



Cavanaugh Macdonald
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The experience and dedication you deserve



**Virginia
Retirement
System**

**Report on the Actuarial Valuation of
Other Postemployment Benefits for
Virginia Retirement System**

Prepared as of June 30, 2019





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

January 3, 2020

The 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 postemployment benefits plans (OPEB Plans) of the Virginia Retirement System (VRS), prepared as of June 30, 2019:

- 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 – Social Service 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, 2019. 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.

The purpose of this report is to provide a summary of the funded status of VRS as of June 30, 2019 and to recommend rates of contribution. While not verifying the data at source, the actuary performed tests for consistency and reasonability. The funded status of the Plan is the ratio of the assets to the actuarial accrued liability. While the market value of assets gives an indication of the funded status of a plan at a particular point in time and is used for financial reporting, for GLI, HIC – State Employees, HIC – Teachers, VSDP, and VLDP, it is not used directly in the calculation of the employer contribution rates. A less volatile actuarial value of assets, which smooths the effect of market fluctuations over a five year period, is applied to determine the funded status for rate setting purposes. For informational purposes, we exhibit the funded status based on this smoothed actuarial value of assets basis as well as the market value in this report. The interest rate used for determining liabilities is based on the expected return on assets. Therefore, liability amounts in this report cannot be used to assess a settlement of the obligation. The VRS Board of Trustees adopted a change in the interest rate from 7.00% to 6.75% for the June 30, 2019 valuation.

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The Board of Trustees

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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. 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 for fiscal years ending 2021 and 2022 based on the June 30, 2019 actuarial valuation and the employer contribution rates approved by the General Assembly for fiscal years ending 2019 and 2020. Contribution rates for VRS employers are established every two years. The actuarially calculated employer contribution rates based on the June 30, 2018 valuation presented in this report are for informational purposes only.

OPEB Plan	Fiscal Years 2019 & 2020		Informational Only	Fiscal Years 2021 & 2022	
	Board Approved	General Assembly Approved		Board Approved	General Assembly Approved
	2017 Valuation		2018 Valuation	2019 Valuation	
GLI*	1.31%	1.31%	1.29%	1.34%	1.34%
HIC – State Employees	1.17%	1.17%	1.15%	1.12%	1.12%
HIC – Teachers	1.20%	1.20%	1.19%	1.21%	1.21%
HIC – Participating Political Subdivisions**	0.32%	0.32%	0.46%	0.59%	0.59%
HIC – Constitutional Officers	0.38%	0.38%	0.37%	0.36%	0.36%
HIC – Social Service Employees	0.43%	0.43%	0.42%	0.38%	0.38%
HIC – Registrars	0.39%	0.39%	0.42%	0.39%	0.39%
VSDP	0.62%	0.62%	0.67%	0.61%	0.61%
VLDP – Teachers	0.41%	0.41%	0.43%	0.47%	0.47%
VLDP – Political Subdivisions	0.72%	0.72%	0.88%	0.83%	0.83%

* The contribution rate for GLI includes an adjustment of 0.34% for active group life insurance, see Section I for additional detail.

** Average of individual employer rates, initial. For fiscal years 2021 & 2022, the contribution rate includes the impact of HB 1513.

The promised postemployment benefits of the OPEB Plans are included in the actuarially calculated contribution rates which are developed using the entry age normal 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 members. Five-year smoothed market value of assets is used for actuarial valuation purposes (with the exception of HIC – Participating Political Subdivisions and HIC - Special Coverage Groups). The discount rate used to value a plan should be based on the likely return of the assets used to pay benefits. As of June 30, 2019, the plan has assets in trust solely to provide benefits to eligible recipients. 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. The assumptions recommended by the actuary and adopted by the Board are in



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the aggregate reasonably related to the experience under the OPEB Plans and to reasonable expectations of anticipated experience under the OPEB Plans.

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.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Alisa Bennett'.

Alisa Bennett, FSA, EA, FCA, MAAA
President

A handwritten signature in blue ink, appearing to read 'Larry Langer'.

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink, appearing to read 'Bradley R. Wild'.

Bradley R. Wild, ASA, FCA, MAAA
Senior Actuary

AB/LL/BRW:w1



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Section I – Summary of Principal Results

Introduction and Summary

This report contains the actuarial valuation results as of June 30, 2019 for the other postemployment plans (OPEB Plans) of the Virginia Retirement System (VRS) as determined by Cavanaugh Macdonald Consulting, the actuary for the VRS. Questions about this report should be directed to the VRS rather than to Cavanaugh Macdonald Consulting.

Employer Contribution Rates

The previous employer contribution rates were set by the June 30, 2017 valuation and are effective for the period July 1, 2018 through June 30, 2020, or fiscal years ending 2019 and 2020. The June 30, 2018 calculated rates shown in each table below are for informational purposes. Rates for subsequent fiscal years will be determined by future actuarial valuations.

Prior to 2007, the OPEB Plans were funded on a “pay-as-you-go” basis. Once trusts were established, contribution rates were not fully funded until 2017 for the statewide plans. Currently, contribution rates are expected to be fully funded.

The recommended employer contribution rate consists of three, or if applicable, four pieces which are shown in the summary tables for the OPEB Plans:

- **Employer Normal Cost Rate** - The ongoing annual cost of active employees accruing benefits under the plan. The normal cost is developed using the entry age normal cost method, which develops normal costs for active members which stay level during their career if benefit provisions are unchanged and assumptions are realized.
- **Administrative Expense** - An estimate of the administrative expenses to be paid out of the trust in the upcoming fiscal year.
- **Amortization of Balance of UAAL** - The amortization of, or payment towards, the unfunded actuarial accrued liability (UAAL) for the year. The UAAL is the amount by which the actuarial value of assets falls short of, or exceeds, the actuarial accrued liability for the plan. Under the funding arrangement adopted by the Board, the UAAL is being amortized as individual layered bases. The legacy unfunded actuarial accrued liability, the unfunded actuarial accrued liability as of June 30, 2013, is amortized over a closed 30 year period beginning June 30, 2013. The amortization period of the legacy unfunded will decrease by one in each subsequent valuation until reaching 0 years. The actuarial gains and losses and other changes in the unfunded due to benefit 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.
- **Adjustment for Active Group Life Insurance** – The GLI cost of benefits for members who die in active service is covered on a one-year term basis through an insurance company, and is not included in the actuarial valuation. The term cost for these active members has been provided to CMC by VRS and is currently 14.1¢ per \$1,000 of insurance. This cost is included in the Summary of Principal Results to provide a combined contribution rate for deaths in active service and postemployment benefits.



Section I – Summary of Principal Results

Assets

The following summary tables show the market and actuarial values of assets for each OPEB Plan. Five-year smoothed market value of assets is used for actuarial valuation purposes. The actuarial value reflects only a portion of the excess (or shortfall) between recent market value returns and the corresponding expected returns based on the prior 7.00% investment return assumption. The actuarial value recognizes this excess return (or shortfall) over a five-year period at the rate of 20% per year. This approach dampens year-to-year fluctuations in the contribution rates. The actuarial value of assets cannot be less than 80% or more than 120% of the market value of assets. For HIC – Participating Political Subdivisions, HIC – Constitutional Officers, HIC – Social Service Employees, and HIC – Registrars, the actuarial value of assets equals the market value of assets. Schedule B shows the reconciliation of assets for each OPEB Plan, the calculation of excess investment income, and, if applicable, the development of actuarial value of assets.

Actuarial Assumptions and Methods

Schedules D and E of this report outline the full set of actuarial assumptions and methods used in the current valuation. Effective with the June 30, 2017 valuation, the actuarial assumptions were revised to reflect the results of the experience study for the period 2012 – 2016. The next experience review is expected to be implemented with the June 30, 2021 annual valuation. The VRS Board of Trustees adopted a change in the interest rate from 7.00% to 6.75% for the June 30, 2019 valuation. Salary increases range between 3.50% and 5.35% depending on the member's service and classification (i.e., members with general employee benefits or with enhanced hazardous duty coverage). Liabilities were determined under the Entry Age Normal actuarial cost method.

The Political Subdivisions have been divided into two groups. The Top 10 Locals group consists of: City of Virginia Beach, Henrico County, Prince William County, Chesterfield County, City of Chesapeake, City of Alexandria, City of Hampton, Loudoun County, City of Lynchburg, and the City of Portsmouth. The Non-Top 10 Locals group is all other Political Subdivisions not included in The Top 10 Locals group.

Benefit Provisions

This actuarial valuation takes into account the provisions of VRS as of the valuation date of June 30, 2019. For each OPEB Plan except HIC – Political Subdivisions, there have been no changes in plan provisions since the prior valuation. For HIC – Political Subdivisions, the valuation reflects the provisions of HB 1513 which requires school divisions to provide an uncapped Health Insurance Credit of \$1.50 per month of service for all non-teacher employees beginning July 1, 2021. While benefit payments do not begin until July 1, 2021 for school divisions that did not previously elect the HIC benefit, the bill requires that those employers begin funding for the benefits effective July 1, 2020. The main benefit provisions are summarized in Schedule F of this report.

Member Data

This actuarial valuation is based on census data supplied by the VRS. The number of active and inactive members is shown in the summary tables below with additional information provided in Section II as well as a more detailed breakout of active membership in Schedule G. The number of retirees shown includes those who retired from this employer, therefore they are expected to receive the full benefit from that employer.



Section I – Summary of Principal Results

Experience

The OPEB Plans listed below experienced a total actuarial loss for the year ended June 30, 2019, which means the unfunded actuarial accrued liability is larger than anticipated:

- 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)
- Virginia Local Disability Program (VLDP)
 - Teachers (VLDP – Teachers)

This loss is primarily due to the decrease in the assumed interest rate (assumption loss), as well as, if applicable, investment losses on an actuarial basis. Below is a more detailed breakdown:

- GLI saw an experience loss due to new entrants and lower than expected post-retirement mortality, partially offset by more retirements and terminations than expected. An investment gain only partially offset the experience and assumption losses.
- HIC State Employees saw gains in investment and demographic experience that only partially offset the loss due to the decrease in the assumed interest rate. The post-retirement mortality, partially offset by more retirements than expected, resulted in a demographic gain.
- HIC Teachers saw an experience gain due to post-retirement mortality and more terminations than expected, partially offset by more retirements than expected and new entrants.
- HIC Constitutional Officers saw experience losses arising from more retirements and disabilities than expected and new entrants, partially offset by post-retirement mortality.
- VLDP Teachers saw investment losses on an actuarial basis, partially offset by experience gains primarily arising from more terminations than expected and less disabilities than expected that are partially offset by new entrants.

The OPEB Plans listed below experienced a total actuarial gain for the year ended June 30, 2019, which means the unfunded actuarial accrued liability is smaller than anticipated:

- Health Insurance Credit Program (HIC)
 - Special Coverage Groups (HIC – Special Coverage Groups)
 - Social Service Employees (HIC – Social Service Employees)
 - Registrars (HIC – Registrars)
- Virginia Sickness and Disability Program (VSDP)
- Virginia Local Disability Program (VLDP)
 - Political Subdivisions (VLDP – Political Subdivisions)

This gain is primarily due to experience gains, partially offset by a loss due to the decrease in the assumed interest rate. Below is a more detailed breakdown:

- HIC Social Service Employees saw experience gains due to post-retirement mortality and data remediation, partially offset by losses due to new members and more retirements that contributed to experience gains.



Section I – Summary of Principal Results

- HIC Registrars saw experience gains primarily arising from less retirements than expected and a higher inactive mortality rate than expected. The experience gain is partially offset by investment losses on an actuarial basis.
- VSDP saw experience gains primarily arising from more terminations than expected and less disabilities than expected, partially offset by new entrants. Offsetting the overall gain, VSDP experienced an investment loss on an actuarial basis.
- VLDP Political Subdivisions saw experience gains primarily arising from more terminations than expected and less disabilities than expected, partially offset by new entrants. Offsetting the overall gain, VSDP experienced an investment loss on an actuarial basis.

Summary of Results

For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results for the OPEB plans are summarized below. In addition to the summary tables for each OPEB Plan, we present a summary of the valuation results for the political subdivisions in aggregate.



Section I – Summary of Principal Results

GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Valuation Date	June 30, 2019	June 30, 2018
Number Active	367,627	367,903
Number Retired or Disabled	<u>192,021</u>	<u>185,605</u>
Total	559,648	553,508
Annual Covered Payroll	\$ 20,498,084	\$ 19,783,323
Valuation Salary	\$ 18,023,041	\$ 17,377,195
Assets:		
Actuarial Value	\$ 1,741,406	\$ 1,574,017
Market Value	\$ 1,762,972	\$ 1,594,773
Funded Ratio:		
Actuarial Value	51.00%	49.71%
Market Value	51.63%	50.36%
Unfunded Actuarial Liability	\$ 1,672,916	\$ 1,592,516
Amortization Period (Years)	15-24	16-25
Insurance Amount		
Active Members	\$ 40,996,168	\$ 39,566,646
Retired and Disabled Members	<u>7,761,298</u>	<u>7,354,358</u>
Total	\$ 48,757,466	\$ 46,921,004
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost*	\$ 92,811	\$ 81,890
Accrued Liability	<u>99,191</u>	<u>93,882</u>
Total	\$ 192,002	\$ 175,772
ADEC as a Percent of Active Payroll:		
Normal Cost	0.51 %	0.47 %
Administrative Expense	0.00 %	0.00 %
Accrued Liability**	<u>0.49 %</u>	<u>0.48 %</u>
Total	1.00 %	0.95 %
Adjustment for Active Group Life Insurance	<u>0.34 %</u>	<u>0.34 %</u>
Total Cost for Plan	1.34 %	1.29 %
Contribution as ¢ per \$1,000 of Active Insurance		
Active Members	14.1	14.1
Retired and Disabled Members	<u>41.7</u>	<u>39.6</u>
Total	55.8	53.7
Discount Rate	6.75%	7.00%

* Includes total administrative expenses of \$709,000 for 2019 and \$664,000 for 2018.

** Includes timing adjustment factor of 1.018041.



Section I – Summary of Principal Results (continued)

HEALTH INSURANCE CREDIT PROGRAM STATE EMPLOYEES* (\$ IN THOUSANDS)

Valuation Date	June 30, 2019	June 30, 2018
Number Active	106,948	107,234
Number Retired, Disabled, or Eligible Deferral Vested	<u>53,034</u>	<u>49,311</u>
Total	159,982	156,545
Annual Covered Payroll	\$ 6,907,506	\$ 6,635,983
Valuation Salary	\$ 6,026,365	\$ 5,796,912
Assets:		
Actuarial Value	\$ 109,417	\$ 96,294
Market Value	\$ 109,023	\$ 95,908
Funded Ratio:		
Actuarial Value	10.66%	9.67%
Market Value	10.62%	9.63%
Unfunded Actuarial Liability	\$ 917,335	\$ 899,365
Amortization Period (Years)	15-24	16-25
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost**	\$ 19,005	\$ 18,323
Accrued Liability	<u>55,694</u>	<u>54,427</u>
Total	\$ 74,699	\$ 72,750
ADEC as a Percent of Active Payroll:		
Normal Cost	0.31 %	0.31 %
Administrative Expense	0.00 %	0.00 %
Accrued Liability***	<u>0.81 %</u>	<u>0.84 %</u>
Total	1.12 %	1.15 %
Discount Rate	6.75%	7.00%

* State Employees include State, JRS, SPORS, VaLORS, ORP, and UVA employees.

** Includes total administrative expenses of \$136,000 for 2019 and \$149,000 for 2018.

*** Includes timing adjustment factor of 1.018041.



Section I – Summary of Principal Results (continued)

HEALTH INSURANCE CREDIT PROGRAM TEACHERS (\$ IN THOUSANDS)

Valuation Date	June 30, 2019	June 30, 2018
Number Active	149,396	151,585
Number Retired, Disabled, or Eligible Deferral Vested	<u>71,839</u>	<u>68,672</u>
Total	221,235	220,257
Annual Covered Payroll*	\$ 8,608,489	\$ 8,479,023
Valuation Salary	\$ 7,640,886	\$ 7,504,014
Assets:		
Actuarial Value	\$ 130,043	\$ 113,136
Market Value	\$ 129,015	\$ 111,639
Funded Ratio:		
Actuarial Value	9.12%	8.20%
Market Value	9.05%	8.10%
Unfunded Actuarial Liability	\$ 1,295,840	\$ 1,265,937
Amortization Period (Years)	15-24	16-25
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost**	\$ 20,514	\$ 19,759
Accrued Liability	<u>79,726</u>	<u>77,521</u>
Total	\$ 100,240	\$ 97,280
ADEC as a Percent of Active Payroll:		
Normal Cost	0.27 %	0.26 %
Administrative Expense	0.00 %	0.00 %
Accrued Liability***	<u>0.94 %</u>	<u>0.93 %</u>
Total	1.21 %	1.19 %
Discount Rate	6.75%	7.00%

* Includes an assumed pay increase on the valuation date.

** Includes total administrative expenses of \$151,000 for 2019 and \$152,000 for 2018.

*** Includes timing adjustment factor of 1.018041



Section I – Summary of Principal Results (continued)

HEALTH INSURANCE CREDIT PROGRAM PARTICIPATING POLITICAL SUBDIVISIONS (\$ IN THOUSANDS)

Valuation Date	June 30, 2019	June 30, 2018
Number Active	37,248	23,034
Number Retired, Disabled, or Eligible Deferred	<u>11,447</u>	<u>5,531</u>
Total	48,695	28,565
Annual Covered Payroll	\$ 1,440,731	\$ 1,048,068
Valuation Salary	\$ 1,249,722	\$ 914,165
Assets:		
Actuarial Value	\$ 24,468	\$ 23,161
Market Value	\$ 24,468	\$ 23,161
Funded Ratio:		
Actuarial Value	33.58%	56.57%
Market Value	33.58%	56.57%
Unfunded Actuarial Liability	\$ 48,387	\$ 17,782
Amortization Period (Years)	15-25	16-25
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost*	\$ 1,447	\$ 957
Accrued Liability	<u>3,200</u>	<u>1,095</u>
Total	\$ 4,647	\$ 2,052
Average Actuarially Determined Employer Contribution as a Percent of Active Payroll**:		
Normal Cost	0.15 %	0.14 %
Administrative Expense	0.00 %	0.00 %
Accrued Liability***	<u>0.44 %</u>	<u>0.32 %</u>
Total	0.59 %	0.46 %
Discount Rate	6.75%	7.00%

* Includes total administrative expenses of \$32,000 for 2019 and \$37,000 for 2018.

** Some participating locals include an additional funding contribution rate to allow the use of the 6.75% investment return as the single equivalent interest rate assumption for purposes of the GASB 74/75 statements.

*** Includes timing adjustment factor of 1.018041. These figures are the average of all participating Political Subdivisions after updates to the additional funding contribution rate and the plan surcharge. For more information about the plan surcharge see Schedule D.



Section I – Summary of Principal Results (continued)

**HEALTH INSURANCE CREDIT PROGRAM
CONSTITUTIONAL OFFICERS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
Number Active	13,302	12,890
Number Retired or Disabled	<u>3,913</u>	<u>3,681</u>
Total	17,215	16,571
Annual Covered Payroll	\$ 698,316	\$ 652,041
Valuation Salary	\$ 608,251	\$ 567,568
Assets:		
Actuarial Value	\$ 4,479	\$ 3,278
Market Value	\$ 4,479	\$ 3,278
Funded Ratio:		
Actuarial Value	14.19%	11.03%
Market Value	14.19%	11.03%
Unfunded Actuarial Liability	\$ 27,088	\$ 26,442
Amortization Period (Years)	15-24	16-25
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost*	\$ 704	\$ 646
Accrued Liability	<u>1,681</u>	<u>1,631</u>
Total	\$ 2,385	\$ 2,277
ADEC as a Percent of Active Payroll:		
Normal Cost	0.12 %	0.11 %
Administrative Expense	0.00 %	0.00 %
Accrued Liability**	<u>0.24 %</u>	<u>0.26 %</u>
Total	0.36 %	0.37 %
Discount Rate	6.75%	7.00%

* Includes total administrative expenses of \$5,000 for 2019 and \$4,000 for 2018.

** Includes timing adjustment factor of 1.018041.



Section I – Summary of Principal Results (continued)

**HEALTH INSURANCE CREDIT PROGRAM
SOCIAL SERVICE EMPLOYEES
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
Number Active	6,048	5,713
Number Retired or Disabled	<u>2,159</u>	<u>2,087</u>
Total	8,207	7,800
Annual Covered Payroll	\$ 285,738	\$ 261,272
Valuation Salary	\$ 246,761	\$ 225,360
Assets:		
Actuarial Value	\$ 2,273	\$ 1,319
Market Value	\$ 2,273	\$ 1,319
Funded Ratio:		
Actuarial Value	15.54%	9.29%
Market Value	15.54%	9.29%
Unfunded Actuarial Liability	\$ 12,359	\$ 12,878
Amortization Period (Years)	15-24	16-25
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost*	\$ 276	\$ 245
Accrued Liability	<u>754</u>	<u>789</u>
Total	\$ 1,030	\$ 1,034
ADEC as a Percent of Active Payroll:		
Normal Cost	0.11 %	0.11 %
Administrative Expense	0.00 %	0.00 %
Accrued Liability**	<u>0.27 %</u>	<u>0.31 %</u>
Total	0.38 %	0.42 %
Discount Rate	6.75%	7.00%

* Includes total administrative expenses of \$3,000 for 2019 and \$1,000 for 2018.

** Includes timing adjustment factor of 1.018041.



Section I – Summary of Principal Results (continued)

**HEALTH INSURANCE CREDIT PROGRAM
REGISTRARS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
Number Active	232	233
Number Retired or Disabled	<u>69</u>	<u>67</u>
Total	301	300
Annual Covered Payroll	\$ 11,882	\$ 11,472
Valuation Salary	\$ 10,188	\$ 9,668
Assets:		
Actuarial Value	\$ 88	\$ 58
Market Value	\$ 88	\$ 58
Funded Ratio:		
Actuarial Value	15.96%	10.84%
Market Value	15.96%	10.84%
Unfunded Actuarial Liability	\$ 461	\$ 479
Amortization Period (Years)	15-24	16-25
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost*	\$ 15	\$ 15
Accrued Liability	<u>29</u>	<u>30</u>
Total	\$ 44	\$ 45
ADEC as a Percent of Active Payroll:		
Normal Cost	0.15 %	0.15 %
Administrative Expense	0.00 %	0.00 %
Accrued Liability**	<u>0.24 %</u>	<u>0.27 %</u>
Total	0.39 %	0.42 %
Discount Rate	6.75%	7.00%

* Includes total administrative expenses of \$0 for 2019 and \$0 for 2018.

** Includes timing adjustment factor of 1.018041.



Section I – Summary of Principal Results (continued)

VIRGINIA SICKNESS AND DISABILITY PROGRAM LONG-TERM DISABILITY AND LONG-TERM CARE COMBINED (\$ IN THOUSANDS)

Valuation Date	June 30, 2019	June 30, 2018
Number Active (participating in VSDP)	79,105	75,164
Number Disabled	2,540	2,653
Number Ported	<u>2,650</u>	<u>2,174</u>
Total	84,295	79,991
Annual Covered Payroll*	\$ 4,456,996	\$ 3,993,073
Valuation Salary	\$ 3,900,086	\$ 3,496,134
Assets:		
Actuarial Value	\$ 484,986	\$ 460,466
Market Value	\$ 488,241	\$ 462,961
Funded Ratio:		
Actuarial Value	195.16%	173.57%
Market Value	196.47%	174.51%
Unfunded Actuarial Liability	\$ (236,474)	\$ (195,174)
Amortization Period (Years)	15-24	16-25
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost**	\$ 38,120	\$ 35,083
Accrued Liability	<u>(15,804)</u>	<u>(12,841)</u>
Total	\$ 22,316	\$ 22,242
ADEC as a Percent of Active Payroll:		
Normal Cost	0.79 %	0.78 %
Administrative Expense	0.19 %	0.22 %
Accrued Liability***	<u>(0.37)%</u>	<u>(0.33)%</u>
Total	0.61 %	0.67 %
Discount Rate	6.75%	7.00%

* Annual Covered Payroll consists of only those State, VaLORS, and SPORS participating in VSDP.

** Include administrative expenses of \$7,218,000 for 2019 and \$7,763,000 for 2018.

*** Includes timing adjustment factor of 1.018041.



Section I – Summary of Principal Results (continued)

VIRGINIA SICKNESS AND DISABILITY PROGRAM LONG-TERM DISABILITY (\$ IN THOUSANDS)

Valuation Date - June 30, 2019	State	SPORS	VaLORS	Total
Number Active (participating in VSDP)	69,414	1,516	8,175	79,105
Number Disabled	<u>2,006</u>	<u>17</u>	<u>517</u>	<u>2,540</u>
Total	71,420	1,533	8,692	81,645
Annual Covered Payroll*	\$ 4,019,030	\$ 95,873	\$ 342,093	\$ 4,456,996
Valuation Salary	\$ 3,531,130	\$ 89,914	\$ 279,042	\$ 3,900,086
LTD Assets (allocated by liabilities):				
Actuarial Value	\$ 320,864	\$ 4,687	\$ 74,080	\$ 399,631
Market Value	\$ 323,128	\$ 4,720	\$ 74,602	\$ 402,450
Funded Ratio:				
Actuarial Value	209.89%	209.89%	209.89%	209.89%
Market Value	211.37%	211.37%	211.37%	211.37%
LTD Unfunded Actuarial Liability	\$ (167,992)	\$ (2,454)	\$ (38,785)	\$ (209,231)
Amortization Period (Years)	15-24	15-24	15-24	15-24
LTD Actuarially Determined Employer Contribution (ADEC) in Normal Cost**	\$ 29,428	\$ 446	\$ 5,300	\$ 35,174
Accrued Liability	<u>(10,876)</u>	<u>(164)</u>	<u>(2,557)</u>	<u>(13,597)</u>
Total	\$ 18,552	\$ 282	\$ 2,743	\$ 21,577
LTD ADEC as a Percent of Active Payroll:				
Normal Cost	0.67 %	0.40 %	1.43 %	0.72 %
Administrative Expense	0.16 %	0.09 %	0.47 %	0.18 %
Accrued Liability***	<u>(0.28)%</u>	<u>(0.17)%</u>	<u>(0.76)%</u>	<u>(0.31)%</u>
Total	0.55 %	0.32 %	1.14 %	0.59 %
Discount Rate	6.75 %	6.75 %	6.75 %	6.75 %

* Annual Covered Payroll consists of only those State, VaLORS, and SPORS participating in VSDP.

** Includes administrative expenses of \$7,081,298 for 2019.

*** Includes timing adjustment factor of 1.018041.

Note: VSDP is a multiple employer cost sharing plan and the breakdown presented above is provided for illustrative purposes only.



Section I – Summary of Principal Results (continued)

VIRGINIA SICKNESS AND DISABILITY PROGRAM LONG-TERM CARE (\$ IN THOUSANDS)

Valuation Date - June 30, 2019	State	SPORS	VaLORS	Total
Number Active (participating in VSDP)	69,414	1,516	8,175	79,105
Number Disabled	2,099	19	520	2,638
Number Ported	<u>2,528</u>	<u>7</u>	<u>115</u>	<u>2,650</u>
Total	74,041	1,542	8,810	84,393
Annual Covered Payroll*	\$ 4,019,030	\$ 95,873	\$ 342,093	\$ 4,456,996
Valuation Salary	\$ 3,531,131	\$ 89,935	\$ 276,553	\$ 3,897,619
LTC Assets (allocated by liabilities):				
Actuarial Value	\$ 81,798	\$ 519	\$ 3,038	\$ 85,355
Market Value	\$ 82,216	\$ 522	\$ 3,053	\$ 85,791
Funded Ratio:				
Actuarial Value	146.88%	146.88%	146.88%	146.88%
Market Value	147.63%	147.63%	147.63%	147.63%
LTC Unfunded Actuarial Liability	\$ (26,107)	\$ (166)	\$ (970)	\$ (27,243)
Amortization Period (Years)	15-24	15-24	15-24	15-24
LTC Actuarially Determined Employer Contribution (ADEC) in Normal Cost**	\$ 2,788	\$ 23	\$ 135	\$ 2,946
Accrued Liability	<u>(2,114)</u>	<u>(13)</u>	<u>(80)</u>	<u>(2,207)</u>
Total	\$ 674	\$ 10	\$ 55	\$ 739
LTC ADEC as a Percent of Active Payroll:				
Normal Cost	0.08 %	0.03 %	0.05 %	0.07 %
Administrative Expense	0.00 %	0.00 %	0.00 %	0.00 %
Accrued Liability***	<u>(0.06)%</u>	<u>(0.02)%</u>	<u>(0.03)%</u>	<u>(0.05)%</u>
Total	0.02 %	0.01 %	0.02 %	0.02 %
Discount Rate	6.75 %	6.75 %	6.75 %	6.75 %

* Annual Covered Payroll consists of only those State, VaLORS, and SPORS participating in VSDP.

** Includes total administrative expenses of \$136,702 for 2019.

*** Includes timing adjustment factor of 1.018041.

Note: VSDP is a multiple employer cost sharing plan and the breakdown presented above is provided for illustrative purposes only.



Section I – Summary of Principal Results (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
TEACHERS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
Number Active (participating in VLDP)	11,047	9,332
Number Disabled	7	6
Number Ported	<u>39</u>	<u>0</u>
Total	11,093	9,338
Annual Covered Payroll*	\$ 463,174	\$ 377,798
Valuation Salary	\$ 397,488	\$ 322,287
Assets:		
Actuarial Value	\$ 1,662	\$ 674
Market Value	\$ 1,660	\$ 647
Funded Ratio:		
Actuarial Value	63.39%	48.74%
Market Value	63.31%	46.76%
Unfunded Actuarial Liability	\$ 960	\$ 709
Amortization Period (Years)	15-20	16-20
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost**	\$ 1,908	\$ 1,377
Accrued Liability	<u>71</u>	<u>52</u>
Total	\$ 1,979	\$ 1,429
ADEC as a Percent of Active Payroll:		
Normal Cost	0.26 %	0.25 %
Administrative Expense	0.19 %	0.17 %
Accrued Liability***	<u>0.02 %</u>	<u>0.01 %</u>
Total	0.47 %	0.43 %
Discount Rate	6.75%	7.00%

* Annual Covered Payroll consists of only those employees participating in VLDP.

** Includes total administrative expenses of \$869,000 for 2019 and \$563,000 for 2018.

*** Includes timing adjustment factor of 1.018041.



Section I – Summary of Principal Results (continued)

VIRGINIA LOCAL DISABILITY PROGRAM POLITICAL SUBDIVISIONS (\$ IN THOUSANDS)

Valuation Date	June 30, 2019	June 30, 2018
Number Active (participating in VLDP)	9,447	7,915
Number Disabled	28	25
Number Ported	<u>4</u>	<u>0</u>
Total	9,479	7,940
Annual Covered Payroll*	\$ 337,363	\$ 268,121
Valuation Salary	\$ 279,562	\$ 220,312
Assets:		
Actuarial Value	\$ 1,971	\$ 853
Market Value	\$ 1,963	\$ 816
Funded Ratio:		
Actuarial Value	69.97%	31.21%
Market Value	69.68%	29.88%
Unfunded Actuarial Liability	\$ 846	\$ 1,879
Amortization Period (Years)	15-20	16-20
Actuarially Determined Employer Contribution (ADEC) in Dollars:		
Normal Cost**	\$ 2,439	\$ 1,821
Accrued Liability	<u>65</u>	<u>134</u>
Total	\$ 2,505	\$ 1,955
ADEC as a Percent of Active Payroll:		
Normal Cost	0.52 %	0.51 %
Administrative Expense	0.29 %	0.32 %
Accrued Liability***	<u>0.02 %</u>	<u>0.05 %</u>
Total	0.83 %	0.88 %
Discount Rate	6.75%	7.00%

* Annual Covered Payroll consists of only those employees participating in VLDP.

** Includes total administrative expenses of \$984,000 for 2019 and \$708,000 for 2018.

*** Includes timing adjustment factor of 1.018041.



Section II – Membership Data

1. Data regarding the membership of VRS for use as a basis of the valuation was furnished by VRS.

The following table shows the number of active members and their annual compensation, as of June 30, 2019 on the basis of which the valuation was prepared.

TABLE 1

**THE NUMBER, ANNUAL COVERED PAYROLL, AND INSURANCE
AMOUNT OF GLI MEMBERS AS OF JUNE 30, 2019
(\$ IN THOUSANDS)**

Group	Number	Covered Payroll	Insurance Amount
ACTIVE EMPLOYEES			
State Employees	74,799	\$4,375,061	\$8,750,122
Teachers	149,396	8,608,489	17,216,978
VRS Political Subdivisions	110,415	5,258,467	10,516,934
SPORS	1,914	132,230	264,460
JRS	462	76,848	153,696
VaLORS	8,692	369,776	739,552
Life Insurance Only*	<u>21,949</u>	<u>1,677,214</u>	<u>3,354,426</u>
Total	367,627	\$20,498,084	\$40,996,168
RETIRED OR DISABLED MEMBERS			
Service Retirees	175,325	n/a	6,899,246
Disabled Members	<u>16,696</u>	n/a	<u>862,052</u>
Total	192,021	n/a	7,761,298

*The group shown above as “Life Insurance Only” consists of political subdivisions not providing VRS pension benefits and eligible members in the Optional Retirement Plan (ORP).



