distributions are received through the liquidation of the underlying assets in the fund. If these investments were held, it is expected that the underlying assets of the funds would be liquidated over one to 14 years.
- 3. Interest Rate Risk.** Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The risk is managed within the portfolio using the effective duration or option-adjusted methodology, as shown in Figure 2.18. It is widely used in the management of fixed income portfolios in that it quantifies, to a much greater degree, the risk of interest rate changes. The methodology takes into account optionality on bonds and scales the risk of price changes on bonds depending on the degree of change in rates and the slope of the yield curve. All of the System's fixed-income portfolios are managed in accordance with investment guidelines, most of which are specific as to the degree of interest rate risk that can be taken.

As of June 30, 2016, the System's investments include securities which are highly sensitive to interest rate fluctuations in that they are subject to early payment in a period of declining interest rates (i.e., collateralized and mortgage pass-through, etc.). The resulting reduction in expected total cash flows affects the fair value of these securities.

#### FIGURE 2.18: EFFECTIVE DURATION OF DEBT SECURITIES BY INVESTMENT TYPE

AT JUNE 30

(EXPRESSED IN THOUSANDS)

Investment Type	Market Value	Weighted Avg. Effective Duration
U.S. Government	\$3,801,988	5.65
Agencies	3,397,073	3.55
Municipal Securities	160,389	8.78
Asset-Backed Securities	651,664	1.72
Collateralized Mortgage Obligations	256,314	0.08
Commercial Mortgages	271,303	5.37
Corporate and Other Bonds	10,260,805	5.83
Repurchase Agreements	88,200	0.00
Fixed Income Commingled Funds	1,179,229	4.98
Cash and Cash Equivalents	2,287,937	0.23
<b>Total Debt Securities</b>	<b>\$22,354,902</b>	<b>4.71</b>

**4. Credit Risk.** Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations to the System. As of June 30, 2016, the System's fixed income assets that are not government-guaranteed represented 83% of the fixed income assets.

The System's policy for credit risk is based on the concept of a risk budget rather than specific limitations related to the rating of an individual security. The System's risk budget is allocated among the different investment strategies. The System's fixed income portfolio credit quality and exposure levels as of June 30, 2016, are summarized in Figure 2.19.

Credit risk for derivative instruments held by the System results from counterparty risk assumed by the System. This is essentially the risk that the borrower will be unable to meet its obligation. Information regarding the System's credit risk related to derivatives is provided in Note 5.B.8. Policies related to credit risk pertaining to the System's securities lending program are provided in Note 5.B.6.

**FIGURE 2.19: CREDIT QUALITY AND EXPOSURE LEVELS OF NON-GOVERNMENT-GUARANTEED SECURITIES**

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

Credit Rating Level	Agencies	Municipal Securities	Asset-Backed Securities	Collateralized Mortgage Obligations	Commercial Mortgages	Corporate and Other Bonds	Repurchase Agreements	Fixed Income Index and Pooled Funds	Cash and Cash Equivalents
<b>MOODY'S RATINGS:</b>									
<b>U.S. Government and Short-Term Debt:</b>									
U.S. Government Agencies:									
FHLB:									
Aaa	\$ 158,415	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FHLMC:									
Aaa	759,823	-	-	81,787	-	-	-	-	-
FNMA:									
Aaa	1,643,753	-	-	80,373	-	-	-	-	-
P-1	-	-	-	-	-	69,205	-	-	958,726
P-2	-	-	-	-	-	-	-	-	650,296
<b>Long-Term Debt:</b>									
Aaa	59,340	10,939	302,679	24,772	226,084	176,557	-	-	-
Aa1	-	60,367	8,115	-	-	91,492	-	-	21,713
Aa2	-	39,874	24,014	-	-	239,213	-	-	-
Aa3	-	42,247	-	-	-	383,979	-	-	-
A1	-	-	-	-	-	216,207	-	-	45,000
A2	-	-	17,788	-	-	405,504	-	-	-
A3	-	-	33	-	-	900,418	-	-	-
Baa1	-	-	894	-	-	992,855	-	832,148	-
Baa2	-	-	-	-	-	963,890	-	-	-
Baa3	-	-	3,198	-	-	946,330	-	-	-
Ba1	-	-	7,954	-	-	415,805	-	150,233	-
Ba2	-	-	11,670	-	843	438,887	-	-	-
Ba3	-	-	13,592	107	27	565,620	-	-	-
B1	-	-	19,648	1,961	4,050	518,621	-	89,892	-
B2	-	-	5,800	5,155	4,116	249,701	-	-	-
B3	-	-	9,959	-	217	358,385	-	-	-
Caa1	-	-	17,111	1,634	-	202,605	-	-	-
Caa2	-	-	2,144	9,965	-	72,169	-	-	-
Caa3	-	-	13,092	18,465	-	66,784	-	-	-
Ca	-	-	30,566	7,395	-	996	-	-	-
C	-	-	6,605	-	-	31	-	-	-
<b>Total Moody's Ratings</b>	<b>2,621,331</b>	<b>153,427</b>	<b>494,862</b>	<b>231,614</b>	<b>235,337</b>	<b>8,275,254</b>	<b>-</b>	<b>1,072,273</b>	<b>1,675,735</b>

**FIGURE 2.19: CREDIT QUALITY AND EXPOSURE LEVELS OF NON-GOVERNMENT-GUARANTEED SECURITIES, cont.**

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

Credit Rating Level	Agencies	Municipal Securities	Asset-Backed Securities	Collateralized Mortgage Obligations	Commercial Mortgages	Corporate and Other Bonds	Repurchase Agreements	Fixed Income Index and Pooled Funds	Cash and Cash Equivalents
<b>STANDARD &amp; POOR'S RATINGS:</b>									
<b>U.S. Government and Short-Term Debt:</b>									
U.S. Government Agencies:									
FHLMC:									
AA+	41,261	—	—	—	—	—	—	—	—
FNMA:									
AA+	1,079	—	—	—	—	—	—	—	—
<b>Long-Term Debt:</b>									
AAA	—	—	66,717	—	23,791	28,280	—	—	—
AA+	2,992	—	—	—	661	—	—	—	—
AA	—	6,962	5,016	—	—	3,616	—	—	—
AA-	—	—	—	—	5,217	—	—	—	—
A+	—	—	—	—	—	2,093	—	—	—
A-	—	—	—	—	—	15,979	—	—	—
BBB+	—	—	—	—	—	46,545	—	—	—
BBB	—	—	—	—	—	20,732	—	—	—
BBB-	—	—	—	—	—	70,145	—	—	—
BB+	—	—	1,844	—	—	60,994	—	—	—
BB	—	—	—	—	—	69,830	—	—	—
BB-	—	—	4,206	—	—	90,280	—	—	—
B+	—	—	—	—	—	38,135	—	—	—
B	—	—	—	—	—	43,590	—	—	—
B-	—	—	—	—	—	11,779	—	—	—
CCC+	—	—	—	—	—	13,660	—	—	—
CCC	—	—	—	3,309	—	18,238	—	—	—
D	—	—	—	—	—	8,481	—	—	—
<b>Total Standard &amp; Poor's Ratings</b>	<b>45,332</b>	<b>6,962</b>	<b>77,783</b>	<b>3,309</b>	<b>29,669</b>	<b>542,377</b>	<b>—</b>	<b>—</b>	<b>—</b>

**FIGURE 2.19: CREDIT QUALITY AND EXPOSURE LEVELS OF NON-GOVERNMENT-GUARANTEED SECURITIES, cont.**

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

Credit Rating Level	Agencies	Municipal Securities	Asset-Backed Securities	Collateralized Mortgage Obligations	Commercial Mortgages	Corporate and Other Bonds	Repurchase Agreements	Fixed Income Index and Pooled Funds	Cash and Cash Equivalents
<b>FITCH RATINGS:</b>									
<b>Long-Term Debt:</b>									
AAA	–	–	11,791	–	–	–	–	–	–
AA	–	–	2,020	–	–	–	–	–	–
A	–	–	10,150	–	–	22,884	–	–	–
A-	–	–	–	–	–	17,399	–	–	–
BBB+	–	–	8,630	–	–	9,113	–	–	–
BBB	–	–	–	–	–	49,718	–	–	–
BBB-	–	–	–	–	–	13,390	–	–	–
BB+	–	–	–	–	–	3,354	–	–	–
BB	–	–	–	–	–	1,388	–	–	–
BB-	–	–	–	–	–	311	–	–	–
B+	–	–	–	–	–	35,752	–	–	–
B	–	–	–	733	–	–	–	–	–
B-	–	–	–	–	2,882	–	–	–	–
CCC	–	–	–	–	3,415	2,383	–	–	–
CC	–	–	17	–	–	–	–	–	–
C	–	–	3,885	–	–	–	–	–	–
D	–	–	2,107	19,759	–	–	–	–	–
<b>Total Fitch Ratings</b>	–	–	<b>38,600</b>	<b>20,492</b>	<b>6,297</b>	<b>155,692</b>	–	–	–
<b>Not Rated Debt:</b>	<b>730,410</b>	–	<b>40,419</b>	<b>899</b>	–	<b>1,287,482</b>	<b>88,200</b>	<b>106,956</b>	<b>612,202</b>
<b>Total</b>	<b>\$3,397,073</b>	<b>\$ 160,389</b>	<b>\$ 651,664</b>	<b>\$ 256,314</b>	<b>\$ 271,303</b>	<b>\$10,260,805</b>	<b>\$ 88,200</b>	<b>\$1,179,229</b>	<b>\$2,287,937</b>

- **Concentration of Credit Risk.** This is the risk of loss that may be attributed to the magnitude of a government’s investment in a single issue. The System’s investment guidelines for each specific portfolio limits investments in any corporate entity to no more than 5.00% of the market value of the account for both the internally and externally managed portfolios. The System has no investments in any commercial or industrial organization whose fair value equals 5.00% or more of the System’s net fiduciary position.
- **Custodial Credit Risk.** This is the risk that in the event of the failure of the counterparty, the System will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. The System’s fair value of securities that were uninsured and held by a counterparty at June 30, 2016 and 2015, are presented in Figure 2.20.

**FIGURE 2.20: CUSTODIAL CREDIT RISK**

AT JUNE 30	(EXPRESSED IN THOUSANDS)	
	2016	2015
U.S. Government and Agency Mortgage Securities	\$ 65,546	\$ 99,849
Held by Broker-Dealer under Securities Lending Program:		
U.S. Government and Agency Mortgage Securities	35,865	392,627
Corporate and Other Bonds	66,603	–
Common and Preferred Stocks	889,066	1,561,818
<b>Total</b>	<b>\$1,057,080</b>	<b>\$2,054,294</b>

**5. Foreign Currency Risk.** Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. The System’s currency risk exposures, or exchange rate risk, primarily exist in the international and global equity investment holdings. The System’s exposure to foreign currency risk as of June 30, 2016, is highlighted in Figure 2.21.

**FIGURE 2.21: CURRENCY EXPOSURES BY ASSET CLASS**

AS OF JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

Currency	Cash and Cash Equivalents	Equity	Fixed Income	Private Equity	Real Assets	International Funds	Forward Contracts	Total
U.S. Dollar	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 1,286,111	\$ —	\$ 1,286,111
Euro Currency Unit	7,239	1,744,393	38,174	652,675	220,516	—	(1,402,650)	1,260,347
Japanese Yen	12,083	1,611,536	—	—	1,682	—	(707,928)	917,373
Hong Kong Dollar	3,303	742,774	—	—	4,033	—	(128,130)	621,980
British Pound Sterling	9,334	1,202,630	1,868	—	116,085	—	(790,580)	539,337
South Korean Won	3,955	382,154	—	—	—	—	(686)	385,423
Canadian Dollar	11,822	752,805	—	—	29,392	—	(474,284)	319,735
Swiss Franc	5,772	625,023	—	—	1,997	—	(366,552)	266,240
Indian Rupee	1,822	221,543	7,045	—	—	—	12,431	242,841
South African Rand	3,067	141,710	60,163	—	—	—	(7,619)	197,321
Australian Dollar	542	463,709	—	—	10,951	—	(295,292)	179,910
New Taiwan Dollar	201	185,345	—	—	—	—	(10,961)	174,585
Brazil Real	3,159	102,309	103,005	—	—	—	(43,868)	164,605
New Turkish Lira	2,213	80,516	46,604	—	—	—	853	130,186
Mexican Peso	2,558	45,889	44,147	—	847	—	36,039	129,480
Malaysian Ringgit	820	62,394	39,352	—	—	—	25,536	128,102
Thailand Baht	141	70,112	16,562	—	—	—	17,755	104,570
Swedish Krona	67	196,387	—	—	—	—	(99,590)	96,864
Indonesian Rupiah	719	33,934	57,512	—	—	—	(1,327)	90,838
Polish Zloty	1,318	18,839	42,869	—	—	—	7,976	71,002
Danish Krone	1,050	131,549	—	—	—	—	(70,536)	62,063
Russian Ruble (New)	230	18,922	21,525	—	—	—	18,487	59,164
Colombian Peso	1,348	1,797	26,545	—	—	—	8,724	38,414
Chilean Peso	1,208	37,566	—	—	—	—	(3,358)	35,416
Norwegian Krone	1,897	93,835	—	—	—	—	(67,794)	27,938
Philippines Peso	653	13,050	2,087	—	—	—	7,621	23,411
Hungarian Forint	5,106	8,019	14,884	—	—	—	(14,310)	13,699
Moroccan Dirham	1	—	—	—	—	—	12,478	12,479
Romanian Leu	203	—	13,734	—	—	—	(1,639)	12,298
Peruvian Nuevo Sol	8	—	7,855	—	—	—	3,345	11,208
Egyptian Pound	259	4,632	—	—	—	—	—	4,891
UAE Dirham	144	3,772	—	—	—	—	—	3,916
Argentine Peso	1,293	—	—	—	—	—	2,302	3,595
Ghanaian Cedi	—	—	3,390	—	—	—	—	3,390
Qatari Riyal	716	2,668	—	—	—	—	—	3,384
Nigerian Naira	—	—	736	—	—	—	—	736
Saudi Arabian Riyal	—	—	—	—	—	—	(5,572)	(5,572)
Czech Koruna	287	310	—	—	—	—	(23,679)	(23,082)
Israeli Shekel	219	44,607	—	—	—	—	(69,986)	(25,160)
New Zealand Dollar	100	26,703	—	—	608	—	(59,077)	(31,666)
Chinese Yuan Renminbi	—	104	—	—	—	—	(46,331)	(46,227)
Singapore Dollar	1,231	120,402	—	—	—	—	(190,662)	(69,029)
<b>Total</b>	<b>\$ 86,088</b>	<b>\$ 9,191,938</b>	<b>\$ 548,057</b>	<b>\$ 652,675</b>	<b>\$ 386,111</b>	<b>\$ 1,286,111</b>	<b>\$ (4,728,864)</b>	<b>\$ 7,422,116</b>

**6. Securities Lending.** Under authorization of the Board, the System lends its fixed income and equity securities to various broker-dealers on a temporary basis. This program is administered through an agreement with the System's custodial agent bank. All security loan agreements are collateralized by cash, securities or an irrevocable letter of credit issued by a major bank, and have a fair value equal to at least 102% of the fair value for domestic securities and 105% for international securities. Securities received as collateral cannot be pledged or sold by the System unless the borrower defaults. Contracts require the lending agents to indemnify the System if the borrowers fail to return the securities lent and related distributions and if the collateral is inadequate to replace the securities lent. All securities loans can be terminated on demand by either the System or the borrowers. The majority of loans are open loans, meaning the rebate is set daily. This results in a maturity of one or two days on average, although securities are often on loan for longer periods. The maturity of loans generally does not match the maturity of collateral investments, which averages 14 days. At year-end, the System had no credit risk exposure to borrowers because the amounts it owes the borrowers exceeded the amounts the borrowers owe the System. All securities are marked to market daily and carried at fair value.

The fair value of securities on loan at June 30, 2016 and 2015, was \$8,258,416,000 and \$7,483,719,000, respectively. The June 30, 2016 and 2015, balances were composed of U.S. government and agency securities of \$2,561,950,000 and \$3,074,206,000, respectively; corporate and other bonds of \$1,676,673,000 and \$254,079,000, respectively; and common and preferred stocks of \$4,019,793,000 and \$4,155,434,000, respectively.

The value of collateral (cash and non-cash) at June 30, 2016 and 2015, was \$8,691,451,000 and \$8,002,941,000, respectively. Securities on loan are included with investments on the statement of plan net position. The invested cash collateral is included in the statement of plan net position as an asset and corresponding liability.

At June 30, 2016, the invested cash collateral had a cost of \$5,023,018,000 and was composed of time deposits of \$85,059,000, floating rate notes of \$3,291,663,000, mutual and money market funds of \$872,169,000 and repurchase agreements of \$774,127,000.

**7. Accounts Receivable/Accounts Payable for Security Transactions.** In addition to unsettled purchases and sales, accounts receivable and accounts payable for security transactions at June 30, 2016 and 2015, included (1) receivables for deposits with brokers for securities sold short of \$501,360,000 and \$551,183,000, respectively; and (2) payables for securities sold short and not covered with fair values of \$483,054,000 and \$478,337,000, respectively.

**8. Derivative Financial Instruments.** Derivative instruments are financial contracts whose values depend on the values of one or more underlying assets, reference rates or financial indexes. All derivatives are considered investments. The fair value of all derivative financial instruments is reported on a net basis on the Statement of Fiduciary Net Position. The derivative instruments are either subject to an enforceable master netting arrangement or similar agreement. The master netting arrangements allow the System to net applicable liabilities or payment obligations to counterparties to the derivative contracts against amounts owed to the System by the counterparties. They include futures, forwards, options and swap contracts. Some traditional securities, such as structured notes, can have derivative-like characteristics. In this case, the return may be linked to one or more indexes and asset-backed securities, such as collateralized mortgage obligations (CMOs), which are sensitive to changes in interest rates and pre-payments. Futures, forwards, options and swaps are recorded on the financial statements, as are structured notes and asset-backed investments.



The System is a party to various derivative financial investments on the financial statements that are used in the normal course of business to enhance returns on investments and manage risk exposure to changes in value resulting from fluctuations in market conditions. These investments may involve, to varying degrees, elements of credit and market risk in excess of amounts recognized on the financial statements.

At June 30, 2016, the System had four types of derivative financial instruments: futures, currency forwards, options and swaps. Futures, currency forwards and options contracts provide the System with the opportunity to build passive benchmark positions, manage portfolio duration in relation to various benchmarks, adjust portfolio yield curve exposure and gain market exposure to various indexes 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.

**9. 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 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 Statement of Changes in Fiduciary Net Position. 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 fair value of the system's investments in futures contracts at June 30, 2016 and 2015, was \$9,913,000 and (\$10,871,000), respectively. The notional value of the System's investment in futures contracts at June 30, 2016 and 2015, is shown in Figure 2.22.

**FIGURE 2.22: FUTURES**

AT JUNE 30

(EXPRESSED IN THOUSANDS)

	2016	2015
Notional Value		
<b>Cash and Cash Equivalent</b>		
<b>Derivatives Futures:</b>		
Long	\$ —	\$ —
Short	—	(183,747)
<b>Equity Derivatives</b>		
<b>Futures:</b>		
Long	635,381	827,881
Short	(2,019)	—
<b>Fixed Income Derivatives</b>		
<b>Futures:</b>		
Long	1,021,181	89,556
Short	(733,650)	(606,020)
<b>Total Futures</b>	<b>\$ 920,893</b>	<b>\$ 127,670</b>

**10. Currency Forwards.** Currency forwards represent foreign exchange contracts and are used by the System to effect settlements and to protect the base currency (\$U.S.) value of portfolio assets denominated in foreign currencies against fluctuations in the exchange rates of those currencies. A forward foreign currency exchange contract is a commitment to purchase or sell a foreign currency at a future date 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. The market risk in foreign currency contracts is related to adverse movements in currency exchange rates. The gain or loss arising from the difference between the original contracts and the closing of such contracts is included in the net realized gains or losses on foreign currency-related transactions in the Statement of Changes in Fiduciary Net Position. Information on the System's currency forwards contracts at June 30, 2016 and 2015, is shown in Figure 2.23.

## FIGURE 2.23: CURRENCY FORWARDS

AT JUNE 30

(EXPRESSED IN THOUSANDS)

Currency	Cost	Pending Foreign Exchange Purchases	Pending Foreign Exchange Sales	Fair Value 2016	Fair Value 2015
Argentine Peso	\$ 2,320	\$ 2,302	\$ –	\$ 2,302	\$ –
Australian Dollar	(292,607)	182,514	(473,459)	(290,945)	(222,487)
Brazil Real	(40,627)	9,773	(52,000)	(42,227)	(57,527)
British Pound Sterling	(832,753)	363,019	(1,168,566)	(805,547)	(1,050,547)
Canadian Dollar	(473,519)	205,071	(678,116)	(473,045)	(566,277)
Chilean Peso	(3,282)	1,606	(4,964)	(3,358)	319
Chinese Yuan Renminbi	(46,791)	638	(46,969)	(46,331)	–
Colombian Peso	8,385	8,918	(194)	8,724	(7,814)
Czech Koruna	(23,683)	–	(23,679)	(23,679)	–
Danish Krone	(69,336)	52,808	(121,681)	(68,873)	(94,319)
Euro Currency Unit	(1,417,991)	395,667	(1,793,541)	(1,397,874)	(1,037,892)
Hong Kong Dollar	(126,132)	13,546	(139,681)	(126,135)	(166,460)
Hungarian Forint	(14,200)	8,120	(22,431)	(14,311)	1,083
Indian Rupee	12,449	25,553	(13,122)	12,431	19,477
Indonesian Rupiah	1,431	9,785	(11,112)	(1,327)	1,057
Israeli Shekel	(68,884)	10,140	(79,210)	(69,070)	(69,449)
Japanese Yen	(697,641)	278,767	(972,110)	(693,343)	(1,052,403)
Malaysian Ringgit	24,839	28,117	(2,581)	25,536	15,840
Mexican Peso	32,716	44,500	(11,215)	33,285	10,738
Moroccan Dirham	12,417	12,478	–	12,478	–
New Taiwan Dollar	(10,780)	–	(10,961)	(10,961)	–
New Turkish Lira	1,591	12,936	(11,262)	1,674	4,646
New Zealand Dollar	(58,895)	104,421	(164,592)	(60,171)	(127,251)
Norwegian Krone	(69,448)	166,245	(235,000)	(68,755)	68,428
Peruvian Nuevo Sol	3,338	3,345	–	3,345	2,345
Philippines Peso	7,624	8,237	(616)	7,621	8,733
Polish Zloty	8,217	31,372	(23,941)	7,431	7,278
Romanian Leu	(1,663)	80	(1,719)	(1,639)	(1,630)
Russian Ruble (New)	17,402	20,938	(3,187)	17,751	(5,981)
Saudi Arabian Riyal	(5,462)	–	(5,572)	(5,572)	–
Singapore Dollar	(188,111)	157,502	(347,958)	(190,456)	(253,062)
South African Rand	(5,542)	15,351	(21,129)	(5,778)	(2,081)
South Korean Won	686	11,883	(11,452)	431	(23,077)
Swedish Krona	(101,805)	117,325	(218,539)	(101,214)	(158,286)
Swiss Franc	(369,479)	10,415	(379,769)	(369,354)	(293,002)
Thailand Baht	17,782	20,642	(2,887)	17,755	7,426
U.S. Dollar	4,770,298	7,039,144	(2,268,846)	4,770,298	5,037,287
<b>Total Forwards Subject to Foreign Currency Risk</b>				<b>\$ 51,097</b>	<b>\$ (4,888)</b>

**11. Options.** Options may be either exchange-traded or negotiated directly between two counterparties over the counter. Options grant the holder the right, but not the obligation, to purchase (call) or sell (put) a financial instrument at a specified price and within a specified period of time from the writer of the option.

As a purchaser of options, the System typically pays a premium at the outset. This premium is reflected as an asset on the financial statements. The System then retains the right, but not the obligation, to exercise the options and purchase the underlying financial instrument. Should the option not be exercised, it expires worthless, and the premium is recorded as a loss.

A writer of options assumes the obligation to deliver or receive the underlying financial instrument on exercise of the option. Certain option contracts may involve cash settlements based on specified indexes such as stock indexes. As a writer of options, the System receives a premium at the outset. This premium is reflected as a liability on the financial statements, and the System bears the risk of an unfavorable change in the price of the financial instrument underlying the option. The notional value of the System's options balances at June 30, 2016 and 2015, is shown in Figure 2.24.

**FIGURE 2.24: OPTIONS**

AT JUNE 30

(EXPRESSED IN THOUSANDS)

	2016	2015
Notional Value		
<b>Cash and Cash Equivalent Options:</b>		
Call	\$ 2,117	\$ (3)
Put	(192)	14
<b>Equity Options:</b>		
Call	–	–
Put	–	–
<b>Fixed Income Options:</b>		
Call	–	(12)
Put	–	(37)
<b>Swaptions:</b>		
Call	–	(12)
Put	–	(51)
<b>Total Options:</b>	<b>\$ 1,925</b>	<b>\$ (101)</b>

**12. Swap Agreements.** Swaps are negotiated contracts between two counterparties for the exchange of payments at certain intervals over a predetermined timeframe. The payments are based on a notional principal amount and calculated using either fixed or floating interest rates or total returns from certain instruments or indexes. Swaps are used to manage risk and enhance returns. To reduce the risk of counterparty nonperformance, the System generally requires collateral on any material gains from these transactions. During fiscal year 2016, the System had activity in credit defaults, interest rate and total return swaps. Gains and losses on swaps are determined based on fair values and are recorded in the Statement of Changes in Fiduciary Net Position. Information on the System's swap balances at June 30, 2016 and 2015, is shown in Figure 2.25.

## FIGURE 2.25: SWAPS

AS OF JUNE 30

Counterparty	Notional Amount	VRS Rate	Counterparty Rate
<b>Credit Default Swaps:</b>			
Barclays Bank PLC	\$ 3,900		
Barclays Bank PLC	3,700		
Barclays Bank PLC	3,450		
Barclays Bank PLC	3,400		
Barclays Bank PLC	2,600		
Barclays Bank PLC	1,800		
Barclays Bank PLC	1,800		
Barclays Bank PLC	1,239		
Barclays Bank PLC	884		
Barclays Bank PLC	800		
Barclays Bank PLC	800		
Barclays Bank PLC	700		
Barclays Bank PLC	600		
Barclays Bank PLC	600		
Barclays Bank PLC	530		
Barclays Bank PLC	500		
Barclays Bank PLC	200		
Barclays Bank PLC	200		
Barclays Bank PLC	200		
Barclays Bank PLC	100		
BNP Paribas SA/London	2,800		
BNP Paribas SA/London	537		
BNP Paribas SA/London	343		
BNP Paribas SA/London	330		
BNP Paribas SA/London	47		
Credit Suisse Group AG	3,400		
Credit Suisse Group AG	1,300		
Credit Suisse Group AG	800		
Credit Suisse Group AG	555		
Credit Suisse Group AG	225		
Credit Suisse Group AG	200		
Credit Suisse Group AG	200		
Credit Suisse Group AG	150		
Deutsche Bank AG/London	8,875		
Deutsche Bank AG/London	5,300		
Deutsche Bank AG/London	2,900		
Deutsche Bank AG/London	2,600		
Deutsche Bank AG/London	1,400		
Deutsche Bank AG/London	1,200		
Deutsche Bank AG/London	800		
Deutsche Bank AG/London	700		
Deutsche Bank AG/London	400		
Deutsche Bank AG/London	400		

(EXPRESSED IN THOUSANDS)

Maturity Date	Buying/Selling Protection	Pay/Receive Rate	Fair Value 2016	Fair Value 2015
6/20/2019	Selling	1.000%	\$ 44	\$ 47
12/20/2018	Buying	1.000%	—	(64)
9/20/2020	Selling	1.000%	—	(53)
6/20/2019	Selling	1.000%	(32)	(57)
9/20/2015	Selling	1.000%	—	(9)
12/20/2018	Buying	1.000%	—	(33)
9/20/2015	Selling	1.000%	—	(1)
6/20/2021	Buying	1.000%	6	—
6/20/2021	Buying	1.000%	4	—
12/20/2020	Selling	1.000%	(62)	—
9/20/2015	Selling	1.000%	—	1
12/20/2018	Buying	1.000%	—	(9)
6/20/2019	Selling	1.000%	(1)	(4)
9/20/2020	Selling	1.000%	(18)	—
6/20/2021	Buying	1.000%	3	—
9/20/2016	Selling	1.000%	1	—
9/20/2016	Selling	1.000%	—	—
6/20/2017	Selling	1.000%	1	—
12/20/2017	Selling	1.000%	—	—
12/20/2016	Selling	1.000%	—	—
6/20/2021	Buying	1.000%	28	—
6/20/2021	Buying	1.000%	9	—
6/20/2021	Buying	1.000%	6	—
6/20/2021	Buying	1.000%	6	—
6/20/2021	Buying	1.000%	—	—
12/20/2018	Buying	1.000%	—	(52)
6/20/2020	Selling	5.000%	—	35
12/20/2016	Selling	1.000%	3	8
12/20/2017	Selling	1.000%	4	—
12/20/2015	Selling	5.000%	—	3
9/20/2020	Selling	1.000%	(6)	—
12/20/2016	Selling	1.000%	1	2
12/20/2016	Selling	5.000%	—	5
6/20/2019	Selling	1.000%	(155)	(421)
12/20/2018	Selling	1.000%	26	24
6/20/2019	Selling	1.000%	7	—
9/20/2015	Selling	1.000%	—	(9)
9/20/2015	Selling	1.000%	—	1
12/20/2016	Selling	1.000%	4	12
9/20/2015	Selling	1.000%	—	1
6/20/2018	Selling	1.000%	(4)	(21)
3/20/2020	Selling	1.000%	(2)	(4)
3/20/2016	Selling	1.000%	—	—

**FIGURE 2.25: SWAPS, cont.**

AS OF JUNE 30

Counterparty	Notional Amount	VRS Rate	Counterparty Rate
Goldman Sachs International	6,600		
Goldman Sachs International	5,800		
Goldman Sachs International	5,225		
Goldman Sachs International	5,200		
Goldman Sachs International	5,200		
Goldman Sachs International	5,000		
Goldman Sachs International	4,900		
Goldman Sachs International	3,400		
Goldman Sachs International	2,800		
Goldman Sachs International	2,300		
Goldman Sachs International	2,100		
Goldman Sachs International	2,100		
Goldman Sachs International	1,950		
Goldman Sachs International	1,050		
Goldman Sachs International	900		
Goldman Sachs International	700		
Goldman Sachs International	650		
Goldman Sachs International	650		
Goldman Sachs International	400		
Goldman Sachs International	300		
Goldman Sachs International	300		
Goldman Sachs International	200		
HSBC Securities Inc.	7,200		
HSBC Securities Inc.	5,300		
HSBC Securities Inc.	2,100		
HSBC Securities Inc.	1,500		
HSBC Securities Inc.	1,400		
HSBC Securities Inc.	1,300		
HSBC Securities Inc.	1,200		
HSBC Securities Inc.	1,100		
HSBC Securities Inc.	1,000		
HSBC Securities Inc.	900		
HSBC Securities Inc.	800		
HSBC Securities Inc.	700		
HSBC Securities Inc.	400		
HSBC Securities Inc.	400		
HSBC Securities Inc.	200		
HSBC Securities Inc.	200		
HSBC Securities Inc.	100		
Intercontinental Exchange Holdings	26,159		
Intercontinental Exchange Holdings	18,300		
Intercontinental Exchange Holdings	10,000		
Intercontinental Exchange Holdings	5,000		
<b>Totals – Credit Default Swaps</b>	<b>\$ 206,449</b>		

(EXPRESSED IN THOUSANDS)

Maturity Date	Buying/Selling Protection	Pay/Receive Rate	Fair Value 2016	Fair Value 2015
6/20/2019	Selling	1.000%	(62)	(110)
9/20/2019	Selling	1.000%	—	(301)
3/20/2020	Selling	5.000%	—	(37)
6/20/2020	Selling	1.000%	—	(362)
9/20/2015	Selling	1.000%	—	2
12/20/2018	Selling	1.000%	—	(99)
6/20/2020	Selling	5.000%	—	(67)
6/20/2019	Selling	1.000%	(4)	(22)
12/20/2017	Selling	1.000%	5	—
3/20/2019	Selling	5.000%	—	263
12/20/2019	Selling	5.000%	—	83
12/20/2019	Selling	1.000%	—	(258)
9/20/2015	Selling	1.000%	—	(799)
12/20/2020	Selling	1.000%	—	(33)
3/20/2020	Buying	1.000%	—	88
3/20/2016	Selling	1.000%	—	1
6/20/2019	Buying	1.000%	—	(16)
6/20/2020	Selling	5.000%	—	46
12/20/2016	Selling	1.000%	1	—
12/20/2020	Selling	1.000%	(23)	—
12/20/2018	Selling	1.000%	(1)	(3)
12/20/2017	Selling	1.000%	1	—
6/20/2021	Buying	1.000%	591	—
9/20/2020	Selling	1.000%	—	(81)
3/20/2020	Selling	1.000%	—	(21)
9/20/2019	Selling	1.000%	—	(78)
12/20/2020	Selling	1.000%	(109)	—
9/20/2015	Selling	1.000%	—	—
9/20/2016	Selling	1.000%	2	—
6/20/2019	Selling	1.000%	(1)	(7)
6/20/2019	Selling	1.000%	(9)	(17)
3/20/2019	Selling	1.000%	—	(27)
12/20/2016	Selling	1.000%	2	—
6/20/2018	Selling	1.000%	(4)	(21)
3/20/2019	Selling	1.000%	—	(12)
6/20/2019	Selling	1.000%	—	(11)
3/20/2023	Selling	1.000%	—	(19)
12/20/2016	Selling	1.000%	1	—
3/20/2023	Selling	1.000%	—	(10)
6/20/2020	Selling	5.000%	—	1,633
6/20/2020	Selling	1.000%	—	(1,685)
6/20/2021	Selling	1.000%	(757)	—
6/20/2020	Selling	5.000%	—	346
			<b>\$ (494)</b>	<b>\$ (2,232)</b>

**FIGURE 2.25: SWAPS, cont.**

AS OF JUNE 30

Counterparty	Notional Amount	VRS Rate	Counterparty Rate
<b>Interest Rate Swaps:</b>			
Banque Nationale de Paris	\$ 89,000	Brazil Cetip Interbank Deposit	13.50%
Barclays Bank PLC	2,372	12.20%	Brazil Cetip Interbank Deposit
Barclays Bank PLC	2,123	12.23%	Brazil Cetip Interbank Deposit
Barclays Bank PLC	1,481	Brazil Cetip Interbank Deposit	13.78%
Barclays Bank PLC	1,288	Brazil Cetip Interbank Deposit	12.36%
Barclays Bank PLC	999	Brazil Cetip Interbank Deposit	15.96%
Barclays Bank PLC	608	3- month Johannesburg (JIBAR)	8.00%
Barclays Bank PLC	650	Mexico Interbank 28- day Index	5.00%
Barclays Bank PLC	335	3-month Johannesburg (JIBAR)	7.50%
BlackRock Inc.	553	Mexico Interbank 28-day Index	5.00%
Chicago Mercantile Exchange Inc.	183,813	3-month LIBOR	1.50%
Chicago Mercantile Exchange Inc.	140,213	3-month LIBOR	1.50%
Chicago Mercantile Exchange Inc.	73,271	2.75%	3-month LIBOR + 500 bps
Chicago Mercantile Exchange Inc.	50,159	2.25%	3-month LIBOR + 500 bps
Chicago Mercantile Exchange Inc.	12,813	6-month EURIBOR +100 bps	0.75%
Chicago Mercantile Exchange Inc.	10,397	3.00%	3-month LIBOR
Chicago Mercantile Exchange Inc.	8,300	1.30%	3-month LIBOR
Chicago Mercantile Exchange Inc.	7,400	2.00%	3-month LIBOR
Chicago Mercantile Exchange Inc.	6,290	Mexico Interbank 28-day Index	5.63%
Chicago Mercantile Exchange Inc.	5,209	1.00%	6-month LIBOR–Japanese Yen
Chicago Mercantile Exchange Inc.	4,246	2.00%	6-month LIBOR–British Pound
Chicago Mercantile Exchange Inc.	3,617	3.00%	6-month LIBOR–British Pound
Chicago Mercantile Exchange Inc.	1,785	Mexico Interbank 28-day Index	5.75%
Chicago Mercantile Exchange Inc.	1,651	Mexico Interbank 28-day Index + 100 bps	6.16%
Chicago Mercantile Exchange Inc.	1,553	1.00%	6-month LIBOR–Japanese Yen
Chicago Mercantile Exchange Inc.	1,262	Mexico Interbank 28-day Index	5.58%
Chicago Mercantile Exchange Inc.	1,114	6-month EURIBOR + 100 bps	0.75%
Chicago Mercantile Exchange Inc.	1,114	1.50%	6-month EURIBOR
Chicago Mercantile Exchange Inc.	196	0.50%	6-month LIBOR–Japanese Yen
Chicago Mercantile Exchange Inc.	134	Mexico Interbank 28-day Index + 100 bps	5.50%
Credit Suisse AG	4,682	13.38%	Brazil Cetip Interbank Deposit
Credit Suisse AG	3,496	Brazil Cetip Interbank Deposit	15.96%
Credit Suisse AG	3,058	Brazil Cetip Interbank Deposit	12.23%
Credit Suisse AG	1,661	14.72%	Brazil Cetip Interbank Deposit
Credit Suisse AG	716	Thai Baht 6-month fixing rate	2.78%
Deutsche Bank AG/London	13,484	Brazil Cetip Interbank Deposit	12.81%
Deutsche Bank AG/London	11,267	Brazil Cetip Interbank Deposit	13.90%
Deutsche Bank AG/London	6,664	10.91%	Brazil Cetip Interbank Deposit
Deutsche Bank AG/London	6,503	12.26%	Brazil Cetip Interbank Deposit
Deutsche Bank AG/London	4,744	16.15%	Brazil Cetip Interbank Deposit
Deutsche Bank AG/London	4,603	Brazil Cetip Interbank Deposit	11.68%
Deutsche Bank AG/London	4,370	Brazil Cetip Interbank Deposit	12.44%



(EXPRESSED IN THOUSANDS)

Maturity Date	Buying/Selling Protection	Pay/Receive Rate	Fair Value 2016	Fair Value 2015
1/2/2017			\$ —	\$ (155)
1/4/2021			19	—
1/4/2021			(5)	—
1/4/2016			—	(2)
1/2/2018			—	(17)
1/2/2019			69	—
12/18/2023			(6)	(8)
2/26/2018			—	9
12/17/2019			(3)	(2)
2/26/2018			—	—
9/15/2017			—	1,663
9/15/2017			—	1,268
9/21/2046			(15,295)	—
9/21/2026			(3,891)	—
9/16/2025			—	571
9/15/2045			(2,802)	(72)
5/6/2017			—	(12)
12/16/2019			—	(56)
7/7/2021			—	(16)
9/18/2023			—	(208)
9/16/2025			—	82
9/17/2024			—	(274)
6/5/2023			—	(41)
1/3/2035			—	(168)
9/20/2024			—	(10)
11/10/2021			—	(13)
9/16/2025			—	50
3/16/2046			—	68
9/17/2021			—	(2)
2/22/2023			—	(5)
1/2/2018			(6)	—
1/2/2019			241	—
1/4/2021			—	(5)
1/2/2018			(41)	—
9/23/2025			50	—
1/4/2021			237	148
1/2/2017			—	(2)
1/2/2017			—	202
1/2/2017			—	45
1/4/2021			(546)	—
1/4/2021			—	(97)
1/2/2019			9	—

FIGURE 2.25: SWAPS, cont.

AS OF JUNE 30

Counterparty	Notional Amount	VRS Rate	Counterparty Rate
Deutsche Bank AG/London	3,153	16.59%	Brazil Cetip Interbank Deposit
Deutsche Bank AG/London	1,385	Colombia IBR Overnight Interbank	5.29%
Deutsche Bank AG/London	1,451	Brazil Cetip Interbank Deposit	12.85%
Deutsche Bank AG/London	1,215	Klibor Interbank Offered Rate	3.335%
Deutsche Bank AG/London	1,035	Mexico Interbank 28-day Index	5.00%
Deutsche Bank AG/London	1,109	Thai Baht 6-month fixing rate	1.93%
Deutsche Bank AG/London	817	Colombia IBR Overnight Interbank	6.12%
Deutsche Bank AG/London	749	Brazil Cetip Interbank Deposit	13.31%
Deutsche Bank AG/London	596	5.25%	Mexican Interbank Equilibrium
Deutsche Bank AG/London	618	Thai Baht 6-month fixing rate	2.58%
Deutsche Bank AG/London	541	Thai Baht 6-month fixing rate	2.02%
Deutsche Bank AG/London	333	Thai Baht 6-month fixing rate	2.20%
Deutsche Bank AG/London	2,469	Brazil Cetip Interbank Deposit	12.36%
Deutsche Bank AG/London	324	6-month LIBOR –Thai Baht	2.58%
Deutsche Bank AG/London	206	Colombia IBR Overnight Interbank	5.32%
Deutsche Bank AG/London	142	Thai Baht 6-month fixing rate	3.41%
Deutsche Bank AG/London	142	Thai Baht 6-month fixing rate	3.41%
Deutsche Bank AG/London	57	Thai Baht 6-month fixing rate	3.39%
Deutsche Bank AG/London	28	Thai Baht 6-month fixing rate	3.37%
Deutsche Bank AG/London	17	Thai Baht 6-month fixing rate	2.18%
Goldman Sachs International	16,356	14.11%	Brazil Cetip Interbank Deposit
Goldman Sachs International	4,058	3-month New Zealand Bank Bill	5.00%
Goldman Sachs International	1,017	3-month Johannesburg (JIBAR)	8.50%
Goldman Sachs International	404	3-month Johannesburg (JIBAR)	7.50%
HSBC Securities Inc.	968	14.14%	Brazil Cetip Interbank Deposit
HSBC Securities Inc.	11,611	13.82%	Brazil Cetip Interbank Deposit
HSBC Securities Inc.	11,330	13.32%	Brazil Cetip Interbank Deposit
HSBC Securities Inc.	7,304	12.36%	Brazil Cetip Interbank Deposit
HSBC Securities Inc.	6,555	Brazil Cetip Interbank Deposit	15.50%
HSBC Securities Inc.	6,535	13.90%	Brazil Cetip Interbank Deposit
HSBC Securities Inc.	4,245	12.23%	Brazil Cetip Interbank Deposit
HSBC Securities Inc.	3,465	Brazil Cetip Interbank Deposit	13.38%
HSBC Securities Inc.	2,189	Brazil Cetip Interbank Deposit	13.77%
HSBC Securities Inc.	2,134	Thai Baht 6-month fixing rate	2.04%
HSBC Securities Inc.	687	Brazil Cetip Interbank Deposit	14.46%
HSBC Securities Inc.	485	3-month Johannesburg (JIBAR)	7.50%
HSBC Securities Inc.	562	Brazil Cetip Interbank Deposit	12.80%
HSBC Securities Inc.	483	Brazil Cetip Interbank Deposit	11.50%
HSBC Securities Inc.	458	Thai Baht 6-month fixing rate	2.51%
HSBC Securities Inc.	395	Colombia IBR Overnight Interbank	6.20%
HSBC Securities Inc.	325	Mexico Interbank 28-day Index	5.50%
HSBC Securities Inc.	281	Brazil Cetip Interbank Deposit	12.06%
HSBC Securities Inc.	239	3-month Johannesburg (JIBAR)	8.75%
HSBC Securities Inc.	177	6-month Warsaw Interbank	2.75%

(EXPRESSED IN THOUSANDS)

Maturity Date	Buying/Selling Protection	Pay/Receive Rate	Fair Value 2016	Fair Value 2015
1/2/2018			(159)	—
8/29/2019			(43)	10
4/1/2021			47	34
4/19/2018			(4)	(13)
10/10/2019			(9)	(6)
2/26/2021			11	—
10/16/2024			(33)	(6)
1/4/2021			26	—
9/6/2019			—	4
10/19/2025			32	—
8/17/2020			8	—
11/23/2020			7	—
1/2/2018			46	(6)
1/29/2025			17	(5)
3/17/2020			(7)	1
1/15/2021			11	9
1/21/2021			11	9
11/19/2018			3	3
11/14/2018			1	1
1/29/2020			—	—
8/1/2016			—	—
12/17/2024			—	360
9/21/2021			22	—
12/17/2019			—	(2)
1/2/2018			(14)	—
1/2/2017			29	12
1/4/2021			(398)	—
1/2/2018			135	—
1/2/2018			245	—
1/6/2017			—	(1)
1/4/2021			(11)	(8)
1/2/2018			4	—
4/1/2016			—	(7)
8/17/2020			32	—
1/1/2019			26	—
12/17/2024			(22)	(29)
1/4/2021			10	6
1/4/2021			—	(14)
1/28/2025			21	(10)
3/21/2024			(12)	3
2/22/2023			(5)	(13)
1/4/2021			(1)	(2)
9/21/2026			6	—
12/17/2024			9	(3)

**FIGURE 2.25: SWAPS, cont.**

AS OF JUNE 30

Counterparty	Notional Amount	VRS Rate	Counterparty Rate
HSBC Securities Inc.	134	6.42%	Colombia IBR Overnight Interbank
HSBC Securities Inc.	105	Thai Baht 6-month fixing rate	2.12%
HSBC Securities Inc.	51	Thai Baht 6-month fixing rate	2.20%
UBS AG	10,769	Brazil Cetip Interbank Deposit	12.56%
UBS AG	1,654	10.91%	Brazil Cetip Interbank Deposit
UBS AG	3,402	11.68%	Brazil Cetip Interbank Deposit
UBS AG	2,716	Brazil Cetip Interbank Deposit	11.61%
UBS AG	1,165	Mexico Interbank 28-day Index	5.63%
UBS AG	936	Brazil Cetip Interbank Deposit	9.13%
UBS AG	661	Mexico Interbank 28- day Index	5.21%
UBS AG	163	5.25%	Mexican Interbank Equilibrium
UBS AG	5,565	Brazil Cetip Interbank Deposit	12.36%
<b>Total Interest Rate Swaps</b>	<b>\$ 805,165</b>		
<b>Total Return Swaps:</b>			
Barclays Bank PLC	\$ 50,000	1-month LIBOR – 5 bps	Barclays Capital U.S. Aggregate Index
Barclays Bank PLC	25,000	1-month LIBOR – 10 bps	Barclays Capital U.S. Aggregate Index
Barclays Bank PLC	25,000	1-month LIBOR	Barclays Capital U.S. Aggregate Index
Barclays Bank PLC	25,000	1-month LIBOR	Barclays Capital U.S. Aggregate Index
Barclays Bank PLC	20,000	1-month LIBOR + 10 bps	Barclays Capital U.S. Aggregate Index
Barclays Bank PLC	20,000	1-month LIBOR + 15 bps	Barclays Capital U.S. Aggregate Index
Deutsche Bank AG/London	250,000	3-month LIBOR + 42 bps	MSCI ACWI IMI
Deutsche Bank AG/London	25,000	1-month LIBOR + 15 bps	Barclays Capital U.S. Aggregate Index
Deutsche Bank AG/London	18,000	1-month LIBOR + 3 bps	Barclays Capital U.S. Aggregate Index
Deutsche Bank AG/London	1	3-month LIBOR + 42 bps	MSCI ACWI IMI
Goldman Sachs Group Inc.	250,101	3-month LIBOR + 42 bps	MSCI ACWI IMI
Goldman Sachs Group Inc.	186,653	3-month LIBOR + 42 bps	MSCI ACWI
Goldman Sachs Group Inc.	2	3-month LIBOR + 42 bps	MSCI ACWI IMI
Goldman Sachs Group Inc.	226,219	3-month LIBOR + 42 bps	MSCI ACWI
Goldman Sachs Group Inc.	150,616	3-month LIBOR + 42 bps	MSCI ACWI IMI
Goldman Sachs Group Inc.	150,120	3-month LIBOR + 42 bps	MSCI ACWI IMI
<b>Total Return Swaps</b>	<b>\$1,421,712</b>		
<b>Total Swaps</b>	<b>\$2,433,326</b>		

(EXPRESSED IN THOUSANDS)

Maturity Date	Buying/Selling Protection	Pay/Receive Rate	Fair Value 2016	Fair Value 2015
7/2/2025			4	(1)
1/28/2020			4	2
11/23/2020			1	—
1/4/2021			197	125
1/2/2017			59	268
1/4/2021			73	74
1/2/2018			(100)	(83)
10/11/2021			3	(9)
1/2/2017			(74)	(66)
10/21/2020			(6)	—
9/6/2019			—	1
1/2/2018			(103)	(88)
			<b>\$ (21,871)</b>	<b>\$ 3,491</b>
8/1/2017			\$ —	\$ —
10/1/2016			—	—
7/1/2017			—	—
2/1/2017			—	—
6/1/2017			—	—
8/1/2016			—	—
7/18/2016			—	—
7/1/2016			—	—
9/1/2016			—	—
7/16/2016			—	—
7/16/2016			(100)	—
7/16/2015			—	(5,306)
7/18/2016			—	—
7/16/2015			—	(6,430)
7/16/2015			—	(4,281)
7/16/2015			—	(2,832)
			<b>\$ (100)</b>	<b>\$ (18,849)</b>
			<b>\$ (22,465)</b>	<b>\$ (17,590)</b>

**12. Asset Allocation.** The long-term expected rate of return on the System's investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target

asset allocation percentage and by adding expected inflation. The target allocations are based on the Strategic Asset Allocation Implementation Schedule and Allowable Ranges document, which was approved by the VRS Board of Trustees on June 20, 2013. Best estimates of arithmetic real rates of return for each major asset class included in the System's target asset allocation for fiscal year 2016 are summarized in Figure 2.26.

**FIGURE 2.26: ASSET ALLOCATION**

FOR THE YEAR ENDED JUNE 30, 2016

Asset Class (Strategy)	Target Allocation	Arithmetic Long-Term Expected Rate of Return	Average Long-Term Expected Rate of Return
U.S. Equity	19.50%	6.46%	1.26%
Developed Non-U.S. Equity	16.50%	6.28%	1.04%
Emerging Market Equity	6.00%	10.00%	0.60%
Fixed Income	15.00%	0.09%	0.01%
Emerging Debt	3.00%	3.51%	0.11%
Rate-Sensitive Credit	4.50%	3.51%	0.16%
Non-Rate-Sensitive Credit	4.50%	5.00%	0.23%
Convertibles	3.00%	4.81%	0.14%
Public Real Estate	2.25%	6.12%	0.14%
Private Real Estate	12.75%	7.10%	0.91%
Private Equity	12.00%	10.41%	1.25%
Cash	1.00%	-1.50%	-0.02%
<b>Total</b>	<b>100.00%</b>		<b>5.83%</b>
	Inflation		2.50%
	* Expected arithmetic nominal return		8.33%

\* The above allocation provides a one-year expected return of 8.33%. However, one-year returns do not take into account the volatility present in each of the asset classes. In setting the long-term expected return for the pension system, stochastic projections are employed to model future returns under various economic conditions. The results provide a range of returns over various time periods that ultimately provide a median return of 7.44%, including expected inflation of 2.50%.

## 6. Capital Assets

The System's non-depreciable and depreciable capital assets for the year ended June 30, 2016, and the changes by category from the prior fiscal year-end are presented in Figure 2.27.

**FIGURE 2.27: PROPERTY, PLANT, FURNITURE, EQUIPMENT AND INTANGIBLE ASSETS**

FOR THE YEAR ENDED JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	Balance June 30, 2015	Increases	Decreases	Balance June 30, 2016
<b>Non-Depreciable Capital Assets:</b>				
Land	\$ 1,368	\$ —	\$ —	\$ 1,368
Construction in progress	4,796	6,653	1,816	9,633
<b>Total Non-Depreciable Capital Assets</b>	<b>6,164</b>	<b>6,653</b>	<b>1,816</b>	<b>11,001</b>
<b>Depreciable Capital and Intangible Assets:</b>				
Building	4,632	—	—	4,632
Furniture and Equipment	6,466	679	—	7,145
Intangible Assets	31,015	1,816	—	32,831
<b>Total Depreciable Capital Assets</b>	<b>42,113</b>	<b>2,495</b>	<b>—</b>	<b>44,608</b>
<b>Less Accumulated Depreciation:</b>				
Building	1,968	116	—	2,084
Furniture and Equipment	5,114	417	—	5,531
Intangible Assets	11,306	4,591	—	15,897
<b>Total Accumulated Depreciation</b>	<b>18,388</b>	<b>5,124</b>	<b>—</b>	<b>23,512</b>
<b>Total Depreciable Capital Assets – Net</b>	<b>23,725</b>	<b>(2,629)</b>	<b>—</b>	<b>21,096</b>
<b>Total Net Capital Assets</b>	<b>\$ 29,889</b>	<b>\$ 4,024</b>	<b>\$ 1,816</b>	<b>\$ 32,097</b>

Depreciation expense amounted to \$5,124,000 and \$5,127,000 in 2016 and 2015, respectively.

