



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

Prepared as of June 30, 2018

March 21, 2019

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, 2018:

- 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, 2018. 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.

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Cavanaugh Macdonald Consulting, LLC (CMC) is submitting the results of the annual actuarial valuation of the OPEB Plans of VRS prepared as of June 30, 2018. 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.

Contribution rates for Virginia Retirement System (VRS) employers are established every two years. The actuarially calculated employer contribution rates based on the June 30, 2017 results presented in this report are for fiscal years ending in 2019 and 2020. The actuarially calculated employer contribution rates based on the June 30, 2018 valuation presented in this report are for informational purposes only.

The valuation results indicate that the full employer contribution rates shown in the following table are sufficient to fund the normal cost for all members and finance the unfunded accrued liability of the indicated OPEB Plans. For comparison, in the following table, we present the employer contribution rates based on the June 30, 2017 actuarial valuation, the employer contribution rates approved by the General Assembly for fiscal years ending 2019 and 2020, and the employer contribution rates based on the June 30, 2018 actuarial valuation.

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

* 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.

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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 - 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, 2018, the plan has assets in trust solely to provide benefits to eligible recipients. Therefore, the discount rate has been set at 7.00%. In accordance with the funding policy adopted by the Board of Trustees, the unfunded liability is being amortized by regular annual contributions as a level percentage of payroll within a closed 30 year period for the unfunded liability as of July 1, 2013, and gains and losses in subsequent years are amortized within a closed 20 year period, on the assumption that payroll will increase by 3% annually and the amortization period will decrease by one each year until reaching 0 years. The assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the OPEB Plans and to reasonable expectations of anticipated experience under the OPEB Plans.

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 principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the OPEB Plans and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of VRS.

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

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

Respectfully submitted,



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Principal and Consulting Actuary



Larry Langer, ASA, EA, FCA, MAAA
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Section I – Summary of Principal Results

1. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized for each OPEB Plan on the following pages:

GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Valuation Date	June 30, 2018	June 30, 2017
Number Active	367,903	365,149
Number Retired or Disabled	<u>185,605</u>	<u>179,410</u>
Total	553,508	544,559
Annual Covered Payroll	\$ 19,783,323	\$ 19,222,759
Valuation Salary	\$ 17,377,195	\$ 16,889,207
Assets:		
Market Value	\$ 1,594,773	\$ 1,437,586
Actuarial Value	\$ 1,574,017	\$ 1,410,087
Funded Ratio:		
Market Value	50.36%	47.53%
Actuarial Value	49.71%	46.62%
Unfunded Actuarial Liability	\$ 1,592,516	\$ 1,614,631
Amortization Period (Years)	16-25	17-26
Insurance Amount		
Active Members	\$ 39,566,646	\$ 38,445,514
Retired and Disabled Members	<u>7,354,358</u>	<u>7,068,589</u>
Total	\$ 46,921,004	\$ 45,514,103
Annual Required Contribution (ARC) in Dollars:		
Normal Cost	\$ 81,890*	\$ 78,867*
Accrued Liability	<u>93,882</u>	<u>93,536</u>
Total	\$ 175,772	\$ 172,403
ARC as a Percent of Active Payroll**:		
Normal Cost	0.47%	0.47%
Accrued Liability	<u>0.48</u>	<u>0.50</u>
Total	0.95%	0.97%
Adjustment for Active Group Life Insurance	<u>0.34%</u>	<u>0.34%</u>
Total Cost for Plan	1.29%	1.31%
Contribution as ¢ per \$1,000 of Active Insurance Amount		
Active Members	14.1¢	14.1¢
Retired and Disabled Members	<u>39.6</u>	<u>40.4</u>
Total	53.7¢	54.5¢
Discount Rate	7.00%	7.00%

* Includes total administrative expenses of \$31,000 for 2017 and \$664,000 for 2018.

** Includes timing adjustment factor of 1.0192.

Section I – Summary of Principal Results (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
Number Active	107,234	108,027
Number Retired, Disabled, or Eligible Deferred Vested	<u>49,311</u>	<u>48,004</u>
Total	156,545	156,031
Annual Covered Payroll	\$ 6,635,983	\$ 6,480,712
Valuation Salary	\$ 5,796,912	\$ 5,656,174
Assets:		
Market Value	\$ 95,908	\$ 79,516
Actuarial Value	\$ 96,294	\$ 79,451
Funded Ratio:		
Market Value	9.63%	8.03%
Actuarial Value	9.67%	8.02%
Unfunded Actuarial Liability	\$ 899,365	\$ 911,273
Amortization Period (Years)	16-25	17-26
Annual Required Contribution (ARC) in Dollars:		
Normal Cost	\$ 18,323**	\$ 18,491**
Accrued Liability	<u>54,427</u>	<u>54,057</u>
Total	\$ 72,750	\$ 72,548
Annual Required Contribution as a Percent of Active Payroll***:		
Normal Cost	0.31%	0.32%
Accrued Liability	<u>0.84</u>	<u>0.85</u>
Total	1.15%	1.17%
Discount Rate	7.00%	7.00%

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

** Includes total administrative expenses of \$131,000 for 2017 and \$149,000 for 2018.

*** Includes timing adjustment factor of 1.0192.

Section I – Summary of Principal Results (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
Number Active	151,585	150,416
Number Retired, Disabled, or Eligible Deferred Vested	<u>68,672</u>	<u>66,509</u>
Total	220,257	216,925
Annual Covered Payroll*	\$ 8,479,023	\$ 8,303,502
Valuation Salary	\$ 7,504,014	\$ 7,344,362
Assets:		
Market Value	\$ 111,639	\$ 96,090
Actuarial Value	\$ 113,136	\$ 96,987
Funded Ratio:		
Market Value	8.10%	7.08%
Actuarial Value	8.20%	7.14%
Unfunded Actuarial Liability	\$ 1,265,937	\$ 1,260,934
Amortization Period (Years)	16-25	17-26
Annual Required Contribution (ARC) in Dollars:		
Normal Cost	\$ 19,759*	\$ 19,642**
Accrued Liability	<u>77,464</u>	<u>75,436</u>
Total	\$ 97,223	\$ 95,078
Annual Required Contribution as a Percent of Active Payroll***:		
Normal Cost	0.26%	0.27%
Accrued Liability	<u>0.93</u>	<u>0.93</u>
Total	1.19%	1.20%
Discount Rate	7.00%	7.00%

* Includes an assumed pay increase on the valuation date.