Section II – Membership Data (continued)

TABLE 2
THE NUMBER AND ANNUAL COVERED PAYROLL
OF ALL ACTIVE MEMBERS AS OF JUNE 30, 2019
(\$ IN THOUSANDS)

OPEB Plan	Number	Covered Payroll
GLI	367,627	\$20,498,084
HIC - State Employees	106,948	6,907,506
HIC - Teachers	149,396	8,608,489
HIC - Participating Political Subdivisions	37,248	1,440,731
HIC - Constitutional Officers	13,302	698,316
HIC - Social Service Employees	6,048	285,738
HIC - Registrars	232	11,882
VSDP		
State Employees	69,414	4,019,030
SPORS	1,516	95,873
VaLORS	<u>8,175</u>	<u>342,093</u>
Total	79,105	4,456,996
VLDP-Teachers	11,047	463,174
VLDP-Political Subdivisions	9,447	337,363

Schedule G, which can be found at the end of this report, shows the distribution by age and service of the number of active members included in the valuation.



Section II – Membership Data (continued)

2. The following table shows a six-year history of active member valuation data.

TABLE 3 - SCHEDULE OF TOTAL ACTIVE MEMBER VALUATION DATA

GROUP LIFE INSURANCE PROGRAM

Valuation Date	Number	Annual Covered Payroll (\$ in Thousands)	Annual Average Pay	% Change in Average Pay
6/30/2019	367,627	\$ 20,498,084	\$ 55,758	3.69 %
6/30/2018	367,903	19,783,323	53,773	2.14 %
6/30/2017	365,149	19,222,759	52,644	4.21 %
6/30/2016	362,678	18,321,880	50,518	2.34 %
6/30/2015	360,873	17,813,570	49,362	1.44 %
6/30/2014	360,855	17,559,285	48,660	2.56 %

HEALTH INSURANCE CREDIT PROGRAM

Valuation Date	Number	Annual Covered Payroll (\$ in Thousands)	Annual Average Pay	% Change in Average Pay
STATE EMPLOYEES				
6/30/2019	106,948	\$ 6,907,506	\$ 64,588	4.37 %
6/30/2018	107,234	6,635,983	61,883	3.15 %
6/30/2017	108,027	6,480,712	59,992	2.37 %
6/30/2016	107,840	6,319,509	58,601	3.74 %
6/30/2015	107,200	6,055,429	56,487	1.73 %
6/30/2014	106,815	5,930,862	55,525	3.57 %
TEACHERS				
6/30/2019	149,396	\$ 8,608,489	\$ 57,622	3.01 %
6/30/2018	151,585	8,479,023	55,936	1.33 %
6/30/2017	150,416	8,303,502	55,204	7.30 %
6/30/2016	149,018	7,666,824	51,449	1.44 %
6/30/2015	147,645	7,488,507	50,720	1.25 %
6/30/2014	146,977	7,362,793	50,095	2.61 %



Section II – Membership Data (continued)

**TABLE 3 - SCHEDULE OF TOTAL ACTIVE MEMBER VALUATION DATA
(CONTINUED)**

HEALTH INSURANCE CREDIT PROGRAM

Valuation Date	Number	Annual Covered Payroll (\$ in Thousands)	Annual Average Pay	% Change in Average Pay
<u>PARTICIPATING POLITICAL SUBDIVISIONS</u>				
6/30/2019	37,248	\$ 1,440,731	\$ 38,679	(14.99)%
6/30/2018	23,034	1,048,068	45,501	3.52 %
6/30/2017	22,478	987,951	43,952	1.80 %
6/30/2016	21,846	943,186	43,174	2.32 %
6/30/2015	21,339	900,390	42,195	0.83 %
6/30/2014	20,921	875,485	41,847	1.51 %
<u>CONSTITUTIONAL OFFICERS</u>				
6/30/2019	13,302	\$ 698,316	\$ 52,497	3.78 %
6/30/2018	12,890	652,041	50,585	1.93 %
6/30/2017	12,706	630,541	49,625	1.16 %
6/30/2016	12,372	606,902	49,054	1.16 %
6/30/2015	12,060	584,797	48,491	0.86 %
6/30/2014	11,796	567,134	48,079	1.22 %
<u>SOCIAL SERVICE EMPLOYEES</u>				
6/30/2019	6,048	\$ 285,738	\$ 47,245	3.31 %
6/30/2018	5,713	261,272	45,733	1.69 %
6/30/2017	5,595	251,620	44,972	1.67 %
6/30/2016	5,418	239,648	44,232	1.87 %
6/30/2015	5,262	228,472	43,419	0.97 %
6/30/2014	4,895	210,499	43,003	0.46 %
<u>REGISTRARS</u>				
6/30/2019	232	\$ 11,882	\$ 51,216	4.02 %
6/30/2018	233	11,472	49,236	1.80 %
6/30/2017	231	11,173	48,367	1.69 %
6/30/2016	216	10,274	47,565	2.50 %
6/30/2015	213	9,884	46,404	1.93 %
6/30/2014	203	9,242	45,527	1.83 %



Section II – Membership Data (continued)

**TABLE 3 - SCHEDULE OF TOTAL ACTIVE MEMBER VALUATION DATA
(CONTINUED)**

VIRGINIA SICKNESS AND DISABILITY PROGRAM

Valuation Date	Number	Annual Covered Payroll (\$ in Thousands)	Annual Average Pay	% Change in Average Pay
6/30/2019	79,105	\$ 4,456,996	\$ 56,343	6.06 %
6/30/2018	75,164	3,993,073	53,125	3.82 %
6/30/2017	73,620	3,767,055	51,169	1.13 %
6/30/2016	75,410	3,815,678	50,599	3.74 %
6/30/2015	74,367	3,627,297	48,776	1.21 %
6/30/2014	74,399	3,585,486	48,193	2.94 %

VIRGINIA LOCAL DISABILITY PROGRAM

Valuation Date	Number	Annual Covered Payroll (\$ in Thousands)	Annual Average Pay	% Change in Average Pay
TEACHERS				
6/30/2019	11,047	\$ 463,174	\$ 41,928	3.57 %
6/30/2018	9,332	377,798	40,484	(4.05)%
6/30/2017	7,239	305,446	42,195	9.31 %
6/30/2016	5,001	193,042	38,601	3.69 %
6/30/2015	2,796	104,087	37,227	13.53 %
POLITICAL SUBDIVISIONS				
6/30/2019	9,447	\$ 337,363	\$ 35,711	5.42 %
6/30/2018	7,915	268,121	33,875	3.66 %
6/30/2017	6,331	206,895	32,680	3.42 %
6/30/2016	4,675	147,729	31,600	4.33 %
6/30/2015	2,917	88,350	30,288	3.67 %



Section II – Membership Data (continued)

3. The following table shows the number of covered retired or disabled members on the rolls as of June 30, 2019 together with the amount of their benefit in force under the plan as of that date.

TABLE 4 - SCHEDULE OF RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
GROUP LIFE INSURANCE PROGRAM*

Valuation Date	Number Added to Rolls	Life Insurance Amount (\$1,000s)	Number Removed from Rolls	Life Insurance Amount (\$1,000s)	Number on Rolls at the End of the Year	Life Insurance Amount (\$1,000s)	Increase in Life Insurance Amount	Average Life Insurance Amount	Increase in Average Life Insurance Amount
6/30/2019	12,091	\$1,480,985	5,675	\$1,074,045	192,021	\$7,761,298	5.53%	\$40,419	2.01%
6/30/2018	11,464	1,357,284	5,269	1,071,515	185,605	7,354,358	4.04%	39,624	0.57%
6/30/2017**	11,212	1,281,014	4,936	2,445,277	179,410	7,068,589	(14.14)%	39,399	(17.15)%
6/30/2016	11,550	1,324,900	4,564	895,728	173,134	8,232,852	5.50%	47,552	1.24%
6/30/2015	11,429	1,275,150	4,519	840,576	166,148	7,803,680	5.90%	46,968	1.49%
6/30/2014	10,922	1,206,647	4,306	843,669	159,238	7,369,106	5.18%	46,277	0.81%
6/30/2013	10,511	1,148,100	4,203	800,829	152,622	7,006,128	5.22%	45,905	0.87%

* This schedule does not include life insurance benefits payable upon the death of an active member.

** June 30, 2017 valuation reflects adjustment to initial amount reported.

The numbers shown above include members who are receiving long-term disability benefits from the Virginia Sickness and Disability Program (VSDP) and the Virginia Local Disability Program (VLDP). The valuation results include an estimate of retiree liability from the “Life Insurance Only” group.



Section II – Membership Data (continued)

**TABLE 4 - SCHEDULE OF RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
(CONTINUED)**

HEALTH INSURANCE CREDIT PROGRAM*

Valuation Date	Number Added to Rols	Health Insurance Credit (\$1,000s)	Number Removed from Rols	Health Insurance Credit (\$1,000s)	Number on Rols at the End of the Year	Health Insurance Credit (\$1,000s)	Increase in Health Insurance Credit	Average Health Insurance Credit	Increase in Average Health Insurance Credit
STATE EMPLOYEES**									
6/30/2019	7,854	\$11,734	1,517	\$2,176	51,078	\$76,112	14.36 %	\$1,490	0.13 %
6/30/2018	2,558	3,779	4,105	5,981	44,741	66,554	(3.20)%	1,488	0.20 %
6/30/2017	3,364	4,928	1,734	2,671	46,288	68,756	3.39 %	1,485	(0.27)%
6/30/2016	2,881	4,332	1,663	2,369	44,658	66,499	3.06 %	1,489	0.27 %
6/30/2015	2,869	4,226	1,618	2,357	43,440	64,524	2.98 %	1,485	0.00 %
6/30/2014	2,652	4,044	1,548	2,212	42,189	62,655	3.01 %	1,485	0.34 %
6/30/2013	2,542	3,765	1,503	2,112	41,085	60,823	2.79 %	1,480	0.14 %
TEACHERS									
6/30/2019	4,044	\$5,270	1,670	\$2,286	68,706	\$94,290	3.27 %	\$1,372	(0.36)%
6/30/2018	3,511	4,719	1,534	2,067	66,332	91,306	2.99 %	1,377	(0.07)%
6/30/2017	3,412	4,565	1,470	1,984	64,355	88,654	3.00 %	1,378	(0.07)%
6/30/2016	3,649	4,913	1,329	1,795	62,413	86,073	3.76 %	1,379	(0.07)%
6/30/2015	3,465	4,714	1,493	2,016	60,093	82,955	3.36 %	1,380	(0.07)%
6/30/2014	3,729	5,075	1,291	1,752	58,121	80,257	4.32 %	1,381	(0.07)%
6/30/2013	3,557	5,016	1,389	1,918	55,683	76,934	4.20 %	1,382	0.14 %

* Excludes eligible deferred vested members.

** State Employees includes State, SPORS, JRS, VaLORS, ORP and UVA.



Section II – Membership Data (continued)

**TABLE 4 - SCHEDULE OF RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
(CONTINUED)**

HEALTH INSURANCE CREDIT PROGRAM*

Valuation Date	Number Added to Rols	Health Insurance Credit (\$1,000s)	Number Removed from Rols	Health Insurance Credit (\$1,000s)	Number on Rols at the End of the Year	Health Insurance Credit (\$1,000s)	Increase in Health Insurance Credit	Average Health Insurance Credit	Increase in Average Health Insurance Credit
<u>PARTICIPATING POLITICAL SUBDIVISIONS</u>									
6/30/2019	5,937	\$2,665	151	\$191	10,899	\$4,989	98.37 %	\$458	(6.91)%
6/30/2018	439	216	156	84	5,113	2,515	5.54 %	492	(0.20)%
6/30/2017	394	188	166	80	4,830	2,383	4.75 %	493	(0.20)%
6/30/2016	400	198	140	70	4,602	2,275	5.96 %	494	0.00 %
6/30/2015	448	219	130	63	4,342	2,147	7.84 %	494	(0.20)%
<u>CONSTITUTIONAL OFFICERS</u>									
6/30/2019	312	\$171	122	\$60	3,868	\$1,979	5.94 %	\$512	0.79 %
6/30/2018	297	145	65	32	3,678	1,868	6.44 %	508	(0.20)%
6/30/2017	290	143	89	42	3,446	1,755	6.11 %	509	(0.20)%
6/30/2016	356	189	101	53	3,245	1,654	8.53 %	510	0.39 %
6/30/2015	237	120	91	44	2,990	1,518	5.27 %	508	0.20 %

* Excludes eligible deferred vested members.



Section II – Membership Data (continued)

**TABLE 4 - SCHEDULE OF RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
(CONTINUED)**

HEALTH INSURANCE CREDIT PROGRAM*

Valuation Date	Number Added to Rols	Health Insurance Credit (\$1,000s)	Number Removed from Rols	Health Insurance Credit (\$1,000s)	Number on Rols at the End of the Year	Health Insurance Credit (\$1,000s)	Increase in Health Insurance Credit	Average Health Insurance Credit	Increase in Average Health Insurance Credit
<u>SOCIAL SERVICE EMPLOYEES</u>									
6/30/2019	115	\$64	64	\$33	2,138	\$1,086	2.94 %	\$508	0.40 %
6/30/2018	137	70	47	24	2,087	1,055	4.56 %	506	0.20 %
6/30/2017	147	73	44	21	1,997	1,009	5.43 %	505	0.00 %
6/30/2016	158	78	50	24	1,894	957	5.98 %	505	(0.20)%
6/30/2015	171	85	32	16	1,786	903	8.27 %	506	0.00 %
<u>REGISTRARS</u>									
6/30/2019	5	\$2	3	\$1	69	\$36	2.86 %	\$522	0.00 %
6/30/2018	5	3	3	2	67	35	2.94 %	522	(0.19)%
6/30/2017	3	1	0	0	65	34	3.03 %	523	(1.69)%
6/30/2016	4	3	1	1	62	33	6.45 %	532	1.33 %
6/30/2015	2	1	0	0	59	31	3.33 %	525	(0.19)%

* Excludes eligible deferred vested members.



Section II – Membership Data (continued)

**TABLE 4 - SCHEDULE OF RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
(CONTINUED)**

VIRGINIA SICKNESS AND DISABILITY PROGRAM

Valuation Date	Number Added to Rols	Annualized LTD Payments (\$1,000s)	Number Removed from Rols	Annualized LTD Payments (\$1,000s)	Number on Rols at the End of the Year	Annualized LTD Payments (\$1,000s)	Increase in Annualized LTD Payments	Average Annualized LTD Payments	Increase in Average Annualized LTD Payments
6/30/2019	305	\$5,978	418	\$7,456	2,540	\$30,723	(4.59)%	\$12,096	(0.35)%
6/30/2018	339	5,994	407	4,424	2,653	32,201	5.13 %	12,138	7.83 %
6/30/2017	366	6,428	441	6,696	2,721	30,631	(0.87)%	11,257	1.86 %
6/30/2016	377	6,507	423	6,734	2,796	30,899	(0.73)%	11,051	0.90 %
6/30/2015	466	7,923	325	4,112	2,842	31,126	13.95 %	10,952	8.30 %
6/30/2014	369	6,103	305	4,567	2,701	27,315	5.96 %	10,113	3.45 %
6/30/2013	401	6,256	434	4,707	2,637	25,779	6.39 %	9,776	7.72 %



Section II – Membership Data (continued)

**TABLE 4 - SCHEDULE OF RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
(CONTINUED)**

VIRGINIA LOCAL DISABILITY PROGRAM

Valuation Date	Number Added to Rols	Annualized LTD Payments (\$1,000s)	Number Removed from Rols	Annualized LTD Payments (\$1,000s)	Number on Rols at the End of the Year	Annualized LTD Payments (\$1,000s)	Increase in Annualized LTD Payments	Average Annualized LTD Payments	Increase in Average Annualized LTD Payments
TEACHERS									
6/30/2019	4	\$33	3	\$36	7	\$72	(4.00)%	\$10,286	(17.71)%
6/30/2018	6	75	0	0	6	75	n/a	12,500	n/a
6/30/2017	0	0	1	11	0	0	n/a	0	n/a
6/30/2016	1	11	0	0	1	11	n/a	11,000	n/a
6/30/2015	0	0	0	0	0	0	0.00 %	0	0.00 %
POLITICAL SUBDIVISIONS									
6/30/2019	11	\$178	8	\$184	28	\$307	(1.92)%	\$10,964	(12.43)%
6/30/2018	20	244	0	0	25	313	353.62 %	12,520	(3.69)%
6/30/2017	5	69	0	0	5	69	n/a	13,000	n/a
6/30/2016	0	0	0	0	0	0	0.00 %	0	0.00 %
6/30/2015	0	0	0	0	0	0	0.00 %	0	0.00 %



Section III – Assets

1. Schedule B shows the additions and deductions of each OPEB Plan for the year preceding the valuation date and a reconciliation of the fund balances at market value. As of June 30, 2019, the market value of assets used to determine the actuarial value of assets for each OPEB Plan is shown below.

TABLE 5
COMPARISON OF MARKET VALUE OF ASSETS AT
JUNE 30, 2019 AND JUNE 30, 2018
(\$ IN THOUSANDS)

OPEB Plan	June 30, 2019	June 30, 2018
GLI	\$1,762,972	\$1,594,773
HIC - State Employees	109,023	95,908
HIC - Teachers	129,015	111,639
HIC - Participating Political Subdivisions	24,468	23,161
HIC - Constitutional Officers	4,479	3,278
HIC - Social Service Employees	2,273	1,319
HIC - Registrars	88	58
VSDP	488,241	462,961
VLDP-Teachers	1,660	647
VLDP-Political Subdivisions	1,963	816



Section III – Assets (continued)

2. Schedule B shows the development of the five-year market related actuarial value of assets as of June 30, 2019. The following table shows the actuarial value of assets.

TABLE 6
COMPARISON OF ACTUARIAL VALUE OF ASSETS AT
JUNE 30, 2019 AND JUNE 30, 2018
(\$ IN THOUSANDS)

OPEB Plan	June 30, 2019	June 30, 2018
GLI	\$1,741,406	\$1,574,017
HIC - State Employees	109,417	96,294
HIC - Teachers	130,043	113,136
HIC - Participating Political Subdivisions*	24,468	23,161
HIC - Constitutional Officers*	4,479	3,278
HIC - Social Service Employees*	2,273	1,319
HIC - Registrars*	88	58
VSDP	484,986	460,466
VLDP-Teachers	1,662	674
VLDP-Political Subdivisions	1,971	853

* Actuarial value of assets equal to market value of assets.



Section IV – Contribution Rates

1. The actuarially determined employer contribution rates as a percentage of active member covered payroll for each OPEB Plan based on the June 30, 2019 actuarial valuation are shown in the following table:

TABLE 7

**ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTION RATE
EXPRESSED AS A PERCENTAGE OF ACTIVE MEMBER COVERED PAYROLL**

OPEB Plan	June 30, 2019
GLI*	1.34%
HIC - State Employees	1.12%
HIC - Teachers	1.21%
HIC - Participating Political Subdivisions**	0.59%
HIC - Constitutional Officers	0.36%
HIC - Social Service Employees	0.38%
HIC - Registrars	0.39%
VSDP	0.61%
VLDP-Teachers	0.47%
VLDP-Political Subdivisions	0.83%

* The contribution rate for GLI includes an adjustment of 0.34% for active group life insurance, see Section I for additional detail.

** Average of individual employer rates.



Section IV – Contribution Rates (continued)

2. The table below shows the normal contribution rate, the unfunded actuarial accrued liability (UAAL), amortization payment rate, and the resulting actuarially determined employer contribution rate for each OPEB Plan as of June 30, 2019.

TABLE 8
EMPLOYER CONTRIBUTION RATE EXPRESSED
AS A PERCENTAGE OF ACTIVE MEMBER COVERED PAYROLL

OPEB Plan	Rate as a Percent of Covered Payroll		
	Normal Cost* (a)	UAAL Amortization Payment (b)	Actuarially Determined Employer Contribution (c) = (a) + (b)
GLI**	0.85 %	0.49 %	1.34 %
HIC - State Employees	0.31 %	0.81 %	1.12 %
HIC - Teachers	0.27 %	0.94 %	1.21 %
HIC - Participating Political Subdivisions***	0.15 %	0.44 %	0.59 %
HIC - Constitutional Officers	0.12 %	0.24 %	0.36 %
HIC - Social Service Employees	0.11 %	0.27 %	0.38 %
HIC - Registrars	0.15 %	0.24 %	0.39 %
VSDP	0.98 %	(0.37)%	0.61 %
VLDP-Teachers	0.45 %	0.02 %	0.47 %
VLDP-Political Subdivisions	0.81 %	0.02 %	0.83 %

* Includes total administrative expenses.

** The normal cost rate for GLI includes an addition of 0.34% for active group life insurance, see Section I for additional detail.

*** Average of individual employer rates.



Section IV – Contribution Rates (continued)

3. Contributions to GLI consist of one-year term active member life insurance provided through an insurance company and advance funding payments to support postemployment life insurance. On the basis of the valuation, we are recommending a total contribution rate of 55.8¢ per month per \$1,000 of active members' life insurance. The recommended contributions are summarized in the following table:

TABLE 9

**GROUP LIFE INSURANCE PROGRAM
EMPLOYER CONTRIBUTION RATE EXPRESSED
AS CENTS PER \$1,000 OF LIFE INSURANCE COVERAGE**

Recommended Contribution	Rate	
	¢ per \$1,000 of Active Member's Life Insurance	% of Covered Payroll
Active Member Term Cost	14.1	0.34%
Postemployment Advance Funding	<u>41.7</u>	<u>1.00%</u>
Total	55.8	1.34%



Section V – Accounting Information

1. Below is a distribution of the number of members by type of membership, as follows:

NUMBER OF ALL MEMBERS AS OF JUNE 30, 2019

OPEB Plan	Active Members	Retired, Disabled, Eligible Deferred Vested, or Ported LTC Members	Total
GLI	367,627	192,021	559,648
HIC - State Employees	106,948	53,034	159,982
HIC - Teachers	149,396	71,839	221,235
HIC - Participating Political Subdivisions	37,248	11,447	48,695
HIC - Constitutional Officers	13,302	3,913	17,215
HIC - Social Service Employees	6,048	2,159	8,207
HIC - Registrars	232	69	301
VSDP	79,105	5,190	84,295
VLDP-Teachers	11,047	46	11,093
VLDP-Political Subdivisions	9,447	32	9,479



Section V – Accounting Information (continued)

2. Another such item is the Schedule of Funding Progress, shown in the following table:

SCHEDULE OF FUNDING PROGRESS GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued 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)
6/30/2019	\$1,741,406	\$ 3,414,322	\$1,672,916	51.00%	\$20,498,084	8.16%
6/30/2018	1,574,017	3,166,533	1,592,516	49.71%	19,783,323	8.05%
6/30/2017	1,410,087	3,024,718	1,614,631	46.62%	19,222,759	8.40%
6/30/2016	1,247,564	2,974,468	1,726,904	41.94%	18,321,880	9.43%
6/30/2015	1,128,876	2,829,104	1,700,228	39.90%	17,813,570	9.54%
6/30/2014	992,221	2,701,509	1,709,288	36.73%	17,559,285	9.73%

SCHEDULE OF FUNDING PROGRESS HEALTH INSURANCE CREDIT PROGRAM (\$ IN THOUSANDS)

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued 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)
STATE EMPLOYEES						
6/30/2019	\$ 109,417	\$ 1,026,752	\$ 917,335	10.66 %	\$ 6,907,506	13.28 %
6/30/2018	96,294	995,659	899,365	9.67 %	6,635,983	13.55 %
6/30/2017	79,451	990,724	911,273	8.02 %	6,480,712	14.06 %
6/30/2016	70,798	987,641	916,843	7.17 %	6,319,509	14.51 %
6/30/2015	67,164	976,526	909,362	6.88 %	6,055,429	15.02 %
6/30/2014	60,645	962,142	901,497	6.30 %	5,930,862	15.20 %
TEACHERS						
6/30/2019	\$ 130,043	\$ 1,425,883	\$1,295,840	9.12 %	\$ 8,608,489	15.05 %
6/30/2018	113,136	1,379,073	1,265,937	8.20 %	8,479,023	14.93 %
6/30/2017	96,987	1,357,921	1,260,934	7.14 %	8,303,502	15.19 %
6/30/2016	86,701	1,351,203	1,264,502	6.42 %	7,666,824	16.49 %
6/30/2015	85,379	1,325,415	1,240,036	6.44 %	7,488,507	16.56 %
6/30/2014	79,177	1,297,721	1,218,544	6.10 %	7,362,793	16.55 %



Section V – Accounting Information (continued)

**SCHEDULE OF FUNDING PROGRESS
HEALTH INSURANCE CREDIT PROGRAM
(\$ IN THOUSANDS)**

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued 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)
<u>PARTICIPATING POLITICAL SUBDIVISIONS</u>						
6/30/2019	\$ 24,468	\$ 72,855	\$ 48,387	33.58 %	\$ 1,440,731	3.36 %
6/30/2018	23,161	40,943	17,782	56.57 %	1,048,068	1.70 %
6/30/2017	22,167	39,300	17,133	56.40 %	987,951	1.73 %
6/30/2016	19,337	38,242	18,905	50.56 %	943,186	2.00 %
<u>CONSTITUTIONAL OFFICERS</u>						
6/30/2019	\$ 4,479	\$ 31,567	\$ 27,088	14.19 %	\$ 698,316	3.88 %
6/30/2018	3,278	29,720	26,442	11.03 %	652,041	4.06 %
6/30/2017	2,427	28,724	26,297	8.45 %	630,541	4.17 %
6/30/2016	1,479	27,778	26,299	5.33 %	606,902	4.33 %
<u>SOCIAL SERVICE EMPLOYEES</u>						
6/30/2019	\$ 2,273	\$ 14,632	\$ 12,359	15.53 %	\$ 285,738	4.33 %
6/30/2018	1,319	14,197	12,878	9.29 %	261,272	4.93 %
6/30/2017	1,091	13,990	12,899	7.80 %	251,620	5.13 %
6/30/2016	861	13,715	12,854	6.28 %	239,648	5.36 %
<u>REGISTRARS</u>						
6/30/2019	\$ 88	\$ 549	\$ 461	16.03 %	\$ 11,882	3.88 %
6/30/2018	58	537	479	10.80 %	11,472	4.18 %
6/30/2017	34	521	487	6.53 %	11,173	4.36 %
6/30/2016	11	510	499	2.16 %	10,274	4.86 %



Section V – Accounting Information (continued)

**SCHEDULE OF FUNDING PROGRESS
VIRGINIA SICKNESS AND DISABILITY PROGRAM
(\$ IN THOUSANDS)**

Actuarial Valuation Date*	Actuarial Value of Plan 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)
6/30/2019**	\$ 484,986	\$ 248,512	\$ (236,474)	195.16%	\$ 4,456,996	(5.31)%
6/30/2018**	460,466	265,292	(195,174)	173.57%	3,993,073	(4.89)%
6/30/2017**	437,372	226,512	(210,860)	193.09%	3,767,055	(5.60)%
6/30/2016**	416,248	240,886	(175,362)	172.80%	3,815,678	(4.60)%
6/30/2015**	398,609	235,247	(163,362)	169.44%	3,627,297	(4.50)%
6/30/2014	325,354	188,538	(136,816)	172.57%	3,585,486	(3.82)%

* Actuarial cost method of Projected Unit Credit prior to 6/30/2013 and Entry Age Normal on 6/30/2013 and later for Long-Term Disability, actuarial cost method of Projected Unit Credit prior to 6/30/2016 and Entry Age Normal on 6/30/2016 and later for Long-Term Care.

** Includes Long-Term Care. Values prior to 6/30/2015 reflect Long-Term Disability only.

**SCHEDULE OF FUNDING PROGRESS
VIRGINIA LOCAL DISABILITY PROGRAM
(\$ IN THOUSANDS)**

Actuarial Valuation Date	Actuarial Value of Plan 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)
TEACHERS						
6/30/2019	\$ 1,662	\$ 2,622	\$ 960	63.39%	\$ 463,174	0.21%
6/30/2018	674	1,383	709	48.73%	377,798	0.19%
6/30/2017	324	812	488	39.90%	305,446	0.16%
6/30/2016	57	439	382	12.98%	193,042	0.20%
6/30/2015	48	177	129	27.12%	104,087	0.12%
POLITICAL SUBDIVISIONS						
6/30/2019	\$ 1,971	\$ 2,817	\$ 846	69.97%	\$ 337,363	0.25%
6/30/2018	853	2,732	1,879	31.22%	268,121	0.70%
6/30/2017	413	825	412	50.06%	209,895	0.20%
6/30/2016	52	378	326	13.76%	147,729	0.22%
6/30/2015	30	136	106	22.06%	88,350	0.12%

* Actuarial cost method of Entry Age Normal for Long-Term Disability, actuarial cost method of Projected Unit Credit prior to 6/30/2016 and Entry Age Normal on 6/30/2016 and later for Long-Term Care.



Section V – Accounting Information (continued)

3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2019. Additional information as of the latest actuarial valuation follows:

All OPEB Plans	
Valuation Date	6/30/2019
Amortization Method	Level Percentage of Pay, Closed
Actuarial Cost Method	Entry Age Normal
Payroll Growth Rate	3.00%
Actuarial Assumptions:	
Investment Rate of Return*	6.75%
*Includes inflation at	2.50%

The assumed investment rate of return reflects the fact a trust has been established to set aside assets that are legally held exclusively for postemployment benefits.

OPEB Plan	Asset Valuation Method
GLI	5-year Smoothed Market
HIC – State Employees	5-year Smoothed Market
HIC – Teachers	5-year Smoothed Market
HIC – Participating Political Subdivisions	Market Value of Assets
HIC - Constitutional Officers	Market Value of Assets
HIC – Social Service Employees	Market Value of Assets
HIC – Registrars	Market Value of Assets
VSDP	5-year Smoothed Market
VLDP – Teachers	5-year Smoothed Market
VLDP – Political Subdivisions	5-year Smoothed Market

OPEB Plan	Benefit Increases
GLI	\$8,463 Minimum Benefit 2.25%
VSDP	LTD Post-Disablement Benefit Increases
VLDP - Teachers	Plan 1: 2.50%
VLDP – Political Subdivisions	Plan 2: 2.25%



Section VI – Derivation of Experience Gains and Losses

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)- DURING FISCAL YEAR ENDING 2019 GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Fiscal Year 2019	
1. Beginning of Year:	
(a) Actuarial Accrued Liability (AAL)	\$3,166,533
(b) Normal Cost	\$81,890
(c) Benefit Payments	\$199,879
2. End of Year:	
(a) Expected AAL, before Assumption Changes	\$3,268,937
$[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$	
(b) Actual AAL, before Assumption Changes	\$3,294,304
(c) Actual AAL, after Assumption Changes	\$3,414,322
3. Total AAL Gain (Loss)	
(a) Gain (Loss) due Experience (2a) - (2b)	(\$25,367)
(b) Gain (Loss) due to Assumption Changes (2b) - (2c)	(\$120,018)
Total	(\$145,385)
4. Actuarial Value of Assets (AVA) Beginning of Year	\$1,574,017
5. Net External Cash Flow During the Year	
(a) Expected Contributions	\$175,772
(b) Benefit Payments	\$199,879
6. End of Year:	
(a) Expected AVA	\$1,665,399
$[(4) + (5a)] \times 1.07 - [(5b) \times (1 + [0.07 \times 0.50])]$	
(b) Actual AVA	\$1,741,406
7. AVA Gain (Loss)	\$76,007
(6b) - (6a)	
8. Expected UAAL at End of Year	\$1,603,538
(2a) - (6a)	
9. Actual UAAL at End of Year	\$1,672,916
(2c) - (6b)	
10. UAAL Gain (Loss)	
(a) Gain (Loss) Experience (3a) + 7	\$50,640
(b) Gain (Loss) due to Assumption Changes (3b)	(\$120,018)
Total	(\$69,378)



Section VI – Derivation of Experience Gains and Losses (continued)

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2019
HEALTH INSURANCE CREDIT PROGRAM
(\$ IN THOUSANDS)**

Fiscal Year 2019	State Employees*	Teachers
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$995,659	\$1,379,073
(b) Normal Cost	\$18,323	\$19,759
(c) Benefit Payments	\$72,857	\$90,456
2. End of Year:		
(a) Expected AAL, before Assumption Changes [(1a) + (1b)] x 1.07 - [(1c) x (1 + [0.07 x 0.50])]	\$1,009,553	\$1,403,128
(b) Actual AAL, before Assumption Changes	\$1,004,117	\$1,391,010
(c) Actual AAL, after Assumption Changes	\$1,026,752	\$1,425,883
3. Total AAL Gain (Loss)		
(a) Gain (Loss) due Experience (2a) - (2b)	\$5,436	\$12,118
(b) Gain (Loss) due to Assumption Changes (2b) - (2c)	(\$22,635)	(\$34,873)
Total	(\$17,199)	(\$22,755)
4. Actuarial Value of Assets (AVA) Beginning of Year	\$96,294	\$113,136
5. Net External Cash Flow During the Year		
(a) Expected Contributions	\$72,750	\$97,280
(b) Benefit Payments	\$72,857	\$90,456
6. End of Year:		
(a) Expected AVA [(4) + (5a)] x 1.07 - [(5b) x (1 + [0.07 x 0.50])]	\$105,470	\$131,523
(b) Actual AVA	\$109,417	\$130,043
7. AVA Gain (Loss)	\$3,947	(\$1,480)
(6b) - (6a)		
8. Expected UAAL at End of Year	\$904,083	\$1,271,605
(2a) - (6a)		
9. Actual UAAL at End of Year	\$917,335	\$1,295,840
(2c) - (6b)		
10. UAAL Gain (Loss)		
(a) Gain (Loss) Experience (3a) + 7	\$9,383	\$10,638
(b) Gain (Loss) due to Assumption Changes (3b)	(\$22,635)	(\$34,873)
Total	(\$13,252)	(\$24,235)

* State Employees include State, JRS, SPORS, VaLORS, ORP, and UVA employees.