## 7. Operating Leases

The System has commitments under various operating leases for office space and parking. In general, the leases are for a 10-year term. In most cases, the System expects that in the normal course of business, these leases will be replaced by similar leases. Total rental expense for the year ended June 30, 2016, was \$3,096,000. The System's total future minimum rental payments as of June 30, 2016, are presented in Figure 2.28.

**FIGURE 2.28: OPERATING LEASES – FUTURE PAYMENTS**

AT JUNE 30, 2016		(EXPRESSED IN THOUSANDS)
Year		Amount
2017		\$ 1,303
2018		1,259
2019		1,301
2020		1,342
2021		1,383
2022-2024		4,400
<b>Total Future Minimum Rental Payments</b>		<b>\$10,988</b>

## 8. System Employee Benefit Plan Obligations

All full-time permanent, salaried employees of the System are employees of the Commonwealth of Virginia and included in the Commonwealth's participation as an employer in VRS. The Commonwealth, not the System, has overall responsibility for contributions to the VRS pension trust fund as well as other employee benefit and post-employment benefit trust funds for System employees. The state's pension contribution requirement for general employees was 12.33% for July 2015, 13.28% for August 2015 and 14.22% for the remainder of the fiscal year. This is compared to 12.33% for the fiscal year ended June 30, 2015.

There were approximately 54,034 state retirees, including System retirees, at June 30, 2016. Note 2.B provides information on the state's contribution toward funding the defined benefit plan for state employees for fiscal year 2016 and fiscal year 2015.

The System's contribution requirement for its employees for fiscal year 2016 and fiscal year 2015 was \$3,658,000 and \$3,064,000, respectively.

The System's financial obligations for other employee benefit and post-employment benefit plans were as follows:

- The state's contribution requirement for the Group Life Insurance Program for the years ended June 30, 2016, and June 30, 2015, was 1.19% of covered payroll. There were approximately 89,720 active state employees and 51,204 state retirees, including System employees and retirees, eligible for group life insurance coverage at June 30, 2016. The System's contribution requirement for its employees and retirees for fiscal year 2016 and fiscal year 2015 was \$319,000 and \$301,000, respectively.
- The state's contribution requirement for the Retiree Health Insurance Credit Program for the years ended June 30, 2016, and June 30, 2015, was 1.05% of covered payroll. There were approximately 44,013 state retirees, including System retirees, receiving the health insurance credit at June 30, 2016. The System's contribution requirement for its employees for fiscal year 2016 and fiscal year 2015 was \$282,000 and \$265,000, respectively.
- The state's contribution requirement for the Virginia Sickness and Disability Program (VSDP) for the years ended June 30, 2016, and June 30, 2015, was 0.66%. There were approximately 74,657 state employees, including System employees, enrolled in VSDP at June 30, 2016. The System's contribution requirement for its employees for fiscal year 2016 and fiscal year 2015 was \$171,000 and \$161,000, respectively. Information regarding the Commonwealth's funding progress is presented in the Commonwealth's Comprehensive Annual Financial Report. Information about the pension plans is provided in Note 2; information about other employee and post-employment benefit plans is provided in Note 3.



## 9. Litigation

The System, including its Board of Trustees, officers and employees, is a defendant in claims and lawsuits that are pending, are in progress or have been settled since June 30, 2016. The Attorney General and outside counsel have reviewed the status of these claims, lawsuits and the System's potential liability arising from them. Based on their review, it is the opinion of management that such liability, if any, would have no material adverse effect on the System's financial condition.

## 10. Risk Management

To cover its exposure to various risks of loss, the System, as an independent agency of the Commonwealth of Virginia, participates in the Commonwealth's self-insurance programs for state employee health care and risk management. The latter program includes property, general (tort) liability, medical malpractice and automobile plans.

The System's employees are covered by the Virginia Workers' Compensation Program administered by the Department of Human Resource Management. In addition, the System is self-insured for fiduciary liability as well as directors' and officers' liability under a program administered by the Commonwealth's Division of Risk Management. There were no claims in excess of coverage and no reductions in coverage during fiscal year 2016 and the three preceding fiscal years.

## 11. Commitments

The System extends investment commitments in the normal course of business. At June 30, 2016 and 2015, these commitments amounted to 10,213,640,000 and \$9,012,604,000, respectively.

## 12. Statutory Contribution Adjustment

For fiscal year 2015, pension contributions due or required were based on the June 30, 2013, actuarial valuation, which used an 8-year funding period for the deferred contributions from fiscal year 2011 and fiscal year 2012 and a 30-year funding period for the remaining balance of the UAAL at June 30, 2013. The General Assembly, in accordance with Section 51.1-145(K1) of the *Code of Virginia*, funded the employer retirement contribution rates for state employees and teachers at less than the rate determined by the actuary and certified by the VRS Board of Trustees. The percentage of the certified rate funded for fiscal year 2015 was 78.02% for state employees, 79.69% for teachers, 83.90% for SPORS, 83.88% for VaLORS and 89.32% for JRS.

As a result, the fiscal year 2015 employer retirement contribution rate for state employees was reduced from 15.80% to 12.33% and for teachers from 18.20% to 14.50%. Additionally, the employer retirement contribution rates for SPORS, VaLORS and JRS were reduced from 30.78%, 21.06% and 57.84% to 25.82%, 17.67% and 51.66%, respectively. There was no adjustment to the employer contribution rates for political subdivision employers or to the member contribution rate of 5.00%.

For fiscal year 2015, other post-employment benefit plan contributions due or required also were based on the June 30, 2013, actuarial valuation, which used a 30-year funding period for the UAAL. The General Assembly again funded less than the rates determined by the actuary by establishing the funding level at 90% of the certified rates. As a result, the fiscal year 2015 rate for the Group Life Insurance Program was reduced from 1.32% to 1.19% and for VSDP from 0.73% to 0.66%. Additionally, for the Retiree Health Insurance Credit Program, the state employer rate was reduced from 1.17% to 1.05% and the teacher employer rate from 1.18% to 1.06%.

There was no adjustment to the Retiree Health Insurance Credit Program employer contribution rates for political subdivision employers or the VLDP employer contribution rates set for teachers and political subdivision employers.

For fiscal year 2016, pension contributions due or required were based on the June 30, 2013, actuarial valuation, which used an 8-year funding period for the deferred contributions from fiscal year 2011 and fiscal year 2012 and a 30-year funding period for the remaining balance of the UAAL at June 30, 2013. The actuarial rate for judges was reduced from 57.84% to 55.55% because of the impact of Senate Bill 1196 that increased the mandatory retirement age for judges from 70 to 73. The actuarial rate for teachers was reduced from 18.20% to 17.64% because of a one-time payment of \$192,884,000 from the Literary Fund authorized in Item 136 C2c of Chapter 665 of the 2015 Virginia Acts of Assembly.

The General Assembly, in accordance with Section 51.1-145(K1) of the *Code of Virginia*, again funded the employer retirement contribution rates for state employees and teachers at less than the rate determined by the actuary and certified by the VRS Board of Trustees or the revised actuarial rates noted above. The percentage of the certified rate funded for fiscal year 2016 was 78.02% for state employees, 79.69% for teachers, 83.90% for SPORS, 83.88% for VaLORS and 89.32% for JRS. During the budget development, the funding for the state employee groups was increased to 90% effective August 10, 2015.

As a result, the fiscal year 2016 employer retirement contribution rate for state employees was reduced from actuarially determined rate of 15.80% to a

funded rate of 12.33% for July 2015, 13.28% for August 2015 and 14.22% for the remainder of the fiscal year. The rate for teachers from the revised actuarial rate of 17.64% to a funded rate of 14.06%. Additionally, the employer retirement contribution rates for SPORS, VaLORS and JRS were reduced from their original or revised actuarial rates of 30.78%, 21.06% and 55.55% to funded rates of 25.82%, 17.67% and 49.62%, respectively, for July 2015; funded rates of 26.83%, 18.34% and 49.82%, respectively, for August 2015; and funded rates of 27.83%, 19.00% and 50.02%, respectively, for the remainder of fiscal year 2016. There was no adjustment to the employer contribution rates for political subdivision employers or to the member contribution rate of 5.00%.

For fiscal year 2016, other post-employment benefit plan contributions due or required also were based on the June 30, 2013, actuarial valuation, which used a 30-year funding period for the UAAL. The General Assembly again funded less than the rates determined by the actuary by establishing the funding level at 90% of the certified rates. As a result, the fiscal year 2016 rate for the Group Life Insurance Program was reduced from 1.32% to 1.19% and for VSDP from 0.73% to 0.66%. Additionally, for the Retiree Health Insurance Credit Program, the state employer rate was reduced from 1.17% to 1.05% and the teacher employer rate from 1.18% to 1.06%.

There was no adjustment to the Retiree Health Insurance Credit Program employer contribution rates for political subdivision employers or the VLDP employer contribution rates set for teachers and political subdivision employers.

REQUIRED SUPPLEMENTAL SCHEDULE OF CHANGES IN EMPLOYERS' NET PENSION LIABILITY

(EXPRESSED IN THOUSANDS)

Change in the Net Pension Liability	2016	VRS State 2015	2014	2016	VRS Teacher 2015	2014
<b>Total pension liability:</b>						
Service cost	\$ 369,779	\$ 375,149	\$ 369,120	\$ 828,856	\$ 828,901	\$ 831,501
Interest	1,533,764	1,482,951	1,436,064	2,931,065	2,834,138	2,722,788
Benefit changes	—	—	—	—	—	—
Difference between actual and expected experience	(245,642)	59,923	—	(391,881)	(212,089)	—
Assumption changes	—	—	—	—	—	—
Benefit payments	(1,195,198)	(1,136,102)	(1,081,866)	(2,081,069)	(1,980,353)	(1,874,636)
Refunds of contributions	(25,240)	(27,724)	(25,036)	(35,067)	(36,058)	(36,103)
Net change in total pension liability	437,463	754,197	698,282	1,251,904	1,434,539	1,643,550
<b>Total pension liability – beginning</b>	<b>22,521,130</b>	<b>21,766,933</b>	<b>21,068,651</b>	<b>42,930,422</b>	<b>41,495,883</b>	<b>39,852,333</b>
<b>Total pension liability – ending (a)</b>	<b>\$22,958,593</b>	<b>\$ 22,521,130</b>	<b>\$21,766,933</b>	<b>\$ 44,182,326</b>	<b>\$42,930,422</b>	<b>\$41,495,883</b>
<b>Plan fiduciary net position:</b>						
Contributions – employer	\$ 722,617	\$ 480,657	\$ 343,259	\$ 1,062,338	\$ 1,267,250	\$ 853,634
Contributions – member	200,184	195,582	198,035	380,314	373,525	371,241
Net investment income	277,166	728,083	2,243,999	516,704	1,327,047	4,042,441
Benefit payments	(1,195,198)	(1,136,102)	(1,081,866)	(2,081,069)	(1,980,353)	(1,874,636)
Refunds of contributions	(25,240)	(27,724)	(25,036)	(35,067)	(36,058)	(36,103)
Administrative expense	(10,140)	(10,302)	(12,341)	(18,859)	(18,238)	(22,036)
Other	(122)	(154)	123	(222)	(284)	217
Net change in plan fiduciary net position	(30,733)	230,040	1,666,173	(175,861)	932,889	3,334,758
<b>Plan fiduciary net position – beginning</b>	<b>16,398,575</b>	<b>16,168,535</b>	<b>14,502,362</b>	<b>30,344,072</b>	<b>29,411,183</b>	<b>26,076,425</b>
<b>Plan fiduciary net position – ending (b)</b>	<b>\$16,367,842</b>	<b>\$ 16,398,575</b>	<b>\$16,168,535</b>	<b>\$ 30,168,211</b>	<b>\$30,344,072</b>	<b>\$29,411,183</b>
<b>Net pension liability – ending (a–b)</b>	<b>\$ 6,590,751</b>	<b>\$ 6,122,555</b>	<b>\$ 5,598,398</b>	<b>\$ 14,014,115</b>	<b>\$12,586,350</b>	<b>\$12,084,700</b>
Plan fiduciary net position as a percentage of the total pension liability (b/a)	71.29%	72.81%	74.28%	68.28%	70.68%	70.88%
Covered payroll (c)	\$ 3,977,759	\$ 3,878,632	\$ 3,861,712	\$ 7,624,612	\$ 7,434,932	\$ 7,313,025
Net pension liability as a percentage of covered payroll ((a – b)/c)	165.69%	157.85%	144.97%	183.80%	169.29%	165.25%

Note: This schedule should present 10 years of data, however, the information prior to fiscal year 2014 is not available.

## REQUIRED SUPPLEMENTAL SCHEDULE OF CHANGES IN EMPLOYERS' NET PENSION LIABILITY

(EXPRESSED IN THOUSANDS)

Change in the Net Pension Liability	VRS Political Subdivisions			SPORS		
	2016	2015	2014	2016	2015	2014
<b>Total pension liability:</b>						
Service cost	\$ 535,322	\$ 530,945	\$ 524,758	\$ 18,700	\$ 18,847	\$ 18,341
Interest	1,362,892	1,309,484	1,243,386	72,618	70,350	67,978
Benefit changes	2,053	1,135	–	–	–	–
Difference between actual and expected experience	(87,268)	(185,419)	–	(14,711)	(2,890)	–
Assumption changes	–	–	–	–	–	–
Benefit payments	(893,585)	(819,201)	(754,706)	(53,515)	(53,338)	(50,467)
Refunds of contributions	(37,380)	(36,898)	(36,876)	(584)	(375)	(685)
Net change in total pension liability	882,034	800,046	976,562	22,508	32,594	35,167
<b>Total pension liability – beginning</b>	<b>19,935,054</b>	<b>19,135,008</b>	<b>18,158,446</b>	<b>1,064,450</b>	<b>1,031,856</b>	<b>996,689</b>
<b>Total pension liability – ending (a)</b>	<b>\$20,817,088</b>	<b>\$19,935,054</b>	<b>\$19,135,008</b>	<b>\$ 1,086,958</b>	<b>\$1,064,450</b>	<b>\$ 1,031,856</b>
<b>Plan fiduciary net position:</b>						
Contributions – employer	\$543,947	\$ 533,877	\$ 539,366	\$ 33,655	\$ 28,427	\$ 42,683
Contributions – member	231,934	227,060	225,555	5,759	5,680	5,646
Net investment income	300,995	761,164	2,272,284	12,634	32,466	98,682
Benefit payments	(893,585)	(819,201)	(754,706)	(53,515)	(53,338)	(50,467)
Refunds of contributions	(37,380)	(36,898)	(36,876)	(584)	(375)	(685)
Administrative expense	(10,696)	(10,358)	(12,153)	(590)	(471)	(431)
Other	(130)	(162)	120	(23)	(27)	–
Net change in plan fiduciary net position	135,085	655,482	2,233,590	(2,664)	12,362	95,428
<b>Plan fiduciary net position – beginning</b>	<b>17,283,021</b>	<b>16,627,539</b>	<b>14,393,949</b>	<b>733,352</b>	<b>720,990</b>	<b>625,562</b>
<b>Plan fiduciary net position – ending (b)</b>	<b>\$17,418,106</b>	<b>\$17,283,021</b>	<b>\$16,627,539</b>	<b>\$ 730,688</b>	<b>\$ 733,352</b>	<b>\$ 720,990</b>
<b>Net pension liability – ending (a – b)</b>	<b>\$ 3,398,982</b>	<b>\$ 2,652,033</b>	<b>\$ 2,507,469</b>	<b>\$ 356,270</b>	<b>\$ 331,098</b>	<b>\$ 310,866</b>
Plan fiduciary net position as a percentage of the total pension liability (b/a)	83.67%	86.70%	86.90%	67.22%	68.89%	69.87%
Covered payroll (c)	\$ 4,628,806	\$ 4,513,335	\$ 4,434,764	\$ 114,395	\$ 110,059	\$ 112,010
Net pension liability as a percentage of covered payroll ((a – b)/c)	73.43%	58.76%	56.54%	311.44%	300.84%	277.53%

Note: This schedule should present 10 years of data; however, the information prior to fiscal year 2014 is not available.

REQUIRED SUPPLEMENTAL SCHEDULE OF CHANGES IN EMPLOYERS' NET PENSION LIABILITY

(EXPRESSED IN THOUSANDS)

Change in the Net Pension Liability	2016	VaLORS 2015	2014	2016	JRS 2015	2014
<b>Total pension liability:</b>						
Service cost	\$ 45,608	\$ 47,531	\$ 46,504	\$ 21,978	\$ 23,254	\$ 24,024
Interest	129,756	124,579	119,040	42,820	41,759	40,013
Benefit changes	—	—	—	(15,552)	—	—
Difference between actual and expected experience	4,997	(4,849)	—	(18,681)	(9,107)	—
Assumption changes	—	—	—	—	—	—
Benefit payments	(92,270)	(84,990)	(78,412)	(41,341)	(40,205)	(37,984)
Refunds of contributions	(4,524)	(4,797)	(4,665)	—	—	—
Net change in total pension liability	83,567	77,474	82,467	(10,776)	15,701	26,053
<b>Total pension liability – beginning</b>	<b>1,902,051</b>	<b>1,824,577</b>	<b>1,742,110</b>	<b>632,381</b>	<b>616,680</b>	<b>590,627</b>
<b>Total pension liability – ending (a)</b>	<b>\$ 1,985,618</b>	<b>\$ 1,902,051</b>	<b>\$ 1,824,577</b>	<b>\$ 621,605</b>	<b>\$ 632,381</b>	<b>\$ 616,680</b>
<b>Plan fiduciary net position:</b>						
Contributions – employer	\$ 79,392	\$ 62,084	\$ 67,483	\$ 41,502	\$ 31,503	\$ 27,727
Contributions – member	17,574	17,081	17,908	3,236	3,015	3,051
Net investment income	20,899	52,312	156,786	8,112	20,051	60,833
Benefit payments	(92,270)	(84,990)	(78,412)	(41,341)	(40,205)	(37,984)
Refunds of contributions	(4,524)	(4,797)	(4,665)	—	—	—
Administrative expense	(940)	(743)	(681)	(363)	(283)	(268)
Other	(38)	(44)	—	(15)	(17)	—
Net change in plan fiduciary net position	20,093	40,903	158,419	11,131	14,064	53,359
<b>Plan fiduciary net position – beginning</b>	<b>1,191,353</b>	<b>1,150,450</b>	<b>992,031</b>	<b>456,258</b>	<b>442,194</b>	<b>388,835</b>
<b>Plan fiduciary net position – ending (b)</b>	<b>\$ 1,211,446</b>	<b>\$ 1,191,353</b>	<b>\$ 1,150,450</b>	<b>\$ 467,389</b>	<b>\$ 456,258</b>	<b>\$ 442,194</b>
<b>Net pension liability – ending (a–b)</b>	<b>\$ 774,172</b>	<b>\$ 710,698</b>	<b>\$ 674,127</b>	<b>\$ 154,216</b>	<b>\$ 176,123</b>	<b>\$ 174,486</b>
Plan fiduciary net position as a percentage of the total pension liability (b/a)	61.01%	62.64%	63.05%	75.19%	72.15%	71.71%
Covered payroll (c)	\$ 345,504	\$ 338,562	\$ 352,492	\$ 66,621	\$ 61,092	\$ 61,020
Net pension liability as a percentage of covered payroll ((a–b)/c)	224.07%	209.92%	191.25%	231.48%	288.29%	285.95%

Note: This schedule should present 10 years of data; however, the information prior to fiscal year 2014 is not available.

**REQUIRED SUPPLEMENTAL SCHEDULE OF EMPLOYER CONTRIBUTIONS: PENSION PLANS**

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Actuarially Determined Contribution	Contributions in Relation to the Actuarially Determined Contribution	Contributions Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
VIRGINIA RETIREMENT SYSTEM (VRS) – STATE					
2016	\$ 628,486	\$ 557,160	\$ 71,326	\$ 3,977,759	14.01%
2015	612,824	478,235	134,589	3,878,632	12.33%
2014	504,726	338,286	166,440	3,861,712	8.76%
2013	485,577	325,452	160,125	3,715,205	8.76%
2012	309,930	117,696	192,234	3,663,475	3.21%
2011	294,363	74,113	220,250	3,479,484	2.13%
2010	285,209	176,751	108,458	3,556,222	4.97%
2009	290,653	225,782	64,871	3,624,109	6.23%
2008	260,965	218,954	42,011	3,560,228	6.15%
2007	246,458	192,997	53,461	3,362,317	5.74%
VIRGINIA RETIREMENT SYSTEM (VRS) – TEACHERS					
2016	\$1,344,981	\$1,072,020	\$ 272,961	\$ 7,624,612	14.06%
2015	1,353,158	1,078,065	275,093	7,434,932	14.50%
2014	1,226,394	852,699	373,695	7,313,025	11.66%
2013	1,203,856	837,028	366,828	7,178,629	11.66%
2012	903,655	443,078	460,577	6,999,653	6.33%
2011	891,237	271,306	619,931	6,903,465	3.93%
2010	839,550	450,218	389,332	7,090,791	6.35%
2009	845,999	629,497	216,502	7,145,260	8.81%
2008	766,559	706,222	60,337	6,856,523	10.30%
2007	733,633	603,705	129,928	6,562,008	9.20%
VIRGINIA RETIREMENT SYSTEM (VRS) – POLITICAL SUBDIVISIONS					
2016	\$ 554,335	\$ 549,408	\$ 4,927	\$ 4,628,806	11.87%
2015	540,859	535,919	4,940	4,513,335	11.87%
2014	551,822	539,131	12,691	4,434,764	12.16%
2013	537,657	525,385	12,272	4,321,565	12.16%
2012	400,879	400,879	–	4,142,150	9.68%
2011	391,531	391,531	–	4,078,580	9.60%
2010	363,982	363,982	–	4,125,087	8.82%
2009	364,366	364,366	–	4,144,638	8.79%
2008	351,469	351,469	–	3,960,566	8.87%
2007	319,516	319,516	–	3,699,629	8.64%

**REQUIRED SUPPLEMENTAL SCHEDULE OF EMPLOYER CONTRIBUTIONS: PENSION PLANS, cont.**

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Actuarially Determined Contribution	Contributions in Relation to the Actuarially Determined Contribution	Contributions Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
<b>STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)</b>					
2016	\$ 35,211	\$ 31,561	\$ 3,650	\$ 114,395	27.59%
2015	33,876	28,417	5,459	110,059	25.82%
2014	36,538	27,711	8,827	112,010	24.74%
2013	34,535	26,193	8,342	105,872	24.74%
2012	26,250	11,441	14,809	102,701	11.14%
2011	24,570	7,460	17,110	96,128	7.76%
2010	23,791	15,714	8,077	98,757	15.91%
2009	24,241	20,175	4,066	100,626	20.05%
2008	22,941	20,989	1,952	101,106	20.76%
2007	19,402	16,358	3,044	97,892	16.71%
<b>VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)</b>					
2016	\$ 72,763	\$ 65,101	\$ 7,662	\$ 345,504	18.84%
2015	71,301	59,824	11,477	338,562	17.67%
2014	68,806	52,169	16,637	352,492	14.80%
2013	66,463	50,392	16,071	340,489	14.80%
2012	55,306	24,481	30,825	347,181	7.05%
2011	53,686	17,255	36,431	337,010	5.12%
2010	57,894	39,027	18,867	345,020	11.31%
2009	60,059	50,932	9,127	357,922	14.23%
2008	61,325	55,929	5,396	352,643	15.86%
2007	56,190	48,338	7,852	323,115	14.96%
<b>JUDICIAL RETIREMENT SYSTEM (JRS)</b>					
2016	\$ 37,008	\$ 33,291	\$ 3,717	\$ 66,621	49.97%
2015	35,336	31,560	3,776	61,092	51.66%
2014	33,018	27,728	5,290	61,020	45.44%
2013	32,185	27,028	5,157	59,481	45.44%
2012	27,631	18,907	8,724	59,053	32.02%
2011	28,101	17,303	10,798	60,058	28.81%
2010	23,638	17,065	6,573	62,139	27.46%
2009	23,148	21,000	2,148	60,853	34.51%
2008	23,600	22,386	1,214	58,896	38.01%
2007	22,557	20,530	2,027	56,293	36.47%

**REQUIRED SUPPLEMENTAL SCHEDULE OF INVESTMENT RETURNS**

	VRS Pooled Asset Portfolio**		
	2016	2015	2014*
Annual money-weighted rate of return, net of investment expense	1.83%	4.72%	15.67%

\* Data is not available for a full 10-year trend. Therefore, only the years with available data are presented.

\*\* Investments for all plans are pooled for investing purposes. Therefore, a money-weighted rate of return, net of investment expense, is only available for the pool and not for each individual plan.

**REQUIRED SUPPLEMENTAL SCHEDULE OF FUNDING PROGRESS: OTHER POST-EMPLOYMENT BENEFIT PLANS**

(EXPRESSED IN MILLIONS)

Actuarial Valuation Date June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) – (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (b-a)/(c)
<b>GROUP LIFE INSURANCE FUND</b>						
2015	\$ 1,129	\$ 2,829	\$ 1,700	39.9%	\$ 17,814	9.5%
2014	992	2,701	1,709	36.7%	17,559	9.7%
2013	837	2,572	1,735	32.5%	17,132	10.1%
2012	756	2,458	1,702	30.7%	16,697	10.2%
2011	852	2,359	1,507	36.1%	16,543	9.1%
2010	929	2,245	1,316	41.4%	16,526	8.0%
2009	967	1,995	1,028	48.5%	16,728	6.1%
2008	975	1,772	797	55.0%	16,267	4.9%
2007	880	1,552	672	56.7%	14,822	4.5%
2006	751	1,436	685	52.3%	13,923	4.9%
<b>RETIREE HEALTH INSURANCE CREDIT FUND *</b>						
2015	\$ 174	\$ 2,380	\$ 2,206	7.3%	\$ 15,267	14.4%
2014	162	2,334	2,172	7.0%	14,956	14.5%
2013	139	2,273	2,134	6.1%	14,502	14.7%
2012	130	2,258	2,128	5.8%	14,211	15.0%
2011	213	2,195	1,982	9.7%	14,111	14.0%
2010	281	2,162	1,881	13.0%	14,220	13.2%
2009	296	2,007	1,711	14.8%	14,339	11.9%
2008	264	1,943	1,679	13.6%	13,686	12.3%
2007	207	1,883	1,676	11.0%	11,935	14.0%
<b>DISABILITY INSURANCE TRUST FUND **</b>						
2015	\$ 398	\$ 235	\$ (163)	169.4%	\$ 3,627	(4.5%)
2014	380	239	(141)	159.0%	3,585	(3.9%)
2013	359	228	(131)	157.4%	3,473	(3.8%)
2012	344	303	(41)	113.7%	3,433	(1.2%)
2011	369	296	(73)	124.6%	3,372	(2.2%)
2010	336	311	(25)	108.0%	3,168	(0.8%)
2009	290	291	1	99.7%	4,080	0.0%
2008	314	392	78	79.9%	4,111	1.9%
2007	264	451	187	58.5%	3,909	4.8%
2006	192	423	231	45.4%	3,716	6.2%
<b>VIRGINIA LOCAL DISABILITY PROGRAM ***</b>						
2015	\$ –	\$ –	\$ –	0.0%	\$ 192	0.0%
2014	–	–	–	0.0%	34	0.0%
<b>LINE OF DUTY ACT TRUST FUND ****</b>						
2015	\$ –	\$ 245	\$ 245	0.3%	N/A	N/A
2014	7	226	219	3.1%	N/A	N/A
2013	10	204	194	4.9%	N/A	N/A
2012	6	226	220	2.7%	N/A	N/A
2011	–	399	399	0.0%	N/A	N/A
2010 ****	–	576	576	0.0%	N/A	N/A

\* Data includes the state-funded Retiree Health Insurance Credit benefit for local employees. Similar information for 2006 is not available so that year has been excluded.

\*\* Data for 2008 and subsequent years includes the state-funded Long-Term Care (LTC) program. In prior years LTC premiums were paid to the carrier. LTC benefits were paid by the carrier and the program liabilities belong to the carrier.

\*\*\* Fiscal year 2014 was the first actuarial valuation prepared for the Virginia Local Disability Program.

\*\*\*\* Contributions into the Line of Duty Act Trust Fund are based on the number of participants in the program using a per capita based contribution versus a payroll-based contribution. Fiscal year 2010 was the first actuarial valuation prepared for the Line of Duty Act Trust Fund.



**REQUIRED SUPPLEMENTAL SCHEDULE OF EMPLOYER CONTRIBUTIONS:  
OTHER POST-EMPLOYMENT BENEFIT PLANS**

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Annual Required Contribution	Percentage Contributed	Statutory Required Contribution*	Percentage Contributed
<b>GROUP LIFE INSURANCE FUND</b>				
2016	\$ 237,558	90.15%	\$ 214,162	100.00%
2015	231,283	90.15%	208,505	100.00%
2014	228,086	90.15%	205,623	100.00%
2013	221,622	90.15%	199,796	100.00%
2012	181,527	26.05%	47,293	100.00%
2011	177,378	25.23%	44,744	100.00%
2010	145,228	65.54%	95,185	100.00%
2009	146,545	92.13%	135,019	100.00%
2008	158,740	100.00%	158,740	100.00%
<b>RETIREE HEALTH INSURANCE CREDIT FUND</b>				
2016	\$ 165,860	89.91%	\$ 149,124	100.00%
2015	161,120	89.91%	144,862	100.00%
2014	150,831	95.09%	143,425	100.00%
2013	145,416	95.09%	138,282	100.00%
2012	138,195	37.54%	51,882	100.00%
2011	133,655	36.46%	48,736	100.00%
2010	148,956	66.70%	99,356	100.00%
2009	150,048	96.63%	144,989	100.00%
2008	147,524	100.00%	147,524	100.00%
<b>DISABILITY INSURANCE TRUST FUND</b>				
2016	\$ 27,187	90.41%	\$ 24,580	100.00%
2015	26,244	90.41%	23,728	100.00%
2014	20,610	81.03%	16,701	100.00%
2013	21,032	81.03%	17,043	100.00%
2012	30,285	3.62%	1,096	100.00%
2011	28,646	0.00%	—	100.00%
2010	76,530	40.32%	30,861	100.00%
2009	78,120	91.33%	71,344	100.00%
2008	97,975	80.00%	78,380	100.00%
<b>VIRGINIA LOCAL DISABILITY PROGRAM</b>				
2016	\$ 1,277	100.00%	\$ 1,277	100.00%
2015	653	100.00%	653	100.00%
2014***	51	100.00%	51	100.00%
<b>LINE OF DUTY ACT TRUST FUND</b>				
2016	\$ 23,328	41.82%	\$ 9,756	100.00%
2015	23,847	41.82%	9,974	100.00%
2014	22,103	46.96%	10,381	100.00%
2013	21,895	42.66%	9,341	100.00%
2012	25,033	33.25%	8,323	100.00%
2011**	N/A	N/A	N/A	N/A

\* Contributions made by employers during the fiscal years ended June 30, 2008, through June 30, 2016, were not in all cases in accordance with the actuarially determined Annual Required Contribution (ARC), but they did meet statutory requirements. Comparable information for fiscal years prior to 2008 is unavailable.

\*\* Fiscal year 2011 was the first year for the Line of Duty Act Trust Fund. It was funded by a loan from the Group Life Insurance Trust Fund. As a result, there were not contributions required or paid during the fiscal year. Contributions of \$10,678,000 were recorded for fiscal year 2011; however, VRS did not receive contributions under the program until fiscal year 2012.

\*\*\* Fiscal year 2014 was the first year for the Virginia Local Disability Program.

## SCHEDULE OF ADMINISTRATIVE EXPENSES

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN THOUSANDS)

	2016	2015
<b>Personnel Services:</b>		
Salaries and Wages	\$ 34,567	\$ 32,933
Per Diem Services	332	366
Retirement Contributions	3,764	3,170
Social Security	2,048	2,005
Group Life and Medical Insurance	4,286	4,366
Compensated Absences	(152)	850
<b>Total Personnel Services</b>	<b>44,845</b>	<b>43,690</b>
<b>Professional Services:</b>		
Data Processing	16,923	14,671
Actuarial and Consulting Services	1,897	1,766
Legal Services	630	593
Medical Review Services	688	748
Management Services	464	535
Personnel Development Services	154	247
<b>Total Professional Services</b>	<b>20,756</b>	<b>18,560</b>
<b>Communication Services:</b>		
Media Services	13	18
Printing	557	716
Postage and Delivery Services	571	620
Telecommunications	807	806
<b>Total Communication Services</b>	<b>1,948</b>	<b>2,160</b>
<b>Rentals:</b>		
Business Equipment	—	—
Office Space	3,095	2,574
<b>Total Rentals</b>	<b>3,095</b>	<b>2,574</b>
<b>Other Services and Charges:</b>		
Skilled and Clerical Services	449	359
Depreciation	5,124	5,127
Dues and Membership	122	120
Equipment	1,542	1,014
Insurance	72	60
Repairs and Maintenance	13	13
Supplies and Materials	257	171
Travel and Transportation	683	701
Miscellaneous	108	84
<b>Total Other Services and Charges</b>	<b>8,370</b>	<b>7,649</b>
<b>Total Administrative Expenses</b>	<b>79,014</b>	<b>74,633</b>
Adjustment for Capitalization of Expenses	(6,653)	(4,262)
Total Administrative Expenses (GAAP Basis)	72,361	70,371
Adjustments Necessary to Convert Administrative Expenses on the GAAP Basis to the Budgetary Basis at Year-End (Net)	2,549	(978)
Administrative Expenses (Budgetary Basis)	\$ 74,910	\$ 69,393
<b>Administrative Expenses Appropriated</b>	<b>\$ 78,569</b>	<b>\$ 70,642</b>
<b>Distribution of Administrative Expenses</b>		
Total Administrative Expenses	\$ 72,361	\$ 70,371
Less In-House Investment Management	(29,205)	(28,104)
<b>Net Administrative Expenses</b>	<b>\$ 43,156</b>	<b>\$ 42,267</b>

## SCHEDULE OF PROFESSIONAL AND CONSULTING SERVICES

FOR THE YEAR ENDED JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

### Actuarial, Legal and Oversight Services:

Aon Consulting, Inc.	Actuarial Services & Benefits Consulting	\$ 4.5
Cavanaugh MacDonald Consulting, LLC	Actuarial Services & Benefits Consulting	969.3
Joint Legislative Audit Review Commission	Oversight Responsibilities	115.7
Challa Law Offices	Legal Services	6.7
Ice Miller, LLP	Legal Services	3.6
Troutman Sanders, LLP	Legal Services	69.2

### Total Actuarial, Legal and Oversight Services

**\$ 1,169.0**

### Consulting Services:

Advantage 2000	Social Security Advocacy & Disability Tracking	\$ 132.7
Advent Software, Inc.	Software Maintenance	41.7
Advisor Compliance	Investment Compliance Services	0.6
Albourne America, LLC	Investment Consulting Services	386.7
BCA Research	Research and Advisory Services	63.0
CEM Benchmarking, Inc.	Benchmarking Analysis	75.0
FX Transparency, LLC	Investment Advisory Services	20.0
Gartner Group, Inc.	Research and Advisory Services	46.9
Genex	Job Analysis of Disability Cases	0.7
Harrison & Turk, PC	Fact-Finding Hearing Officer for Disability Cases	77.4
Hewitt Associates	Retirement Benefits Planning Tool	46.3
Inrarv Enterprises	Fact-Finding Hearing Officer for Disability Cases	5.6
Katzen & Frye, PC	Fact-Finding Hearing Officer for Disability Cases	242.7
Legal Writers, Inc.	Fact-Finding Hearing Officer for Disability Cases	1.0
Life Status 360, LLC	Location Services	11.9
McGinley, Elsberg & Hutcheson, PLC	Fact-Finding Hearing Officer for Disability Cases	33.9
McLagan Partners, Inc.	Investment Compensation Study	68.3
Mercer Health & Benefits	Consulting Services for VSDP	85.6
Pension Consulting Alliance, Inc.	Asset/Liability Study	320.0
Property & Portfolio Research, Inc.	Investment Consulting Services	150.0
Sagitec Solutions, LLC	VRS "Modernization Project" Solution Vendor	1,636.8
Strategic Economic Decisions, Inc.	Economic Advisory Services	10.0
Torreycove Capital	Investment Consulting Services	70.0
Townsend Group	Investment Consulting Services	170.0
United Review Services, Inc.	Medical Board Review and Examinations	687.7
Vedere Consulting, LLC	Consulting Services	0.3
Wells Fargo Bank, NA	Recordkeeping Services	31.3
Yardeni Research	Research and Advisory Services	7.5

### Total Consulting Services

**\$ 4,423.6**

### Total Professional and Consulting Services

**\$ 5,592.6**

## SCHEDULE OF INVESTMENT EXPENSES

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN THOUSANDS)

	2016	2015
<b>Management Fees:</b>		
Public Equity Managers	\$ 50,000	\$ 58,811
Fixed Income Managers	977	258
Credit Strategies Managers	50,753	52,162
Real Assets Managers	77,013	71,253
Alternative Investment Managers	76,135	83,567
Hedge Fund Managers	81,873	87,173
Strategic Opportunity Portfolio	8,882	939
Currency Managers	2,498	1,875
<b>Total Management Fees</b>	<b>348,131</b>	<b>356,038</b>
<b>Performance Fees</b>	<b>16,982</b>	<b>6,581</b>
<b>Miscellaneous Fees and Expenses:</b>		
Custodial Fees	4,500	4,500
Legal Fees	715	862
Other Fees and Expenses	466	2,275
<b>Total Miscellaneous Fees and Expenses</b>	<b>5,681</b>	<b>7,637</b>
<b>In-House Investment Management</b>	<b>29,205</b>	<b>28,104</b>
<b>Total Defined Benefit Investment Expenses</b>	<b>399,999</b>	<b>398,360</b>
<b>Total Defined Contribution Investment Expenses</b>	<b>1,441</b>	<b>631</b>
<b>Total Investment Expenses</b>	<b>\$ 401,440</b>	<b>\$ 398,991</b>



## 3 Investment Section

Chief Investment Officer's Letter  
Investment Account  
Portfolio Highlights  
VRS Money Managers  
Public Equity Commissions  
Schedule of Investment Expenses  
Investment Summary: Defined Benefit Plans  
Description of Hybrid Defined Contribution Plan  
Description of Defined Contribution Plan Investment Options  
Investment Option Performance Summary:  
Defined Contribution Plans



**HELPING MEMBERS  
TAKE CHARGE**

Mid-career members often find themselves sandwiched between demands of careers and families, with their retirement savings goals overshadowed by competing priorities. Taking a refund when changing jobs can alleviate immediate financial concerns but cause a long-term setback to retirement savings. Online calculators, free counseling sessions and educational webinars and videos can help keep this group focused on the future, maintaining savings and managing investments for maximum growth during peak earning years.

## Chief Investment Officer's Letter



**Ronald D. Schmitz**, Chief Investment Officer

P.O. Box 2500 • 1200 East Main Street  
Richmond, Virginia 23218-2500

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October 21, 2016

### **To: Members of the Board of Trustees and Participants of the Virginia Retirement System**

In many ways, the market conditions of fiscal year 2015 have continued throughout fiscal year 2016. Consumer spending and business investment remain positive but not robust. The stock market continued its pattern of recent years in which investor sentiment rotated somewhat erratically between panic and relief. Multiple issues floated in and out of the minds of investors as the year progressed: fear of a Chinese hard landing, concern about an interest rate hike by the Federal Reserve and worries about a Eurozone break-up after Britain's unexpected vote to leave the European Union. Uncertainty over the direction of the global economy was, and remains, high. Accordingly, global stock markets declined slightly for the fiscal year.

### **PERFORMANCE OVERVIEW**

The VRS portfolio is positioned to provide diversification into a variety of assets beyond global stock markets. Accordingly, the total fund had a positive but modest year, rather than suffering the negative returns of global equities. The fund returns for the year, as well as for longer-term periods, exceed the Board-selected benchmark as illustrated below.

#### **Annualized Return for Periods Ended June 30, 2016:**

	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>	<b>15 Years</b>	<b>20 Years</b>	<b>25 Years</b>
VRS Total Fund	1.9%	7.3%	7.0%	5.6%	6.1%	7.4%	8.3%
Benchmark*	1.3%	6.6%	6.4%	5.1%	5.6%	6.9%	7.9%

*\* The benchmark is an asset class weighted set of indices based on the asset mix policy adopted by the Board of Trustees. Benchmarks are selected with the help of a third-party investment consultant who opines on the appropriateness of the benchmarks used in the program.*

As was the case last year, private market assets won the performance honors for most time periods. Real Assets were strong for fiscal year 2016 while the longer-term performance of Private Equity stood out as particularly strong. The Investment-Grade Fixed Income portfolio had a strong year relative to stocks and even exceeded the performance of Public Equities over the 10 years ended June 2016, owing to the negative experience during the financial crisis of 2008-2009. Credit Strategies were modestly positive for the year while Public Equity and the Strategic Opportunities Portfolio were in negative territory for fiscal year 2016.

As can be seen in Figure 3.2 in this section, Public Equity returns for the year were -3.2% versus the program benchmark return of -3.5%. For the year, U.S. stocks turned in modestly positive results while non-U.S. developed and emerging markets sold off for the year ended June 30.

Staff efforts resulted in the equity portfolio outperforming the benchmark for the year, mainly driven by good relative performance in international markets. Low volatility mandates – some managed internally – were a key driver of outperformance. Hedge funds performed poorly for the year. However, the hedge fund managers, collectively, have added value above their benchmark over all longer-term periods.

The Fixed Income portfolio generated a strong 6.8% return, exceeding the benchmark by 80 basis points. The absolute level of return was driven by a continued drop in interest rates through the year (which causes bond prices to rise). The strong relative performance versus the benchmark was driven by positive strategic sector allocation and security selection. The long-term returns were also strong, relative to stocks and the benchmark.

Credit Strategies lagged the benchmark for the fiscal year due, in part, to its positioning in asset classes that we believe can provide better risk/return than the benchmark in the long run. This positioning often causes the portfolio to perform differently than the benchmark in the short run. The first half of the fiscal year saw credit spreads widen and interest rates rise. These changes caused negative portfolio returns but did allow for outperformance versus the benchmark. Conditions reversed in the second half of the year. We are disappointed in the short-term results, but remain confident with the longer-term outlook to produce good absolute and relative performance.

Real Assets returned 11.6% versus its benchmark of 11% for the fiscal year. On an absolute basis, the real estate component of the program benefited from strong returns in U.S. REITs (publicly traded Real Estate Investment Trusts) while international REITs hurt results. Privately held real estate (offices, apartments, etc.) benefited from capital inflows that caused prices to rise. Natural resources, particularly energy, detracted from the fiscal year 2016 performance. As we look ahead, staff is cautious on its ability to post similar results going forward. That said, real estate and more broadly defined real assets continue to be attractive relative to other asset classes.



Private Equity generated a 6.6% return for the fiscal year versus a benchmark of -1.2%. Strength was seen across most segments of the portfolio with buyouts, growth and subordinated debt generating double-digit returns. Similar to the Real Assets portfolio, one negative area was energy, which lost approximately 34% of its value as the per barrel price of oil plummeted. Fiscal year 2016 marks the sixth year in a row where money coming back from managers exceeded cash draws for new investments. We are pleased that our partners are showing caution during the current high-price environment. Longer-term, Private Equity has generated double-digit returns and has been our best performing asset class.

The Strategic Opportunities Portfolio (SOP) has two primary parts: private market partnerships and public, multi-asset accounts. The private partnerships are performing well while the public market accounts are struggling collectively. The public markets portfolio has been recently launched, and it contains a small number of managers. Therefore, individual manager underperformance has disproportionately hurt the portfolio versus what happens in a more mature, fully diversified portfolio. We will continue to build out the program so that individual managers no longer have an outsized effect on performance of this portion of the fund.

It should be mentioned that performance is not the only metric we use to measure success in the SOP. This segment of the fund is intended to provide insights and information transfer with regard to management techniques, macroeconomics and market opportunities. Contributions in these areas are harder to measure, but we believe they will contribute to the success of the total fund. In these qualitative areas, we are quite pleased with the progress of the SOP.

#### ADDITIONAL THOUGHTS

During fiscal year 2016, the Board of Trustees worked with staff and an outside consultant on a risk-tolerance project. This exercise looked at both assets and liabilities over a longer-term period. As a result of the study, the Board made a small change in the long-term policy portfolio. The overall mix of stocks, bonds and real assets stayed the same. However, the equity portion of the fund will see a slight shift from publicly owned assets to privately owned assets. The effect of this change is a slight increase in the expected return. This comes with a slight increase in theoretical risk as well, though private market assets often exhibit less price volatility than public markets.

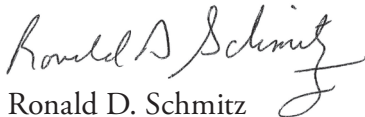
Looking at economic conditions, one cannot but feel a little concerned. Staff conducted a scenario analysis exercise that looked at symmetrical near-term shifts in projected inflation and economic growth. Given the historically high current asset valuations across all asset classes, this exercise indicated a negatively skewed outcome in which positive scenarios did not provide as strong an increase in returns as negative results caused price declines.

Further, we studied a series of scenarios as defined by various external vendors. We refer to these as “story scenarios” as they involve a more nuanced backdrop and outcome in the markets than the simple symmetrical shifts. However, like the symmetrical shifts in the first exercise, the outcomes were negatively skewed – not just in the pattern of returns, but also in the likelihood of occurrence.

Given this exercise, the portfolio is positioned somewhat defensively as compared to the policy portfolio. We do not believe the returns will generate adequate compensation for taking additional risk at this point in the business cycle.

The VRS Investment Staff continues to generate good performance and has added real dollars to the fund through its investment activity compared to passive alternatives. I am particularly pleased that this favorable performance extends across the board as all asset class teams have delivered added value over time.

Sincerely,



Ronald D. Schmitz  
Chief Investment Officer

**T**he Investment Section provides detailed information regarding the structure of the investment portfolio. This information includes performance, asset allocations, portfolio highlights, a list of VRS' money managers and public equity commissions for the fiscal year. The section also presents the System's investment management fees and expenses and an investment summary.

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## Investment Account

The VRS Board of Trustees has fiduciary responsibility to invest the fund solely in the interest of the beneficiaries of the System. As established by the *Code of Virginia*, “the Board shall invest the assets of the Retirement System with the care, skill, prudence, and due diligence 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 like aims.”

Benefit payments are projected to occur over a long period of time, allowing VRS to adopt a long-term investment horizon and asset allocation policy for the management of fund assets. Asset allocation policy is critical because it defines the basic risk and return characteristics of the VRS investment portfolio. Asset allocation targets are established using an asset-liability analysis designed to assist the Board in determining an acceptable volatility target for the fund and an optimal asset allocation policy mix. The asset-liability analysis considers both sides of the VRS balance sheet in order to estimate the potential impact of various asset class mixes on key measures of total plan risk, including the resulting estimated impact on funded status and contribution rates.

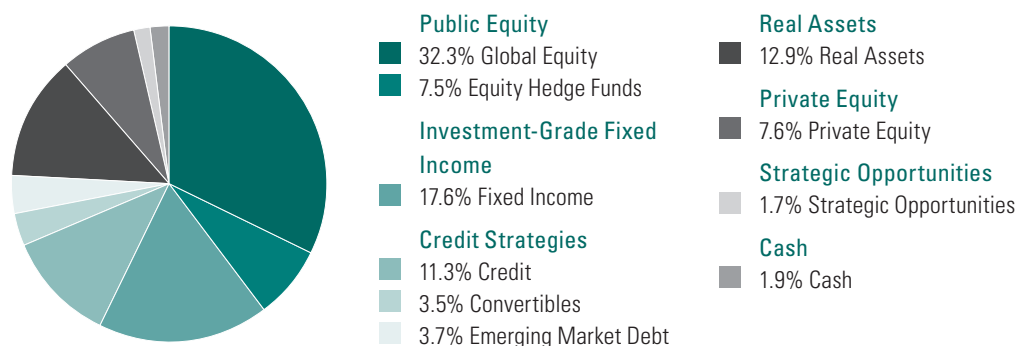
The Chief Investment Officer has been delegated authority by the Board to allocate the System's investments within the approved asset allocation policy and within the Board-approved active risk budget. The total fund active risk budget describes the degree of tolerance for yearly variation in the fund's performance relative to the Total Fund VRS Custom Benchmark. The primary risk measure used for this purpose is Total Fund Tracking Error, calculated as the standard deviation of the difference between the fund's return and the return of the Total Fund VRS Custom Benchmark. From this measure, probability estimates can be derived to help the Board estimate the risk of underperforming the benchmark by certain margins.

The investment staff manages the VRS portfolio on a day-to-day basis according to policies and guidelines established by the Board. The staff manages assets on a direct basis and through outside investment managers. Managers employ both active and passive investment strategies. The Board has established various performance benchmarks to serve as tools for measuring progress toward the achievement of long-term investment goals.

The asset allocation mix of the VRS fund as of June 30, 2016, is shown in Figure 3.1:

### FIGURE 3.1: ASSET ALLOCATION MIX

AS OF JUNE 30, 2016



### FIGURE 3.2: INVESTMENT PERFORMANCE SUMMARY

ANNUALIZED DATA FOR THE PERIOD ENDING JUNE 30, 2016

	1 Year	3 Years	5 Years	10 Years
<b>1. Total Fund</b>				
VRS	1.9%	7.3%	7.0%	5.6%
VRS Custom Benchmark <sup>1</sup>	1.3%	6.6%	6.4%	5.1%
<b>2. Total Public Equity</b>				
VRS	-3.2%	7.5%	7.1%	5.1%
Custom Benchmark <sup>2</sup>	-3.5%	6.7%	6.3%	4.6%
<b>3. Total Investment-Grade Fixed Income</b>				
VRS	6.8%	4.5%	4.2%	5.8%
Custom Benchmark <sup>3</sup>	6.0%	4.1%	3.8%	5.3%
<b>4. Total Credit Strategies</b>				
VRS	1.2%	4.7%	5.2%	6.0%
Custom Benchmark <sup>4</sup>	2.2%	4.7%	4.9%	5.2%
<b>5. Total Real Assets</b>				
VRS	11.6%	12.5%	12.0%	7.4%
Custom Benchmark <sup>5</sup>	11.0%	10.9%	10.9%	7.2%
<b>6. Total Private Equity</b>				
VRS	6.6%	12.5%	12.0%	11.2%
Custom Benchmark <sup>6</sup>	-1.2%	9.5%	11.0%	8.3%
<b>7. Total Strategic Opportunities</b>				
VRS	-2.4%	0.8%	n/a	n/a
Custom Benchmark <sup>7</sup>	0.2%	1.6%	n/a	n/a

Investment return calculations were prepared using a time-weighted return methodology based on market value, net of investment expenses.

## FIGURE 3.2: INVESTMENT PERFORMANCE SUMMARY, cont.

- <sup>1</sup> The VRS Custom Benchmark is a blend of the Asset Class Benchmarks at policy weights.
- <sup>2</sup> Effective July 2015, the Public Equity Custom Benchmark is a blend of the MSCI ACWI IMI with developed market currencies 50% hedged (net VRS tax rates) index (80%) and the Credit Suisse Equity Long/Short Broad Index (20%).
- <sup>3</sup> Effective July 2014, the Investment-Grade Fixed Income Custom Benchmark consists of the Barclays Capital U.S. Aggregate Index.
- <sup>4</sup> Effective July 2012, the Credit Strategies Custom Benchmark is the weighted average of the Citigroup Broad Investment Grade Index (10%), the Bank of America Merrill Lynch BB-B Constrained Index (20%), the S&P Performing Loan Index (30%), the Emerging Market Debt Custom Benchmark (20%), and the Bank of America Merrill Lynch All U.S. Convertibles Index (20%). For the four years prior to July 2012, the risk-adjusted benchmark is the weighted average of the Bank of America Merrill Lynch U.S. High Yield BB-B Constrained Index and the Bank of America All Convertibles Index.
- <sup>5</sup> Effective July 2014, the Real Assets Custom Benchmark is the market value weighted blend of the Total Real Estate Benchmark, of which 85% is the NCREIF Private Real Estate Benchmark (ODCE Index (net) lagged by three months) and 15% is the Total REIT Benchmark (FTSE/EPRA/NAREIT Developed REIT Index) and the Other Real Assets Custom Benchmark (the CPI-U Index plus 400 basis points per annum lagged by three months) with modified benchmarking for Other Real Assets during the increased allocation period.
- <sup>6</sup> Effective July 2013, the Private Equity Custom Benchmark is the MSCI ACWI IMI with the Developed Market Currencies 50% Hedged customized for the VRS dividend withholding tax rates lagged by three months plus 250 basis points per annum with modified benchmarking during the increased allocation period.
- <sup>7</sup> Effective January 2015, the Strategic Opportunities Portfolio Custom Benchmark is the market value weighted average of the benchmarks of the mandates within the program.