** Includes total administrative expenses of \$121,000 for 2017 and \$152,000 for 2018.

*** Includes timing adjustment factor of 1.0192.

Section I – Summary of Principal Results (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
Number Active	23,034	22,478
Number Retired, Disabled, or Eligible Deferred Vested	<u>5,531</u>	<u>5,132</u>
Total	28,565	27,610
Annual Covered Payroll	\$ 1,048,068	\$ 987,951
Valuation Salary	\$ 914,165	\$ 864,081
Assets:		
Market Value	\$ 23,161	\$ 22,167
Actuarial Value	\$ 23,161	\$ 22,167
Funded Ratio:		
Market Value	56.57%	56.40%
Actuarial Value	56.57%	56.40%
Unfunded Actuarial Liability	\$ 17,782	\$ 17,133
Amortization Period (Years)	16-25	17-26
Annual Required Contribution (ARC) in Dollars:		
Normal Cost*	\$ 957*	\$ 922*
Accrued Liability	<u>1,095</u>	<u>1,025</u>
Total	\$ 2,052	\$ 1,947
Average Annual Required Contribution as a Percent of Active Payroll**:		
Normal Cost	0.14%	0.14%
Accrued Liability***	<u>0.32</u>	<u>0.17</u>
Total	0.46%	0.31%
Discount Rate	7.00%	7.00%

* Includes total administrative expenses of \$37,000 for 2017 and \$37,000 for 2018.

** Includes timing adjustment factor of 1.0192. These figures are the average of all participating Political Subdivisions.

*** Some participating locals include an additional funding contribution rate to allow the use of the 7.00% investment return as the single equivalent interest rate assumption for purposes of the GASB 74/75 statements.

Section I – Summary of Principal Results (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
Number Active	12,890	12,706
Number Retired, Disabled, or Eligible Deferred Vested	<u>3,681</u>	<u>3,448</u>
Total	16,571	16,154
Annual Covered Payroll	\$ 652,041	\$ 630,541
Valuation Salary	\$ 567,568	\$ 548,822
Assets:		
Market Value	\$ 3,278	\$ 2,427
Actuarial Value	\$ 3,278	\$ 2,427
Funded Ratio:		
Market Value	11.03%	8.45%
Actuarial Value	11.03%	8.45%
Unfunded Actuarial Liability	\$ 26,442	\$ 26,297
Amortization Period (Years)	16-25	17-26
Annual Required Contribution (ARC) in Dollars:		
Normal Cost	\$ 646*	\$ 637*
Accrued Liability	<u>1,631</u>	<u>1,584</u>
Total	\$ 2,277	\$ 2,221
Annual Required Contribution as a Percent of Active Payroll**:		
Normal Cost	0.11%	0.12%
Accrued Liability	<u>0.26</u>	<u>0.26</u>
Total	0.37%	0.38%
Discount Rate	7.00%	7.00%

* Includes total administrative expenses of \$4,000 for 2017 and \$4,000 for 2018.

** Includes timing adjustment factor of 1.0192.

Section I – Summary of Principal Results (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
Number Active	5,713	5,595
Number Retired, Disabled, or Eligible Deferred Vested	<u>2,087</u>	<u>1,997</u>
Total	7,800	7,592
Annual Covered Payroll	\$ 261,272	\$ 251,620
Valuation Salary	\$ 225,360	\$ 217,211
Assets:		
Market Value	\$ 1,319	\$ 1,091
Actuarial Value	\$ 1,319	\$ 1,091
Funded Ratio:		
Market Value	9.29%	7.80%
Actuarial Value	9.29%	7.80%
Unfunded Actuarial Liability	\$ 12,878	\$ 12,899
Amortization Period (Years)	16-25	17-26
Annual Required Contribution (ARC) in Dollars:		
Normal Cost	\$ 245*	\$ 242*
Accrued Liability	<u>789</u>	<u>773</u>
Total	\$ 1,034	\$ 1,015
Annual Required Contribution as a Percent of Active Payroll**:		
Normal Cost	0.11%	0.11%
Accrued Liability***	<u>0.31</u>	<u>0.32</u>
Total	0.42%	0.43%
Discount Rate	7.00%	7.00%

* Includes total administrative expenses of \$2,000 for 2017 and \$1,000 for 2018.

** Includes timing adjustment factor of 1.0192.

*** Includes an additional funding contribution rate to allow the use of the 7.00% investment return as the single equivalent interest rate assumption for purposes of the GASB 74/75 statements.

Section I – Summary of Principal Results (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
Number Active	233	231
Number Retired, Disabled, or Eligible Deferred Vested	<u>67</u>	<u>65</u>
Total	300	296
Annual Covered Payroll	\$ 11,472	\$ 11,173
Valuation Salary	\$ 9,668	\$ 9,458
Assets:		
Market Value	\$ 58	\$ 34
Actuarial Value	\$ 58	\$ 34
Funded Ratio:		
Market Value	10.84%	6.53%
Actuarial Value	10.84%	6.53%
Unfunded Actuarial Liability	\$ 479	\$ 487
Amortization Period (Years)	16-25	17-26
Annual Required Contribution (ARC) in Dollars:		
Normal Cost	\$ 15*	\$ 11*
Accrued Liability	<u>30</u>	<u>30</u>
Total	\$ 45	\$ 41
Annual Required Contribution as a Percent of Active Payroll*:		
Normal Cost	0.15%	0.12%
Accrued Liability	<u>0.27</u>	<u>0.27</u>
Total	0.42%	0.39%
Discount Rate	7.00%	7.00%

* Includes total administrative expenses of \$0 for 2017 and \$0 for 2018.

** Includes timing adjustment factor of 1.0192.

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, 2018	June 30, 2017
Number Active (participating in VSDP)	75,164	73,620
Number Disabled	2,653	2,721
Number Ported	<u>2,174</u>	<u>2,087</u>
Total	79,991	78,428
Annual Covered Payroll*	\$ 3,993,073	\$ 3,767,055
Valuation Salary	\$ 3,496,134	\$ 3,300,741
Assets:		
Market Value	\$ 462,961	\$ 442,334
Actuarial Value	\$ 460,466	\$ 437,372
Funded Ratio:		
Market Value	174.51%	195.28%
Actuarial Value	173.57%	193.09%
Unfunded Actuarial Accrued Liability	\$ (195,174)	\$ (210,860)
Amortization Period (Years)	16-25	17-26
Annual Required Contribution (ARC) in Dollars:		
Normal Cost**	\$ 35,083	\$ 33,445
Accrued Liability	<u>(12,841)</u>	<u>(13,552)</u>
Total	\$ 22,242	\$ 19,893
ARC as a Percent of Active Payroll***:		
Normal Cost	1.00%	0.99%
Accrued Liability	<u>(0.33)</u>	<u>(0.37)</u>
Total	0.67%	0.62%
Discount Rate	7.00%	7.00%

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

** Include administrative expenses of \$7,718,000 for 2017 and \$7,763,000 for 2018.

*** Includes timing adjustment factor of 1.0192.

Section I – Summary of Principal Results (continued)