Section VI – Derivation of Experience Gains and Losses (continued)

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL) DURING FISCAL YEAR 2019 HEALTH INSURANCE CREDIT PROGRAM (\$ IN THOUSANDS)

Fiscal Year 2019	Participating Political Subdivisions	Constitutional Officers
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$40,943	\$29,720
(b) Normal Cost	\$957	\$646
(c) Benefit Payments	\$2,564	\$1,824
2. End of Year:		
(a) Expected AAL, before Assumption Changes [(1a) + (1b)] x 1.07 - [(1c) x (1 + [0.07 x 0.50])]	\$42,179	\$30,604
(b) Actual AAL, before Assumption Changes	\$42,695	\$30,799
(c) Actual AAL, after Assumption Changes	\$43,753	\$31,567
(d) Actual AAL, after Plan Changes	\$72,855	N/A
3. Total AAL Gain (Loss)		
(a) Gain (Loss) due Experience (2a) - (2b)	(\$516)	(\$195)
(b) Gain (Loss) due to Assumption Changes (2b) - (2c)	(\$1,058)	(\$768)
(c) Gain (Loss) due to Plan Change (2c) - (2d)	(\$29,102)	N/A
Total	(\$30,676)	(\$963)
4. Actuarial Value of Assets (AVA) Beginning of Year	\$23,161	\$3,278
5. Net External Cash Flow During the Year		
(a) Expected Contributions	\$2,052	\$2,277
(b) Benefit Payments	\$2,564	\$1,824
6. End of Year:		
(a) Expected AVA [(4) + (5a)] x 1.07 - [(5b) x (1 + [0.07 x 0.50])]	\$24,324	\$4,056
(b) Actual AVA	\$24,468	\$4,479
7. AVA Gain (Loss) (6b) - (6a)	\$144	\$423
8. Expected UAAL at End of Year (2a) - (6a)	\$17,855	\$26,548
9. Actual UAAL at End of Year (2c) or (2d) - (6b)	\$48,387	\$27,088
10. UAAL Gain (Loss)		
(a) Gain (Loss) Experience (3a) + 7	(\$372)	\$228
(b) Gain (Loss) due to Assumption Changes (3b)	(\$1,058)	(\$768)
(c) Gain (Loss) due to Plan Changes (3c)*	(\$29,102)	N/A
Total	(\$30,532)	(\$540)

* For Participating Political Subdivisions, plan changes are due to recognizing the provisions of HB 1513



Section VI – Derivation of Experience Gains and Losses (continued)

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2019
HEALTH INSURANCE CREDIT PROGRAM
(\$ IN THOUSANDS)**

Fiscal Year 2019	Social Service Employees	Registrars
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$14,197	\$537
(b) Normal Cost	\$245	\$15
(c) Benefit Payments	\$1,012	\$12
2. End of Year:		
(a) Expected AAL, before Assumption Changes	\$14,406	\$579
$[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$		
(b) Actual AAL, before Assumption Changes	\$14,306	\$537
(c) Actual AAL, after Assumption Changes	\$14,632	\$549
3. Total AAL Gain (Loss)		
(a) Gain (Loss) due Experience (2a) - (2b)	\$100	\$42
(b) Gain (Loss) due to Assumption Changes (2b) - (2c)	(\$326)	(\$12)
Total	(\$226)	\$30
4. Actuarial Value of Assets (AVA) Beginning of Year	\$1,319	\$58
5. Net External Cash Flow During the Year		
(a) Expected Contributions	\$1,034	\$45
(b) Benefit Payments	\$1,012	\$12
6. End of Year:		
(a) Expected AVA	\$1,470	\$98
$[(4) + (5a)] \times 1.07 - [(5b) \times (1 + [0.07 \times 0.50])]$		
(b) Actual AVA	\$2,273	\$88
7. AVA Gain (Loss)	\$803	(\$10)
(6b) - (6a)		
8. Expected UAAL at End of Year	\$12,936	\$481
(2a) - (6a)		
9. Actual UAAL at End of Year	\$12,359	\$461
(2c) - (6b)		
10. UAAL Gain (Loss)		
(a) Gain (Loss) Experience (3a) + 7	\$903	\$32
(b) Gain (Loss) due to Assumption Changes (3b)	(\$326)	(\$12)
Total	\$577	\$20



Section VI – Derivation of Experience Gains and Losses (continued)

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2019
VIRGINIA SICKNESS AND DISABILITY PROGRAM
(\$ IN THOUSANDS)**

Fiscal Year 2019	
1. Beginning of Year:	
(a) Actuarial Accrued Liability (AAL)	\$265,292
(b) Normal Cost	\$35,083
(c) Benefit Payments	\$24,376
2. End of Year:	
(a) Expected AAL, before Assumption Changes	\$296,171
$[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$	
(b) Actual AAL, before Assumption Changes	\$244,713
(c) Actual AAL, after Assumption Changes	\$248,512
3. Total AAL Gain (Loss)	
(a) Gain (Loss) due Experience (2a) - (2b)	\$51,458
(b) Gain (Loss) due to Assumption Changes (2b) - (2c)	(\$3,799)
Total	\$47,659
4. Actuarial Value of Assets (AVA) Beginning of Year	\$460,466
5. Net External Cash Flow During the Year	
(a) Expected Contributions	\$22,242
(b) Benefit Payments	\$24,376
6. End of Year:	
(a) Expected AVA	\$491,268
$[(4) + (5a)] \times 1.07 - [(5b) \times (1 + [0.07 \times 0.50])]$	
(b) Actual AVA	\$484,986
7. AVA Gain (Loss)	(\$6,282)
(6b) - (6a)	
8. Expected UAAL at End of Year	(\$195,097)
(2a) - (6a)	
9. Actual UAAL at End of Year	(\$236,474)
(2c) - (6b)	
10. UAAL Gain (Loss)	
(a) Gain (Loss) Experience (3a) + 7	\$45,176
(b) Gain (Loss) due to Assumption Changes (3b)	(\$3,799)
Total	\$41,377



Section VI – Derivation of Experience Gains and Losses (continued)

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2019
VIRGINIA LOCAL DISABILITY PROGRAM
(\$ IN THOUSANDS)**

Fiscal Year 2019	Teachers	Political Subdivisions
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$1,383	\$2,732
(b) Normal Cost	\$1,377	\$1,821
(c) Benefit Payments	\$167	\$188
2. End of Year:		
(a) Expected AAL, before Assumption Changes $[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$	\$2,780	\$4,678
(b) Actual AAL, before Assumption Changes	\$2,556	\$2,763
(c) Actual AAL, after Assumption Changes	\$2,622	\$2,817
3. Total AAL Gain (Loss)		
(a) Gain (Loss) due Experience (2a) - (2b)	\$224	\$1,915
(b) Gain (Loss) due to Assumption Changes (2b) - (2c)	(\$66)	(\$54)
Total	\$158	\$1,861
4. Actuarial Value of Assets (AVA) Beginning of Year	\$674	\$853
5. Net External Cash Flow During the Year		
(a) Expected Contributions	\$1,429	\$1,955
(b) Benefit Payments	\$167	\$188
6. End of Year:		
(a) Expected AVA $[(4) + (5a)] \times 1.07 - [(5b) \times (1 + [0.07 \times 0.50])]$	\$2,077	\$2,810
(b) Actual AVA	\$1,662	\$1,971
7. AVA Gain (Loss) (6b) - (6a)	(\$415)	(\$839)
8. Expected UAAL at End of Year (2a) - (6a)	\$703	\$1,868
9. Actual UAAL at End of Year (2c) - (6b)	\$960	\$846
10. UAAL Gain (Loss)		
(a) Gain (Loss) Experience (3a) + 7	(\$191)	\$1,076
(b) Gain (Loss) due to Assumption Changes (3b)	(\$66)	(\$54)
Total	(\$257)	\$1,022



Schedule A – Results of the Valuation

GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll	\$ 20,498,084	\$ 19,783,323
2. Actuarial Accrued Liability Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 1,991,907	\$ 1,824,248
(b) Present retired and disabled members	2,071,215	1,901,090
(c) Total present value of prospective benefits	\$ 4,063,122	\$ 3,725,338
(d) Present value of future normal contributions	648,800	558,805
(e) Total actuarial accrued liability (2c) - (2d)	\$ 3,414,322	\$ 3,166,533
3. Present Assets for Valuation Purposes	\$ 1,741,406	\$ 1,574,017
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 1,672,916	\$ 1,592,516
5. Normal Contribution*	\$ 92,811	\$ 81,890
6. Accrued Liability Contribution	99,191	93,882
7. Total Contribution (5) + (6)	\$ 192,002	\$ 175,772
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll	0.51%	0.47%
10. Accrued Liability Contribution as a Percent of Covered Payroll** (6) / (1)	0.49%	0.48%
11. Total Contribution as a Percent of Payroll (9) + (10)	1.00%	0.95%
12. Adjustment for Active Group Life Insurance	0.34%	0.34%
13. Total Actuarially Determined Employer Contribution for Plan (11) + (12)	1.34%	1.29%

* Includes total administrative expenses of \$709,000 for 2019 and \$664,000 for 2018.

** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**HEALTH INSURANCE CREDIT PROGRAM
STATE EMPLOYEES
(State, SPORS, JRS, VaLORS, ORP, and UVA)
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll	\$ 6,907,506	\$ 6,635,983
2. Actuarial Accrued Liability Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 481,376	\$ 474,860
(b) Present retired and disabled members	683,387	651,476
(c) Total present value of prospective benefits	\$ 1,164,763	\$ 1,126,336
(d) Present value of future normal contributions	138,011	130,677
(e) Total actuarial accrued liability (2c) - (2d)	\$ 1,026,752	\$ 995,659
3. Present Assets for Valuation Purposes	\$ 109,417	\$ 96,294
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 917,335	\$ 899,365
5. Normal Contribution*	\$ 19,005	\$ 18,323
6. Accrued Liability Contribution	55,694	54,427
7. Total Contribution (5) + (6)	\$ 74,699	\$ 72,750
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll	0.31%	0.31%
10. Accrued Liability Contribution as a Percent of Covered Payroll** (6) / (1)	0.81%	0.84%
11. Total Contribution as a Percent of Payroll (9) + (10)	1.12%	1.15%

* Includes total administrative expenses of \$136,000 for 2019 and \$149,000 for 2018.

** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**HEALTH INSURANCE CREDIT PROGRAM
TEACHERS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll	\$ 8,608,489	\$ 8,479,023
2. Actuarial Accrued Liability		
Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 702,618	\$ 690,114
(b) Present retired and disabled members	896,306	851,963
(c) Total present value of prospective benefits	\$ 1,598,924	\$ 1,542,077
(d) Present value of future normal contributions	173,041	163,004
(e) Total actuarial accrued liability (2c) - (2d)	\$ 1,425,883	\$ 1,379,073
3. Present Assets for Valuation Purposes	\$ 130,043	\$ 113,136
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 1,295,840	\$ 1,265,937
5. Normal Contribution*	\$ 20,514	\$ 19,759
6. Accrued Liability Contribution	79,726	77,521
7. Total Contribution (5) + (6)	\$ 100,240	\$ 97,280
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll	0.27%	0.26%
10. Accrued Liability Contribution as a Percent of Covered Payroll** (6) / (1)	0.94%	0.93%
11. Total Contribution as a Percent of Payroll (9) + (10)	1.21%	1.19%

* Includes total administrative expenses of \$151,000 for 2019 and \$152,000 for 2018.

** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**HEALTH INSURANCE CREDIT PROGRAM
PARTICIPATING POLITICAL SUBDIVISIONS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll	\$ 1,440,731	\$ 1,048,068
2. Actuarial Accrued Liability		
Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 41,355	\$ 24,889
(b) Present retired and disabled members	41,097	22,409
(c) Total present value of prospective benefits	\$ 82,452	\$ 47,298
(d) Present value of future normal contributions	9,597	6,355
(e) Total actuarial accrued liability (2c) - (2d)	\$ 72,855	\$ 40,943
3. Present Assets for Valuation Purposes	\$ 24,468	\$ 23,161
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 48,387	\$ 17,782
5. Normal Contribution*	\$ 1,447	\$ 957
6. Accrued Liability Contribution	3,200	1,095
7. Total Contribution (5) + (6)	\$ 4,647	\$ 2,052
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll**	0.15%	0.14%
10. Accrued Liability Contribution as a Percent of Covered Payroll**	0.44%	0.32%
11. Total Contribution as a Percent of Payroll (9) + (10)	0.59%	0.46%

* Includes total administrative expenses of \$32,000 for 2019 and \$37,000 for 2018.

** Average rate as a percent of covered payroll. Accrued liability contribution for some participating locals includes an additional funding contribution rate to allow the use of the 6.75% investment return as the single equivalent interest rate assumption for purposes of the GASB 74/75 statements.



Schedule A – Results of the Valuation (continued)

**HEALTH INSURANCE CREDIT PROGRAM
CONSTITUTIONAL OFFICERS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll	\$ 698,316	\$ 652,041
2. Actuarial Accrued Liability		
Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 18,025	\$ 17,036
(b) Present retired and disabled members	18,551	17,190
(c) Total present value of prospective benefits	\$ 36,576	\$ 34,226
(d) Present value of future normal contributions	5,009	4,506
(e) Total actuarial accrued liability (2c) - (2d)	\$ 31,567	\$ 29,720
3. Present Assets for Valuation Purposes	\$ 4,479	\$ 3,278
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 27,088	\$ 26,442
5. Normal Contribution*	\$ 704	\$ 646
6. Accrued Liability Contribution	1,681	1,631
7. Total Contribution (5) + (6)	\$ 2,385	\$ 2,277
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll	0.12%	0.11%
10. Accrued Liability Contribution as a Percent of Covered Payroll** (6) / (1)	0.24%	0.26%
11. Total Contribution as a Percent of Payroll (9) + (10)	0.36%	0.37%

* Includes total administrative expenses of \$5,000 for 2019 and \$4,000 for 2018.

** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**HEALTH INSURANCE CREDIT PROGRAM
SOCIAL SERVICE EMPLOYEES
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll	\$ 285,738	\$ 261,272
2. Actuarial Accrued Liability		
Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 6,504	\$ 6,197
(b) Present retired and disabled members	10,056	9,677
(c) Total present value of prospective benefits	\$ 16,560	\$ 15,874
(d) Present value of future normal contributions	1,928	1,677
(e) Total actuarial accrued liability (2c) - (2d)	\$ 14,632	\$ 14,197
3. Present Assets for Valuation Purposes	\$ 2,273	\$ 1,319
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 12,359	\$ 12,878
5. Normal Contribution*	\$ 276	\$ 245
6. Accrued Liability Contribution	754	789
7. Total Contribution (5) + (6)	\$ 1,030	\$ 1,034
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll	0.11%	0.11%
10. Accrued Liability Contribution as a Percent of Covered Payroll** (6) / (1)	0.27%	0.31%
11. Total Contribution as a Percent of Payroll (9) + (10)	0.38%	0.42%

* Includes total administrative expenses of \$3,000 for 2019 and \$1,000 for 2018.

** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**HEALTH INSURANCE CREDIT PROGRAM
REGISTRARS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll	\$ 11,882	\$ 11,472
2. Actuarial Accrued Liability		
Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 308	\$ 293
(b) Present retired and disabled members	330	328
(c) Total present value of prospective benefits	\$ 638	\$ 621
(d) Present value of future normal contributions	89	84
(e) Total actuarial accrued liability (2c) - (2d)	\$ 549	\$ 537
3. Present Assets for Valuation Purposes	\$ 88	\$ 58
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 461	\$ 479
5. Normal Contribution*	\$ 15	\$ 15
6. Accrued Liability Contribution	29	30
7. Total Contribution (5) + (6)	\$ 44	\$ 45
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll	0.15%	0.15%
10. Accrued Liability Contribution as a Percent of Covered Payroll** (6) / (1)	0.24%	0.27%
11. Total Contribution as a Percent of Payroll (9) + (10)	0.39%	0.42%

* Includes total administrative expenses of \$0 for 2019 and \$0 for 2018.

** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll*	\$ 4,456,996	\$ 3,993,073
2. Actuarial Accrued Liability		
Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 315,292	\$ 282,128
(b) Present retired and disabled members	170,146	187,514
(c) Total present value of prospective benefits	\$ 485,438	\$ 469,642
(d) Present value of future normal contributions	236,926	204,350
(e) Total actuarial accrued liability (2c) - (2d)	\$ 248,512	\$ 265,292
3. Present Assets for Valuation Purposes	\$ 484,986	\$ 460,466
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ (236,474)	\$ (195,174)
5. Normal Contribution**	\$ 38,120	\$ 35,083
6. Accrued Liability Contribution	(15,804)	(12,841)
7. Total Contribution (5) + (6)	\$ 22,316	\$ 22,242
8. Amortization Period (Years)	15-24	16-25
9. Normal Contribution as a Percent of Payroll	0.79%	0.78%
10. Accrued Liability Contribution as a Percent of Covered Payroll*** (6) / (1)	(0.37)%	(0.33)%
11. Total Contribution as a Percent of Payroll (9) + (10)	0.42%	0.45%

* Covered payroll consist of only those State, VaLORS, and SPORS employees participating in VSDP and exclude the compensation of those employees hired before January 1, 1999 who did not elect VSDP during one of two open enrollment periods offered in 1999 and 2002.

** Includes third party administrator expenses of \$7,218,000 for 2019 and \$7,763,000 for 2018.

*** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
TEACHERS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll*	\$ 463,174	\$ 377,798
2. Actuarial Accrued Liability Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 8,378	\$ 9,133
(b) Present retired and disabled members	806	271
(c) Total present value of prospective benefits	\$ 9,184	\$ 9,404
(d) Present value of future normal contributions	6,562	8,021
(e) Total actuarial accrued liability (2c) - (2d)	\$ 2,622	\$ 1,383
3. Present Assets for Valuation Purposes	\$ 1,662	\$ 674
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 960	\$ 709
5. Normal Contribution**	\$ 1,908	\$ 1,377
6. Accrued Liability Contribution	71	52
7. Total Contribution (5) + (6)	\$ 1,979	\$ 1,429
8. Amortization Period (Years)	15-20	16-20
9. Normal Contribution as a Percent of Payroll	0.26%	0.25%
10. Accrued Liability Contribution as a Percent of Covered Payroll*** (6) / (1)	0.02%	0.01%
11. Total Contribution as a Percent of Payroll (9) + (10)	0.28%	0.26%

* Covered payroll consist of only those Teachers employees participating in VLDP.

** Includes third party administrator expenses of \$869,000 for 2019 and \$563,000 for 2018.

** Includes timing adjustment.



Schedule A – Results of the Valuation (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
POLITICAL SUBDIVISIONS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Covered Payroll*	\$ 337,363	\$ 268,121
2. Actuarial Accrued Liability Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 8,858	\$ 8,399
(b) Present retired and disabled members	1,511	1,571
(c) Total present value of prospective benefits	\$ 10,369	\$ 9,970
(d) Present value of future normal contributions	7,552	7,238
(e) Total actuarial accrued liability (2c) - (2d)	\$ 2,817	\$ 2,732
3. Present Assets for Valuation Purposes	\$ 1,971	\$ 853
4. Unfunded Actuarial Accrued Liability (2e) - 3	\$ 846	\$ 1,879
5. Normal Contribution**	\$ 2,439	\$ 1,821
6. Accrued Liability Contribution	65	134
7. Total Contribution (5) + (6)	\$ 2,504	\$ 1,955
8. Amortization Period (Years)	15-20	16-20
9. Normal Contribution as a Percent of Payroll	0.52%	0.51%
10. Accrued Liability Contribution as a Percent of Covered Payroll*** (6) / (1)	0.02%	0.05%
11. Total Contribution as a Percent of Payroll (9) + (10)	0.54%	0.56%

* Covered payroll consist of only those Political Subdivisions employees participating in VLDP.

** Includes third party administrator expenses of \$984,000 for 2019 and \$708,000 for 2018.

** Includes timing adjustment.



Schedule A – Solvency Test

GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Aggregate Accrued Liabilities For						Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
Valuation Date	(1) Active Member Contributions	(2) Retirees, Survivors and Inactive Members	(3) Active Members (Employer Financed Portion)	Total	Actuarial Value of Assets	(1)	(2)	(3)
6/30/2019	n/a	\$2,071,215	\$1,343,107	\$3,414,322	\$1,741,406	n/a	84.08%	0.00%
6/30/2018	n/a	1,901,090	1,265,443	3,166,533	1,574,017	n/a	82.80	0.00
6/30/2017	n/a	1,786,401	1,238,317	3,024,718	1,410,087	n/a	78.93	0.00
6/30/2016	n/a	1,749,825	1,224,643	2,974,468	1,247,564	n/a	71.30	0.00
6/30/2015	n/a	1,633,937	1,195,167	2,829,104	1,128,876	n/a	69.09	0.00

HEALTH INSURANCE CREDIT PROGRAM (\$ IN THOUSANDS)

Aggregate Accrued Liabilities For						Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
Valuation Date	(1) Active Member Contributions	(2) Retirees, Survivors and Inactive Members	(3) Active Members (Employer Financed Portion)	Total	Actuarial Value of Assets	(1)	(2)	(3)
STATE EMPLOYEES								
6/30/2019	n/a	\$683,387	\$343,365	\$1,026,752	\$109,417	n/a	16.01%	0.00%
6/30/2018	n/a	651,476	344,183	995,659	96,294	n/a	14.78	0.00
6/30/2017	n/a	638,266	352,458	990,724	79,451	n/a	12.45	0.00
6/30/2016	n/a	610,570	377,071	987,641	70,798	n/a	11.60	0.00
6/30/2015	n/a	594,098	382,428	976,526	67,164	n/a	11.31	0.00
TEACHERS								
6/30/2019	n/a	\$896,306	\$529,577	\$1,425,883	\$130,043	n/a	14.51%	0.00%
6/30/2018	n/a	851,963	527,110	1,379,073	113,136	n/a	13.28	0.00
6/30/2017	n/a	832,771	525,150	1,357,921	96,987	n/a	11.65	0.00
6/30/2016	n/a	811,164	540,039	1,351,203	86,701	n/a	10.69	0.00
6/30/2015	n/a	786,781	538,634	1,325,415	85,379	n/a	10.85	0.00



Schedule A – Solvency Test (continued)

**HEALTH INSURANCE CREDIT PROGRAM
(\$ IN THOUSANDS)**

Aggregate Accrued Liabilities For						Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
Valuation Date	(1) Active Member Contributions	(2) Retirees, Survivors and Inactive Members	(3) Active Members (Employer Financed Portion)	Total	Actuarial Value of Assets	(1)	(2)	(3)
PARTICIPATING POLITICAL SUBDIVISIONS								
6/30/2019	n/a	\$41,097	\$31,758	\$72,855	\$24,468	n/a	59.54%	0.00%
6/30/2018	n/a	22,409	18,534	40,943	23,161	n/a	100.00	4.06
6/30/2017	n/a	21,326	17,974	39,300	22,167	n/a	100.00	4.68
6/30/2016	n/a	20,216	18,026	38,242	19,337	n/a	95.65	0.00
6/30/2015	n/a	19,286	17,626	36,912	19,348	n/a	100.00	0.35
CONSTITUTIONAL OFFICERS								
6/30/2019	n/a	\$18,551	\$13,016	\$31,567	\$4,479	n/a	24.14%	0.00%
6/30/2018	n/a	17,190	12,530	29,720	3,278	n/a	19.07	0.00
6/30/2017	n/a	16,175	12,549	28,724	2,427	n/a	15.00	0.00
6/30/2016	n/a	15,106	12,672	27,778	1,479	n/a	9.79	0.00
6/30/2015	n/a	13,802	12,898	26,700	1,120	n/a	8.11	0.00
SOCIAL SERVICE EMPLOYEES								
6/30/2019	n/a	\$10,056	\$4,576	\$14,632	\$2,273	n/a	22.60%	0.00%
6/30/2018	n/a	9,677	4,520	14,197	1,319	n/a	13.63	0.00
6/30/2017	n/a	9,313	4,677	13,990	1,091	n/a	11.71	0.00
6/30/2016	n/a	8,770	4,945	13,715	861	n/a	9.82	0.00
6/30/2015	n/a	8,357	5,051	13,408	915	n/a	10.95	0.00
REGISTRARS								
6/30/2019	n/a	\$330	\$219	\$549	\$88	n/a	26.67%	0.00%
6/30/2018	n/a	328	209	537	58	n/a	17.68	0.00
6/30/2017	n/a	303	218	521	34	n/a	11.22	0.00
6/30/2016	n/a	291	219	510	11	n/a	3.78	0.00
6/30/2015	n/a	281	223	504	7	n/a	2.49	0.00



Schedule A – Solvency Test (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
(\$ IN THOUSANDS)**

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Liabilities Covered by Actuarial Value of Assets		
	(1) Active Member Contributions	(2) Retirees, Survivors and Inactive Members	(3) Active Members (Employer Financed Portion)	Total		(1)	(2)	(3)
6/30/2019	n/a	\$170,146	\$78,366	\$248,512	\$484,986	n/a	100.00%	401.76%
6/30/2018	n/a	187,514	77,778	265,292	460,466	n/a	100.00	350.94
6/30/2017	n/a	160,283	66,229	226,512	437,372	n/a	100.00	418.38
6/30/2016	n/a	156,449	84,437	240,886	416,248	n/a	100.00	307.68
6/30/2015	n/a	156,796	78,451	235,247	398,609	n/a	100.00	308.23

**VIRGINIA LOCAL DISABILITY PROGRAM
(\$ IN THOUSANDS)**

Aggregate Accrued Liabilities For						Liabilities Covered by Actuarial Value of Assets		
Valuation Date	(1) Active Member Contributions	(2) Retirees, Survivors and Inactive Members	(3) Active Members (Employer Financed Portion)	Total	Actuarial Value of Assets	(1)	(2)	(3)
TEACHERS								
6/30/2019	n/a	\$806	\$1,816	\$2,622	\$1,662	n/a	100.00%	47.14%
6/30/2018	n/a	271	1,112	1,383	674	n/a	100.00	36.24
6/30/2017	n/a	103	709	812	324	n/a	100.00	31.17
6/30/2016	n/a	132	307	439	57	n/a	43.18	0.00
6/30/2015	n/a	15	162	177	48	n/a	100.00	20.37
POLITICAL SUBDIVISIONS								
6/30/2019	n/a	\$1,511	\$1,306	\$2,817	\$1,971	n/a	100.00%	35.22%
6/30/2018	n/a	1,571	1,161	2,732	853	n/a	54.30	0.00
6/30/2017	n/a	361	464	825	413	n/a	100.00	11.21
6/30/2016	n/a	135	243	378	52	n/a	38.52	0.00
6/30/2015	n/a	30	106	136	30	n/a	100.00	0.00



Schedule B – Plan Assets

For HIC – Participating Political Subdivisions, HIC – Constitutional Officers, HIC – Social Service Employees, and HIC – Registrars, the actuarial value of assets equals the market value of assets. For all other OPEB Plans, the actuarial value of assets is a smoothed market value, phasing-in investment returns above or below the 6.75% assumption over five years. This smoothed value is subject to a corridor that restricts the actuarial value of assets from being more than 120% or less than 80% of the market value of assets. The actuarial value of assets used for the valuation is shown on the following pages.