## Portfolio Highlights

### PUBLIC EQUITY

The market value of the Total Public Equity Program, including rebalance equity exposure, as of June 30, 2016, was \$27.1 billion, representing approximately 40% of the total fund. The program is dominated by traditional strategies valued at \$22.0 billion or 81.2%. The program also employs equity-oriented hedge fund strategies valued at \$5.1 billion or 18.8%. The objective of the portfolio is to exceed the Custom Benchmark over longer-term periods, net of all costs. The Custom Benchmark is comprised of 80% MSCI All Country World Index (ACWI) IMI with developed currencies 50% hedged and 20% Credit Suisse Equity Long/Short Broad Index.

The Traditional Public Equity portfolio had 51% invested in domestic equity and 49% in international equity. Three percent was invested in passive strategies and 50% was managed internally. At fiscal year-end, the ACWI IMI benchmark was comprised of 53.3% of the MSCI U.S. Investible Market Index (IMI), 36.2% of the MSCI World excluding U.S. IMI (50% hedged) and 10.5% in the MSCI Emerging IMI.

Traditional Public Equity versus the MSCI ACWI IMI strategic sectors and region weights are as follows:

**FIGURE 3.3: TRADITIONAL EQUITY CUSTOM BENCHMARK SECTORS AND REGIONS**

Strategic Sectors	VRS	MSCI ACWI IMI	Regions	VRS	MSCI ACWI IMI
Consumer Discretionary	11.02%	12.57%	North America	55.17%	56.58%
Consumer Staples	10.00%	10.20%	Europe/Middle East/Africa	23.30%	22.48%
Energy	6.27%	6.61%	Asia Pacific	20.15%	19.61%
Financials	17.74%	20.27%	Latin and South America	1.38%	1.33%
Health Care	12.57%	11.89%		100.00%	100.00%
Industrials	11.19%	11.29%			
Information Technology	15.19%	14.70%			
Materials	4.89%	5.30%			
Telecommunication Services	5.65%	3.60%			
Utilities	5.48%	3.57%			
	100.00%	100.00%			

*Based on Barra's classification of sectors and regions and excludes cash.*

The top 10 holdings in the Total Public Equity Program comprised 5.5% of the program at fiscal year-end. Six companies, Wells Fargo, Google, Comcast, JPMorgan Chase, Valeant and Allergan were replaced by Exxon Mobil, Roche Holding, AT&T, Facebook, Amazon and GlaxoSmithKline on this year's schedule.

**FIGURE 3.4: PUBLIC EQUITY – TOP 10 EXPOSURES**

AS OF JUNE 30, 2016

Company	Fair Value	Shares
Johnson & Johnson	\$ 216,914,725	1,788,250
Apple Inc.	187,698,076	1,963,369
Exxon Mobil Corp.	153,733,038	1,639,994
Microsoft Corp.	153,253,536	2,994,988
Verizon Communications	145,108,281	2,598,644
Roche Holding AG	144,189,926	548,496
AT&T Inc.	138,207,660	3,198,511
Facebook Inc.	125,036,262	1,094,122
Amazon.com Inc.	121,389,189	169,628
GlaxoSmithKline PLC	117,155,926	4,819,383

*Aggregated various share classes based on parent company.*

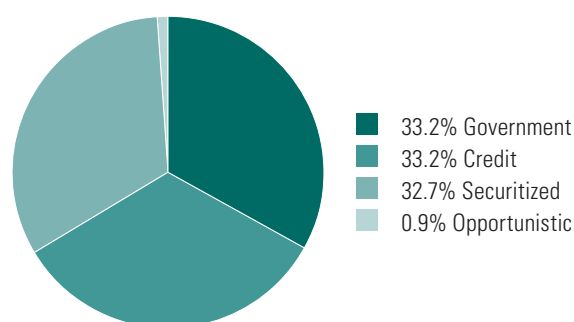
## FIXED INCOME

VRS invests a portion of its portfolio in fixed income investments to reduce total fund volatility, produce income and provide for some protection in the event of a deflationary environment. The market value of the Fixed Income Program as of June 30, 2016, was \$12.0 billion, representing 17.6% of the total fund.

The Fixed Income Program is internally invested in a diversified portfolio of high-quality assets, such as government securities, corporate securities and mortgage-backed securities. The objective of the program is to exceed the return of the Barclay's U.S. Aggregate Index, while staying in compliance with risk limits. For fiscal year 2016, the return of the program was 6.8% versus a return of 6.0% for the benchmark.

**FIGURE 3.5: FIXED INCOME PORTFOLIO BY SECTOR ALLOCATION**

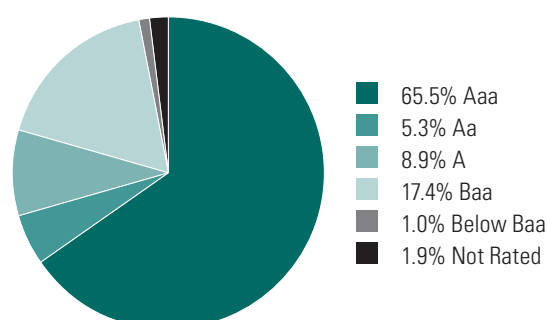
AS OF JUNE 30, 2016



**FIGURE 3.6: FIXED INCOME PORTFOLIO BY CREDIT QUALITY BREAKDOWN**

AS OF JUNE 30, 2016

Source: Moody's Credit Rating Service



**FIGURE 3.7: FIXED INCOME – TOP 10 HOLDINGS BY MARKET VALUE**

AS OF JUNE 30, 2016

Security	Par Value	Fair Value
TREASURY NOTE	192,000,000	198,292,985
TREASURY NOTE	122,375,000	126,719,935
TREASURY NOTE	115,000,000	115,685,621
TREASURY BOND	103,800,000	115,209,726
FHLMC MBS	108,243,260	112,768,595
TREASURY NOTE	103,000,000	105,538,990
TREASURY NOTE	95,000,000	95,630,891
TREASURY NOTE	95,000,000	95,482,697
TREASURY NOTE	90,000,000	90,565,302
FHLMC BOND	57,565,000	90,553,510

### SHORT-TERM INVESTMENTS

Generally, VRS desires to remain fully invested at all times and seeks to minimize its holdings of cash investments. Temporary cash balances are invested in short-term money market instruments with the goal of maintaining high credit quality and liquidity.

### PRIVATE EQUITY

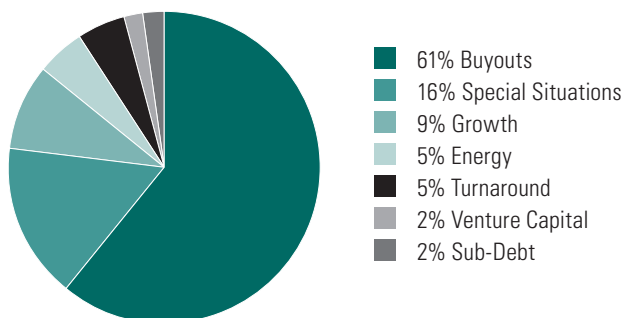
VRS invests in private equity to achieve returns greater than those available in the public equity markets. Specifically, the program seeks to outperform the Morgan Stanley Capital International – All Country World Index (MSCI ACWI) by 2.5% per year. Program returns are calculated on both a time-weighted basis and a dollar-weighted or internal rate-of-return (IRR) basis. On a time-weighted basis, the program return for fiscal year 2016 was 6.6%. On a dollar-weighted or IRR basis, the private equity one-year return was 6.4% as of March 31, 2016.

As of June 30, 2016, the carrying value of the program was approximately \$5.2 billion. Most of the program is invested in limited partnerships. Sectors in which the program invests include leveraged buyouts, venture capital, growth, sub-debt, turnaround, energy and special situations.

The Private Equity Program’s market value by subclass was as follows:

**FIGURE 3.8: PRIVATE EQUITY PROGRAM**

AS OF JUNE 30, 2016



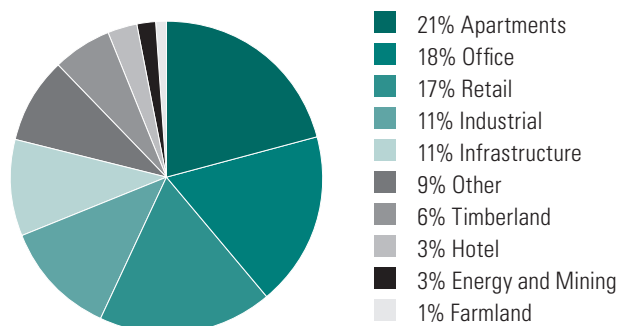
### REAL ASSETS

A portion of the VRS portfolio is invested in real assets to help diversify the total fund by providing exposure to asset classes and sectors that offer low historical correlations with the public markets and with the additional objectives of generating competitive risk-adjusted returns, significant operating cash flows and inflation linkages. The portfolio continued to grow in fiscal year 2016, producing an 11.6% return and outperforming the benchmark by 60 basis points. The private real estate portfolio delivered a 13.2% return while the real estate investment trusts (REITs) produced a total return of 10.8%. Investments in infrastructure, natural resources, timberland and farmland produced a 5.6% return for the fiscal year.

The percentage of the total fund represented by the real assets portfolio increased over the course of the year from 11.4% to 12.9%, due primarily to new fundings as well as asset income and appreciation. At fiscal year-end, the portfolio was composed of approximately 67.1% private real estate, 12.0% REITs, 12.3% infrastructure, 5.5% timberland, 2.8% energy and mining and .3% farmland. Portfolio leverage as a percentage of total real assets was 29.9% as of June 30, 2016.

**FIGURE 3.9: REAL ASSETS BY SECTOR**

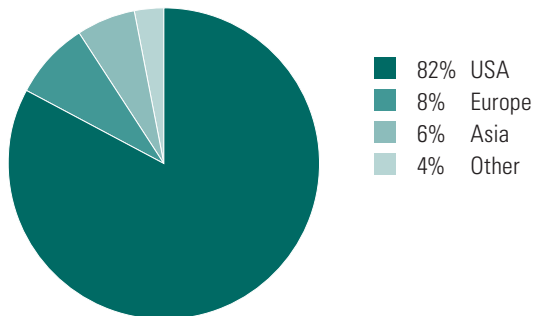
AS OF JUNE 30, 2016





**FIGURE 3.10: REAL ASSETS BY GEOGRAPHIC REGION**

AS OF JUNE 30, 2016

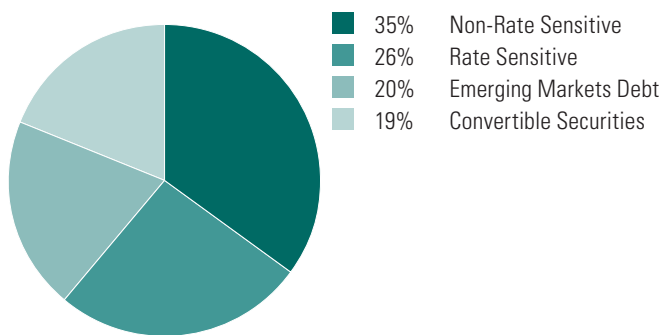


**CREDIT STRATEGIES**

VRS allocates a portion of the portfolio to credit-related investments. The Credit Strategies program provides an alternative arena for generating attractive returns for the plan. The objective of the program is to provide attractive returns relative to the Custom Credit Strategies benchmark. For the fiscal year, the program returned 1.2%, while the program’s custom benchmark returned 2.2%.

**FIGURE 3.11: CREDIT STRATEGIES PROGRAM**

AS OF JUNE 30, 2016



**CURRENCY**

VRS has currency risk due to its investments in non-dollar denominated assets. To help control this risk, VRS has a Currency Program that uses a combination of internal hedging strategies and external managers. The external currency management part aims to lower overall Fund volatility and provide diversified alpha across the Fund. Investments include constrained positions in developed and emerging market currencies. The currency positions are typically traded on a forward basis and thus no capital is necessary at the time of the trade. At forward settlement date, gains and losses are received/paid out against a notional value. The current notional value, as of June 30, 2016, was \$1.4 billion. For the fiscal year, it returned 1.5% versus a zero benchmark.

**STRATEGIC OPPORTUNITIES PORTFOLIO**

The Board of Trustees approved the Strategic Opportunities Portfolio on January 1, 2013, to manage strategies that staff believes would add value to the total fund but would otherwise not fit in individual program mandates or benchmarks. As of June 30, 2016, the portfolio had a market value of \$1.1 billion and was invested in two multi-asset class public investments funds and two multi-asset class private investments funds. During the fiscal year, it returned -2.4% against the program’s custom benchmark, which returned 0.2%.

**MORE INFORMATION**

A complete list of the investment portfolio is available upon request. Address requests to the VRS FOIA Coordinator, Virginia Retirement System, P.O. Box 2500, Richmond, VA 23218-2500. More information is available at [www.varetire.org/legal/foia.asp](http://www.varetire.org/legal/foia.asp).

## VRS Money Managers

The diversified investment structure as of June 30, 2016, is reflected in the following tables, which list VRS managers by investment program and style.

### PUBLIC EQUITY MONEY MANAGERS

External Managers – Top 10 Managers	Style Description
Acadian Asset Management	Emerging, Non-U.S. Small
Ariel	Global
Arrowstreet Capital	Global
Baillie Gifford	Global
Epoch	Global
J.P. Morgan	U.S. Large Cap
LSV Asset Management	Global, Non-U.S. Small
Nordea	Emerging, Global
Select	U.S. Small Cap
TimesSquare	U.S. Small Cap
Internal Portfolios	Style Description
Afton	U.S. Small
Matoaka	Non-U.S. Large
Mobjack	U.S. Large
Piedmont	Non-U.S. Large
Potomac	U.S. Large
Tuckahoe	Emerging
VRS Energy Overlay	Global Energy
Top 10 Equity Hedge Funds	Style Description
Blue Ridge, LP	Long/Short
Cevian	Activist
Glenhill Capital	Long/Short
Kylin	Long/Short
Lansdowne Partners	Long/Short
Maverick Capital	Long/Short
New Mountain Capital	Long/Short
Select – Cooper Square	Long/Short
Theleme	Long/Short
ValueAct Capital	Activist

### FIXED INCOME

Internal Portfolios	Style Description
VRS Securitized	Mortgage and other Asset-Backed Securities
VRS Credit	High-Quality Corporates
VRS Government	Treasuries, Agencies and other Government-Related
VRS Fixed Income Opportunistic	Various Fixed Income Related Assets

## PRIVATE EQUITY – TOP 10 MANAGERS

### Style Description

Grosvenor	Customized Separate Account
Apax Partners	Buyout
TPG Partners	Buyout
Hellman and Friedman	Buyout
TA Associates	Growth
Nordic Capital	Buyout
Littlejohn & Co.	Turnaround
Olympus Partners	Buyout
Charterhouse Capital	Buyout
Natural Gas Partners	Energy

## CREDIT STRATEGIES – TOP 10 MANAGERS

### Style Description

Advent Capital	Convertibles
Beach Point Capital Management	Distressed, Leveraged Loans, Opportunistic
BlueBay Asset Management	Emerging Markets Debt
J.P. Morgan	High-Yield
Oaktree Capital Management	Convertibles, Distressed, High-Yield, Mezzanine
Pacific Investment Management Company	Emerging Markets Debt, High-Yield
Payden & Rygel	Emerging Markets Debt
Prudential	High-Yield, Investment Grade, Mezzanine
Solus	Hedge Fund, Opportunistic
Zazove Associates	Convertibles

## STRATEGIC OPPORTUNITIES PORTFOLIO

### Style Description

AQR	Multi-Asset Class Public Investments
Bridgewater	Multi-Asset Class Public Investments
Carlyle	Multi-Asset Class Private Investments
KKR	Multi-Asset Class Private Investments

## CURRENCY

### Style Description

FDO	Developed and Emerging
First Quadrant	Developed

## REAL ASSETS – TOP 10 MANAGERS

### Style Description

AmCap Incorporated	Core Real Estate
Blackstone Real Estate Partners	Core, Enhanced Core, Opportunistic Real Estate & REITs
Clarion Partners	Enhanced Core Real Estate
Industry Funds Management	Global Infrastructure
J.P. Morgan Asset Management, Inc.	Core Real Estate
LaSalle Investment Management	Core & Opportunistic Real Estate
Morgan Stanley	Core, Enhanced Core, Opportunistic Real Estate, International REITs & Global Infrastructure
PGIM	Core & Enhanced Core Real Estate
Pritzker Realty Group	Opportunistic Real Estate
VRS – Internal Equity Management	U.S. REITs

## Public Equity Commissions

AS OF JUNE 30, 2016

Broker	Commission	Broker	Commission
Merrill Lynch International London Equities	\$ 1,478,680.97	Sanford C. Bernstein & Co., New York	\$ 145,277.79
Credit Suisse, New York (CSUS)	\$ 1,266,432.52	Merrill Lynch Pierce Fenner & Smith Inc., Wilmington	\$ 124,490.44
National Financial Services Corp., New York	\$ 753,709.10	ITG Inc., New York	\$ 111,365.29
Goldman Sachs & Co., New York	\$ 592,681.94	HSBC Bank PLC (Midland Bank)(JAC), London	\$ 110,457.27
Merrill Lynch Pierce Fenner & Smith Inc., New York	\$ 554,987.91	Investment Technology Group, New York	\$ 105,738.96
Deutsche Bank Securities, Inc., New York (NWSCUS33)	\$ 485,333.72	J.P. Morgan Secs., Ltd., London	\$ 104,606.70
Morgan Stanley & Co., Inc., New York	\$ 274,978.35	SG Americas Securities LLC, New York	\$ 101,135.15
Loop Capital Markets, Jersey City	\$ 268,491.32	Weeden & Co., New York	\$ 100,699.51
Instinet Europe Limited, London	\$ 267,191.26	Other Brokers	\$ 2,738,141.27
Citigroup Global Markets, Inc., New York	\$ 229,152.37		
UBS Securities LLC, Stamford	\$ 218,581.62		
		<b>Total FY 2016</b>	<b>\$ 10,032,133.46</b>

## SCHEDULE OF INVESTMENT EXPENSES

FOR THE YEAR ENDED JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

	Assets Under Management	Management Fees and Expenses
<b>External Asset Management:</b>		
Public Equity Managers	\$ 10,654,764	\$ 56,526
Fixed Income Managers	2,450,993	977
Credit Strategies Managers	11,502,066	51,008
Real Asset Managers	8,872,597	87,469
Private Equity Managers	5,240,073	75,880
Hedge Fund Managers	6,026,861	81,873
Strategic Opportunity Portfolio	1,384,026	8,882
Currency Managers*	—	2,498
<b>Total External Management Fees</b>	<b>46,131,380</b>	<b>365,113</b>
<b>Internal Management</b>	<b>22,349,691</b>	<b>29,205</b>
<b>Miscellaneous Fees and Expenses:</b>		
Custodial Fees	—	4,500
Legal Fees	—	715
Other Fees and Expenses	—	466
<b>Total Miscellaneous Fees and Expenses</b>	<b>—</b>	<b>5,681</b>
<b>Total Defined Benefit Investment Expenses</b>	<b>\$ 68,481,071</b>	<b>\$ 399,998</b>
<b>Total Defined Contribution Investment Expenses**</b>	<b>73,913</b>	<b>1,441</b>
<b>Total</b>	<b>\$ 68,554,984</b>	<b>\$ 401,440</b>

\* The fees related to the Active Currency Overlay Program are based on the manager's notional account values. The notional value of the account at June 30, 2016, was \$1.4 billion.

\*\* Administrative expense related to Hybrid Retirement Plan record-keeping fees.

## Investment Summary: Defined Benefit Plans

In accordance with Section 51.1-124.31 of the *Code of Virginia* (1950), as amended, the Board of Trustees has pooled substantially all defined benefits plan assets of the Virginia Retirement System, the State Police Officers' Retirement System, the Virginia Law Officers' Retirement System, the Judicial Retirement System, the Group Life Insurance Fund, the Retiree Health Insurance Credit Fund, the Virginia Sickness and Disability Trust Fund, the Line of Duty Trust Fund, the Virginia Local Disability Program and other assets of the System into a common investment pool. The common investment pool of the pension trust funds and other employee benefit trust funds held the following composition of investments at June 30, 2016 and 2015:

	(EXPRESSED IN THOUSANDS)			
	2016 Fair Value	Percent of Total Value	2015 Fair Value	Percent of Total Value
<b>Bonds and Mortgage Securities:</b>				
U.S. Government and Agencies	\$ 4,200,844	6.10%	\$ 4,576,496	6.72%
Mortgage Securities	3,521,350	5.11%	3,496,782	5.13%
Corporate and Other Bonds	13,084,085	19.00%	12,933,907	18.99%
<b>Total Bonds and Mortgage Securities</b>	20,806,279	30.21%	21,007,185	30.84%
<b>Common and Preferred Stocks</b>	21,219,259	30.82%	23,686,079	34.77%
<b>Index and Pooled Funds</b>				
Equity Index and Pooled Funds	8,481,970	12.32%	6,978,380	10.24%
Fixed Income Commingled Funds	1,179,229	1.71%	745,010	1.09%
<b>Total Index and Pooled Funds</b>	9,661,199	14.03%	7,723,390	11.34%
<b>Real Estate</b>				
Private Real Estate	7,666,278	11.13%	6,983,580	10.25%
<b>Private Equity</b>	9,053,853	13.15%	8,154,219	11.97%
<b>Short-Term Investments</b>				
Treasurer of Virginia – LGIP Investment Pool	306,874	0.45%	283,998	0.42%
TBC Pooled Employee Trust Fund	64,709	0.09%	222,015	0.33%
Foreign Currencies	74,203	0.11%	66,368	0.10%
<b>Total Short-Term Investments</b>	445,787	0.65%	572,381	0.84%
<b>Total Investments</b>	<b>\$ 68,852,655</b>	<b>100.00%</b>	<b>\$ 68,126,834</b>	<b>100.00%</b>

## Description of Hybrid Defined Contribution Plan

Defined contribution plan assets for Hybrid Retirement Plan members are maintained in two separate accounts. The Hybrid 401(a) account contains the hybrid plan member and employer mandatory contributions and the employer match on the voluntary member contributions. The Hybrid Deferred Compensation Plan (457) contains the hybrid plan member's voluntary member contributions. The schedule below shows the assets in each investment option and the accumulated plan assets in each option.

### HYBRID PARTICIPANT ACCOUNT PLAN ASSETS BY FUND OPTION

AS OF JUNE 30, 2016

Fund Name	Hybrid 401(a)	Hybrid 457	Total
Retirement Portfolio	\$ 700,926	\$ 208,370	\$ 909,296
Target Date 2020 Portfolio	2,601,847	871,650	3,473,497
Target Date 2025 Portfolio	3,895,395	1,296,348	5,191,743
Target Date 2030 Portfolio	4,949,869	1,491,645	6,441,514
Target Date 2035 Portfolio	5,866,607	2,090,217	7,956,824
Target Date 2040 Portfolio	5,922,973	1,924,686	7,847,659
Target Date 2045 Portfolio	6,952,499	1,907,299	8,859,798
Target Date 2050 Portfolio	9,054,303	2,022,915	11,077,218
Target Date 2055 Portfolio	14,826,146	1,917,190	16,743,336
Target Date 2060 Portfolio	1,092,008	134,505	1,226,513
Money Market Fund	359,130	58,348	417,478
Stable Value Fund	118,325	159,223	277,548
Bond Fund	87,381	92,560	179,941
Inflation-Protected Bond Fund	20,641	23,219	43,860
High-Yield Bond Fund	59,154	78,829	137,983
Stock Fund	818,250	823,792	1,642,042
Small/Mid-Cap Stock Fund	357,610	362,712	720,322
International Stock Fund	151,176	155,219	306,395
Emerging Markets Stock Fund	96,014	86,610	182,624
Global Real Estate Fund	133,446	126,450	259,896
VRS Investment Portfolio – Interim Account	4,040	218	4,258
VRS Investment Portfolio	10,880	266	11,146
Self-Directed Brokerage	–	2,189	2,189
<b>Total Plan Assets</b>	<b>\$58,078,620</b>	<b>\$15,834,460</b>	<b>\$73,913,080</b>

## Description of Defined Contribution Plan Investment Options

Participants with the System's Hybrid Retirement Plan benefit structure have access to a number of core investment options for their Defined Contribution Plan contributions. These options are intended to provide participants with a variety of investment choices while controlling the costs associated with those choices. In addition to the option-specific annual operating expense detailed in the Investment Option Performance Summary, participants pay an annual record-keeping fee of \$30.50 that is deducted from their accounts on a month basis (approximately \$2.54 per month). Participants with multiple accounts in the Plan pay only one annual fee of \$30.50. At June 30, 2016, the plans provided the following core investment options to plan participants.

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### DO-IT-FOR-ME FUNDS

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**Retirement Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risks that investors, on average, may be willing to accept. In pursuit of that object, the portfolio will be broadly diversified across global asset classes.

U.S. Bonds—51.1% U.S. Large-Cap Stocks—19.7% International Stocks—11.1%  
U.S. Inflation-Index Bonds—8.8% U.S. Small/Mid-Cap Stocks—5.1%  
Commodities—3.7% Developed Real Estate—0.5%

**Target Date 2020 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Bonds—42.1% U.S. Large-Cap Stocks—23.9% International Stocks—14.7%  
U.S. Inflation-Index Bonds—6.8% U.S. Small/Mid-Cap Stocks—5.8%  
Commodities—3.8% Developed Real Estate—2.9%

**Target Date 2025 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Bonds—32.3% U.S. Large-Cap Stocks—28.4% International Stocks—18.4%  
U.S. Small/Mid-Cap Stocks—6.4% Developed Real Estate—5.4%  
U.S. Inflation-Index Bonds—5.2% Commodities—3.9%

**Target Date 2030 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Large-Cap Stocks—32.5% U.S. Bonds—23.4% International Stocks—21.9%  
Developed Real Estate—7.7% U.S. Small/Mid-Cap Stocks—6.9%  
Commodities—4.0% U.S. Inflation-Index Bonds—3.6%

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**Target Date 2035 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Large-Cap Stocks—36.5% International Stocks—25.2% U.S. Bonds—14.7%  
Developed Real Estate—10.1% U.S. Small/Mid-Cap Stocks—7.5%  
Commodities—4.0% U.S. Inflation-Index Bonds—2.1%

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**Target Date 2040 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Large-Cap Stocks—39.6% International Stocks—28.2%  
Developed Real Estate—12.1% U.S. Small/Mid-Cap Stocks—8.2%  
U.S. Bonds—6.9% Commodities—4.2% U.S. Inflation-Index Bonds—0.8%

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**Target Date 2045 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Large-Cap Stocks—40.7% International Stocks—30.1%  
Developed Real Estate—13.8% U.S. Small/Mid-Cap Stocks—8.8%  
Commodities—4.3% U.S. Bonds—2.1% U.S. Inflation-Index Bonds—0.2%

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**Target Date 2050 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Large-Cap Stocks—40.8% International Stocks—30.7% Developed Real Estate—14.2%  
U.S. Small/Mid-Cap Stocks—9.0% Commodities—4.3% U.S. Bonds—1.0%

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**Target Date 2055 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Large-Cap Stocks—40.8% International Stocks—30.7% Developed Real Estate—14.2%  
U.S. Small/Mid-Cap Stocks—9.0% Commodities—4.3% U.S. Bonds—1.0%

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**Target Date 2060 Portfolio:** Seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. In pursuit of that objective, the portfolio will be broadly diversified across global asset classes, with asset allocations becoming more conservative over time.

U.S. Large-Cap Stocks–40.8% International Stocks–30.7% Developed Real Estate–14.2%  
U.S. Small/Mid-Cap Stocks–9.0% Commodities–4.3% U.S. Bonds–1.0%

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## HELP-ME-DO-IT FUNDS

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**Money Market Fund:** Seeks to provide a high level of current income as is consistent liquidity and stability of principal.

Government Agency Debt–59.4% Treasury Repurchase Agreements–23.5%  
Government Agency Repurchase Agreements–15.8% Treasury Debt–1.3%

**Stable Value Fund:** Seeks to provide safety of principal while earning a reasonable level of interest income consistent with an underlying portfolio of short to intermediate duration high-quality fixed-income (bond) securities, and liquidity to accommodate participant transactions.

Transamerica Premier life Insurance Company–25.6% State Street Bank and Trust Company–24.2%  
Voya Life Insurance and Annuity Company–21.8% Royal Bank of Canada–18.4% Money Market–10.0%

**Bond Fund:** Seeks to track the performance of the Barclays Aggregate Bond Index. The Index is an unmanaged index that represents the broad U.S. investment grade bond market and is comprised of U.S. treasury securities, government agency bonds, corporate bonds, mortgage-backed securities, asset-backed securities and a small amount of foreign bonds traded in the U.S.

Treasury–36.8% Mortgages–27.2% Industrials–15.4% Financials–7.8%  
Non-U.S. Credit–4.7% Agencies–2.1% Utilities–1.9% CMBS–1.6%  
Cash–0.9% Taxable Municipals–0.9% Asset-Backed Securities–0.5% Hybrid ARM–0.2%

**Inflation-Protected Bond Fund:** Seeks to track the performance of the Barclays U.S. Treasury Inflation-Protected Securities Index. The Index is an unmanaged index that represents the U.S. Treasury Inflation-Protection Securities (TIPS) market. The index includes investment-grade TIPS with one or more years to final maturity.

U.S. Treasury–100.0%

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**High-Yield Bond Fund:** Seeks to achieve returns that exceed, over time, its benchmark, the Bank of America (BofA) Merrill Lynch U.S. High-Yield BB-B Rated Constrained Index. The Index is an unmanaged index of BB-B rated securities that caps any single issuer exposure to 2.00%. The index is indicative of the higher quality high-yield bond market.

Communications—25.6% Consumer Non-Cyclical—18.3% Consumer Cyclical—14.2%  
Technology—11.9% Energy—8.3% Capital Goods—7.7% Basic Industry—4.4%  
Financial/REIT—3.1% Other Industrial—2.6% Transportation—1.9% Other/Cash—1.3% Utilities—0.7%

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**Stock Fund:** Seeks to track the performance of the Standard & Poor's 500 Index. The Index is an unmanaged index that represents the broad large capitalization U.S. stock market and is comprised of 500 widely held U.S. stocks chosen by Standard & Poor's.

Information Technology—19.8% Financials—15.7% Health Care—14.7% Consumer Discretionary—12.3%  
Consumer Staples—10.6% Industrials—10.2% Energy—7.4%  
Utilities—3.6% Telecommunications Services—2.9% Materials—2.8%

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**Small/Mid-Capitalization Stock Fund:** Seeks to track the performance of the Russell 2500 Index. The Index is an unmanaged index that represents the broad middle to smaller capitalization U.S. stock market.

Financials—26.3% Information Technology—14.8% Industrials—14.7%  
Consumer Discretionary—13.2% Health Care—11.3% Materials—5.9% Utilities—5.0%  
Energy—4.4% Consumer Staples—3.6% Telecommunication Services—0.8%

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**International Stock Fund:** Seeks to track the performance of the Morgan Stanley Capital International World ex-U.S. (MSCI World ex-U.S.) Index. The Index is an unmanaged index that is comprised of foreign stocks representing companies located in Canada and in developed countries across Western Europe and the Pacific Rim.

Financials—23.9% Industrials—12.8% Consumer Staples—12.6% Consumer Discretionary—11.6%  
Health Care—11.3% Materials—7.4% Energy—6.7%  
Information Technology—5.1% Telecommunication Services—4.9% Utilities—3.7%

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**Emerging Markets Stock Fund:** Seeks to track the performance of the Morgan Stanley Capital International Emerging Markets (MSCI Emerging Markets) Index. The Index is an unmanaged index that is comprised of foreign stocks representing companies located in 26 emerging markets.

Financials–25.9% Information Technology–22.6% Consumer Discretionary–10.5% Energy–7.5%  
Consumer Staples–8.5% Telecommunication Services–6.6% Industrials–6.2%  
Materials–6.3% Utilities–3.2% Health Care–2.7%

**Global Real Estate Fund:** Seeks to track the performance of the FTSE EPRA/NAREIT Developed Index. This Index is an unmanaged index which is designed to reflect the performance of listed real estate companies worldwide including the U.S.

Retail REITs–24.6% Office REITs–11.3% Diversified REITs–10.9%  
Specialized REITs–9.6% Residential REITs–9.5% Diversified Real Estate Activities–8.6%  
Real Estate Operating Companies–7.6% Health Care REITs–7.0% Industrial REITs–5.6%  
Hotel & Resort REITs–3.0% Real Estate Development–1.9% Health Care Facilities–0.2%  
Hotel Resorts & Cruise Lines–0.1% Asset Management & Custody Banks–0.1%

**VRS Investment Portfolio (VRSIP):** Seeks to maximize return while managing risk within an acceptable range. Due to the long-term nature of the defined benefit plan's liabilities, the horizon for investment decisions is generally defined as 10 years or longer.

Public Equity–39.9% Credit Strategies–18.4% Fixed Income–17.6%  
Real Assets–12.9% Private Equity–7.6% Cash–1.9% Strategic Opportunities–1.7%

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## DO-IT-MYSELF FUNDS

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**Self-Directed Brokerage Account (SDBA):** Allows investors to select from thousands of publicly-traded mutual funds, exchange-traded funds (ETFs) and individual securities in addition to the available core investment options. The SDBA option is offered through TD Ameritrade. The SDBA option is for knowledgeable investors who acknowledge and understand the risks and costs associated with the investments contained in this option. In addition to the annual recordkeeping fee and operating expenses, this option is subject to transaction fees charged by TD Ameritrade and investment management related fees and expenses for the funds or investments selected. ICMA-RC charges a \$50 setup fee when a member establishes a SDBA and deducts the fee from the member's ICMA-RC account.

## Investment Option Performance Summary: Defined Contribution Plans

AS OF JUNE 30, 2016

(RETURNS GREATER THAN ONE YEAR ARE ANNUALIZED)

DO-IT-FOR-ME PATH: TARGET DATE PORTFOLIOS

Investment Options	Inception Date	1 Year	3 Years	5 Years	10 Years or Since Inception	Total Annual Operating Expenses	
						As a %	Per \$1,000
<b>Retirement Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>08/01/05</b>	<b>2.54%</b> 2.53%	<b>4.87%</b> 4.85%	<b>4.83%</b> 4.80%	<b>5.32%</b> 5.31%	<b>0.08%</b>	<b>\$0.80</b>
<b>Target Date 2020 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>08/01/05</b>	<b>1.88%</b> 1.83%	<b>5.44%</b> 5.39%	<b>5.32%</b> 5.29%	<b>5.07%</b> 5.05%	<b>0.08%</b>	<b>\$0.80</b>
<b>Target Date 2025 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>07/05/06</b>	<b>1.26%</b> 1.23%	<b>5.73%</b> 5.67%	<b>5.62%</b> 5.58%	<b>5.13%</b> 5.09%	<b>0.08%</b>	<b>\$0.80</b>
<b>Target Date 2030 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>08/01/05</b>	<b>0.70%</b> 0.62%	<b>5.98%</b> 5.88%	<b>5.88%</b> 5.81%	<b>5.08%</b> 5.04%	<b>0.08%</b>	<b>\$0.80</b>
<b>Target Date 2035 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>07/05/06</b>	<b>0.14%</b> 0.04%	<b>6.15%</b> 6.06%	<b>6.10%</b> 6.00%	<b>5.09%</b> 5.02%	<b>0.08%</b>	<b>\$0.80</b>
<b>Target Date 2040 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>08/01/05</b>	<b>-0.41%</b> -0.53%	<b>6.31%</b> 6.20%	<b>6.26%</b> 6.15%	<b>5.02%</b> 4.94%	<b>0.08%</b>	<b>\$0.80</b>
<b>Target Date 2045 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>07/05/06</b>	<b>-0.70%</b> -0.84%	<b>6.51%</b> 6.38%	<b>6.44%</b> 6.33%	<b>4.99%</b> 4.93%	<b>0.08%</b>	<b>\$0.80</b>
<b>Target Date 2050 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>09/30/07</b>	<b>-0.76%</b> -0.92%	<b>6.72%</b> 6.60%	<b>6.62%</b> 6.51%	<b>3.33%</b> 3.23%	<b>0.09%</b>	<b>\$0.90</b>
<b>Target Date 2055 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>05/19/10</b>	<b>-0.78%</b> -0.92%	<b>6.92%</b> 6.80%	<b>6.91%</b> 6.75%	<b>9.41%</b> 9.33%	<b>0.09%</b>	<b>\$0.90</b>
<b>Target Date 2060 Portfolio<sup>2</sup></b> Custom Benchmark <sup>1</sup>	<b>11/17/14</b>	<b>-0.71%</b> -0.92%	<b>N/A</b> N/A	<b>N/A</b> N/A	<b>0.78%</b> 0.60%	<b>0.09%</b>	<b>\$0.90</b>

HELP-ME-DO-IT PATH: INDIVIDUAL OPTIONS

Investment Options	Inception Date	Total Annual Operating Expenses					
		1 Year	3 Years	5 Years	10 Years or Since Inception	As a %	Per \$1,000
<b>Money Market Fund</b>	<b>11/01/99</b>	<b>0.18%</b>	<b>0.06%</b>	<b>0.08%</b>	<b>1.16%</b>	<b>0.10%</b>	<b>\$1.00</b>
Benchmark: Barclays 3-Month Treasury Bill Index Yield as of June 30, 2016 was 0.36%		0.21%	0.11%	0.10%	1.08%		
<b>Stable Value Fund</b>	<b>02/01/95</b>	<b>1.59%</b>	<b>1.53%</b>	<b>1.86%</b>	<b>2.98%</b>	<b>0.29%</b>	<b>\$2.90</b>
Custom Benchmark <sup>3</sup> Yield as of June 30, 2016 was 1.71%		1.53%	1.42%	1.21%	2.05%		
<b>Bond Fund</b>	<b>11/01/99</b>	<b>6.06%</b>	<b>4.13%</b>	<b>3.84%</b>	<b>5.22%</b>	<b>0.04%</b>	<b>\$0.40</b>
Benchmark: Barclays U.S. Aggregate Bond Index		6.00%	4.06%	3.76%	5.13%		
<b>Inflation-Protected Bond Fund</b>	<b>07/30/02</b>	<b>4.40%</b>	<b>2.36%</b>	<b>2.69%</b>	<b>4.80%</b>	<b>0.04%</b>	<b>\$0.40</b>
Benchmark: Barclays U.S. Treasury Inflation-Protected Securities Index		4.35%	2.31%	2.63%	4.75%		
<b>High-Yield Bond Fund</b>	<b>05/31/04</b>	<b>2.63%</b>	<b>4.60%</b>	<b>6.18%</b>	<b>7.44%</b>	<b>0.39%</b>	<b>\$3.90</b>
Benchmark: BofA Merrill Lynch U.S. High-Yield BB-B Constrained Index		2.13%	4.62%	5.86%	7.06%		
<b>Stock Fund</b>	<b>11/01/99</b>	<b>4.00%</b>	<b>11.70%</b>	<b>12.14%</b>	<b>7.47%</b>	<b>0.01%</b>	<b>\$0.10</b>
Benchmark: S&P 500 Index		3.99%	11.66%	12.10%	7.42%		
<b>Small/Mid-Cap Stock Fund</b>	<b>11/01/99</b>	<b>-3.43%</b>	<b>8.75%</b>	<b>9.50%</b>	<b>7.50%</b>	<b>0.04%</b>	<b>\$0.40</b>
Benchmark: Russell 2500 Index		-3.67%	8.61%	9.39%	7.37%		
<b>International Stock Fund</b>	<b>11/01/99</b>	<b>-9.52%</b>	<b>2.18%</b>	<b>1.66%</b>	<b>1.64%</b>	<b>0.06%</b>	<b>\$0.60</b>
Benchmark: MSCI World ex-U.S. Index		-9.84%	1.88%	1.30%	1.39%		
<b>Emerging Markets Stock Fund</b>	<b>12/17/08</b>	<b>-12.14%</b>	<b>-1.68%</b>	<b>-3.95%</b>	<b>6.99%</b>	<b>0.14%</b>	<b>\$1.40</b>
Benchmark: MSCI Emerging Markets Index		-12.06%	-1.56%	-3.78%	7.38%		
<b>Global Real Estate Fund</b>	<b>10/01/02</b>	<b>12.69%</b>	<b>8.80%</b>	<b>10.64%</b>	<b>5.94%</b>	<b>0.12%</b>	<b>\$1.20</b>
Benchmark: FTSE EPRA/NAREIT Developed Index		11.58%	8.08%	10.17%	5.84%		
<b>VRS Investment Portfolio (VRSIP)</b>	<b>07/01/08</b>	<b>0.46%</b>	<b>6.63%</b>	<b>6.74%</b>	<b>5.59%</b>	<b>0.59%</b>	<b>\$5.90</b>
VRS Custom Benchmark <sup>4</sup>		(0.82)%	5.78%	6.05%	5.02%		

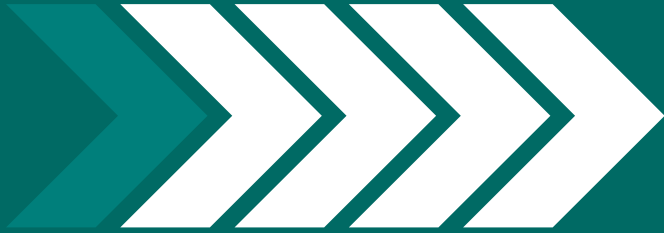
VRSIP and benchmark performance returns are reported with a one-month lag. Information is as of May 31, 2016.

<sup>1</sup> Benchmarks are calculated using blended returns of third-party indices that proportionately reflect the respective weightings of the Portfolios' asset classes. Weightings are adjusted quarterly to reflect the Portfolios' asset allocation shifts over time. Indices currently used to calculate the custom benchmarks are S&P 500 Index, Dow Jones U.S. Completion Total Stock Market Index, MSCI ACWI ex-U.S. IMI Index, Barclays U.S. Aggregate Bond Index, Barclays U.S. Treasury Inflation-Protected Securities Index, FTSE EPRA/NAREIT Developed Index and the Bloomberg Commodity Index Total Return.

<sup>2</sup> The Target Date Portfolios invest in units of BlackRock's LifePath Index Funds O. The LifePath Index Funds O invest in the master LifePath Index Funds F. Fund returns prior to January 2012 for the Retirement portfolio and 2020-2055 Funds as well as returns prior to February 2015 for the 2060 Fund are those of the master Funds F with deductions taken for investment management fees negotiated by VRS and fund administrative expenses.

<sup>3</sup> The benchmark represents the hypothetical return generated by the monthly yield of actively traded U.S. Treasuries with a three-year maturity plus an annualized spread of 0.50% and representative of the Fund's expected return profile, given its mandate and book value accounting treatment.

<sup>4</sup> The VRS Custom Benchmark is a blend of the asset class benchmarks at policy weights.



## 4 Actuarial Section

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**HELPING MEMBERS  
TAKE CHARGE**

Late-career members may have taken midlife financial hits, but they still have time to recover and boost their savings before retiring. Now's the time for these members to consider participating in a deferred compensation plan or maximizing savings to those plans to increase a future monthly benefit and to prepare retirement estimates to forecast their budgets for the future. With a few years left in the workforce, it's a good idea to compare retirement goals—travel, hobbies, second careers, volunteer work—with savings projections, while getting one's financial house in order.



Actuary's Certification Letter:  
Pension Plans



**Cavanaugh Macdonald**  
CONSULTING, LLC  
*The experience and dedication you deserve*

December 18, 2015

**Board of Trustees**

Virginia Retirement System  
1200 E. Main Street  
Richmond, VA 23219

Dear Trustees:

We are pleased to submit the results of the annual actuarial valuation for the following divisions of the Virginia Retirement System (VRS), prepared as of June 30, 2015.

- State Employees (VRS)
- Teachers (VRS)
- State Police (SPORS)
- Virginia Law Officers (VaLORS)
- Judicial (JRS)

In addition, this report includes information in aggregate on the actuarial valuations of the Political Subdivisions participating in VRS as of June 30, 2015. We have prepared, and provided separately, actuarial valuation reports for each of the Political Subdivisions. Please refer to the individual reports for the valuation results, summary of actuarial assumptions and methods, and plan provisions for each of the Political Subdivision plans.

The purpose of this report is to provide a summary of the funded status of VRS as of June 30, 2015, to recommend rates of contribution, and to provide accounting information under Governmental Accounting Standards Board (GASB) Statement No. 68 (GASB 68). While not verifying the data at source, the actuary performed tests for consistency and reasonability.

The valuation results indicate that the full employer contribution rates shown in the table below are sufficient to fund the normal cost for all members and finance the unfunded accrued liability of the plans for fiscal years 2017 and 2018. We also present the expected employer contributions to be actually funded based on the percentage of the full rate adopted by the General Assembly. For comparison, in the table below we present the employer contribution rates based on the June 30, 2014, actuarial valuation, the recommended



employer contribution rates based on the June 30, 2013, actuarial valuations and the employer contribution rates approved by the General Assembly for fiscal years ending in 2015 and 2016. The total employer rates for the 2014 and 2015 valuations include the average employer rate for the defined contribution component of the Hybrid Retirement Plan.

System	Fiscal Years 2015 & 2016		Informational Only	Fiscal Years 2017 & 2018			
	Board Approved	General Assembly Approved	Total Employer Rate for Retirement Plans	Full Employer Contribution Rate for Defined Benefit Plan	Employer Rate for Hybrid DC Component	Total Employer Rate for Retirement Plans	Estimated Employer Contribution Rate Based on Funding Schedule Adopted by the General Assembly (Code Section 51.1-145)
	2013 Valuation		2014 Valuation	2015 Valuation			
State	15.80%	12.33%	15.17%	14.36%	0.10%	14.46%	12.87%
Teachers	18.20%	14.50%	17.52%	16.25%	0.07%	16.32%	14.66%
SPORS	32.93%	25.82%	29.58%	28.99%	N/A	28.99%	26.66%
ValORS	21.74%	17.67%	20.78%	22.21%	N.A	22.21%	20.42%
Judicial	57.84%	51.66%	53.44%	45.01%	0.14%	45.15%	42.74%
Political Subdivisions (average rates)	9.91%	9.91%	8.63%	8.05%	0.10%	8.15%	8.15%

The promised benefits of VRS are included in the calculated contribution rates which are developed using the entry age normal cost method. The valuation takes into account the differentiation between Plan 1 vested members, Plan 1 non-vested members as of January 1, 2013, resulting from House Bill 1130 and Senate Bill 498, and Plan 2 members. The June 30, 2014, valuation is the first valuation to reflect the Hybrid Retirement Plan for eligible new hires on or after January 1, 2014, and for members who elected to opt into the hybrid plan. Five-year smoothed market value of assets is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded accrued liability. In accordance with the supplemental contribution provision under the 2011 Appropriations Act, Item 469(I)(6), the portion of the unfunded accrued liability with respect to deferred contributions for the 2010-2012 biennium is amortized using a level-dollar, closed, 10-year period beginning June 30, 2011. In accordance with the funding policy adopted by the Board of Trustees in 2013, the balance of the unfunded accrued liability as of June 30, 2013, is being amortized by regular annual contributions as a level percentage of payroll over a closed 29-year period and the change in the unfunded accrued liability for the year ended June 30, 2014, over a closed 20-year period.



The amortization of the unfunded liability assumes that payroll will increase by 3% annually and the amortization period will decrease by one year until reaching 0 years. The assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the Fund and to reasonable expectations of anticipated experience under the Fund, and meet the parameters for disclosures under GASB 68.

We have prepared the Schedule of Funding Progress and Trend Information shown in the Financial Section of the Comprehensive Annual Financial Report and all supporting schedules, including the Schedule of Active Member Valuation Data, the Solvency Test and the Analysis of Financial Experience shown in the Actuarial Section of the Comprehensive Annual Financial Report. For completeness, the table of Changes in Unfunded Actuarial Accrued Liabilities in Section VII, the Solvency Test in Schedule A, and the Retiree and Beneficiary Data in Schedule I include the information with respect to the Political Subdivisions participating in VRS.

In addition, the following schedules (or updates to them) were prepared by VRS from information prepared by us during the 2014 and prior actuarial valuations or from supplemental information prepared by us for use in the System's Comprehensive Annual Financial Report. Historical information that references a valuation date prior to June 30, 2008, was prepared by a previous actuarial firm. We have reviewed the following schedules for the periods indicated for inclusion in the System's 2016 Comprehensive Annual Financial Report:

- Schedule of Funding Progress (Fiscal Year 2005)
- Schedule of Employer Contributions (All Years)
- Solvency Test (Fiscal Year 2005-Fiscal Year 2006)
- Schedule of Active Member Valuation Data (Fiscal Year 2005-Fiscal Year 2009)
- Schedule of Retirees and Beneficiaries (All Years)

Our organization has only a contractual relationship with the Virginia Retirement System to provide actuarial consulting services, and we do not provide other services to nor have a financial interest in the Virginia Retirement System. There are no known interests or relationships that our firm has with the Virginia Retirement System that may impair or appear to impair the objectivity of our work.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the System and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.



Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jose I. Fernandez', with a long, sweeping tail.

Jose I. Fernandez, ASA, FCA, EA, MAAA  
Principal and Consulting Actuary

A handwritten signature in black ink, appearing to read 'John J. Garrett', with a long, sweeping tail.

John J. Garrett, ASA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in black ink, appearing to read 'Micki R. Taylor', with a long, sweeping tail.

Micki R. Taylor, ASA, FCA, MAAA  
Senior Actuary

The Actuarial Section presents information about the assumptions adopted by the Board of Trustees and used by the VRS actuary to evaluate the funded status of the pension plans. This information includes trend data about retirements, disabilities, terminations and salary increase rates. The section also provides summaries of the provisions of and changes to the pension plans administered by the System.

## SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS: PENSION PLANS

	2006-2009	2010	2011-2012	2013-2015
Investment Rate of Return	7.50%	7.00%	7.00%	7.00%
Inflation Assumption	2.50%	2.50%	2.50%	2.50%
Cost of Living (COLA) Assumption				
Plan 1	2.50%	2.50%	2.50%	2.50%
Plan 2	N/A	N/A	2.25%	2.25%
Actuarial Cost Method	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Change in Decremental Assumptions	Yes	No	No	Yes
Value of Ancillary Benefits Included	Yes	Yes	Yes	Yes
Value of Post-Retirement Adjustments to Date Included	Yes	Yes	Yes	Yes
Assets Valuation Method	5-Year Smoothed Market	5-Year Smoothed Market	5-Year Smoothed Market	5-Year Smoothed Market

**SOLVENCY TEST: PENSION PLANS**

(EXPRESSED IN THOUSANDS)

Valuation Date (June 30)	Aggregate Accrued Liabilities for			Valuation Assets	Portion of Accrued Liabilities Covered by Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members*		(1)	(2)	(3)
<b>VIRGINIA RETIREMENT SYSTEM (VRS)</b>							
2015	\$ 12,176,530	\$ 46,783,519	\$ 25,751,093	\$ 62,083,601	100.00%	100.00%	12.13%
2014	11,819,771	44,469,489	25,794,124	57,144,567	100.00%	100.00%	3.32%
2013	11,420,836	42,383,697	25,273,058	52,124,581	100.00%	96.00%	0.00%
2012	9,479,988	39,996,442	28,382,426	51,211,915	100.00%	100.00%	6.11%
2011	9,116,662	37,539,539	28,528,577	52,558,997	100.00%	100.00%	20.69%
2010	9,246,421	35,117,915	28,436,065	52,728,575	100.00%	100.00%	29.41%
2009	8,876,564	31,589,747	25,856,699	53,185,033	100.00%	100.00%	49.19%
2008	8,389,773	29,225,652	24,939,054	52,548,375	100.00%	100.00%	59.88%
2007	8,154,046	23,339,386	23,623,041	47,815,450	100.00%	100.00%	56.39%
2006	6,988,172	23,055,815	22,777,916	42,668,752	100.00%	100.00%	55.43%
<b>STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)</b>							
2015	\$ 95,394	\$ 586,984	\$ 368,323	\$ 710,864	100.00%	100.00%	7.73%
2014	92,637	562,413	374,105	662,244	100.00%	100.00%	1.92%
2013	88,814	548,115	359,761	591,983	100.00%	91.80%	0.00%
2012	78,465	563,612	371,201	587,160	100.00%	90.30%	0.00%
2011	74,943	540,097	370,664	616,603	100.00%	100.00%	0.42%
2010	77,759	510,491	360,642	633,415	100.00%	100.00%	12.52%
2009	74,662	474,622	329,896	646,960	100.00%	100.00%	29.61%
2008	71,160	444,025	329,010	646,277	100.00%	100.00%	39.84%
2007	70,796	408,085	327,147	594,985	100.00%	100.00%	35.49%
2006	66,055	378,636	285,236	538,646	100.00%	100.00%	32.94%
<b>VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)</b>							
2015	\$ 232,824	\$ 1,088,742	\$ 585,155	\$ 1,155,767	100.00%	84.77%	0.00%
2014	230,522	977,848	611,675	1,058,010	100.00%	84.60%	0.00%
2013	223,467	916,886	601,757	941,933	100.00%	78.40%	0.00%
2012	176,172	861,342	715,499	909,399	100.00%	85.10%	0.00%
2011	174,963	763,631	744,597	926,082	100.00%	98.40%	0.00%
2010	186,792	682,378	710,151	925,443	100.00%	100.00%	7.92%
2009	181,760	581,887	648,197	912,922	100.00%	100.00%	23.03%
2008	173,039	510,878	597,560	873,473	100.00%	100.00%	31.72%
2007	169,393	458,383	538,203	766,243	100.00%	100.00%	25.73%
2006	156,310	412,767	527,291	656,668	100.00%	100.00%	16.61%
<b>JUDICIAL RETIREMENT SYSTEM (JRS)</b>							
2015	\$ 36,784	\$ 390,690	\$ 172,914	\$ 442,250	100.00%	100.00%	8.55%
2014	38,522	370,265	199,382	406,053	100.00%	99.30%	0.00%
2013	38,439	360,470	191,717	368,671	100.00%	91.60%	0.00%
2012	38,578	335,501	208,377	361,097	100.00%	96.10%	0.00%
2011	37,981	312,423	219,091	371,051	100.00%	100.00%	9.42%
2010	43,217	310,305	206,398	372,096	100.00%	100.00%	9.00%
2009	41,793	287,543	192,127	378,212	100.00%	100.00%	25.44%
2008	38,785	271,276	184,707	373,850	100.00%	100.00%	34.54%
2007	38,675	242,825	160,998	340,200	100.00%	100.00%	36.46%
2006	34,756	240,005	149,637	302,734	100.00%	100.00%	18.69%

\* Employer-financed portion.