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

Valuation Date – June 30, 2018	State	SPORS	VaLORS	Total
Number Active (participating in VSDP)	65,789	1,424	7,951	75,164
Number Disabled	<u>2,093</u>	<u>14</u>	<u>546</u>	<u>2,653</u>
Total	67,882	1,438	8,497	77,817
Annual Covered Payroll*	\$ 3,596,672	\$ 86,639	\$ 309,762	\$ 3,993,073
Valuation Salary	\$ 3,159,994	\$ 81,221	\$ 254,919	\$ 3,496,134
LTD Assets: (Allocated by liabilities)				
Market Value	\$ 314,666	\$ 3,779	\$ 64,105	\$ 382,550
Actuarial Value	\$ 312,918	\$ 3,758	\$ 63,749	\$ 380,425
Funded Ratio:				
Market Value	181.93%	181.93%	181.93%	181.93%
Actuarial Value	180.92%	180.92%	180.92%	180.92%
LTD Unfunded Actuarial Accrued Liability	\$ (139,957)	\$ (1,681)	\$ (28,513)	\$ (170,151)
Amortization Period (Years)	16-25	16-25	16-25	16-25
LTD Annual Required Contribution (ARC) in Dollars:				
Normal Cost**	\$ 27,179	\$ 399	\$ 4,883	\$ 32,461
Accrued Liability	<u>(8,896)</u>	<u>(110)</u>	<u>(1,836)</u>	<u>(10,842)</u>
Total	\$ 18,283	\$ 289	\$ 3,047	\$ 21,619
LTD Annual Required Contribution as a Percent of Active Payroll***:				
Normal Cost	0.86%	0.49%	1.92%	0.93%
Accrued Liability	<u>(0.25)</u>	<u>(0.13)</u>	<u>(0.60)</u>	<u>(0.28)</u>
Total	0.61%	0.36%	1.32%	0.65%
Discount Rate	7.00%	7.00%	7.00%	7.00%

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

** Includes administrative expenses of \$7,601,000 for 2018.

*** Includes timing adjustment factor of 1.0192.

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, 2018	State	SPORS	VaLORS	Total
Number Active (participating in VSDP)	65,789	1,424	7,951	75,164
Number Disabled	2,205	16	556	2,777
Number Ported	<u>2,094</u>	<u>3</u>	<u>77</u>	<u>2,174</u>
Total	70,088	1,443	8,584	80,115
Annual Covered Payroll*	\$ 3,596,672	\$ 86,639	\$ 309,762	\$ 3,993,073
Valuation Salary	\$ 3,159,994	\$ 81,236	\$ 252,662	\$ 3,493,892
LTC Assets: (Allocated by liabilities)				
Market Value	\$ 77,442	\$ 404	\$ 2,565	\$ 80,411
Actuarial Value	\$ 77,086	\$ 402	\$ 2,553	\$ 80,041
Funded Ratio:				
Market Value	146.15%	146.15%	146.15%	146.15%
Actuarial Value	145.48%	145.48%	145.48%	145.48%
LTC Unfunded Actuarial Accrued Liability	\$ (24,099)	\$ (126)	\$ (798)	\$ (25,023)
Amortization Period (Years)	16-25	16-25	16-25	16-25
LTC Annual Required Contribution (ARC) in Dollars:				
Normal Cost**	\$ 2,481	\$ 20	\$ 121	\$ 2,622
Accrued Liability	<u>(1,923)</u>	<u>(10)</u>	<u>(66)</u>	<u>(1,999)</u>
Total	\$ 558	\$ 10	\$ 55	\$ 623
LTC Annual Required Contribution as a Percent of Active Payroll***:				
Normal Cost	0.07%	0.02%	0.05%	0.07%
Accrued Liability	<u>(0.05)</u>	<u>(0.01)</u>	<u>(0.02)</u>	<u>(0.05)</u>
Total	0.02%	0.01%	0.03%	0.02%
Discount Rate	7.00%	7.00%	7.00%	7.00%

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

** Includes total administrative expenses of \$162,000 for 2018.

*** Includes timing adjustment factor of 1.0192.

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, 2018	June 30, 2017
Number Active (participating in VLDP)	9,332	7,239
Number Disabled	<u>6</u>	<u>0</u>
Total	9,338	7,239
Annual Covered Payroll*	\$ 377,798	\$ 305,446
Valuation Salary	\$ 322,287	\$ 258,696
Assets:		
Market Value	\$ 647	\$ 278
Actuarial Value	\$ 674	\$ 324
Funded Ratio:		
Market Value	46.76%	34.41%
Actuarial Value	48.74%	40.02%
Unfunded Actuarial Accrued Liability	\$ 709	\$ 488
Amortization Period (Years)	16-20	17-20
Annual Required Contribution (ARC) in Dollars:		
Normal Cost**	\$ 1,377	\$ 1,113
Accrued Liability	<u>52</u>	<u>36</u>
Total	\$ 1,429	\$ 1,149
ARC as a Percent of Active Payroll***:		
Normal Cost	0.42%	0.40%
Accrued Liability	<u>0.01</u>	<u>0.01</u>
Total	0.43%	0.41%
Discount Rate	7.00%	7.00%

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

** Includes total administrative expenses of \$489,000 for 2017 and \$563,000 for 2018.

*** Includes timing adjustment factor of 1.0192.

Section I – Summary of Principal Results (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
Number Active (participating in VLDP)	7,915	6,331
Number Disabled	<u>25</u>	<u>5</u>
Total	7,940	6,336
Annual Covered Payroll*	\$ 268,121	\$ 206,895
Valuation Salary	\$ 220,312	\$ 168,367
Assets:		
Market Value	\$ 816	\$ 351
Actuarial Value	\$ 853	\$ 413
Funded Ratio:		
Market Value	29.88%	42.61%
Actuarial Value	31.21%	50.03%
Unfunded Actuarial Accrued Liability	\$ 1,879	\$ 412
Amortization Period (Years)	16-20	17-20
Annual Required Contribution (ARC) in Dollars:		
Normal Cost**	\$ 1,821	\$ 1,274
Accrued Liability	<u>134</u>	<u>30</u>
Total	\$ 1,955	\$ 1,304
ARC as a Percent of Active Payroll***:		
Normal Cost	0.83%	0.71%
Accrued Liability	<u>0.05</u>	<u>0.01</u>
Total	0.88%	0.72%
Discount Rate	7.00%	7.00%

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

** Includes total administrative expenses of \$455,000 for 2017 and \$708,000 for 2018.

*** Includes timing adjustment factor of 1.0192.

Section I – Summary of Principal Results (continued)

2. Comments on the valuation results as of June 30, 2018 are given in Section IV and further discussion of the contribution levels is provided in Section V.
3. Schedule B shows the development of the actuarial value of assets. Schedule D and Schedule E of this report outline the full set of actuarial assumptions and methods used in the current valuation. 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.
4. 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 Summary of Principal Results to provide a combined contribution rate for deaths in active service and postemployment benefits.
5. The valuation takes into account the effect of amendments to VRS through the valuation date. The main plan provisions of VRS, as summarized in Schedule F, were taken into account in the current valuation.
6. 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.