Schedule B – Plan Assets (continued)

**GROUP LIFE INSURANCE PROGRAM
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 1,594,773	\$ 1,437,586
Revenue for the year		
Contributions		
Member	\$ 155,153	\$ 150,402
Employer	102,175	98,530
Total contributions	\$ 257,328	\$ 248,932
Net investment income	113,440	110,917
Miscellaneous revenue	0	0
2. Total revenue	\$ 370,768	\$ 359,849
Expenditures for the year		
Benefit payments	\$ 199,879	\$ 200,285
Administrative expenses	709	664
Other expenses	1,981	1,713
3. Total expenditures	\$ 202,569	\$ 202,662
4. Change in net assets (2) - (3)	\$ 168,199	\$ 157,187
5. Market value of assets at end of year (1) + (4)	\$ 1,762,972	\$ 1,594,773



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
STATE EMPLOYEES
(State, SPORS, JRS, VaLORS, ORP, and UVA)
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 95,908	\$ 79,516
Revenue for the year		
Contributions	\$ 79,926	\$ 79,416
Other Revenue	(1)	536
Net investment income	6,183	5,706
2. Total revenue	\$ 86,108	\$ 85,658
Expenditures for the year		
Benefit payments	\$ 72,857	\$ 69,117
Administrative expenses	136	149
3. Total expenditures	\$ 72,993	\$ 69,266
4. Change in net assets (2) - (3)	\$ 13,115	\$ 16,392
5. Market value of assets at end of year (1) + (4)	\$ 109,023	\$ 95,908



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
TEACHERS
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 111,639	\$ 96,090
Revenue for the year		
Contributions	\$ 100,643	\$ 99,469
Other Revenue	(1)	(446)
Net investment income	7,341	6,098
2. Total revenue	\$ 107,983	\$ 105,121
Expenditures for the year		
Benefit payments	\$ 90,456	\$ 89,420
Administrative expenses	151	152
3. Total expenditures	\$ 90,607	\$ 89,572
4. Change in net assets (2) - (3)	\$ 17,376	\$ 15,549
5. Market value of assets at end of year (1) + (4)	\$ 129,015	\$ 111,639



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
PARTICIPATING POLITICAL SUBDIVISIONS
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 23,171	\$ 22,167
Revenue for the year		
Contributions	\$ 2,406	\$ 2,291
Other Revenue	0	(113)
Net investment income	1,487	1,561
2. Total revenue	\$ 3,893	\$ 3,739
Expenditures for the year		
Benefit payments	\$ 2,564	\$ 2,708
Administrative expenses	32	37
3. Total expenditures	\$ 2,596	\$ 2,745
4. Change in net assets (2) - (3)	\$ 1,297	\$ 994
5. Market value of assets at end of year (1) + (4)	\$ 24,468	\$ 23,161



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
CONSTITUTIONAL OFFICERS
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 3,278	\$ 2,427
Revenue for the year		
Contributions	\$ 2,794	\$ 2,378
Other Revenue	(2)	17
Net investment income	238	183
2. Total revenue	\$ 3,030	\$ 2,578
Expenditures for the year		
Benefit payments	\$ 1,824	\$ 1,723
Administrative expenses	5	4
3. Total expenditures	\$ 1,829	\$ 1,727
4. Change in net assets (2) - (3)	\$ 1,201	\$ 851
5. Market value of assets at end of year (1) + (4)	\$ 4,479	\$ 3,278



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
SOCIAL SERVICE EMPLOYEES
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 1,319	\$ 1,091
Revenue for the year		
Contributions	\$ 1,847	\$ 1,120
Other Revenue	1	7
Net investment income	121	72
2. Total revenue	\$ 1,969	\$ 1,199
Expenditures for the year		
Benefit payments	\$ 1,012	\$ 970
Administrative expenses	3	1
3. Total expenditures	\$ 1,015	\$ 971
4. Change in net assets (2) - (3)	\$ 954	\$ 228
5. Market value of assets at end of year (1) + (4)	\$ 2,273	\$ 1,319



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
REGISTRARS
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 58	\$ 34
Revenue for the year		
Contributions	\$ 37	\$ 32
Other Revenue	0	0
Net investment income	5	4
2. Total revenue	\$ 42	\$ 36
Expenditures for the year		
Benefit payments	\$ 12	\$ 12
Administrative expenses	0	0
3. Total expenditures	\$ 12	\$ 12
4. Change in net assets (2) - (3)	\$ 30	\$ 24
5. Market value of assets at end of year (1) + (4)	\$ 88	\$ 58



Schedule B – Plan Assets (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date - June 30, 2019	LTD	LTC	Total
1. Market value of assets at beginning of year	\$ 382,550	\$ 80,411	\$ 462,961
Revenue for the year			
Contributions and miscellaneous revenue	\$ 24,856	\$ 1,557	\$ 26,413
Net investment income	25,198	5,297	30,495
2. Total revenue	\$ 50,054	\$ 6,854	\$ 56,908
Expenditures for the year			
Benefit payments	\$ 23,045	\$ 1,331	\$ 24,376
Administrative expenses	7,109	143	7,252
3. Total expenditures	\$ 30,154	\$ 1,474	\$ 31,628
4. Change in net assets (2) - (3)	\$ 19,900	\$ 5,380	\$ 25,280
5. Market value of assets at end of year (1) + (4)	\$ 402,450	\$ 85,791	\$ 488,241

Valuation Date - June 30, 2018	LTD	LTC	Total
1. Market value of assets at beginning of year	\$ 367,588	\$ 74,746	\$ 442,334
Revenue for the year			
Contributions and miscellaneous revenue	\$ 25,195	\$ 2,065	\$ 27,260
Net investment income	26,653	5,420	32,073
2. Total revenue	\$ 51,848	\$ 7,485	\$ 59,333
Expenditures for the year			
Benefit payments	\$ 29,421	\$ 1,652	\$ 31,073
Administrative expenses	7,465	168	7,633
3. Total expenditures	\$ 36,886	\$ 1,820	\$ 38,706
4. Change in net assets (2) - (3)	\$ 14,962	\$ 5,665	\$ 20,627
5. Market value of assets at end of year (1) + (4)	\$ 382,550	\$ 80,411	\$ 462,961



Schedule B – Plan Assets (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
RECONCILIATION OF ASSETS
(\$ IN THOUSANDS)**

Valuation Date - June 30, 2019	Teachers	Political Subdivisions
1. Market value of assets at beginning of year	\$ 647	\$ 816
Revenue for the year		
Contributions and miscellaneous revenue	\$ 1,966	\$ 2,226
Other Revenue	0	0
Net investment income	83	93
2. Total revenue	\$ 2,049	\$ 2,319
Expenditures for the year		
Benefit payments	\$ 167	\$ 188
Administrative expenses	869	984
3. Total expenditures	\$ 1,036	\$ 1,172
4. Change in net assets (2) - (3)	\$ 1,013	\$ 1,147
5. Market value of assets at end of year (1) + (4)	\$ 1,660	\$ 1,963

Valuation Date - June 30, 2018	Teachers	Political Subdivisions
1. Market value of assets at beginning of year	\$ 278	\$ 351
Revenue for the year		
Contributions and miscellaneous revenue	\$ 1,340	\$ 1,691
Net investment income	30	35
2. Total revenue	\$ 1,370	\$ 1,726
Expenditures for the year		
Benefit payments	\$ 131	\$ 165
Administrative expenses	870	1,096
3. Total expenditures	\$ 1,001	\$ 1,261
4. Change in net assets (2) - (3)	\$ 369	\$ 465
5. Market value of assets at end of year (1) + (4)	\$ 647	\$ 816



Schedule B – Plan Assets (continued)

**GROUP LIFE INSURANCE PROGRAM
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
PREPARED AS OF JUNE 30, 2019
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019
1. Excess (shortfall) of investment income for current and previous three years	
a. Current Year	\$ (111)
b. First Prior Year	8,667
c. Second Prior Year	70,787
d. Third Prior Year	(59,298)
e. Total for four years	\$ 20,045
2. Excess (shortfall) of investment income for current and previous	
a. Current Year at 80%: (1a) x 0.80	\$ (89)
b. First Prior Year at 60%: (1b) x 0.60	5,200
c. Second Prior Year at 40%: (1c) x 0.40	28,315
d. Third Prior Year at 20%: (1d) x 0.20	(11,860)
e. Total for four years	\$ 21,566
3. Market value of assets at end of year	\$ 1,762,972
4. Preliminary actuarial value of assets at end of year (3) - (2e)	\$ 1,741,406
5. Actuarial value of assets corridor	
a. 80% of market value at end of year: (3) x 0.80	\$ 1,410,378
b. 120% of market value at end of year: (3) x 1.20	\$ 2,115,566
6. Actuarial value of assets at end of year	\$ 1,741,406



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
PREPARED AS OF JUNE 30, 2019
(\$ IN THOUSANDS)**

Group	State Employees*	Teachers
1. Excess (shortfall) of investment income for current and previous three years		
a. Current Year	\$ (774)	\$ (825)
b. First Prior Year	(234)	(960)
c. Second Prior Year	2,780	2,852
d. Third Prior Year	(3,733)	(4,666)
e. Total for four years	\$ (1,961)	\$ (3,599)
2. Excess (shortfall) of investment income for current and previous		
a. Current Year at 80%: (1a) x 0.80	\$ (619)	\$ (660)
b. First Prior Year at 60%: (1b) x 0.60	(140)	(576)
c. Second Prior Year at 40%: (1c) x 0.40	1,112	1,141
d. Third Prior Year at 20%: (1d) x 0.20	(747)	(933)
e. Total for four years	\$ (394)	\$ (1,028)
3. Market value of assets at end of year	\$ 109,023	\$ 129,015
4. Preliminary actuarial value of assets at end of year (3) - (2e)	\$ 109,417	\$ 130,043
5. Actuarial value of assets corridor		
a. 80% of market value at end of year: (3) x 0.80	\$ 87,218	\$ 103,212
b. 120% of market value at end of year: (3) x 1.20	\$ 130,828	\$ 154,818
6. Actuarial value of assets at end of year	\$ 109,417	\$ 130,043

* Includes State, SPORS, JRS, VaLORS, ORP, and UVA.



Schedule B – Plan Assets (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
PREPARED AS OF JUNE 30, 2019
(\$ IN THOUSANDS)**

Benefit	LTD	LTC
1. Excess (shortfall) of investment income for current and previous three years		
a. Current Year	\$ (1,396)	\$ (335)
b. First Prior Year	1,331	179
c. Second Prior Year	16,940	3,197
d. Third Prior Year	(18,195)	(3,410)
e. Total for four years	\$ (1,320)	\$ (369)
2. Excess (shortfall) of investment income for current and previous		
a. Current Year at 80%: (1a) x 0.80	\$ (1,117)	\$ (268)
b. First Prior Year at 60%: (1b) x 0.60	799	107
c. Second Prior Year at 40%: (1c) x 0.40	6,776	1,279
d. Third Prior Year at 20%: (1d) x 0.20	(3,639)	(682)
e. Total for four years	\$ 2,819	\$ 436
3. Market value of assets at end of year	\$ 402,450	\$ 85,791
4. Preliminary actuarial value of assets at end of year (3) - (2e)	\$ 399,631	\$ 85,355
5. Actuarial value of assets corridor		
a. 80% of market value at end of year: (3) x 0.80	\$ 321,960	\$ 68,633
b. 120% of market value at end of year: (3) x 1.20	\$ 482,940	\$ 102,949
6. Actuarial value of assets at end of year	\$ 399,631	\$ 85,355



Schedule B – Plan Assets (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
PREPARED AS OF JUNE 30, 2019
(\$ IN THOUSANDS)**

Group	Teachers	Political Subdivisions
1. Excess (shortfall) of investment income for current and previous three years		
a. Current Year	\$ 5	\$ (1)
b. First Prior Year	(3)	(4)
c. Second Prior Year	(10)	(12)
d. Third Prior Year	0	0
e. Total for four years	\$ (8)	\$ (17)
2. Excess (shortfall) of investment income for current and previous		
a. Current Year at 80%: (1a) x 0.80	\$ 4	\$ (1)
b. First Prior Year at 60%: (1b) x 0.60	(2)	(2)
c. Second Prior Year at 40%: (1c) x 0.40	(4)	(5)
d. Third Prior Year at 20%: (1d) x 0.20	0	0
e. Total for four years	\$ (2)	\$ (8)
3. Market value of assets at end of year	\$ 1,660	\$ 1,963
4. Preliminary actuarial value of assets at end of year (3) - (2e)	\$ 1,662	\$ 1,971
5. Actuarial value of assets corridor		
a. 80% of market value at end of year: (3) x 0.80	\$ 1,328	\$ 1,570
b. 120% of market value at end of year: (3) x 1.20	\$ 1,992	\$ 2,356
6. Actuarial value of assets at end of year	\$ 1,662	\$ 1,971



Schedule B – Plan Assets (continued)

**GROUP LIFE INSURANCE PROGRAM
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 1,594,773	\$ 1,437,586
2. Net external cash flow during the year	\$ 54,759	\$ 46,270
3. Market value of assets at end of year	\$ 1,762,972	\$ 1,594,773
4. Actual investment income during the year based on market value: (3) - (2) - (1)	\$ 113,440	\$ 110,917
5. Assumed earning rate	7.00%	7.00%
6. Expected earnings for the year		
a. Market value of assets at beginning of year: (1) x (5)	\$ 111,634	\$ 100,631
b. Net external cash flow: (2) x (5) x 0.50	1,917	1,619
c. Total: (6a) + (6b)	\$ 113,551	\$ 102,250
7. Excess investment income for the year: (4) - (6c)	\$ (111)	\$ 8,667



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
STATE EMPLOYEES
(State, SPORS, JRS, VaLORS, ORP, and UVA)
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 95,908	\$ 79,516
2. Net external cash flow during the year	\$ 6,932	\$ 10,686
3. Market value of assets at end of year	\$ 109,023	\$ 95,908
4. Actual investment income during the year based on market value: (3) - (2) - (1)	\$ 6,183	\$ 5,706
5. Assumed earning rate	7.00%	7.00%
6. Expected earnings for the year		
a. Market value of assets at beginning of year: (1) x (5)	\$ 6,714	\$ 5,566
b. Net external cash flow: (2) x (5) x 0.50	243	374
c. Total: (6a) + (6b)	\$ 6,957	\$ 5,940
7. Excess investment income for the year: (4) - (6c)	\$ (774)	\$ (234)



Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
TEACHERS
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2019	June 30, 2018
1. Market value of assets at beginning of year	\$ 111,639	\$ 96,090
2. Net external cash flow during the year	\$ 10,035	\$ 9,452
3. Market value of assets at end of year	\$ 129,015	\$ 111,639
4. Actual investment income during the year based on market value: (3) - (2) - (1)	\$ 7,341	\$ 6,097
5. Assumed earning rate	7.00%	7.00%
6. Expected earnings for the year		
a. Market value of assets at beginning of year: (1) x (5)	\$ 7,815	\$ 6,726
b. Net external cash flow: (2) x (5) x 0.50	351	331
c. Total: (6a) + (6b)	\$ 8,166	\$ 7,057
7. Excess investment income for the year: (4) - (6c)	\$ (825)	\$ (960)



Schedule B – Plan Assets (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME
(\$ IN THOUSANDS)**

Valuation Date - June 30, 2019	LTD	LTC
1. Market value of assets at beginning of year	\$ 382,550	\$ 80,411
2. Net external cash flow during the year	\$ (5,298)	\$ 83
3. Market value of assets at end of year	\$ 402,450	\$ 85,791
4. Actual investment income during the year based on market value: (3) - (2) - (1)	\$ 25,198	\$ 5,297
5. Assumed earning rate	7.00%	7.00%
6. Expected earnings for the year		
a. Market value of assets at beginning of year: (1) x (5)	\$ 26,779	\$ 5,629
b. Net external cash flow: (2) x (5) x 0.50	(185)	3
c. Total: (6a) + (6b)	\$ 26,594	\$ 5,632
7. Excess investment income for the year: (4) - (6c)	\$ (1,396)	\$ (335)

Valuation Date - June 30, 2018	LTD	LTC
1. Market value of assets at beginning of year	\$ 367,588	\$ 74,746
2. Net external cash flow during the year	\$ (11,691)	\$ 245
3. Market value of assets at end of year	\$ 382,550	\$ 80,411
4. Actual investment income during the year based on market value: (3) - (2) - (1)	\$ 26,653	\$ 5,420
5. Assumed earning rate	7.00%	7.00%
6. Expected earnings for the year		
a. Market value of assets at beginning of year: (1) x (5)	\$ 25,731	\$ 5,232
b. Net external cash flow: (2) x (5) x 0.50	(409)	9
c. Total: (6a) + (6b)	\$ 25,322	\$ 5,241
7. Excess investment income for the year: (4) - (6c)	\$ 1,331	\$ 179



Schedule B – Plan Assets (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
CALCULATION OF EXCESS (SHORTFALL) INVESTMENT INCOME
(\$ IN THOUSANDS)**

Valuation Date - June 30, 2019	Teachers	Political Subdivisions
1. Market value of assets at beginning of year	\$ 647	\$ 816
2. Net external cash flow during the year	\$ 930	\$ 1,054
3. Market value of assets at end of year	\$ 1,660	\$ 1,963
4. Actual investment income during the year based on market value: (3) - (2) - (1)	\$ 83	\$ 93
5. Assumed earning rate	7.00%	7.00%
6. Expected earnings for the year		
a. Market value of assets at beginning of year: (1) x (5)	\$ 45	\$ 57
b. Net external cash flow: (2) x (5) x 0.50	33	37
c. Total: (6a) + (6b)	\$ 78	\$ 94
7. Excess investment income for the year: (4) - (6c)	\$ 5	\$ (1)

Valuation Date - June 30, 2018	Teachers	Political Subdivisions
1. Market value of assets at beginning of year	\$ 278	\$ 351
2. Net external cash flow during the year	\$ 339	\$ 429
3. Market value of assets at end of year	\$ 647	\$ 816
4. Actual investment income during the year based on market value: (3) - (2) - (1)	\$ 30	\$ 36
5. Assumed earning rate	7.00%	7.00%
6. Expected earnings for the year		
a. Market value of assets at beginning of year: (1) x (5)	\$ 19	\$ 25
b. Net external cash flow: (2) x (5) x 0.50	12	15
c. Total: (6a) + (6b)	\$ 31	\$ 40
7. Excess investment income for the year: (4) - (6c)	\$ (1)	\$ (4)



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule

GROUP LIFE INSURANCE PROGRAM UAAL AMORTIZATION SCHEDULE (\$ in Thousands)

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$1,735,144	\$1,813,898	\$110,398	\$1,822,745	\$111,146	24 Years
June 30, 2014 Experience (Gain)/Loss	(45,419)	(43,754)	(3,584)	(42,982)	(3,637)	15 Years
June 30, 2015 Experience (Gain)/Loss	(27,163)	(26,537)	(2,081)	(26,168)	(2,110)	16 Years
June 30, 2016 Experience (Gain)/Loss	10,216	10,087	760	9,980	770	17 Years
June 30, 2017 Assumption and Method Changes	(49,110)	(46,724)	(3,391)	(46,366)	(3,432)	18 Years
June 30, 2017 Experience (Gain)/Loss	(77,647)	(79,398)	(5,762)	(78,791)	(5,831)	18 Years
June 30, 2018 Experience (Gain)/Loss	(35,056)	(35,056)	(2,458)	(34,880)	(2,485)	19 Years
June 30, 2019 Assumption and Method Changes	120,018	n/a	n/a	120,018	8,252	20 Years
June 30, 2019 Experience (Gain)/Loss	(50,640)	n/a	n/a	(50,640)	(3,482)	20 Years
		\$1,592,516	\$93,882	\$1,672,916	\$99,191	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$1,672,916
July 1, 2020	1,679,951
July 1, 2021	1,684,283
July 1, 2022	1,685,637
July 1, 2023	1,683,713
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**HEALTH INSURANCE CREDIT PROGRAM
STATE EMPLOYEES
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$889,809	\$930,196	\$56,614	\$934,733	\$56,997	24 Years
June 30, 2014 Experience (Gain)/Loss	1,656	1,594	131	1,565	132	15 Years
June 30, 2015 Experience (Gain)/Loss	(1,294)	(1,266)	(99)	(1,249)	(101)	16 Years
June 30, 2016 Experience (Gain)/Loss	(707)	(697)	(52)	(690)	(53)	17 Years
June 30, 2017 Assumption and Method Changes	(12,857)	(12,793)	(928)	(12,696)	(940)	18 Years
June 30, 2017 Experience (Gain)/Loss	187	186	13	185	14	18 Years
June 30, 2018 Experience (Gain)/Loss	(17,855)	(17,855)	(1,252)	(17,765)	(1,266)	19 Years
June 30, 2019 Assumption and Method Changes	22,635	n/a	n/a	22,635	1,556	20 Years
June 30, 2019 Experience (Gain)/Loss	(9,383)	n/a	n/a	(9,383)	(645)	20 Years
		\$899,365	\$54,427	\$917,335	\$55,694	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$917,335
July 1, 2020	919,799
July 1, 2021	920,648
July 1, 2022	919,715
July 1, 2023	916,828
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**HEALTH INSURANCE CREDIT PROGRAM
TEACHERS
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$1,190,780	\$1,244,826	\$75,763	\$1,250,897	\$76,276	24 Years
June 30, 2014 Experience (Gain)/Loss	14,338	13,813	1,131	13,570	1,148	15 Years
June 30, 2015 Experience (Gain)/Loss	9,296	9,082	712	8,956	722	16 Years
June 30, 2016 Experience (Gain)/Loss	13,656	13,484	1,016	13,341	1,029	17 Years
June 30, 2017 Assumption and Method Changes	(16,036)	(15,956)	(1,158)	(15,834)	(1,172)	18 Years
June 30, 2017 Experience (Gain)/Loss	3,250	3,234	235	3,209	237	18 Years
June 30, 2018 Experience (Gain)/Loss	(2,546)	(2,546)	(178)	(2,534)	(181)	19 Years
June 30, 2019 Assumption and Method Changes	34,873	n/a	n/a	34,873	2,398	20 Years
June 30, 2019 Experience (Gain)/Loss	(10,638)	n/a	n/a	(10,638)	(731)	20 Years
		\$1,265,937	\$77,521	\$1,295,840	\$79,726	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$1,295,840
July 1, 2020	1,298,201
July 1, 2021	1,298,168
July 1, 2022	1,295,505
July 1, 2023	1,289,951
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**HEALTH INSURANCE CREDIT PROGRAM
CONSTITUTIONAL OFFICERS
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$23,939	\$25,025	\$1,523	\$25,147	\$1,533	24 Years
June 30, 2014 Experience (Gain)/Loss	(716)	(690)	(57)	(677)	(57)	15 Years
June 30, 2015 Experience (Gain)/Loss	1,837	1,795	141	1,770	143	16 Years
June 30, 2016 Experience (Gain)/Loss	502	496	37	491	38	17 Years
June 30, 2017 Experience (Gain)/Loss	(183)	(183)	(13)	(182)	(13)	18 Years
June 30, 2018 Experience (Gain)/Loss	(1)	(1)	0	(1)	0	19 Years
June 30, 2019 Assumption and Method Changes	768	n/a	n/a	768	53	20 Years
June 30, 2019 Experience (Gain)/Loss	(228)	n/a	n/a	(228)	(16)	20 Years
		\$26,442	\$1,631	\$27,088	\$1,681	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$27,088
July 1, 2020	27,121
July 1, 2021	27,103
July 1, 2022	27,027
July 1, 2023	26,890
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**HEALTH INSURANCE CREDIT PROGRAM
SOCIAL SERVICE EMPLOYEES
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$11,900	\$12,441	\$757	\$12,502	\$762	24 Years
June 30, 2014 Experience (Gain)/Loss	(824)	(794)	(65)	(780)	(66)	15 Years
June 30, 2015 Experience (Gain)/Loss	1,155	1,128	88	1,113	90	16 Years
June 30, 2016 Experience (Gain)/Loss	252	248	19	245	19	17 Years
June 30, 2017 Experience (Gain)/Loss	(48)	(48)	(3)	(48)	(4)	18 Years
June 30, 2018 Experience (Gain)/Loss	(97)	(97)	(7)	(96)	(7)	19 Years
June 30, 2019 Assumption and Method Changes	326	n/a	n/a	326	22	20 Years
June 30, 2019 Experience (Gain)/Loss	(903)	n/a	n/a	(903)	(62)	20 Years
		\$12,878	\$789	\$12,359	\$754	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$12,359
July 1, 2020	12,389
July 1, 2021	12,397
July 1, 2022	12,380
July 1, 2023	12,337
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**HEALTH INSURANCE CREDIT PROGRAM
REGISTRARS
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$447	\$467	\$29	\$469	\$29	24 Years
June 30, 2014 Experience (Gain)/Loss	(1)	(1)	0	(1)	0	15 Years
June 30, 2015 Experience (Gain)/Loss	41	41	3	41	3	16 Years
June 30, 2016 Experience (Gain)/Loss	(2)	(2)	0	(2)	0	17 Years
June 30, 2017 Experience (Gain)/Loss	(16)	(15)	(1)	(15)	(1)	18 Years
June 30, 2018 Experience (Gain)/Loss	(11)	(11)	(1)	(11)	(1)	19 Years
June 30, 2019 Assumption and Method Changes	12	n/a	n/a	12	1	20 Years
June 30, 2019 Experience (Gain)/Loss	(32)	n/a	n/a	(32)	(2)	20 Years
		\$479	\$30	\$461	\$29	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$461
July 1, 2020	461
July 1, 2021	460
July 1, 2022	458
July 1, 2023	456
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	(\$130,534)	(\$135,607)	(\$8,253)	(\$136,269)	(\$8,309)	24 Years
June 30, 2014 Experience (Gain)/Loss	(4,810)	(5,813)	(476)	(5,711)	(483)	15 Years
June 30, 2015 Experience (Gain)/Loss	(24,839)	(24,268)	(1,903)	(23,931)	(1,929)	16 Years
June 30, 2016 Experience (Gain)/Loss	(10,975)	(10,836)	(816)	(10,721)	(827)	17 Years
June 30, 2017 Experience (Gain)/Loss	(34,768)	(34,596)	(2,511)	(34,331)	(2,541)	18 Years
June 30, 2018 Experience (Gain)/Loss	15,946	15,946	1,118	15,866	1,130	19 Years
June 30, 2019 Assumption and Method Changes	3,799	n/a	n/a	3,799	261	20 Years
June 30, 2019 Experience (Gain)/Loss	(45,176)	n/a	n/a	(45,176)	(3,106)	20 Years
		(\$195,174)	(\$12,841)	(\$236,474)	(\$15,804)	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	(\$236,474)
July 1, 2020	(235,673)
July 1, 2021	(234,314)
July 1, 2022	(232,345)
July 1, 2023	(229,711)
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
TEACHERS
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$0	\$0	\$0	\$0	\$0	24 Years
June 30, 2014 Experience (Gain)/Loss	11	11	1	11	1	15 Years
June 30, 2015 Experience (Gain)/Loss	118	115	9	113	9	16 Years
June 30, 2016 Experience (Gain)/Loss	254	250	19	247	19	17 Years
June 30, 2017 Experience (Gain)/Loss	108	107	8	106	8	18 Years
June 30, 2018 Experience (Gain)/Loss	226	226	15	226	16	19 Years
June 30, 2019 Assumption and Method Changes	66	n/a	n/a	66	5	20 Years
June 30, 2019 Experience (Gain)/Loss	191	n/a	n/a	191	13	20 Years
		\$709	\$52	\$960	\$71	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$960
July 1, 2020	950
July 1, 2021	934
July 1, 2022	918
July 1, 2023	898
July 1, 2043	0



Schedule C – Unfunded Actuarial Accrued Liability (UAAL) Amortization Schedule (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
POLITICAL SUBDIVISIONS
UAAL AMORTIZATION SCHEDULE
(\$ in Thousands)**

Description	Original Balance	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Outstanding Balance as of June 30, 2019	July 1, 2019 Amortization Payment	Years Remaining as of June 30, 2019
June 30, 2013 Legacy UAAL	\$0	\$0	\$0	\$0	\$0	24 Years
June 30, 2014 Experience (Gain)/Loss	48	46	4	45	4	15 Years
June 30, 2015 Experience (Gain)/Loss	58	57	5	56	5	16 Years
June 30, 2016 Experience (Gain)/Loss	221	218	16	216	17	17 Years
June 30, 2017 Experience (Gain)/Loss	88	87	6	87	6	18 Years
June 30, 2018 Experience (Gain)/Loss	1,471	1,471	103	1,464	104	19 Years
June 30, 2019 Assumption and Method Changes	54	n/a	n/a	54	4	20 Years
June 30, 2019 Experience (Gain)/Loss	(1,076)	n/a	n/a	(1,076)	(75)	20 Years
		\$1,879	\$134	\$846	\$65	

Date	Projected UAAL (\$ in Thousands)
July 1, 2019	\$846
July 1, 2020	833
July 1, 2021	818
July 1, 2022	799
July 1, 2023	776
July 1, 2043	0



Schedule D – Outline of Actuarial Assumptions and Methods

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The basis for the assumptions is the Virginia Retirement System Experience Study for the Four-Year Period July 1, 2012 to June 30, 2016 issued February 21, 2018 and presented and adopted by the Board at its April 2017 meeting as well as the investment rate of return of 6.75% adopted by the Board of Trustees at its October 10, 2019 meeting. These assumptions comply with Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations* and ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*.

Assumptions and Methods which apply to all OPEB Plans

Investment Return Rate:	6.75% per annum, compounded annually, net of investment expenses.
Inflation Assumption:	2.50% per year.
Actuarial Cost Method:	Entry age normal cost method, allocated as a level percent of payroll, from first funding age to last age before terminal retirement age. Actuarial gains and losses, as they occur, are reflected in the unfunded actuarial accrued liability. See Schedule E for a detailed explanation.
Funding Period:	<p>The amortization period 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 of 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.</p> <p>The amortization payment includes an adjustment of 1.018041 to account for the passage of time from the valuation date to the date the contribution is made.</p>
Payroll Growth Rate:	3.00% per annum.
Administrative Expenses:	The employer contribution rates include a rate for anticipated non-investment expenses based on actual prior year experience.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Group Life Insurance Program

Asset Valuation Method: For the purposes of GASB 74/75, the value of assets is equal to the market value of assets.

To calculate the actuarially determined contributions, 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 asset value cannot be less than 80% or more than 120% of the market value of assets.

Minimum Benefit: Beginning with the fiscal year ending June 30, 2016, in no event will the death benefit be less than \$8,000 for members who retire with at least 30 years of creditable service. Between June 30, 2016 and the current valuation date, this minimum is indexed at the same rate as the post-retirement supplement for retirees hired on or after July 1, 2010. Beginning on the valuation date, this minimum is assumed to increase annually, effective July 1, by 2.25% (the same assumed annual increase percentage for any annual post-retirement supplement for retirees, as calculated for employees hired on or after July 1, 2010).

“Life Insurance Only” Retirees: Results include an estimate of retiree liability for those groups not providing retiree census data. A liability equaling 10% of the active employee liability times the average retiree to active liability ratio is assumed.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Health Insurance Credit Program State Employees and Teachers

Asset Valuation Method: For the purposes of GASB 74/75, the value of assets is equal to the market value of assets.

To calculate the actuarially determined contributions, 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 asset value cannot be less than 80% or more than 120% of the market value of assets.

Participation Rates: 95% of eligible future service retirees from active status are assumed to utilize the benefit plan.

Eligible future service retirees from deferred vested status are assumed to utilize the benefit plan as follows:

Duration Since Retirement	Participation Rate
First Year	55.0%
Second Year	65.0%
Third Year	70.0%
Fourth Year	75.0%
Fifth Year	80.0%
Sixth Year	85.0%
Seventh Year	90.0%
Eighth Year and Beyond	95.0%

Participation Rates (continued): Eligible future disabled benefit recipients from active status are assumed to utilize the benefit plan as follows:

System	Participation
State/JRS	95%
Teachers	90%
SPORS/VaLORS	75%



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Health Insurance Credit Program State Employees and Teachers (continued)

Percentage Not Utilizing the Maximum Benefit:

The percentage of eligible future benefit recipients assumed to utilize the benefit plan but not receive the maximum benefit for which they are eligible is as follows:

System	Percentage
State/JRS	10%
Teachers	20%
SPORS/VaLORS	20%

Percentage of Maximum Benefit Received:

Eligible future benefit recipients assumed to utilize the benefit plan but not receive the maximum benefit for which they are eligible are assumed to initially receive 70% of the maximum benefit for which they are eligible.

Annual Increase in Benefit for Those Not Receiving the Maximum Benefit:

Benefit recipients assumed to utilize the benefit plan but not receiving the maximum benefit for which they are eligible are assumed to have their benefit increase at the following rates:

Duration Since Retirement	Annual Increase in HIC benefit
1 Year	6.50%
2 – 3 Years	4.25%
4 or More Years	3.00%

Percentage of Future Eligible Deferred Vested Members Electing to Withdraw from VRS:

The percentage of future eligible deferred vested members assumed to withdraw from VRS is as follows:

System	Percentage
State/JRS	50%
Teachers	35%
SPORS/VaLORS	70%



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Health Insurance Credit Program State Employees and Teachers (continued)

Deferred Vested Deferral Period: Eligible deferred vested members are assumed to begin receiving benefits at the following ages:

System	Age of Initial Benefit Receipt
State/JRS/Teachers	
Plan 1 Members	60
Plan 2 and Hybrid Plan Members	
Born prior to 1938	60
Born after 1937 and before 1960	61
Born after 1959	62
SPORS/VaLORS	
Members with less than 25 years of service	55
Members with 25 or more years of service	50

ORP and UVA Deferred Vested: Results include an estimate of deferred vested liability for those groups providing limited deferred vested census data. The estimate is derived from a ratio of retired to vested liabilities for the other HIC Plans.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Health Insurance Credit Program Political Subdivisions and Special Coverage Groups

Asset Valuation Method: Market value of assets.

Participation Rates: 85% of eligible future service retirees from active status are assumed to utilize the benefit plan. 45% of eligible future disability retirees will utilize the benefit.

Eligible future service retirees from deferred vested status are assumed to utilize the benefit plan as follows:

Duration Since Retirement	Participation Rate
First Year	55.0%
Second Year	65.0%
Third Year	70.0%
Fourth Year	75.0%
Fifth Year	80.0%
Sixth Year	85.0%
Seventh Year	90.0%
Eighth Year and Beyond	95.0%

Percentage Not Utilizing the Maximum Benefit: 10% of eligible future benefit recipients are assumed to utilize the benefit plan but not receive the maximum benefit for which they are eligible.

Percentage of Maximum Benefit Received: Eligible future benefit recipients assumed to utilize the benefit plan but not receive the maximum benefit for which they are eligible are assumed to initially receive 70% of the maximum benefit for which they are eligible.

Annual Increase in Benefit for Those Not Receiving the Maximum Benefit: Benefit recipients assumed to utilize the benefit plan but not receiving the maximum benefit for which they are eligible are assumed to have their benefit increase at the following rates:

Duration Since Retirement	Annual Increase in HIC benefit
1 Year	6.50%
2 – 3 Years	4.25%
4 or More Years	3.00%



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Health Insurance Credit Program Political Subdivisions and Special Coverage Groups (continued)

Percentage of Future Eligible Deferred Vested Members Electing to Withdraw from VRS: 45% of future eligible deferred vested members are assumed to withdraw from VRS.

Deferred Vested Deferral Period: Eligible deferred vested members with LEOs/Fire Pension Benefit Coverage are assumed to receive benefits at age 55 (if the member has less than 25 years of service at retirement) and at age 50 (if the member has 25 or more years of service at retirement). Eligible deferred vested members with General Employee Pension Benefit Coverage are assumed to receive benefits as follows:

Political Subdivisions and Special Coverage Groups	Age of Initial Benefit Receipt
Plan 1 Members	60
Plan 2 and Hybrid Plan Members	
Born prior to 1938	60
Born after 1937 and before 1960	61
Born after 1959	62

Employer Groups: The political subdivisions have been divided into two groups. The Top 10 group consists of: City of Virginia Beach, Henrico County, Prince William County, Chesterfield County, City of Chesapeake, City of Alexandria, City of Hampton, Loudoun County, City of Lynchburg, and the City of Portsmouth. The Non-Top 10 is all other political subdivisions not included in the Top 10 group.

Plan Surcharge: The additional contribution rate applied to plans with low funding levels to bring the plan to a more sustainable funding position as determined by the Plan Actuary.

Additional Funding Charge: An additional funding charge will be included in the contribution rate, if needed, to allow the use of the 6.75% investment return assumption to be used as the single equivalent interest rate assumption for GASB 74/75 purposes.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Disability Benefits and Long-Term Care Benefits

Asset Valuation Method: For the purposes of GASB 74/75, the value of assets is equal to the market value of assets.

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 asset value cannot be less than 80% or more than 120% of the market value of assets.

Health Insurance Credit and Group Life Insurance Benefits: Health Insurance Credit and Group Life Insurance benefits provided by VSDP are valued under the respective plans.

Disability: A Plan 1 Member hired prior to January 1, 1999 and who has elected VSDP coverage or any member hired on or after January 1, 1999. Applicable members hired prior to July 1, 2009 are eligible from the first day of employment for work related and non-work related VSDP disability benefits. Applicable members hired on or after July 1, 2009 are eligible from the first day of employment for work-related VSDP disability benefits, but must have a minimum of one year of service to be eligible for non-work related VSDP disability benefits.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Disability Benefits

Cost-Of-Living Increase:

Plan 1 Members: 2.50% per year, compounded annually.

Plan 2 and Hybrid Members: 2.25% per year, compounded annually.

Liability Assumed for Disabled Members in Waiting Period:

The liability associated for those disabled and not yet eligible to receive benefits was based upon the development method in which plan experience was applied to those claims reported in the second half of the most recent fiscal year.