Aggregate Accrued Liabilities are determined under the entry age normal cost method (System-funded method used to determine employer contribution requirements).

The progress of a retirement system in accumulating assets to pay benefits when due can be measured by examining the extent to which assets accumulated for benefits cover 1) active member contributions to the System; 2) liabilities for future benefits to retirees and beneficiaries; and 3) liabilities for the employer-financed portion of service already rendered by active members. In a system receiving actuarially determined employer contributions, the liabilities for member contributions and future benefits to retirees and beneficiaries will generally be fully covered by accumulated assets. In addition, the liabilities for service already rendered will be partially covered by the remainder of the accumulated assets and will increase over time.

**SOLVENCY TEST: VRS PENSION PLANS**

(EXPRESSED IN THOUSANDS)

Valuation Date (June 30)	Aggregate Accrued Liabilities for				Portion of Accrued Liabilities Covered by Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members*	Valuation Assets	(1)	(2)	(3)
VRS – STATE							
2015	\$ 3,267,188	\$12,960,842	\$ 6,063,528	\$ 15,881,597	100.00%	97.33%	0.00%
2014	3,202,604	12,433,349	6,186,983	14,826,208	100.00%	93.50%	0.00%
2013	3,113,926	11,954,023	6,000,702	13,714,404	100.00%	88.70%	0.00%
2012	2,559,930	11,363,015	7,021,313	13,740,366	100.00%	98.40%	0.00%
2011	2,475,123	10,844,164	7,088,671	14,406,275	100.00%	100.00%	15.33%
2010	2,511,650	10,279,653	6,748,150	14,700,854	100.00%	100.00%	28.30%
2009	2,501,163	9,024,592	6,400,124	15,049,901	100.00%	100.00%	55.06%
2008	2,398,033	8,411,441	6,287,468	15,046,348	100.00%	100.00%	67.39%
2007	2,361,187	7,707,539	6,211,055	13,857,242	100.00%	100.00%	61.00%
2006	2,023,931	6,865,383	6,174,748	12,542,390	100.00%	100.00%	59.16%
VRS – TEACHER							
2015	\$ 5,679,555	\$ 23,776,912	\$ 13,107,711	\$ 29,441,485	100.00%	99.94%	0.00%
2014	5,494,752	22,720,375	13,082,542	27,026,576	100.00%	94.80%	0.00%
2013	5,310,701	21,627,490	12,914,143	24,724,679	100.00%	89.80%	0.00%
2012	4,573,244	20,361,089	14,156,075	24,391,761	100.00%	97.30%	0.00%
2011	4,394,657	19,066,272	14,310,803	25,166,124	100.00%	100.00%	11.92%
2010	4,376,385	17,935,907	14,776,284	25,447,677	100.00%	100.00%	21.22%
2009	4,155,034	16,383,311	13,322,169	25,764,665	100.00%	100.00%	39.23%
2008	3,922,647	15,181,246	12,854,428	25,502,482	100.00%	100.00%	49.78%
2007	3,826,300	13,670,111	12,173,427	23,204,871	100.00%	100.00%	46.89%
2006	3,284,393	12,086,579	11,903,092	20,731,192	100.00%	100.00%	45.03%
VRS – POLITICAL SUBDIVISIONS							
2015	\$ 3,229,787	\$ 10,045,765	\$ 6,579,854	\$ 16,760,519	100.00%	100.00%	52.96%
2014	3,122,415	9,315,765	6,524,599	15,291,783	100.00%	100.00%	43.74%
2013	2,996,209	8,802,184	6,358,213	13,685,498	100.00%	100.00%	29.68%
2012	2,346,814	8,272,338	7,205,038	13,079,788	100.00%	100.00%	34.15%
2011	2,246,882	7,629,103	7,129,103	12,986,598	100.00%	100.00%	43.63%
2010	2,358,386	6,902,355	6,911,631	12,580,044	100.00%	100.00%	48.02%
2009	2,220,367	6,181,844	6,134,406	12,370,467	100.00%	100.00%	64.69%
2008	2,069,093	5,632,966	5,797,158	11,999,545	100.00%	100.00%	74.13%
2007	1,966,559	4,961,736	5,238,559	10,753,337	100.00%	100.00%	73.02%
2006	1,679,848	4,103,853	4,700,076	9,395,170	100.00%	100.00%	76.84%
VRS – TOTAL							
2015	\$ 12,176,530	\$ 46,783,519	\$ 25,751,093	\$ 62,083,601	100.00%	100.00%	12.13%
2014	11,819,771	44,469,489	25,794,124	57,144,567	100.00%	100.00%	3.32%
2013	11,420,836	42,383,697	25,273,058	52,124,581	100.00%	96.00%	0.00%
2012	9,479,988	39,996,442	28,382,426	51,211,915	100.00%	100.00%	6.11%
2011	9,116,662	37,539,539	28,528,577	52,558,997	100.00%	100.00%	20.69%
2010	9,246,421	35,117,915	28,436,065	52,728,575	100.00%	100.00%	29.41%
2009	8,876,564	31,589,747	25,856,699	53,185,033	100.00%	100.00%	49.19%
2008	8,389,773	29,225,652	24,939,054	52,548,375	100.00%	100.00%	59.88%
2007	8,154,046	26,339,386	23,623,041	47,815,450	100.00%	100.00%	56.39%
2006	6,988,172	23,055,815	22,777,916	42,668,752	100.00%	100.00%	55.43%

\* Employer-financed portion.

Aggregate Accrued Liabilities are determined under the entry age normal cost method (System-funded method used to determine employer contribution requirements).

The progress of a retirement system in accumulating assets to pay benefits when due can be measured by examining the extent to which assets accumulated for benefits cover 1) active member contributions to the System; 2) liabilities for future benefits to retirees and beneficiaries; and 3) liabilities for the employer-financed portion of service already rendered by active members. In a system receiving actuarially determined employer contributions, the liabilities for member contributions and future benefits to retirees and beneficiaries will generally be fully covered by accumulated assets. In addition, the liabilities for service already rendered will be partially covered by the remainder of the accumulated assets and will increase over time.

**SCHEDULE OF FUNDING (ACTUARIAL VALUE OF ASSETS BASIS): ALL PENSION PLANS**

(EXPRESSED IN MILLIONS)

Actuarial Valuation Date June 30	Market Value of Assets (MVA) (a)	Actuarial Accrued Liability (AAL) – Entry Age (b)	Net Pension Liability (AAL-MVA) (b-a)	Funded Ratio Funded (MVA/AAL) (a/b)	Covered Payroll (c)	Net Pension Liability as a Percentage of Covered Payroll (b-a)/(c)
<b>VIRGINIA RETIREMENT SYSTEM (VRS)**</b>						
2015	\$ 62,083	\$ 84,711	\$ 22,628	73.3%	\$ 15,901	142.3%
2014	57,145	82,083	24,938	69.6%	15,671	159.1%
2013*	52,125	79,078	26,953	65.9%	15,269	176.5%
2012	51,212	77,859	26,647	65.8%	14,880	179.1%
2011	52,559	75,185	22,626	69.9%	14,709	153.8%
2010	52,729	72,801	20,072	72.4%	14,758	136.0%
2009*	53,185	66,323	13,138	80.2%	14,948	87.9%
2008	52,548	62,554	10,006	84.0%	14,559	68.7%
2007	47,815	58,116	10,301	82.3%	13,834	74.5%
2006	42,669	52,822	10,153	80.8%	13,002	78.1%
<b>STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)</b>						
2015	\$ 711	\$ 1,051	\$ 340	67.6%	\$ 111	307.4%
2014	662	1,029	367	64.3%	112	326.7%
2013*	592	997	405	59.4%	109	371.3%
2012	587	1,013	426	57.9%	104	409.0%
2011	617	986	369	62.6%	100	370.3%
2010	634	949	315	66.8%	98	323.2%
2009*	647	879	232	73.6%	101	230.0%
2008	646	844	198	76.6%	103	193.2%
2007	595	806	211	73.8%	101	209.4%
2006	539	730	191	73.8%	94	204.1%
<b>VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)</b>						
2015	\$ 1,156	\$ 1,907	\$ 751	60.6%	\$ 331	227.3%
2014	1,058	1,820	762	58.1%	353	216.1%
2013*	942	1,742	800	54.1%	342	233.9%
2012	909	1,753	844	51.9%	345	244.8%
2011	926	1,683	757	55.0%	356	212.5%
2010	925	1,579	654	58.6%	346	189.0%
2009*	913	1,412	499	64.7%	359	138.9%
2008	873	1,281	408	68.2%	368	110.8%
2007	766	1,166	400	65.7%	341	117.2%
2006	656	1,096	440	59.9%	321	137.0%
<b>JUDICIAL RETIREMENT SYSTEM (JRS)</b>						
2015	\$ 443	\$ 600	\$ 158	73.7%	\$ 62	255.6%
2014	406	608	202	66.8%	59	340.4%
2013*	369	591	222	62.4%	57	388.6%
2012	361	582	221	62.0%	57	388.6%
2011	371	569	198	65.2%	59	336.8%
2010	372	560	188	66.5%	61	307.8%
2009*	378	521	143	72.5%	63	228.4%
2008	374	495	121	75.6%	61	199.9%
2007	340	442	102	76.9%	58	177.3%
2006	302	424	122	71.3%	54	224.1%

\* Revised economic and demographic assumptions due to experience study.

\*\* The breakdown of VRS data into state, teacher and political subdivisions is also presented in the Statistical Section.



**SCHEDULE OF FUNDING (ACTUARIAL VALUE OF ASSETS BASIS): VRS PENSION PLANS**

(EXPRESSED IN THOUSANDS)

Actuarial Valuation Date June 30	Actuarial Value of Assets (a)	Actuarial Liability (AAL) – Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (b-a)/(c)
VIRGINIA RETIREMENT SYSTEM (VRS) – STATE						
2015	\$ 15,881,597	\$ 22,291,558	\$ 6,409,961	71.2%	\$ 3,872,724	165.5%
2014	14,826,208	21,822,936	6,966,728	67.9%	3,854,779	181.5%
2013*	13,714,404	21,068,651	7,354,247	65.1%	3,716,548	197.9%
2012	13,740,366	20,944,258	7,203,892	65.6%	3,713,119	194.0%
2011	14,406,275	20,407,958	6,001,683	70.6%	3,686,259	162.8%
2010	14,700,854	19,539,453	4,838,599	75.2%	3,514,396	137.7%
2009*	15,049,901	17,925,879	2,875,978	84.0%	3,619,478	79.5%
2008	15,046,348	17,096,942	2,050,594	88.0%	3,640,692	56.3%
2007	13,857,342	16,279,781	2,422,439	85.1%	3,467,388	69.9%
2006	12,542,390	15,064,062	2,521,672	83.3%	3,301,286	76.4%
VIRGINIA RETIREMENT SYSTEM (VRS) – TEACHER						
2015	\$ 29,441,485	\$ 42,564,178	\$ 13,122,693	69.2%	\$ 7,488,507	175.2%
2014	27,026,576	41,297,669	14,271,093	65.4%	7,362,793	193.8%
2013*	24,724,679	39,852,334	15,127,655	62.0%	7,211,543	209.8%
2012	24,391,761	39,090,408	14,698,647	62.4%	7,004,577	209.8%
2011	25,166,124	37,771,732	12,605,608	66.6%	6,922,130	182.1%
2010	25,447,677	37,088,576	11,640,899	68.6%	7,119,889	163.5%
2009*	25,764,665	33,860,514	8,095,849	76.1%	7,160,842	113.1%
2008	25,502,482	31,958,321	6,455,839	79.8%	6,896,432	93.6%
2007	23,204,871	29,669,838	6,464,967	78.2%	6,604,643	97.9%
2006	20,731,192	27,274,064	6,542,872	76.0%	6,195,421	105.6%
VIRGINIA RETIREMENT SYSTEM (VRS) – POLITICAL SUBDIVISIONS						
2015	\$ 16,760,519	\$ 19,855,406	\$ 3,094,887	84.4%	\$ 4,540,149	68.2%
2014	15,291,783	18,962,779	3,670,996	80.6%	4,453,787	82.4%
2013*	13,685,498	18,156,606	4,471,108	75.4%	4,340,988	103.0%
2012	13,079,788	17,824,190	4,744,402	73.4%	4,162,579	114.0%
2011	12,986,598	17,005,070	4,018,472	76.4%	4,100,470	98.0%
2010	12,580,044	16,172,372	3,592,328	77.8%	4,123,505	87.1%
2009*	12,370,467	14,536,618	2,166,151	85.1%	4,167,324	52.0%
2008	11,999,545	13,499,216	1,499,671	88.9%	4,021,468	37.3%
2007	10,753,237	12,166,854	1,413,617	88.4%	3,761,991	37.6%
2006	9,395,170	10,483,777	1,088,607	89.6%	3,504,844	31.1%
VIRGINIA RETIREMENT SYSTEM (VRS) – TOTAL						
2015	\$ 62,083,601	\$ 84,711,142	\$ 22,627,541	73.3%	\$15,901,380	142.3%
2014	57,144,567	82,083,384	24,938,817	69.6%	15,671,359	159.1%
2013*	52,124,581	79,077,591	26,953,010	65.9%	15,269,079	176.5%
2012	51,211,915	77,858,856	26,646,941	65.8%	14,880,275	179.1%
2011	52,558,997	75,184,760	22,625,763	69.9%	14,708,859	153.8%
2010	52,728,575	72,800,401	20,071,826	72.4%	14,757,790	136.0%
2009*	53,185,033	66,323,011	13,137,978	80.2%	14,947,644	87.9%
2008	52,548,375	62,554,479	10,006,104	84.0%	14,558,592	68.7%
2007	47,815,450	58,116,473	10,301,023	82.3%	13,834,022	74.5%
2006	42,668,752	52,821,903	10,153,151	80.8%	13,001,551	78.1%

\* Revised economic and demographic assumptions due to experience study.

## SCHEDULE OF ACTIVE MEMBER VALUATION DATA: PENSION PLANS

Valuation Date (June 30)	Active Members				
	Number	Annual Payroll (000s)	Average Annual Pay	Annualized % Change in Average Pay	Number of Employers
VIRGINIA RETIREMENT SYSTEM (VRS)					
2015	328,833	\$ 15,901,380	\$ 48,357	1.4%	602
2014	328,494	15,671,359	47,707	2.6%	601
2013	328,277	15,269,079	46,513	2.6%	599
2012	328,385	14,880,275	45,314	0.5%	599
2011	326,357	14,708,859	45,070	0.6%	594
2010	329,374	14,757,790	44,806	-0.2%	592
2009	333,049	14,947,644	44,881	2.3%	587
2008	331,851	14,558,592	43,871	3.5%	583
2007	326,218	13,834,022	42,407	4.4%	578
2006	320,065	13,001,551	40,622	4.1%	575
STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)					
2015	1,994	\$ 110,543	\$ 55,438	-0.7%	1
2014	2,011	112,303	55,844	2.6%	1
2013	2,002	109,006	54,449	-1.7%	1
2012	1,881	104,189	55,390	-3.4%	1
2011	1,738	99,669	57,347	3.8%	1
2010	1,767	97,601	55,235	0.0%	1
2009	1,828	100,974	55,237	-0.2%	1
2008	1,852	102,466	55,327	3.8%	1
2007	1,890	100,785	53,325	2.1%	1
2006	1,795	93,742	52,224	4.1%	1
VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)					
2015	8,820	\$ 330,397	\$ 37,460	0.1%	1
2014	9,429	352,709	37,407	2.5%	1
2013	9,372	342,154	36,508	-0.6%	1
2012	9,383	344,616	36,728	-0.7%	1
2011	9,631	356,240	36,989	4.0%	1
2010	9,734	346,040	35,550	-0.1%	1
2009	10,087	359,070	35,597	0.2%	1
2008	10,370	368,255	35,512	6.3%	1
2007	10,213	341,035	33,392	3.1%	1
2006	9,904	320,869	32,398	3.8%	1
JUDICIAL RETIREMENT SYSTEM (JRS)					
2015	401	\$ 61,881	\$ 154,317	0.1%	1
2014	385	59,373	154,216	2.9%	1
2013	381	57,110	149,895	0.0%	1
2012	380	56,958	149,889	0.2%	1
2011	394	58,919	149,541	0.0%	1
2010	408	61,021	149,561	0.4%	1
2009	421	62,709	148,952	1.5%	1
2008	412	60,486	146,811	7.9%	1
2007	424	57,687	136,054	4.0%	1
2006	415	54,289	130,818	4.4%	1

## SCHEDULE OF ACTIVE MEMBER VALUATION DATA: VRS PENSION PLANS

Valuation Date (June 30)	Active Members				
	Number	Annual Payroll (000s)	Average Annual Pay	Annualized % Change in Average Pay	Number of Employers
VRS – STATE					
2015	75,256	\$ 3,872,724	\$ 51,461	1.1%	1
2014	75,730	3,854,779	50,902	3.9%	1
2013	75,879	3,716,548	48,980	0.6%	1
2012	76,274	3,713,119	48,681	0.1%	1
2011	75,820	3,686,259	48,619	5.2%	1
2010*	76,033	3,514,396	46,222	N/A	1
VRS – TEACHER					
2015	147,645	\$ 7,488,507	\$ 50,720	1.2%	145
2014	146,977	7,362,793	50,095	2.3%	145
2013	147,257	7,211,543	48,972	2.9%	145
2012	147,216	7,004,577	47,580	0.5%	144
2011	146,152	6,922,130	47,363	-1.2%	144
2010*	148,462	7,119,889	47,958	N/A	144
VRS – POLITICAL SUBDIVISIONS					
2015	105,932	\$ 4,540,149	\$ 42,859	1.8%	456
2014	105,787	4,453,787	42,101	2.0%	455
2013	105,141	4,340,988	41,287	4.0%	453
2012	104,895	4,162,579	39,683	1.0%	454
2011	104,385	4,100,470	39,282	-0.1%	449
2010*	104,879	4,123,505	39,317	N/A	447
VRS – TOTAL					
2015	328,833	\$ 15,901,380	\$ 48,357	1.4%	602
2014	328,494	15,671,359	47,707	2.6%	601
2013	328,277	15,269,079	46,513	2.6%	599
2012	328,385	14,880,275	45,314	0.5%	599
2011	326,357	14,708,859	45,070	0.6%	594
2010*	329,374	14,757,790	44,806	N/A	592

\* Plan-level statistics for this presentation are not available for years prior to 2010.

## SCHEDULE OF RETIREE AND BENEFICIARY VALUATION DATA: PENSION PLANS

### Retirees and Beneficiaries

Valuation Date (June 30)	Added to Rolls		Removed from Rolls		Rolls at End of Year		Annualized % Increase in Annual Allowances	Average Annual Allowance
	Number	Allowances*	Number	Allowances	Number	Allowances		
VIRGINIA RETIREMENT SYSTEM (VRS)								
2015	12,348	\$ 313,032,000	5,067	\$ 90,733,000	179,968	\$3,854,951,000	6.1%	\$ 21,420
2014	11,912	289,092,000	4,719	89,997,000	172,687	3,632,652,000	5.8%	21,036
2013	11,297	303,240,000	4,574	83,618,000	165,494	3,433,557,000	6.8%	20,747
2012	10,493	305,440,000	4,411	91,446,000	158,771	3,213,935,000	7.1%	20,243
2011	11,630	248,784,000	4,210	31,978,000	152,689	2,999,941,000	7.8%	19,647
2010	10,780	234,416,000	4,011	65,755,000	145,269	2,783,135,000	6.5%	19,158
2009	9,474	278,307,000	4,202	63,388,000	138,500	2,614,474,000	9.0%	18,877
2008	9,610	284,577,000	3,869	68,575,000	133,228	2,399,555,000	9.9%	18,011
2007	9,475	277,466,000	3,774	66,307,000	127,487	2,183,553,000	10.7%	17,128
2006	8,949	190,775,000	3,834	33,172,000	121,786	1,972,394,000	8.7%	16,196
STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)								
2015	66	\$ 3,871,000	34	\$ 1,555,000	1,271	\$ 51,169,000	4.7%	\$ 40,259
2014	55	2,972,000	24	1,124,000	1,239	48,853,000	3.9%	39,429
2013	44	2,652,000	36	1,491,000	1,208	47,005,000	2.5%	38,912
2012	54	3,619,000	20	1,543,000	1,200	45,844,000	4.7%	38,203
2011	68	2,954,000	24	412,000	1,166	43,768,000	6.2%	37,537
2010	62	2,450,000	22	1,085,000	1,122	41,226,000	3.4%	36,743
2009	72	3,604,000	23	777,000	1,082	39,861,000	7.6%	36,840
2008	68	4,207,000	26	548,000	1,033	37,034,000	11.0%	35,851
2007	52	3,292,000	18	1,311,000	991	33,375,000	6.3%	33,678
2006	57	2,378,000	23	170,000	957	31,394,000	7.6%	32,805
VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)								
2015	397	\$ 10,242,000	36	\$ 2,006,000	3,826	\$ 84,386,000	10.8%	\$ 22,056
2014	311	7,736,000	59	6,956,000	3,465	76,150,000	1.0%	21,977
2013	336	8,561,000	34	(2,847,000)**	3,213	75,370,000	17.8%	23,458
2012	347	9,437,000	37	2,505,000	2,911	63,962,000	12.2%	21,973
2011	316	6,677,000	33	1,145,000	2,601	57,030,000	10.7%	21,926
2010	281	6,667,000	24	932,000	2,318	51,498,000	12.5%	22,216
2009	264	6,903,000	17	671,000	2,061	45,763,000	15.8%	22,204
2008	224	5,774,000	28	3,817,000	1,814	39,531,000	5.2%	21,792
2007	253	7,118,000	16	1,393,000	1,618	37,574,000	18.0%	23,222
2006	209	4,692,000	34	129,000	1,381	31,849,000	16.7%	23,062
JUDICIAL RETIREMENT SYSTEM (JRS)								
2015	40	\$ 3,844,000	34	\$ 2,147,000	511	\$ 38,773,000	4.6%	\$ 75,877
2014	32	2,952,000	16	2,045,000	505	37,076,000	2.5%	73,418
2013	40	3,483,000	14	205,000	489	36,169,000	10.0%	73,966
2012	34	3,354,000	17	1,022,000	463	32,891,000	7.6%	71,039
2011	25	1,717,000	30	1,514,000	446	30,559,000	0.7%	68,518
2010	29	2,116,000	17	1,022,000	451	30,356,000	3.7%	67,308
2009	36	2,919,000	20	1,491,000	439	29,262,000	5.1%	66,657
2008	36	3,567,000	17	1,746,000	423	27,834,000	7.0%	65,802
2007	24	2,831,000	19	1,723,000	404	26,013,000	4.4%	64,390
2006	25	1,983,000	21	814,000	399	24,905,000	4.9%	62,420

\* Additions to allowances include added retirees and the annual COLA provided to existing retirees and beneficiaries.

\*\* Reflects adjustment to benefits attributable to this plan. Adjustment of prior amounts removed from payroll.

## SCHEDULE OF RETIREE AND BENEFICIARY VALUATION DATA: VRS PENSION PLANS

### Retirees and Beneficiaries

Valuation Date (June 30)	Added to Rolls		Removed from Rolls		Rolls at End of Year		Annualized % Increase in Annual Allowances	Average Annual Allowance
	Number	Allowances*	Number	Allowances	Number	Allowances		
VRS – STATE								
2015	3,263	\$ 89,596,000	1,824	\$ 31,662,000	52,702	\$1,126,274,000	5.4%	\$ 21,371
2014	3,152	80,896,000	1,718	34,128,000	51,263	1,068,340,000	4.6%	20,840
2013	2,864	81,985,000	1,650	28,163,000	49,829	1,021,572,000	5.6%	20,502
2012	2,739	85,005,000	1,618	30,250,000	48,615	967,750,000	6.0%	19,906
2011	2,994	66,569,000	1,564	14,936,000	47,494	912,995,000	6.0%	19,223
2010**	3,728	88,557,000	1,432	22,536,000	46,064	861,362,000	N/A	18,699
VRS – TEACHER								
2015	5,135	\$ 140,493,000	1,816	\$ 38,434,000	80,717	\$1,923,884,000	5.6%	\$ 23,835
2014	5,086	135,345,000	1,596	32,303,000	77,398	1,821,825,000	6.0%	23,538
2013	4,929	142,836,000	1,607	35,947,000	73,908	1,718,783,000	6.6%	23,256
2012	4,520	147,153,000	1,550	36,908,000	70,586	1,611,894,000	7.3%	22,836
2011	5,291	123,035,000	1,433	14,549,000	67,616	1,501,649,000	7.8%	22,208
2010**	4,045	95,290,000	1,432	28,977,000	63,758	1,393,163,000	N/A	21,851
VRS – POLITICAL SUBDIVISIONS								
2015	3,950	\$ 82,943,000	1,427	\$ 20,637,000	46,549	\$ 804,793,000	8.4%	\$ 17,289
2014	3,674	72,851,000	1,405	23,566,000	44,026	742,487,000	7.1%	16,865
2013	3,504	78,419,000	1,317	19,508,000	41,757	693,202,000	9.3%	16,601
2012	3,234	73,282,000	1,243	24,288,000	39,570	634,291,000	8.4%	16,030
2011	3,345	59,180,000	1,213	2,493,000	37,579	585,297,000	10.7%	15,575
2010**	3,007	50,569,000	1,147	14,242,000	35,447	528,610,000	N/A	14,913
VRS – TOTAL								
2015	12,348	313,032,000	5,067	90,733,000	179,968	\$3,854,951,000	6.1%	\$ 21,420
2014	11,912	289,092,000	4,719	89,997,000	172,687	3,632,652,000	5.8%	21,036
2013	11,297	303,240,000	4,574	83,618,000	165,494	3,433,557,000	6.8%	20,747
2012	10,493	305,440,000	4,411	91,446,000	158,771	3,213,935,000	7.1%	20,243
2011	11,630	248,784,000	4,210	31,978,000	152,689	2,999,941,000	7.8%	19,647
2010**	10,780	234,416,000	4,011	65,755,000	145,269	2,783,135,000	N/A	19,158

\* Additions to Allowances include added retirees and the annual COLA provided to existing retirees and beneficiaries.

\*\* Plan-level statistics for this presentation are not available for years prior to 2010.

## FIGURE 4.1: ANALYSIS OF ACTUARIAL GAINS AND LOSSES – PENSION PLANS

FOR THE YEAR ENDED JUNE 30, 2015

(EXPRESSED IN THOUSANDS)

	VRS	SPORS	VaLORS	JRS	Total
<b>A. Calculation of Expected Unfunded Actuarial Accrued Liability (UAAL)</b>					
1. UAAL as of June 30, 2014	\$ 24,938,817	\$ 366,911	\$ 762,035	\$ 202,116	\$ 26,269,879
2. Normal Cost for Previous Year	1,621,491	17,614	44,422	21,732	1,705,259
3. Actual Contributions During the Year	(3,077,351)	(34,080)	(79,121)	(34,501)	(3,225,053)
4. Interest at Previous Year's Rate of 7.00%					
a. On UAAL	1,745,718	25,684	53,342	14,148	1,838,892
b. On Normal Cost	113,504	1,233	3,110	1,521	119,368
c. On contributions	(107,707)	(1,193)	(2,769)	(1,208)	(112,877)
<b>d. Total</b>	<b>1,751,515</b>	<b>25,724</b>	<b>53,683</b>	<b>14,461</b>	<b>1,845,383</b>
5. Expected UAAL as of June 30, 2015 (A1+A2+A3+A4)	25,234,472	376,169	781,019	203,808	26,595,468
6. Actual UAAL as of June 30, 2015	22,627,541	339,837	750,954	158,138	23,876,470
<b>7. Total Gain/(Loss) (A5-A6)</b>	<b>2,606,931</b>	<b>36,332</b>	<b>30,065</b>	<b>45,670</b>	<b>2,718,998</b>
<b>B. Calculation of Asset Gain / (Loss)</b>					
1. Actuarial Value of Assets (AVA) as of June 30, 2014	57,144,567	662,244	1,058,010	406,053	59,270,874
2. Contributions During the Year	3,077,351	34,080	79,121	34,501	3,225,053
3. Benefit Payments During the Year	(4,036,336)	(53,713)	(89,787)	(40,205)	(4,220,041)
4. Interest at Previous Year's Rate of 7.00%					
a. On AVA at Beginning of Year	4,000,120	46,357	74,061	28,424	4,148,962
b. On Contributions	107,707	1,193	2,769	1,208	112,877
c. On Benefit Payments	(141,271)	(1,880)	(3,143)	(1,407)	(147,701)
<b>d. Total</b>	<b>3,966,556</b>	<b>45,670</b>	<b>73,687</b>	<b>28,225</b>	<b>4,114,138</b>
5. Expected AVA as of June 30, 2015 (B1+B2+B3+B4)	60,152,138	688,281	1,121,031	428,574	62,390,024
6. Actual AVA as of June 30, 2015	62,083,601	710,864	1,155,767	442,250	64,392,482
<b>7. Total Gain/(Loss) on Assets (B6-B5)</b>	<b>1,931,463</b>	<b>22,583</b>	<b>34,736</b>	<b>13,676</b>	<b>2,002,458</b>
<b>C. Calculation of Liability Gain/(Loss)</b>					
1. Gain/(Loss) Due to Changes in Actuarial Assumptions	–	–	–	–	–
2. Gain/(Loss) Due to Plan Amendments	(2,053)	–	–	15,552	13,499
3. Gain/(Loss) Due to Change in Asset Method	–	–	–	–	–
<b>4. Liability Experience Gain/(Loss) (A7-B7-C1-C2-C3)</b>	<b>\$ 677,521</b>	<b>\$ 13,749</b>	<b>\$ (4,671)</b>	<b>\$ 16,442</b>	<b>\$ 703,041</b>

## FIGURE 4.2: ANALYSIS OF ACTUARIAL GAINS AND LOSSES – VRS PENSION PLANS

FOR THE YEAR ENDED JUNE 30, 2015

(EXPRESSED IN THOUSANDS)

	State	Teacher	Political Subdivisions	Total
<b>A. Calculation of Expected Unfunded Actuarial Accrued Liability (UAAL)</b>				
1. UAAL as of June 30, 2014	\$ 6,996,728	\$ 14,271,093	\$ 3,670,996	\$ 24,938,817
2. Normal Cost for Previous Year	350,606	774,674	496,210	1,621,490
3. Actual Contributions During the Year	(676,085)	(1,640,491)	(760,775)	(3,077,351)
4. Interest at Previous Year's Rate of 7.00%				
a. On UAAL	489,771	998,977	256,970	1,745,718
b. On Normal Cost	24,542	54,227	34,735	113,504
c. On Contributions	(23,663)	(57,417)	(26,627)	(107,707)
<b>d. Total</b>	<b>490,650</b>	<b>995,787</b>	<b>265,078</b>	<b>1,751,515</b>
5. Expected UAAL as of June 30, 2015 (A1+A2+A3+A4)	7,161,899	14,401,063	3,671,509	25,234,471
6. Actual UAAL as of June 30, 2015	6,409,961	13,122,693	3,094,887	22,627,541
<b>7. Total Gain/(Loss) (A5-A6)</b>	<b>751,938</b>	<b>1,278,370</b>	<b>576,622</b>	<b>2,606,930</b>
<b>B. Calculation of Asset Gain / (Loss)</b>				
1. Actuarial Value of Assets (AVA) as of June 30, 2014	14,826,208	27,026,576	15,291,783	57,144,567
2. Contributions During the Year	676,085	1,640,491	760,775	3,077,351
3. Benefit Payments During the Year	(1,163,826)	(2,016,411)	(856,099)	(4,036,336)
4. Interest at Previous Year's Rate of 7.00%				
a. On AVA at Beginning of Year	1,037,835	1,891,860	1,070,425	4,000,120
b. On Contributions	23,663	57,417	26,627	107,707
c. On Benefit Payments	(40,734)	(70,574)	(29,963)	(141,271)
<b>d. Total</b>	<b>1,020,764</b>	<b>1,878,703</b>	<b>1,067,089</b>	<b>3,966,556</b>
5. Expected AVA as of June 30, 2015 (B1+B2+B3+B4)	15,359,231	28,529,359	16,263,548	60,152,138
6. Actual AVA as of June 30, 2015	15,881,597	29,441,485	16,760,519	62,083,601
<b>7. Total Gain/(Loss) on Assets (B6-B5)</b>	<b>522,366</b>	<b>912,126</b>	<b>496,971</b>	<b>1,931,463</b>
<b>C. Calculation of Liability Gain/(Loss)</b>				
1. Gain/(Loss) Due to Changes in Actuarial Assumptions	—	—	—	—
2. Gain/(Loss) Due to Plan Amendments	—	—	(2,053)	(2,053)
3. Gain/(Loss) Due to Change in Asset Method	—	—	—	—
<b>4. Liability Experience Gain/(Loss) (A7-B7-C1-C2-C3)</b>	<b>\$ 229,572</b>	<b>\$ 366,244</b>	<b>\$ 81,704</b>	<b>\$ 677,520</b>

## Actuarial Assumptions and Methods

On June 20, 2013, the VRS Board of Trustees adopted most of the actuarial assumptions and methods on the recommendation of its actuary. The assumptions for the pension plans include the Virginia Retirement System (VRS), the State Police Officers' Retirement System (SPORS), the Virginia Law Officers' Retirement System (VaLORS) and the Judicial Retirement System (JRS). They were based on an analysis of plan experience for the four-year period July 1, 2008, through June 30, 2012, and were used for the June 30, 2015, valuation.

### ACTUARIAL ASSUMPTIONS AND METHODS: PENSION PLANS

FOR THE JUNE 30, 2015, VALUATION

**Investment Return Rate:** 7.00% per annum, compounded annually, composed of an assumed 2.50% inflation rate and a 4.50% real rate of return. Benefits are assumed to increase annually by 2.50% for Plan 1 retirees and by 2.25% for Plan 2 retirees due to the cost-of-living adjustment (COLA).

#### Mortality Rates

**Pre-Retirement:** RP-2000 Employee Mortality Table Projected with Scale AA to 2020:

- State – Males set forward 2 years and females set back 3 years
- Teachers – Males set back 3 years and females set back 5 years
- State Police – Males set forward 5 years and females set back 3 years
- VaLORS – Males set forward 5 years and females set back 3 years
- Judicial – Males set forward 2 years and females set back 3 years
- Political subdivisions, Non-LEOS – Males set forward 4 years and females set back 2 years
- Political subdivisions, LEOS – Males set back 2 years and females set back 2 years

**Post-Retirement:** RP-2000 Combined Mortality Table Projected with Scale AA to 2020:

- State – Females set back 1 year
- Teachers – Males set back 2 years and females set back 3 years
- State Police – Females set back 1 year
- VaLORS – Females set back 1 year
- Judicial – Females set back 1 year
- Political subdivisions, Non-LEOS – Males set forward 1 year
- Political subdivisions, LEOS – Males set forward 1 year

**Post-Disablement:** RP-2000 Disability Life Mortality Table:

- State – Males set back 3 years and no provision for future mortality improvement
- Teachers – Males set back 1 year and no provision for future mortality improvement
- State Police – Males set back 3 years and no provision for future mortality improvement
- VaLORS – Males set back 3 years and no provision for future mortality improvement
- Judicial – Males set back 3 years and no provision for future mortality improvement
- Political subdivisions, Non-LEOS – Males set back 3 years and no provision for future mortality improvement
- Political subdivisions, LEOS – Males set back 3 years and no provision for future mortality improvement



**FIGURE 4.3: RETIREMENT RATES – PENSION PLANS**

Sample rates of retirement for members eligible to retire are shown below.

**State Employees**

Plan 1

Age	Retirement with Less Than 30 Years of Service		Retirement with 30 or More Years of Service	
	Male	Female	Male	Female
50	3.00%	3.20%	10.00%	10.00%
55	5.00%	5.00%	10.00%	10.00%
59	5.00%	5.50%	10.00%	10.00%
60	5.00%	5.50%	10.00%	15.00%
61	10.00%	10.00%	15.00%	20.00%
62	15.00%	15.00%	25.00%	30.00%
64	15.00%	15.00%	20.00%	20.00%
65	30.00%	30.00%	30.00%	40.00%
67	30.00%	30.00%	25.00%	25.00%
> = 70	100.00%	100.00%	100.00%	100.00%

Plan 2 and Hybrid – Males  
Years of Service

Age	30	31	33	35	37	39	> = 40
50	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	35.00%
55	0.00%	0.00%	0.00%	35.00%	10.00%	10.00%	10.00%
59	0.00%	35.00%	10.00%	10.00%	10.00%	10.00%	10.00%
60	35.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
61	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
62	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
64	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
65	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
67	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	25.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Rate is 35.00% when age plus service equals 90.

**FIGURE 4.3: RETIREMENT RATES – PENSION PLANS, cont.**

Sample rates of retirement for members eligible to retire are shown below.

**State Employees**

Age	Plan 2 and Hybrid – Females Years of Service						
	30	31	33	35	37	39	> = 40
50	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	35.00%
55	0.00%	0.00%	0.00%	35.00%	10.00%	10.00%	10.00%
59	0.00%	35.00%	10.00%	10.00%	10.00%	10.00%	10.00%
60	35.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
61	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
62	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
64	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
65	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
67	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	25.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

*Rate is 35.00% when age plus service equals 90.*

**Teachers**

Age	Plan 1			
	Retirement with Fewer Than 30 Years of Service		Retirement with 30 or More Years of Service	
	Male	Female	Male	Female
50	2.00%	2.00%	17.50%	15.00%
55	5.70%	6.10%	22.50%	22.50%
59	7.00%	7.50%	22.50%	22.50%
60	7.50%	8.50%	22.50%	22.50%
61	11.00%	12.00%	30.00%	30.00%
62	17.00%	17.00%	35.00%	35.00%
64	18.00%	16.50%	30.00%	35.00%
65	30.00%	30.00%	40.00%	35.00%
67	30.00%	30.00%	40.00%	35.00%
> = 70	100.00%	100.00%	100.00%	100.00%

**FIGURE 4.3: RETIREMENT RATES – PENSION PLANS, cont.**

Sample rates of retirement for members eligible to retire are shown below.

**Teachers**

Plan 2 and Hybrid – Males  
Years of Service

Age	30	31	33	35	37	39	> = 40
50	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	40.00%
55	0.00%	0.00%	0.00%	40.00%	22.50%	22.50%	22.50%
59	0.00%	40.00%	22.50%	22.50%	22.50%	22.50%	22.50%
60	40.00%	22.50%	22.50%	22.50%	22.50%	22.50%	22.50%
61	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
62	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%
64	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
65	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
67	30.00%	30.00%	40.00%	40.00%	40.00%	40.00%	40.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

*Rate is 40.00% when age plus service equals 90.*

Plan 2 and Hybrid – Females  
Years of Service

Age	30	31	33	35	37	39	> = 40
50	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	35.00%
55	0.00%	0.00%	0.00%	35.00%	22.50%	22.50%	22.50%
59	0.00%	35.00%	22.50%	22.50%	22.50%	22.50%	22.50%
60	35.00%	22.50%	22.50%	22.50%	22.50%	22.50%	22.50%
61	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
62	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	35.00%
64	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	35.00%
65	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	35.00%
67	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	35.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

*Rate is 35.00% when age plus service equals 90.*

**FIGURE 4.3: RETIREMENT RATES – PENSION PLANS, cont.**

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

Age	Plan 1				Plan 2			
	Reduced Retirement		Unreduced Retirement		Reduced Retirement		Unreduced Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
50	3.50%	3.50%	13.00%	15.60%	0.00%	0.00%	13.00%	15.60%
55	5.00%	5.00%	11.50%	14.30%	0.00%	0.00%	11.50%	14.30%
59	4.50%	6.00%	13.50%	13.40%	0.00%	0.00%	13.50%	13.40%
60	6.00%	7.50%	17.00%	12.80%	6.00%	7.50%	17.00%	12.80%
61	10.50%	10.00%	19.00%	17.70%	10.50%	10.00%	19.00%	17.70%
62	17.50%	15.50%	31.00%	28.00%	17.50%	15.50%	31.00%	28.00%
64	16.50%	17.00%	29.00%	18.30%	16.50%	17.00%	29.00%	18.30%
65	30.00%	30.00%	41.00%	29.60%	30.00%	30.00%	41.00%	29.60%
67	30.00%	30.00%	24.00%	33.20%	30.00%	30.00%	24.00%	33.20%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

Age	Plan 1				Plan 2			
	Reduced Retirement		Unreduced Retirement		Reduced Retirement		Unreduced Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
50	5.00%	4.00%	9.00%	8.00%	0.00%	0.00%	9.00%	8.00%
55	5.00%	5.50%	14.00%	11.50%	0.00%	0.00%	14.00%	11.50%
59	6.00%	5.00%	11.00%	11.50%	0.00%	0.00%	11.00%	11.50%
60	6.00%	7.50%	11.00%	13.00%	6.00%	7.50%	11.00%	13.00%
61	10.00%	7.50%	25.00%	17.50%	10.00%	7.50%	25.00%	17.50%
62	17.00%	17.00%	35.00%	25.00%	17.00%	17.00%	35.00%	25.00%
64	15.00%	13.00%	27.00%	17.50%	15.00%	13.00%	25.00%	25.00%
65	30.00%	30.00%	33.00%	40.00%	30.00%	30.00%	25.00%	25.00%
67	30.00%	30.00%	20.00%	25.00%	30.00%	30.00%	33.00%	40.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	9.00%	25.00%
55	8.50%	18.00%
59	13.50%	31.50%
60	20.00%	35.00%
> = 65	100.00%	100.00%

**FIGURE 4.3: RETIREMENT RATES – PENSION PLANS, cont.**

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – All Other Employers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	8.50%	25.00%
55	8.50%	17.50%
59	11.50%	28.50%
60	20.00%	35.00%
> = 65	100.00%	100.00%

**State Police Officers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	10.00%	15.00%
55	10.00%	15.00%
59	12.00%	20.00%
60	25.00%	40.00%
> = 64	100.00%	100.00%

**Virginia Law Officers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	9.20%	25.00%
55	9.50%	25.00%
59	12.00%	40.00%
60	20.00%	40.00%
> = 65	100.00%	100.00%

**Judges – All Plans**

Age	Service Multiplier = 1.5 Years of Service			Service Multiplier = 2.0 Years of Service		
	2-19	20	>=21	2-14	15	>=16
60	0.00%	50.00%	50.00%	0.00%	50.00%	50.00%
65	50.00%	50.00%	15.00%	50.00%	50.00%	15.00%
69	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
> = 73	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Age	Service Multiplier = 2.5 Years of Service			Service Multiplier = 3.5 Years of Service		
	2-11	12	>=13	1-8	9	>=10
60	0.00%	50.00%	50.00%	0.00%	50.00%	50.00%
65	50.00%	50.00%	15.00%	50.00%	50.00%	15.00%
69	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
> = 73	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**FIGURE 4.4: DISABILITY RATES – PENSION PLANS**

As shown below for selected ages.

**State Employees**

14% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0900%	0.0100%
30	0.1800%	0.1500%
40	0.1800%	0.2900%
50	0.4500%	0.5500%
60	0.7200%	1.0000%

**Teachers**

5% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0100%	0.0100%
40	0.0210%	0.0360%
50	0.1330%	0.0900%
60	0.3080%	0.2400%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

14% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0600%	0.0500%
40	0.1800%	0.0500%
50	0.2400%	0.1800%
60	0.7200%	0.4500%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

14% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0200%	0.0100%
30	0.0600%	0.0200%
40	0.1400%	0.0800%
50	0.3100%	0.2700%
60	0.8200%	0.7000%

**FIGURE 4.4: DISABILITY RATES – PENSION PLANS, cont.**

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

60% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0500%	0.0500%
40	0.1800%	0.2400%
50	0.4000%	0.5300%
60	0.6500%	0.8100%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

60% of disability cases are assumed to be service-related.

Age	Rate
20	0.0000%
30	0.0300%
40	0.1100%
50	0.3800%
60	0.6400%

**State Police Officers**

60% of disability cases are assumed to be service-related.

Age	Rate
20	0.0000%
30	0.0280%
40	0.2100%
50	0.6750%
60	0.0000%

**Virginia Law Officers**

50% of disability cases are assumed to be service-related.

Age	Rate
20	0.1500%
30	0.6000%
40	0.8000%
50	1.2000%
60	1.0000%

**FIGURE 4.4: DISABILITY RATES – PENSION PLANS, cont.**

**Judges**

5% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0070%	0.0070%
40	0.1420%	0.0900%
50	0.4800%	0.3970%
60	0.0000%	0.0000%

**FIGURE 4.5: TERMINATION RATES – PENSION PLANS**

Withdrawal rates are based on age and years of service. Sample rates for selected ages and years of service are shown below for causes other than death, disability or retirement.

**State Employees – Plan 1**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males				Years of Service – Females			
	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	22.10%	13.00%	13.00%	0.00%	25.60%	15.70%	15.70%	0.00%
35	16.70%	9.30%	9.30%	4.50%	17.80%	11.00%	11.00%	5.00%
45	12.90%	7.00%	7.00%	2.30%	13.90%	7.40%	7.40%	2.50%
55	10.20%	6.00%	6.00%	0.00%	12.50%	8.60%	0.00%	0.00%
65	11.30%	11.00%	0.00%	0.00%	14.00%	12.00%	0.00%	0.00%

**State Employees – Plan 2 and Hybrid**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males				Years of Service – Females			
	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	22.10%	13.00%	13.00%	0.00%	25.60%	15.70%	15.70%	0.00%
35	16.70%	9.30%	9.30%	4.50%	17.80%	11.00%	11.00%	5.00%
45	12.90%	7.00%	7.00%	2.30%	13.90%	7.40%	7.40%	2.50%
55	10.20%	6.00%	6.00%	0.40%	12.50%	6.00%	6.00%	0.40%
65	11.30%	11.00%	0.00%	0.00%	14.00%	12.00%	0.00%	0.00%

**Teachers – Plan 1**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males				Years of Service – Females			
	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	15.40%	11.80%	11.80%	0.80%	14.60%	12.00%	12.00%	15.00%
35	14.10%	7.30%	7.30%	3.10%	14.90%	9.00%	9.00%	3.90%
45	14.70%	7.50%	7.50%	1.90%	11.70%	6.40%	6.40%	2.10%
55	14.30%	7.00%	0.00%	0.00%	12.40%	5.80%	0.00%	0.00%
65	17.00%	8.30%	0.00%	0.00%	13.00%	8.00%	0.00%	0.00%



**FIGURE 4.5: TERMINATION RATES – PENSION PLANS, cont.**

**Teachers – Plan 2 and Hybrid**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males				Years of Service – Females			
	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	15.40%	11.80%	11.80%	0.80%	14.60%	12.00%	12.00%	15.00%
35	14.10%	7.30%	7.30%	3.10%	14.90%	9.00%	9.00%	3.90%
45	14.70%	7.50%	7.50%	1.90%	11.70%	6.40%	6.40%	2.10%
55	14.30%	7.00%	7.00%	0.30%	12.40%	5.80%	5.80%	0.30%
65	17.00%	8.30%	0.00%	0.00%	13.00%	8.00%	0.00%	0.00%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males			Years of Service – Females		
	0-2	3-9	10+	0-2	3-9	10+
25	21.80%	13.70%	0.00%	23.30%	16.70%	0.00%
35	17.20%	9.70%	5.80%	18.60%	10.60%	5.10%
45	14.30%	7.10%	2.90%	14.80%	7.70%	2.80%
55	10.90%	5.30%	0.70%	11.90%	6.30%	0.00%
65	13.60%	8.20%	0.00%	12.60%	8.20%	0.00%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males			Years of Service – Females		
	0-2	3-9	10+	0-2	3-9	10+
25	23.50%	14.00%	0.00%	25.50%	16.50%	0.00%
35	18.50%	10.50%	5.50%	19.00%	11.50%	6.00%
45	15.50%	8.00%	3.00%	15.00%	8.00%	3.50%
55	12.00%	6.50%	1.00%	12.50%	6.50%	0.00%
65	12.00%	8.00%	0.00%	13.00%	9.00%	0.00%

**FIGURE 4.5: TERMINATION RATES – PENSION PLANS, cont.**

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males			Years of Service – Females		
	0-2	3-9	10+	0-2	3-9	10+
25	7.80%	6.80%	0.00%	7.80%	6.80%	0.00%
35	8.00%	4.40%	2.40%	8.00%	4.40%	2.40%
45	9.20%	4.60%	1.50%	9.20%	4.60%	1.50%
55	8.30%	6.30%	0.00%	8.30%	6.30%	0.00%
60	8.70%	6.50%	0.00%	8.70%	6.50%	0.00%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – All Other Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males			Years of Service – Females		
	0-2	3-9	10+	0-2	3-9	10+
25	13.00%	8.50%	0.00%	13.00%	10.00%	0.00%
35	11.00%	7.00%	3.80%	14.00%	8.00%	4.50%
45	13.00%	6.00%	2.40%	12.00%	6.00%	3.50%
55	15.00%	8.00%	0.50%	12.00%	5.00%	0.50%
60	11.00%	10.00%	0.50%	12.00%	5.00%	0.50%

**State Police Officers – Plan 1**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males				Years of Service – Females			
	0-2	3-4	5-9	10+	2	5	9	10+
25	7.50%	5.50%	5.50%	3.00%	10.80%	10.50%	5.40%	4.40%
35	7.50%	4.80%	4.80%	2.40%	12.10%	7.40%	6.00%	6.10%
45	10.00%	4.50%	4.50%	1.40%	10.80%	8.20%	6.40%	5.90%
55	10.00%	6.70%	0.00%	0.00%	7.40%	12.60%	6.70%	4.10%
65	10.00%	7.50%	0.00%	0.00%	1.50%	20.50%	6.90%	0.60%

**Virginia Law Officers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION

Age	Years of Service – Males			Years of Service – Females		
	0-2	3-9	10+	0-2	3-9	10+
25	20.00%	15.00%	5.00%	20.00%	15.00%	7.50%
35	20.00%	12.50%	5.00%	20.00%	12.50%	6.00%
45	15.00%	10.50%	4.00%	17.50%	8.00%	4.00%
55	12.00%	6.50%	4.00%	10.00%	12.00%	4.00%
65	15.00%	7.00%	4.00%	10.00%	10.00%	4.00%

### Judges – All Plans

There are no assumed rates of withdrawal prior to service retirement for causes other than death, disability or retirement.

### FIGURE 4.6: SALARY INCREASE RATES – PENSION PLANS

Sample salary increase rates are shown below.