Section II – Membership Data

1. Data regarding the membership of VRS for use as a basis of the valuation were furnished by VRS. The following table shows the number of active members and their annual compensation, as of June 30, 2018, 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, 2018
(\$ IN THOUSANDS)

Group	Number	Covered Payroll	Insurance Amount
<u>ACTIVE EMPLOYEES</u>			
State Employees	74,582	\$ 4,161,922	\$ 8,323,844
Teachers	151,585	8,479,023	16,958,048
VRS Political Subdivisions	108,693	4,973,560	9,947,120
SPORS	1,885	126,523	253,046
JRS	416	67,424	134,848
VaLORS	8,718	346,106	692,212
Life Insurance Only*	<u>22,024</u>	<u>1,628,764</u>	<u>3,257,528</u>
Total	367,903	\$19,783,323	\$39,566,646
<u>RETIRED OR DISABLED MEMBERS</u>			
Service Retirees	168,551	n/a	\$ 6,480,804
Disabled Members	<u>17,054</u>	n/a	<u>873,553</u>
Total	185,605	n/a	\$ 7,354,358

* 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, 2018
(\$ IN THOUSANDS)

OPEB Plan	Number	Covered Payroll
GLI	367,903	\$19,783,323
HIC – State Employees	107,234	6,635,983
HIC – Teachers	151,585	8,479,023
HIC – Participating Political Subdivisions	23,034	1,048,068
HIC – Constitutional Officers	12,890	652,041
HIC – Social Service Employees	5,713	261,272
HIC – Registrars	233	11,472
VSDP		
State Employees	65,789	3,596,672
SPORS	1,424	86,639
VaLORS	<u>7,951</u>	<u>309,762</u>
Total	75,164	3,993,073
VLDP – Teachers	9,332	377,798
VLDP – Political Subdivisions	7,915	268,121

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
6/30/2018	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
6/30/2013	361,080	17,132,176	47,447	2.47

HEALTH INSURANCE CREDIT PROGRAM

Valuation Date	Number	Annual Covered Payroll (\$ in Thousands)	Annual Average Pay	% Change in Average Pay
<u>STATE EMPLOYEES</u>				
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
6/30/2013	106,780	5,724,611	53,611	1.22
<u>TEACHERS</u>				
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
6/30/2013	147,257	7,188,884	48,819	2.60

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>				
6/30/2018	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
6/30/2013	20,534	846,523	41,225	3.92
<u>CONSTITUTIONAL OFFICERS</u>				
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	1.14
6/30/2015	12,060	584,797	48,499	0.86
6/30/2014	11,796	567,134	48,079	1.22
6/30/2013	11,269	535,261	47,499	4.12
<u>SOCIAL SERVICE EMPLOYEES</u>				
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
6/30/2013	4,633	198,320	42,806	3.72
<u>REGISTRARS</u>				
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
6/30/2013	191	8,539	44,707	3.95

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
6/30/2018	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
6/30/2013	74,178	3,472,669	46,815	0.50

VIRGINIA LOCAL DISABILITY PROGRAM

Valuation Date	Number	Annual Covered Payroll (\$ in Thousands)	Annual Average Pay	% Change in Average Pay
<u>TEACHERS</u>				
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
6/30/2014	282	9,247	32,791	n/a
<u>POLITICAL SUBDIVISIONS</u>				
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
6/30/2014	845	24,688	29,217	n/a

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, 2018 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
6/30/2018	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	(14.40)	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
6/30/2012	9,828	1,064,957	3,905	773,058	146,314	6,658,857	4.58	45,511	0.35

* 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**									
6/30/2018	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
6/30/2012	2,539	3,784	1,453	2,065	40,046	59,170	2.99	1,478	0.20
TEACHERS									
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
6/30/2012	3,240	4,426	1,214	1,649	53,515	73,836	3.91	1,380	0.00

* 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>									
6/30/2018	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)
6/30/2014	n/a	n/a	n/a	n/a	4,024	1,991	n/a	495	n/a
<u>CONSTITUTIONAL OFFICERS</u>									
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
6/30/2014	n/a	n/a	n/a	n/a	2,844	1,442	n/a	507	n/a

* 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>									
6/30/2018	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
6/30/2014	n/a	n/a	n/a	n/a	1,647	834	n/a	506	n/a
<u>REGISTRARS</u>									
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)
6/30/2014	n/a	n/a	n/a	n/a	57	30	n/a	526	n/a

* 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 Rolls	Annualized LTD Payments (\$1,000s)	Number Removed from Rolls	Annualized LTD Payments (\$1,000s)	Number on Rolls 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
6/30/2018	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
6/30/2012	424	6,438	374	5,635	2,670	24,230	3.43	9,075	1.49

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
<u>TEACHERS</u>									
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
6/30/2014	0	0	0	0	0	0	0.00	0	0.00
<u>POLITICAL SUBDIVISIONS</u>									
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
6/30/2014	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, 2018, the market value of assets used to determine the actuarial value of assets is shown below.

TABLE 5
COMPARISON OF MARKET VALUE OF ASSETS AT
JUNE 30, 2018 AND JUNE 30, 2017
(\$ IN THOUSANDS)

OPEB Plan	June 30, 2018	June 30, 2017
GLI	\$1,594,773	\$1,437,586
HIC – State Employees	95,908	79,516
HIC – Teachers	111,639	96,090
HIC - Participating Political Subdivisions	23,161	22,167
HIC – Constitutional Officers	3,278	2,427
HIC – Social Service Employees	1,319	1,091
HIC – Registrars	58	34
VSDP	462,961	442,334
VLDP – Teachers	647	278
VLDP – Political Subdivisions	816	351

Section III – Assets (continued)

2. Schedule B shows the development of the five-year market related actuarial value of assets as of June 30, 2018. The following table shows the actuarial value of assets.

TABLE 6
COMPARISON OF ACTUARIAL VALUE OF ASSETS AT
JUNE 30, 2018 AND JUNE 30, 2017
(\$ IN THOUSANDS)

OPEB Plan	June 30, 2018	June 30, 2017
GLI	\$1,574,017	\$1,410,087
HIC – State Employees	96,294	79,451
HIC – Teachers	113,136	96,987
HIC – Participating Political Subdivisions*	23,161	22,167
HIC – Constitutional Officers*	3,278	2,427
HIC – Social Service Employees*	1,319	1,091
HIC – Registrars*	58	34
VSDP	460,466	437,372
VLDP – Teachers	674	324
VLDP – Political Subdivisions	853	413

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

Section IV – Comments on Valuation

GROUP LIFE INSURANCE PROGRAM

1. The June 30, 2018 valuation shows GLI has total prospective liabilities of \$3,725,338,000 of which \$1,901,090,000 is for the prospective death benefits payable on account of present retired and disabled members, and \$1,824,248,000 is for the prospective postemployment death benefits payable on account of present active members. Against these benefit liabilities, GLI has a total present actuarial value of assets of \$1,574,017,000 as of June 30, 2018. The difference of \$2,151,321,000 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for GLI on account of postemployment death benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year, plus administrator expenses. The valuation indicates the normal contribution for GLI is 0.47% of total active covered payroll.
3. Prospective normal contributions have a present value of \$558,805,000. When this amount is subtracted from \$2,151,321,000, which is the present value of the total future contributions to be made by the employers, there remains \$1,592,516,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For GLI, it is recommended that the accrued liability contribution rate payable by employers on account of retirement benefits be set at 0.48% of total active covered payroll. This rate is sufficient to liquidate the unfunded accrued liability of \$1,592,516,000 over 26.4 years, based on a 7.00% investment rate of return assumption and that aggregate payroll will increase by 3.00% each year. See Schedule C for the amortization schedule for the unfunded accrued liability. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) is 0.95% of total active covered payroll. This rate is equivalent to 39.6¢ per month per \$1,000 of active members' life insurance.
6. This valuation determines the cost of advance funding the postemployment death benefits under GLI. The cost of death 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 month per \$1,000 of insurance.
7. The sum of the active term cost of 14.1¢ per \$1,000 of active members' life insurance and the postemployment advance funding cost of 39.6¢ per \$1,000 of active members' life insurance is 53.7¢ per \$1,000 of active members' life insurance.
8. GLI experienced a liability loss since the prior valuation of \$52.9 million primarily due to demographic and salary experience. Assets grew more than expected for an asset gain of \$17.3 million. Combining the liability loss with the asset gain results in an overall loss on the unfunded liability of \$35.6 million.