Income Replacement for Future Disabled Members:

61% of a member's pre-disability income.

Percentage of Members with Social Security Offsets:

70.5% of members are assumed to meet the Social Security definition of Disability, and are thus eligible for an additional 1% of Income Replacement.

Offsets for Disabled Members:

It is assumed that the offset amounts reported by the administrator will continue to apply to each member's benefit until the benefit expires. For members with less than eight years of disability and no current benefit offsets, benefit amounts are adjusted to reflect future offsets as follows:

Year of Long-Term Disability	Percentage Receiving Offsets in the Next Year if Currently Not in Receipt	Average Percentage of Full Benefit Paid if in Receipt of Offsets
1	35%	25%
2	30%	26%
3	24%	27%
4	14%	27%
5	14%	27%
6	9%	27%
7	6%	27%
8 and Longer	0%	30%



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Disability Benefits (continued)

Offsets for Active Members:

The following benefit adjustments are assumed for the expected future monthly benefits to be paid to future disabled members. The benefit adjustments are consistent with recent experience.

Year of Long-Term Disability	Benefit Adjustment Factor
1	0.723
2	0.575
3	0.465
4	0.403
5	0.367
6-9	0.342
10-13	0.404
14	0.411
15 and Longer	0.450

Rates of Termination of Benefits Due to Death or Recovery:

2012 Group Long Term Disability Valuation Table (2012 GLDT) as proposed by the Society of Actuaries' Group Disability Experience Committee for use by the National Association of Insurance Commissioners. Used as a basis those rates applicable to plans with a six-month elimination period, "Own Occupation" definition of disability in the first twenty-four months and "Any Occupation" definition of disability for the twenty-fifth month onward, initial maximum guaranteed benefit of \$1,900, "No Diagnosis" cause of disability, 15% margin for recovery, 28% margin for deaths, and adjusted for prior five years of VRS experience with the following adjustment factors:

Month of Disability	Male	Female
4 - 24	0.904	0.908
25 - 60	0.891	0.943
61 - 120	1.052	1.025
121 and over	1.021	0.999



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Care Benefits

Disabled Life Reserve:

The liability associated for those participants assumed to be in a current benefit period was based upon the development method in which prior experience was applied to the current claim duration and prior payments made for each individual.

Incurred But Not Reported Reserve:

The liability associated for those participants with claims that have been incurred but not reported (IBNR), as of the valuation date, to the administrator was based upon the development method in which prior experience for claim incidence and expected benefits payments was applied to the covered population.

Morbidity:

CMC reviewed the rates developed by the prior actuary against rates developed using the Society of Actuaries (SOA) Long Term Care basic experience rate tables and made no modifications. While separate rates for assisted living facility claims are not used, our review indicates the nursing facility rates are reasonable based upon the benefit structure and a comparison to the combined experience produced by the SOA's tables. As experience develops the rates will need to be reviewed and adjusted accordingly.

Unadjusted Claim Incidence Rates				
Attained Age	Nursing Facility		Home Health	
	Male	Female	Male	Female
25	0.00001	0.00001	0.00008	0.00008
30	0.00003	0.00002	0.00010	0.00010
35	0.00008	0.00005	0.00012	0.00013
40	0.00013	0.00009	0.00018	0.00015
45	0.00021	0.00014	0.00028	0.00017
50	0.00031	0.00020	0.00039	0.00029
55	0.00047	0.00029	0.00053	0.00047
60	0.00060	0.00065	0.00085	0.00092
65	0.00100	0.00107	0.00150	0.00162
70	0.00210	0.00191	0.00249	0.00295
75	0.00480	0.00507	0.00482	0.00541
80	0.01023	0.01327	0.00895	0.00917
85	0.02155	0.03171	0.01541	0.01511
90	0.04111	0.06180	0.02249	0.02042
95	0.05844	0.08370	0.02522	0.02190
100	0.07276	0.09756	0.02598	0.02198
105	0.09059	0.11372	0.02677	0.02206
110+	0.11279	0.13255	0.02758	0.02213



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Care Benefits (continued)

Morbidity (continued):

For actively employed members, the unadjusted claim incidence rates are adjusted by the following selection factors based upon length of VSDP membership and age of entry into VSDP.

Claim Incidence Selection Factors			
Actively Employed Members			
Years of VSDP Membership	VSDP Entry Age		
	<50	50 - 64	65+
1	0.133	0.138	0.164
2	0.217	0.222	0.256
3	0.284	0.289	0.342
4	0.334	0.341	0.438
5	0.367	0.375	0.520
6	0.439	0.447	0.547
7	0.473	0.482	0.573
8	0.500	0.511	0.593
9	0.527	0.538	0.612
10	0.561	0.573	0.634
11	0.599	0.612	0.673
12	0.643	0.658	0.719
13	0.702	0.718	0.755
14	0.769	0.787	0.797
15	0.836	0.836	0.840
16	0.851	0.851	0.855
17	0.869	0.869	0.872
18	0.890	0.890	0.893
19	0.915	0.915	0.918
20+	0.945	0.945	0.947



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Care Benefits (continued)

Morbidity (continued):

For ported members, the unadjusted claim incidence rates are adjusted based upon the likelihood of porting and the number of years since porting.

Claim Incidence Selection Factors		
Ported Members		
Porting Rate	Initial Year Of Porting	Ultimate Rate*
0%	2.35	1.19
5%	2.29	1.18
10%	2.22	1.18
15%	2.16	1.17
20%	2.09	1.16
25%	2.03	1.16
30%	1.96	1.15
35%	1.90	1.14
40%	1.83	1.13
45%	1.77	1.13
50%	1.70	1.12
55%	1.64	1.11
60%	1.57	1.11
65%	1.51	1.10
70%	1.44	1.09
75%	1.38	1.09
80%	1.31	1.08
85%	1.25	1.07
90%	1.18	1.06
95%	1.12	1.06
100%	1.05	1.05

* The selection factors are assumed to decrease linearly over a 10 year period.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Care Benefits (continued)

Morbidity (continued):

The duration of a claim is based upon the attained age at incidence, gender, and type of claim.

Attained Age	Length of Stay (Months)			
	Nursing Facility		Home Health	
	Male	Female	Male	Female
25	11.15	13.96	19.14	12.54
30	11.60	14.42	18.81	12.47
35	12.04	14.98	18.67	12.45
40	12.29	14.87	16.77	13.48
45	12.50	14.77	14.99	14.56
50	12.90	14.16	15.36	13.78
55	13.30	13.52	15.77	13.02
60	12.99	14.12	15.15	12.40
65	13.36	14.30	12.84	12.80
70	14.00	14.32	11.80	13.53
75	13.99	15.09	11.50	13.50
80	13.76	15.61	10.90	13.18
85	13.62	15.90	10.05	12.86
90	13.09	16.19	8.78	12.70
95	12.30	16.51	8.23	12.66
100	11.32	16.10	8.70	13.34
105	9.84	14.77	9.56	14.60
110+	8.31	13.32	9.33	14.89

Daily Benefit Amount:

\$96 per day indemnity benefit paid for service in a nursing home. The daily benefit for home health care coverage is 50% of the nursing home benefit.

Daily Benefit Amount Increases:

The valuation does not include a provision for increases (i.e., 5% compound increase every five years). If the benefit policy is to provide increases at regular intervals, the resulting liability will be materially greater than the results presented (i.e., inflation increases are not assumed to be pre-funded).

Benefit Maximums:

A lifetime maximum benefit of \$70,080 (reflects a two year maximum coverage period based upon a \$96 per day indemnity benefit).



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Care Benefits (continued)

Porting Rates:

Porting rate assumptions are based upon experience over the first five years of the program, with substantial increases over the life of the program. CMC reviewed the rates developed by the prior actuary and made no modifications. As the porting rates have a significant impact on results, experience, as it develops, will need to be reviewed and the rates adjusted accordingly. Porting rates by age of entry into VSDP and length of VSDP membership are provided in the following table.

VSDP Entry Age	Years of VSDP Membership										
	0	5	10	15	20	25	30	35	40	45	50+
25	0.1000	0.1010	0.1144	0.1313	0.1739	0.2555	0.3693	0.5263	0.6812	0.8874	1.0000
30	0.1000	0.1019	0.1234	0.1534	0.2185	0.3194	0.4537	0.5822	0.7574	0.9609	1.0000
35	0.1000	0.1021	0.1303	0.1778	0.2683	0.3935	0.5001	0.6454	0.8406	1.0000	1.0000
40	0.1000	0.1063	0.1608	0.2383	0.3423	0.4320	0.5526	0.7169	0.9230	1.0000	1.0000
45	0.1001	0.1177	0.2001	0.2931	0.3754	0.4755	0.6119	0.7978	0.9983	1.0000	1.0000
50	0.1027	0.1304	0.2244	0.3262	0.4116	0.5247	0.6790	0.8833	1.0000	1.0000	1.0000
55	0.1072	0.1410	0.2422	0.3585	0.4524	0.5804	0.7549	0.9624	1.0000	1.0000	1.0000
60	0.1162	0.1596	0.2667	0.3924	0.4986	0.6434	0.8407	1.0000	1.0000	1.0000	1.0000
65	0.1329	0.1887	0.2999	0.4307	0.5508	0.7146	0.9257	1.0000	1.0000	1.0000	1.0000
70	0.1485	0.2129	0.3308	0.4741	0.6099	0.7952	0.9985	1.0000	1.0000	1.0000	1.0000
75	0.1700	0.2444	0.3693	0.5231	0.6768	0.8863	1.0000	1.0000	1.0000	1.0000	1.0000
80	0.1875	0.2682	0.4043	0.5786	0.7524	0.9645	1.0000	1.0000	1.0000	1.0000	1.0000
85	0.1941	0.2770	0.4310	0.6413	0.8379	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
90	0.2012	0.2863	0.4601	0.7123	0.9347	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
95	0.2088	0.2960	0.4917	0.7925	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.2171	0.3063	0.5261	0.8833	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
105	0.2259	0.3171	0.5635	0.9860	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
110	0.2354	0.3284	0.6042	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
115	0.2457	0.3404	0.6485	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
120	0.2567	0.3529	0.6966	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Sickness and Disability Program Long-Term Care Benefits (continued)

Porting Premiums:

While actively employed or receiving LTD benefits, a member receives coverage in the amount currently in place for the entire actively employed group. Upon termination of employment, a member has the option to port the amount of coverage current for the group by paying a premium. CMC reviewed the rates developed by the prior actuary for adequacy and made no modifications. As experience develops the rates may need to be reviewed and adjusted accordingly.

Monthly Porting Premium Rates Per \$1 of Daily Benefit Amount							
VSDP Entry Age	Rate	VSDP Entry Age	Rate	VSDP Entry Age	Rate	VSDP Entry Age	Rate
20	0.018	38	0.070	56	0.233	74	1.212
21	0.019	39	0.075	57	0.255	75	1.331
22	0.020	40	0.078	58	0.278	76	1.466
23	0.022	41	0.084	59	0.305	77	1.619
24	0.023	42	0.089	60	0.335	78	1.786
25	0.025	43	0.095	61	0.368	79	1.968
26	0.028	44	0.100	62	0.406	80	2.153
27	0.030	45	0.106	63	0.448	81	2.329
28	0.033	46	0.112	64	0.497	82	2.503
29	0.035	47	0.121	65	0.539	83	2.676
30	0.038	48	0.128	66	0.596	84	2.835
31	0.041	49	0.136	67	0.662	85	2.971
32	0.046	50	0.144	68	0.717	86	3.134
33	0.050	51	0.155	69	0.777	87	3.277
34	0.053	52	0.166	70	0.845	88	3.405
35	0.057	53	0.180	71	0.922	89	3.522
36	0.061	54	0.196	72	1.007	90	3.610
37	0.065	55	0.213	73	1.105		



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Local Disability Program Long-Term Disability Benefits and Long-Term Care Benefits

Asset Valuation Method:	<p>For the purposes of GASB 74/75, the value of assets is equal to the market value of assets.</p> <p>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 asset value cannot be less than 80% or more than 120% of the market value of assets.</p>
Health Insurance Credit and Group Life Insurance Benefits:	<p>Health Insurance Credit (if applicable) and Group Life Insurance benefits provided under VLDP are valued under the respective plans.</p>
Disability:	<p>Applicable members covered under the Hybrid Plan are eligible from the first day of employment for work-related VLDP disability benefits, but must have a minimum of one year of service to be eligible for non-work related VLDP disability benefits.</p>



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Local Disability Program Long-Term Disability Benefits

Cost-Of-Living Increase:	0.00% per year, compounded annually.
Liability Assumed for Disabled Members in Waiting Period:	The liability associated for those disabled and not yet eligible to receive benefits was based upon the expected number of long-term disabilities incurred during the period of January 1, 2016 and June 30, 2016.
Income Replacement for Future Disabled Members:	61% of a member's pre-disability income.
Percentage of Members with Social Security Offsets:	70.5% of members are assumed to meet the Social Security definition of Disability, and are thus eligible for an additional 1% of Income Replacement.
Offsets for Disabled Members:	It is assumed that the offset amounts reported by the administrator will continue to apply to each member's benefit until the benefit expires. For members with less than six years of disability and no current benefit offsets, benefit amounts are adjusted to reflect future offsets as follows:

Year of Long-Term Disability	Percentage Receiving Offsets in the Next Year if Currently Not in Receipt	Average Percentage of Full Benefit Paid if in Receipt of Offsets
1	35%	25%
2	30%	26%
3	24%	27%
4	14%	27%
5	14%	27%
6	9%	27%
7	6%	27%
8 and Longer	0%	30%



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Local Disability Program Long-Term Disability Benefits (continued)

Offsets for Active Members:

The following benefit adjustments are assumed for the expected future monthly benefits to be paid to future disabled members. The benefit adjustments are consistent with recent experience.

Year of Long-Term Disability	Benefit Adjustment Factor
1	0.723
2	0.575
3	0.465
4	0.403
5	0.367
6-9	0.342
10-13	0.404
14	0.411
15 and Longer	0.450

Rates of Termination of Benefits Due to Death or Recovery:

2012 Group Long Term Disability Valuation Table (2012 GLDT) as proposed by the Society of Actuaries' Group Disability Experience Committee for use by the National Association of Insurance Commissioners. Used as a basis those rates applicable to plans with a six-month elimination period, "Own Occupation" definition of disability, initial maximum guaranteed benefit of \$1,900, "No Diagnosis" cause of disability, 15% margin for recovery, 28% margin for deaths, and adjusted for prior five years of VRS experience with the following adjustment factors:

Adjustment Factor

Month of Disability	Male	Female
4 - 24	0.904	0.907
25 - 60	0.891	0.943
61 - 120	1.052	1.025
121 and over	1.021	0.999



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Local Disability Program Long-Term Care Benefits

Disabled Life Reserve:

The liability associated for those participants assumed to be in a current benefit period was based upon the development method in which prior experience was applied to the current claim duration and prior payments made for each individual.

Incurred But Not Reported Reserve:

The liability associated for those participants with claims that have been incurred but not reported (IBNR) as of the valuation date to the administrator was based upon the development method in which prior experience for claim incidence and expected benefits payments was applied to the covered population.

Morbidity:

CMC reviewed the rates developed by the prior actuary against rates developed using the Society of Actuaries (SOA) Long Term Care basic experience rate tables and made no modifications. While separate rates for assisted living facility claims are not used, our review indicates the nursing facility rates are reasonable based upon the benefit structure and a comparison to the combined experience produced by the SOA's tables. As experience develops the rates will need to be reviewed and adjusted accordingly.

Unadjusted Claim Incidence Rates				
Attained Age	Nursing Facility		Home Health	
	Male	Female	Male	Female
25	0.00001	0.00001	0.00008	0.00008
30	0.00003	0.00002	0.00010	0.00010
35	0.00008	0.00005	0.00012	0.00013
40	0.00013	0.00009	0.00018	0.00015
45	0.00021	0.00014	0.00028	0.00017
50	0.00031	0.00020	0.00039	0.00029
55	0.00047	0.00029	0.00053	0.00047
60	0.00060	0.00065	0.00085	0.00092
65	0.00100	0.00107	0.00150	0.00162
70	0.00210	0.00191	0.00249	0.00295
75	0.00480	0.00507	0.00482	0.00541
80	0.01023	0.01327	0.00895	0.00917
85	0.02155	0.03171	0.01541	0.01511
90	0.04111	0.06180	0.02249	0.02042
95	0.05844	0.08370	0.02522	0.02190
100	0.07276	0.09756	0.02598	0.02198
105	0.09059	0.11372	0.02677	0.02206
110+	0.11279	0.13255	0.02758	0.02213



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

**Assumptions and Methods Applicable to the Virginia Local Disability Program
Long-Term Care Benefits (continued)**

Morbidity (continued):

For actively employed members, the unadjusted claim incidence rates are adjusted by the following selection factors based upon length of VLDP membership and age of entry into VLDP.

Claim Incidence Selection Factors			
Actively Employed Members			
Years of VLDP Membership	VLDP Entry Age		
	<50	50 - 64	65+
1	0.133	0.138	0.164
2	0.217	0.222	0.256
3	0.284	0.289	0.342
4	0.334	0.341	0.438
5	0.367	0.375	0.520
6	0.439	0.447	0.547
7	0.473	0.482	0.573
8	0.500	0.511	0.593
9	0.527	0.538	0.612
10	0.561	0.573	0.634
11	0.599	0.612	0.673
12	0.643	0.658	0.719
13	0.702	0.718	0.755
14	0.769	0.787	0.797
15	0.836	0.836	0.840
16	0.851	0.851	0.855
17	0.869	0.869	0.872
18	0.890	0.890	0.893
19	0.915	0.915	0.918
20+	0.945	0.945	0.947



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

**Assumptions and Methods Applicable to the Virginia Local Disability Program
Long-Term Care Benefits (continued)**

Morbidity (continued):

For ported members, the unadjusted claim incidence rates are adjusted based upon the likelihood of porting and the number of years since porting.

Claim Incidence Selection Factors		
Ported Members		
Porting Rate	Initial Year Of Porting	Ultimate Rate*
0%	2.35	1.19
5%	2.29	1.18
10%	2.22	1.18
15%	2.16	1.17
20%	2.09	1.16
25%	2.03	1.16
30%	1.96	1.15
35%	1.90	1.14
40%	1.83	1.13
45%	1.77	1.13
50%	1.70	1.12
55%	1.64	1.11
60%	1.57	1.11
65%	1.51	1.10
70%	1.44	1.09
75%	1.38	1.09
80%	1.31	1.08
85%	1.25	1.07
90%	1.18	1.06
95%	1.12	1.06
100%	1.05	1.05

* The selection factors are assumed to decrease linearly over a 10 year period.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Local Disability Program Long-Term Care Benefits (continued)

Morbidity (continued):

The duration of a claim is based upon the attained age at incidence, gender, and type of claim.

Attained Age	Length of Stay (Months)			
	Nursing Facility		Home Health	
	Male	Female	Male	Female
25	11.15	13.96	19.14	12.54
30	11.60	14.42	18.81	12.47
35	12.04	14.98	18.67	12.45
40	12.29	14.87	16.77	13.48
45	12.50	14.77	14.99	14.56
50	12.90	14.16	15.36	13.78
55	13.30	13.52	15.77	13.02
60	12.99	14.12	15.15	12.40
65	13.36	14.30	12.84	12.80
70	14.00	14.32	11.80	13.53
75	13.99	15.09	11.50	13.50
80	13.76	15.61	10.90	13.18
85	13.62	15.90	10.05	12.86
90	13.09	16.19	8.78	12.70
95	12.30	16.51	8.23	12.66
100	11.32	16.10	8.70	13.34
105	9.84	14.77	9.56	14.60
110+	8.31	13.32	9.33	14.89

Daily Benefit Amount:

\$96 per day indemnity benefit paid for service in a nursing home. The daily benefit for home health care coverage is 50% of the nursing home benefit.

Daily Benefit Amount Increases:

The valuation does not include a provision for increases (i.e., 5% compound increase every five years). If the benefit policy is to provide increases at regular intervals, the resulting liability will be materially greater than the results presented (i.e., inflation increases are not assumed to be pre-funded).

Benefit Maximums:

A lifetime maximum benefit of \$70,080 (reflects a two year maximum coverage period based upon a \$96 per day indemnity benefit).



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Local Disability Program Long-Term Care Benefits (continued)

Porting Rates:

Porting rate assumptions are based upon experience over the first five years of the program, with substantial increases over the life of the program. CMC reviewed the rates developed by the prior actuary and made no modifications. As the porting rates have a significant impact on results, experience, as it develops, will need to be reviewed and the rates adjusted accordingly. Porting rates by age of entry into VLDP and length of VLDP membership are provided in the following table.

VLDP Entry Age	Years of VLDP Membership										
	0	5	10	15	20	25	30	35	40	45	50+
25	0.1000	0.1010	0.1144	0.1313	0.1739	0.2555	0.3693	0.5263	0.6812	0.8874	1.0000
30	0.1000	0.1019	0.1234	0.1534	0.2185	0.3194	0.4537	0.5822	0.7574	0.9609	1.0000
35	0.1000	0.1021	0.1303	0.1778	0.2683	0.3935	0.5001	0.6454	0.8406	1.0000	1.0000
40	0.1000	0.1063	0.1608	0.2383	0.3423	0.4320	0.5526	0.7169	0.9230	1.0000	1.0000
45	0.1001	0.1177	0.2001	0.2931	0.3754	0.4755	0.6119	0.7978	0.9983	1.0000	1.0000
50	0.1027	0.1304	0.2244	0.3262	0.4116	0.5247	0.6790	0.8833	1.0000	1.0000	1.0000
55	0.1072	0.1410	0.2422	0.3585	0.4524	0.5804	0.7549	0.9624	1.0000	1.0000	1.0000
60	0.1162	0.1596	0.2667	0.3924	0.4986	0.6434	0.8407	1.0000	1.0000	1.0000	1.0000
65	0.1329	0.1887	0.2999	0.4307	0.5508	0.7146	0.9257	1.0000	1.0000	1.0000	1.0000
70	0.1485	0.2129	0.3308	0.4741	0.6099	0.7952	0.9985	1.0000	1.0000	1.0000	1.0000
75	0.1700	0.2444	0.3693	0.5231	0.6768	0.8863	1.0000	1.0000	1.0000	1.0000	1.0000
80	0.1875	0.2682	0.4043	0.5786	0.7524	0.9645	1.0000	1.0000	1.0000	1.0000	1.0000
85	0.1941	0.2770	0.4310	0.6413	0.8379	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
90	0.2012	0.2863	0.4601	0.7123	0.9347	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
95	0.2088	0.2960	0.4917	0.7925	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.2171	0.3063	0.5261	0.8833	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
105	0.2259	0.3171	0.5635	0.9860	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
110	0.2354	0.3284	0.6042	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
115	0.2457	0.3404	0.6485	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
120	0.2567	0.3529	0.6966	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Assumptions and Methods Applicable to the Virginia Local Disability Program Long-Term Care Benefits (continued)

Porting Premiums:

While actively employed or receiving LTD benefits, a member receives coverage in the amount currently in place for the entire actively employed group. Upon termination of employment, a member has the option to port the amount of coverage current for the group by paying a premium. CMC reviewed the rates developed by the prior actuary for adequacy and made no modifications. As experience develops the rates may need to be reviewed and adjusted accordingly.

Monthly Porting Premium Rates Per \$1 of Daily Benefit Amount

VLDP Entry Age	Rate	VLDP Entry Age	Rate	VLDP Entry Age	Rate	VLDP Entry Age	Rate
20	0.018	38	0.070	56	0.233	74	1.212
21	0.019	39	0.075	57	0.255	75	1.331
22	0.020	40	0.078	58	0.278	76	1.466
23	0.022	41	0.084	59	0.305	77	1.619
24	0.023	42	0.089	60	0.335	78	1.786
25	0.025	43	0.095	61	0.368	79	1.968
26	0.028	44	0.100	62	0.406	80	2.153
27	0.030	45	0.106	63	0.448	81	2.329
28	0.033	46	0.112	64	0.497	82	2.503
29	0.035	47	0.121	65	0.539	83	2.676
30	0.038	48	0.128	66	0.596	84	2.835
31	0.041	49	0.136	67	0.662	85	2.971
32	0.046	50	0.144	68	0.717	86	3.134
33	0.050	51	0.155	69	0.777	87	3.277
34	0.053	52	0.166	70	0.845	88	3.405
35	0.057	53	0.180	71	0.922	89	3.522
36	0.061	54	0.196	72	1.007	90	3.610
37	0.065	55	0.213	73	1.105		



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

STATE EMPLOYEES¹

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with Scale BB to 2020; males setback 1 year, 85% of rates; females setback 1 year

Post-Retirement:

R P-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with Scale BB to 2020; males set forward 1 year; 1.5% increase compounded from ages 70 to 85, females setback 1 year

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with Scale BB to 2020; males 115% of rates; females 130% of rates

State Employees Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00031	0.00044	0.00803	0.00016	0.00016	0.00285
25	0.00043	0.00045	0.00957	0.00017	0.00017	0.00304
30	0.00037	0.00046	0.00894	0.00020	0.00020	0.00383
35	0.00042	0.00053	0.01035	0.00027	0.00027	0.00503
40	0.00050	0.00066	0.01242	0.00036	0.00036	0.00696
45	0.00073	0.00107	0.01925	0.00058	0.00058	0.01155
50	0.00127	0.00431	0.02304	0.00098	0.00098	0.01520
55	0.00211	0.00599	0.02639	0.00151	0.00333	0.01827
60	0.00345	0.00789	0.02933	0.00214	0.00454	0.02081
65	0.00587	0.01102	0.03389	0.00315	0.00684	0.02522
70	0.00970	0.01677	0.04238	0.00527	0.01104	0.03410
75		0.02704	0.05702		0.01930	0.04963
80		0.04548	0.08047		0.03437	0.07380
85		0.07920	0.11900		0.06378	0.10933
90		0.14247	0.18618		0.11280	0.16137

25% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.

¹ The actuarial assumptions for State are also applied to the applicable members of the Optional Retirement Plan (ORP)



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 1.

State Employees Retirement Rates, Plan 1 Male							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	≥31
≤49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0000	0.0000	0.0000	0.0325	0.0325	0.1250	0.1250
51	0.0000	0.0000	0.0000	0.0325	0.0300	0.0800	0.0900
52	0.0000	0.0000	0.0000	0.0325	0.0300	0.0800	0.0900
53	0.0000	0.0000	0.0000	0.0325	0.0300	0.0500	0.0900
54	0.0000	0.0000	0.0000	0.0325	0.0300	0.0500	0.0900
55	0.0000	0.0450	0.0450	0.0450	0.0350	0.0500	0.0900
56	0.0000	0.0450	0.0400	0.0400	0.0400	0.0500	0.0900
57	0.0000	0.0450	0.0400	0.0400	0.0400	0.0750	0.0900
58	0.0000	0.0450	0.0400	0.0400	0.0400	0.1000	0.0900
59	0.0000	0.0450	0.0400	0.0400	0.0400	0.1000	0.0900
60	0.0000	0.0450	0.0500	0.0500	0.0500	0.1150	0.0900
61	0.0000	0.1500	0.0750	0.0750	0.0750	0.1650	0.1500
62	0.0000	0.1500	0.1000	0.1000	0.1000	0.2000	0.2000
63	0.0000	0.1500	0.1000	0.1000	0.1000	0.2000	0.1750
64	0.0000	0.1500	0.1350	0.1350	0.1350	0.2000	0.1750
65	0.0000	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
66	0.0000	0.2750	0.2500	0.2500	0.2500	0.2500	0.2500
67	0.0000	0.2750	0.2200	0.2200	0.2200	0.2200	0.2200
68	0.0000	0.2000	0.2200	0.2200	0.2200	0.2200	0.2200
69	0.0000	0.2000	0.2200	0.2200	0.2200	0.2200	0.2200
70	0.0000	0.2000	0.2200	0.2200	0.2200	0.2200	0.2200
71	0.0000	0.2000	0.2200	0.2200	0.2200	0.2200	0.2200
72	0.0000	0.2000	0.2200	0.2200	0.2200	0.2200	0.2200
73	0.0000	0.2000	0.2200	0.2200	0.2200	0.2200	0.2200
74	0.0000	0.2000	0.2200	0.2200	0.2200	0.2200	0.2200
≥75	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

State Employees Retirement Rates, Plan 1 Female							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	≥31
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.030	0.030	0.075	0.075
51	0.000	0.000	0.000	0.035	0.030	0.075	0.060
52	0.000	0.000	0.000	0.035	0.030	0.075	0.060
53	0.000	0.000	0.000	0.035	0.035	0.100	0.090
54	0.000	0.000	0.000	0.050	0.035	0.100	0.090
55	0.000	0.050	0.050	0.050	0.040	0.100	0.090
56	0.000	0.050	0.050	0.050	0.050	0.100	0.090
57	0.000	0.050	0.050	0.050	0.050	0.100	0.090
58	0.000	0.050	0.050	0.050	0.050	0.100	0.090
59	0.000	0.050	0.050	0.050	0.050	0.100	0.090
60	0.000	0.050	0.050	0.050	0.050	0.120	0.125
61	0.000	0.075	0.080	0.080	0.080	0.165	0.175
62	0.000	0.100	0.120	0.120	0.120	0.225	0.250
63	0.000	0.175	0.120	0.120	0.120	0.225	0.175
64	0.000	0.175	0.150	0.150	0.150	0.225	0.175
65	0.000	0.275	0.275	0.275	0.275	0.275	0.300
66	0.000	0.300	0.300	0.300	0.300	0.300	0.300
67	0.000	0.300	0.250	0.250	0.250	0.250	0.250
68	0.000	0.250	0.250	0.250	0.250	0.250	0.250
69	0.000	0.250	0.250	0.250	0.250	0.250	0.250
70	0.000	0.250	0.250	0.250	0.250	0.250	0.250
71	0.000	0.250	0.250	0.250	0.250	0.250	0.250
72	0.000	0.250	0.250	0.250	0.250	0.250	0.250
73	0.000	0.250	0.250	0.250	0.250	0.250	0.250
74	0.000	0.250	0.250	0.250	0.250	0.250	0.250
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 2 and the Hybrid Plan.

State Employees Retirement Rates, Plan 2 and Hybrid Male																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.080
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.080	0.090
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050	0.090	0.090
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050	0.090	0.090	0.090
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050	0.090	0.090	0.090	0.090
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050	0.090	0.090	0.090	0.090	0.090
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075	0.075	0.090	0.090	0.090	0.090	0.090	0.090
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090	0.090	0.090	0.090
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
60	0.000	0.045	0.045	0.045	0.045	0.045	0.045	0.115	0.115	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
61	0.000	0.150	0.075	0.075	0.075	0.075	0.165	0.165	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
62	0.000	0.150	0.100	0.100	0.100	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
63	0.000	0.150	0.100	0.100	0.200	0.200	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
64	0.000	0.150	0.135	0.200	0.200	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
65	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
66	0.000	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
67	0.000	0.275	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
68	0.000	0.200	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
69	0.000	0.200	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
70	0.000	0.200	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
71	0.000	0.200	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
72	0.000	0.200	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
73	0.000	0.200	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
74	0.000	0.200	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

State Employees Retirement Rates, Plan 2 and Hybrid Female																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075	0.075
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075	0.075	0.060
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090	0.090
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090	0.090	0.090
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090	0.090	0.090	0.090
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
60	0.000	0.050	0.050	0.050	0.050	0.050	0.050	0.120	0.120	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
61	0.000	0.075	0.080	0.080	0.080	0.080	0.165	0.165	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
62	0.000	0.100	0.120	0.120	0.120	0.225	0.225	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
63	0.000	0.175	0.120	0.120	0.225	0.225	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
64	0.000	0.175	0.150	0.225	0.225	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
65	0.000	0.275	0.275	0.275	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
66	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
67	0.000	0.300	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
68	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
69	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
70	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
71	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
72	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
73	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
74	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 25% of disability cases are assumed to be service related.