#### State Employees

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown. It is assumed state employees who are covered under the Virginia Sickness and Disability Program (VSDP) receive a 3.50% annual increase in pay while disabled. This adjusted pay is used to determine deferred retirement benefits payable from the System.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.85%	5.35%
3	1.25%	4.75%
6	0.95%	4.45%
9	0.50%	4.00%
11	0.15%	3.65%
15	0.15%	3.65%
19	0.15%	3.65%
20 or more	0.00%	3.50%

#### Teachers

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	2.45%	5.95%
3	2.35%	5.85%
6	1.95%	5.45%
9	1.85%	5.35%
11	1.35%	4.85%
15	1.15%	4.65%
19	0.95%	4.45%
20 or more	0.00%	3.50%

**FIGURE 4.6: SALARY INCREASE RATES – PENSION PLANS, cont.**

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.85%	5.35%
3	1.25%	4.75%
6	0.95%	4.45%
9	0.50%	4.00%
11	0.15%	3.65%
15	0.15%	3.65%
19	0.15%	3.65%
20 or more	0.00%	3.50%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.85%	5.35%
3	1.25%	4.75%
6	0.95%	4.45%
9	0.50%	4.00%
11	0.15%	3.65%
15	0.15%	3.65%
19	0.15%	3.65%
20 or more	0.00%	3.50%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**FIGURE 4.6: SALARY INCREASE RATES – PENSION PLANS, cont.**

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**State Police Officers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown. It is assumed state police officers who are covered under the Virginia Sickness and Disability Program (VSDP) receive a 3.50% annual increase in pay while disabled. This adjusted pay is used to determine deferred retirement benefits payable from the System.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**Virginia Law Officers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown. It is assumed Virginia law officers who are covered under the Virginia Sickness and Disability Program (VSDP) receive a 3.50% annual increase in pay while disabled. This adjusted pay is used to determine deferred retirement benefits payable from the System.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**Judges**

Salary increase rates are 4.50%.

## ADDITIONAL INFORMATION ABOUT ACTUARIAL ASSUMPTIONS AND METHODS: PENSION PLANS

**Percent Electing a Refund or Deferred Annuity (excluding JRS Members).** Terminating members are assumed to elect a refund of their member contributions and accrued interest or a deferred annuity based on the option any given member would consider most valuable at the time of termination. The deferred annuity, if elected, is assumed to commence at the age at which the member first becomes eligible for an unreduced benefit.

**Provision for Expense.** The assumed investment return represents the anticipated net rate of return after payment of all administrative expenses.

**Asset Valuation Method.** The method of valuing assets is intended to recognize a “smoothed” market value of assets. Under this method, the difference between actual return on market value from investment experience and the expected return on market value is recognized over a five-year period. The resulting actuarial value of assets cannot be less than 80% or more than 120% of the market value of assets.

**Actuarial Cost Method.** The valuation was prepared using the entry age normal actuarial cost method. Under this method, a calculation is made for pension benefits to determine the uniform and constant percentage rate of employer contributions that, if applied to the compensation of the average new member during the entire period of his or her anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on the member’s behalf.

The unfunded actuarial accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from VRS. The accrued liability contribution amortizes

the balance of the unfunded accrued liability over a period of years from the valuation date.

**Actuarial Gains and Losses.** Actuarial gains and losses are reflected in the unfunded actuarial accrued liability and are amortized as part of that balance.

**Payroll Growth Rates.** For state employees, teachers and members of SPORS, VaLORS and JRS, the payroll growth rate is assumed to be 3.00% based on a zero population growth assumption. For political subdivision employees, the payroll growth rate also is assumed to be 3.00% based on a zero population growth assumption.

**Funding Period.** The legacy unfunded actuarial accrued liability less the deferred contribution as of June 30, 2013, is amortized over a closed 30-year period from June 30, 2013. The amortization period of the unfunded, less the deferred contribution, will decrease by one each year until reaching 0 years. The deferred contribution, as defined under the 2011 Appropriations Act, Item 469(I)(6), is to be amortized using a level-dollar, closed 10-year period beginning June 30, 2011. The actuarial gains and losses and other changes in the unfunded due to benefits and actuarial assumption and method changes for each valuation subsequent to the June 30, 2013, valuation will be amortized over a closed 20-year period.

**Cost-of-Living Adjustment (COLA).** For Plan 1 employees receiving benefits or vested as of January 1, 2013, the COLA is assumed to be 2.50% per year compounded annually for the Basic Benefit option. The hazardous duty supplement for Plan 1 SPORS members, VaLORS members and political subdivision employees receiving enhanced hazardous duty benefits is assumed to increase at an inflation rate of 2.50% per year compounded annually. For Plan 1 employees who were not vested as of January 1, 2013, Plan 2 employees and hybrid plan employees, the COLA is assumed to be 2.25% per year compounded annually.

# Summary of Pension Plan Provisions

## Retirement Plans

### ADMINISTRATION

The Virginia Retirement System (the System) pension Plan 1, Plan 2, and Hybrid Retirement Plan are administered by the Board of Trustees of the System. Plan 2 was established during the 2010 session of the General Assembly, and its provisions are effective for new members hired or rehired on or after July 1, 2010. The hybrid plan was established for all non-hazardous duty employees hired on or after January 1, 2014.

In addition, Plan 1 members who were not vested as of January 1, 2013, are also in Plan 2.

### TYPES OF PLANS

**1. Virginia Retirement System (VRS), effective March 1, 1952.** VRS is a qualified governmental pension system that administers two defined benefit structures, Plan 1 and Plan 2, and a Hybrid Retirement Plan with a benefit structure that combines both defined benefit and defined contribution features. The Governmental Accounting Standards Board (GASB) defines VRS as an agent multiple-employer public employee retirement system. Covered employees include full-time permanent, salaried state employees; faculty members of the state's public colleges and universities who do not elect to participate in an optional retirement plan; teachers and administrative employees of the state's local public school divisions; and employees of Virginia cities, towns, counties and other political subdivisions that have elected to participate in VRS. Some part-time permanent, salaried state employees also are covered under VRS. VRS has separate cost-sharing pools for state and school employers.

Members are covered under Plan 1, Plan 2 or the Hybrid Retirement Plan according to their membership date:

- **Plan 1:** Members hired before July 1, 2010, and who had at least five years of service on January 1, 2013, are covered under the Plan 1 benefit structure. These members also include deferred members who have returned to covered employment with service credit in VRS or an account balance in an optional retirement plan (ORP) authorized or administered by VRS as of June 30, 2010, and members retired under Plan 1 who have returned to covered employment and resumed active membership.
- **Plan 2:** Members hired or rehired on or after July 1, 2010, and former Plan 1 members who did not have five years of service on January 1, 2013, are covered under the Plan 2 benefit structure. These members also include those employed in a covered position before July 1, 2010, who left covered employment, took a refund and returned to covered employment on or after July 1, 2010, with no service credit in VRS or no ORP account balance.
- **Hybrid Retirement Plan:** Members hired on or after January 1, 2014, or Plan 1 and Plan 2 members who elected, during a one-time opt-in period, to be covered under the hybrid plan. Employees in positions with hazardous duty benefits are not eligible to participate in the hybrid plan and become members of Plan 2.

**2. Single-Employer Public Employee Retirement Systems as Defined by GASB.** The provisions for the Plan 1 and Plan 2 benefit structures for the following systems are the same as those for VRS:

- State Police Officers' Retirement System (SPORS) established July 1, 1950, for full-time permanent, salaried state police officers.
- Virginia Law Officers' Retirement System (VaLORS) established October 1, 1999, for full-time permanent, salaried Virginia law officers other than state police.

- Judicial Retirement System (JRS) established July 1, 1970, for full-time permanent, salaried state judges and other qualifying employees. Members hired on or after January 1, 2014, are covered under the hybrid plan.

## MEMBER CONTRIBUTIONS

Member contributions vary by plan.

**Defined Benefit:** Active members in Plan 1 and Plan 2 contribute 5% of their creditable compensation per year. Active members in the hybrid plan contribute 4% of their creditable compensation per year. Contributions paid by employers on behalf of employees are governed by Section 414(h) of the Internal Revenue Code.

**Defined Contribution:** Active members in the hybrid plan are required to contribute 1% of their creditable compensation per year to the defined contribution component of the hybrid plan. Active members can make voluntary additional contributions of up to 4% of their creditable compensation. Members' contribution accounts accrue 4.00% interest each year, calculated on the balance as of the previous June 30.

## CREDITABLE COMPENSATION

Creditable compensation is the member's salary reported to VRS by the employer. It does not include payments for overtime, temporary employment, extra duties or other additional payments.

## AVERAGE FINAL COMPENSATION

Average final compensation is one of the factors used to calculate the member's retirement benefit.

**Plan 1.** Average of the member's 36 consecutive months of highest creditable compensation as a covered employee.

**Plan 2 and Hybrid Retirement Plan.** Average of the member's 60 consecutive months of highest creditable compensation as a covered employee.

## VESTING

VRS members become vested after accumulating five years of service credit.

## SERVICE CREDIT

**1. VRS; SPORS and VaLORS Members in Plan 1 and Plan 2; and Hybrid Retirement Plan.** These members receive one month of service credit for each month they are employed in a covered position and the employer is contributing to the System.

**2. JRS Members in Plan 1.** Judges appointed or elected before January 1, 1995, receive one month of service credit multiplied by a weighting factor of 3.5 for each month they are employed in a JRS-covered position and the employer is contributing to the System. The weighting factor for judges appointed or elected on or after January 1, 1995, is 2.5.

**3. JRS Members in Plan 2 and Hybrid Retirement Plan.** Judges appointed or elected on or after July 1, 2010, receive one month of service credit multiplied by the following weighting factors for each month they are employed in a JRS-covered position and the employer is contributing to the System: 1.5 for those appointed or elected before age 45; 2.0 for those appointed or elected between the ages 45 and 54; and 2.5 for those appointed or elected at age 55 or older.

## PRIOR SERVICE CREDIT

Members may purchase prior service as credit in their plan. Eligible prior service includes active duty military service; full-time salaried federal service; full-time salaried public service with an employer or school system of another state or United States territory, or with a Virginia public employer that does not participate in VRS; non-covered service with a VRS-participating employer; approved leave from a VRS-covered position for the birth or adoption of a child; approved educational leave; unused sick leave at retirement, if the member is eligible; and VRS-refunded service. Members also can apply for no-cost military leave, provided they are not dishonorably discharged, return to covered



employment within one year of discharge and do not take a refund of their member contributions and interest.

Prior service credit counts toward vesting, eligibility for retirement and eligibility for the health insurance credit. Prior service credit for refunded VRS hazardous duty service or for an eligible period of leave while covered under VRS in a hazardous duty position also counts toward the hazardous duty supplement for eligible members, provided they purchase or, in the case of no-cost military leave, are granted this service. Other types of prior service credit, such as active duty military service or hazardous duty service with a non-VRS participating employer, do not count toward the supplement.

Members may arrange to purchase prior service through a lump-sum payment using a personal check, a trustee-to-trustee transfer of funds or a pre-tax rollover of funds; an after-tax payroll deduction contract or a pre-tax salary reduction contract (if the employer offers the pre-tax salary reduction option); or a combination of these methods. Members must be within their eligibility period to use a contract. Other special rules and limits govern the purchase of prior service.

The cost basis and eligibility periods for members are as follows:

**VRS Refunded Service, Plan 1 and Plan 2.** The cost is 5.00% of compensation or average final compensation at the time of purchase, whichever is higher, multiplied by the number of months to purchase. If the member uses a contract to purchase VRS refunded service, the cost is based on compensation, even if average final compensation is higher. If the member has not purchased VRS refunded service within three years, the cost basis will remain 5.00%, but the member will be required to use a lump-sum payment.

**VRS Refunded Service, Hybrid Retirement Plan.** The cost is 4.00% of compensation or average final compensation at the time of purchase, whichever is higher, multiplied by the number of months to purchase. If the member uses a contract to purchase VRS refunded service, the cost is based on compensation, even if average final compensation is higher. If the member has not purchased VRS refunded service within one year, the cost basis will remain 4.00%, but the member will be required to use a lump-sum payment.

**Other Types of Eligible Service, Plan 1.** Within the three-year cost window: 5.00% of compensation or average final compensation at the time of purchase, whichever is higher, multiplied by the number of months to purchase. If the member uses a contract to purchase service, the cost is based on compensation, even if average final compensation is higher. After the three-year cost window: Actuarial equivalent rate.

**Other Types of Eligible Service, Plan 2 and Hybrid Retirement Plan.** Within the one-year cost window: Approximate normal cost rate as a percentage of compensation or average final compensation at the time of purchase, whichever is higher, multiplied by the number of months to purchase. If the member uses a contract to purchase service, the cost is based on compensation, even if average final compensation is higher. Normal cost rates vary depending on whether the member is covered under VRS, SPORS, VaLORS or JRS, or employed in a political subdivision position eligible for enhanced hazardous duty coverage. After the one-year cost window: Actuarial equivalent rate.

## NORMAL (UNREDUCED) AND REDUCED RETIREMENT ELIGIBILITY AND BENEFIT CALCULATIONS

### EARLIEST UNREDUCED RETIREMENT ELIGIBILITY

PLAN 1	PLAN 2 & HYBRID PLAN	BENEFIT CALCULATIONS
VRS: Age 65 with at least five years of service credit, or age 50 with at least 30 years of service credit..	Normal Social Security retirement age with at least five years of service credit or when age and service equal 90. Example: Age 60 with 30 years of service credit.	<ul style="list-style-type: none"> <li>• Plan 1: 1.70% of average final compensation X years of service</li> <li>• Plan 2: 1.65% of average final compensation X years of service</li> <li>• Hybrid Retirement Plan: 1.00% of average final compensation X years of service</li> </ul>
SPORS, VaLORS and political subdivision hazardous duty employees: Age 60 with at least five years of service credit or age 50 with at least 25 years of service credit.	Plan 2 SPORS, VaLORS and political subdivision hazardous duty employees: Age 60 with at least five years of service credit or age 50 with at least 25 years of service credit. (Hybrid plan not applicable.)	<ul style="list-style-type: none"> <li>• SPORS, sheriffs and regional jail superintendents: 1.85% of average final compensation for each year of service credit.</li> <li>• VaLORS: 1.70% or 2.00% of average final compensation for each year of service credit as elected by the member. Note: VaLORS members retiring under the 2.00% multiplier are not eligible for the hazardous duty supplement.</li> <li>• Political subdivision hazardous duty employees: 1.70% or 1.85% of average final compensation for each year of service credit, as elected by the employer.</li> </ul>
JRS: Age 65 with at least five years of service credit or age 60 with at least 30 years of service credit.	Same as Plan 1.	<ul style="list-style-type: none"> <li>• Plan 1: 1.70% of average final compensation for each year of service credit (if appointed or elected to an original term prior to January 1, 2013).</li> <li>• For judges appointed or elected to an original term between January 1, 2013, and December 31, 2013: 1.70% on service prior to January 1, 2013, and 1.65% on service on or after January 1, 2013.</li> <li>• Plan 2: 1.70% of average final compensation for each year of service credit on service prior to January 1, 2013; 1.65% percent on service on or after January 1, 2013.</li> <li>• Hybrid Retirement Plan: 1.00% of average final compensation for each year of service credit.</li> </ul>

## NORMAL (UNREDUCED) AND REDUCED RETIREMENT ELIGIBILITY AND BENEFIT CALCULATIONS

### EARLIEST REDUCED RETIREMENT ELIGIBILITY

PLAN 1	PLAN 2 & HYBRID PLAN	BENEFIT CALCULATIONS
VRS: Age 55 with at least five years of service credit or age 50 with at least 10 years of service credit.	Age 60 with at least five years of service credit.	<ul style="list-style-type: none"> <li>Plan 1: For members at least age 55, a reduction of 0.50% per month for the first 60 months of retirement and 0.40% per month for the next 60 months of retirement. The reduction is applied for each month until the member reaches age 65 or, if more favorable to the member, for each month the member's service credit is less than 30 years (less than 25 years for hazardous duty members). For members younger than 55 at retirement, the reduction factor is determined as though the member were 55 is further reduced by multiplying it by a second factor, to reflect a 0.60% reduction for each month retirement precedes age 55.</li> </ul>
SPORS, VaLORS and political subdivision hazardous duty employees: Age 50 with at least five years of service credit.	Same as Plan 1.	
JRS: Age 55 with at least five years of weighted service credit.	Same as Plan 1.	<ul style="list-style-type: none"> <li>Plan 2 and Hybrid Retirement Plan: Calculated the same as a normal retirement benefit, using actual service at retirement and multiplied by an actuarially equivalent reduction factor. No reduction applies if the sum of the member's age and service equals 90.</li> </ul>

### BENEFIT PAYOUT OPTIONS

VRS members eligible for retirement must elect one of the following benefit payout options when they apply for retirement. This election is irrevocable, except for the Survivor Option under certain circumstances. These options are available on an actuarially equivalent basis:

**1. Basic Benefit.** Members may choose the Basic Benefit, which is the unreduced benefit amount. An early retirement reduction factor is applied for the reduced benefit. The Basic Benefit does not provide a continuation of a lifetime monthly benefit to a survivor.

**2. Survivor Option.** Members may choose a whole percentage of their benefit, between 10% and 100%, to continue as a lifetime benefit to a survivor upon their death. The member's benefit is actuarially reduced accordingly.

**3. Partial Lump-Sum Option Payment (PLOP).** Members who are in active service for one or more years beyond the date they become eligible for an unreduced retirement benefit may elect a partial lump-sum payment of their member contributions and accrued interest equal to one, two or three times their annual retirement benefit, depending on how long they work beyond their unreduced retirement eligibility date. The monthly benefit is actuarially reduced accordingly. This option is available with the Basic Benefit and the Survivor Option.

**4. Advance Pension Option.** With this option, members elect to receive a temporary higher benefit until at least age 62 up to their normal retirement age under Social Security, as elected by the member. At that point, the monthly benefit is permanently reduced on an actuarially equivalent basis. The benefit can never be reduced by more than 50%.

## PAYMENT FORM

The retirement benefit is paid as a lifetime monthly annuity. Upon the member's death in retirement, the member's beneficiary receives a lump-sum payment of any remaining member contributions and accrued interest in the member's account. If the member has elected the Survivor Option, a lifetime monthly benefit is paid to his or her survivor instead of a lump-sum payment.

## HAZARDOUS DUTY SUPPLEMENT

An annual supplement is payable to members of SPORS and VRS political subdivision members eligible for enhanced hazardous duty coverage who retire with at least 20 years of eligible hazardous duty service credit. The supplement begins when they retire and continues until they reach their normal retirement age under Social Security.

VaLORS members retiring under the 1.70% multiplier who have at least 20 years of eligible hazardous duty service credit receive the supplement beginning when they retire and continuing until age 65; VaLORS members retiring under the 2.00% multiplier are not eligible for the supplement. Vested members hired in eligible hazardous duty positions before July 1, 1974, are not required to have 20 years of hazardous duty service credit to qualify for the supplement, provided they take an immediate annuity.

The supplement is a dollar amount added to the member's monthly retirement benefit payment. It is adjusted biennially based on increases in Social Security benefits during interim periods, as determined by the VRS actuary.

## COST-OF-LIVING ADJUSTMENT (COLA)

The cost-of-living adjustment (COLA) is deferred for one full calendar year after the member reaches unreduced retirement age. The deferred COLA does not apply to employees within five years of eligibility for unreduced retirement as of January 1, 2013, and to members who retire with 20 or more years of service. The COLA is effective each July 1 thereafter, when provided. During periods of no inflation or deflation, the COLA is zero (0.00%).

The COLA is calculated based on changes in the Consumer Price Index for all Urban Consumers (CPI-U) as follows:

1. The CPI-U for the most recent calendar year used to determine the VRS COLA is subtracted from the most recent average annual CPI-U to arrive at the index point change.
2. The index point change is divided by the CPI-U for the most recent calendar year in which a COLA was paid.
3. The result is multiplied by 100 to convert it to a percentage.

Under Plan 1, automatic cost-of-living increases are calculated as the first 3.00% of the increase of the CPI-U, plus half of each percentage increase from 3.00% to 7.00%.

Under Plan 2 and the Hybrid Retirement Plan, automatic cost-of-living increases are calculated as the first 2.00% of the increase of the CPI-U, plus half of each percentage increase from 2.00% to 4.00%, with a maximum COLA increase of 3.00%.

## Refunds and Deferred Membership

**1. Refunds.** Vested members in Plan 1, Plan 2 and the Hybrid Retirement Plan who leave or are involuntarily separated from employment for causes other than job performance or misconduct are eligible for a full refund of their member contribution account balance, including accrued interest. Non-vested members are eligible for a refund of the balance, excluding any employer-paid member contributions made to their accounts after July 1, 2010, and the accrued interest on these contributions.

Hybrid Retirement Plan members are also immediately vested to any funds they contribute to the defined contribution component of their plan. They become vested over a four-year period to the funds their employer contributes on their behalf. Members with fewer than two years of creditable service forfeit the employer contributions.

Taking a refund cancels membership and eligibility for any future benefits under the retirement plans. Members who take a refund and return to covered employment will be rehired under the currently applicable plan. They are eligible to purchase their VRS refunded service as credit in their plan.

**2. Deferred membership.** Members separating from employment have the option to leave their funds with VRS and become deferred members. If they are vested or involuntarily separated from employment, they may be eligible for a future retirement benefit if they meet the age and service requirements for their plan. The benefit is calculated based on the member's service credit and average final compensation at the time of separation. Upon the member's death, the member's beneficiary receives a lump-sum payment of any remaining member contributions and accrued interest. If the member retires and elects the Survivor Option, a lifetime monthly benefit is paid to the survivor upon the member's death.

Deferred members remain eligible to receive a full or partial refund of their member contribution account balance, depending on whether or not they are vested. If a deferred member returns to covered employment, member contributions and the service credit the member earns upon reemployment are added to the member's record.

## Death-in-Service Benefit

If a member dies while in active service, his or her named beneficiary or spouse, natural or legally adopted minor child or parent may be eligible for a death-in-service benefit in addition to VRS life insurance benefits, if applicable.

### NON-WORK-RELATED CAUSE OF DEATH

If the member dies from a non-work-related cause, the member's named beneficiary will be eligible for a refund of any funds remaining in the member's contribution account. If the member is vested at the time of death and his or her spouse, natural or legally adopted minor child or parent is one of the

member's named beneficiaries or is the beneficiary based on order of precedence, he or she will be eligible for a refund or a monthly benefit to the exclusion of all other primary beneficiaries. Any benefits minor children receive will end when they reach age 18. If the member is not vested at the time of death, his or her spouse, natural or legally adopted minor child or parent will be eligible for a refund only, which will be shared with any other primary beneficiaries the member has designated, if applicable.

The monthly non-work-related benefit is a lifetime monthly annuity based on the 100% Survivor Option. Members covered under Plan 1 who die before age 55 are assumed to be age 55 at the time of death for the purpose of calculating the benefit. The calculation for members covered under Plan 2 and the Hybrid Retirement Plan uses age 60. The calculation for Plan 1 and Plan 2 members of SPORS and VaLORS, and for VRS members eligible for enhanced hazardous duty coverage, uses age 50.

### WORK-RELATED CAUSE OF DEATH

If the member dies from a work-related cause, the member's named beneficiary will be eligible for a lump-sum payment of any funds remaining in the member's contribution account. In addition, the member's spouse, natural or legally adopted minor child or parent will be eligible for a monthly benefit, whether or not this individual is a named beneficiary.

The monthly work-related benefit is a lifetime monthly annuity based on 33⅓% of the member's average final compensation if the spouse, minor child or parent qualifies for Social Security survivor benefits, or 50% of the member's average final compensation if the spouse, minor child or parent does not qualify for Social Security survivor benefits. The benefit is then adjusted by any workers' compensation survivor benefits.

## Disability Benefits

### DISABILITY RETIREMENT

Plan 1 and Plan 2 members who are not covered under the Virginia Sickness and Disability Program (VSDP) are eligible to apply for disability retirement from the first day of covered employment if they have a physical or cognitive disability that prevents them from performing their job and is likely to be permanent. Members covered under Plan 1 and Plan 2 who retire on disability before age 60 are credited with the lesser of (1) twice their total service credit at disability retirement; or (2) their total service credit plus the number of years remaining between their age at disability retirement and age 60.

The disability benefit for non-vested members is the minimum guaranteed benefit, which is either (1) 50% of the member's average final compensation (66⅔% if the disability is work-related) if the member does not qualify for primary Social Security benefits; or (2) 33⅓% of average final compensation (50% if the disability is work-related) if the member qualifies for primary Social Security benefits.

Vested members receive the greater of the minimum guaranteed benefit or 1.70% of average final compensation for each year of service credit at the time of disability retirement. The benefit for members retiring on work-related disability is reduced by any workers' compensation benefits. The payout options available to members retiring on disability are the Basic Benefit and Survivor Option.

### VIRGINIA SICKNESS AND DISABILITY PROGRAM

The Virginia Sickness and Disability Program (VSDP) was established on January 1, 1999, to provide income protection to state employees covered under VRS, SPORS and VaLORS if

they suffer a non-work-related or work-related illness or injury. Enrollment in VSDP is automatic upon employment. State employees hired before January 1, 1999, had the option to elect VSDP or retain their eligibility to be considered for disability retirement. Employees enrolled in VSDP are not eligible to retire on disability. Additional information about VSDP is provided in the "Summary of Other Post-Employment Benefit (OPEB) Plan Provisions" in the next discussion on OPEBs. Additional information also is provided in the Financial Section.

### VIRGINIA LOCAL DISABILITY PROGRAM

The Virginia Local Disability Program (VLDP) was implemented January 1, 2014, to provide short-term and long-term disability benefits for non-work-related and work-related disabilities. Eligible employees are enrolled automatically upon employment, unless their employer has elected to provide comparable coverage. Eligible employees include:

- Teachers or other professional employees of a local public school division.
- General employees of a VRS-participating political subdivision, such as a city, county, town, authority or commission.
- Local law enforcement officers, firefighters or emergency medical technicians if the employer does not provide enhanced hazardous duty benefits.

Additional information about VLDP is provided in the "Summary of Other Post-Employment Benefit (OPEB) Plan Provisions" in the next discussion on OPEBs. Additional information also is provided in the Financial Section.

## Summary of Pension Plan Changes

The following actuarially material changes have occurred to the pension plan provisions in recent years.

**2006 VALUATION:** No actuarially material changes are made to the plan provisions.

**2007 VALUATION:** The retirement multiplier for VRS-covered sheriffs and SPORS members changes from 1.70% to 1.85% of average final compensation, effective July 1, 2008.

**2008 VALUATION:** No actuarially material changes are made to the plan provisions.

**2009 VALUATION:** No actuarially material changes are made to the plan provisions. There are three changes of note:

1. On April 16, 2009, the Board adopts the recommended economic and demographic assumptions proposed by the actuary as a result of the June 2008 experience study.
2. The temporary retirement supplement for SPORS members, VaLORS members and political subdivision employees eligible for enhanced hazardous duty coverage changes from \$11,508 to \$12,456 annually.
3. For the June 30, 2009, valuation, the Board suspends application of the 80% to 120% market value-of-assets corridor on the actuarial value of assets.

**2010 VALUATION:** No actuarially material changes are made to the plan provisions. There are two changes of note:

1. For the June 30, 2010, valuation, the application of the 80% to 120% market value-of-assets corridor on the actuarial value of assets is reinstated.
2. The Board reduces the investment rate-of-return assumption from 7.50% to 7.00%.

**2011 VALUATION:** In 2010, VRS adopts a second retirement plan, Plan 2. All employees hired on or after July 1, 2010, are automatically enrolled in this plan. The differences between Plan 1 and Plan 2 are listed below:

1. Under Plan 2, average final compensation is based on the highest 60 consecutive months of service.
2. The Plan 2 cost-of-living adjustment (COLA) is based on the first 2.00% increase in the Consumer Price Index for all Urban Consumers (CPI-U) plus half of each percent from 2.00% to 10.00%, with a maximum COLA of 6.00%.
3. Under Plan 2, normal retirement age is Social Security normal retirement age with at least five years of service credit. A Plan 2 member is eligible for unreduced early retirement when the sum of his or her age plus service credit is 90 (Rule of 90). Eligibility for reduced early retirement is at age 60 with five years of service credit.
4. Weighted service factors for first-term Plan 2 judges are 1.5 for judges less than age 45; 2.0 for judges age 45-54; and 2.5 for judges age 55 or older.

New general state employees, teachers and general political subdivision employees under VRS are subject to changes 1, 2 and 3 above. New state police officers (SPORS), Virginia law officers (VaLORS) and political subdivision employees eligible for enhanced hazardous duty coverage (VRS) are subject to changes 1 and 2 above. New employees covered under JRS are subject to changes 1, 2 and 4 above.

**2012 VALUATION:** In 2012 House Bill 1130/Senate Bill 498 was enacted and was effective on January 1, 2013. The changes resulting from this legislation are as listed below:

1. Active non-vested members of Plan 1 have their Average Final Compensation based on the highest 60 consecutive months of service instead of the highest 36 consecutive months of service. This provision applies to all plans.
2. Active non-vested members of Plan 1 and all Plan 2 members accrue benefits at 1.65% as of the effective date. This provision applies to the state and teacher plans and to members in political subdivision plans who are not covered by hazardous duty benefits.
3. Active members in the judicial plan hired after January 1, 2013, accrue benefits at 1.65%.
4. Active non-vested members of Plan 1 have to satisfy the Rule of 90 (sum of age and service at least 90) or reach their Social Security normal retirement age to be eligible for unreduced retirement. These same members must attain age 60 with five years of service to be eligible for early retirement. This provision applies to the state and teacher plans and to members of political subdivision plans who are not covered by hazardous duty benefits.
5. Non-vested members of Plan 1 and all members of Plan 2 have a maximum cost-of-living adjustment (COLA) of 3.00%. This provision applies to all plans.
6. All active employees not within five years of eligibility for an unreduced retirement as of January 1, 2013, and retiring with fewer than 20 years of service have their cost-of-living adjustment (COLA) deferred to one year

following their unreduced retirement date after beginning to receive benefits. All active employees within five years of eligibility for unreduced retirement as of January 1, 2013, are grandfathered into the old provisions with no deferral of the COLA.

**2013 VALUATION:** No actuarially material changes are made to the plan provisions. There are two changes of note:

1. On June 20, 2013, the Board adopts the recommended economic and demographic assumptions proposed by the actuary as a result of the June 2012 experience study.
2. Changes noted in the 2012 valuation information, with effective dates in fiscal year 2013, were implemented.

**2014 VALUATION:** No actuarially material changes are made to the plan provisions. The 2014 valuation includes Hybrid Retirement Plan members for the first time. The hybrid plan covers eligible employees hired on or after January 1, 2014, in the state, teacher and judicial plans or Plan 1 and Plan 2 members who elected, during a one-time opt-in period, to be covered under the hybrid plan. The hybrid plan does not apply to members in the SPORS and VaLORS plans. The hybrid plan consists of defined benefit plan and defined contribution plan components.

**2015 VALUATION:** No actuarially material changes are made to the plan provisions. There are two changes of note:

1. An administrative expense charge was added to the employer contribution rates to cover administrative expenses.
2. The retirement rates for the judicial plan were extended to age 73 to reflect the change in the mandatory retirement age to 73.



Actuary's Certification Letter:  
OPEB Plans



**Cavanaugh Macdonald**  
CONSULTING, LLC  
*The experience and dedication you deserve*

December 18, 2015

**Board of Trustees**

Virginia Retirement System  
1200 E. Main Street  
Richmond, VA 23219

Dear Trustees:

We are pleased to submit the results of the annual actuarial valuation for the following other post-employment benefits plans (OPEB Plans) of the Virginia Retirement System (VRS), prepared as of June 30, 2015:

- Group Life Insurance Program (GLI)
- Health Insurance Credit Program (HIC)
  - State Employees (HIC – State Employees)
  - Teachers (HIC – Teachers)
- Participating Political Subdivisions in Aggregate (HIC – Political Subdivisions)
- Special Coverage Groups (HIC – Special Coverage Groups)
  - Constitutional Officers (HIC – Constitutional Officers)
  - Social Service Employees (HIC – State Employees)
  - Registrars (HIC – Registrars)
- Virginia Sickness and Disability Program (VSDP)
- Virginia Local Disability Program (VLDP)
  - Teachers (VLDP – Teachers)
- Political Subdivisions (VLDP – Political Subdivisions)

As described above, this report includes information, in aggregate, on the actuarial valuations of the Health Insurance Credit Program for participating Political Subdivisions as of June 30, 2015. We have prepared and provided separately, actuarial valuation reports for each of the participating Political Subdivisions. Please refer to the individual reports for the valuation results, summary of actuarial assumptions and methods, and plan provisions for each of the participating Political Subdivision plans.

Governmental Accounting Standards Board Statements No. 43 and No. 45 (GASB 43 and 45) require actuarial valuations of retiree health care and other post-employment benefits (OPEB). Cavanaugh Macdonald Consulting, LLC (CMC) is submitting the results of the annual actuarial valuation of the OPEB



Plans of VRS prepared as of June 30, 2015. While not verifying the data at source, the actuary performed tests for consistency and reasonability.

Contribution rates for VRS employers are established every two years. The actuarially calculated employer contribution rates based on the June 30, 2015, results presented in this report are for fiscal years ending 2017 and 2018. The actuarially calculated employer contribution rates based on the June 30, 2014, valuation presented in this report are for informational purposes only.

The valuation results indicate that the full employer contribution rates shown in the following table are sufficient to fund the normal cost for all members and finance the unfunded accrued liability of the indicated OPEB Plans. For comparison, in the following table, we present the employer contribution rates based on the June 30, 2014, actuarial valuation, the employer contribution rates approved by the General Assembly for fiscal years ending 2015 and 2016, and the employer contribution rates based on the June 30, 2015, actuarial valuation.

	Fiscal Years 2015 & 2016			Fiscal Years 2017 & 2018
	Board Approved	General Assembly Approved		
OPEB Plan	2013 Valuation		2014 Valuation	2015 Valuation
GLI*	1.32%	1.19%	1.31%	1.31%
HIC – State Employees	1.17%	1.05%	1.17%	1.18%
HIC – Teachers	1.18%	1.06%	1.20%	1.23%
HIC – Participating Political Subdivisions**	0.27%	0.27%	0.31%	0.31%
HIC – Constitutional Officers	0.36%	N/A	0.34%	0.36%
HIC – Social Service Employees	0.44%	N/A	0.40%	0.42%
HIC – Registrars	0.40%	N/A	0.39%	0.41%
VSDP	0.73%	0.66%	0.77%	0.66%
VLDP – Teachers	0.29%	0.29%	0.30%	0.31%
VLDP – Political Subdivisions	0.60%	0.60%	0.59%	0.60%

\* The contribution rate for GLI includes an adjustment of 0.34% for active group life insurance, see Section I for additional detail.

\*\* Arithmetic average of individual employer rate.

The promised post-employment benefits of the OPEB Plans are included in the actuarially calculated contribution rates which are developed using the assumed actuarial cost method with projected benefits. The valuation takes into account the differentiation between Plan 1 vested members, Plan 1 non-vested members as of January 1, 2013, resulting from HB 1130 and SB 498, Plan 2 members and Hybrid Retirement Plan members. Five-year smoothed market value of assets is used for actuarial valuation purposes (with the exception of HIC–Political Subdivisions and HIC–Special Coverage Groups). GASB 43 and 45 require the discount rate used to value a plan be based on the likely return of the assets used to pay benefits. As of June 30, 2015, the plan has assets in trust solely to provide benefits to eligible recipients.



Therefore, the discount rate has been set at 7.00%. In accordance with the funding policy adopted by the Board of Trustees, the unfunded liability is being amortized by regular annual contributions as a level percentage of payroll within a closed 30-year period for the unfunded liability as of July 1, 2013, and gains and losses in subsequent years are amortized within a closed 20-year period, on the assumption that payroll will increase by 3% annually and the amortization period will decrease by one each year until reaching 0 years. In the event that the funding policy produces an effective amortization period of greater than 30 years, a 30-year amortization period is used in accordance with GASB 43 and 45. The assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the OPEB Plans and to reasonable expectations of anticipated experience under the OPEB Plans and meet the parameters for the disclosures under GASB 43 and 45.

The annual required contribution was determined in accordance with the accounting requirements under GASB 43 and 45.

Our organization has only a contractual relationship with the Virginia Retirement System to provide actuarial consulting services and we do not provide other services to nor have a financial interest in the Virginia Retirement System. There are no known interests or relationships that our firm has with the Virginia Retirement System that may impair or appear to impair the objectivity of our work.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the OPEB Plans and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of VRS.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: Experience of the OPEB Plans differing from that anticipated by the economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the OPEB Plans' funded status); and changes in the provisions of the OPEB Plans or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jose I. Fernandez'.

Jose I. Fernandez, ASA, FCA, EA, MAAA  
Principal and Consulting Actuary

A handwritten signature in black ink, appearing to read 'Eric H. Gary'.

Eric H. Gary, FSA, FCA, MAAA  
Chief Health Actuary

Actuary's Certification Letter:  
OPEB Plans – Line of Duty Act Fund



**Cavanaugh Macdonald**  
CONSULTING, LLC  
*The experience and dedication you deserve*

December 18, 2015

**Board of Trustees**

Virginia Retirement System  
1200 E. Main Street  
Richmond, VA 23219

Dear Trustees:

Governmental Accounting Standards Board Statements No. 43 and No. 45 (GASB 43 and 45) require actuarial valuations of retiree health care and other post-employment benefit (OPEB) plans. Cavanaugh Macdonald Consulting, LLC (CMC) is submitting the results of the annual actuarial valuation of the Virginia Retirement System (VRS) Line of Duty Act Fund (Plan) prepared as of June 30, 2015.

CMC has relied on the plan provisions and eligibility provisions of the Commonwealth of Virginia's Line of Duty Program (LODA Program) provided by § 9.1-400 of the *Code of Virginia* (Code) and Item 264 of the 2015 Appropriations Act (the Act). Additionally, CMC has received active participant data from the Virginia Retirement System (VRS) and inactive data provided by the Commonwealth of Virginia Department of Accounts (DOA). CMC has reviewed the data for reasonableness only, and has not performed a formal audit of the data used for this valuation. Because the census data was collected from a wide range of sources with varying and, at times, limited content, the data is incomplete. Adjustments have been made to account for this incompleteness. Along with the valuation results, commentary is provided regarding the various aspects of developing the cost structure for LODA Program benefits to be financed through the Plan.

The valuation results are provided on a blended, single group cost basis comprised of two individual segments of the total population: state employees and political subdivision employees. State employees include state employees, Virginia law officers (VaLORS), state police (SPORS), Department of Motor Vehicles (DMV) employees, and the National Guard. Political subdivision employees include emergency medical technicians (EMTs), fire personnel, participating political subdivisions within VRS, as well as one retirement system independent of VRS.

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Projections estimate annual Full-Time Equivalent (FTE) employee contributions for the fiscal year 2017 and 2018 to be \$567.37. The estimated contribution rates assume Plan participation of 11,252.70 state FTE employees and 7,566.75 political subdivision FTE employees, for a total of 18,819.45 FTE employees. The contribution rates represent, in total, the estimated cost of providing benefits payable in fiscal year 2017 and 2018, including administrative expenses, the cost of benefits incurred and reported to the administrator but awaiting processing (additional reserves). Contribution rates for participating employer groups are established every two years. The actuarially calculated employer contribution rates based on the June 30, 2015, valuation are for fiscal years 2017 and 2018.

The results provided do not account for the potential, long-term incurred but not reported claims resulting from a lack of employer or beneficiary education about the Plan's benefits. The potential cost and liability for these claims may be considerable. A margin for these costs may need to be considered. Additionally, the State Comptroller may want to consider this potential risk in regards to its authority to waive the five-year statute of limitation on claims.

The promised death benefits and post-employment health care benefits provided through the Plan are included in all of the actuarially estimated contribution rates. The Plan is a cost-sharing, multiple-employer plan, and the liability for the Plan is developed and reported, as a whole, under the requirements of GASB Statement No. 43. The measurement of the cost-sharing employers' OPEB expense and liabilities under GASB Statement No. 45 is based upon employers' contractually required contributions to the Plan. The actuarially calculated contribution rates based upon the requirements of GASB 43 and 45 were developed using the entry age normal cost method with projected benefits. As the Act requires contributions to be determined on a current disbursement basis, the Plan has minimal assets in trust solely to provide benefits, and GASB 43 and 45 requires the discount rate used to value a plan to be based on the likely return of the assets used to pay benefits, the GASB 43 and 45 valuation results provided in this report reflect a discount rate of 4.75%. The assumed annual rate of return of 4.75% is assumed to be consistent with the long-term rate of return for Virginia's Local Government Investment Pool (LGIP). The unfunded accrued liability is being amortized by regular annual contributions as a level percentage of payroll within a 30-year period, on the assumption that payroll will increase by 3.00% annually. The assumptions recommended by the actuary are in the aggregate reasonably related to the experience under the Plan and to reasonable expectations of anticipated experience under the Plan and meet the parameters for the disclosures under GASB 43 and 45.

The valuation reflects changes in the actuarial assumptions and methods used in the prior study, including adjustments to the percentage of death benefit payments made as a direct or proximate result of the performance of duty, the assumed per capita health care costs, the assumed rates of health care inflation, and a change to the methodology used to determine costs for non-employer based health care coverage (e.g., individual policies).

Our organization has only a contractual relationship with the Virginia Retirement System to provide actuarial consulting services and we do not provide other services to nor have a financial interest in the Virginia Retirement System. There are no known interests or relationships that our firm has with the Virginia Retirement System that may impair or appear to impair the objectivity of our work.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted



actuarial procedures, based on the current provisions of the Plan and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of VRS. The aggregate assumptions recommended by the actuary are reasonably related to the experience under the Plan and are reasonable expectations of anticipated experience under the Plan.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: potential variance in the number and/or type of covered lives, Plan experience differing from that anticipated by the economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the Plan's funded status); and changes in Plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jose I. Fernandez', with a long, sweeping tail.

Jose I. Fernandez, ASA, FCA, EA, MAAA  
Principal and Consulting Actuary

A handwritten signature in black ink, appearing to read 'Eric H. Gary', with a stylized, cursive script.

Eric H. Gary, FSA, FCA, MAAA  
Chief Health Actuary

**T**he Actuarial Section for VRS-administered Other Post-Employment Benefit (OPEB) Plans presents information about the assumptions adopted by the Board of Trustees and used by the VRS actuaries to evaluate the funded status of these plans. This information includes assumptions about retirements, disabilities, terminations and salary increase rates. The section also provides a summary of OPEB plan provisions and changes.

## Summary of Actuarial Assumptions and Methods

On June 20, 2013, the VRS Board of Trustees adopted most of the actuarial assumptions and methods on the recommendation of its actuary. The following assumptions include the Group Life Insurance Program, the Retiree Health Insurance Credit Program, the Virginia Sickness and Disability Program, the Virginia Local Disability Program and the Line of Duty Act Program. They were based on an analysis of plan experience for the four-year period July 1, 2008, through June 30, 2012, and were used for the June 30, 2015, valuation.

### SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS: OTHER POST-EMPLOYMENT BENEFIT (OPEB) PLANS

FOR THE JUNE 30, 2015, ACTUARIAL VALUATION

Actuarial Assumptions and Methods	Group Life Insurance Program	Retiree Health Insurance Credit Program	Virginia Sickness and Disability Program	Line of Duty Act Program	Virginia Local Disability Program
Valuation Interest Rate	7.00%	7.00%	7.00%	4.75%	7.00%
Salary Scale Inflation Factor	2.50%	2.50%	2.50%	2.50%	2.50%
Actuarial Cost Method	Entry Age Normal	Entry Age Normal	LTD: Entry Age Normal LTC: Projected Unit Credit	Entry Age Normal	LTD: Entry Age Normal LTC: Projected Unit Credit
Effective Amortization Period – State	28.6 Years	28.0 Years	25.9 Years	30 Years	N/A
Effective Amortization Period – Teacher	28.6 Years	27.8 Years	N/A	N/A	20.1 Years
Effective Amortization Period – Political Subdivisions	28.6 Years	27.8 Years	N/A	30 Years	17.9 Years
Amortization Method	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay
	Closed	Closed	Closed	Closed	Closed
Payroll Growth Rate	3.00%	3.00%	3.00%	3.00%	3.00%
Assets Valuation Method – State and Teacher	5-Year Smoothed Market	5-Year Smoothed Market	5-Year Smoothed Market	Market Value	5-Year Smoothed Market
Assets Valuation Method – Political Subdivisions	5-Year Smoothed Market	Market Value *	N/A	Market Value	5-Year Smoothed Market

\* Includes state-funded retiree health insurance for certain local government employees.

**SOLVENCY TEST: OPEB PLANS**

(EXPRESSED IN THOUSANDS)

Valuation Date (June 30)	Aggregate Accrued Liabilities for			Valuation Assets	Portion of Accrued Liabilities Covered by Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members*		(1)	(2)	(3)
<b>GROUP LIFE INSURANCE</b>							
2015	N/A	\$ 1,633,937	\$ 1,195,167	\$ 1,128,876	N/A	69.09%	0.00%
2014	N/A	1,522,758	1,178,751	992,221	N/A	65.16%	0.00%
2013	N/A	1,422,423	1,149,268	836,547	N/A	58.81%	0.00%
2012	N/A	1,308,096	1,150,214	755,889	N/A	57.79%	0.00%
2011	N/A	1,228,335	1,130,642	852,424	N/A	69.40%	0.00%
2010	N/A	1,140,158	1,105,157	928,920	N/A	81.47%	0.00%
2009	N/A	995,206	999,593	967,188	N/A	97.18%	0.00%
2008***	N/A	912,508	858,862	974,869	N/A	100.00%	7.26%
<b>RETIREE HEALTH INSURANCE CREDIT – STATE EMPLOYEES**</b>							
2015	N/A	\$ 594,098	\$ 382,428	\$ 67,164	N/A	11.31%	0.00%
2014	N/A	577,291	384,851	60,645	N/A	10.51%	0.00%
2013	N/A	562,448	382,134	54,773	N/A	9.74%	0.00%
2012	N/A	542,874	374,294	55,510	N/A	10.23%	0.00%
2011	N/A	530,461	366,099	110,791	N/A	20.89%	0.00%
2010	N/A	521,153	373,888	159,163	N/A	30.54%	0.00%
2009	N/A	466,457	375,654	169,287	N/A	36.29%	0.00%
2008***	N/A	422,996	379,164	153,738	N/A	36.35%	0.00%
<b>RETIREE HEALTH INSURANCE CREDIT – TEACHERS</b>							
2015	N/A	\$ 786,781	\$ 538,634	\$ 85,379	N/A	10.85%	0.00%
2014	N/A	761,301	536,420	79,177	N/A	10.40%	0.00%
2013	N/A	728,612	529,180	67,012	N/A	9.20%	0.00%
2012	N/A	732,146	536,924	58,286	N/A	7.96%	0.00%
2011	N/A	707,436	522,769	85,933	N/A	12.15%	0.00%
2010	N/A	666,263	536,175	108,187	N/A	16.24%	0.00%
2009	N/A	614,050	494,120	115,880	N/A	18.87%	0.00%
2008***	N/A	554,541	523,484	98,266	N/A	17.72%	0.00%
<b>RETIREE HEALTH INSURANCE CREDIT – STATE-FUNDED LOCALITY BENEFITS</b>							
2015	N/A	\$ 22,440	\$ 18,172	\$ 2,042	N/A	9.10%	0.00%
2014	N/A	21,179	18,120	4,145	N/A	19.57%	0.00%
2013	N/A	20,001	17,794	1,510	N/A	7.55%	0.00%
2012	N/A	19,817	18,456	1,807	N/A	9.12%	0.00%
2011	N/A	18,271	18,406	2,338	N/A	12.80%	0.00%
2010	N/A	17,045	17,724	2,743	N/A	16.09%	0.00%
2009	N/A	15,289	16,049	3,040	N/A	19.88%	0.00%
2008***	N/A	14,960	19,726	3,311	N/A	22.13%	0.00%



**SOLVENCY TEST: OPEB PLANS, cont.**

(EXPRESSED IN THOUSANDS)

Valuation Date (June 30)	Aggregate Accrued Liabilities for			Valuation Assets	Portion of Accrued Liabilities Covered by Assets			
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members*		(1)	(2)	(3)	
<b>RETIREE HEALTH INSURANCE CREDIT – POLITICAL SUBDIVISIONS</b>								
2015	N/A	\$ 19,286	\$ 17,626	\$ 19,348	N/A	100.00%	0.35%	
2014	N/A	17,371	17,826	18,605	N/A	100.00%	6.92%	
2013	N/A	16,268	17,036	16,137	N/A	99.19%	0.00%	
2012	N/A	15,054	16,369	14,275	N/A	94.83%	0.00%	
2011	N/A	14,503	15,688	13,918	N/A	95.97%	0.00%	
2010	N/A	13,223	16,861	11,218	N/A	84.84%	0.00%	
2009	N/A	11,943	13,548	8,332	N/A	69.76%	0.00%	
2008***	N/A	15,388	12,722	8,553	N/A	55.58%	0.00%	
<b>VIRGINIA SICKNESS AND DISABILITY PROGRAM – LTD BENEFITS</b>								
2015	N/A	\$ 156,796	\$ 78,451	\$ 398,609	N/A	100.00%	308.23%	
2014	N/A	138,511	50,027	325,354	N/A	100.00%	373.48%	
2013	N/A	132,842	50,104	313,480	N/A	100.00%	360.53%	
2012	N/A	125,578	136,151	305,170	N/A	100.00%	131.91%	
2011	N/A	123,339	139,505	330,079	N/A	100.00%	148.20%	
2010	N/A	133,728	148,251	302,683	N/A	100.00%	113.97%	
2009	N/A	120,811	146,773	266,635	N/A	100.00%	99.35%	
2008***	N/A	147,518	215,357	286,164	N/A	100.00%	64.38%	
<b>LINE OF DUTY ACT PROGRAM</b>								
2015	N/A	\$ 169,288	\$ 76,520	\$ 696	N/A	0.41%	0.00%	
2014	N/A	152,120	73,696	6,914	N/A	4.55%	0.00%	
2013	N/A	139,835	64,249	10,084	N/A	7.21%	0.00%	
2012	N/A	131,501	94,673	6,052	N/A	4.60%	0.00%	
2011	N/A	207,186	191,770	–	N/A	0.00%	0.00%	
2010***	N/A	200,908	375,134	–	N/A	0.00%	0.00%	

\* Employer-financed portion.

\*\* State employees include state, SPORS, JRS, VaLORS, ORP and University of Virginia.

\*\*\* Data for prior fiscal years is unavailable.

The progress of a plan in accumulating assets to pay benefits when due can be measured by examining the extent to which assets accumulated for benefits cover 1) any active member contributions to the plan; 2) liabilities for future benefits to retirees and beneficiaries; and 3) liabilities for the employer-financed portion of service already rendered by active members. In a plan receiving actuarially determined employer contributions, the liabilities for future benefits to retirees and beneficiaries will generally be fully covered by accumulated assets. In addition, the liabilities for service already rendered will be partially covered by the remainder of the accumulated assets and will increase over time.

## SCHEDULE OF ACTIVE MEMBER VALUATION DATA: OPEB PLANS

Valuation Date (June 30)	Active Members			
	Number	Annual Payroll (000s)	Average Annual Pay	Annualized % Change in Average Pay
GROUP LIFE INSURANCE				
2015	360,873	\$ 17,813,570	\$ 49,362	1.44%
2014	360,855	17,559,285	48,660	2.56%
2013	361,080	17,132,176	47,447	2.47%
2012	360,602	16,696,961	46,303	0.36%
2011	358,536	16,542,753	46,140	0.97%
2010	361,644	16,526,260	45,698	-0.10%
2009	365,682	16,728,060	45,745	2.67%
2008**	365,103	16,267,352	44,556	N/A
RETIREE HEALTH INSURANCE CREDIT – STATE EMPLOYEES*				
2015	107,200	\$ 6,055,429	\$ 56,487	1.73%
2014	106,815	5,930,862	55,525	3.57%
2013	106,780	5,724,611	53,611	1.22%
2012	106,517	5,641,862	52,967	-0.91%
2011	105,186	5,622,425	53,452	5.21%
2010	105,106	5,340,134	50,807	0.45%
2009	107,791	5,452,111	50,580	0.79%
2008**	104,774	5,257,958	50,184	N/A
RETIREE HEALTH INSURANCE CREDIT – TEACHERS				
2015	147,645	\$ 7,488,507	\$ 50,720	1.25%
2014	146,977	7,362,793	50,095	2.61%
2013	147,257	7,188,884	48,819	2.60%
2012	147,216	7,004,577	47,580	0.46%
2011	146,152	6,922,130	47,363	-1.24%
2010	148,462	7,119,889	47,958	-0.37%
2009	148,762	7,160,842	48,136	3.29%
2008**	147,833	6,889,702	46,605	N/A
RETIREE HEALTH INSURANCE CREDIT – STATE-FUNDED LOCALITY BENEFITS				
2015	17,535	\$ 823,153	46,943	0.79%
2014	16,894	786,875	46,577	1.00%
2013	16,093	742,121	46,115	4.07%
2012	16,175	716,748	44,312	1.13%
2011	16,894	740,253	43,818	-0.02%
2010	17,021	745,952	43,825	-0.34%
2009	17,052	749,841	43,974	1.53%
2008**	16,168	700,231	43,310	N/A
VIRGINIA SICKNESS AND DISABILITY PROGRAM				
2015	74,367	\$ 3,627,297	48,776	1.21%
2014	74,399	3,585,486	48,193	2.94%
2013	74,178	3,472,669	46,815	0.50%
2012	73,707	3,433,322	46,581	0.08%
2011	72,440	3,371,773	46,546	5.10%
2010	71,529	3,167,849	44,288	0.04%
2009	73,003	3,231,897	44,271	0.15%
2008**	72,854	3,220,489	44,205	N/A

\* State employees include state, SPORS, JRS, VaLORS, ORP and University of Virginia.