Section IV – Comments on Valuation (continued)

HEALTH INSURANCE CREDIT PROGRAM STATE EMPLOYEES (State, JRS, SPORS, VaLORS, ORP, and UVA)

1. For HIC - State Employees, the June 30, 2018 valuation shows total prospective benefit liabilities of \$1,126,336,000, of which \$651,476,000 is for the prospective retiree health care benefits payable on account of present retired members, members receiving disability benefits, and eligible deferred vested members, and \$474,860,000 is for the prospective retiree health care benefits payable on account of present active members. Against these benefit liabilities, HIC - State Employees has a total present actuarial value of assets of \$96,294,000 as of June 30, 2018. The difference of \$1,030,042,000 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for HIC - State Employees on account of retiree health care benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year, plus administrator expenses. The normal contribution for HIC - State Employees is determined to be 0.31% of total active covered payroll.
3. Prospective normal contributions have a present value of \$130,677,000. When this amount is subtracted from \$1,030,042,000, which is the present value of the total future contributions to be made by the employers, there remains \$899,365,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For HIC - State Employees, it is recommended that the accrued liability contribution rate payable by employers on account of retiree health care benefits be set at 0.84% of total active covered payroll. This rate is sufficient to liquidate the unfunded accrued liability of \$899,365,000 over 25.2 years, based on a 7.00% investment rate of return and the assumption payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) is 1.15% of total active covered payroll.
6. HIC - State Employees experienced a liability gain since the prior valuation of \$12.6 million due to demographic changes. The assets grew more than expected for a gain of \$0.2 million resulting in an overall gain on the unfunded liability of \$12.8 million.

Section IV – Comments on Valuation (continued)

HEALTH INSURANCE CREDIT PROGRAM TEACHERS

1. For HIC - Teachers, the June 30, 2018 valuation shows total prospective benefit liabilities of \$1,542,077,000, of which \$851,963,000 is for the prospective retiree health care benefits payable on account of present retired members, members receiving disability benefits, and eligible deferred vested members, and \$690,114,000 is for the prospective retiree health care benefits payable on account of present active members. Against these benefit liabilities, HIC – Teachers has a total present actuarial value of assets of \$113,136,000 as of June 30, 2018. The difference of \$1,428,941,000 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for HIC - Teachers on account of retiree health care benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year, plus administrator expenses. The normal contribution for HIC - Teachers is determined to be 0.26% of total active covered payroll.
3. Prospective normal contributions have a present value of \$163,004,000. When this amount is subtracted from \$1,428,941,000, which is the present value of the total future contributions to be made by the employers, there remains \$1,265,937,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For HIC - Teachers, it is recommended that the accrued liability contribution rate payable by employer account of retiree health care benefits be set at 0.93% of salary. This rate is sufficient to liquidate the unfunded accrued liability of \$1,265,937,000 over 24.8 years, based on a 7.00% investment rate of return and the assumption payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) is 1.19% of total active covered payroll.
6. HIC - Teachers experienced a liability gain since the prior valuation of \$2.3 million primarily due to demographic changes. The assets grew less than expected for a loss of \$0.5 million and an overall gain on the unfunded liability of \$1.8 million.

Section IV – Comments on Valuation (continued)

HEALTH INSURANCE CREDIT PROGRAM PARTICIPATING POLITICAL SUBDIVISIONS

1. For HIC - Participating Political Subdivisions, the June 30, 2018 valuation shows total prospective benefit liabilities of \$47,298,000, of which \$22,409,000 is for the prospective retiree health care benefits payable on account of present retired members, members receiving disability benefits, and eligible deferred vested members, and \$24,889,000 is for the prospective retiree health care benefits payable on account of present active members. Against these benefit liabilities, HIC - Participating Political Subdivisions has, in aggregate, a total present market value of assets of \$23,161,000 as of June 30, 2018. The difference of \$24,137,000 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for HIC - Participating Political Subdivisions on account of retiree health care benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year, plus administrator expenses. The average normal contribution for HIC - Participating Political Subdivisions is determined to be 0.14% of total active covered payroll.
3. Prospective normal contributions have a present value of \$6,355,000. When this amount is subtracted from \$24,137,000, which is the present value of the total future contributions to be made by the employers, there remains \$17,782,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For HIC - Participating Political Subdivisions, the average accrued liability contribution rate payable by employers on account of retiree health care benefits is 0.32% of salary. This rate is sufficient to liquidate the unfunded accrued liability of \$17,782,000 over 24.5 years, based on a 7.00% investment rate of return and the assumption payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The average total annual required contribution (ARC) is 0.46% of total active covered payroll.
6. HIC - Participating Political Subdivisions experienced a liability loss since the prior valuation of \$0.7 million due to demographic changes and a minimal gain on assets.

Section IV – Comments on Valuation (continued)

HEALTH INSURANCE CREDIT PROGRAM CONSTITUTIONAL OFFICERS

1. For HIC - Constitutional Officers, the June 30, 2018 valuation shows total prospective benefit liabilities of \$34,226,000, of which \$17,190,000 is for the prospective retiree health care benefits payable on account of present retired members, members receiving disability benefits, and eligible deferred vested members, and \$17,036,000 is for the prospective retiree health care benefits payable on account of present active members. Against these benefit liabilities, HIC - Constitutional Officers has a total present actuarial value of assets of \$3,278,000 as of June 30, 2018. The difference of \$30,948,000 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for HIC - Constitutional Officers on account of retiree health care benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year. The normal contribution for HIC - Constitutional Officers is determined to be 0.11% of total active covered payroll.
3. Prospective normal contributions have a present value of \$4,506,000. When this amount is subtracted from \$30,948,000, which is the present value of the total future contributions to be made by the employers, there remains \$26,442,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For HIC - Constitutional Officers, it is recommended that the accrued liability contribution rate payable by employers on account of retiree health care benefits be set at 0.26% of salary. This rate is sufficient to liquidate the unfunded accrued liability of \$26,442,000 over 24.4 years, based on a 7.00% investment rate of return and the assumption payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) is 0.37% of total active covered payroll.
6. HIC - Constitutional Officers experienced a liability loss since the prior valuation of \$0.1 million due to demographic changes and a minimal loss on assets.