State Employees Disability Rates		
Age	Male	Female
20	0.00039	0.00033
25	0.00072	0.00100
30	0.00091	0.00211
35	0.00129	0.00281
40	0.00212	0.00354
45	0.00343	0.00474
50	0.00497	0.00629
55	0.00629	0.00742
60	0.00690	0.00735
65	0.00657	0.00653
70	0.00572	0.00841



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

State Employees Termination Rates, Male											
Age	Years of service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.25852	0.25852	0.25694	0.23691	0.19663	0.15321	0.11602	0.09132	0.08331	0.08331	0.08331
25	0.22297	0.22297	0.22056	0.20171	0.16921	0.13670	0.10954	0.09132	0.08251	0.07732	0.07214
30	0.17601	0.17601	0.17095	0.15425	0.13244	0.11401	0.10011	0.08993	0.08095	0.06790	0.05485
35	0.15120	0.14553	0.13631	0.12195	0.10694	0.09577	0.08902	0.08387	0.07574	0.05878	0.04183
40	0.14480	0.12618	0.11198	0.09890	0.08767	0.08029	0.07681	0.07442	0.06799	0.04938	0.03077
45	0.14223	0.11470	0.09617	0.08321	0.07345	0.06888	0.06600	0.06412	0.05934	0.04282	0.02630
50	0.13789	0.10668	0.08617	0.07370	0.06544	0.06362	0.05994	0.05630	0.05128	0.03879	0.02630
55	0.13242	0.10032	0.08050	0.07094	0.06491	0.06348	0.05950	0.05391	0.04470	0.03550	0.02630
60	0.13038	0.09617	0.07857	0.07094	0.06491	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.13038	0.09477	0.07859	0.07094	0.06491	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.13038	0.09477	0.07859	0.07094	0.06491	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

State Employees Termination Rates, Female											
Age	Years of service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.31434	0.31434	0.30334	0.27392	0.23350	0.18606	0.14708	0.12545	0.12362	0.12362	0.12362
25	0.26747	0.26747	0.25594	0.23170	0.20061	0.16601	0.13663	0.11705	0.11136	0.11136	0.11136
30	0.21874	0.20726	0.19398	0.17630	0.15700	0.13853	0.12163	0.10538	0.09500	0.09045	0.09045
35	0.19257	0.17078	0.15532	0.14101	0.12758	0.11658	0.10633	0.09380	0.08241	0.07177	0.06019
40	0.17770	0.14790	0.12987	0.11685	0.10577	0.09775	0.09030	0.08135	0.07188	0.05904	0.03747
45	0.17029	0.13335	0.11247	0.09984	0.08920	0.08275	0.07531	0.06872	0.06277	0.05214	0.03025
50	0.16721	0.12286	0.09934	0.08763	0.07822	0.07316	0.06479	0.05936	0.05545	0.05088	0.03025
55	0.16695	0.11694	0.09149	0.08236	0.07660	0.07039	0.06175	0.05711	0.05138	0.05088	0.03025
60	0.16695	0.11656	0.09060	0.08236	0.07660	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.16695	0.11656	0.09060	0.08236	0.07660	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.16695	0.11656	0.09060	0.08236	0.07660	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following total salary increase rates are used. The total salary increase rate consists of an inflation rate of 2.50%, a productivity component of 1.00%, and a variable merit component that is dependent on years of service.

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	5.35%
2	5.35
3	4.75
4	4.45
5	4.45
6	4.45
7	4.35
8	4.25
9	4.00
10	4.00
11-19	3.65
20 or more	3.50

DISABILITY ELECTION: All active members hired on or after January 1, 1999 will enter the Virginia Sickness and Disability Program (VSDP) and will not be eligible to receive non-VSDP disability benefits. For members hired before January 1, 1999 we measure the liabilities based upon the member's actual election contained in the valuation data.

EMPLOYER CONTRIBUTION TO DEFINED CONTRIBUTION HYBRID PLAN: The valuation assumes an average employer defined contribution rate for members in the Hybrid Plan. This is reported by VRS each valuation.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

TEACHERS¹

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 White Collar Employee Rates to age 80, White Collar Healthy Annuitant Rates at ages 81 and older projected with Scale BB to 2020

Post-Retirement:

RP-2014 White Collar Employee Rates to age 49, White Collar Healthy Annuitant Rates at ages 50 and older projected with Scale BB to 2020; males 1% increase compounded from ages 70 to 90; females setback 3 years with 1.5% increase compounded from ages 65 to 75, and 2.0% increase compounded from ages 75 to 90

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with Scale BB to 2020; 115% of rates for males and females

Teachers Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00028	0.00028	0.00803	0.00014	0.00015	0.00252
25	0.00033	0.00033	0.00957	0.00014	0.00014	0.00269
30	0.00031	0.00031	0.00894	0.00018	0.00016	0.00339
35	0.00036	0.00036	0.01035	0.00024	0.00020	0.00445
40	0.00043	0.00043	0.01242	0.00033	0.00026	0.00616
45	0.00067	0.00067	0.01925	0.00054	0.00040	0.01022
50	0.00116	0.00272	0.02304	0.00091	0.00068	0.01345
55	0.00192	0.00384	0.02639	0.00137	0.00225	0.01616
60	0.00315	0.00501	0.02933	0.00194	0.00297	0.01841
65	0.00540	0.00705	0.03389	0.00290	0.00460	0.02231
70	0.00939	0.01144	0.04238	0.00505	0.00804	0.03017
75		0.02063	0.05702		0.01419	0.04390
80		0.03801	0.08047		0.02649	0.06529
85		0.07325	0.11900		0.05139	0.09672
90		0.14553	0.18618		0.10307	0.14275

5% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.

¹ The actuarial assumptions for Teachers are also applied to the applicable members of the Optional Retirement Plan (ORP).



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 1.

Teachers Retirement Rates, Plan 1 Male							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	≥31
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.020	0.020	0.175	0.175
51	0.000	0.000	0.000	0.020	0.020	0.175	0.150
52	0.000	0.000	0.000	0.020	0.020	0.175	0.150
53	0.000	0.000	0.000	0.020	0.020	0.175	0.150
54	0.000	0.000	0.000	0.040	0.035	0.175	0.150
55	0.000	0.070	0.070	0.070	0.045	0.225	0.150
56	0.000	0.070	0.045	0.045	0.045	0.225	0.150
57	0.000	0.070	0.045	0.045	0.045	0.225	0.150
58	0.000	0.070	0.060	0.060	0.060	0.225	0.150
59	0.000	0.100	0.060	0.060	0.060	0.225	0.150
60	0.000	0.100	0.070	0.070	0.070	0.225	0.150
61	0.000	0.110	0.085	0.085	0.085	0.300	0.250
62	0.000	0.170	0.150	0.150	0.150	0.350	0.350
63	0.000	0.140	0.150	0.150	0.150	0.350	0.250
64	0.000	0.180	0.150	0.150	0.150	0.350	0.250
65	0.000	0.300	0.300	0.300	0.300	0.300	0.350
66	0.000	0.275	0.350	0.350	0.350	0.350	0.350
67	0.000	0.300	0.350	0.350	0.350	0.350	0.350
68	0.000	0.300	0.300	0.300	0.300	0.300	0.300
69	0.000	0.300	0.300	0.300	0.300	0.300	0.300
70	0.000	0.300	0.300	0.300	0.300	0.300	0.300
71	0.000	0.300	0.300	0.300	0.300	0.300	0.300
72	0.000	0.300	0.300	0.300	0.300	0.300	0.300
73	0.000	0.300	0.300	0.300	0.300	0.300	0.300
74	0.000	0.300	0.300	0.300	0.300	0.300	0.300
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Teachers Retirement Rates, Plan 1 Female							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	≥31
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.024	0.024	0.150	0.150
51	0.000	0.000	0.000	0.035	0.020	0.150	0.100
52	0.000	0.000	0.000	0.035	0.025	0.150	0.100
53	0.000	0.000	0.000	0.035	0.025	0.150	0.100
54	0.000	0.000	0.000	0.040	0.030	0.150	0.100
55	0.000	0.060	0.060	0.060	0.050	0.225	0.160
56	0.000	0.060	0.050	0.050	0.050	0.225	0.160
57	0.000	0.060	0.050	0.050	0.050	0.225	0.160
58	0.000	0.070	0.050	0.050	0.050	0.225	0.160
59	0.000	0.080	0.060	0.060	0.060	0.225	0.200
60	0.000	0.090	0.080	0.080	0.080	0.225	0.200
61	0.000	0.150	0.100	0.100	0.100	0.300	0.250
62	0.000	0.150	0.150	0.150	0.150	0.350	0.300
63	0.000	0.150	0.150	0.150	0.150	0.350	0.300
64	0.000	0.250	0.150	0.150	0.150	0.350	0.300
65	0.000	0.300	0.300	0.300	0.300	0.300	0.350
66	0.000	0.300	0.350	0.350	0.350	0.350	0.350
67	0.000	0.300	0.300	0.300	0.300	0.300	0.300
68	0.000	0.300	0.300	0.300	0.300	0.300	0.300
69	0.000	0.300	0.300	0.300	0.300	0.300	0.300
70	0.000	0.300	0.300	0.300	0.300	0.300	0.300
71	0.000	0.300	0.300	0.300	0.300	0.300	0.300
72	0.000	0.300	0.300	0.300	0.300	0.300	0.300
73	0.000	0.300	0.300	0.300	0.300	0.300	0.300
74	0.000	0.300	0.300	0.300	0.300	0.300	0.300
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 2 and the Hybrid Plan.

Teachers Retirement Rates, Plan 2 and Hybrid Male																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175	0.175
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175	0.175	0.150
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175	0.175	0.150	0.150
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175	0.175	0.150	0.150	0.150
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.150	0.150	0.150	0.150
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.150	0.150	0.150	0.150	0.150
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.150	0.150	0.150	0.150	0.150	0.150
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.150	0.150	0.150	0.150	0.150	0.150	0.150
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
60	0.000	0.100	0.100	0.100	0.100	0.100	0.100	0.225	0.225	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
61	0.000	0.110	0.085	0.085	0.085	0.085	0.300	0.300	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
62	0.000	0.170	0.150	0.150	0.150	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
63	0.000	0.140	0.150	0.150	0.350	0.350	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
64	0.000	0.180	0.150	0.350	0.350	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
65	0.000	0.300	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
66	0.000	0.275	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
67	0.000	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
68	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
69	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
70	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
71	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
72	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
73	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
74	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Teachers Retirement Rates, Plan 2 and Hybrid Female																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
<=49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150	0.150
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150	0.150	0.100
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150	0.150	0.100	0.100
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150	0.150	0.100	0.100	0.100
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.160	0.160	0.160	0.160
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.160	0.160	0.160	0.160	0.160
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.160	0.160	0.160	0.160	0.160	0.160
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.160	0.160	0.160	0.160	0.160	0.160	0.160
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.225	0.225	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
60	0.000	0.090	0.090	0.090	0.090	0.090	0.090	0.225	0.225	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
61	0.000	0.150	0.100	0.100	0.100	0.100	0.300	0.300	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
62	0.000	0.150	0.150	0.150	0.150	0.350	0.350	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
63	0.000	0.150	0.150	0.150	0.350	0.350	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
64	0.000	0.250	0.150	0.350	0.350	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
65	0.000	0.300	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
66	0.000	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
67	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
68	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
69	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
70	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
71	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
72	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
73	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
74	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 5% of disability cases are assumed to be service related.

Teachers Disability Rates		
Age	Male	Female
20	0.000005	0.000003
25	0.000005	0.000023
30	0.000064	0.000081
35	0.000135	0.000196
40	0.000325	0.000481
45	0.000725	0.000792
50	0.001444	0.001609
55	0.002443	0.002521
60	0.003395	0.003321
65	0.003773	0.003509
70	0.003773	0.003509



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

Teachers Termination Rates, Male											
Age	Years of service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.21079	0.14843	0.11901	0.11020	0.09349	0.08050	0.08046	0.07228	0.05097	0.04292	0.04292
25	0.18729	0.14293	0.12175	0.11084	0.09453	0.08071	0.07568	0.06716	0.05060	0.04286	0.04286
30	0.16964	0.13940	0.12584	0.11218	0.09637	0.08159	0.07055	0.06162	0.05134	0.04355	0.04355
35	0.16964	0.13888	0.12459	0.10907	0.09347	0.07931	0.06709	0.05881	0.05210	0.04361	0.03314
40	0.16964	0.13888	0.12078	0.10272	0.08688	0.07483	0.06444	0.05760	0.05255	0.04302	0.02407
45	0.16964	0.13888	0.11573	0.10116	0.07864	0.06940	0.06230	0.05733	0.05243	0.04239	0.02407
50	0.16964	0.13888	0.11233	0.10116	0.07206	0.06391	0.06033	0.05733	0.05234	0.04238	0.02407
55	0.16964	0.13888	0.11217	0.10116	0.07038	0.05844	0.05813	0.05733	0.05234	0.04238	0.02407
60	0.16964	0.13888	0.11217	0.10116	0.07038	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.16964	0.13888	0.11217	0.10116	0.07038	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.16964	0.13888	0.11217	0.10116	0.07038	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Teachers Termination Rates, Female											
Age	Years of service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.18697	0.11393	0.09392	0.09392	0.08483	0.06269	0.04984	0.04984	0.04938	0.04663	0.04663
25	0.18037	0.12332	0.10860	0.10637	0.09381	0.07728	0.06567	0.06507	0.05448	0.04933	0.04933
30	0.17320	0.13889	0.12685	0.11780	0.10503	0.09536	0.08496	0.07332	0.06172	0.05303	0.04656
35	0.16500	0.14138	0.12602	0.11307	0.10178	0.09519	0.08653	0.07385	0.06386	0.05292	0.03931
40	0.15660	0.13208	0.11313	0.09891	0.08919	0.08395	0.07759	0.06810	0.06086	0.04911	0.02568
45	0.15055	0.12047	0.09933	0.08544	0.07686	0.07181	0.06623	0.05912	0.05390	0.04417	0.02287
50	0.14909	0.11617	0.09449	0.08038	0.07126	0.06481	0.05822	0.05346	0.04858	0.04357	0.02287
55	0.14909	0.11617	0.09449	0.08038	0.07093	0.06249	0.05450	0.05326	0.04771	0.04357	0.02287
60	0.14909	0.11617	0.09449	0.08038	0.07093	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.14909	0.11617	0.09449	0.08038	0.07093	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.14909	0.11617	0.09449	0.08038	0.07093	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following salary increase rates are used. Inflation rate of 2.50% plus productivity component of 1.00% plus step-rate/promotional component as shown:

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	5.95%
2	5.85
3	5.85
4	5.45
5	5.45
6	5.45
7	5.35
8	5.35
9	5.35
10	4.85
11	4.85
12	4.85
13	4.75
14	4.75
15	4.65
16	4.65
17	4.55
18	4.45
19	4.45
20 or more	3.50

EMPLOYER CONTRIBUTION TO DEFINED CONTRIBUTION HYBRID PLAN: The valuation assumes an average employer defined contribution rate for members in the Hybrid Plan. This is reported by VRS each valuation.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

STATE POLICE

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with Scale BB to 2020; males 90% of rates; females set forward 1 year

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with Scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with Scale BB to 2020; males set forward 2 years; unisex using 100% male

SPORS Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00036	0.00044	0.00839	0.00016	0.00016	0.00839
25	0.00043	0.00045	0.00772	0.00018	0.00019	0.00772
30	0.00040	0.00046	0.00820	0.00023	0.00025	0.00820
35	0.00046	0.00053	0.00948	0.00030	0.00033	0.00948
40	0.00056	0.00066	0.01247	0.00043	0.00052	0.01247
45	0.00086	0.00107	0.01810	0.00072	0.00089	0.01810
50	0.00149	0.00431	0.02124	0.00118	0.00317	0.02124
55	0.00246	0.00599	0.02397	0.00174	0.00423	0.02397
60	0.00405	0.00789	0.02682	0.00247	0.00625	0.02682
65	0.00693	0.01102	0.03182	0.00383	0.00989	0.03182
70	0.01139	0.01694	0.04125	0.00653	0.01601	0.04125
75		0.02871	0.05658		0.02631	0.05658
80		0.05074	0.08141		0.04493	0.08141
85		0.09286	0.12299		0.07928	0.12299
90		0.17558	0.19143		0.14077	0.19143

85% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire.

SPORS Retirement Rates			
Age	Years of service		
	0-4	5-24	>=25
<=49	0.000	0.000	0.000
50	0.000	0.100	0.100
51	0.000	0.030	0.100
52	0.000	0.030	0.100
53	0.000	0.030	0.100
54	0.000	0.030	0.100
55	0.000	0.060	0.100
56	0.000	0.060	0.100
57	0.000	0.060	0.100
58	0.000	0.100	0.100
59	0.000	0.100	0.100
60	0.000	0.100	0.100
61	0.000	0.100	0.100
62	0.000	0.200	0.200
63	0.000	0.200	0.200
64	0.000	0.200	0.200
>=65	0.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 85% of disability cases are assumed to be service related.

SPORS Disability Rates	
Age	Unisex
<=44	0.00194
45	0.00233
50	0.00481
55	0.00770
60	0.00897
65	0.01108
70	0.01368

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

SPORS Termination Rates	
Service	Unisex
0	0.09750
1	0.04750
2	0.04750
3	0.04750
4	0.04750
5	0.04750
6	0.04750
7	0.03000
8	0.03000
9	0.03000
>=10	0.01750



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following salary increase rates are used. Inflation rate of 2.50% plus productivity component of 1.00% plus step-rate/promotional component as shown:

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	4.75%
2	4.75
3	4.75
4	4.75
5	4.65
6	4.40
7	4.40
8	4.40
9	4.40
10 - 19	4.00
20 or more	3.50

It is assumed members covered under VSDP receive a 3.50% annual increase in pay while disabled and this adjusted pay is used to determine deferred benefits payable from the System.

DISABILITY ELECTION: All active members hired on or after January 1, 1999 will enter the Virginia Sickness and Disability Program (VSDP) and will not be eligible to receive non-VSDP disability benefits. For members hired before January 1, 1999 we measure the liabilities based upon the member's actual election contained in the valuation data.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

JUDICIAL

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with Scale BB to 2020; males setback 1 year, 85% of rates; females setback 1 year

Post-Retirement:

R P-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with Scale BB to 2020; males set forward 1 year; females setback 1 year with 1.5% compounding increase from ages 70 to 85

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with Scale BB to 2020; males 115% of rates; females 130% of rates

Judicial Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00031	0.00044	0.00803	0.00016	0.00016	0.00285
25	0.00043	0.00045	0.00957	0.00017	0.00017	0.00304
30	0.00037	0.00046	0.00894	0.00020	0.00020	0.00383
35	0.00042	0.00053	0.01035	0.00027	0.00027	0.00503
40	0.00050	0.00066	0.01242	0.00036	0.00036	0.00696
45	0.00073	0.00107	0.01925	0.00058	0.00058	0.01155
50	0.00127	0.00431	0.02304	0.00098	0.00098	0.01520
55	0.00211	0.00599	0.02639	0.00151	0.00333	0.01827
60	0.00345	0.00789	0.02933	0.00214	0.00454	0.02081
65	0.00587	0.01102	0.03389	0.00315	0.00684	0.02522
70	0.00970	0.01677	0.04238	0.00527	0.01104	0.03410
75		0.02704	0.05702		0.01930	0.04963
80		0.04548	0.08047		0.03437	0.07380
85		0.07920	0.11900		0.06378	0.10933
90		0.14247	0.18618		0.11280	0.16137

5% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire with an unreduced retirement benefit.

Judicial Retirement Rates	
Age	Unisex
<=59	0.000
60	0.150
61	0.150
62	0.150
63	0.150
64	0.150
65	0.150
66	0.150
67	0.150
68	0.150
69	0.150
70	0.500
71	0.500
72	0.500
>=73	1.000

DISABILITY RATES: There are no assumed rates of disability prior to service retirement for causes other than death or retirement.

TERMINATION RATES: There are no assumed rates of withdrawal prior to service retirement for causes other than death or retirement.

SALARY INCREASE RATES: Salary increase rates are 4.5%.

EMPLOYER CONTRIBUTION TO DEFINED CONTRIBUTION HYBRID PLAN: The valuation assumes an average employer defined contribution rate for members in the Hybrid Plan. This is reported by VRS each valuation.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

VIRGINIA LAW OFFICERS **Plan Specific Assumptions and Methods**

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older
Projected BB to 2020; M 90% of Rates; F SF 1yr

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older
Projected BB to 2020; M SF 1yr, 1% increase compounded from ages 70 to 90; F
SF 3yr.

Post-Disablement:

RP-2014 Disabled Mortality Rates Projected BB to 2020; M SF 2yr; Unisex using
100% Male.

VaLORS Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00036	0.00044	0.00839	0.00016	0.00016	0.00839
25	0.00043	0.00045	0.00772	0.00018	0.00019	0.00772
30	0.00040	0.00046	0.00820	0.00023	0.00025	0.00820
35	0.00046	0.00053	0.00948	0.00030	0.00033	0.00948
40	0.00056	0.00066	0.01247	0.00043	0.00052	0.01247
45	0.00086	0.00107	0.01810	0.00072	0.00089	0.01810
50	0.00149	0.00431	0.02124	0.00118	0.00317	0.02124
55	0.00246	0.00599	0.02397	0.00174	0.00423	0.02397
60	0.00405	0.00789	0.02682	0.00247	0.00625	0.02682
65	0.00693	0.01102	0.03182	0.00383	0.00989	0.03182
70	0.01139	0.01694	0.04125	0.00653	0.01601	0.04125
75		0.02871	0.05658		0.02631	0.05658
80		0.05074	0.08141		0.04493	0.08141
85		0.09286	0.12299		0.07928	0.12299
90		0.17558	0.19143		0.14077	0.19143

35% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire.

VaLORS Retirement Rates, Male					
Age	Years of service				
	0-4	5	6-24	25	>=26
<=49	0.000	0.000	0.000	0.000	0.000
50	0.000	0.110	0.110	0.350	0.350
51	0.000	0.100	0.080	0.300	0.250
52	0.000	0.100	0.080	0.300	0.250
53	0.000	0.100	0.080	0.300	0.250
54	0.000	0.100	0.080	0.240	0.250
55	0.000	0.100	0.080	0.180	0.250
56	0.000	0.100	0.090	0.180	0.200
57	0.000	0.100	0.100	0.180	0.200
58	0.000	0.100	0.100	0.180	0.200
59	0.000	0.100	0.120	0.180	0.200
60	0.000	0.180	0.180	0.180	0.200
61	0.000	0.180	0.200	0.200	0.200
62	0.000	0.180	0.400	0.400	0.400
63	0.000	0.400	0.250	0.250	0.250
64	0.000	0.150	0.250	0.250	0.250
>=65	0.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

VaLORS Retirement Rates, Female					
Age	Years of service				
	0-4	5	6-24	25	>=26
<=49	0.000	0.000	0.000	0.000	0.000
50	0.000	0.100	0.100	0.375	0.375
51	0.000	0.100	0.080	0.250	0.200
52	0.000	0.100	0.080	0.250	0.200
53	0.000	0.100	0.080	0.250	0.225
54	0.000	0.100	0.080	0.250	0.250
55	0.000	0.100	0.080	0.250	0.275
56	0.000	0.100	0.080	0.250	0.300
57	0.000	0.100	0.080	0.250	0.225
58	0.000	0.100	0.080	0.400	0.225
59	0.000	0.100	0.130	0.300	0.225
60	0.000	0.200	0.200	0.200	0.225
61	0.000	0.200	0.225	0.225	0.225
62	0.000	0.200	0.300	0.300	0.300
63	0.000	0.200	0.250	0.250	0.250
64	0.000	0.200	0.250	0.250	0.250
>=65	0.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 35% of disability cases are assumed to be service related.

VaLORS Disability Rates		
Age	Male	Female
20	0.00143	0.00543
25	0.00322	0.00581
30	0.00584	0.00659
35	0.00720	0.00769
40	0.00793	0.01001
45	0.00913	0.01381
50	0.01165	0.01821
55	0.01501	0.02277
60	0.01782	0.02901
65	0.01916	0.03865
70	0.01920	0.05499



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

VaLORS Termination Rates, Male											
Age	Years of service										
	0	1	2	3	4	5	6	7	8	9	>=10
20	0.31876	0.28460	0.25466	0.22550	0.19680	0.16134	0.13524	0.12367	0.12367	0.12367	0.12367
25	0.30264	0.26915	0.23838	0.20793	0.17797	0.14758	0.12544	0.11510	0.11510	0.11510	0.11510
30	0.28066	0.24612	0.21425	0.18325	0.15307	0.12980	0.11286	0.10375	0.10098	0.10098	0.10098
35	0.25749	0.21974	0.18823	0.16020	0.13400	0.11603	0.10242	0.09350	0.08615	0.07590	0.06050
40	0.23639	0.19311	0.16185	0.13861	0.11962	0.10471	0.09313	0.08358	0.07325	0.05907	0.04275
45	0.22182	0.17034	0.13792	0.12032	0.11173	0.09580	0.08484	0.07391	0.06240	0.05163	0.04275
50	0.21689	0.15441	0.11855	0.10683	0.10683	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
55	0.21689	0.14708	0.10525	0.09930	0.09930	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
60	0.21689	0.14673	0.09871	0.09787	0.09787	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.21689	0.14673	0.09796	0.09787	0.09787	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.21689	0.14673	0.09796	0.09787	0.09787	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

VaLORS Termination Rates, Female											
Age	Years of service										
	0	1	2	3	4	5	6	7	8	9	>=10
20	0.34816	0.33235	0.29905	0.25161	0.20346	0.15381	0.13567	0.10072	0.09919	0.09919	0.09919
25	0.33633	0.30645	0.27155	0.23161	0.19212	0.15381	0.13567	0.10072	0.09919	0.09919	0.09919
30	0.32698	0.27494	0.23556	0.20432	0.17667	0.15381	0.13567	0.10072	0.09919	0.09066	0.09066
35	0.32025	0.25204	0.20727	0.17948	0.15980	0.14868	0.13534	0.10072	0.09909	0.08073	0.06058
40	0.31390	0.23286	0.18182	0.15417	0.14036	0.13413	0.12530	0.10072	0.09311	0.07057	0.03901
45	0.30589	0.21487	0.15693	0.12720	0.11803	0.10976	0.10134	0.09113	0.07804	0.06036	0.03687
50	0.29483	0.19601	0.13051	0.09760	0.09281	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
55	0.28000	0.17544	0.10155	0.06516	0.06490	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
60	0.26118	0.15309	0.06978	0.02989	0.03440	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.23879	0.12934	0.03574	0.00004	0.00182	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.20897	0.10078	0.00000	0.00004	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following salary increase rates are used. Inflation rate of 2.50% plus productivity component of 1.00% plus step-rate/promotional component as shown:

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	4.75%
2	4.75
3	4.75
4	4.75
5	4.65
6	4.40
7	4.40
8	4.40
9	4.40
10 - 19	4.00
20 or more	3.50

It is assumed members covered under VSDP receive a 3.50% annual increase in pay while disabled and this adjusted pay is used to determine deferred benefits payable from the System.

DISABILITY ELECTION: All active members hired on or after January 1, 1999 will enter the Virginia Sickness and Disability Program (VSDP) and will not be eligible to receive non-VSDP disability benefits. For members hired before January 1, 1999 we measure the liabilities based upon the member's actual election contained in the valuation data.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

LOCALS – TOP 10, NON-LEO

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates

Top 10 non-LEO Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00038	0.00050	0.00923	0.00017	0.00016	0.00274
25	0.00045	0.00044	0.00850	0.00018	0.00017	0.00293
30	0.00042	0.00048	0.00902	0.00023	0.00021	0.00369
35	0.00049	0.00056	0.01042	0.00030	0.00028	0.00484
40	0.00059	0.00078	0.01372	0.00041	0.00039	0.00670
45	0.00091	0.00133	0.01991	0.00068	0.00065	0.01111
50	0.00157	0.00495	0.02336	0.00114	0.00272	0.01462
55	0.00260	0.00667	0.02637	0.00171	0.00352	0.01756
60	0.00427	0.00894	0.02950	0.00241	0.00489	0.02001
65	0.00731	0.01285	0.03501	0.00361	0.00749	0.02425
70	0.01202	0.02021	0.04538	0.00616	0.01209	0.03279
75	0.02012	0.03312	0.06223	0.01052	0.02067	0.04772
80		0.05662	0.08955		0.03616	0.07096
85		0.10039	0.13529		0.06599	0.10513
90		0.17537	0.21057		0.12354	0.15517

20% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 1.

Top 10 non-LEO Retirement Rates, Plan 1 Male with 50/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	≥31
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.028	0.028	0.100	0.100
51	0.000	0.000	0.000	0.070	0.035	0.100	0.060
52	0.000	0.000	0.000	0.070	0.035	0.100	0.090
53	0.000	0.000	0.000	0.070	0.035	0.100	0.090
54	0.000	0.000	0.000	0.070	0.035	0.100	0.100
55	0.000	0.060	0.060	0.060	0.050	0.100	0.100
56	0.000	0.070	0.050	0.050	0.050	0.100	0.125
57	0.000	0.070	0.045	0.045	0.045	0.100	0.125
58	0.000	0.100	0.045	0.045	0.045	0.100	0.090
59	0.000	0.100	0.045	0.045	0.045	0.100	0.140
60	0.000	0.100	0.060	0.060	0.060	0.100	0.140
61	0.000	0.100	0.100	0.100	0.100	0.100	0.140
62	0.000	0.100	0.140	0.140	0.140	0.250	0.300
63	0.000	0.100	0.115	0.115	0.115	0.250	0.170
64	0.000	0.100	0.150	0.150	0.150	0.250	0.250
65	0.000	0.250	0.250	0.250	0.250	0.250	0.370
66	0.000	0.300	0.250	0.250	0.250	0.250	0.250
67	0.000	0.150	0.250	0.250	0.250	0.250	0.250
68	0.000	0.150	0.250	0.250	0.250	0.250	0.250
69	0.000	0.275	0.250	0.250	0.250	0.250	0.250
70	0.000	0.275	0.250	0.250	0.250	0.250	0.250
71	0.000	0.275	0.250	0.250	0.250	0.250	0.250
72	0.000	0.275	0.250	0.250	0.250	0.250	0.250
73	0.000	0.275	0.250	0.250	0.250	0.250	0.250
74	0.000	0.275	0.250	0.250	0.250	0.250	0.250
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Top 10 non-LEO Retirement Rates, Plan 1 Female with 50/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	>=31
<=49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.035	0.035	0.160	0.160
51	0.000	0.000	0.000	0.035	0.050	0.110	0.085
52	0.000	0.000	0.000	0.035	0.050	0.120	0.085
53	0.000	0.000	0.000	0.035	0.050	0.175	0.085
54	0.000	0.000	0.000	0.045	0.050	0.075	0.085
55	0.000	0.045	0.045	0.045	0.050	0.220	0.160
56	0.000	0.105	0.050	0.050	0.050	0.130	0.160
57	0.000	0.105	0.050	0.050	0.050	0.090	0.160
58	0.000	0.105	0.050	0.050	0.050	0.165	0.160
59	0.000	0.105	0.060	0.060	0.060	0.200	0.160
60	0.000	0.105	0.075	0.075	0.075	0.140	0.160
61	0.000	0.105	0.100	0.100	0.100	0.140	0.160
62	0.000	0.105	0.140	0.140	0.140	0.345	0.275
63	0.000	0.105	0.135	0.135	0.135	0.240	0.275
64	0.000	0.105	0.170	0.170	0.170	0.100	0.180
65	0.000	0.250	0.250	0.250	0.250	0.250	0.275
66	0.000	0.200	0.275	0.275	0.275	0.275	0.275
67	0.000	0.150	0.275	0.275	0.275	0.275	0.275
68	0.000	0.150	0.275	0.275	0.275	0.275	0.275
69	0.000	0.150	0.275	0.275	0.275	0.275	0.275
70	0.000	0.150	0.275	0.275	0.275	0.275	0.275
71	0.000	0.150	0.275	0.275	0.275	0.275	0.275
72	0.000	0.150	0.275	0.275	0.275	0.275	0.275
73	0.000	0.150	0.275	0.275	0.275	0.275	0.275
74	0.000	0.150	0.275	0.275	0.275	0.275	0.275
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Top 10 non-LEO Retirement Rates, Plan 1 Male with 55/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	>=31
<=49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.028	0.028	0.028	0.028
51	0.000	0.000	0.000	0.070	0.035	0.035	0.035
52	0.000	0.000	0.000	0.070	0.035	0.035	0.035
53	0.000	0.000	0.000	0.070	0.035	0.035	0.035
54	0.000	0.000	0.000	0.070	0.035	0.035	0.035
55	0.000	0.060	0.060	0.060	0.050	0.100	0.100
56	0.000	0.070	0.050	0.050	0.050	0.100	0.125
57	0.000	0.070	0.045	0.045	0.045	0.100	0.125
58	0.000	0.100	0.045	0.045	0.045	0.100	0.090
59	0.000	0.100	0.045	0.045	0.045	0.100	0.140
60	0.000	0.100	0.060	0.060	0.060	0.100	0.140
61	0.000	0.100	0.100	0.100	0.100	0.100	0.140
62	0.000	0.100	0.140	0.140	0.140	0.250	0.300
63	0.000	0.100	0.115	0.115	0.115	0.250	0.170
64	0.000	0.100	0.150	0.150	0.150	0.250	0.250
65	0.000	0.250	0.250	0.250	0.250	0.250	0.370
66	0.000	0.300	0.250	0.250	0.250	0.250	0.250
67	0.000	0.150	0.250	0.250	0.250	0.250	0.250
68	0.000	0.150	0.250	0.250	0.250	0.250	0.250
69	0.000	0.275	0.250	0.250	0.250	0.250	0.250
70	0.000	0.275	0.250	0.250	0.250	0.250	0.250
71	0.000	0.275	0.250	0.250	0.250	0.250	0.250
72	0.000	0.275	0.250	0.250	0.250	0.250	0.250
73	0.000	0.275	0.250	0.250	0.250	0.250	0.250
74	0.000	0.275	0.250	0.250	0.250	0.250	0.250
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Top 10 non-LEO Retirement Rates, Plan 1 Female with 55/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	>=31
<=49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.035	0.035	0.035	0.035
51	0.000	0.000	0.000	0.035	0.050	0.050	0.050
52	0.000	0.000	0.000	0.035	0.050	0.050	0.050
53	0.000	0.000	0.000	0.035	0.050	0.050	0.050
54	0.000	0.000	0.000	0.045	0.050	0.050	0.050
55	0.000	0.045	0.045	0.045	0.050	0.220	0.220
56	0.000	0.105	0.050	0.050	0.050	0.130	0.160
57	0.000	0.105	0.050	0.050	0.050	0.090	0.160
58	0.000	0.105	0.050	0.050	0.050	0.165	0.160
59	0.000	0.105	0.060	0.060	0.060	0.200	0.160
60	0.000	0.105	0.075	0.075	0.075	0.140	0.160
61	0.000	0.105	0.100	0.100	0.100	0.140	0.160
62	0.000	0.105	0.140	0.140	0.140	0.345	0.275
63	0.000	0.105	0.135	0.135	0.135	0.240	0.275
64	0.000	0.105	0.170	0.170	0.170	0.100	0.180
65	0.000	0.250	0.250	0.250	0.250	0.250	0.275
66	0.000	0.200	0.275	0.275	0.275	0.275	0.275
67	0.000	0.150	0.275	0.275	0.275	0.275	0.275
68	0.000	0.150	0.275	0.275	0.275	0.275	0.275
69	0.000	0.150	0.275	0.275	0.275	0.275	0.275
70	0.000	0.150	0.275	0.275	0.275	0.275	0.275
71	0.000	0.150	0.275	0.275	0.275	0.275	0.275
72	0.000	0.150	0.275	0.275	0.275	0.275	0.275
73	0.000	0.150	0.275	0.275	0.275	0.275	0.275
74	0.000	0.150	0.275	0.275	0.275	0.275	0.275
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 2 and the Hybrid Plan.