\*\* Data for prior fiscal years is unavailable.

**SCHEDULE OF RETIREE AND BENEFICIARY VALUATION DATA: OPEB PLANS**

GROUP LIFE INSURANCE								
Retirees								
Valuation Valuation Date (June 30)	Added to Rolls		Removed from Rolls			Current Total Annual Life Insurance Amount	Annualized % Increase in Life Insurance Credit	Average Life Insurance Credit
	Number	Amount	Number	Amount	Total			
2015	11,429	1,275,150,000	4,519	840,576,000	166,148	\$7,803,680,000	5.90%	\$ 46,968
2014	10,922	1,206,647,000	4,306	843,669,000	159,238	7,369,106,000	5.18%	46,277
2013	10,511	1,148,100,000	4,203	800,829,000	152,622	7,006,128,000	5.22%	45,905
2012	9,828	1,064,957,000	3,905	773,058,000	146,314	6,658,865,000	4.58%	45,511
2011	11,216	1,205,369,000	4,325	714,803,000	140,391	6,366,958,000	8.35%	45,352
2010	10,048	1,074,004,000	2,577	614,199,000	133,500	5,876,393,000	8.49%	44,018
2009**	8,296	N/A	10,816	N/A	126,029	5,416,588,000	8.66%	42,979
2008**	N/A	N/A	N/A	N/A	128,549	4,984,937,000	N/A	38,778

RETIREE HEALTH INSURANCE CREDIT – STATE EMPLOYEES*								
Retirees								
Valuation Valuation Date (June 30)	Added to Rolls		Removed from Rolls			Current Total Annual Health Insurance Credit	Annualized % Increase in Health Insurance Credit	Average Annual Health Insurance Credit
	Number	Amount	Number	Amount	Total			
2015	2,869	4,226,000	1,618	2,357,000	43,440	\$ 64,524,000	2.98%	\$ 1,485
2014	2,652	4,044,000	1,548	2,212,000	42,189	62,655,000	3.01%	1,485
2013	2,542	3,765,000	1,503	2,112,000	41,085	60,823,000	2.79%	1,480
2012	2,539	3,784,000	1,453	2,065,000	40,046	59,170,000	2.99%	1,478
2011	2,684	4,009,000	1,986	2,841,000	38,960	57,451,000	2.08%	1,475
2010	3,521	5,685,000	1,279	1,784,000	38,262	56,283,000	7.45%	1,471
2009**	3,201	N/A	1,368	N/A	36,020	52,382,000	8.98%	1,454
2008**	N/A	N/A	N/A	N/A	34,187	48,067,000	N/A	1,406

RETIREE HEALTH INSURANCE CREDIT – TEACHERS								
Retirees								
Valuation Valuation Date (June 30)	Added to Rolls		Removed from Rolls			Current Total Annual Health Insurance Credit	Annualized % Increase in Health Insurance Credit	Average Annual Health Insurance Credit
	Number	Amount	Number	Amount	Total			
2015	3,465	4,714,000	1,493	2,016,000	60,093	82,955,000	3.36%	1,380
2014	3,729	5,075,000	1,291	1,752,000	58,121	80,257,000	4.32%	1,381
2013	3,557	5,016,000	1,389	1,918,000	55,683	76,934,000	4.20%	1,382
2012	3,240	4,426,000	1,214	1,649,000	53,515	73,836,000	3.91%	1,380
2011	4,073	5,776,000	1,163	1,568,000	51,489	71,059,000	6.29%	1,380
2010	3,216	4,545,000	1,101	1,483,000	48,579	66,851,000	4.80%	1,376
2009**	5,375	N/A	1,002	N/A	46,464	63,789,000	9.90%	1,373
2008**	N/A	N/A	N/A	N/A	42,091	58,045,000	N/A	1,379

**SCHEDULE OF RETIREE AND BENEFICIARY VALUATION DATA: OPEB PLANS, cont.**

VIRGINIA SICKNESS AND DISABILITY PROGRAM									
Valuation Date (June 30)	Disableds					Total	Current Total Annual LTD Payments	Annualized % Increase in LTD Payments	Average Annual LTD Payment
	Added to Rolls		Removed from Rolls		Total				
	Number	Amount	Number	Amount					
2015	466	7,293,000	325	4,112,000	2,842	\$ 31,126,000	13.95%	\$ 10,952	
2014	369	6,103,000	305	4,567,000	2,701	27,315,000	5.96%	10,113	
2013	401	6,256,000	434	4,707,000	2,637	25,779,000	6.39%	9,776	
2012	424	6,438,000	374	5,635,000	2,670	24,230,000	3.43%	9,075	
2011	411	6,262,000	365	6,252,000	2,620	23,427,000	0.04%	8,942	
2010	445	6,902,000	265	4,972,000	2,574	23,417,000	8.98%	9,098	
2009**	377	N/A	297	N/A	2,394	21,487,000	-3.64%	8,975	
2008**	N/A	N/A	N/A	N/A	2,314	22,299,000	N/A	9,637	

\* State employees includes state, SPORS, JRS, VaLORS, ORP and UVA.

\*\* Details of retirees added to and removed from the rolls were not available for these periods.

\*\*\* Data for prior fiscal years is unavailable.

**FIGURE 4.7: RETIREMENT RATES – OPEB PLANS**

Sample rates of retirement for members eligible to retire are shown below. For the Retiree Health Insurance Credit, 95% of the state employees, teachers, state police officers, Virginia law officers and judges who retire with 15 or more years of service will utilize the benefit. For all political subdivision employees, 85% of the employees with 15 or more years of service will utilize the benefit.

**State Employees**

Age	Plan 1				Plan 2 and Hybrid			
	Retirement with Less Than 30 Years of Service		Retirement with 30 or More Years of Service		Age and Service Meet Rule of 90			
	Male	Female	Male	Female	No	Yes		
50	3.00%	3.20%	10.00%	10.00%	0.00%	0.00%	35.00%	35.00%
55	5.00%	5.00%	10.00%	10.00%	0.00%	0.00%	10.00%	10.00%
59	5.00%	5.50%	10.00%	10.00%	0.00%	0.00%	10.00%	10.00%
60	5.00%	5.50%	10.00%	15.00%	5.00%	5.50%	10.00%	15.00%
61	10.00%	10.00%	15.00%	20.00%	10.00%	10.00%	15.00%	20.00%
62	15.00%	15.00%	25.00%	30.00%	15.00%	15.00%	25.00%	30.00%
64	15.00%	15.00%	20.00%	20.00%	15.00%	15.00%	20.00%	20.00%
65	30.00%	30.00%	30.00%	40.00%	30.00%	30.00%	30.00%	40.00%
67	30.00%	30.00%	25.00%	25.00%	30.00%	30.00%	25.00%	25.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**FIGURE 4.7: RETIREMENT RATES – OPEB PLANS, cont.**

**Teachers**

Age	Plan 1				Plan 2 and Hybrid			
	Retirement with Less Than 30 Years of Service		Retirement with 30 or More Years of Service		Age and Service Meet Rule of 90			
	Male	Female	Male	Female	No		Yes	
	Male	Female	Male	Female	Male	Female	Male	Female
50	2.00%	2.00%	17.50%	15.00%	0.00%	0.00%	40.00%	35.00%
55	5.70%	6.10%	22.50%	22.50%	0.00%	0.00%	22.50%	22.50%
59	7.00%	7.50%	22.50%	22.50%	0.00%	0.00%	22.50%	22.50%
60	7.50%	8.50%	22.50%	22.50%	7.50%	8.50%	22.50%	22.50%
61	11.00%	12.00%	30.00%	30.00%	11.00%	12.00%	30.00%	30.00%
62	17.00%	17.00%	35.00%	35.00%	17.00%	17.00%	35.00%	35.00%
64	18.00%	16.50%	30.00%	35.00%	18.00%	16.50%	30.00%	35.00%
65	30.00%	30.00%	40.00%	35.00%	30.00%	30.00%	40.00%	35.00%
67	30.00%	30.00%	40.00%	35.00%	30.00%	30.00%	40.00%	35.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

Age	Plan 1				Plan 2 and Hybrid			
	Reduced Retirement		Unreduced Retirement		Reduced Retirement		Unreduced Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
50	3.50%	3.50%	13.00%	15.60%	0.00%	0.00%	13.00%	15.60%
55	5.00%	5.00%	11.50%	14.30%	0.00%	0.00%	11.50%	14.30%
59	4.50%	6.00%	13.50%	13.40%	0.00%	0.00%	13.50%	13.40%
60	6.00%	7.50%	17.00%	12.80%	6.00%	7.50%	17.00%	12.80%
61	10.50%	10.00%	19.00%	17.70%	10.50%	10.00%	19.00%	17.70%
62	17.50%	15.50%	31.00%	28.00%	17.50%	15.50%	31.00%	28.00%
64	16.50%	17.00%	29.00%	18.30%	16.50%	17.00%	29.00%	18.30%
65	30.00%	30.00%	41.00%	29.60%	30.00%	30.00%	41.00%	29.60%
67	30.00%	30.00%	24.00%	33.20%	30.00%	30.00%	24.00%	33.20%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**FIGURE 4.7: RETIREMENT RATES – OPEB PLANS, cont.**

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

Age	Plan 1				Plan 2 and Hybrid			
	Reduced Retirement		Unreduced Retirement		Reduced Retirement		Unreduced Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
50	5.00%	4.00%	9.00%	8.00%	0.00%	0.00%	9.00%	8.00%
55	5.00%	5.50%	14.00%	11.50%	0.00%	0.00%	14.00%	11.50%
59	6.00%	5.00%	11.00%	11.50%	0.00%	0.00%	11.00%	11.50%
60	6.00%	7.50%	11.00%	13.00%	6.00%	7.50%	11.00%	13.00%
61	10.00%	7.50%	25.00%	17.50%	10.00%	7.50%	25.00%	17.50%
62	17.00%	17.00%	35.00%	25.00%	17.00%	17.00%	35.00%	25.00%
64	15.00%	13.00%	27.00%	17.50%	15.00%	13.00%	25.00%	25.00%
65	30.00%	30.00%	33.00%	40.00%	30.00%	30.00%	25.00%	25.00%
67	30.00%	30.00%	20.00%	25.00%	30.00%	30.00%	33.00%	40.00%
> = 70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	9.00%	25.00%
55	8.50%	18.00%
59	13.50%	31.50%
60	20.00%	35.00%
> = 65	100.00%	100.00%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – All Other Employers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	8.50%	25.00%
55	8.50%	17.50%
59	11.50%	28.50%
60	20.00%	35.00%
> = 65	100.00%	100.00%

**State Police Officers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	10.00%	15.00%
55	10.00%	15.00%
59	12.00%	20.00%
60	25.00%	40.00%
> = 64	100.00%	100.00%

**FIGURE 4.7: RETIREMENT RATES: OPEB PLANS, cont.**

**Virginia Law Officers – All Plans**

Age	Reduced Retirement	Unreduced Retirement
50	9.20%	25.00%
55	9.50%	25.00%
59	12.00%	40.00%
60	20.00%	40.00%
> = 65	100.00%	100.00%

**Judges – All Plans**

Age	Service Multiplier = 1.5 Years of Service			Service Multiplier = 2.0 Years of Service		
	2-19	20	>=21	2-14	15	> = 16
60	0.00%	50.00%	50.00%	0.00%	50.00%	50.00%
65	50.00%	50.00%	15.00%	50.00%	50.00%	15.00%
69	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
70	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
> = 73	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Age	Service Multiplier = 2.5 Years of Service			Service Multiplier = 3.5 Years of Service		
	2-11	12	> = 13	1-8	9	> = 10
60	0.00%	50.00%	50.00%	0.00%	50.00%	50.00%
65	50.00%	50.00%	15.00%	50.00%	50.00%	15.00%
69	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
70	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
> = 73	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

**FIGURE 4.8: DISABILITY RATES – OPEB PLANS**

As shown below for selected ages.

**State Employees**

14% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0900%	0.0100%
30	0.1800%	0.1500%
40	0.1800%	0.2900%
50	0.4500%	0.5500%
60	0.7200%	1.0000%

**FIGURE 4.8: DISABILITY RATES: OPEB PLANS, cont.**

**Teachers**

5% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0100%	0.0100%
40	0.0210%	0.0360%
50	0.1330%	0.0900%
60	0.3080%	0.2400%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

14% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0600%	0.0450%
40	0.1800%	0.0450%
50	0.2400%	0.1800%
60	0.7200%	0.4500%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

14% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0180%	0.0060%
30	0.0600%	0.0240%
40	0.1440%	0.1260%
50	0.3120%	0.4500%
60	0.8160%	0.5520%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

60% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0500%	0.0500%
40	0.1800%	0.2400%
50	0.4000%	0.5300%
60	0.6500%	0.8100%



**FIGURE 4.8: DISABILITY RATES – OPEB PLANS, cont.**

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

60% of disability cases are assumed to be service-related.

Age	Rate
20	0.0000%
30	0.0300%
40	0.1130%
50	0.3830%
60	0.6380%

**State Police Officers**

60% of disability cases are assumed to be service-related.

Age	Rate
20	0.0000%
30	0.0280%
40	0.2100%
50	0.6750%
60	0.0000%

**Virginia Law Officers**

50% of disability cases are assumed to be service-related.

Age	Rate
20	0.1500%
30	0.6000%
40	0.8000%
50	1.2000%
60	1.0000%

**Judges**

5% of disability cases are assumed to be service-related.

Age	Male	Female
20	0.0000%	0.0000%
30	0.0070%	0.0070%
40	0.1420%	0.0900%
50	0.4800%	0.3970%
60	0.0000%	0.0000%

**FIGURE 4.9: TERMINATION RATES – OPEB PLANS**

Withdrawal rates are based on age and years of service credit. Sample rates for selected ages and years of service are shown below for causes other than death, disability or retirement.

<b>State Employees – Plan 1</b>					<b>SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION</b>			
Years of Service – Males					Years of Service – Females			
Age	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	22.10%	13.00%	13.00%	0.00%	25.60%	15.70%	15.70%	0.00%
35	16.70%	9.30%	9.30%	4.50%	17.80%	11.00%	11.00%	5.00%
45	12.90%	7.00%	7.00%	2.30%	13.90%	7.40%	7.40%	2.50%
55	10.20%	6.00%	6.00%	0.00%	12.50%	6.00%	0.00%	0.00%
65	11.30%	11.00%	0.00%	0.00%	14.00%	12.00%	0.00%	0.00%

<b>State Employees – Plan 2 and Hybrid</b>					<b>SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION</b>			
Years of Service – Males					Years of Service – Females			
Age	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	22.10%	13.00%	13.00%	0.00%	25.60%	15.70%	15.70%	0.00%
35	16.70%	9.30%	9.30%	4.50%	17.80%	11.00%	11.00%	5.00%
45	12.90%	7.00%	7.00%	2.30%	13.90%	7.40%	7.40%	2.50%
55	10.20%	6.00%	6.00%	0.40%	12.50%	6.00%	6.00%	0.40%
65	11.30%	11.00%	0.00%	0.00%	14.00%	12.00%	0.00%	0.00%

<b>Teachers – Plan 1</b>					<b>SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION</b>			
Years of Service – Males					Years of Service – Females			
Age	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	15.40%	11.80%	11.80%	0.80%	14.60%	12.00%	12.00%	15.00%
35	14.10%	7.30%	7.30%	3.10%	14.90%	9.00%	9.00%	3.90%
45	14.70%	7.50%	7.50%	1.90%	11.70%	6.40%	6.40%	2.10%
55	14.30%	7.00%	0.00%	0.00%	12.40%	5.80%	0.00%	0.00%
65	17.00%	8.30%	0.00%	0.00%	13.00%	8.00%	0.00%	0.00%

<b>Teachers – Plan 2 and Hybrid</b>					<b>SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION</b>			
Years of Service – Males					Years of Service – Females			
Age	0-2	3-4	5-9	10+	0-2	3-4	5-9	10+
25	15.40%	11.80%	11.80%	0.80%	14.60%	12.00%	12.00%	15.00%
35	14.10%	7.30%	7.30%	3.10%	14.90%	9.00%	9.00%	3.90%
45	14.70%	7.50%	7.50%	1.90%	11.70%	6.40%	6.40%	2.10%
55	14.30%	7.00%	7.00%	0.30%	12.40%	5.80%	5.80%	0.30%
65	17.00%	8.30%	0.00%	0.00%	13.00%	8.00%	0.00%	0.00%

**FIGURE 4.9: TERMINATION RATES – OPEB PLANS, cont.**

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION							
Age	Years of Service – Males			Years of Service – Females			
	0-2	3-9	10+	0-2	3-9	10+	
25	21.80%	13.70%	0.00%	23.30%	16.70%	0.00%	
35	17.20%	9.70%	5.80%	18.60%	10.60%	5.10%	
45	14.30%	7.10%	2.90%	14.80%	7.70%	2.80%	
55	10.90%	5.30%	0.70%	11.90%	6.30%	0.00%	
65	13.60%	8.20%	0.00%	12.60%	8.20%	0.00%	

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION							
Age	Years of Service – Males			Years of Service – Females			
	0-2	3-9	10+	0-2	3-9	10+	
25	23.50%	14.00%	0.00%	25.50%	16.50%	0.00%	
35	18.50%	10.50%	5.50%	19.00%	11.50%	6.00%	
45	15.50%	8.00%	3.00%	15.00%	8.00%	3.50%	
55	12.00%	6.50%	1.00%	12.50%	6.50%	0.00%	
65	12.00%	8.00%	0.00%	13.00%	9.00%	0.00%	

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION							
Age	Years of Service – Males			Years of Service – Females			
	0-2	3-9	10+	0-2	3-9	10+	
25	7.80%	6.80%	0.00%	7.80%	6.80%	0.00%	
35	8.00%	4.40%	2.40%	8.00%	4.40%	2.40%	
45	9.20%	4.60%	1.50%	9.20%	4.60%	1.50%	
55	8.30%	6.30%	0.00%	8.30%	6.30%	0.00%	
60	8.70%	6.50%	0.00%	8.70%	6.50%	0.00%	

**FIGURE 4.9: TERMINATION RATES – OPEB PLANS, cont.**

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits –  
All Other Employers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION						
Age	Years of Service – Males			Years of Service – Females		
	0-2	3-9	10+	0-2	3-9	10+
25	13.00%	8.50%	0.00%	13.00%	10.00%	0.00%
35	11.00%	7.00%	3.80%	14.00%	8.00%	4.50%
45	13.00%	6.00%	2.40%	12.00%	6.00%	3.50%
55	15.00%	8.00%	0.50%	12.00%	5.00%	0.50%
60	11.00%	10.00%	0.50%	12.00%	5.00%	0.50%

**State Police Officers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION								
Age	Years of Service – Males				Years of Service – Females			
	0-2	3-4	5-9	10+	2	5	9	10+
25	7.50%	5.50%	5.50%	3.00%	10.80%	10.50%	5.40%	4.40%
35	7.50%	4.80%	4.80%	2.40%	12.10%	7.40%	6.00%	6.10%
45	10.00%	4.50%	4.50%	1.40%	10.80%	8.20%	6.40%	5.90%
55	10.00%	6.70%	0.00%	0.00%	7.40%	12.60%	6.70%	4.10%
65	10.00%	7.50%	0.00%	0.00%	1.50%	20.50%	6.90%	0.60%

**Virginia Law Officers – All Plans**

SEPARATIONS FROM ACTIVE SERVICE DUE TO TERMINATION						
Age	Years of Service – Males			Years of Service – Females		
	0-2	3-9	10+	0-2	3-9	10+
25	20.00%	15.00%	5.00%	20.00%	15.00%	7.50%
35	20.00%	12.50%	5.00%	20.00%	12.50%	6.00%
45	15.00%	10.50%	4.00%	17.50%	8.00%	4.00%
55	12.00%	6.50%	4.00%	10.00%	12.00%	4.00%
65	15.00%	7.00%	4.00%	10.00%	10.00%	4.00%

**Judges**

There are no assumed rates of withdrawal prior to service retirement for causes other than death, disability or retirement.

**FIGURE 4.10: SALARY INCREASE RATES – OPEB PLANS**

The sample salary increase rates are shown below. These factors are not applicable to the Line of Duty Act program since neither the benefit nor the cost are salary-based.

**State Employees**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown. It is assumed state employees who are covered under the Virginia Sickness and Disability Program (VSDP) receive a 3.50% annual increase in pay while disabled. This adjusted pay is used to determine deferred retirement benefits payable from the System.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.85%	5.35%
3	1.25%	4.75%
6	0.95%	4.45%
9	0.50%	4.00%
11	0.15%	3.65%
15	0.15%	3.65%
19	0.15%	3.65%
20 or more	0.00%	3.50%

**Teachers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	2.45%	5.95%
3	2.35%	5.85%
6	1.95%	5.45%
9	1.85%	5.35%
11	1.35%	4.85%
15	1.15%	4.65%
19	0.95%	4.45%
20 or more	0.00%	3.50%

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.85%	5.35%
3	1.25%	4.75%
6	0.95%	4.45%
9	0.50%	4.00%
11	0.15%	3.65%
15	0.15%	3.65%
19	0.15%	3.65%
20 or more	0.00%	3.50%

**FIGURE 4.10: SALARY INCREASE RATES – OPEB PLANS, cont.**

**Political Subdivision Employees Not Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.85%	5.35%
3	1.25%	4.75%
6	0.95%	4.45%
9	0.50%	4.00%
11	0.15%	3.65%
15	0.15%	3.65%
19	0.15%	3.65%
20 or more	0.00%	3.50%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – Ten Largest Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**Political Subdivision Employees Receiving Enhanced Hazardous Duty Benefits – All Other Employers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**FIGURE 4.10: SALARY INCREASE RATES – OPEB PLANS, cont.**

**State Police Officers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown. It is assumed state police officers who are covered under the Virginia Sickness and Disability Program (VSDP) receive a 3.50% annual increase in pay while disabled. This adjusted pay is used to determine deferred retirement benefits payable from the System.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**Virginia Law Officers**

Inflation of 2.50% plus a productivity component of 1.00% and a step-rate/promotional component as shown. It is assumed Virginia law officers who are covered under the Virginia Sickness and Disability Program (VSDP) receive a 3.50% annual increase in pay while disabled. This adjusted pay is used to determine deferred retirement benefits payable from the System.

Years of Service	Annual Step-Rate/Promotional Rates of Increase	Total Annual Rate of Increase
1	1.25%	4.75%
3	1.25%	4.75%
6	0.90%	4.40%
9	0.90%	4.40%
11	0.50%	4.00%
15	0.50%	4.00%
19	0.50%	4.00%
20 or more	0.00%	3.50%

**Judges**

Salary increase rates are 4.50%.

### FIGURE 4.11: PORTING RATES – LONG-TERM CARE

Porting rates represent the probability that an individual will choose to port the coverage upon employment termination. Porting rates are assumed to increase with longevity because the contributions for terminated employees are based upon the age at which they started the program (either 2002 or age at hire, if later).

#### Current Selected Policy Porting Rate Assumptions by Policy Issue Age and Policy Duration

Issue Age	Policy Duration (years)				
	0	10	20	30	40
30	0.1000	0.1234	0.2185	0.4537	0.7574
40	0.1000	0.1608	0.3423	0.5526	0.9230
50	0.1027	0.2244	0.4116	0.6790	1.0000
60	0.1162	0.2667	0.4986	0.8407	1.0000
70	0.1485	0.3308	0.6099	0.9985	1.0000
80	0.1875	0.4043	0.7524	1.0000	1.0000
90	0.2012	0.4601	0.9347	1.0000	1.0000
100	0.2171	0.5261	1.0000	1.0000	1.0000
110	0.2354	0.6042	1.0000	1.0000	1.0000

#### ADDITIONAL INFORMATION ABOUT ACTUARIAL ASSUMPTIONS AND METHODS:

#### OTHER POST-EMPLOYMENT BENEFIT (OPEB) PLANS

#### MORTALITY RATES:

- **Pre-Retirement:** RP-2000 Employee Mortality Table Projected with Scale AA to 2020:
  - State – Males set forward 2 years and females set back 3 years
  - Teachers – Males set back 3 years and females set back 5 years
  - State Police – Males set forward 5 years and females set back 3 years
  - VaLORS – Males set forward 5 years and females set back 3 years
  - Judicial – Males set forward 2 years and females set back 3 years

- Political subdivisions, Non-LEOS – Males set forward 4 years and females set back 2 years
- Political subdivisions, LEOS – Males set back 2 years and females set back 2 years
- **Post-Retirement:** RP-2000 Combined Mortality Table Projected with Scale AA to 2020:
  - State – Females set back 1 year
  - Teachers – Males set back 2 years and females set back 3 years
  - State Police – Females set back 1 year
  - VaLORS – Females set back 1 year
  - Judicial – Females set back 1 year
  - Political subdivisions, Non-LEOS – Males set forward 1 year
  - Political subdivisions, LEOS – Males set forward 1 year



- **Post-Disablement:** RP-2000 Disability Life Mortality Table:
  - State – Males set back 3 years and no provision for future mortality improvement
  - Teachers – Males set back 1 year and no provision for future mortality Improvement
  - State Police – Males set back 3 years and no provision for future mortality improvement
  - VaLORS – Males set back 3 years and no provision for future mortality improvement
  - Judicial – Males set back 3 years and no provision for future mortality improvement
  - Political subdivisions, Non-LEOS – Males set back 3 years and no provision for future mortality improvement
  - Political subdivisions, LEOS – Males set back 3 years and no provision for future mortality improvement

**Provision for Expense.** The assumed investment return represents the anticipated net rate of return after payment of all administrative expenses.

**Asset Valuation Method.** For the Group Life Insurance Program, the state and teacher employer groups for the Retiree Health Insurance Credit Program, VSDP and VLDP, the method of valuing assets is intended to recognize a “smoothed” market value of assets. Under this method, the difference between actual return on market value from investment experience and the expected return on market value is recognized over a five-year period. The resulting actuarial value of assets cannot be less than 80% or more than 120% of the market value of assets. For the Line of Duty Act Program and the political subdivision employer groups in the Retiree Health Insurance Credit Program or employees who are eligible for the state-funded benefit for Constitutional Officers and their employees, General Registrars and their employees and local Social Services employees., the actuarial value of assets is equal to the market value of assets.

**Actuarial Cost Method.** For the Group Life Insurance, Retiree Health Insurance Credit Programs, VSDP, VLDP and the Line of Duty Act Program, the normal contribution is determined using the entry age normal method. Under this method, a calculation is made for the cost of benefits to determine the uniform and constant percentage rate of the employer contribution which, if applied to the compensation of the average new member during the entire period of the member’s anticipated covered service, would meet the cost of all benefits payable on the member’s behalf. The unfunded accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions from the present value of the expected benefits to be paid. The accrued liability contribution amortizes the balance of the unfunded accrued actuarial liability (UAAL) over a period of years from the valuation date.

**Actuarial Gains and Losses.** Actuarial gains and losses are reflected in the unfunded actuarial accrued liability and are amortized as part of that balance.

**Payroll Growth Rates.** The payroll growth rate is assumed to be 3.00% based on a zero population growth assumption.

**Funding Period.** For all programs, the amortization of the legacy UAAL began at 30 years on June 30, 2013, and this amortization period is to decrease by one year on each subsequent valuation date until the legacy UAAL is fully amortized (amortization period is 0 years). With each subsequent valuation, a new amortization base will be used to amortize that portion of the UAAL not covered by the current balances of the previously established amortization bases. Here, each Valuation’s newly allocated share of the UAAL will be amortized over a closed 20-year period. In the event this funding policy produces an effective amortization period of greater than 30 years, a 30-year amortization period for the aggregate UAAL is used in accordance with GASB 43 and 45.

## Summary of Other Post-Employment Benefit Plan Provisions

### Group Life Insurance Program

#### ADMINISTRATION

The plan is administered by the Board of Trustees of the Virginia Retirement System (the System). Contributions received are held in trust. Payments are made to the Minnesota Life Insurance Company as reimbursement for the payment of life insurance proceeds to the beneficiaries.

An addition to the contribution requirement for the active member benefit provides for the retiree death benefit. The active portion of the contribution is used to purchase group term life insurance from an insurance company; the retired member portion is held in a trust until required for benefit payments. When a covered retiree dies, the Minnesota Life Insurance Company pays the insurance claim and then collects a premium equal to the cost of the claim.

The retired member contribution is determined actuarially. The Board sets administrative policy and determines the allocation of the assets held for investment.

#### ELIGIBILITY

The following employees are covered under the Group Life Insurance Program upon employment:

- Full-time permanent, salaried employees of the Commonwealth of Virginia, including state employees, faculty members of the state's public colleges and universities, state police officers (SPORS), Virginia law officers (VaLORS) and judicial employees (JRS);
- Full-time permanent, salaried teachers and other administrative employees of local public school divisions;

- Full-time permanent, salaried sheriffs, deputy sheriffs and other eligible non-hazardous duty and hazardous duty employees of political subdivisions that have elected to participate in the Group Life Insurance Program; and
- Employees of five localities that do not participate in VRS for retirement: City of Richmond, City of Portsmouth, City of Roanoke, City of Norfolk and Roanoke City School Board.

Certain members who were employed at the time of initial coverage under the Group Life Insurance Program had the option to decline coverage.

#### ACTIVE MEMBER BENEFIT

Active members are covered for the following benefits:

- Natural death benefit equal to the member's compensation rounded to the next highest thousand and then doubled
- Accidental death benefit, which is double the natural death benefit
- Accidental dismemberment benefit, safety belt benefit, repatriation benefit, felonious assault benefit and an accelerated death benefit option

Covered employees may elect additional coverage for themselves as well as a spouse or dependent children through the Optional Group Life Insurance Program. Optional group life benefits are not included in the valuations of the OPEB plans.

#### RETIREE BENEFIT

**1. Service Retirement.** A death benefit equal to the active member's natural death benefit and the accelerated death benefit option continue for retirees and for deferred members who have met the eligibility requirements for retirement upon leaving employment. Coverage begins to reduce by 25% on the January 1 following one calendar year of retirement and by 25% each January 1 thereafter, until it reaches 25% of its original value. If a

member has at least 30 years of creditable service, that coverage cannot reduce below \$8,000. The minimum will be increased annually based on the VRS Plan 2 cost-of-living adjustment calculation.

**2. Disability Retirement.** The benefits available to disability retirees are the same as those for service retirees, except that the first 25% annual reduction begins on the January 1 following the first full year from the date the retiree reaches normal retirement age.

## Retiree Health Insurance Credit Program

### ADMINISTRATION

The plan is administered by the System’s Board of Trustees. Contributions received are held in trust. The Board sets administrative policy and determines the allocation of the assets held for investment.

### ELIGIBILITY

The health insurance credit is a tax-free reimbursement in an amount set by the General Assembly for each year of service credit against the portion of qualified health insurance premiums retirees pay for single coverage. The credit cannot exceed the amount of the premium and ends upon the retiree’s death.

If a member has worked for more than one employer under VRS, SPORS, VaLORS or JRS, for the purpose of this valuation, the most current (or last) employer assumes the full liability for that employee.

## CREDIT AMOUNTS

The dollar amounts vary depending on the employee type, as shown in the following table:

### Health Insurance Credit Dollar Amounts at Retirement

ELIGIBLE EMPLOYEES	AMOUNT PER YEAR OF SERVICE	MAXIMUM CREDIT PER MONTH
State employees	\$ 4.00	No Cap
Teachers and other administrative school employees	\$ 4.00	No Cap
General registrars and their employees, constitutional officers and their employees and local social service employees	\$ 1.50	\$45.00
General registrars and their employees, constitutional officers and their employees and local social service employees, if the political subdivision elects the \$1.00 enhancement	\$ 2.50	\$75.00
Other political subdivision employees as elected by the employer	\$ 1.50	\$45.00

## Virginia Sickness and Disability Program (VSDP)

### ADMINISTRATION

The plan is administered by the System’s Board of Trustees. Contributions received are held in trust. The Board sets administrative policy and determines the allocation of the assets held for investment.

### ELIGIBILITY

The following state employees are covered automatically under the Virginia Sickness and Disability Program (VSDP) upon employment:

- Full-time permanent, salaried employees of the Commonwealth of Virginia (VRS) and part-time permanent, salaried state employees who work at least 20 hours a week;
- Public college and university faculty members who elect to participate in VRS instead of an

optional retirement plan. These faculty members can elect VSDP or a disability plan offered by their institution;

- Full-time permanent, salaried state police officers (SPORS); and
- Full-time permanent, salaried Virginia law officers other than state police (VaLORS).

State employees hired before January 1, 1999, had the option to elect VSDP or retain their eligibility to be considered for disability retirement.

### SHORT-TERM AND LONG-TERM DISABILITY BENEFITS

VSDP coverage provides short-term and long-term disability benefits for non-work-related and work-related illnesses and injuries. Eligible members who become disabled receive short-term disability benefits for up to 125 workdays, following a seven-calendar day waiting period from the first day of disability. Members who are still disabled after 125 workdays are evaluated for long-term disability. Members hired or rehired on or after July 1, 2009, must satisfy eligibility periods for non-work-related disability coverage and certain income replacement levels.

The long-term disability benefit provides income replacement equal to 60% of the member's pre-disability income. While members are on long-term disability, they are not considered employees of the Commonwealth of Virginia. Members who can work at least 20 hours a week but cannot perform their full duties may be eligible for long-term disability benefits while working. They must have returned to work with modified duties while on short-term disability.

The long-term disability benefit is adjusted by any salary, wages, workers' compensation benefits or other disability payments the member receives for the same condition. If a member's condition becomes catastrophic, income replacement will increase to 80% of pre-disability income for as long as the condition is considered catastrophic. A disability is determined to be catastrophic if a member is unable to perform at least two of a specified list of activities of daily living without assistance.

Long-term disability benefits end if the member can perform the full duties of his or her pre-disability position without any restrictions during the first 24 months of disability; can perform the regular duties of any job for which the member is reasonably qualified after 24 months of disability and earning 80% or more of his or her pre-disability income; takes a refund of his or her member contributions and interest; does not cooperate or comply with the requirements of VSDP; or begins receiving a VRS service retirement benefit. Benefits also end in the event of the member's death.

### VSDP LONG-TERM CARE PLAN

VSDP plan members are eligible for no-cost long-term care coverage under the VSDP Long-Term Care Plan. The plan provides a two-year maximum coverage period with a maximum \$96-per-day daily benefit for nursing home care and other covered services. The benefit of many of the other services is less than the nursing home benefit, which means those needing these services will take longer to reach their lifetime maximum amount, resulting in longer coverage duration.

Benefits begin after 90 days from the date the member is certified by a licensed healthcare professional as eligible for benefits. The benefit schedule includes the possibility of an increase for inflation every five years in the amount of 5.00% compounded annually since the last inflation increase. Since such increases are not pre-funded, they are accompanied by a corresponding increase in contributions. Upon retirement or termination from employment, VSDP plan members may elect to continue their long-term care coverage by paying the premiums.

## Virginia Local Disability Program (VLDP)

### ADMINISTRATION

The plan is administered by the System's Board of Trustees. Contributions received are held in trust. The Board sets administrative policy and determines the allocation of the assets held for investment.

## ELIGIBILITY

The following state employees are covered automatically under the Virginia Local Disability Program (VLDP) upon employment:

- Full-time permanent, salaried Hybrid Retirement Plan employees of participating local public school divisions (teachers); and
- Full-time permanent, salaried Hybrid Retirement Plan employees of participating political subdivisions.

## SHORT-TERM AND LONG-TERM DISABILITY BENEFITS

VLDP coverage provides short-term and long-term disability benefits for non-work-related and work-related illnesses and injuries. Eligible members who become disabled receive short-term disability benefits for up to 125 workdays, following a seven-calendar day waiting period from the first day of disability. Members who are still disabled after 125 workdays are evaluated for long-term disability.

The long-term disability benefit provides income replacement equal to 60% of the member's pre-disability income. While members are on long-term disability, they are not considered employees. Members who can work at least 20 hours a week but cannot perform their full duties may be eligible for long-term disability benefits while working. They must have returned to work with modified duties while on short-term disability.

The long-term disability benefit is adjusted by any salary, wages, workers' compensation benefits or other disability payments the member receives for the same condition. If a member's condition becomes catastrophic, income replacement will increase to 80% of pre-disability income for as long as the condition is considered catastrophic. A disability is determined to be catastrophic if a member is unable to perform at least two of a specified list of activities of daily living without assistance.

Long-term disability benefits end if the member can perform the full duties of his or her pre-disability

position without any restrictions during the first 24 months of disability; can perform the regular duties of any job for which the member is reasonably qualified after 24 months of disability and earning 80% or more of his or her pre-disability income; takes a refund of his or her member contributions and interest; does not cooperate or comply with the requirements of VLDP; or begins receiving a VRS service retirement benefit. Benefits also end in the event of the member's death.

## VLDP LONG-TERM CARE PLAN

VLDP plan members are eligible for no-cost long-term care coverage under the VSDP Long-Term Care Plan. The plan provides a two-year maximum coverage period with a maximum \$96-per-day daily benefit for nursing home care and other covered services. The benefit of many of the other services is less than the nursing home benefit, which means those needing these services will take longer to reach their lifetime maximum amount, resulting in longer coverage duration.

Benefits begin after 90 days from the date the member is certified by a licensed healthcare professional as eligible for benefits. The benefit schedule includes the possibility of an increase for inflation every five years in the amount of 5.00% compounded annually since the last inflation increase. Since such increases are not pre-funded, they are accompanied by a corresponding increase in contributions. Upon retirement or termination from employment, VLDP plan members may elect to continue their long-term care coverage by paying the premiums.

## Line of Duty Act Program

### ADMINISTRATION

The plan is administered by the System's Board of Trustees. Contributions received are held in trust. The Board sets administrative policy and determines the allocation of the assets held for investment.

### ELIGIBILITY

Members of SPORS and VaLORS as well as members of VRS who are eligible for enhanced

hazardous duty coverage are covered under the Line of Duty Act. Paid employees and volunteers in hazardous duty positions in all VRS-participating and non-VRS participating localities also are covered under the act.

## BENEFITS

Coverage provides death and health insurance benefits, which are administered by the Virginia Department of Accounts (DOA). The System is responsible for managing the assets of the Line of Duty Act Fund.

### Summary of OPEB Plan Changes

The following changes have occurred to the OPEB plan provisions.

**2009 VALUATION:** No actuarially material changes are made to the plan provisions. There are two changes of note:

1. On April 16, 2009, the Board adopts the recommended economic and demographic assumptions proposed by the actuary as a result of the June 2008 actuarial experience study.
2. For the June 30, 2009, valuation, the Board suspends application of the 80% to 120% market value-of-assets corridor on the actuarial value of assets for the Group Life Insurance Program and the Retiree Health Insurance Credit Program.

**2010 VALUATION:** No actuarially material changes are made to the plan provisions. There are two changes of note:

1. For the June 30, 2010, valuation, the application of the 80% to 120% market value-of-assets corridor on the actuarial value of assets is reinstated.
2. The Board reduces the investment rate-of-return assumption for the Group Life Insurance Program, the Retiree Health Insurance Credit Program and the Virginia Sickness and Disability Program (VSDP) from 7.50% to 7.00%.

**2011 VALUATION:** No actuarially material changes are made to the plan provisions.

**2012 VALUATION:** The changes resulting from recent legislation are listed below:

1. Under House Bill 791, effective July 1, 2012, the life insurance amount reduction start date for disabled retirees was changed to January 1 following the first full year from the date the retiree reaches normal retirement age.
2. In 2012 HB 1130/SB 498 was enacted and was effective on January 1, 2013, requiring that active non-vested members of Plan 1 have to satisfy the Rule of 90 (sum of

age and service at least 90) or reach their Social Security normal retirement age to be eligible for unreduced retirement. These same members must attain age 60 with five years of service to be eligible for early retirement. This provision applies to the state and teacher plans and to members of political subdivision plans who are not covered by hazardous duty benefits. In addition, state employees on LTD are assumed to receive cost-of-living adjustments to their LTD benefits in an amount of 2.25% per year, compounded annually.

3. Benefit offset adjustments for VSDP were adjusted to reflect actual VRS experience.

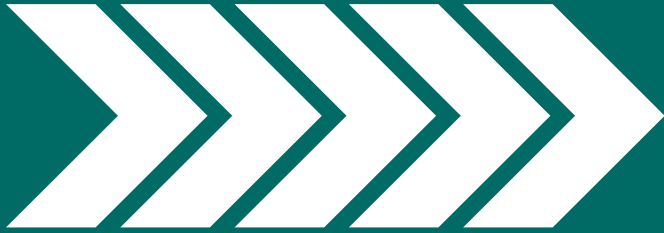
**2013 VALUATION:** No actuarially material changes are made to the plan provisions. There are two changes of note:

1. On June 20, 2013, the Board adopts the recommended economic and demographic assumptions proposed by the actuary as a result of the June 2012 experience study.
2. Changes noted in the 2012 Valuation information, with effective dates in FY 2013 were implemented.

**2014 VALUATION:** No actuarially material changes are made to the plan provisions. The 2014 valuation includes Hybrid Retirement Plan members for the first time. The hybrid plan covers eligible employees hired on or after January 1, 2014, in the state, teacher and judicial plans or Plan 1 or Plan 2 members who elected during a one-time opt-in period, to be covered under the hybrid plan. The hybrid plan does not apply to members in the SPORS and VaLORS plans. The hybrid plan consists of defined benefit plan and defined contribution plan components.

**2015 VALUATION:** No actuarially material changes are made to the plan provisions. There are two changes of note:

1. An administrative expense charge was added to the employer contribution rates to cover administrative expenses.
2. The retirement rates for the judicial plan were extended to age 73 to reflect the change in the mandatory retirement age to 73.



## 5 Statistical Section

### Pension Trust Funds:

- Schedule of Retirement Contributions by System and Plan
- Schedule of Pension Trust Fund Additions by Source
- Schedule of Pension Trust Fund Deductions by Type
- Schedule of Retirement Benefits by System and Plan
- Schedule of Retirement Benefits by Type
- Schedule of Refunds by Type
- Schedule of Retirees and Beneficiaries by Type of Retirement
- Schedule of Retirees and Beneficiaries by Type of Retirement and Plan
- Schedule of Retirees and Beneficiaries by Payout Option Selected
- Schedule of Average Benefit Payments
- Schedule of Funding (Market Value Basis): All Pension Plans
- Schedule of Funding (Market Value Basis): VRS Pension Plans

### Other Employee Benefit Trust Funds:

- Schedule of Group Life Insurance Additions by Source
- Schedule of Group Life Insurance Deductions by Type
- Schedule of Retiree Health Insurance Credit Additions by Source
- Schedule of Retiree Health Insurance Credit Deductions by Type
- Schedule of Disability Insurance Trust Fund Additions by Source
- Schedule of Disability Insurance Trust Fund Deductions by Type
- Schedule of Retired Members and Beneficiaries by Plan
- Schedule of Average Benefit Payments by Plan

### VRS-Participating Employers

- Commonwealth of Virginia 457 Deferred Compensation and Cash Match Plans





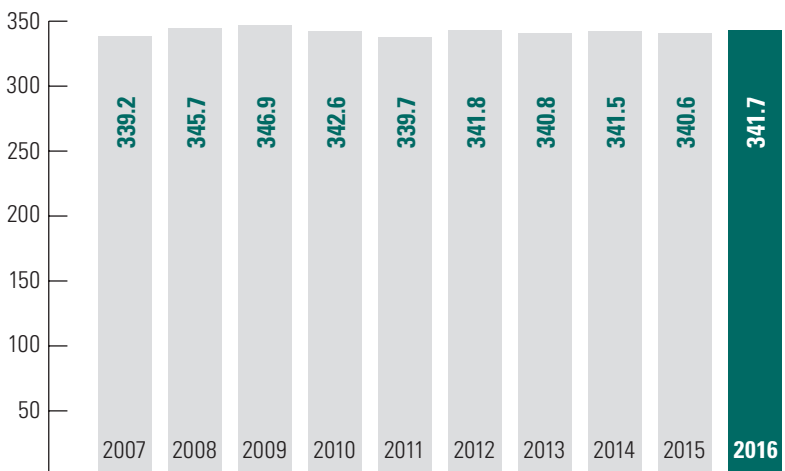
The Statistical Section presents detailed historical information regarding the pension and other employee benefit plans administered by the System. This information includes a 10-year analysis of changes in plan net position, plan enrollment, contributions, plan additions and deductions, benefits and refunds. In addition, this section provides information regarding retirees and an analysis of funding, enrollment and investment activity related to the Commonwealth of Virginia 457 Deferred Compensation Plan and the Virginia Cash Match Plan. The Statistical Section also lists the employers as of the end of the fiscal year.

## Pension Trust Funds

**FIGURE 5.1: ANALYSIS OF CHANGES AND GROWTH IN NET FIDUCIARY POSITION – ALL PENSION TRUST FUNDS**  
FOR THE YEARS ENDED JUNE 30 (EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$47,627</b>	<b>\$56,890</b>	<b>\$53,600</b>	<b>\$41,348</b>	<b>\$46,287</b>	<b>\$53,151</b>	<b>\$52,091</b>	<b>\$56,979</b>	<b>\$64,522</b>	<b>\$66,431</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	1,944	2,148	2,097	1,862	1,549	1,821	2,600	2,697	3,250	3,375
Benefits and Administrative Expenses and Transfers	(2,434)	(2,665)	(2,857)	(3,157)	(3,397)	(3,518)	(3,791)	(4,029)	(4,263)	(4,505)
Net Funding	(490)	(517)	(760)	(1,295)	(1,848)	(1,697)	(1,191)	(1,332)	(1,013)	(1,130)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	1,157	983	762	775	1,031	1,052	911	984	912	907
Net Appreciation (Depreciation) in Fair Value	8,596	(3,756)	(12,254)	5,459	7,681	(415)	5,168	7,891	2,010	231
Net Investment Income	9,753	(2,773)	(11,492)	6,234	8,712	637	6,079	8,875	2,922	1,138
<b>Net Increase (Decrease)</b>	<b>9,263</b>	<b>(3,290)</b>	<b>(12,252)</b>	<b>4,939</b>	<b>6,864</b>	<b>(1,060)</b>	<b>4,888</b>	<b>7,543</b>	<b>1,909</b>	<b>8</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$56,890</b>	<b>\$53,600</b>	<b>\$41,348</b>	<b>\$46,287</b>	<b>\$53,151</b>	<b>\$52,091</b>	<b>\$56,979</b>	<b>\$64,522</b>	<b>\$66,431</b>	<b>\$66,439</b>

**FIGURE 5.2: NUMBER OF ACTIVE MEMBERS**  
AT JUNE 30 (EXPRESSED IN THOUSANDS)



**FIGURE 5.3: ANALYSIS OF CHANGES AND GROWTH IN NET FIDUCIARY POSITION BY PENSION TRUST FUND**  
FOR THE YEARS ENDED JUNE 30

**STATE POLICE OFFICERS' RETIREMENT SYSTEM PENSION TRUST FUND**

(EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$ 581</b>	<b>\$ 684</b>	<b>\$ 636</b>	<b>\$ 484</b>	<b>\$ 534</b>	<b>\$ 599</b>	<b>\$ 575</b>	<b>\$ 625</b>	<b>\$ 721</b>	<b>\$ 733</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	21	26	25	21	13	16	31	48	34	39
Benefits and Administrative Expenses and Transfers	(35)	(41)	(41)	(43)	(47)	(47)	(49)	(51)	(54)	(55)
Net Funding	(14)	(15)	(16)	(22)	(34)	(31)	(18)	(3)	(20)	(16)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	14	12	9	9	12	12	11	11	10	11
Net Appreciation (Depreciation) in Fair Value	103	(45)	(145)	63	87	(5)	57	88	22	3
Net Investment Income	117	(33)	(136)	72	99	7	68	99	32	14
<b>Net Increase (Decrease)</b>	<b>103</b>	<b>(48)</b>	<b>(152)</b>	<b>50</b>	<b>65</b>	<b>(24)</b>	<b>50</b>	<b>96</b>	<b>12</b>	<b>(2)</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$ 684</b>	<b>\$ 636</b>	<b>\$ 484</b>	<b>\$ 534</b>	<b>\$ 599</b>	<b>\$ 575</b>	<b>\$ 625</b>	<b>\$ 721</b>	<b>\$ 733</b>	<b>\$ 731</b>

**VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM PENSION TRUST FUND**

(EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$ 700</b>	<b>\$ 868</b>	<b>\$ 853</b>	<b>\$ 691</b>	<b>\$ 792</b>	<b>\$ 911</b>	<b>\$ 895</b>	<b>\$ 992</b>	<b>\$ 1,150</b>	<b>\$ 1,191</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	64	74	69	56	35	42	68	85	79	97
Benefits and Administrative Expenses and Transfers	(40)	(45)	(50)	(58)	(64)	(69)	(76)	(84)	(90)	(98)
Net Funding	24	29	19	(2)	(29)	(27)	(8)	1	(11)	(1)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	17	16	12	12	18	18	16	18	16	16
Net Appreciation (Depreciation) in Fair Value	127	(60)	(193)	91	130	(7)	89	139	36	5
Net Investment Income	144	(44)	(181)	103	148	11	105	157	52	21
<b>Net Increase (Decrease)</b>	<b>168</b>	<b>(15)</b>	<b>(162)</b>	<b>101</b>	<b>119</b>	<b>(16)</b>	<b>97</b>	<b>158</b>	<b>41</b>	<b>20</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$ 868</b>	<b>\$ 853</b>	<b>\$ 691</b>	<b>\$ 792</b>	<b>\$ 911</b>	<b>\$ 895</b>	<b>\$ 992</b>	<b>\$ 1,150</b>	<b>\$ 1,191</b>	<b>\$ 1,211</b>

**FIGURE 5.3: ANALYSIS OF CHANGES AND GROWTH IN NET FIDUCIARY POSITION BY PENSION TRUST FUND, cont.**  
FOR THE YEARS ENDED JUNE 30

**JUDICIAL RETIREMENT SYSTEM PENSION TRUST FUND**

(EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$ 326</b>	<b>\$ 390</b>	<b>\$ 367</b>	<b>\$ 284</b>	<b>\$ 315</b>	<b>\$ 361</b>	<b>\$ 354</b>	<b>\$ 389</b>	<b>\$ 442</b>	<b>\$ 457</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	23	25	24	20	20	22	30	31	35	45
Benefits and Administrative Expenses and Transfers	(25)	(29)	(29)	(31)	(32)	(34)	(37)	(39)	(40)	(42)
Net Funding	(2)	(4)	(5)	(11)	(12)	(12)	(7)	(8)	(5)	3
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	8	7	5	5	7	7	6	7	6	6
Net Appreciation (Depreciation) in Fair Value	58	(26)	(83)	37	51	(2)	36	54	14	2
Net Investment Income	66	(19)	(78)	42	58	5	42	61	20	8
<b>Net Increase (Decrease)</b>	<b>64</b>	<b>(23)</b>	<b>(83)</b>	<b>31</b>	<b>46</b>	<b>(7)</b>	<b>35</b>	<b>53</b>	<b>15</b>	<b>11</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$ 390</b>	<b>\$ 367</b>	<b>\$ 284</b>	<b>\$ 315</b>	<b>\$ 361</b>	<b>\$ 354</b>	<b>\$ 389</b>	<b>\$ 442</b>	<b>\$ 457</b>	<b>\$ 468</b>

**VIRGINIA RETIREMENT SYSTEM – STATE**

(EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$ 13,549</b>	<b>\$ 16,034</b>	<b>\$ 14,902</b>	<b>\$ 11,301</b>	<b>\$ 12,432</b>	<b>\$ 14,040</b>	<b>\$ 13,516</b>	<b>\$ 14,550</b>	<b>\$ 16,218</b>	<b>\$ 16,455</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	377	410	417	360	253	309	520	542	684	939
Benefits and Administrative Expenses and Transfers	(720)	(770)	(825)	(931)	(968)	(992)	(1,054)	(1,119)	(1,175)	(1,232)
Net Funding	(343)	(360)	(408)	(571)	(715)	(683)	(534)	(577)	(491)	(293)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	335	273	212	212	275	263	235	249	227	221
Net Appreciation (Depreciation) in Fair Value	2,492	(1,045)	(3,405)	1,490	2,048	(104)	1,333	1,996	501	56
Net Investment Income	2,828	(772)	(3,193)	1,702	2,323	159	1,568	2,245	728	277
<b>Net Increase (Decrease)</b>	<b>2,485</b>	<b>(1,132)</b>	<b>(3,601)</b>	<b>1,131</b>	<b>1,608</b>	<b>(524)</b>	<b>1,034</b>	<b>1,668</b>	<b>237</b>	<b>(16)</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$ 16,034</b>	<b>\$ 14,902</b>	<b>\$ 11,301</b>	<b>\$ 12,432</b>	<b>\$ 14,040</b>	<b>\$ 13,516</b>	<b>\$ 14,550</b>	<b>\$ 16,218</b>	<b>\$ 16,455</b>	<b>\$ 16,439</b>

**FIGURE 5.3: ANALYSIS OF CHANGES AND GROWTH IN NET FIDUCIARY POSITION – VIRGINIA RETIREMENT SYSTEM**

FOR THE YEARS ENDED JUNE 30

**VIRGINIA RETIREMENT SYSTEM – TEACHER**

(EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$22,331</b>	<b>\$26,616</b>	<b>\$25,074</b>	<b>\$ 19,299</b>	<b>\$ 21,515</b>	<b>\$24,518</b>	<b>\$23,928</b>	<b>\$ 26,072</b>	<b>\$29,406</b>	<b>\$30,348</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	945	1,055	986	821	623	816	1,204	1,225	1,651	1,464
Benefits and Administrative Expenses and Transfers	(1,184)	(1,294)	(1,386)	(1,509)	(1,651)	(1,697)	(1,834)	(1,933)	(2,036)	(2,136)
Net Funding	(239)	(239)	(400)	(688)	(1,028)	(881)	(630)	(708)	(385)	(672)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	537	462	356	361	477	481	415	448	414	414
Net Appreciation (Depreciation) in Fair Value	3,988	(1,765)	(5,731)	2,543	3,554	(190)	2,359	3,594	913	105
Net Investment Income	4,524	(1,303)	(5,375)	2,904	4,031	291	2,774	4,042	1,327	519
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$ 26,616</b>	<b>\$25,074</b>	<b>\$19,299</b>	<b>\$ 21,515</b>	<b>\$ 24,518</b>	<b>\$23,928</b>	<b>\$26,072</b>	<b>\$ 29,406</b>	<b>\$30,348</b>	<b>\$30,195</b>

**VIRGINIA RETIREMENT SYSTEM – POLITICAL SUBDIVISIONS**

(EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$ 10,141</b>	<b>\$ 12,298</b>	<b>\$ 11,767</b>	<b>\$ 9,290</b>	<b>\$ 10,699</b>	<b>\$12,722</b>	<b>\$ 12,823</b>	<b>\$ 14,351</b>	<b>\$ 16,585</b>	<b>\$ 17,247</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	512	557	576	584	606	615	747	766	767	790
Benefits and Administrative Expenses and Transfers	(429)	(486)	(524)	(584)	(635)	(679)	(741)	(803)	(866)	(943)
Net Funding	83	71	52	–	(29)	(64)	6	(37)	(99)	(153)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	246	213	168	175	243	272	228	251	237	241
Net Appreciation (Depreciation) in Fair Value	1,828	(815)	(2,697)	1,234	1,809	(107)	1,294	2,020	524	60
Net Investment Income	2,074	(602)	(2,529)	1,409	2,052	165	1,522	2,271	761	301
<b>Net Increase (Decrease)</b>	<b>2,157</b>	<b>(531)</b>	<b>(2,477)</b>	<b>1,409</b>	<b>2,023</b>	<b>101</b>	<b>1,528</b>	<b>2,234</b>	<b>662</b>	<b>148</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$ 12,298</b>	<b>\$ 11,767</b>	<b>\$ 9,290</b>	<b>\$ 10,699</b>	<b>\$ 12,722</b>	<b>\$12,823</b>	<b>\$ 14,351</b>	<b>\$ 16,585</b>	<b>\$ 17,247</b>	<b>\$ 17,395</b>

**FIGURE 5.3: ANALYSIS OF CHANGES AND GROWTH IN NET FIDUCIARY POSITION – VIRGINIA RETIREMENT SYSTEM, cont.**

FOR THE YEARS ENDED JUNE 30

**VIRGINIA RETIREMENT SYSTEM PENSION TRUST FUND – TOTAL**

(EXPRESSED IN MILLIONS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$ 46,021</b>	<b>\$ 54,948</b>	<b>\$ 51,743</b>	<b>\$ 39,890</b>	<b>\$ 44,646</b>	<b>\$ 51,280</b>	<b>\$ 50,267</b>	<b>\$ 54,973</b>	<b>\$ 62,209</b>	<b>\$ 64,050</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	1,834	2,022	1,979	1,765	1,482	1,740	2,471	2,533	3,102	3,193
Benefits and Administrative Expenses and Transfers	(2,333)	(2,550)	(2,735)	(3,024)	(3,254)	(3,368)	(3,629)	(3,855)	(4,077)	(4,311)
Net Funding	(499)	(528)	(756)	(1,259)	(1,772)	(1,628)	(1,158)	(1,322)	(975)	(1,118)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	1,118	948	736	748	995	1,016	878	948	878	876
Net Appreciation (Depreciation) in Fair Value	8,308	(3,625)	(11,833)	5,267	7,411	(401)	4,986	7,610	1,938	221
Net Investment Income	9,426	(2,677)	(11,097)	6,015	8,406	615	5,864	8,558	2,816	1,097
<b>Net Increase (Decrease)</b>	<b>8,927</b>	<b>(3,205)</b>	<b>(11,853)</b>	<b>4,756</b>	<b>6,634</b>	<b>(1,013)</b>	<b>4,706</b>	<b>7,236</b>	<b>1,841</b>	<b>(21)</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$ 54,948</b>	<b>\$ 51,743</b>	<b>\$ 39,890</b>	<b>\$ 44,646</b>	<b>\$ 51,280</b>	<b>\$ 50,267</b>	<b>\$ 54,973</b>	<b>\$ 62,209</b>	<b>\$ 64,050</b>	<b>\$ 64,029</b>

Note: VRS and JRS plans include Hybrid Retirement Plan data.