Section IV – Comments on Valuation (continued)

HEALTH INSURANCE CREDIT PROGRAM SOCIAL SERVICE EMPLOYEES

1. For HIC - Social Service Employees, the June 30, 2018 valuation shows total prospective benefit liabilities of \$15,874,000, of which \$9,677,000 is for the prospective retiree health care benefits payable on account of present retired members, members receiving disability benefits, and eligible deferred vested members, and \$6,197,000 is for the prospective retiree health care benefits payable on account of present active members. Against these benefit liabilities, HIC - Social Service Employees has a total present actuarial value of assets of \$1,319,000 as of June 30, 2018. The difference of \$14,555,000 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for HIC - Social Service Employees on account of retiree health care benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year. The normal contribution for HIC - Social Service Employees is determined to be 0.11% of total active covered payroll.
3. Prospective normal contributions have a present value of \$1,677,000. When this amount is subtracted from \$14,555,000, which is the present value of the total future contributions to be made by the employers, there remains \$12,878,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For HIC - Social Service Employees, it is recommended that the accrued liability contribution rate payable by employers on account of retiree health care benefits be set at 0.31% of salary. This rate is sufficient to liquidate the unfunded accrued liability of \$12,878,000 over 24.7 years, based on a 7.00% investment rate of return and the assumption payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) is 0.42% of total active covered payroll.
6. HIC - Social Services Employees experienced a minimal gain/loss on liabilities and assets since the prior valuation.

Section IV – Comments on Valuation (continued)

HEALTH INSURANCE CREDIT PROGRAM REGISTRARS

1. For HIC - Registrars, the June 30, 2018 valuation shows total prospective benefit liabilities of \$621,000, of which \$328,000 is for the prospective retiree health care benefits payable on account of present retired members, members receiving disability benefits, and eligible deferred vested members, and \$293,000 is for the prospective retiree health care benefits payable on account of present active members. Against these benefit liabilities, HIC - Registrars has a total present actuarial value of assets of \$58,000 as of June 30, 2018. The difference of \$563,000 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for HIC - Registrars on account of retiree health care benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year. The normal contribution for Registrars is determined to be 0.15% of total active covered payroll.
3. Prospective normal contributions have a present value of \$84,000. When this amount is subtracted from \$563,000, which is the present value of the total future contributions to be made by the employers, there remains \$479,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For HIC - Registrars, it is recommended that the accrued liability contribution rate payable by employers on account of retiree health care benefits be set at 0.27% of salary. This rate is sufficient to liquidate the unfunded accrued liability of \$479,000 over 23.5 years, based on a 7.00% investment rate of return and the assumption payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) is 0.42% of total active covered payroll.
6. HIC - Registrars experienced a minimal gain/loss on liabilities since the prior valuation. The assets grew more than expected for a gain of \$0.1 million.

Section IV – Comments on Valuation (continued)

VIRGINIA SICKNESS AND DISABILITY PROGRAM

1. The June 30, 2018 valuation of VSDP shows total prospective benefit liabilities of \$469,642,000, of which \$187,514,000 is for the prospective benefits payable on account of present disabled and ported members and incurred but not yet reported benefits, and \$282,128,000 is for the prospective benefits payable on account of present active members. Against these liabilities, LTD and LTC benefits have present assets of \$460,466,000 as of June 30, 2018. The difference of \$9,176,000 between the total liabilities and the total present actuarial value of assets represents the present value of excess assets on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for VSDP on account of disabled and ported member benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year, plus administrator expenses. The normal contribution is determined to be 1.00% of total active covered payroll.
3. Prospective normal contributions have a present value of \$204,350,000. When this amount is subtracted from \$9,176,000, which is the present value of the total future contributions to be made by the employers, a surplus of \$195,174,000 results.
4. It is recommended that the accrued liability contribution rate payable by employers on account of LTD and LTC benefits be set at -0.33% of total active covered payroll. This rate includes an amount sufficient to liquidate the surplus of \$195,174,000 over 22.07 years, based on a 7.00% investment rate of return and the assumption that the payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) for LTD benefits and LTC benefits, combined, is 0.67% of total active covered payroll.

Section IV – Comments on Valuation (continued)

6. VSDP experienced a liability loss since the prior valuation of \$19.4 million due to demographic changes. The assets grew more than expected for a gain of \$4.3 million resulting in an overall loss on the unfunded liability of \$15.1 million.
7. VSDP became effective January 1, 1999 and made available to state employees, members of the State Police Officers' Retirement System, and qualifying part-time employees. VSDP is a managed disability program that includes both short- and long-term disability. At the time of its original enactment, VSDP did not include a waiting period for non-work related disability benefits. The 2009 Appropriation Act included modifications to the VSDP program which included creating a one-year waiting period for non-work related disabilities for new employees. This change in plan provisions significantly lowered the accrued liability of the plan and put the plan in an overfunded position.

Section IV – Comments on Valuation (continued)

VIRGINIA LOCAL DISABILITY PROGRAM TEACHERS

1. The June 30, 2018 valuation of VLDP – Teachers shows total prospective benefit liabilities of \$9,404,000, of which \$271,000 is for the prospective benefits payable on account of present disabled and ported members and incurred but not yet reported benefits, and \$9,133,000 is for the prospective benefits payable on account of present active members. Against these liabilities, LTD and LTC benefits have present assets of \$674,000 as of June 30, 2018. The difference of \$8,730,000 between the total liabilities and the total present actuarial value of assets presents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for VLDP – Teachers on account of disabled and ported member benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year, plus administrator expenses. The normal contribution is determined to be 0.42% of total active covered payroll.
3. Prospective normal contributions have a present value of \$8,021,000. When this amount is subtracted from \$8,730,000, which is the present value of the total future contributions to be made by the employers, there remains \$709,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For VLDP – Teachers, it is recommended that the accrued liability contribution rate payable by employers on account of LTD and LTC benefits be set at 0.01% of total active covered payroll. This rate includes an amount sufficient to liquidate the unfunded accrued liability of \$709,000 over 18.5 years, based on a 7.00% investment rate of return and the assumption that the payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) for LTD benefits and LTC benefits, combined, is 0.43% of total active covered payroll.
6. VLDP – Teachers experienced a liability gain since the prior valuation of \$0.5 million due to demographic changes. The assets grew more than expected for a gain of \$0.1 million resulting in an overall gain on the unfunded liability of \$0.6 million.

Section IV – Comments on Valuation (continued)

VIRGINIA LOCAL DISABILITY PROGRAM POLITICAL SUBDIVISIONS

1. The June 30, 2018 valuation for VLDP – Political Subdivisions shows total prospective benefit liabilities of \$9,970,000, of which \$1,571,000 is for the prospective benefits payable on account of present disabled and ported members and incurred but not yet reported benefits, and \$8,399,000 is for the prospective benefits payable on account of present active members. Against these liabilities, LTD and LTC benefits have present assets of \$853,000 as of June 30, 2018. The difference of \$9,117,000 between the total liabilities and the total present actuarial value of assets presents the present value of contributions to be made in the future on account of benefits. Schedule A of this report outlines the results of the actuarial valuation.
2. The contributions for VLDP – Political Subdivisions on account of disabled and ported member benefits consist of normal contributions and accrued liability contributions. The normal contribution is equal to the actuarial present value of benefits accruing during the current year, plus administrator expenses. The normal contribution is determined to be 0.83% of total active covered payroll.
3. Prospective normal contributions have a present value of \$7,238,000. When this amount is subtracted from \$9,117,000, which is the present value of the total future contributions to be made by the employers, there remains \$1,879,000 as the amount of future accrued liability contributions.