Top 10 non-LEO Retirement Rates, Plan 2/Hybrid Male																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.100	0.100	0.100
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.100	0.100	0.100	0.100
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.125	0.125	0.125	0.125	0.125
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.125	0.125	0.125	0.125	0.125	0.125
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.090	0.090	0.090	0.090	0.090	0.090	0.090
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140
60	0.000	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140
61	0.000	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.140
62	0.000	0.100	0.140	0.140	0.140	0.250	0.250	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
63	0.000	0.100	0.115	0.115	0.250	0.250	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170
64	0.000	0.100	0.150	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
65	0.000	0.250	0.250	0.250	0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.370
66	0.000	0.300	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
67	0.000	0.150	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
68	0.000	0.150	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
69	0.000	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
70	0.000	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
71	0.000	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
72	0.000	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
73	0.000	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
74	0.000	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Top 10 non-LEO Retirement Rates, Plan 2/Hybrid Female																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.160
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.110
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.085
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175	0.175	0.085	0.085
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075	0.075	0.085	0.085	0.085
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220	0.220	0.160	0.160	0.160	0.160
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.130	0.130	0.160	0.160	0.160	0.160	0.160
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.090	0.160	0.160	0.160	0.160	0.160	0.160
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.165	0.165	0.160	0.160	0.160	0.160	0.160	0.160	0.160
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.200	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160
60	0.000	0.105	0.105	0.105	0.105	0.105	0.105	0.140	0.140	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160
61	0.000	0.105	0.100	0.100	0.100	0.100	0.140	0.140	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160
62	0.000	0.105	0.140	0.140	0.140	0.345	0.345	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
63	0.000	0.105	0.135	0.135	0.240	0.240	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
64	0.000	0.105	0.170	0.100	0.100	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180
65	0.000	0.250	0.250	0.250	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
66	0.000	0.200	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
67	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
68	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
69	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
70	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
71	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
72	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
73	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
74	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 20% of disability cases are assumed to be service related.

Top 10 non-LEO Disability Rates		
Age	Male	Female
20	0.00005	0.00001
25	0.00005	0.00005
30	0.00007	0.00023
35	0.00050	0.00062
40	0.00139	0.00134
45	0.00252	0.00229
50	0.00384	0.00330
55	0.00591	0.00442
60	0.00808	0.00530
65	0.00942	0.00546
70	0.01022	0.00546



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

Top 10 non-LEO Termination Rates, Male											
Age	Years of Service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.25392	0.22206	0.20116	0.18762	0.17764	0.15808	0.12342	0.09285	0.08232	0.06883	0.06883
25	0.23300	0.20505	0.18626	0.17319	0.16251	0.14426	0.11711	0.09285	0.08232	0.06883	0.06883
30	0.20800	0.18397	0.16688	0.15379	0.14187	0.12620	0.10926	0.09285	0.08232	0.06883	0.06883
35	0.19131	0.16822	0.15078	0.13689	0.12397	0.11188	0.10157	0.09215	0.08232	0.06883	0.05224
40	0.17894	0.15565	0.13702	0.12181	0.10776	0.09960	0.09363	0.08862	0.08132	0.06779	0.04307
45	0.16933	0.14546	0.12562	0.10920	0.09444	0.08921	0.08524	0.08181	0.07546	0.06301	0.03941
50	0.16162	0.13610	0.11524	0.09886	0.08586	0.08049	0.07627	0.07170	0.06439	0.05476	0.03941
55	0.15609	0.12538	0.10330	0.08976	0.08448	0.07339	0.06690	0.05864	0.04833	0.04320	0.03941
60	0.15353	0.11112	0.08689	0.08055	0.08055	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.15343	0.09244	0.06477	0.06477	0.06477	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.15343	0.06515	0.03176	0.03176	0.03176	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Top 10 non-LEO Termination Rates, Female											
Age	Years of Service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.23553	0.21693	0.20665	0.20440	0.20440	0.20440	0.19895	0.17588	0.14347	0.14347	0.14347
25	0.22847	0.20860	0.19802	0.19425	0.19257	0.18886	0.17958	0.15784	0.13041	0.13041	0.13041
30	0.22192	0.19894	0.18647	0.17978	0.17463	0.16606	0.15276	0.13313	0.11268	0.10449	0.10449
35	0.21392	0.18767	0.17208	0.16238	0.15439	0.14424	0.13001	0.11315	0.09792	0.08502	0.07338
40	0.20339	0.17376	0.15476	0.14236	0.13212	0.12260	0.10939	0.09565	0.08451	0.07002	0.04165
45	0.19067	0.15747	0.13540	0.12135	0.11040	0.10262	0.09177	0.08099	0.07250	0.06008	0.03671
50	0.17898	0.14101	0.11606	0.10164	0.09263	0.08548	0.07824	0.07059	0.06260	0.05556	0.03671
55	0.17295	0.12753	0.09920	0.08541	0.08214	0.07159	0.06952	0.06590	0.05564	0.05536	0.03671
60	0.17275	0.11948	0.08699	0.07432	0.07432	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.17275	0.11784	0.08108	0.06923	0.06923	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.17275	0.11784	0.08083	0.06904	0.06904	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following total salary increase rates are used. The total salary increase rate consists of an inflation rate of 2.50%, a productivity component of 1.00%, and a variable merit component that is dependent on years of service.

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	5.35%
2	5.35
3	4.75
4	4.45
5	4.45
6	4.45
7	4.35
8	4.25
9	4.00
10	4.00
11-19	3.65
20 or more	3.50

EMPLOYER CONTRIBUTION TO DEFINED CONTRIBUTION HYBRID PLAN: The valuation assumes an average employer defined contribution rate for members in the Hybrid Plan. This is reported by VRS each valuation.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

LOCALS – NON-TOP 10, NON-LEO

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates

Non-Top 10 non-LEO Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00038	0.00050	0.00923	0.00017	0.00016	0.00274
25	0.00045	0.00044	0.00850	0.00018	0.00017	0.00293
30	0.00042	0.00048	0.00902	0.00023	0.00021	0.00369
35	0.00049	0.00056	0.01042	0.00030	0.00028	0.00484
40	0.00059	0.00078	0.01372	0.00041	0.00039	0.00670
45	0.00091	0.00133	0.01991	0.00068	0.00065	0.01111
50	0.00157	0.00495	0.02336	0.00114	0.00272	0.01462
55	0.00260	0.00667	0.02637	0.00171	0.00352	0.01756
60	0.00427	0.00894	0.02950	0.00241	0.00489	0.02001
65	0.00731	0.01285	0.03501	0.00361	0.00749	0.02425
70	0.01202	0.02021	0.04538	0.00616	0.01209	0.03279
75	0.02012	0.03312	0.06223	0.01052	0.02067	0.04772
80		0.05662	0.08955		0.03616	0.07096
85		0.10039	0.13529		0.06599	0.10513
90		0.17537	0.21057		0.12354	0.15517

20% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 1.

Non-Top 10 non-LEO Retirement Rates, Plan 1 Male with 50/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	≥31
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.050	0.050	0.100	0.100
51	0.000	0.000	0.000	0.055	0.040	0.100	0.080
52	0.000	0.000	0.000	0.055	0.040	0.100	0.080
53	0.000	0.000	0.000	0.055	0.040	0.100	0.080
54	0.000	0.000	0.000	0.055	0.040	0.100	0.100
55	0.000	0.055	0.055	0.055	0.050	0.140	0.100
56	0.000	0.055	0.050	0.050	0.050	0.140	0.100
57	0.000	0.090	0.055	0.055	0.055	0.110	0.100
58	0.000	0.090	0.055	0.055	0.055	0.110	0.100
59	0.000	0.100	0.055	0.055	0.055	0.120	0.100
60	0.000	0.100	0.060	0.060	0.060	0.120	0.100
61	0.000	0.150	0.100	0.100	0.100	0.250	0.220
62	0.000	0.130	0.170	0.170	0.170	0.350	0.300
63	0.000	0.130	0.150	0.150	0.150	0.200	0.250
64	0.000	0.200	0.150	0.150	0.150	0.270	0.250
65	0.000	0.270	0.270	0.270	0.270	0.270	0.300
66	0.000	0.270	0.300	0.300	0.300	0.300	0.300
67	0.000	0.270	0.250	0.250	0.250	0.250	0.250
68	0.000	0.270	0.250	0.250	0.250	0.250	0.250
69	0.000	0.270	0.250	0.250	0.250	0.250	0.250
70	0.000	0.270	0.250	0.250	0.250	0.250	0.250
71	0.000	0.270	0.250	0.250	0.250	0.250	0.250
72	0.000	0.270	0.250	0.250	0.250	0.250	0.250
73	0.000	0.270	0.250	0.250	0.250	0.250	0.250
74	0.000	0.270	0.250	0.250	0.250	0.250	0.250
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Non-Top 10 non-LEO Retirement Rates, Plan 1 Female with 50/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	>=31
<=49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.055	0.055	0.060	0.060
51	0.000	0.000	0.000	0.055	0.040	0.060	0.100
52	0.000	0.000	0.000	0.055	0.045	0.060	0.100
53	0.000	0.000	0.000	0.055	0.045	0.120	0.100
54	0.000	0.000	0.000	0.055	0.045	0.120	0.100
55	0.000	0.070	0.070	0.070	0.055	0.120	0.100
56	0.000	0.060	0.055	0.055	0.055	0.120	0.100
57	0.000	0.060	0.055	0.055	0.055	0.100	0.100
58	0.000	0.060	0.055	0.055	0.055	0.100	0.100
59	0.000	0.060	0.055	0.055	0.055	0.150	0.100
60	0.000	0.085	0.075	0.075	0.075	0.150	0.100
61	0.000	0.085	0.075	0.075	0.075	0.200	0.175
62	0.000	0.190	0.170	0.170	0.170	0.200	0.250
63	0.000	0.110	0.150	0.150	0.150	0.200	0.250
64	0.000	0.110	0.150	0.150	0.150	0.250	0.150
65	0.000	0.280	0.280	0.280	0.280	0.280	0.350
66	0.000	0.280	0.300	0.300	0.300	0.300	0.300
67	0.000	0.175	0.220	0.220	0.220	0.220	0.220
68	0.000	0.175	0.220	0.220	0.220	0.220	0.220
69	0.000	0.300	0.220	0.220	0.220	0.220	0.220
70	0.000	0.300	0.220	0.220	0.220	0.220	0.220
71	0.000	0.300	0.220	0.220	0.220	0.220	0.220
72	0.000	0.300	0.220	0.220	0.220	0.220	0.220
73	0.000	0.300	0.220	0.220	0.220	0.220	0.220
74	0.000	0.300	0.220	0.220	0.220	0.220	0.220
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Non-Top 10 non-LEO Retirement Rates, Plan 1 Male with 55/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	>=31
<=49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.050	0.050	0.050	0.050
51	0.000	0.000	0.000	0.055	0.040	0.040	0.040
52	0.000	0.000	0.000	0.055	0.040	0.040	0.040
53	0.000	0.000	0.000	0.055	0.040	0.040	0.040
54	0.000	0.000	0.000	0.055	0.040	0.040	0.040
55	0.000	0.055	0.055	0.055	0.050	0.140	0.140
56	0.000	0.055	0.050	0.050	0.050	0.140	0.100
57	0.000	0.090	0.055	0.055	0.055	0.110	0.100
58	0.000	0.090	0.055	0.055	0.055	0.110	0.100
59	0.000	0.100	0.055	0.055	0.055	0.120	0.100
60	0.000	0.100	0.060	0.060	0.060	0.120	0.100
61	0.000	0.150	0.100	0.100	0.100	0.250	0.220
62	0.000	0.130	0.170	0.170	0.170	0.350	0.300
63	0.000	0.130	0.150	0.150	0.150	0.200	0.250
64	0.000	0.200	0.150	0.150	0.150	0.270	0.250
65	0.000	0.270	0.270	0.270	0.270	0.270	0.300
66	0.000	0.270	0.300	0.300	0.300	0.300	0.300
67	0.000	0.270	0.250	0.250	0.250	0.250	0.250
68	0.000	0.270	0.250	0.250	0.250	0.250	0.250
69	0.000	0.270	0.250	0.250	0.250	0.250	0.250
70	0.000	0.270	0.250	0.250	0.250	0.250	0.250
71	0.000	0.270	0.250	0.250	0.250	0.250	0.250
72	0.000	0.270	0.250	0.250	0.250	0.250	0.250
73	0.000	0.270	0.250	0.250	0.250	0.250	0.250
74	0.000	0.270	0.250	0.250	0.250	0.250	0.250
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Non-Top 10 non-LEO Retirement Rates, Plan 1 Female with 55/30 eligibility							
Age	Years of service						
	0-4	5	6-9	10	11-29	30	>=31
<=49	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.055	0.055	0.055	0.055
51	0.000	0.000	0.000	0.055	0.040	0.040	0.040
52	0.000	0.000	0.000	0.055	0.045	0.045	0.045
53	0.000	0.000	0.000	0.055	0.045	0.045	0.045
54	0.000	0.000	0.000	0.055	0.045	0.045	0.045
55	0.000	0.070	0.070	0.070	0.055	0.120	0.120
56	0.000	0.060	0.055	0.055	0.055	0.120	0.100
57	0.000	0.060	0.055	0.055	0.055	0.100	0.100
58	0.000	0.060	0.055	0.055	0.055	0.100	0.100
59	0.000	0.060	0.055	0.055	0.055	0.150	0.100
60	0.000	0.085	0.075	0.075	0.075	0.150	0.100
61	0.000	0.085	0.075	0.075	0.075	0.200	0.175
62	0.000	0.190	0.170	0.170	0.170	0.200	0.250
63	0.000	0.110	0.150	0.150	0.150	0.200	0.250
64	0.000	0.110	0.150	0.150	0.150	0.250	0.150
65	0.000	0.280	0.280	0.280	0.280	0.280	0.350
66	0.000	0.280	0.300	0.300	0.300	0.300	0.300
67	0.000	0.175	0.220	0.220	0.220	0.220	0.220
68	0.000	0.175	0.220	0.220	0.220	0.220	0.220
69	0.000	0.300	0.220	0.220	0.220	0.220	0.220
70	0.000	0.300	0.220	0.220	0.220	0.220	0.220
71	0.000	0.300	0.220	0.220	0.220	0.220	0.220
72	0.000	0.300	0.220	0.220	0.220	0.220	0.220
73	0.000	0.300	0.220	0.220	0.220	0.220	0.220
74	0.000	0.300	0.220	0.220	0.220	0.220	0.220
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire from Plan 2 and the Hybrid Plan.

Non-Top 10 non-LEO Retirement Rates, Plan 2/Hybrid Male																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
≤49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.080
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.080	0.080
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.100	0.100	0.100
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.140	0.140	0.100	0.100	0.100	0.100
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.140	0.140	0.100	0.100	0.100	0.100	0.100
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.110	0.100	0.100	0.100	0.100	0.100	0.100
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.110	0.100	0.100	0.100	0.100	0.100	0.100	0.100
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
60	0.000	0.100	0.100	0.100	0.100	0.100	0.100	0.120	0.120	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
61	0.000	0.150	0.100	0.100	0.100	0.100	0.250	0.250	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
62	0.000	0.130	0.170	0.170	0.170	0.350	0.350	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
63	0.000	0.130	0.150	0.150	0.200	0.200	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
64	0.000	0.200	0.150	0.270	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
65	0.000	0.270	0.270	0.270	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
66	0.000	0.270	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
67	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
68	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
69	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
70	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
71	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
72	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
73	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
74	0.000	0.270	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Non-Top 10 non-LEO Retirement Rates, Plan 2/Hybrid Female																		
Age	Years of service																	
	0-4	5	6-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	≥40
≤49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060	0.060
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060	0.060	0.100
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.100	0.100
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.100	0.100	0.100
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.100	0.100	0.100	0.100
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.100	0.100	0.100	0.100	0.100
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.150	0.150	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
60	0.000	0.085	0.085	0.085	0.085	0.085	0.085	0.150	0.150	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
61	0.000	0.085	0.075	0.075	0.075	0.075	0.200	0.200	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
62	0.000	0.190	0.170	0.170	0.170	0.200	0.200	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
63	0.000	0.110	0.150	0.150	0.200	0.200	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
64	0.000	0.110	0.150	0.250	0.250	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
65	0.000	0.280	0.280	0.280	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
66	0.000	0.280	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
67	0.000	0.175	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
68	0.000	0.175	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
69	0.000	0.300	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
70	0.000	0.300	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
71	0.000	0.300	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
72	0.000	0.300	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
73	0.000	0.300	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
74	0.000	0.300	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.220
≥75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 25% of disability cases are assumed to be service related.

Non-Top 10 non-LEO Disability Rates		
Age	Male	Female
20	0.00005	0.00001
25	0.00009	0.00001
30	0.00022	0.00001
35	0.00052	0.00024
40	0.00130	0.00058
45	0.00271	0.00127
50	0.00429	0.00274
55	0.00585	0.00483
60	0.00656	0.00640
65	0.00656	0.00656
70	0.00656	0.00656



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

Non-Top 10 non-LEO Termination Rates, Male											
Age	Years of Service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.27688	0.25244	0.22872	0.20056	0.16855	0.14057	0.12603	0.11320	0.10411	0.10411	0.10411
25	0.25057	0.23024	0.20925	0.18373	0.15688	0.13361	0.11957	0.10835	0.09992	0.09992	0.09992
30	0.22157	0.20258	0.18350	0.16156	0.14147	0.12425	0.11142	0.10236	0.09459	0.08978	0.08978
35	0.20650	0.18223	0.16214	0.14313	0.12751	0.11426	0.10347	0.09571	0.08813	0.07795	0.06549
40	0.19553	0.16457	0.14299	0.12680	0.11490	0.10504	0.09615	0.08848	0.08079	0.06770	0.04626
45	0.18397	0.14896	0.12718	0.11399	0.10572	0.09878	0.09085	0.08205	0.07363	0.06227	0.04626
50	0.17144	0.13660	0.12001	0.10648	0.10447	0.09747	0.08930	0.08111	0.06806	0.06227	0.04626
55	0.16068	0.12967	0.12001	0.10500	0.10447	0.09747	0.08930	0.08111	0.06486	0.06227	0.04626
60	0.15449	0.12875	0.12001	0.10500	0.10447	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.15356	0.12875	0.12001	0.10500	0.10447	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.15356	0.12875	0.12001	0.10500	0.10447	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Non-Top 10 non-LEO Termination Rates, Female											
Age	Years of Service										
	0	1	2	3	4	5	6	7	8	9	≥10
20	0.30069	0.27981	0.24957	0.21230	0.17722	0.15634	0.13998	0.12034	0.10656	0.10656	0.10656
25	0.27370	0.25711	0.23395	0.20379	0.17488	0.15451	0.13809	0.12034	0.10656	0.10642	0.10642
30	0.24251	0.22690	0.21116	0.19063	0.17074	0.15276	0.13578	0.12002	0.10656	0.09928	0.09928
35	0.22330	0.20208	0.18736	0.17235	0.15849	0.14347	0.12837	0.11557	0.10447	0.09116	0.07607
40	0.20843	0.18156	0.16471	0.15164	0.14138	0.13004	0.11766	0.10682	0.09812	0.08252	0.05323
45	0.19506	0.16555	0.14581	0.13206	0.12281	0.11551	0.10655	0.09714	0.08999	0.07643	0.05323
50	0.18178	0.15325	0.13203	0.11702	0.10714	0.10278	0.09905	0.09359	0.08483	0.07560	0.05323
55	0.16934	0.14490	0.12446	0.10933	0.10007	0.09284	0.09284	0.09284	0.08445	0.07560	0.05323
60	0.16029	0.14080	0.12292	0.10875	0.10007	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.15628	0.14008	0.12292	0.10875	0.10007	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.15619	0.14008	0.12292	0.10875	0.10007	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following total salary increase rates are used. The total salary increase rate consists of an inflation rate of 2.50%, a productivity component of 1.00%, and a variable merit component that is dependent on years of service.

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	5.35%
2	5.35
3	4.75
4	4.45
5	4.45
6	4.45
7	4.35
8	4.25
9	4.00
10	4.00
11-19	3.65
20 or more	3.50

EMPLOYER CONTRIBUTION TO DEFINED CONTRIBUTION HYBRID PLAN: The valuation assumes an average employer defined contribution rate for members in the Hybrid Plan. This is reported by VRS each valuation.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

LOCALS – TOP 10, LEO

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year, 1% increase compounded from ages 70 to 90; females set forward 3 years

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male

Top 10 LEO Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00036	0.00044	0.00839	0.00016	0.00016	0.00839
25	0.00043	0.00045	0.00772	0.00018	0.00019	0.00772
30	0.00040	0.00046	0.00820	0.00023	0.00025	0.00820
35	0.00046	0.00053	0.00948	0.00030	0.00033	0.00948
40	0.00056	0.00066	0.01247	0.00043	0.00052	0.01247
45	0.00086	0.00107	0.01810	0.00072	0.00089	0.01810
50	0.00149	0.00431	0.02124	0.00118	0.00317	0.02124
55	0.00246	0.00599	0.02397	0.00174	0.00423	0.02397
60	0.00405	0.00789	0.02682	0.00247	0.00625	0.02682
65	0.00693	0.01102	0.03182	0.00383	0.00989	0.03182
70	0.01139	0.01694	0.04125	0.00653	0.01601	0.04125
75		0.02871	0.05658		0.02631	0.05658
80		0.05074	0.08141		0.04493	0.08141
85		0.09286	0.12299		0.07928	0.12299
90		0.17558	0.19143		0.14077	0.19143

70% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire.

Top 10 LEO Retirement Rates, Male					
Age	Years of service				
	0-4	5	6-24	25	>=26
<=49	0.000	0.000	0.000	0.000	0.000
50	0.000	0.070	0.070	0.260	0.260
51	0.000	0.070	0.060	0.150	0.205
52	0.000	0.070	0.060	0.150	0.205
53	0.000	0.070	0.060	0.150	0.205
54	0.000	0.070	0.060	0.150	0.205
55	0.000	0.070	0.060	0.150	0.205
56	0.000	0.070	0.060	0.210	0.205
57	0.000	0.070	0.060	0.210	0.205
58	0.000	0.070	0.060	0.210	0.205
59	0.000	0.070	0.125	0.320	0.275
60	0.000	0.210	0.210	0.210	0.275
61	0.000	0.375	0.275	0.275	0.275
62	0.000	0.500	0.320	0.320	0.320
63	0.000	0.500	0.320	0.320	0.320
64	0.000	0.500	0.400	0.400	0.400
>=65	0.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Top 10 LEO Retirement Rates, Female					
Age	Years of service				
	0-4	5	6-24	25	>=26
<=49	0.000	0.000	0.000	0.000	0.000
50	0.000	0.050	0.050	0.320	0.320
51	0.000	0.050	0.088	0.250	0.200
52	0.000	0.050	0.075	0.250	0.200
53	0.000	0.050	0.075	0.250	0.275
54	0.000	0.050	0.075	0.250	0.275
55	0.000	0.050	0.075	0.250	0.210
56	0.000	0.050	0.140	0.250	0.210
57	0.000	0.050	0.140	0.250	0.210
58	0.000	0.050	0.140	0.250	0.210
59	0.000	0.050	0.140	0.250	0.400
60	0.000	0.200	0.200	0.200	0.400
61	0.000	0.200	0.200	0.200	0.200
62	0.000	0.200	0.350	0.350	0.350
63	0.000	0.200	0.300	0.300	0.300
64	0.000	0.200	0.300	0.300	0.300
>=65	0.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 70% of disability cases are assumed to be service related.

Top 10 LEO Disability Rates		
Age	Male	Female
20	0.00019	0.00012
25	0.00022	0.00248
30	0.00052	0.00558
35	0.00133	0.00705
40	0.00267	0.00794
45	0.00405	0.00906
50	0.00500	0.01090
55	0.00657	0.01376
60	0.01055	0.01788
65	0.01786	0.02327
70	0.03085	0.03105

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

Top 10 LEO Termination Rates		
Service	Male	Female
0	0.10000	0.15000
1	0.08500	0.09000
2	0.08000	0.09000
3	0.07500	0.09000
4	0.05500	0.09000
5	0.05000	0.09000
6	0.04750	0.09000
7	0.04500	0.06000
8	0.04000	0.03500
9	0.03000	0.02000
>=10	0.01800	0.02000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following salary increase rates are used. Inflation rate of 2.50% plus productivity component of 1.00% plus step-rate/promotional component as shown:

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	4.75%
2	4.75
3	4.75
4	4.75
5	4.65
6	4.40
7	4.40
8	4.40
9	4.40
10 - 19	4.00
20 or more	3.50



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

LOCALS – NON-TOP 10, LEO

Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year, 1% increase compounded from ages 70 to 90; females set forward 3 years

Post-Disablement:

RP-2014 Disabled Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male

Non-Top 10 LEO Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00036	0.00044	0.00839	0.00016	0.00016	0.00839
25	0.00043	0.00045	0.00772	0.00018	0.00019	0.00772
30	0.00040	0.00046	0.00820	0.00023	0.00025	0.00820
35	0.00046	0.00053	0.00948	0.00030	0.00033	0.00948
40	0.00056	0.00066	0.01247	0.00043	0.00052	0.01247
45	0.00086	0.00107	0.01810	0.00072	0.00089	0.01810
50	0.00149	0.00431	0.02124	0.00118	0.00317	0.02124
55	0.00246	0.00599	0.02397	0.00174	0.00423	0.02397
60	0.00405	0.00789	0.02682	0.00247	0.00625	0.02682
65	0.00693	0.01102	0.03182	0.00383	0.00989	0.03182
70	0.01139	0.01694	0.04125	0.00653	0.01601	0.04125
75		0.02871	0.05658		0.02631	0.05658
80		0.05074	0.08141		0.04493	0.08141
85		0.09286	0.12299		0.07928	0.12299
90		0.17558	0.19143		0.14077	0.19143

45% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale BB.



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

RETIREMENT RATES: The following rates of retirement are assumed for members eligible to retire.

Non-Top 10 LEO Retirement Rates, Male					
Age	Years of service				
	0-4	5	6-24	25	>=26
<=49	0.000	0.000	0.000	0.000	0.000
50	0.000	0.090	0.090	0.275	0.275
51	0.000	0.090	0.075	0.275	0.150
52	0.000	0.090	0.075	0.200	0.150
53	0.000	0.090	0.075	0.200	0.150
54	0.000	0.090	0.075	0.200	0.150
55	0.000	0.090	0.075	0.200	0.180
56	0.000	0.090	0.075	0.200	0.165
57	0.000	0.090	0.075	0.200	0.165
58	0.000	0.090	0.080	0.200	0.165
59	0.000	0.090	0.120	0.200	0.240
60	0.000	0.150	0.150	0.150	0.275
61	0.000	0.150	0.275	0.275	0.275
62	0.000	0.150	0.275	0.275	0.275
63	0.000	0.250	0.300	0.300	0.300
64	0.000	0.200	0.300	0.300	0.300
>=65	0.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

Non-Top 10 LEO Retirement Rates, Female					
Age	Years of service				
	0-4	5	6-24	25	>=26
<=49	0.000	0.000	0.000	0.000	0.000
50	0.000	0.093	0.093	0.500	0.500
51	0.000	0.125	0.090	0.200	0.150
52	0.000	0.125	0.090	0.200	0.150
53	0.000	0.125	0.090	0.200	0.150
54	0.000	0.125	0.090	0.200	0.150
55	0.000	0.125	0.090	0.200	0.180
56	0.000	0.125	0.090	0.200	0.165
57	0.000	0.125	0.090	0.200	0.165
58	0.000	0.125	0.090	0.200	0.165
59	0.000	0.125	0.090	0.200	0.240
60	0.000	0.200	0.200	0.200	0.275
61	0.000	0.200	0.275	0.275	0.275
62	0.000	0.200	0.275	0.275	0.275
63	0.000	0.200	0.300	0.300	0.300
64	0.000	0.200	0.300	0.300	0.300
>=65	0.000	1.000	1.000	1.000	1.000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

DISABILITY RATES: As shown below for selected ages. 45% of disability cases are assumed to be service related.

Non-Top 10 LEO Disability Rates		
Age	Male	Female
20	0.00001	0.00005
25	0.00016	0.00067
30	0.00058	0.00157
35	0.00121	0.00189
40	0.00218	0.00201
45	0.00330	0.00244
50	0.00416	0.00413
55	0.00496	0.00831
60	0.00575	0.01605
65	0.00630	0.02747
70	0.00659	0.04509



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

TERMINATION RATES: The following are sample withdrawal rates based on age and years of service (for causes other than death, disability, or retirement).

Non-Top 10 LEO Termination Rates, Male											
Age	Years of Service										
	0	1	2	3	4	5	6	7	8	9	>=10
20	0.16820	0.15769	0.15265	0.14807	0.13578	0.11182	0.08845	0.07768	0.06899	0.06899	0.06899
25	0.16006	0.14519	0.13807	0.13247	0.12169	0.10519	0.08845	0.07768	0.06899	0.06899	0.06899
30	0.15408	0.13212	0.12044	0.11255	0.10382	0.09687	0.08803	0.07768	0.06849	0.06237	0.05800
35	0.15310	0.12574	0.10924	0.09896	0.09156	0.08897	0.08437	0.07640	0.06609	0.05433	0.04189
40	0.15357	0.12180	0.10118	0.08908	0.08281	0.08025	0.07719	0.07142	0.06199	0.04868	0.03220
45	0.15275	0.11790	0.09478	0.08223	0.07802	0.07022	0.06634	0.06269	0.05626	0.04561	0.03022
50	0.14879	0.11257	0.08908	0.07811	0.07733	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
55	0.14065	0.10547	0.08414	0.07694	0.07694	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
60	0.12791	0.09675	0.08028	0.07694	0.07694	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.11088	0.08665	0.07763	0.07694	0.07694	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.08616	0.07353	0.07353	0.07353	0.07353	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Non-Top 10 LEO Termination Rates, Female											
Age	Years of Service										
	0	1	2	3	4	5	6	7	8	9	>=10
20	0.17536	0.15011	0.12899	0.11652	0.11390	0.11329	0.11233	0.09556	0.06591	0.05831	0.05831
25	0.18762	0.15474	0.13049	0.11598	0.11001	0.10648	0.10224	0.08766	0.06591	0.05831	0.05831
30	0.20549	0.16296	0.13433	0.11683	0.10644	0.09874	0.09030	0.07873	0.06591	0.05831	0.05762
35	0.20886	0.16395	0.13402	0.11544	0.10335	0.09327	0.08334	0.07404	0.06591	0.05831	0.05043
40	0.20126	0.15881	0.13026	0.11258	0.10087	0.08968	0.08014	0.07253	0.06591	0.05763	0.04252
45	0.18253	0.14688	0.12276	0.10843	0.09904	0.08818	0.07992	0.07253	0.06587	0.05314	0.03443
50	0.15288	0.12797	0.11154	0.10319	0.09757	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
55	0.11234	0.10212	0.09680	0.09680	0.09599	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
60	0.06089	0.06935	0.06935	0.06935	0.06935	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
65	0.01269	0.03040	0.03040	0.03040	0.03040	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
70	0.01269	0.01185	0.01185	0.01185	0.01185	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000



Schedule D – Outline of Actuarial Assumptions and Methods (continued)

SALARY INCREASE RATES: The following salary increase rates are used. Inflation rate of 2.50% plus productivity component of 1.00% plus step-rate/promotional component as shown:

Pay Increase Assumption	
Years of Service	Total Increase (Next Year)
1	4.75%
2	4.75
3	4.75
4	4.75
5	4.65
6	4.40
7	4.40
8	4.40
9	4.40
10 - 19	4.00
20 or more	3.50



Schedule E – Actuarial Cost Method

The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable upon death after retirement or disability. The calculations are based on the member's age, years of service, gender, and an assumed future interest earnings rate (currently 6.75%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service or disability benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members.