## SCHEDULE OF RETIREMENT CONTRIBUTIONS BY SYSTEM AND PLAN

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Virginia Retirement System				State Police Officers' Retirement System	Virginia Law Officers' Retirement System	Judicial Retirement System	System Total
	State	Teacher	Political	Sub-Total				
2016	\$ 939,045	\$ 1,464,148	\$ 790,072	\$ 3,193,265	\$ 39,414	\$ 96,966	\$ 45,412	\$ 3,375,057
2015	683,602	1,650,697	767,310	3,101,609	34,107	79,165	34,734	3,249,615
2014	541,816	1,225,175	765,479	2,532,470	48,329	85,391	30,778	2,696,968
2013	519,319	1,204,021	746,040	2,469,380	31,553	67,654	30,000	2,598,587
2012**	307,843	814,681	613,572	1,736,096	16,611	42,202	21,875	1,816,784
2011**	252,110	622,904	605,908	1,480,922	12,343	34,423	20,338	1,548,026
2010*	359,827	820,193	583,864	1,763,884	20,747	56,347	20,206	1,861,184
2009	416,921	986,116	575,951	1,978,988	25,280	69,071	24,064	2,097,403
2008	409,685	1,055,498	557,230	2,022,413	26,218	74,039	25,498	2,148,168
2007	377,117	945,243	511,687	1,834,047	21,466	64,820	23,437	1,943,770

\* The General Assembly suspended employer contributions for all state employees, SPORS, VaLORS and JRS for April, May and the first half of June 2010 and for teachers for the entire fourth quarter of fiscal year 2010.

\*\* The General Assembly funded contribution rates for all state employee groups and teachers significantly below those certified by the Board of Trustees for fiscal year 2011. For fiscal year 2012, the funding for all state employee groups remained at low levels for the first three quarters of the year.

**FIGURE 5.4: NUMBER OF RETIREES AND BENEFICIARIES**

AT JUNE 30

(EXPRESSED IN THOUSANDS)



**FIGURE 5.5: RETIREMENT BENEFITS PAID**

FISCAL YEARS ENDED JUNE 30, 2007 – 2016

(EXPRESSED IN MILLIONS)



## SCHEDULE OF PENSION TRUST FUND ADDITIONS BY SOURCE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Member Contributions	Employer Contributions		Investment Income (Loss)	Other	Total
		For Members	Employer Share			
VIRGINIA RETIREMENT SYSTEM (VRS)						
2016	\$ 817,652	\$ 23,463	\$ 2,352,150	\$ 1,095,229	\$ 1,789	\$ 4,290,283
2015	758,355	51,006	2,292,248	2,815,780	1,723	5,919,112
2014 **	702,089	93,468	1,736,913	8,558,759	460	11,091,689
2013 **	572,543	207,695	1,689,142	5,864,628	1,547	8,335,555
2012 *	208,243	557,522	970,331	614,613	3,782	2,354,491
2011	26,529	712,560	741,833	8,405,834	1,290	9,888,046
2010	26,225	736,413	1,001,246	6,014,601	1,083	7,779,568
2009	20,254	743,762	1,214,972	(11,106,018)	8,668	(9,118,362)
2008	24,843	716,797	1,280,773	(2,677,358)	290	(654,655)
2007	29,489	680,023	1,124,535	9,426,035	338	11,260,420
STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)						
2016	\$ 5,759	\$ —	\$ 33,655	\$ 12,635	\$ —	\$ 52,049
2015	5,680	—	28,427	32,466	—	66,573
2014	5,646	—	42,683	98,682	—	147,011
2013	5,361	—	26,192	67,067	—	98,620
2012 *	5,167	1	11,443	6,853	—	23,464
2011	121	4,742	7,480	99,209	—	111,552
2010	47	4,945	15,755	72,609	—	93,356
2009	57	5,034	20,189	(135,929)	87	(110,562)
2008	149	5,061	21,008	(33,367)	20	(7,129)
2007	213	4,895	16,358	117,501	—	138,967
VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)						
2016	\$ 17,574	\$ —	\$ 79,392	\$ 20,897	\$ —	\$ 117,863
2015	17,081	—	62,084	52,312	—	131,477
2014	17,908	—	67,483	156,786	—	242,177
2013	17,256	—	50,398	105,084	27	172,765
2012 *	17,510	48	24,644	11,195	110	53,507
2011	941	16,102	17,380	147,982	130	182,535
2010	196	17,208	38,943	103,488	104	159,939
2009	212	17,871	50,988	(181,112)	519	(111,522)
2008	291	17,723	56,025	(44,270)	274	30,043
2007	371	16,127	48,322	143,664	171	208,655
JUDICIAL RETIREMENT SYSTEM (JRS)						
2016	\$ 1,154	\$ 2,349	\$ 41,909	\$ 8,137	\$ —	\$ 53,549
2015	643	2,531	31,560	20,049	—	54,783
2014	327	2,724	27,727	60,833	—	91,611
2013	179	2,795	27,026	41,557	—	71,557
2012	47	2,921	18,907	4,576	—	26,451
2011	32	3,003	17,303	58,587	—	78,925
2010	30	3,108	17,068	42,430	—	62,636
2009	20	3,043	21,001	(77,947)	50	(53,833)
2008	21	2,945	22,532	(19,305)	—	6,193
2007	92	2,815	20,530	65,964	—	89,401

\* Member contributions and employer contributions for members reflect the shift to member-paid retirement contributions for state employees, except judges, effective July 1, 2011.

\*\* Member contributions and employer contributions for members reflect the shift to member-paid retirement contributions for teachers and political subdivision employees, effective July 1, 2012.

## SCHEDULE OF PENSION TRUST FUND DEDUCTIONS BY TYPE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Retirement Benefits	Refunds	Administrative Expenses	Other	Total
VIRGINIA RETIREMENT SYSTEM (VRS)					
2016	\$ 4,169,852	\$ 99,444	\$ 39,695	\$ 2,263	\$ 4,311,254
2015	3,935,656	100,993	38,898	2,323	4,077,870
2014	3,711,208	98,049	39,785	6,745	3,855,787
2013	3,516,219	77,588	31,154	4,579	3,629,540
2012	3,257,359	84,577	25,475	694	3,368,105
2011	3,125,772	96,209	25,082	6,464	3,253,527
2010	2,907,204	88,671	23,720	3,911	3,023,506
2009	2,617,313	86,688	30,692	668	2,735,361
2008	2,427,543	97,574	24,677	298	2,550,092
2007	2,219,350	89,716	23,686	178	2,332,930
STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)					
2016	\$ 53,515	\$ 584	\$ 591	\$ 23	\$ 54,713
2015	53,338	375	471	27	54,211
2014	50,467	685	353	78	51,583
2013	47,884	364	227	51	48,526
2012	46,113	319	243	7	46,682
2011	46,259	279	222	68	46,828
2010	42,714	496	257	46	43,513
2009	40,919	469	340	–	41,728
2008	39,382	730	299	–	40,411
2007	33,867	1,221	301	–	35,389
VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)					
2016	\$ 92,270	\$ 4,524	\$ 938	\$ 38	\$ 97,770
2015	84,990	4,797	743	44	90,574
2014	78,412	4,665	557	124	83,758
2013	71,638	3,586	344	82	75,650
2012	64,849	4,027	366	15	69,257
2011	59,749	4,051	395	103	64,298
2010	53,758	3,919	373	66	58,116
2009	45,890	4,151	471	–	50,512
2008	40,805	4,586	378	–	45,769
2007	35,019	4,828	365	–	40,212
JUDICIAL RETIREMENT SYSTEM (JRS)					
2016	\$ 41,341	\$ –	\$ 363	\$ 15	\$ 41,719
2015	40,205	–	283	17	40,505
2014	37,984	–	221	47	38,252
2013	36,800	–	141	31	36,972
2012	33,454	–	143	5	33,602
2011	32,115	5	158	40	32,318
2010	31,598	–	151	27	31,776
2009	29,101	40	198	–	29,339
2008	28,538	45	168	–	28,751
2007	25,253	–	169	–	25,422



## SCHEDULE OF RETIREMENT BENEFITS BY SYSTEM AND PLAN

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Virginia Retirement System				State Police Officers' Retirement System	Virginia Law Officers' Retirement System	Judicial Retirement System	Total
	State	Teachers	Political	Sub-Total				
2016	\$ 1,195,198	\$ 2,081,069	\$ 893,585	\$ 4,169,852	\$ 53,515	\$ 92,270	\$ 41,341	\$ 4,356,978
2015	1,136,102	1,980,353	819,201	3,935,656	53,338	84,990	40,205	4,114,189
2014	1,081,866	1,874,636	754,706	3,711,208	50,467	78,412	37,984	3,878,071
2013	1,024,464	1,788,548	703,207	3,516,219	47,884	71,638	36,800	3,672,541
2012	961,209	1,654,377	641,773	3,257,359	46,113	64,849	33,454	3,401,775
2011	931,893	1,599,208	594,671	3,125,772	46,259	59,749	32,115	3,263,895
2010	898,226	1,462,638	546,340	2,907,204	42,714	53,758	31,598	3,035,274
2009	790,472	1,338,776	488,065	2,617,313	40,919	45,890	29,101	2,733,223
2008	736,053	1,245,201	446,289	2,427,543	39,382	40,805	28,538	2,536,268
2007	686,258	1,138,980	394,112	2,219,350	33,867	35,019	25,253	2,313,489

## SCHEDULE OF RETIREMENT BENEFITS BY TYPE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Service Benefits	Disability Benefits	Survivor Benefits	Total
VIRGINIA RETIREMENT SYSTEM (VRS) STATE				
2016	\$ 1,105,788	\$ 74,127	\$ 15,283	\$ 1,195,198
2015	1,048,497	73,490	14,115	1,136,102
2014	994,111	74,245	13,510	1,081,866
2013	937,148	74,353	12,963	1,024,464
2012	874,606	74,558	12,045	961,209
2011	845,009	75,395	11,489	931,893
2010	810,248	77,223	10,755	898,226
2009	702,730	77,940	9,802	790,472
2008	653,088	74,354	8,611	736,053
2007	605,049	73,246	7,963	686,258
VIRGINIA RETIREMENT SYSTEM (VRS) TEACHER				
2016	\$ 1,965,675	\$ 106,580	\$ 8,814	\$ 2,081,069
2015	1,867,670	104,305	8,378	1,980,353
2014	1,764,792	101,720	8,124	1,874,636
2013	1,682,021	98,767	7,760	1,788,548
2012	1,551,557	95,498	7,322	1,654,377
2011	1,498,877	93,450	6,881	1,599,208
2010	1,364,367	91,882	6,389	1,462,638
2009	1,245,300	87,777	5,699	1,338,776
2008	1,155,318	84,775	5,108	1,245,201
2007	1,054,429	80,098	4,453	1,138,980

**SCHEDULE OF RETIREMENT BENEFITS BY TYPE, cont.**

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Service Benefits	Disability Benefits	Survivor Benefits	Total
<b>VIRGINIA RETIREMENT SYSTEM (VRS) POLITICAL SUBDIVISIONS</b>				
2016	\$ 752,038	\$ 132,240	\$ 9,307	\$ 893,585
2015	685,530	125,992	7,679	819,201
2014	625,221	122,362	7,123	754,706
2013	578,105	118,023	7,079	703,207
2012	521,682	113,610	6,481	641,773
2011	477,944	110,750	5,977	594,671
2010	432,678	108,080	5,582	546,340
2009	380,546	102,357	5,162	488,065
2008	344,982	96,742	4,565	446,289
2007	300,274	89,853	3,985	394,112
<b>VIRGINIA RETIREMENT SYSTEM (VRS) – TOTAL</b>				
2016	\$ 3,823,501	\$ 312,947	\$ 33,404	\$ 4,169,852
2015	3,601,697	303,787	30,172	3,935,656
2014	3,384,124	298,327	28,757	3,711,208
2013	3,197,274	291,143	27,802	3,516,219
2012	2,947,845	283,666	25,848	3,257,359
2011	2,821,830	279,595	24,347	3,125,772
2010	2,607,293	277,185	22,726	2,907,204
2009	2,328,576	268,074	20,663	2,617,313
2008	2,153,388	255,871	18,284	2,427,543
2007	1,959,752	243,197	16,401	2,219,350
<b>STATE POLICE OFFICERS' RETIREMENT SYSTEMS (SPORS)</b>				
2016	\$ 46,429	\$ 6,447	\$ 639	\$ 53,515
2015	46,426	6,392	520	53,338
2014	43,693	6,270	504	50,467
2013	41,254	6,128	502	47,884
2012	39,626	6,011	476	46,113
2011	39,828	5,983	448	46,259
2010	36,779	5,532	403	42,714
2009	35,155	5,391	373	40,919
2008	34,011	5,049	322	39,382
2007	28,871	4,684	312	33,867

## SCHEDULE OF RETIREMENT BENEFITS BY TYPE, cont.

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Service Benefits	Disability Benefits	Survivor Benefits	Total
VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)				
2016	\$ 87,538	\$ 4,013	\$ 719	\$ 92,270
2015	80,663	3,728	599	84,990
2014	74,291	3,549	572	78,412
2013	67,715	3,380	543	71,638
2012	61,128	3,246	475	64,849
2011	56,409	2,910	430	59,749
2010	50,704	2,660	394	53,758
2009	43,008	2,507	375	45,890
2008	38,428	2,096	281	40,805
2007	32,854	1,937	228	35,019
JUDICIAL RETIREMENT SYSTEM (JRS)				
2016	\$ 39,806	\$ 387	\$ 1,148	\$ 41,341
2015	38,632	401	1,172	40,205
2014	36,396	402	1,186	37,984
2013	35,289	394	1,117	36,800
2012	31,963	413	1,078	33,454
2011	30,635	463	1,017	32,115
2010	30,124	425	1,049	31,598
2009	27,614	410	1,077	29,101
2008	27,154	411	973	28,538
2007	23,923	394	936	25,253

## SCHEDULE OF REFUNDS BY TYPE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Separation	Death	Total
VIRGINIA RETIREMENT SYSTEM (VRS) STATE			
2016	\$ 19,341	\$ 6,617	\$ 25,958
2015	20,893	6,956	27,849
2014	19,673	5,374	25,047
2013	14,980	5,114	20,094
2012	17,664	5,199	22,863
2011	20,832	5,485	26,317
2010	18,822	5,370	24,192
2009	19,826	6,046	25,872
2008	20,966	5,138	26,104
2007	23,924	2,463	26,387

**SCHEDULE OF REFUNDS BY TYPE, cont.**

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Separation	Death	Total
<b>VIRGINIA RETIREMENT SYSTEM (VRS) TEACHER</b>			
2016	\$ 30,458	\$ 4,997	\$ 35,455
2015	30,355	5,744	36,099
2014	30,955	5,156	36,111
2013	23,406	4,746	28,152
2012	26,823	3,645	30,468
2011	32,560	4,021	36,581
2010	28,926	4,353	33,279
2009	27,561	3,985	31,546
2008	32,599	4,438	37,037
2007	30,617	2,592	33,209
<b>VIRGINIA RETIREMENT SYSTEM (VRS) POLITICAL SUBDIVISIONS</b>			
2016	\$ 33,483	\$ 4,548	\$ 38,031
2015	31,718	5,327	37,045
2014	32,498	4,393	36,891
2013	24,908	4,434	29,342
2012	27,205	4,041	31,246
2011	29,647	3,664	33,311
2010	27,755	3,445	31,200
2009	25,683	3,587	29,270
2008	30,202	4,231	34,433
2007	28,343	1,777	30,120
<b>VIRGINIA RETIREMENT SYSTEM (VRS) – TOTAL</b>			
2016	\$ 83,282	\$ 16,162	\$ 99,444
2015	82,966	18,026	100,993
2014	83,126	14,923	98,049
2013	63,294	14,294	77,588
2012	71,692	12,885	84,577
2011	83,039	13,170	96,209
2010	75,503	13,168	88,671
2009	73,070	13,618	86,688
2008	83,767	13,807	97,574
2007	82,884	6,832	89,716
<b>STATE POLICE OFFICERS' RETIREMENT SYSTEMS (SPORS)</b>			
2016	\$ 405	\$ 179	\$ 584
2015	325	50	375
2014	685	–	685
2013	243	121	364
2012	303	16	319
2011	273	6	279
2010	496	–	496
2009	440	29	469
2008	730	–	730
2007	1,169	52	1,221

**SCHEDULE OF REFUNDS BY TYPE, cont.**

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Separation	Death	Total
<b>VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)</b>			
2016	\$ 3,688	\$ 836	\$ 4,524
2015	4,465	332	4,797
2014	4,340	325	4,665
2013	3,157	429	3,586
2012	3,673	354	4,027
2011	3,904	147	4,051
2010	3,601	318	3,919
2009	3,948	203	4,151
2008	4,190	396	4,586
2007	4,608	220	4,828
<b>JUDICIAL RETIREMENT SYSTEM (JRS)</b>			
2016	\$ —	\$ —	\$ —
2015	—	—	—
2014	—	—	—
2013	—	—	—
2012	—	—	—
2011	5	—	5
2010	—	—	—
2009	40	—	40
2008	45	—	45
2007	—	—	—

**SCHEDULE OF RETIREES AND BENEFICIARIES BY TYPE OF RETIREMENT**

AS OF JUNE 30, 2016

Minimum Guaranteed Benefit Amount	Number of Retirees	Type of Retirement								
		Service Retirement	Early Retirement Window	50/30 Service Retirement	1991 Early Faculty Ret. Window	Regular Disability	Survivor Death-in-Service	Line-of-Duty (LOD) Disability	Survivor LOD Death-in-Service	50/10 Service Retirement
\$ 1-200	14,394	12,364	2	—	1	531	588	30	3	875
201-400	21,473	17,477	138	5	—	1,813	534	95	7	1,404
401-600	18,788	14,665	322	30	2	2,292	362	219	20	876
601-800	15,881	12,159	393	76	1	2,065	237	352	18	580
801-1,000	14,377	10,905	527	193	5	1,714	169	386	27	451
1,001-1,200	12,920	9,831	489	377	5	1,386	141	319	18	354
1,201-1,400	11,043	8,297	451	494	15	1,115	101	277	12	281
1,401-1,600	10,376	7,869	386	669	21	849	83	229	11	259
1,601-1,800	9,826	7,413	287	955	25	680	59	188	5	214
1,801-2,000	10,286	7,710	219	1,355	29	563	76	180	1	153
Over 2,000	53,047	43,592	422	6,008	102	1,644	270	627	12	370
<b>Totals</b>	<b>192,411</b>	<b>152,282</b>	<b>3,636</b>	<b>10,162</b>	<b>206</b>	<b>14,652</b>	<b>2,620</b>	<b>2,902</b>	<b>134</b>	<b>5,817</b>

## SCHEDULE OF RETIREES AND BENEFICIARIES BY TYPE OF RETIREMENT AND PLAN

AS OF JUNE 30, 2016

Plan	Number of Retirees	Type of Retirement								
		Service Retirement	Early Retirement Window	50/30 Service Retirement	1991 Early Faculty Ret. Window	Regular Disability	Survivor Death-in-Service	Line-of-Duty (LOD) Disability	Survivor LOD Death-in-Service	50/10 Service Retirement
VRS – State	53,285	41,076	1,953	3,184	205	3,379	1,124	894	26	1,444
VRS – Teacher	84,888	69,136	1,470	5,590	1	4,772	670	189	6	3,054
VRS – Political Subdivisions	48,494	36,898	213	1,387	–	6,273	704	1,617	83	1,319
SPORS	1,232	1,013	–	–	–	39	14	150	16	–
ValORS	4,015	3,692	–	1	–	181	86	52	3	–
JRS	497	467	–	–	–	8	22	–	–	–
<b>All Plans</b>	<b>192,411</b>	<b>152,282</b>	<b>3,636</b>	<b>10,162</b>	<b>206</b>	<b>14,652</b>	<b>2,620</b>	<b>2,902</b>	<b>134</b>	<b>5,817</b>

## SCHEDULE OF RETIREES AND BENEFICIARIES BY PAYOUT OPTION SELECTED

AS OF JUNE 30, 2016

Minimum Guaranteed Benefit Amount	Payout Option Selected															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
\$ 1-200	11,803	17	495	96	530	2	52	–	–	1	584	–	455	147	196	16
201-400	17,294	12	558	144	534	4	718	18	2	34	548	–	967	191	399	50
401-600	14,420	12	451	189	550	8	1,089	33	–	78	441	–	865	176	439	37
601-800	11,759	6	337	214	576	7	959	30	–	94	388	–	845	177	442	47
801-1,000	10,298	1	290	252	647	12	678	18	1	55	413	–	889	183	561	79
1,001-1,200	8,897	–	286	247	545	12	505	18	2	47	258	–	957	215	793	138
1,201-1,400	7,461	–	234	243	365	19	334	9	1	25	186	–	896	190	925	155
1,401-1,600	6,826	–	223	236	241	26	208	2	–	24	139	–	834	182	1,195	240
1,601-1,800	6,407	–	184	219	143	26	134	3	–	10	84	–	820	188	1,328	280
1,801-2,000	6,506	–	159	233	106	26	98	2	–	5	79	–	783	173	1,771	345
Over 2,000	28,317	–	578	697	164	152	138	8	–	20	134	–	5,984	1,147	13,395	2,313
<b>Totals</b>	<b>129,988</b>	<b>48</b>	<b>3,795</b>	<b>2,770</b>	<b>4,401</b>	<b>294</b>	<b>4,913</b>	<b>141</b>	<b>6</b>	<b>393</b>	<b>3,254</b>	<b>–</b>	<b>14,295</b>	<b>2,969</b>	<b>21,444</b>	<b>3,700</b>

A: Basic Benefit  
 B: Increased Basic Benefit  
 C: 100% Survivor Option  
 D: Variable Survivor Option  
 E: Social Security Leveling Benefit  
 F: Special Survivor Option

G: Minimum Guaranteed Disability Basic Benefit  
 H: Minimum Guaranteed Disability Variable Survivor Option  
 I: Disability 100% Survivor Option  
 J: Special Disability Survivor Option  
 K: Leveling Benefit

L: Leveling Benefit/Rollover  
 M: Survivor Option  
 N: Advance Pension Option  
 O: Partial Lump-Sum Option Payment (PLOP) with Basic Benefit  
 P: PLOP with Survivor Option

## SCHEDULE OF AVERAGE BENEFIT PAYMENTS

FOR RETIREMENTS EFFECTIVE JULY 1, 2008, TO JUNE 30, 2016

		Years of Credited Service					
		1-10	11-15	16-20	21-25	26-30	Over 30
FY 2016* State	Average Monthly Benefit	\$ 401.55	\$ 768.31	\$ 1,038.35	\$ 1,539.86	\$ 1,907.73	\$ 3,004.64
	Number of Active Retirees	315	318	357	307	411	1,307
	Average AFC	43,993	49,585	49,392	55,174	54,986	64,126
Teacher	Average Monthly Benefit	\$ 432.49	\$746.26	\$ 1,115.50	\$ 1,606.80	\$ 2,436.89	\$ 3,078.52
	Number of Active Retirees	484	681	699	671	797	1,468
	Average AFC	42,306	49,610	54,438	58,555	65,786	70,386
Political Subdivisions	Average Monthly Benefit	\$ 320.69	\$ 562.57	\$ 895.21	\$ 1,252.95	\$ 2,082.39	\$ 2,946.00
	Number of Active Retirees	545	569	556	473	647	895
	Average AFC	31,052	38,544	41,480	45,989	58,617	68,431
Total VRS	Average Monthly Benefit	\$ 379.90	\$ 684.08	\$ 1,022.44	\$ 1,477.29	\$ 2,196.01	\$ 3,019.89
	Number of Active Retirees	1,344	1,568	1,612	1,451	1,855	3,670
	Weighted Average AFC	38,138	45,589	48,851	53,743	60,893	67,660
SPORS	Average Monthly Benefit	—	\$ 139.46	\$ 864.59	\$ 1,538.59	\$ 2,960.02	\$ 4,092.02
	Number of Active Retirees	—	2	2	5	11	18
	Average AFC	—	24,869	53,438	62,731	75,082	92,720
VaLORS	Average Monthly Benefit	\$ 372.46	\$ 619.25	\$ 946.46	\$ 1,203.56	\$ 1,596.89	\$ 2,458.85
	Number of Active Retirees	29	26	48	90	79	51
	Average AFC	39,019	37,606	39,308	43,542	45,962	55,791
JRS	Average Monthly Benefit	—	—	—	\$4,396.22	\$ 5,647.58	\$ 8,048.62
	Number of Active Retirees	—	—	—	1	1	17
	Average AFC	—	—	—	146,295	146,294	154,562
All Plans	Average Monthly Benefit	\$ 379.74	\$ 682.34	\$ 1,020.04	\$ 1,463.44	\$ 2,177.77	\$ 3,040.16
	Number of Active Retirees	1,373	1,596	1,662	1,547	1,946	3,756
	Weighted Average AFC	38,156	45,433	48,581	53,239	60,411	68,012
FY 2015 State	Average Monthly Benefit	\$392.12	\$694.37	\$1,030.11	\$1,446.53	\$1,930.58	\$3,016.49
	Number of Active Retirees	329	327	369	301	388	1,170
Teacher	Average Monthly Benefit	\$381.68	\$714.22	\$1,066.14	\$1,541.72	\$2,476.42	\$3,096.71
	Number of Active Retirees	559	669	696	704	732	1,453
Political Subdivisions	Average Monthly Benefit	\$330.59	\$513.35	\$843.10	\$1,254.45	\$2,059.40	\$2,708.39
	Number of Active Retirees	592	620	478	458	572	846
Total VRS	Average Monthly Benefit	\$363.56	\$633.14	\$988.43	\$1,432.21	\$2,210.28	\$2,974.96
	Number of Active Retirees	1,480	1,616	1,543	1,463	1,692	3,469
SPORS	Average Monthly Benefit	\$1,078.60	\$969.65	—	\$2,506.63	\$2,539.27	\$3,697.36
	Number of Active Retirees	1	1	—	2	16	34
VaLORS	Average Monthly Benefit	\$455.80	\$585.05	\$946.20	\$1,161.28	\$1,715.68	\$2,141.37
	Number of Active Retirees	23	50	52	95	93	56
JRS	Average Monthly Benefit	—	—	—	—	\$5,408.75	\$7,674.09
	Number of Active Retirees	—	—	—	—	1	31
All Plans	Average Monthly Benefit	\$365.45	\$631.90	\$987.05	\$1,417.08	\$2,189.44	\$3,009.36
	Number of Active Retirees	1,504	1,667	1,595	1,560	1,802	3,590

## SCHEDULE OF AVERAGE BENEFIT PAYMENTS

FOR RETIREMENTS EFFECTIVE JULY 1, 2008, TO JUNE 30, 2016

			Years of Credited Service					
			1-10	11-15	16-20	21-25	26-30	Over 30
FY 2014	State	Average Monthly Benefit	\$374.40	\$674.96	\$1,035.41	\$1,308.58	\$1,913.24	\$2,766.37
		Number of Active Retirees	341	363	299	315	333	1,185
	Teacher	Average Monthly Benefit	\$408.27	\$701.52	\$1,083.91	\$1,559.04	\$2,383.18	\$3,055.18
		Number of Active Retirees	604	651	611	690	804	1,463
	Political Subdivisions	Average Monthly Benefit	\$308.87	\$542.75	\$855.38	\$1,248.49	\$2,007.63	\$2,668.41
		Number of Active Retirees	569	563	456	448	524	676
	Total VRS	Average Monthly Benefit	\$363.28	\$638.73	\$997.01	\$1,408.99	\$2,170.49	\$2,873.56
		Number of Active Retirees	1,514	1,577	1,366	1,453	1,661	3,324
	SPORS	Average Monthly Benefit	—	—	\$615.19	\$1,631.99	\$2,809.19	\$3,597.68
		Number of Active Retirees	—	—	1	2	10	28
	VaLORS	Average Monthly Benefit	\$383.32	\$695.40	\$899.70	\$1,133.65	\$1,700.98	\$2,537.26
		Number of Active Retirees	25	29	45	75	72	36
	JRS	Average Monthly Benefit	—	—	—	—	\$5,051.59	\$7,400.90
		Number of Active Retirees	—	—	—	—	3	22
	All Plans	Average Monthly Benefit	\$363.61	\$639.75	\$993.63	\$1,395.78	\$2,159.73	\$2,905.16
		Number of Active Retirees	1,539	1,606	1,412	1,530	1,746	3,410
FY 2013**	State	Average Monthly Benefit	\$373.47	\$636.41	\$1,035.61	\$1,362.08	\$1,881.63	\$2,813.81
		Number of Active Retirees	291	299	261	283	340	1,086
	Teacher	Average Monthly Benefit	\$429.20	\$689.55	\$1,128.94	\$1,537.48	\$2,304.17	\$2,915.42
		Number of Active Retirees	531	574	536	636	747	1,672
	Political Subdivisions	Average Monthly Benefit	\$295.20	\$525.24	\$803.27	\$1,220.49	\$1,920.03	\$2,666.07
		Number of Active Retirees	562	512	396	394	496	753
	Total VRS	Average Monthly Benefit	\$363.12	\$617.34	\$1,000.42	\$1,404.56	\$2,093.05	\$2,830.51
		Number of Active Retirees	1,384	1,385	1,193	1,313	1,583	3,511
	SPORS	Average Monthly Benefit	—	—	—	\$2,263.68	\$2,752.85	\$3,282.00
		Number of Active Retirees	—	—	—	3	10	17
	VaLORS	Average Monthly Benefit	\$332.59	\$632.67	\$883.09	\$1,223.64	\$1,709.19	\$2,246.63
		Number of Active Retirees	29	30	39	67	70	49
	JRS	Average Monthly Benefit	—	—	\$3,645.63	\$4,738.37	—	\$7,490.90
		Number of Active Retirees	—	—	3	1	—	28
	All Plans	Average Monthly Benefit	\$362.24	\$617.66	\$1,003.13	\$1,400.06	\$2,080.06	\$2,860.90
		Number of Active Retirees	1,413	1,415	1,235	1,384	1,663	3,605



## SCHEDULE OF AVERAGE BENEFIT PAYMENTS, cont.

FOR RETIREMENTS EFFECTIVE JULY 1, 2008, TO JUNE 30, 2016

			Years of Credited Service					
			1-10	11-15	16-20	21-25	26-30	Over 30
FY 2012	All Plans	Average Monthly Benefit	\$349.17	\$628.04	\$950.15	\$1,360.69	\$2,149.70	\$2,843.02
		Number of Active Retirees	1,331	1,309	1,176	1,273	1,453	3,367
FY 2011	All Plans	Average Monthly Benefit	\$346.15	\$590.10	\$923.89	\$1,364.97	\$2,058.50	\$2,791.19
		Number of Active Retirees	1,218	1,196	1,164	1,383	1,637	4,318
FY 2010	All Plans	Average Monthly Benefit	\$319.83	\$585.59	\$895.47	\$1,309.38	\$1,977.48	\$2,750.03
		Number of Active Retirees	1,106	954	980	1,251	1,543	4,303
FY 2009	All Plans	Average Monthly Benefit	\$344.16	\$578.17	\$880.56	\$1,269.17	\$2,024.64	\$2,669.86
		Number of Active Retirees	986	859	916	1,090	1,377	3,063
FY 2008	All Plans	Average Monthly Benefit	\$327.19	\$575.47	\$861.72	\$1,234.89	\$2,024.96	\$2,610.24
		Number of Active Retirees	994	857	995	1,091	1,615	3,271

\* Average final compensation (AFC) information was not available prior to fiscal year 2016.

\*\* Fiscal year 2013 is the first year for which information is available to support this detailed presentation by plan.

## FIGURE 5.6: DISTRIBUTION OF RETIREES BY PAYOUT OPTION SELECTED

ALL RETIREES AT JUNE 30, 2016

	Basic Benefit	Survivor Option	PLOP with Basic Benefit	PLOP with Survivor Option	Advance Payment Option	Total
VRS	71.02%	10.82%	10.84%	1.79%	5.53%	100.00%
SPORS	49.72%	28.97%	13.17%	7.42%	0.72%	100.00%
ValORS	61.31%	15.57%	15.72%	3.70%	3.70%	100.00%
JRS	44.07%	31.23%	10.87%	11.46%	2.37%	100.00%
<b>All Plans</b>	<b>70.61%</b>	<b>11.09%</b>	<b>10.96%</b>	<b>1.89%</b>	<b>5.45%</b>	<b>100.00%</b>

FISCAL YEAR 2016 RETIREES

	Basic Benefit	Survivor Option	PLOP with Basic Benefit	PLOP with Survivor Option	Advance Payment Option	Total
VRS	67.85%	11.76%	16.59%	2.39%	1.41%	100.00%
SPORS	39.02%	26.83%	21.95%	9.76%	2.44%	100.00%
ValORS	58.74%	11.14%	22.59%	3.61%	3.92%	100.00%
JRS	50.00%	15.38%	11.54%	23.08%	0.00%	100.00%
<b>All Plans</b>	<b>67.47%</b>	<b>11.80%</b>	<b>16.76%</b>	<b>2.49%</b>	<b>1.48%</b>	<b>100.00%</b>

## Benefit Payout Options

**Basic Benefit.** The Basic Benefit is based on the unreduced (normal) retirement benefit calculation. It does not provide for a continuation of a benefit to a survivor. Upon the member's death, any remaining member contributions and accrued interest are paid in a lump sum to the member's beneficiary.

**Partial Lump-Sum Option Payment (PLOP).** Members who are in active service for one or more years beyond their eligibility for an unreduced retirement benefit are eligible to elect a partial lump-sum payment of their member contributions and accrued interest equal to one, two or three times their annual retirement benefit, depending on how long they work beyond their unreduced retirement eligibility. The monthly benefit is actuarially reduced accordingly. This option is available with the Basic Benefit or Survivor Option.

**Survivor Option.** Members may choose a whole percentage of their benefit, between 10% and 100%, to continue as a lifetime benefit to a survivor upon their death. The member's benefit is actuarially reduced accordingly.

**Advance Pension Option.** With this option, members elect to receive a temporary higher benefit that begins at retirement and continues until an age chosen by the member, between age 62 up to the normal retirement age under Social Security. At that point, the monthly benefit is permanently reduced on an actuarially equivalent basis.

**FIGURE 5.7: DISTRIBUTION OF RETIREES BY YEARS OF SERVICE**

ALL RETIREES AT JUNE 30, 2016

	1–10 Years	11–20 Years	21–30 Years	Over 30 Years	Total
VRS	11.43%	24.31%	29.41%	34.85%	100.00%
SPORS	2.32%	3.59%	22.90%	71.19%	100.00%
VaLORS	7.90%	20.81%	52.29%	19.00%	100.00%
JRS	0.68%	2.55%	6.79%	89.98%	100.00%
<b>All Plans</b>	<b>11.27%</b>	<b>24.04%</b>	<b>29.77%</b>	<b>34.92%</b>	<b>100.00%</b>

FISCAL YEAR 2016 RETIREES

	1–10 Years	11–20 Years	21–30 Years	Over 30 Years	Total
VRS	11.69%	27.65%	28.75%	31.91%	100.00%
SPORS	0.00%	10.53%	42.11%	47.36%	100.00%
VaLORS	8.98%	22.91%	52.32%	15.79%	100.00%
JRS	0.00%	0.00%	10.53%	89.47%	100.00%
<b>All Plans</b>	<b>11.56%</b>	<b>27.42%</b>	<b>29.40%</b>	<b>31.62%</b>	<b>100.00%</b>

**FIGURE 5.8: DISTRIBUTION OF RETIREES BY AGE AT RETIREMENT**

ALL RETIREES AT JUNE 30, 2016

	Under 55	55 – 59	60 – 65	Over Age 65	Total
VRS	16.01%	25.45%	45.91%	12.63%	100.00%
SPORS	47.86%	32.91%	16.59%	2.64%	100.00%
VaLORS	42.73%	25.52%	26.96%	4.79%	100.00%
JRS	1.29%	11.71%	41.29%	45.71%	100.00%
<b>All Plans</b>	<b>16.59%</b>	<b>25.46%</b>	<b>45.42%</b>	<b>12.53%</b>	<b>100.00%</b>

FISCAL YEAR 2016 RETIREES

	Under 55	55 – 59	60 – 65	Over Age 65	Total
VRS	10.44%	18.66%	47.28%	23.62%	100.00%
SPORS	52.64%	23.68%	18.42%	5.26%	100.00%
VaLORS	42.20%	20.80%	27.83%	9.17%	100.00%
JRS	0.00%	10.53%	31.58%	57.89%	100.00%
<b>All Plans</b>	<b>11.43%</b>	<b>18.72%</b>	<b>46.63%</b>	<b>23.22%</b>	<b>100.00%</b>

**FIGURE 5.9: DISTRIBUTION OF RETIREES BY AVERAGE FINAL COMPENSATION**

ALL RETIREES AT JUNE 30, 2016

	Up to \$10,000	\$10,001 – 20,000	\$20,001 – 30,000	\$30,001 – 40,000	\$40,001 – 50,000	\$50,001 – 70,000	Over \$70,000	Total
VRS	6.16%	17.49%	17.29%	16.03%	14.16%	18.20%	10.67%	100.00%
SPORS	3.77%	5.42%	7.27%	13.22%	17.25%	29.48%	23.59%	100.00%
VaLORS	0.00%	0.07%	9.98%	48.44%	26.88%	12.71%	1.92%	100.00%
JRS	3.29%	1.57%	1.00%	4.00%	5.29%	10.14%	74.71%	100.00%
<b>All Plans</b>	<b>6.04%</b>	<b>17.08%</b>	<b>17.07%</b>	<b>16.52%</b>	<b>14.37%</b>	<b>18.15%</b>	<b>10.77%</b>	<b>100.00%</b>

FISCAL YEAR 2016 RETIREES

	Up to \$10,000	\$10,001 – 20,000	\$20,001 – 30,000	\$30,001 – 40,000	\$40,001 – 50,000	\$50,001 – 70,000	Over \$70,000	Total
VRS	0.50%	6.53%	10.35%	13.87%	15.25%	29.38%	24.12%	100.00%
SPORS	0.00%	0.00%	2.63%	0.00%	5.26%	26.32%	65.79%	100.00%
VaLORS	0.00%	0.00%	1.53%	47.09%	30.28%	18.65%	2.45%	100.00%
JRS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
<b>All Plans</b>	<b>0.49%</b>	<b>6.33%</b>	<b>10.07%</b>	<b>14.71%</b>	<b>15.61%</b>	<b>29.01%</b>	<b>23.78%</b>	<b>100.00%</b>

## SCHEDULE OF FUNDING (MARKET VALUE BASIS): ALL PENSION PLANS

(EXPRESSED IN MILLIONS)

Actuarial Valuation Date June 30	Market Value of Assets (MVA)(a)	Actuarial Accrued Liability (AAL) – Entry Age (b)	Net Pension Liability (AAL-MVA) (b-a)	Funded Ratio Funded (MVA/AAL) (a/b)	Covered Payroll (c)	Net Pension Liability as a Percentage of Covered Payroll (b-a)/(c)
VIRGINIA RETIREMENT SYSTEM (VRS)**						
2015	\$ 64,026	\$ 84,711	\$ 20,685	75.6%	\$ 15,901	130.1%
2014	62,207	82,083	19,876	75.8%	15,671	126.8%
2013*	54,973	79,078	24,105	69.5%	15,269	157.9%
2012	50,267	77,859	27,592	64.6%	14,880	185.4%
2011	51,280	75,185	23,905	68.2%	14,709	162.5%
2010	44,646	72,801	28,155	61.3%	14,758	190.8%
2009*	39,890	66,323	26,433	60.1%	14,948	176.8%
2008	51,743	62,554	10,811	82.7%	14,559	74.3%
2007	54,948	58,116	3,168	94.5%	13,834	22.9%
2006	46,021	52,822	6,801	87.1%	13,002	52.3%
STATE POLICE OFFICERS' RETIREMENT SYSTEM (SPORS)						
2015	\$ 733	\$ 1,051	\$ 318	69.7%	\$ 111	285.5%
2014	721	1,029	308	70.1%	112	274.0%
2013*	625	997	372	62.7%	109	341.0%
2012	575	1,013	438	56.8%	104	420.6%
2011	599	986	387	60.8%	100	388.3%
2010	534	949	415	56.3%	98	425.3%
2009*	484	879	395	55.1%	101	391.4%
2008	636	844	208	75.5%	103	202.9%
2007	684	806	122	84.9%	101	121.3%
2006	581	730	149	79.6%	94	159.4%
VIRGINIA LAW OFFICERS' RETIREMENT SYSTEM (VaLORS)						
2015	\$ 1,191	\$ 1,907	\$ 716	62.5%	\$ 330	217.2%
2014	1,150	1,820	670	63.2%	353	190.0%
2013*	992	1,742	750	56.9%	342	219.0%
2012	895	1,753	858	51.1%	345	248.9%
2011	911	1,683	772	54.1%	356	216.8%
2010	792	1,579	787	50.2%	346	227.5%
2009*	691	1,412	721	48.9%	359	200.7%
2008	853	1,281	428	66.7%	368	116.2%
2007	868	1,166	298	74.4%	341	87.3%
2006	700	1,096	396	63.9%	321	123.3%
JUDICIAL RETIREMENT SYSTEM (JRS)						
2015	\$ 456	\$ 600	\$ 144	76.0%	\$ 62	230.3%
2014	442	608	166	72.7%	59	279.4%
2013*	389	591	202	65.8%	57	353.5%
2012	354	582	228	60.8%	57	400.9%
2011	361	569	208	63.4%	59	353.7%
2010	315	560	245	56.4%	61	401.2%
2009*	284	521	237	54.4%	63	377.6%
2008	367	495	128	74.1%	61	211.3%
2007	390	442	52	88.2%	58	91.1%
2006	326	424	98	77.0%	54	179.7%

\* Revised economic and demographic assumptions due to experience study.

\*\* The breakdown of VRS data into state, teacher and political subdivisions is also presented in the Statistical Section.

## SCHEDULE OF FUNDING (MARKET VALUE BASIS): VRS PENSION PLANS

(EXPRESSED IN THOUSANDS)

Actuarial Valuation Date June 30	Market Value of Assets (MVA)(a)	Actuarial Accrued Liability (AAL) – Entry Age (b)	Net Pension Liability (AAL-MVA) (b-a)	Funded Ratio Funded (MVA/AAL) (a/b)	Covered Payroll (c)	Net Pension Liability as a Percentage of Covered Payroll (b-a)/(c)
VIRGINIA RETIREMENT SYSTEM (VRS) – STATE						
2015	\$ 16,398,575	\$ 22,291,558	\$ 5,892,983	73.6%	\$ 3,872,724	152.2%
2014	16,168,535	21,822,936	5,654,401	74.1%	3,854,779	146.7%
2013*	14,502,362	21,068,651	6,566,289	68.8%	3,716,548	176.7%
2012	13,469,215	20,944,258	7,475,043	64.3%	3,713,119	201.3%
2011	13,992,901	20,407,958	6,415,057	68.6%	3,686,259	174.0%
2010	12,384,638	19,539,453	7,154,815	63.4%	3,514,396	203.6%
2009*	11,253,767	17,925,879	6,672,112	62.8%	3,619,478	184.3%
2008	14,856,159	17,096,942	2,240,783	86.9%	3,640,692	61.5%
2007	15,987,528	16,279,781	292,253	98.2%	3,467,388	8.4%
2006	13,549,153	15,064,062	1,514,909	89.9%	3,301,286	45.9%
VIRGINIA RETIREMENT SYSTEM (VRS) – TEACHER						
2015	\$ 30,344,072	\$ 42,564,178	\$ 12,220,106	71.3%	\$ 7,488,507	163.2%
2014	29,411,183	41,297,669	11,886,486	71.2%	7,362,793	161.4%
2013*	26,076,425	39,852,334	13,775,909	65.4%	7,211,543	191.0%
2012	23,930,149	39,090,408	15,160,259	61.2%	7,004,577	216.4%
2011	24,520,362	37,771,732	13,251,370	64.9%	6,922,130	191.4%
2010	21,517,178	37,088,576	15,571,398	58.0%	7,119,889	218.7%
2009*	19,302,368	33,860,514	14,558,146	57.0%	7,160,842	203.3%
2008	25,076,413	31,958,321	6,881,908	78.5%	6,896,432	99.8%
2007	26,618,235	29,669,838	3,051,603	89.7%	6,604,643	46.2%
2006	22,330,731	27,274,064	4,943,333	81.9%	6,195,421	79.8%
VIRGINIA RETIREMENT SYSTEM (VRS) – POLITICAL SUBDIVISIONS						
2015	\$ 17,283,021	\$ 19,855,406	\$ 2,572,385	87.0%	\$ 4,540,149	56.7%
2014	16,627,539	18,962,779	2,335,240	87.7%	4,453,787	52.4%
2013*	14,393,949	18,156,606	3,762,657	79.3%	4,340,988	86.7%
2012	12,867,357	17,824,190	4,956,833	72.2%	4,162,579	119.1%
2011	12,767,072	17,005,070	4,237,998	75.1%	4,100,470	103.4%
2010	10,744,000	16,172,372	5,428,372	66.4%	4,123,505	131.6%
2009*	9,333,619	14,536,618	5,202,999	64.2%	4,167,324	124.9%
2008	11,810,904	13,499,216	1,688,312	87.5%	4,021,468	42.0%
2007	12,342,460	12,166,854	(175,606)	101.4%	3,761,991	(4.7%)
2006	10,140,847	10,483,777	342,930	96.7%	3,504,844	9.8%
VIRGINIA RETIREMENT SYSTEM (VRS) – TOTAL						
2015	\$ 64,025,668	\$ 84,711,142	\$ 20,685,474	75.6%	\$ 15,901,380	130.1%
2014	62,207,257	82,083,384	19,876,127	75.8%	15,671,359	126.8%
2013*	54,972,736	79,077,591	24,104,855	69.5%	15,269,079	157.9%
2012	50,266,721	77,858,856	27,592,135	64.6%	14,880,275	185.4%
2011	51,280,335	75,184,760	23,904,425	68.2%	14,708,859	162.5%
2010	44,645,816	72,800,401	28,154,585	61.3%	14,757,790	190.8%
2009*	39,889,754	66,323,011	26,433,257	60.1%	14,947,644	176.8%
2008	51,743,476	62,554,479	10,811,003	82.7%	14,558,592	74.3%
2007	54,948,223	58,116,473	3,168,250	94.5%	13,834,022	22.9%
2006	46,020,731	52,821,903	6,801,172	87.1%	13,001,551	52.3%

\* Revised economic and demographic assumptions due to experience study.