Section IV – Comments on Valuation (continued)

4. For VLDP – Political Subdivisions, it is recommended that the accrued liability contribution rate payable by employers on account of LTD and LTC benefits be set at 0.05% of total active covered payroll. This rate includes an amount sufficient to liquidate the unfunded accrued liability of \$1,879,000 over 19.5 years, based on a 7.00% investment rate of return and the assumption that the payroll will increase by 3.00% annually. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D and Schedule E.
5. The total annual required contribution (ARC) for LTD benefits and LTC benefits, combined, is 0.88% of total active covered payroll.
6. VLDP – Political Subdivisions experienced a liability loss since the prior valuation of \$0.7 million due to demographic changes. The assets grew more than expected for a gain of \$0.1 million resulting in an overall loss on the unfunded liability of \$0.6 million.

Section V – Contribution Rates

1. The actuarially determined employer contribution (ARC) rates based on the June 30, 2018 actuarial valuation for each OPEB Plan are shown in the following table:

TABLE 7

**ANNUAL REQUIRED CONTRIBUTION (ARC) EXPRESSED
AS A PERCENTAGE OF ACTIVE MEMBER COVERED PAYROLL**

OPEB Plan	June 30, 2018
GLI*	1.29%
HIC – State Employees	1.15
HIC – Teachers	1.19
HIC – Participating Political Subdivisions**	0.46
HIC – Constitutional Officers	0.37
HIC – Social Service Employees	0.42
HIC – Registrars	0.42
VSDP	0.67
VLDP – Teachers	0.43
VLDP – Political Subdivisions	0.88

* 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 V – 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 required contribution (ARC) rate for each OPEB Plan.

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

OPEB Plan	Rate as a Percent of Covered Payroll		
	Normal Cost* (a)	UAAL Amortization Payment (b)	Annual Required Contribution (c) = (a) + (b)
GLI	0.81%**	0.48%	1.29%
HIC – State Employees	0.31	0.84	1.15
HIC – Teachers	0.26	0.93	1.19
HIC – Participating Political Subdivisions***	0.14	0.32	0.46
HIC – Constitutional Officers	0.11	0.26	0.37
HIC – Social Service Employees	0.11	0.31	0.42
HIC – Registrars	0.15	0.27	0.42
VSDP	1.00	(0.33)	0.67
VLDP – Teachers	0.42	0.01	0.43
VLDP – Political Subdivisions	0.83	0.05	0.88

* 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 V – 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 53.7¢ 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 Members' Life Insurance	% of Covered Payroll
Active Member Term Cost	14.1¢	0.34%
Postemployment Advance Funding	<u>39.6¢</u>	<u>0.95%</u>
Total	53.7¢	1.29%

Section VI – 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, 2018

OPEB Plan	Active Members	Retired, Disabled, Eligible Deferred Vested, or Ported LTC Members	Total
GLI	367,903	185,605	553,508
HIC – State Employees	107,234	49,311	156,545
HIC – Teachers	151,585	68,672	220,257
HIC – Participating Political Subdivisions	23,034	5,531	28,565
HIC - Constitutional Officers	12,890	3,681	16,571
HIC – Social Service Employees	5,713	2,087	7,800
HIC – Registrars	233	67	300
VSDP	75,164	4,827	79,991
VLDP – Teachers	9,332	6	9,338
VLDP – Political Subdivisions	7,915	25	7,940

Section VI – 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 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)
6/30/2018	\$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
6/30/2013	836,547	2,571,691	1,735,144	32.53	17,132,176	10.13

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

Actuarial Valuation Date	Actuarial Value of 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						
6/30/2018	\$ 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
6/30/2013	54,773	944,582	889,809	5.80	5,724,611	15.54
TEACHERS						
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
6/30/2013	67,012	1,257,792	1,190,780	5.33	7,188,884	16.56

Section VI – Accounting Information (continued)

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

Actuarial Valuation Date	Actuarial Value of 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>						
6/30/2018	\$ 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
6/30/2015	19,348	36,912	17,564	52.42	900,390	1.95
<u>CONSTITUTIONAL OFFICERS</u>						
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
6/30/2015	1,120	26,700	25,580	4.19	584,797	4.37
<u>SOCIAL SERVICE EMPLOYEES</u>						
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
6/30/2015	915	13,407	12,492	6.82	228,472	5.47
<u>REGISTRARS</u>						
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
6/30/2015	7	504	497	1.39	9,884	5.03

Section VI – Accounting Information (continued)

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)* (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
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)
6/30/2013	313,480	182,946	(130,534)	171.35	3,472,669	(3.76)

* 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 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)
<u>TEACHERS</u>						
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
6/30/2014	0	11	11	0.00	9,247	0.12
<u>POLITICAL SUBDIVISIONS</u>						
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
6/30/2014	0	48	48	0.00	24,688	0.19

* 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.

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

Section VI – Accounting Information (continued)

3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2018. Additional information as of the latest actuarial valuation follows:

All OPEB Plans	
Valuation Date	6/30/2018
Amortization Method	Level Percentage of Pay, Closed
Actuarial Cost Method	Entry Age Normal
Payroll Growth Rate	3.00%
Actuarial Assumptions:	
Investment Rate of Return*	7.00%
*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	\$8,279 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 – Accounting Information (continued)

4. On June 2, 2015, GASB Statement No. 74 and GASB Statement No. 75 (GASB 74 and 75) were unanimously adopted by the GASB Board. The disclosure requirements of GASB 74 and 75 will be similar to the disclosure requirements for pension benefits under GASB Statement No. 67 and GASB Statement No. 68. GASB 74 relates to accounting disclosures for plan sponsors and, as such, replaces GASB 43 beginning with fiscal years ending June 30, 2017. GASB 75 relates to accounting disclosures for contributing employers and, as such, replaces GASB 45 beginning with fiscal years ending June 30, 2018. GASB 74 and 75 will require applicable OPEB plan sponsors and contributing employers to disclose the net OPEB liability on the statement of financial position and book an accounting expense based upon the entry age normal actuarial cost method. Beyond the use of a specified actuarial cost method, GASB's new disclosure standards will also require the discount rate used to calculate liabilities to be based upon the yield of 20-year, tax-exempt municipal bonds and the expected rate of return on plan assets, to the extent plan assets are projected to be available for the payment of future benefits. Additionally, GASB 74 and 75 will bring about many other changes in the liability valuation and accounting disclosure processes currently in place which are expected to significantly impact data collection, timing, and effort. As details for the new GASB OPEB disclosure standards emerge, planning and coordination between plan sponsors, contributing employers, actuaries, and auditors is recommended.