The employer contributions required to support the benefits of each OPEB Plan are determined following a level funding approach and consist of a normal contribution and an accrued liability contribution.

The normal contribution is determined using the "entry age normal" method (EAN). Under this method, a calculation is made for postemployment benefits to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his anticipated covered service, would be required to meet the cost of all benefits payable on a member's behalf. Administrative expenses are included in the normal contribution.

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 expected benefits to be paid from each OPEB Plan. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes

SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

This schedule summarizes the major retirement benefit provisions of VRS included in the valuations. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Benefit Provisions which apply to all VRS Plans

Plan Year:	Twelve-month period ending June 30th.
Administration:	All plans are administered by the Board of Trustees of the Virginia Retirement System.
Plan 1:	Members hired prior to July 1, 2010 and who were vested as of January 1, 2013.
Plan 2:	Members hired on or after July 1, 2010, or members hired prior to July 1, 2010 and who were not vested as of January 1, 2013. Members hired after January 1, 2014 in the State Police and Virginia Law Officers Plans are in Plan 2.
Hybrid:	Members hired on or after January 1, 2014 or by member election. There is no Hybrid Plan in the State Police and Virginia Law Officers Plans.
Eligibility:	All full-time, salaried, permanent employees of the Commonwealth of Virginia or of any participating Virginia city, county, town, or political subdivision or of any local Virginia school boards are eligible to become members of VRS. This summary covers the provisions relating to state employees.



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

GROUP LIFE INSURANCE PROGRAM

The Group Life Insurance Program is administered by the Board of Trustees for the Virginia Retirement System (VRS). Contributions received are held in trust. Premiums for active employees are paid to Securian which in turn pays the life insurance proceeds to the beneficiaries. Payments for postemployment benefits are made by Securian and reimbursed by the Trust. The Board sets administrative policy and determines the allocation of the assets held for investment.

The following persons are eligible to participate in the Group Life Insurance Program: Teachers, State Employees, State Police (SPORS), Judicial Employees (JRS), Virginia Law Officers (VaLORS) and those VRS members receiving long-term disability benefits from the Virginia Sickness and Disability Program (VSDP), the Virginia Local Disability Program (VLDP), or, if the employer opted-out of VLDP during the election period, a comparable plan. In addition, local political subdivisions may elect coverage. Substantially all local units covered by VRS have elected coverage in the Group Life Insurance Program, as have other political subdivisions not providing VRS pension benefits. Also, certain members of the Optional Retirement Plan (ORP) have life insurance coverage. Although certain members who were employed at the time of initial coverage under the Group Life Insurance Program may decline coverage, substantially all full-time, permanent employees participate.

Each active member is entitled to a death benefit from this plan equal to two times the member's annual rate of compensation, rounded up to the next higher multiple of \$1,000. This benefit is provided for by the purchase of a group term life insurance contract from an insurance company. Active members may also be covered by Accidental Death and Dismemberment insurance, and they may elect additional amounts of insurance. These benefits are excluded from this valuation.

Each service retiree will be entitled to a death benefit from this plan equal to the amount in effect immediately before his/her termination or retirement, reduced by 25% on January 1 of the first full year following the date the employee is separated from service and each year thereafter. In no event will the death benefit be less than 25% of the amount in effect at the date of termination or retirement or \$8,000 for members who retire with at least 30 years of creditable service, effective as of 2015 (the \$8,000 is increased by the same percentage as any annual post-retirement supplement for retirees, as calculated for employees hired on or after July 1, 2010).

Each disabled member, including those receiving benefits from VSDP or VLDP, will be entitled to a death benefit from this plan, similar to the service retiree benefit, except the 25% per year reduction does not begin until the member reaches Normal Retirement Age, or the retirement date, if later. Members participating in VLDP (or a comparable plan) and State, VaLORS, and SPORS members participating in VSDP and hired on or after July 1, 2009 need at least one year of service before the member is eligible for a non-service related life insurance benefit from the Plan. The postemployment death benefit is paid for by an addition to the contribution required to provide the active member benefit. While the active member portion of the contribution is used to purchase group term life insurance from an insurance company, the postemployment portion of the contribution is held in a trust until required to pay benefits. The postemployment contribution is actuarially determined by this valuation.



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

HEALTH INSURANCE CREDIT PROGRAM

If an eligible employee has worked for more than one employer in VRS, for the purpose of this valuation, their most current (or last) employer providing HIC benefits assumes full liability for that employee.

STATE EMPLOYEES (State, SPORS, JRS, VaLORS, ORP, and UVA)

The Commonwealth shall provide a credit toward the cost of health insurance coverage for any former state employee who retired under the Virginia Retirement System (State), State Police Officers' Retirement System (SPORS), Judicial Retirement System (JRS), or Virginia Law Officers' Retirement System (VaLORS) and who rendered at least 15 years of total creditable service under the Retirement System or rendered service as a temporary employee of the General Assembly in 1972 and became a member of the retirement system from 1972 to 1985 immediately following such temporary service. The amount of each monthly health insurance credit shall be \$4 per year of creditable service, which shall be credited monthly to any retired employee participating in the Health Insurance Credit Program. However, such credit shall not exceed a beneficiary's qualified medical expenses.

An employee who retired under an Optional Retirement Plan (ORP) or the University of Virginia (UVA) may qualify for the health insurance credit if the retiree has at least 15 years of coverage under the ORP, UVA, or a combination of VRS service credit and ORP or UVA coverage equal to at least 15 years.

Disabled State retirees and Virginia Sickness and Disability Program (VSDP) beneficiaries shall receive a maximum monthly credit, which is the greater of (i) \$120, (ii) \$4 per year for each year of creditable service at the time of disability retirement, or (iii) \$4 per year for each year of creditable service at the time of eligibility for postemployment disability benefits. State, VaLORS, and SPORS employees participating in VSDP who receive long-term disability benefits from VSDP shall receive a monthly credit of \$120, or \$4 per year of creditable service at the time of disability, whichever is greater. Those employees participating in VSDP and hired on or after July 1, 2009 are required to earn one year of service to be eligible for the non-service related Health Insurance Credit disability benefit.



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

TEACHERS

A member who retired under the Virginia Retirement System and who rendered at least 15 years of total creditable service under VRS shall receive a health insurance credit to his monthly retirement allowance, which shall be applied to reduce the retired member's health insurance premium cost. The amount of each monthly health insurance credit shall be \$4 for each full year of the retired member's creditable service. However, such credit shall not exceed a beneficiary's qualified medical expenses.

Disabled Teacher retirees and Virginia Local Disability Program (VLDP) beneficiaries (or, if the employer opted-out of VLDP during the election period, a comparable plan) shall receive a monthly health insurance credit of \$4 multiplied by the lesser of (i) twice the amount of his creditable service or (ii) the amount of creditable service he would have completed at age 60 if he had remained in service to that age. Eligibility for the credit shall be determined in a manner prescribed by the Virginia Retirement System. Those employees participating in VLDP (or, if the employer opted-out of VLDP during the election period, a comparable plan) and hired on or after July 1, 2009 are required to earn one year of service to be eligible for the non-service related Health Insurance Credit disability benefit.

POLITICAL SUBDIVISIONS

Political subdivisions participating in the Virginia Retirement System (VRS) may elect to provide a credit toward the cost of health insurance coverage for any former employee who retired under VRS with at least 15 years of total creditable service. The amount of each monthly health insurance credit shall be \$1.50 per year of creditable service, which amount shall be paid monthly to any retired employee participating in the Health Insurance Credit Program. A maximum monthly benefit of \$45 applies to non-school division retirees. However, such credit shall not exceed the health insurance premium for retiree.

Disabled retirees are eligible to receive a maximum monthly credit of \$45.

In addition to the above mentioned health insurance credit, some localities chose to provide an additional health insurance credit of \$1 per month for each full year of the retired member's creditable service, not to exceed a maximum monthly credit of \$30. This additional benefit is available for retired constitutional officers, employees of constitutional officers, general registrars, employees of general registrars, and local social service employees.



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

SPECIAL COVERGE GROUPS

A local officer, as defined in the Code of Virginia §51.1-124.3, retired under the Virginia Retirement System (VRS) who rendered at least 15 years of total creditable service under VRS shall receive a monthly health insurance credit of \$1.50 per year of creditable service, not to exceed a maximum monthly credit of \$45. However, such credit shall not exceed the health insurance premium for the retiree.

Disabled retirees are eligible to receive a maximum monthly credit of \$45.

VIRGINIA SICKNESS AND DISABILITY PROGRAM

The following employees are eligible for VSDP benefits: full-time and part-time salaried state employees who are active members of the Virginia Retirement System (State), active members of the State Police Officers' Retirement System (SPORS), and active members of the Virginia Law Officers' Retirement System (VaLORS). Newly hired or appointed faculty of state universities of higher education in teaching, research or administrative positions who elect VRS as their retirement plan, may elect coverage under VSDP or any disability plan offered by the institution. If the institution does not offer an alternative disability plan, the faculty member is automatically covered under VSDP. Any eligible employee hired on or after July 1, 2009, shall not be eligible to receive VSDP long-term disability (LTD) benefits for non-work related disabilities prior to the completion of one continuous year of employment.

LTD benefits provide income replacement for members who become disabled and are unable to work for an extended period of time. LTD benefits begin at the expiration of the maximum period of short-term disability. While on long-term disability, members continue to accrue service as a VRS-covered member. LTD recipients are not considered employees of the Commonwealth of Virginia while they are on long-term disability.

Upon attaining the normal retirement age while on LTD, a member is required to retire. However, if the member becomes disabled within five years of the normal retirement age, they will be eligible, for up to five years, to receive VSDP LTD benefits, provided the member remains medically eligible. Once such member receives VSDP LTD benefits for five years, the member must retire.

Members are eligible to receive LTD benefits while working. Long-term disability-working status is in effect if members are able to work at least 20 hours a week, but are restricted from performing the full duties of their job or working a regular schedule. A member must have returned to work with modified duties while on short-term disability to be eligible for long-term disability-working status. The benefit will be adjusted by income or wages a member earns. During the first six months of long-term disability-working, the benefit amount will be adjusted by 60 percent of income or wages earned from employment. After the first six months of long-term disability-



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

working, the benefit amount will be adjusted by 70 percent of income or wages earned from employment.

LTD benefits provide members with an income replacement of 60 percent of a member's pre-disability income, or 80 percent for a catastrophic condition. For valuation purposes, a 2.50% Cost of Living Adjustment (COLA) is assumed for participating Plan 1 members of State, SPORS and VaLORS. For participating Plan 2 and Hybrid Plan members of State, SPORS, and VaLORS, a 2.25% COLA is assumed for the purpose of this valuation. LTD recipients are also eligible for benefits under the Health Insurance Credit Program (HIC) and are eligible for benefits under the Group Life Insurance Program (GLI). The liability associated with HIC and GLI for LTD recipients is not included as a VSDP liability, and is valued under the actuarial valuation of the HIC and GLI plans.

The LTD benefit is adjusted by any payments received as a result of the same disability from wages and salary from employment. Wages and salary include income reported on W-2 forms and income from self-employment. During the first six months on long-term disability, the amount of the adjustment depends on the income replacement level under VSDP.

LTD benefits end if the member: is able to perform the full duties of their job without restrictions, leaves covered employment and takes a refund of their member contributions and interest in their member contribution account, applies for service retirement or reaches normal retirement age, or the member does not cooperate or comply with the requirements of VSDP.

The purpose of the long-term care (LTC) benefit under VSDP is to provide members financial assistance towards long-term care services needed as a result of a catastrophic illness, injury or aging. Specifically, the LTC benefit under VSDP provides a \$96 per day indemnity benefit to reimburse qualified nursing home and assisted living costs. Additional LTC benefits are provided for qualified home health care services (50% of the nursing home daily benefit amount), and informal care (25% of the nursing home daily benefit amount). LTC benefits are paid after a 90-day elimination period following a member's certification to be unable to perform two of six activities of daily living or having a severe cognitive impairment. LTC benefits are tax qualified under the Health Insurance Portability and Accountability Act of 1996 (HIPAA).

The LTC benefit has a lifetime maximum benefit of \$70,080 based upon a two-year maximum coverage period with a \$96 daily benefit amount (DBA) paid for nursing home care. At VRS' discretion, the DBA may be increased for inflation every five years in the amount of 5%, compounded annually since the previous increase. Since the LTC benefit's inception, VRS has elected to increase the DBA once (December of 2007). As such, the valuation does not include a provision for increases to the DBA. If the LTC benefit policy is to provide increases at regular intervals, the resulting liability will be materially greater than the results presented (i.e., inflation increases are not assumed to be pre-funded).



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

While actively employed or receiving LTD benefits, a member receives coverage in the amount currently in place for the actively employed group. Upon termination of employment, a member has the option to port the amount of coverage current for the actively employed group by paying a premium based upon the member's age at entry into VSDP.



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

VIRGINIA LOCAL DISABILITY PROGRAM

The VLDP provides disability benefits for those Hybrid Plan members of Teachers and Political Subdivisions (excluding members with enhanced hazardous duty coverage) that elect to participate in VLDP.

Long-term disability (LTD) benefits provide income replacement for members who become disabled and are unable to work for an extended period of time. LTD benefits begin at the expiration of the maximum period of short-term disability. While on long-term disability, members continue to accrue service as a VRS-covered member. LTD recipients are not considered employees of their associated employer group while they are on long-term disability.

In addition to an income replacement benefit, disabled members participating in the Hybrid Plan may be eligible to receive a one percent employer contribution to their defined contribution account. To be eligible for the one percent mandatory employer contribution, a Hybrid Plan member must be permanently and totally disabled as defined in §22(e)(3) of the Internal Revenue Code (Social Security Definition of Disability).

Upon attaining the normal retirement age while on LTD, a member is required to retire. However, if the member becomes approved for supplemental disability benefits on or after age 60 they will be eligible to receive VLDP LTD benefits, provided the member remains medically eligible, based on the chart below:

Ages Approved for Supplemental Disability Benefits	Supplemental Disability Benefit Eligibility Period*
60 – 64	5 Years
65 – 68	To Age 70
69 and Older	1 Year

* Eligibility period includes short-term disability and long-term disability

Members are eligible to receive LTD benefits while working. Long-term disability-working status is in effect if members are able to work at least 20 hours a week, but are restricted from performing the full duties of their job or working a regular schedule. A member must have returned to work with modified duties while on short-term disability to be eligible for long-term disability-working status. The benefit will be adjusted by income or wages a member earns. During the first six months of long-term disability-working, the benefit amount will be adjusted by 60 percent of income or wages earned from employment. After the first six months of long-term disability-working, the benefit amount will be adjusted by 70 percent of income or wages earned from employment.



Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

LTD benefits provide members with an income replacement of 60 percent of a member's pre-disability income, or 80 percent for a catastrophic condition. LTD recipients are also eligible for benefits under the Health Insurance Credit Program (HIC) and are eligible for benefits under the Group Life Insurance Program (GLI). The liability associated with HIC and GLI for LTD recipients is not included as a VLDP liability, and is valued under the actuarial valuation of the HIC and GLI plans.

The LTD benefit is adjusted by any payments received as a result of the same disability from wages and salary from employment. Wages and salary include income reported on W-2 forms and income from self-employment. During the first six months on long-term disability, the amount of the adjustment depends on the income replacement level under VLDP.

LTD benefits end if the member: is able to perform the full duties of their job without restrictions, leaves covered employment and takes a refund of their member contributions and interest in their member contribution account, applies for service retirement or reaches normal retirement age, or the member does not cooperate or comply with the requirements of VLDP.

The purpose of the long-term care (LTC) benefit under VLDP is to provide members financial assistance towards long-term care services needed as a result of a catastrophic illness, injury or aging. Specifically, the LTC benefit under VLDP provides a \$96 per day indemnity benefit to reimburse qualified nursing home and assisted living costs. Additional LTC benefits are provided for qualified home health care services (50% of the nursing home daily benefit amount), and informal care (25% of the nursing home daily benefit amount). LTC benefits are paid after a 90-day elimination period following a member's certification to be unable to perform two of six activities of daily living or having a severe cognitive impairment. LTC benefits are tax qualified under the Health Insurance Portability and Accountability Act of 1996 (HIPAA).

The LTC benefit has a lifetime maximum benefit of \$70,080 based upon a two-year maximum coverage period with a \$96 daily benefit amount (DBA) paid for nursing home care. At VRS' discretion, the DBA may be increased for inflation every five years in the amount of 5%, compounded annually since the previous increase. Since the LTC benefit's inception, VRS has elected to increase the DBA once (December of 2007). As such, the valuation does not include a provision for increases to the DBA. If the LTC benefit policy is to provide increases at regular intervals, the resulting liability will be materially greater than the results presented (i.e., inflation increases are not assumed to be pre-funded).

While actively employed or receiving LTD benefits, a member receives coverage in the amount currently in place for the actively employed group. Upon termination of employment, a member has the option to port the amount of coverage current for the actively employed group by paying a premium based upon the member's age at entry into VLDP.



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

STATE EMPLOYEES
Plan Specific Benefit Provisions

Normal Retirement Eligibility:

Plan 1:	A member may retire with unreduced pension benefits upon Normal Retirement on or after age 65 with credit for five years of service.
Plan 2 and Hybrid:	A member may retire with unreduced pension benefits upon Normal Retirement once they attain their normal Social Security retirement age and have at least five years of service.

Early Retirement Eligibility:

Plan 1:	A member may retire early with unreduced pension benefits after reaching age 50 with at least 30 years of service credit. A member may retire early with reduced pension benefits after reaching age 50 with at least ten years of service credit, or age 55 with credit for at least five years of service.
Plan 2 and Hybrid:	A member may retire early with unreduced pension benefits upon the sum of their age and their service being 90 (Rule of 90). A member may retire early with reduced pension benefits after reaching age 60 with at least five years of service credit.

**Disability Retirement Eligibility
– Non-VSDP:**

A Plan 1 member hired prior to January 1, 1999 and who has declined VSDP coverage is eligible for disability retirement benefits from the first day of employment.

**Disability Retirement Eligibility
– VSDP:**

A Plan 1 member hired prior to January 1, 1999 and who has elected VSDP coverage or any member hired on or after January 1, 1999. Applicable members hired prior to July 1, 2009 are eligible from the first day of employment for work related and non-work related VSDP disability benefits. Applicable members hired on or after July 1, 2009 are eligible from the first day of employment for work-related VSDP disability benefits, but must have a minimum of one year of service to be eligible for non-work related VSDP disability benefits.



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

TEACHERS
Plan Specific Benefit Provisions

Normal Retirement Eligibility:

Plan 1:	A member may retire with unreduced pension benefits upon Normal Retirement on or after age 65 with credit for five years of service.
Plan 2 and Hybrid:	A member may retire with unreduced pension benefits upon Normal Retirement once they attain their normal Social Security retirement age and have at least five years of service.

Early Retirement Eligibility:

Plan 1:	A member may retire early with unreduced pension benefits after reaching age 50 with at least 30 years of service credit. A member may retire early with reduced pension benefits after reaching age 50 with at least ten years of service credit, or age 55 with credit for at least five years of service.
Plan 2 and Hybrid:	A member may retire early with unreduced pension benefits upon the sum of their age and their service being 90 (Rule of 90). A member may retire early with reduced pension benefits after reaching age 60 with at least five years of service credit.

Disability Retirement Eligibility

– **Non-VLDP (Plan 1 and Plan 2):** A member is eligible from the first day of employment.

Disability Retirement Eligibility

– **VLDP (Hybrid Plan):** Hybrid Plan members are eligible from the first day of employment for work-related VLDP disability benefits (or, if the employer opted-out of VLDP during the election period, a comparable plan), but must have a minimum of one year of service to be eligible for non-work related VLDP disability benefits.



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

STATE POLICE
Plan Specific Benefit Provisions

Normal Retirement Eligibility:	A member may retire with an unreduced pension benefit upon Normal Retirement on or after age 60 with credit for five years of service.
Early Retirement Eligibility:	A member may retire early with unreduced pension benefits after reaching age 50 with at least 25 years of service credit. A member may retire early with reduced pension benefits after reaching age 50 with at least five years of service credit.
Disability Retirement Eligibility – Non-VSDP:	A member hired prior to 1/1/1999 and who has declined VSDP coverage is eligible for disability benefits from the first day of employment.
Disability Retirement Eligibility – VSDP:	A Plan 1 member hired prior to January 1, 1999 and who has elected VSDP coverage or any member hired on or after January 1, 1999. Applicable members hired prior to July 1, 2009 are eligible from the first day of employment for work related and non-work related VSDP disability benefits. Applicable members hired on or after July 1, 2009 are eligible from the first day of employment for work-related VSDP disability benefits, but must have a minimum of one year of service to be eligible for non-work related VSDP disability benefits.



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

JUDICIAL
Plan Specific Benefit Provisions

Service:

- Plan 1: Employees receive credit of one year of service multiplied by a weighting factor of 3.5 (2.5 for judges entering JRS on or after January 1, 1995). Any non-judicial VRS service credit is not weighted.
- Plan 2 and Hybrid: Employees receive credit of one year of service multiplied by a weighting factor of:
- 1.5 for judges entering JRS before age 45,
 - 2.0 for judges entering JRS between ages 45 and 54, or
 - 2.5 for judges entering JRS at age 55 or older.

Any non-judicial VRS service credit is not weighted.

Normal Retirement Eligibility: A member may retire with unreduced pension benefits upon Normal Retirement on or after age 65 with credit for five years of service, or age 60 with at least 30 years of service credit. Effective June 1, 2017, the mandatory retirement age for judges is age 73.

Early Retirement Eligibility: A member may retire early with unreduced pension benefits at age 60 with at least 30 years of service or a member may retire early with reduced pension benefits after reaching age 55 with at least five years of service credit.

Disability Retirement Eligibility: A member is eligible for disability retirement benefits from the first day of employment.



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

**VIRGINIA LAW OFFICERS
Plan Specific Benefit Provisions**

Normal Retirement Eligibility: A member may retire upon Normal Retirement on or after age 60 with credit for five years of service.

Early Retirement Eligibility: A member may retire early with unreduced pension benefits after reaching age 50 with at least 25 years of service credit. A member may retire early with reduced pension benefits after reaching age 50 with at least five years of service credit.

Disability Retirement Eligibility:
– **Non-VSDP:** A member hired prior to 1/1/1999 and who has declined VSDP coverage is eligible for disability retirement benefits from the first day of employment.

Disability Retirement Eligibility:
– **VSDP:** A Plan 1 member hired prior to January 1, 1999 and who has elected VSDP coverage or any member hired on or after January 1, 1999. Applicable members hired prior to July 1, 2009 are eligible from the first day of employment for work related and non-work related VSDP disability benefits. Applicable members hired on or after July 1, 2009 are eligible from the first day of employment for work-related VSDP disability benefits, but must have a minimum of one year of service to be eligible for non-work related VSDP disability benefits.



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

POLITICAL SUBDIVISIONS
Locals¹ – General
Plan Specific Benefit Provisions

Normal Retirement Eligibility:

Plan 1:	A member may retire with unreduced pension benefits upon Normal Retirement on or after age 65 with credit for five years of service.
Plan 2 and Hybrid:	A member may retire with unreduced pension benefits upon Normal Retirement once they attain their normal Social Security retirement age and have at least five years of service.

Early Retirement Eligibility:

Plan 1:	A member may retire early with unreduced pension benefits after reaching age 50 with at least 30 years of service credit. A member may retire early with reduced pension benefits after reaching age 50 with at least ten years of service credit, or age 55 with credit for at least five years of service.
Plan 2 and Hybrid:	A member may retire early with unreduced pension benefits upon the sum of their age and their service being 90 (Rule of 90). A member may retire early with reduced pension benefits after reaching age 60 with at least five years of service credit.

Disability Retirement Eligibility
– (Plan 1 and Plan 2):

A member is eligible from the first day of employment.

Disability Retirement Eligibility
– VLDP (Hybrid Plan):

Hybrid Plan members are eligible from the first day of employment for work-related VLDP disability benefits (or, if the employer opted-out of VLDP during the election period, a comparable plan), but must have a minimum of one year of service to be eligible for non-work related VLDP disability benefits.

¹ Locals includes both the Top 10 Locals group and the Non-Top 10 Locals group.



***Schedule F – Summary of Main Plan Provisions as Interpreted for Valuation
Purposes (continued)***

POLITICAL SUBDIVISIONS
Locals – LEO/Fire
Plan Specific Benefit Provisions

- Normal Retirement Eligibility:** A member may retire with an unreduced pension benefit upon Normal Retirement on or after age 60 with credit for five years of service.
- Early Retirement Eligibility:** A member may retire early with a reduced pension benefit after reaching age 50 with at least five years of service credit.
- Disability Retirement Eligibility:** A member is eligible for disability retirement benefits from the first day of employment.



Schedule G – Schedule of Active Member Data

**GROUP LIFE INSURANCE PROGRAM
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	4,413	5,204	24							9,641
25 - 29	5,472	22,215	4,814	23						32,524
30 - 34	3,784	16,133	15,344	3,813	30					39,104
35 - 39	2,990	11,939	10,376	13,258	3,480	34				42,077
40 - 44	2,381	10,080	8,020	9,528	10,214	2,461	25			42,709
45 - 49	2,252	9,227	8,313	8,923	9,070	9,123	2,150	55		49,113
50 - 54	1,819	7,889	7,419	8,853	8,058	6,951	6,229	1,987	40	49,245
55 - 59	1,541	6,426	6,269	8,223	8,103	6,108	5,003	4,619	1,460	47,752
60 - 64	801	3,819	4,233	5,760	5,969	4,997	3,956	3,130	3,430	36,095
65 - 69	234	1,348	1,763	2,293	2,244	1,837	1,527	1,242	1,819	14,307
70 & Up	91	507	638	871	779	555	469	437	713	5,060
Totals	25,778	94,787	67,213	61,545	47,947	32,066	19,359	11,470	7,462	367,627



Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
STATE EMPLOYEES
(State, SPORS, JRS, VaLORS, ORP, and UVA)
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	1,516	1,112	15							2,643
25 - 29	2,008	5,130	957	6						8,101
30 - 34	1,420	5,154	3,235	704	12					10,525
35 - 39	1,033	4,321	3,480	2,530	647	9				12,020
40 - 44	789	3,229	2,980	2,663	1,768	516	9			11,954
45 - 49	744	2,596	2,769	2,678	2,141	1,806	506	16		13,256
50 - 54	582	2,296	2,242	2,567	2,315	1,835	1,379	657	18	13,891
55 - 59	478	1,940	2,084	2,317	2,189	1,928	1,721	1,592	546	14,795
60 - 64	248	1,173	1,482	1,778	1,649	1,511	1,462	1,363	1,475	12,141
65 - 69	61	392	633	823	757	682	655	613	974	5,590
70 & Up	16	116	162	271	264	209	233	263	498	2,032
Totals	8,895	27,459	20,039	16,337	11,742	8,496	5,965	4,504	3,511	106,948



Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
TEACHERS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	814	2,044	1							2,859
25 - 29	1,164	10,785	2,416	1						14,366
30 - 34	670	6,054	8,307	1,664	4					16,699
35 - 39	632	4,160	4,191	7,398	1,762	3				18,146
40 - 44	531	3,899	3,131	4,265	5,874	1,157	3			18,860
45 - 49	537	3,765	3,395	3,756	4,302	4,746	971	7		21,479
50 - 54	375	2,901	3,002	3,759	3,552	3,073	3,385	648	5	20,700
55 - 59	237	2,001	2,126	3,332	3,652	2,491	2,047	1,857	437	18,180
60 - 64	131	1,038	1,143	2,017	2,567	2,125	1,562	969	1,142	12,694
65 - 69	38	313	377	648	827	692	568	355	505	4,323
70 & Up	11	98	101	163	207	144	113	90	163	1,090
Totals	5,140	37,058	28,190	27,003	22,747	14,431	8,649	3,926	2,252	149,396



Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
POLITICAL SUBDIVISIONS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	498	526	4							1,028
25 - 29	543	1,525	314	4						2,386
30 - 34	415	1,410	805	357	5					2,992
35 - 39	392	1,108	696	759	207	6				3,168
40 - 44	346	1,112	678	676	544	136	3			3,495
45 - 49	325	1,121	843	812	706	506	151	8		4,472
50 - 54	327	1,175	945	978	783	557	313	157	6	5,241
55 - 59	347	1,173	931	1,074	899	641	406	314	128	5,913
60 - 64	202	892	835	907	728	557	400	230	208	4,959
65 - 69	78	448	421	425	314	215	148	92	88	2,229
70 & Up	40	234	280	300	214	134	82	37	44	1,365
Totals	3,513	10,724	6,752	6,292	4,400	2,752	1,503	838	474	37,248



Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
CONSTITUTIONAL OFFICERS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	291	323	1							615
25 - 29	254	1,086	296	4						1,640
30 - 34	137	629	658	234	5					1,663
35 - 39	84	389	386	531	204	4				1,598
40 - 44	78	301	214	376	400	161	2			1,532
45 - 49	61	221	220	312	378	503	137	4		1,836
50 - 54	43	219	206	258	302	320	232	82	4	1,666
55 - 59	40	135	168	236	257	224	121	112	64	1,357
60 - 64	22	97	98	153	154	143	69	66	93	895
65 - 69	4	19	41	71	71	48	36	31	60	381
70 & Up	3	7	10	19	17	7	18	15	23	119
Totals	1,017	3,426	2,298	2,194	1,788	1,410	615	310	244	13,302



Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
SOCIAL SERVICE EMPLOYEES
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	70	62								132
25 - 29	129	348	45							522
30 - 34	129	373	185	31						718
35 - 39	96	306	192	152	25					771
40 - 44	64	233	164	167	91	13				732
45 - 49	74	238	153	134	157	98	17			871
50 - 54	49	153	117	152	126	92	97	20	1	807
55 - 59	29	115	89	119	90	81	99	48	16	686
60 - 64	16	54	78	81	84	79	76	54	59	581
65 - 69	3	19	20	32	26	27	16	13	25	181
70 & Up		2	5	9	7	4	8	5	7	47
Totals	659	1,903	1,048	877	606	394	313	140	108	6,048



Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
REGISTRARS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25		2								2
25 - 29	3	7	2							12
30 - 34	1	6		1						8
35 - 39	1	8	5	5	1					20
40 - 44	1	8	3	6	1	1				20
45 - 49		10	3	3	8	2				26
50 - 54	4	8	4	7	6	3	2			34
55 - 59	1	4	12	10	4	6	3	1		41
60 - 64	1	2	6	7	7	8	4	3	2	40
65 - 69		3	4	5		1	2	3	1	19
70 & Up		2	1	1	1	1	2		2	10
Totals	12	60	40	45	28	22	13	7	5	232



Schedule G – Schedule of Active Member Data (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	1,521	1,013	4							2,538
25 - 29	1,944	4,176	751	3						6,874
30 - 34	1,351	3,671	2,707	608	4					8,341
35 - 39	991	2,876	2,477	2,256	578	9				9,187
40 - 44	767	2,262	1,999	2,066	1,555	357	7			9,013
45 - 49	733	1,902	1,980	2,003	1,636	1,268	325	12		9,859
50 - 54	565	1,758	1,724	1,997	1,688	1,144	879	364	11	10,130
55 - 59	461	1,507	1,617	1,937	1,642	1,192	994	917	310	10,577
60 - 64	236	866	1,183	1,469	1,278	949	778	683	739	8,181
65 - 69	57	259	446	649	538	382	291	252	511	3,385
70 & Up	17	60	94	189	178	110	80	79	213	1,020
Totals	8,643	20,350	14,982	13,177	9,097	5,411	3,354	2,307	1,784	79,105



Schedule G – Schedule of Active Member Data (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
TEACHERS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	136	427								563
25 - 29	270	2,364	290							2,924
30 - 34	150	1,403	259							1,812
35 - 39	141	1,031	126	1						1,299
40 - 44	139	998	129	1	1					1,268
45 - 49	137	990	119							1,246
50 - 54	92	754	98	1			1			946
55 - 59	51	467	57							575
60 - 64	29	240	25							294
65 - 69	13	69	12							94
70 & Up	3	21	2							26
Totals	1,161	8,764	1,117	3	1	0	1	0	0	11,047



Schedule G – Schedule of Active Member Data (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
POLITICAL SUBDIVISIONS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2019**

Attained Age	Years of Service to Valuation Date									Total
	Less than 1 year	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 or more	
Under 25	266	234	8							508
25 - 29	392	902	38							1,332
30 - 34	348	904	61							1,313
35 - 39	328	773	40							1,141
40 - 44	271	746	52	1						1,070
45 - 49	249	730	75							1,054
50 - 54	220	674	66	1	1					962
55 - 59	242	702	84	1		1				1,030
60 - 64	115	474	56							645
65 - 69	44	199	28							271
70 & Up	16	94	11							121
Totals	2,491	6,432	519	3	1	1	0	0	0	9,447