## Other Employee Benefit Trust Funds

**FIGURE 5.10: ANALYSIS OF CHANGES AND GROWTH IN FIDUCIARY NET POSITION – GROUP LIFE INSURANCE FUND**

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN THOUSANDS)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position</b>										
<b>Restricted –</b>										
<b>Beginning of Year</b>	<b>\$751,361</b>	<b>\$962,328</b>	<b>\$937,146</b>	<b>\$713,812</b>	<b>\$783,058</b>	<b>\$833,065</b>	<b>\$746,619</b>	<b>\$887,773</b>	<b>\$1,079,315</b>	<b>\$1,162,617</b>
<b>Funding:</b>										
Member and Employer Contributions and Other Additions	169,824	158,823	135,063	94,860	45,048	47,285	201,688	205,586	208,463	214,257
Benefits and Administrative Expenses	(119,738)	(133,407)	(153,083)	(139,344)	(146,550)	(141,026)	(150,700)	(160,909)	(177,336)	(175,393)
Net Funding	50,086	25,416	(18,020)	(44,484)	(101,502)	(93,741)	50,988	44,677	31,127	38,864
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	19,078	17,908	13,582	14,128	17,924	16,301	13,669	16,981	16,341	17,040
Net Appreciation (Depreciation) in Fair Value	141,803	(68,506)	(218,896)	99,602	133,585	(9,006)	76,497	129,884	35,834	6,405
Net Investment Income	160,881	(50,598)	(205,314)	113,730	151,509	7,295	90,166	146,865	52,175	23,445
<b>Net Increase (Decrease)</b>	<b>210,967</b>	<b>(25,182)</b>	<b>(223,334)</b>	<b>69,246</b>	<b>50,007</b>	<b>(86,446)</b>	<b>141,154</b>	<b>191,542</b>	<b>83,302</b>	<b>62,309</b>
<b>Net Fiduciary Position</b>										
<b>Restricted –</b>										
<b>End of Year</b>	<b>\$962,328</b>	<b>\$937,146</b>	<b>\$713,812</b>	<b>\$783,058</b>	<b>\$833,065</b>	<b>\$746,619</b>	<b>\$887,773</b>	<b>\$1,079,315</b>	<b>\$1,162,617</b>	<b>\$1,224,926</b>

\* The group life insurance contribution rates for the last quarter of fiscal year 2010 and for all of fiscal year 2006 were zero as a result of a statutory premium holiday. Amounts shown in premium holiday years are adjustments and contributions for new employers.

## SCHEDULE OF GROUP LIFE INSURANCE ADDITIONS BY SOURCE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Contributions				Investment Income (Loss)	Other	Total
	State	Teacher	Political Subdivisions	Sub-Total			
2016	\$ 65,980	\$ 91,121	\$ 57,156	\$ 214,257	\$ 23,445	\$ –	\$ 237,702
2015	63,927	88,871	55,665	208,463	52,175	–	260,638
2014	64,151	86,807	54,628	205,586	146,865	–	352,451
2013	61,541	85,725	53,449	200,715	90,166	973	291,854
2012	14,243	20,183	12,108	46,534	7,295	751	54,580
2011	13,348	19,427	11,920	44,695	151,509	353	196,557
2010*	28,685	40,502	25,673	94,860	113,730	–	208,590
2009	40,369	58,855	35,839	135,063	(205,314)	–	(70,251)
2008	52,503	60,405	45,915	158,823	(50,598)	–	108,225
2007	51,116	74,442	44,266	169,824	160,881	–	330,705

\* The group life insurance contribution rates for the last quarter of fiscal year 2010 and for all of fiscal years 2006, 2005 and 2004 were zero as a result of a statutory premium holiday. Amounts shown in premium holiday years are adjustments and contributions for new employers.

## SCHEDULE OF GROUP LIFE INSURANCE DEDUCTIONS BY TYPE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Group Life Claims			Administrative Expenses	Other	Total
	Active	Retired	Sub-Total			
2016	\$ 60,427	\$ 113,416	\$ 173,843	\$ 81	\$ 1,469	\$ 175,393
2015	55,429	120,331	175,760	183	1,393	177,336
2014	53,478	105,880	159,358	275	1,276	160,909
2013	47,875	101,612	149,487	65	1,148	150,700
2012	54,605	85,338	139,943	77	1,006	141,026
2011	51,236	93,791	145,027	484	1,039	146,550
2010	46,263	91,570	137,833	663	848	139,344
2009	64,119	87,550	151,669	700	714	153,083
2008	55,814	76,279	132,093	686	628	133,407
2007	46,322	72,305	118,627	568	543	119,738

**FIGURE 5.11: ANALYSIS OF CHANGES AND GROWTH IN FIDUCIARY NET POSITION –  
RETIREE HEALTH INSURANCE CREDIT FUND**

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN THOUSANDS)

	2007	2008*	2009	2010**	2011	2012	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$178,068</b>	<b>\$224,606</b>	<b>\$251,634</b>	<b>\$231,994</b>	<b>\$244,958</b>	<b>\$209,033</b>	<b>\$127,234</b>	<b>\$146,472</b>	<b>\$170,048</b>	<b>\$173,194</b>
<b>Funding:</b>										
Employer Contributions and Other Additions	92,919	148,908	146,333	100,613	50,052	51,356	145,031	146,742	144,834	151,916
Reimbursements and Administrative Expenses	(80,803)	(109,426)	(115,878)	(120,872)	(126,963)	(131,435)	(137,906)	(143,088)	(148,459)	(154,320)
Net Funding	12,116	39,482	30,455	(20,259)	(76,911)	(80,079)	7,125	3,654	(3,625)	(2,404)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	4,082	4,407	3,314	4,127	4,849	2,997	1,856	2,226	2,140	2,098
Net Appreciation (Depreciation) in Fair Value	30,340	(16,861)	(53,409)	29,096	36,137	(4,717)	10,257	17,696	4,631	323
Net Investment Income	34,422	(12,454)	(50,095)	33,223	40,986	(1,720)	12,113	19,922	6,771	2,421
<b>Net Increase (Decrease)</b>	<b>46,538</b>	<b>27,028</b>	<b>(19,640)</b>	<b>12,964</b>	<b>(35,925)</b>	<b>(81,799)</b>	<b>19,238</b>	<b>23,576</b>	<b>3,146</b>	<b>17</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$224,606</b>	<b>\$251,634</b>	<b>\$231,994</b>	<b>\$244,958</b>	<b>\$209,033</b>	<b>\$127,234</b>	<b>\$146,472</b>	<b>\$170,048</b>	<b>\$173,194</b>	<b>\$173,211</b>

\* The health insurance credit for teachers increased to \$4 per month for each year of service with no cap on the benefit. The balance in the Enhanced Retiree Health Insurance Credit Program for teachers was refunded to employers.

\*\* The health insurance credit contribution rate for the last quarter of fiscal year 2010 was zero as a result of a statutory contribution holiday.



## SCHEDULE OF RETIREE HEALTH INSURANCE CREDIT ADDITIONS BY SOURCE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Contributions				Investment Income (Loss)	Other	Total
	State	Teacher	Political Subdivisions	Sub-Total			
2016	\$ 69,095	\$ 80,831	\$ 1,990	\$ 151,916	\$ 2,421	–	\$ 154,337
2015	64,027	78,874	1,933	144,834	6,771	–	151,605
2014	64,146	80,720	1,876	146,742	19,922	–	166,664
2013	62,597	80,489	1,945	145,031	12,113	–	157,144
2012	7,137	42,245	1,974	51,356	(1,720)	–	49,636
2011	6,702	41,410	1,940	50,052	40,986	–	91,038
2010*	44,485	53,114	3,014	100,613	33,223	–	133,836
2009	66,256	77,205	2,872	146,333	(50,095)	–	96,238
2008	65,696	79,518	3,694	148,908	(12,454)	–	136,454
2007	55,289	34,019	3,611	92,919	34,422	–	127,341

\*The health insurance credit contribution rate for the last quarter of fiscal year 2010 was zero as a result of a statutory contribution holiday.

## SCHEDULE OF RETIREE HEALTH INSURANCE CREDIT DEDUCTIONS BY TYPE

FISCAL YEARS 2007 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Retiree Health Insurance Reimbursements				Administrative Expenses	Other	Total
	State	Teacher	Political Subdivisions	Sub-Total			
2016	\$ 68,359	\$ 83,329	\$ 2,226	\$ 153,914	\$ 401	\$ 5	\$ 154,320
2015	66,576	79,457	1,956	147,989	465	5	148,459
2014	64,422	76,389	1,799	142,610	463	15	143,088
2013	62,795	72,997	1,746	137,538	358	10	137,906
2012	59,882	69,638	1,582	131,102	333	–	131,435
2011	58,433	66,608	1,459	126,500	463	–	126,963
2010	56,337	62,573	1,359	120,269	603	–	120,872
2009	52,742	61,229	1,307	115,278	600	–	115,878
2008*	49,248	58,748	993	108,989	437	–	109,426
2007	47,263	32,308	876	80,447	356	–	80,803

\* The health insurance credit reimbursement for teachers was increased to \$4 per month per year of service with no cap on the benefit.

**FIGURE 5.12: ANALYSIS OF CHANGES AND GROWTH IN FIDUCIARY NET POSITION –  
DISABILITY INSURANCE TRUST FUND**

FOR THE YEARS ENDED JUNE 30

(EXPRESSED IN THOUSANDS)

	2007	2008	2009	2010*	2011*	2012*	2013	2014	2015	2016
<b>Net Fiduciary Position Restricted – Beginning of Year</b>	<b>\$191,872</b>	<b>\$263,586</b>	<b>\$313,521</b>	<b>\$290,481</b>	<b>\$336,213</b>	<b>\$369,071</b>	<b>\$343,972</b>	<b>\$370,121</b>	<b>\$410,097</b>	<b>\$414,518</b>
<b>Funding:</b>										
Employer Contributions and Other Additions	65,726	99,430	71,337	31,021	6	78	17,267	17,693	24,026	25,156
Disability Insurance Benefits and Administrative Expenses	(34,048)	(32,697)	(28,800)	(28,415)	(29,001)	(28,955)	(30,668)	(34,290)	(37,942)	(38,782)
Net Funding	31,678	66,733	42,537	2,606	(28,995)	(28,877)	(13,401)	(16,597)	(13,916)	(13,626)
<b>Investment Income:</b>										
Interest, Dividends and Other Investment Income	4,749	5,946	4,339	5,358	7,317	7,048	5,919	6,264	5,705	5,576
Net Appreciation (Depreciation) in Fair Value	35,287	(22,744)	(69,916)	37,768	54,536	(3,270)	33,631	50,309	12,632	1,358
Net Investment Income	40,036	(16,798)	(65,577)	43,126	61,853	3,778	39,550	56,573	18,337	6,934
<b>Net Increase (Decrease)</b>	<b>71,714</b>	<b>49,935</b>	<b>(23,040)</b>	<b>45,732</b>	<b>32,858</b>	<b>(25,099)</b>	<b>26,149</b>	<b>39,976</b>	<b>4,421</b>	<b>(6,692)</b>
<b>Net Fiduciary Position Restricted – End of Year</b>	<b>\$263,586</b>	<b>\$313,521</b>	<b>\$290,481</b>	<b>\$336,213</b>	<b>\$369,071</b>	<b>\$343,972</b>	<b>\$370,121</b>	<b>\$410,097</b>	<b>\$414,518</b>	<b>\$407,826</b>

\* The disability insurance contribution rate for fiscal year 2011 and fiscal year 2012 and the last quarter of fiscal year 2010 was zero as a result of a statutory contribution holiday.

## SCHEDULE OF DISABILITY INSURANCE TRUST FUND ADDITIONS BY SOURCE

FISCAL YEARS 2008 – 2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Contributions	Investment Income	Transfers and Other Additions**	Total
LONG-TERM DISABILITY PROGRAM				
2016	\$ 20,134	\$ 5,911	\$ –	\$ 26,045
2015	19,458	15,884	–	35,342
2014	14,393	49,603	–	63,996
2013	14,061	35,090	–	49,151
2012	67	3,378	–	3,445
2011	5	55,686	–	55,691
2010	24,196	39,586	7,029	70,811
2009	61,371	(59,852)	–	1,519
2008*	66,606	(15,332)	–	51,274
LONG-TERM CARE PROGRAM				
2016	\$ 5,022	\$ 1,023	\$ –	\$ 6,045
2015	4,557	2,454	10	7,021
2014	2,998	6,970	302	10,270
2013	2,929	4,460	277	7,666
2012	11	400	–	411
2011	1	6,167	–	6,168
2010	6,825	3,540	–	10,365
2009	9,966	(5,725)	–	4,241
2008*	11,754	(1,466)	21,070	31,358
TOTAL DISABILITY INSURANCE TRUST FUND				
2016	\$ 25,156	\$ 6,934	\$ –	\$ 32,090
2015	24,015	18,338	10	42,363
2014	17,391	56,573	302	74,266
2013	16,990	39,550	277	56,817
2012	78	3,778	–	3,856
2011	6	61,853	–	61,859
2010	31,021	43,126	7,029	81,176
2009	71,337	(65,577)	–	5,760
2008*	78,360	(16,798)	21,070	82,632

\* Fiscal year 2008 was the first year for program activity with the current program design.

\*\* Transfers and Other Additions in fiscal year 2008 was a transfer of assets from a fully insured plan. Transfers and Other Additions in fiscal year 2010 includes a transfer of \$7,029,000 between long-term care and long-term disability.

## SCHEDULE OF DISABILITY INSURANCE TRUST FUND DEDUCTIONS BY TYPE

FISCAL YEARS 2008–2016

(EXPRESSED IN THOUSANDS)

Year Ended June 30	Long-Term Disability Benefits	Long-Term Care and Costs	TPA Administrator Administrative Services	VRS Administrative Expenses	Transfers and Other Expenses**	Total
LONG-TERM DISABILITY PROGRAM						
2016	\$ 30,358	\$ —	\$ 7,102	\$ 660	\$ 10	\$ 38,130
2015	28,504	—	7,953	729	13	37,199
2014	24,920	—	7,830	486	39	33,275
2013	23,015	—	6,320	449	26	29,810
2012	20,924	—	6,974	425	32	28,355
2011	20,050	—	7,512	585	148	28,295
2010	19,771	—	7,191	747	25	27,734
2009	19,076	—	8,285	716	—	28,077
2008*	19,675	—	8,438	583	—	28,696
LONG-TERM CARE PROGRAM						
2016	\$ —	\$ 536	\$ —	\$ 114	\$ 2	\$ 652
2015	—	628	—	113	2	743
2014	—	931	—	69	15	1,015
2013	—	798	—	57	3	858
2012	—	546	—	50	4	600
2011	—	624	—	65	17	706
2010	—	612	—	67	7,031	7,710
2009	—	655	—	68	—	723
2008*	—	3,098	—	903	—	4,001
TOTAL DISABILITY INSURANCE TRUST FUND						
2016	\$ 30,358	\$ 536	\$ 7,102	\$ 774	\$ 12	\$ 38,782
2015	28,504	628	7,953	842	15	37,942
2014	24,920	931	7,830	555	54	34,290
2013	23,015	798	6,320	506	29	30,668
2012	20,924	546	6,974	475	36	28,955
2011	20,050	624	7,512	650	165	29,001
2010	19,771	612	7,191	814	7,056	35,444
2009	19,076	655	8,285	784	—	28,800
2008*	19,675	3,098	8,438	1,486	—	32,697

\* Fiscal year 2008 was the first year for program activity with the current program design.

\*\* Transfers and Other Expenses in fiscal year 2010 includes a transfer of \$7,029,000 between long-term care and long-term disability.

## FIGURE 5.13: OTHER POST-EMPLOYMENT BENEFIT PLAN STATISTICS

### SCHEDULE OF RETIRED MEMBERS AND BENEFICIARIES BY PLAN

At June 30	Group Life Insurance	Retiree Health Insurance Credit	Disability Insurance	Line of Duty*
2016	169,786	116,408	2,844	621
2015	163,482	112,053	2,860	525
2014	156,549	108,076	2,764	551
2013	149,926	103,952	2,757	536
2012	143,657	99,836	2,722	788
2011	137,784	96,671	2,698	801
2010	130,915	92,126	2,592	N/A
2009**	124,646	87,538	2,483	N/A

\* This was a new program in fiscal year 2011. The reduction in cases resulted from employers that opted out of the Line of Duty program and are self-administering their line-of-duty cases and funding their benefits.

\*\* Fiscal year 2009 was the first year that this data was available.

FIGURE 5.13: OTHER POST-EMPLOYMENT BENEFIT PLAN STATISTICS, cont.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS BY PLAN

Group Life Insurance			Retiree Health Insurance Credit		
Year Ended June 30	Number of Claims Paid	Average Claim Amount	Payment Period	Number of Recipients	Average Monthly Credit Amount
2016	4,660	\$ 23,735	June 2016	116,408	\$ 108
2015	4,520	\$ 24,754	June 2015	112,053	\$ 108
2014	4,259	\$ 23,489	June 2014	108,076	\$ 108
2013	4,206	\$ 21,816	June 2013	103,952	\$ 107
2012	,013	\$ 21,737	June 2012	99,834	\$ 107
2011	3,999	\$ 21,896	June 2011	96,671	\$ 107
2010	3,852	\$ 22,118	June 2010	92,125	\$ 106
2009*	3,650	\$ 21,301	June 2009*	87,537	\$ 105

\* Fiscal year 2009 was the first year that this data was available.

\* Fiscal year 2009 was the first year that this data was available.

Disability Insurance

Payment Period	Number of Claims Paid	Average Gross Monthly Benefit	Average Net Monthly Benefit*
June 2016	2,836	\$ 1,797	\$ 892
June 2015	2,829	\$ 1,820	\$ 885
June 2014	2,814	\$ 1,852	\$ 843
June 2013	2,707	\$ 1,852	\$ 814
June 2012	2,683	\$ 1,828	\$ 762
June 2011	2,650	\$ 1,770	\$ 759
June 2010	2,564	\$ 1,738	\$ 779
June 2009**	2,428	\$ 1,714	\$ 797

\* The net monthly benefit reflects adjustments for Social Security, workers' compensation and other offsets.

\*\* Fiscal year 2009 was the first year that this data was available.

Line of Duty\*

Line of Duty Death Benefits**			Health Insurance Benefits		
Year Ended June 30	LOD Death	Presumptive LOD Death	Year Ended June 30	Number of Active Claims	Average Annual Health Insurance Benefit
2016	1	2	2016	621	\$ 13,503
2015	—	3	2015	525	\$ 15,198
2014	3	2	2014	573	\$ 12,725
2013	2	3	2013	552	\$ 10,807
2012	4	4	2012	781	\$ 12,298
2011***	6	11	2011	801	\$ 11,138

\* The Line of Duty Program was funded by a trust fund beginning in fiscal year 2011. In that year and fiscal year 2012, employers had the option to opt-out and self-fund the benefits provided by the program. Data for fiscal year 2011 and fiscal year 2012 are not representative of the program's expected activity going forward.

\*\* The Line of Duty Program provides a \$100,000 death benefit for a beneficiary of an eligible individual whose death was a direct or proximate result of the performance of duty. The program also provides a \$25,000 death benefit for beneficiaries of certain individuals whose death arose out of their employment or was within five years of the date of retirement.

\*\*\* Fiscal year 2011 was the first year that this data was available.

## VRS-Participating Employers

More than 800 employers participate in the Virginia Retirement System (VRS) on behalf of their employees. Employers include state agencies, public colleges and universities, school divisions and political subdivisions.

The following employers were participating in VRS as of June 30, 2016:

### PARTICIPATING POLITICAL SUBDIVISIONS: 456

*A: retirement only B: retirement and group life insurance C: retirement, group life insurance and retiree health insurance credit  
D: retirement and retiree health insurance credit*

#### COUNTIES: 93

Accomack County: C	Dickenson County: A	Lancaster County: B	Rappahannock County: C
Albemarle County: B	Dinwiddie County: B	Lee County: B	Richmond County: B
Alleghany County: B	Essex County: C	Loudoun County: B	Roanoke County: C
Amelia County: C	Fauquier County: B	Louisa County: C	Rockbridge County: B
Amherst County: C	Floyd County: B	Lunenburg County: B	Rockingham County: B
Appomattox County: B	Fluvanna County: C	Madison County: C	Russell County: C
Augusta County: B	Franklin County: B	Mathews County: C	Scott County: B
Bath County: B	Frederick County: B	Mecklenburg County: B	Shenandoah County: C
Bedford County: B	Giles County: B	Middlesex County: B	Smyth County: B
Bland County: C	Gloucester County: C	Montgomery County: B	Southampton County: C
Botetourt County: B	Goochland County: B	Nelson County: B	Spotsylvania County: B
Brunswick County: B	Grayson County: B	New Kent County: B	Stafford County: C
Buchanan County: B	Greene County: C	Northampton County: B	Surry County: B
Buckingham County: B	Greensville County: C	Northumberland County: C	Sussex County: B
Campbell County: B	Halifax County: C	Nottoway County: B	Tazewell County: C
Caroline County: B	Hanover County: C	Orange County: B	Warren County: B
Carroll County: B	Henrico County: B	Page County: B	Washington County: C
Charles City County: B	Henry County: C	Patrick County: B	Westmoreland County: C
Charlotte County: B	Highland County: B	Pittsylvania County: C	Wise County: C
Chesterfield County: B	Isle of Wight County: C	Powhatan County: C	Wythe County: C
Clarke County: B	James City County: C	Prince Edward County: B	York County: C
Craig County: C	King & Queen County: B	Prince George County: B	
Culpeper County: B	King George County: B	Prince William County: C	
Cumberland County: B	King William County: B	Pulaski County: C	

#### CITIES AND TOWNS: 161

City of Alexandria: A	City of Hampton: B	City of Radford: C	Town of Ashland: B
City of Bedford: B	City of Harrisonburg: B	City of Richmond: B	Town of Berryville: B
City of Bristol: B	City of Hopewell: B	City of Roanoke: B	Town of Big Stone Gap: A
City of Buena Vista: B	City of Lexington: B	City of Salem: B	Town of Blacksburg: B
City of Chesapeake: B	City of Lynchburg: B	City of Staunton: B	Town of Blackstone: B
City of Colonial Heights: B	City of Manassas: C	City of Suffolk: B	Town of Bluefield: B
City of Covington: C	City of Manassas Park: B	City of Virginia Beach: B	Town of Bowling Green: B
City of Danville: A	City of Martinsville: B	City of Waynesboro: B	Town of Boyce: B
City of Emporia: B	City of Newport News: B	City of Williamsburg: B	Town of Boydton: B
City of Fairfax: A	City of Norfolk: B	City of Winchester: C	Town of Boykins: A
City of Falls Church: B	City of Norton: B	Town of Abingdon: B	Town of Bridgewater: B
City of Franklin: B	City of Petersburg: B	Town of Altavista: B	Town of Broadway: B
City of Fredericksburg: B	City of Poquoson: C	Town of Amherst: B	Town of Brodnax: A
City of Galax: B	City of Portsmouth: B	Town of Appomattox: A	Town of Brookneal: B

CITIES AND TOWNS, cont.

Town of Burkeville: B	Town of Gretna: B	Town of Middletown: D	Town of South Boston: B
Town of Cape Charles: B	Town of Grottoes: B	Town of Mineral: A	Town of South Hill: A
Town of Chase City: B	Town of Grundy: B	Town of Montross: B	Town of St. Paul: B
Town of Chatham: B	Town of Halifax: B	Town of Mount Jackson: B	Town of Stanley: C
Town of Chilhowie: B	Town of Hamilton: C	Town of Narrows: A	Town of Stephens City: B
Town of Chincoteague: B	Town of Haymarket: A	Town of New Market: B	Town of Strasburg: C
Town of Christiansburg: A	Town of Haysi: A	Town of Onancock: B	Town of Stuart: B
Town of Clarksville: B	Town of Herndon: B	Town of Onley: B	Town of Tappahannock: A
Town of Clifton Forge: B	Town of Hillsville: B	Town of Orange: B	Town of Tazewell: A
Town of Coeburn: B	Town of Hurt: B	Town of Parksley: B	Town of Timberville: B
Town of Colonial Beach: B	Town of Independence: A	Town of Pearisburg: C	Town of Urbanna: B
Town of Courtland: B	Town of Iron Gate: B	Town of Pembroke: B	Town of Victoria: B
Town of Craigsville: B	Town of Jarratt: A	Town of Pennington Gap: A	Town of Vienna: B
Town of Crewe: B	Town of Jonesville: B	Town of Pound: A	Town of Vinton: B
Town of Culpeper: B	Town of Kenbridge: C	Town of Pulaski: B	Town of Wakefield: A
Town of Dayton: B	Town of Kilmarnock: C	Town of Purcellville: B	Town of Warrenton: B
Town of Dillwyn: A	Town of La Crosse: A	Town of Quantico: B	Town of Warsaw: B
Town of Dublin: B	Town of Lawrenceville: C	Town of Remington: B	Town of Waverly: A
Town of Dumfries: C	Town of Lebanon: B	Town of Rich Creek: A	Town of Weber City: B
Town of Edinburg: A	Town of Leesburg: B	Town of Richlands: A	Town of West Point: B
Town of Elkton: B	Town of Louisa: B	Town of Rocky Mount: B	Town of Windsor: B
Town of Exmore: A	Town of Lovettsville: B	Town of Round Hill: B	Town of Wise: B
Town of Floyd: B	Town of Luray: B	Town of Rural Retreat: A	Town of Woodstock: C
Town of Front Royal: B	Town of Madison: B	Town of Saltville: A	Town of Wytheville: B
Town of Gate City: A	Town of Marion: B	Town of Scottsville: B	
Town of Glasgow: B	Town of McKenney: B	Town of Shenandoah: C	
Town of Gordonsville: B	Town of Middleburg: B	Town of Smithfield: B	

AUTHORITIES, COMMISSIONS, DISTRICTS, REGIONAL INSTITUTIONS AND COMMUNITY SERVICES BOARDS: 202

Accomack-Northampton Planning District Commission: B	Bedford Public Library: B	Brunswick Industrial Development Authority: B	Chesterfield County Health Center Commission: B
Albemarle County Service Authority: B	Bedford Regional Water Authority: B	Campbell County Utilities & Service Authority: B	Clinch Valley Soil & Water Conservation District: B
Albemarle-Charlottesville Regional Jail: B	Big Sandy Soil & Water Conservation District: A	Capital Region Airport Commission: B	Coeburn-Norton-Wise Regional Water Treatment Authority: B
Alexandria Redevelopment & Housing Authority: B	Big Stone Gap Redevelopment & Housing Authority: A	Castlewood Water & Sewage Authority: B	Colonial Behavioral Health: C
Alexandria Renew Enterprises: A	Big Walker Soil & Water Conservation District: A	Central Rappahannock Regional Library: B	Colonial Soil & Water Conservation District: B
Alleghany Highlands Community Services Board: B	Blacksburg-Christiansburg-VPI Water Authority: B	Central Virginia Community Services Board: B	Commonwealth Regional Council: A
Alleghany Highlands Regional Library, Inc.: B	Blacksburg-VPI Sanitation Authority: B	Central Virginia Regional Jail: B	Crater Youth Care Commission: B
Amherst County Service Authority: C	Blue Ridge Behavioral Healthcare: B	Central Virginia Waste Management Authority: C	Culpeper Soil & Water Conservation District: B
Anchor Commission: B	Blue Ridge Juvenile Detention Center: B	Charlottesville-Albemarle Airport Authority: B	Cumberland Mountain Community Services Board: B
Appalachian Juvenile Commission: C	Blue Ridge Regional Jail Authority: B	Charlottesville Redevelopment & Housing Authority: B	Cumberland Plateau Regional Housing Authority: B
Appomattox Regional Library: B	Bristol Redevelopment & Housing Authority: B	Chesapeake Bay Bridge & Tunnel District: B	Daniel Boone Soil & Water Conservation District: B
Appomattox River Water Authority: B	Bristol Virginia Utilities Authority: B	Chesapeake Redevelopment & Housing Authority: B	Danville-Pittsylvania Community Services Board: B

AUTHORITIES, COMMISSIONS, DISTRICTS, REGIONAL INSTITUTIONS AND COMMUNITY SERVICES BOARDS, cont.

Danville Redevelopment & Housing Authority: B	Holston River Soil & Water Conservation District: A	Northern Neck Regional Jail: B	Richmond Metropolitan Authority: B
Dinwiddie County Water Authority: B	Hopewell Redevelopment & Housing Authority: A	Northern Shenandoah Valley Regional Commission: B	Richmond Redevelopment & Housing Authority: B
District 19 Community Services Board: C	Institute for Advanced Learning and Research: A	Northern Virginia Health Care Center Commission: A	Richmond Regional Planning District Commission: A
Eastern Shore Community Services Board: B	James City Service Authority: C	Northern Virginia Juvenile Detention Home: B	Rivanna Solid Waste Authority: B
Eastern Shore Public Library: B	John Marshall Soil & Water Conservation District: B	Northern Virginia Transportation Authority: C	Rivanna Water & Sewer Authority: B
Eastern Shore Soil & Water Conservation District: B	Lee County Public Service Authority: B	Northwestern Community Services Board: B	Riverside Regional Jail: B
Economic Development Authority of Henrico County: B	Lee County Redevelopment & Housing Authority: B	Opportunity Inc. of Hampton Roads: B	Roanoke Higher Education Authority: C
Evergreen Soil & Water Conservation District: B	Lenowisco Planning District Commission: B	Pamunkey Regional Jail: B	Roanoke Redevelopment & Housing Authority: A
Fauquier County Water & Sanitation Authority: B	Lonesome Pine Regional Library: B	Pamunkey Regional Library: C	Roanoke River Service Authority: A
Ferrum Water & Sewage Authority: A	Lonesome Pine Soil & Water Conservation District: A	Peaks of Otter Soil & Water Conservation District: B	Robert E. Lee Soil & Water Conservation District: A
Franklin Redevelopment & Housing Authority: B	Loudoun County Sanitation Authority: B	Peninsula Airport Commission: B	Rockbridge Area Community Services Board: B
Frederick County Sanitation Authority: C	Massanutten Regional Library: B	Pepper's Ferry Regional Wastewater Authority: C	Rockbridge Area Social Services Department: B
Giles County Public Service Authority: B	Meherrin Regional Library: C	Peter Francisco Soil & Water Conservation District: A	Rockbridge County Public Service Authority: B
Goochland-Powhatan Community Services Board: B	Meherrin River Regional Jail Authority: C	Petersburg Redevelopment & Housing Authority: C	Rockbridge Regional Library: A
Greensville County Water & Sewer Authority: C	Middle Peninsula-Northern Neck Community Services Board: B	Peumansend Creek Regional Jail: B	RSW Regional Jail Authority: B
Greensville-Emporia Department of Social Services: C	Middle Peninsula Planning District Commission: B	Piedmont Community Services Board: B	Russell County Public Service Authority: C
Halifax Service Authority: B	Middle Peninsula Regional Security Center: B	Piedmont Regional Jail: B	Scott County Public Service Authority: B
Hampton-Newport News Community Services Board: A	Middle River Regional Jail Authority: B	Piedmont Regional Juvenile Detention Center: B	Scott County Redevelopment & Housing Authority: B
Hampton Redevelopment & Housing Authority: B	Monacan Soil & Water Conservation District: C	Pittsylvania County Service Authority: B	Scott County Soil & Water Conservation District: B
Hampton Roads Planning District Commission: B	Montgomery Regional Solid Waste Authority: B	Planning District One Behavioral Health Services Board: C	Shenandoah Valley Juvenile Detention Home Commission: C
Hampton Roads Regional Jail Authority: B	Mount Rogers Community Services Board: B	Portsmouth Redevelopment & Housing Authority: B	Shenandoah Valley Regional Airport Commission: B
Hampton Roads Sanitation District: C	Nelson County Service Authority: B	Potomac and Rappahannock Transportation Commission: B	Skyline Soil & Water Conservation District: A
Hampton Roads Transit: B	New River Resource Authority: C	Potomac River Fisheries Commission: B	South Central Wastewater Authority: B
Hampton Roads Transportation Accountability Commission: C	New River Soil & Water Conservation District: B	Prince William County Service Authority: C	Southeastern Virginia Public Service Authority: B
Handley Regional Library: B	New River Valley Community Services Board: A	Prince William Soil & Water Conservation District: B	Southside Community Services Board: C
Harrisonburg-Rockingham Community Services Board: C	New River Valley Juvenile Detention Home Commission: B	Rappahannock Area Community Services Board: C	Southside Planning District Commission: B
Harrisonburg-Rockingham Regional Sewer Authority: B	New River Valley Planning District Commission: A	Rappahannock Juvenile Center: C	Southside Regional Jail: C
Henricopolis Soil & Water Conservation District: B	New River Valley Regional Jail: B	Rappahannock-Rapidan Community Services Board: B	Southside Regional Juvenile Group Home Commission: B
Henry County Public Service Authority: C	Norfolk Airport Authority: B	Rappahannock-Rapidan Regional Planning District Commission: B	Southside Regional Library Board: B
	Norfolk Redevelopment & Housing Authority: B	Rappahannock Regional Jail: B	Southwest Regional Recreation Authority: B
	Northern Neck Planning District Commission: B	Region Ten Community Services Board: B	



AUTHORITIES, COMMISSIONS, DISTRICTS, REGIONAL INSTITUTIONS AND COMMUNITY SERVICES BOARDS, cont.

Southwest Virginia Regional Jail: B	Tidewater Soil & Water Conservation District: A	Virginia Peninsula Regional Jail: B	Western Virginia Regional Jail Authority: C
Spotsylvania-Stafford-Fredericksburg Group Home Commission: B	Tidewater Youth Services Commission: C	Virginia Peninsulas Public Service Authority: B	Western Virginia Water Authority: B
Staunton Redevelopment & Housing Authority: B	Tri-County/City Soil & Water Conservation District: B	Virginia Resources Authority: B	Wise County Public Service Authority: B
Suffolk Redevelopment & Housing Authority: B	Upper Occoquan Sewage Authority: B	Virginia's Region 2000 Local Government Council: B	Wise County Redevelopment & Housing Authority: C
Sussex Service Authority: B	Valley Community Services Board: B	Washington County Service Authority: B	Woodway Water Authority: B
Tazewell Soil & Water Conservation District: B	Virginia Biotechnology Research Park Authority: C	Washington Metropolitan Area Transportation Commission: A	Wythe-Grayson Regional Library: B
Thomas Jefferson Planning District Commission: B	Virginia Coalfield Economic Development Authority: C	Waynesboro Redevelopment & Housing Authority: B	Wytheville Redevelopment & Housing Authority: B
Thomas Jefferson Soil & Water Conservation District: B	Virginia Highlands Airport Authority: B	Western Tidewater Community Services Board: D	
		Western Tidewater Regional Jail: B	

**SCHOOLS: 145\***

*E: professional employees covered by retirement, group life insurance and the retiree health insurance credit and non-professional employees (as applicable) covered by retirement and group life insurance*

*F: professional and non-professional employees covered by retirement, group life insurance and the retiree health insurance credit*

COUNTY SCHOOLS: 94

Accomack County Schools: E	Cumberland County Schools: E	King William County Schools: E	Prince William County Schools: F
Albemarle County Schools: E	Dickenson County Schools: E	Lancaster County Schools: E	Pulaski County Schools: E
Alleghany County Schools: E	Dinwiddie County Schools: E	Lee County Schools: F	Rappahannock County Schools: F
Amelia County Schools: E	Essex County Schools: E	Loudoun County Schools: F	Richmond County Schools: E
Amherst County Schools: E	Fairfax County Schools: E	Louisa County Schools: F	Roanoke County Schools: E
Appomattox County Schools: F	Fauquier County Schools: E	Lunenburg County Schools: E	Rockbridge County Schools: E
Arlington County Schools: E	Floyd County Schools: E	Madison County Schools: E	Rockingham County Schools: F
Augusta County Schools: E	Fluvanna County Schools: E	Mathews County Schools: E	Russell County Schools: F
Bath County Schools: F	Franklin County Schools: F	Mecklenburg County Schools: E	Scott County Schools: E
Bedford County Schools: E	Frederick County Schools: E	Middlesex County Schools: E	Shenandoah County Schools: E
Bland County Schools: E	Giles County Schools: E	Montgomery County Schools: E	Smyth County Schools: E
Botetourt County Schools: F	Gloucester County Schools: F	Nelson County Schools: E	Southampton County Schools: E
Brunswick County Schools: F	Goochland County Schools: E	New Kent County Schools: E	Spotsylvania County Schools: E
Buchanan County Schools: E	Grayson County Schools: E	Northampton County Schools: E	Stafford County Schools: F
Buckingham County Schools: E	Greene County Schools: E	Northumberland County Schools: E	Surry County Schools: E
Campbell County Schools: F	Greensville County Schools: E	Nottoway County Schools: E	Sussex County Schools: E
Caroline County Schools: E	Halifax County Schools: F	Orange County Schools: E	Tazewell County Schools: E
Carroll County Schools: F	Hanover County Schools: E	Page County Schools: E	Warren County Schools: E
Charles City County Schools: E	Henrico County Schools: E	Patrick County Schools: E	Washington County Schools: F
Charlotte County Schools: E	Henry County Schools: E	Pittsylvania County Schools: F	Westmoreland County Schools: E
Chesterfield County Schools: E	Highland County Schools: E	Powhatan County Schools: E	Wise County Schools: F
Clarke County Schools: E	Isle of Wight County Schools: E	Prince Edward County Schools: E	Wythe County Schools: F
Craig County Schools: E	King & Queen County Schools: E	Prince George County Schools: E	York County Schools: E
Culpeper County Schools: F	King George County Schools: E		

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**CITY AND TOWN SCHOOLS: 39**

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Alexandria City Schools: E	Falls Church Public Schools: E	Manassas Park City Schools: F	Roanoke City Schools: F
Bristol City Schools: E	Franklin City Schools: F	Martinsville City Schools: E	Salem City Schools: F
Buena Vista City Schools: E	Fredericksburg City Schools: E	Newport News Public Schools: F	Staunton City Schools: F
Charlottesville Public Schools: E	Galax City Schools: E	Norfolk Public Schools: E	Suffolk City Schools: E
Chesapeake Public Schools: E	Hampton City Schools: E	Norton City Schools: E	Virginia Beach City Schools: E
Colonial Beach Schools: E	Harrisonburg City Schools: E	Petersburg City Schools: E	Waynesboro City Schools: E
Colonial Heights City Schools: E	Hopewell City Schools: E	Poquoson City Schools: F	West Point Schools: E
Covington City Schools: F	Lexington City Schools: E	Portsmouth City Schools: E	Williamsburg-James City County Schools: F
Danville City Schools: E	Lynchburg Public Schools: E	Radford City Schools: E	Winchester Public Schools: F
Fairfax City Schools: E	Manassas City Schools: F	Richmond City Public Schools: E	

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**OTHER SCHOOLS: 12**

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Amelia-Nottoway Vocational Center: E	Charlottesville-Albemarle Vocational Technical Center: E	New Horizons Technical Center: E	The Pruden Center for Industry and Technology: E
Appomattox Regional Governor's School: E	Jackson River Vocational Technical Center: F	Northern Neck Regional Special Education Program: E	Valley Vocational Technical Center: E
Bridging Communities Regional Career Center & Technical Center: E	Maggie Walker Governor's School for Government and International Studies: E	Northern Neck Regional Vocational Center: E	
		Rowanty Vocational Technical Center: E	

*\* Of the 145 school boards, 133 also provide coverage for non-professional employees and are treated as political subdivisions.*

**AGENCIES OF THE COMMONWEALTH OF VIRGINIA, INCLUDING PUBLIC COLLEGES  
AND UNIVERSITIES: 226**

*Covered by retirement, group life insurance, retiree health insurance credit and sickness and disability*

**TOTAL VRS-PARTICIPATING EMPLOYERS: 827**

**FIGURE 5.14: VRS EMPLOYER RANKING  
CURRENT YEAR**

AS OF JUNE 30, 2016

Employer	Active Employees	Percentage of Total
1. Fairfax County Schools – Professional Employees	21,642	6.33%
2. Loudoun County Schools – Professional Employees	8,469	2.48%
3. Prince William County Schools – Professional Employees	8,282	2.42%
4. Virginia Beach City Schools – Professional Employees	7,902	2.31%
5. Chesterfield County Schools – Professional Employees	6,135	1.80%
6. City of Virginia Beach – General Government	5,770	1.69%
7. Henrico County Schools – Professional Employees	5,220	1.53%
8. University of Virginia – Academic Division	5,075	1.49%
9. Henrico County – General Government	5,070	1.48%
10. Virginia Polytechnic Institute and State University – Academic	4,861	1.42%
11. All other	263,245	77.05%
<b>Total</b>	<b>341,671</b>	<b>100.00%</b>

**HISTORICAL COMPARISON**

AS OF JUNE 30, 2007\*

Employer	Active Employees	Percentage of Total
1. Fairfax County Schools – Professional Employees	19,297	5.69%
2. Virginia Beach City Schools – Professional Employees	8,496	2.50%
3. Prince William County Schools – Professional Employees	7,309	2.15%
4. Loudoun County Schools – Professional Employees	6,053	1.78%
5. Chesterfield County Schools – Professional Employees	5,983	1.76%
6. City of Virginia Beach – General Government	5,887	1.74%
7. University of Virginia – Academic Division	5,340	1.57%
8. Norfolk City Schools – Professional Employees	5,133	1.51%
9. Virginia Polytechnic Institute and State University – Academic	4,792	1.41%
10. Henrico County – General Government	4,711	1.39%
11. All other	266,214	78.50%
<b>Total</b>	<b>339,215</b>	<b>100.00%</b>

\* Fiscal year 2007 is the earliest year for which comparative information exists to support this detailed presentation by specific employer.

**Commonwealth of Virginia 457 Deferred Compensation and Cash Match Plans  
Program With Oversight by VRS**

**PLAN OVERVIEW**

The Commonwealth of Virginia 457 Deferred Compensation Plan is qualified under Section 457(b) of the Internal Revenue Code and regulated by Title 51.1, Chapter 6, of the Code of Virginia. The 457 Deferred Compensation Plan provides

eligible members a way to save for retirement through deferrals of compensation each pay period. The Cash Match Plan is qualified under Section 401(a) of the Internal Revenue Code and is regulated by Title 51.1, Chapter 6, of the Code of Virginia. Employees participating in the Deferred

Compensation Plan are eligible to receive an employer-provided contribution to the Cash Match Plan if they are state employees or employees whose employers have elected the Cash Match Plan.

### ELIGIBILITY

New and re-hired salaried state employees in Plan 1 and Plan 2 are automatically enrolled in the Deferred Compensation Plan upon employment with two opportunities to opt out of the plan. The Deferred Compensation Plan is voluntary to salaried state employees hired before January 1, 2008, and to eligible political subdivision employees whose employers have elected to participate in the plan.

Wage employees of employers that offer the plans may participate in the Deferred Compensation Plan but not the Cash Match Plan. Figure 5.15 presents details of each plan's activity for the years ended June 30, 2016, 2015 and 2014.

Contributions to the Deferred Compensation Plan during fiscal year 2016 and fiscal year 2015

were \$139,303,721 and \$129,961,846, respectively. Contributions to the Cash Match Plan during fiscal year 2016 and fiscal year 2015 were \$16,454,181 and \$17,164,370, respectively.

As shown in Figures 5.16 and 5.17, there were approximately 76,863 employees in the Deferred Compensation Plan and 69,779 employees in the Cash Match Plan as of June 30, 2016.

Current state legislation establishing the Commonwealth of Virginia 457 Deferred Compensation Plan allows participants to use plan funds to purchase eligible prior service credit in their defined benefit plan. Approximately 242 plan participants used the trustee-to-trustee transfer provision to buy VRS service credit.

The Virginia Retirement System (the System) has oversight but no investment responsibility for the Deferred Compensation and Cash Match Plans. These plans' assets, therefore, are not included in the System's Basic Financial Statements.

### FIGURE 5.15: STATEMENT OF CHANGES IN PLAN ACCUMULATION ASSETS

FOR THE YEARS ENDED JUNE 30

	Deferred Compensation Plan – 457(b)			Cash Match Plan – 401(a)		
	2016	2015	2014	2016	2015	2014
Plan Assets on July 1	\$ 2,114,351,524	\$ 2,026,875,362	\$ 1,741,845,322	\$ 369,825,796	\$ 353,287,941	\$ 302,484,937
Contributions	139,303,721	129,961,846	129,879,195	16,454,181	17,164,370	17,654,309
Distributions	(110,806,127)	(110,690,633)	(103,153,207)	(22,149,632)	(21,481,259)	(18,281,127)
Plan Transfers*	9,129,981	8,627,066	2,044,169	8,591,671	10,355,268	10,613,093
Third-Party Administrative Fees**	(2,322,347)	(2,382,686)	(2,328,590)	(65,041)	(64,692)	(290,504)
Period Earnings	35,098,750	61,960,569	258,588,473	6,421,093	10,564,168	41,107,233
<b>Plan Assets on June 30</b>	<b>\$ 2,184,755,502</b>	<b>\$ 2,114,351,524</b>	<b>\$ 2,026,875,362</b>	<b>\$ 379,078,068</b>	<b>\$ 369,825,796</b>	<b>\$ 353,287,941</b>

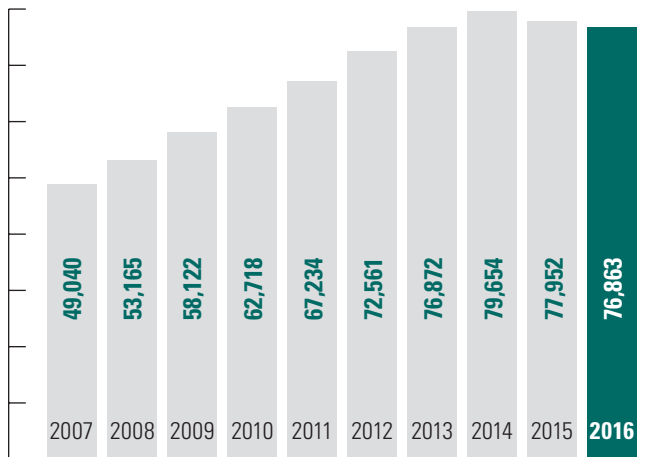
\* For the Deferred Compensation Plan, this represents plan transfers from other eligible Section 457(b) plans into the Commonwealth's Plan. For the Cash Match Plan, this represents transfers from other qualified plans, including Partial Lump-Sum Option Payments (PLOPs) for the VRS pension plans.

\*\* The current third-party administrator, ICMA-RC, is compensated based on an annual record-keeping and communication fee of \$30.50 per participant deducted on a monthly basis (approximately \$2.54 per month).

Participants with multiple accounts only pay one annual fee of \$30.50. In addition, administrative costs were incurred by VRS for each of the plans. For the Deferred Compensation Plan, they were \$696,956 and \$786,307 in fiscal year 2016 and fiscal year 2015, respectively. For the Cash Match Plan, they were \$481,423 and \$482,115 in fiscal year 2016 and fiscal year 2015, respectively. These costs are funded by the employers participating in the plans.

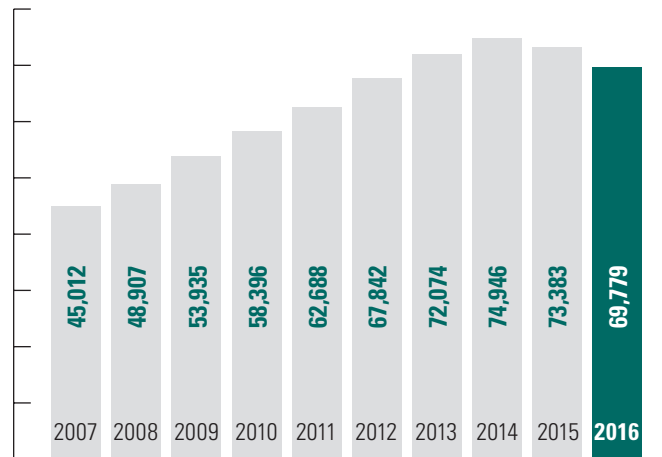
**FIGURE 5.16: 457(b) ACTIVE AND INACTIVE PLAN PARTICIPANTS**

AT JUNE 30



**FIGURE 5.17: 401(a) ACTIVE AND INACTIVE PLAN PARTICIPANTS**

AT JUNE 30



**FIGURE 5.18: TOTAL PARTICIPANT ACCOUNTS IN EACH FUND OPTION**

AT JUNE 30, 2016

(EXPRESSED IN THOUSANDS)

Fund Name	Deferred Compensation Plan – 457(b)	Cash Match Plan – 401(a)
Retirement Portfolio	5,106	3,916
Target Date 2020 Portfolio	5,652	4,726
Target Date 2025 Portfolio	6,417	5,438
Target Date 2030 Portfolio	6,310	5,382
Target Date 2035 Portfolio	6,306	5,384
Target Date 2040 Portfolio	5,843	5,094
Target Date 2045 Portfolio	6,457	5,602
Target Date 2050 Portfolio	6,530	5,709
Target Date 2055 Portfolio	4,550	4,055
Target Date 2060 Portfolio	446	415
Money Market Fund	4,388	3,302
Stable Value Fund	18,619	18,324
Bond Fund	9,474	7,000
Inflation-Protected Bond Fund	3,870	2,621
High-Yield Bond Fund	4,078	2,607
Stock Fund	23,793	19,943
Small/Mid-Cap Stock Fund	12,882	9,895
International Stock Fund	11,376	8,698
Emerging Markets Stock Fund	1,744	838
Global Real Estate fund	8,482	6,325
VRS Investment Portfolio	1,677	1,022
Self-Directed Brokerage	434	56

*The number of participant accounts exceeds the number of participants because a participant may invest in more than one fund.*

## FIGURE 5.19: ACCUMULATION PLAN ASSETS BY FUND

FOR THE YEARS ENDED JUNE 30

	Deferred Compensation Plan – 457(b)			Cash Match Plan – 401(a)		
	2016	2015	2014	2016	2015	2014
Retirement Portfolio	\$ 134,124,866	\$ 137,414,862	\$ 89,948,245	\$ 22,105,079	\$ 21,261,655	\$ 13,499,498
Target Date 2015 Portfolio	–	–	51,898,275	–	–	7,542,049
Target Date 2020 Portfolio	110,385,748	100,288,852	87,735,414	16,779,592	15,906,309	14,491,015
Target Date 2025 Portfolio	84,285,982	73,076,359	62,588,283	14,473,693	13,339,434	11,794,733
Target Date 2030 Portfolio	56,407,009	50,022,756	43,644,322	12,086,563	11,237,640	10,053,110
Target Date 2035 Portfolio	46,218,327	40,851,071	34,575,922	11,309,360	10,351,825	9,363,090
Target Date 2040 Portfolio	34,233,349	29,310,334	24,401,410	8,571,036	7,930,036	6,690,708
Target Date 2045 Portfolio	22,910,724	19,593,200	16,515,238	7,485,866	6,768,548	5,757,396
Target Date 2050 Portfolio	15,188,388	13,060,692	11,272,850	5,712,752	5,073,018	4,274,299
Target Date 2055 Portfolio	9,280,237	7,526,914	6,198,398	2,749,779	2,310,816	1,691,867
Target Date 2060 Portfolio	971,667	630,963	–	149,332	66,441	–
Money Market Fund	43,385,395	37,444,368	36,528,539	6,376,164	6,353,361	5,997,599
Stable Value Fund	392,258,749	371,650,613	375,728,991	95,579,966	92,982,094	93,031,775
Bond Fund	110,341,141	100,878,897	98,975,281	13,922,248	13,268,210	12,831,395
Inflation-Protected Bond Fund	31,708,715	31,669,110	33,080,531	3,270,111	3,373,663	3,373,189
High-Yield Bond Fund	24,046,718	25,336,688	24,835,102	2,999,957	3,294,132	3,499,405
Stock Fund	621,481,903	615,546,031	575,358,557	95,970,209	94,382,476	88,125,771
Small/Mid-Cap Stock Fund	196,652,719	206,470,600	200,491,298	26,692,300	28,449,295	27,264,072
International Stock Fund	101,749,572	114,882,413	123,496,662	12,477,092	14,060,551	15,309,496
Emerging Markets Stock Fund	9,028,308	8,885,917	8,506,685	602,796	631,430	675,130
Global Real Estate Fund	86,537,812	80,985,503	79,545,789	13,057,981	12,301,215	12,332,598
VRS Investment Portfolio – Interim Account	1,546,921	1,164,566	1,317,922	141,332	69,825	67,436
VRS Investment Portfolio	22,965,612	19,707,298	14,923,653	5,827,047	5,605,016	5,037,873
Self-Directed Brokerage	29,045,640	27,953,519	25,307,995	737,813	808,805	584,437
<b>Total Accumulation Plan Assets</b>	<b>\$ 2,184,755,502</b>	<b>\$ 2,114,351,524</b>	<b>\$ 2,026,875,362</b>	<b>\$ 379,078,068</b>	<b>\$ 369,825,796</b>	<b>\$ 353,287,941</b>

Detailed information on each of these funds, including the investment objective, distribution of assets, investment performance and annual operating expense for each fund, is presented in the Investment Section of this report.





Virginia  
Retirement  
System

**Virginia Retirement System**

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