Section VII – Derivation of Experience Gains and Losses

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)- DURING FISCAL YEAR ENDING 2018 GROUP LIFE INSURANCE PROGRAM (\$ IN MILLIONS)

Fiscal Year 2018		
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$	3,024.7
(b) Normal Cost	\$	78.9
(c) Benefit Payments	\$	200.3
2. End of Year:		
(a) Expected AAL [[$(1a) + (1b)$] x 1.07] – [(1c) x (1 + [0.07 x 0.50])]	\$	3,113.6
(b) Actual AAL	\$	3,166.5
3. Total AAL Gain (or Loss) (2a) – (2b)	\$	(52.9)
4. Actuarial Value of Assets (AVA) Beginning of Year	\$	1,410.1
5. Net external cash flow during the year	\$	46.3
6. End of Year:		
(a) Expected AVA [(4) x 1.07] + [(5) x (1 + [0.07 x 0.50])]	\$	1,556.7
(b) Actual AVA	\$	1,574.0
7. AVA Gain (or Loss) (6b) – (6a)	\$	17.3
8. Expected UAAL at End of Year (2a) – (6a)	\$	1,556.9
9. Actual UAAL at End of Year (2b) – (6b)	\$	1,592.5
10. UAAL Gain (or Loss) (8) – (9)	\$	(35.6)

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

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2018
HEALTH INSURANCE CREDIT PROGRAM
(\$ IN MILLIONS)**

Fiscal Year 2018	State Employees*	Teachers
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$ 990.7	\$ 1,357.9
(b) Normal Cost	\$ 18.5	\$ 19.6
(c) Benefit Payments	\$ 69.1	\$ 89.4
2. End of Year:		
(a) Expected AAL $[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$	\$ 1,008.3	\$ 1,381.4
(b) Actual AAL	\$ 995.7	\$ 1,379.1
3. Total AAL Gain (or Loss) (2a) – (2b)	\$ 12.6	\$ 2.3
4. Actuarial Value of Assets (AVA) Beginning of Year	\$ 79.5	\$ 97.0
5. Net external cash flow during the year	\$ 10.7	\$ 9.5
6. End of Year:		
(a) Expected AVA $[(4) \times 1.07] + [(5) \times (1 + [0.07 \times 0.50])]$	\$ 96.1	\$ 113.6
(b) Actual AVA	\$ 96.3	\$ 113.1
7. AVA Gain (or Loss) (6b) – (6a)	\$ 0.2	\$ (0.5)
8. Expected UAAL at End of Year (2a) – (6a)	\$ 912.2	\$ 1,267.8
9. Actual UAAL at End of Year (2b) – (6b)	\$ 899.4	\$ 1,266.0
10. UAAL Gain (or Loss) (8) – (9)	\$ 12.8	\$ 1.8

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

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

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2018
HEALTH INSURANCE CREDIT PROGRAM
(\$ IN MILLIONS)**

Fiscal Year 2018	Participating Political Subdivisions	Constitutional Officers
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$ 39.3	\$ 28.7
(b) Normal Cost	\$ 0.9	\$ 0.6
(c) Benefit Payments	\$ 2.7	\$ 1.7
2. End of Year:		
(a) Expected AAL $[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$	\$ 40.2	\$ 29.6
(b) Actual AAL	\$ 40.9	\$ 29.7
3. Total AAL Gain (or Loss) (2a) – (2b)	\$ (0.7)	\$ (0.1)
4. Actuarial Value of Assets (AVA) Beginning of Year	\$ 22.2	\$ 2.4
5. Net external cash flow during the year	\$ (0.5)	\$ 0.7
6. End of Year:		
(a) Expected AVA $[(4) \times 1.07] + [(5) \times (1 + [0.07 \times 0.50])]$	\$ 23.2	\$ 3.3
(b) Actual AVA	\$ 23.2	\$ 3.3
7. AVA Gain (or Loss) (6b) – (6a)	\$ 0.0	\$ 0.0
8. Expected UAAL at End of Year (2a) – (6a)	\$ 17.0	\$ 26.3
9. Actual UAAL at End of Year (2b) – (6b)	\$ 17.7	\$ 26.4
10. UAAL Gain (or Loss) (8) – (9)	\$ (0.7)	\$ (0.1)

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

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2018
HEALTH INSURANCE CREDIT PROGRAM
(\$ IN MILLIONS)**

Fiscal Year 2018	Social Service Employees	Registrars
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$ 14.0	\$ 0.5
(b) Normal Cost	\$ 0.2	\$ 0.0
(c) Benefit Payments	\$ 1.0	\$ 0.0
2. End of Year:		
(a) Expected AAL $[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$	\$ 14.2	\$ 0.5
(b) Actual AAL	\$ 14.2	\$ 0.5
3. Total AAL Gain (or Loss) (2a) – (2b)	\$ 0.0	\$ 0.0
4. Actuarial Value of Assets (AVA) Beginning of Year	\$ 1.1	\$ 0.0
5. Net external cash flow during the year	\$ 0.1	\$ 0.0
6. End of Year:		
(a) Expected AVA $[(4) \times 1.07] + [(5) \times (1 + [0.07 \times 0.50])]$	\$ 1.3	\$ 0.0
(b) Actual AVA	\$ 1.3	\$ 0.1
7. AVA Gain (or Loss) (6b) – (6a)	\$ 0.0	\$ 0.1
8. Expected UAAL at End of Year (2a) – (6a)	\$ 12.9	\$ 0.5
9. Actual UAAL at End of Year (2b) – (6b)	\$ 12.9	\$ 0.4
10. UAAL Gain (or Loss) (8) – (9)	\$ 0.0	\$ 0.1

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

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2018
VIRGINIA SICKNESS AND DISABILITY PROGRAM
(\$ IN MILLIONS)**

Fiscal Year 2018		
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$	226.5
(b) Normal Cost	\$	33.4
(c) Benefit Payments	\$	31.1
2. End of Year:		
(a) Expected AAL	\$	245.9
$[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$		
(b) Actual AAL	\$	265.3
3. Total AAL Gain (or Loss) (2a) – (2b)	\$	(19.4)
4. Actuarial Value of Assets (AVA) Beginning of Year	\$	437.4
5. Net external cash flow during the year	\$	(11.4)
6. End of Year:		
(a) Expected AVA	\$	456.2
$[(4) \times 1.07] + [(5) \times (1 + [0.07 \times 0.50])]$		
(b) Actual AVA	\$	460.5
7. Total AVA Gain (or Loss) (6a) – (6b)	\$	4.3
8. Expected UAAL at End of Year	\$	(210.3)
(2a) – (6a)		
9. Actual UAAL at End of Year	\$	(195.2)
(2b) – (6b)		
10. UAAL Gain (or Loss)	\$	(15.1)
(8) – (9)		

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

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)
DURING FISCAL YEAR 2018
VIRGINIA LOCAL DISABILITY PROGRAM
(\$ IN MILLIONS)**

Fiscal Year 2018	Teachers	Political Subdivisions
1. Beginning of Year:		
(a) Actuarial Accrued Liability (AAL)	\$ 0.8	\$ 0.8
(b) Normal Cost	\$ 1.1	\$ 1.3
(c) Benefit Payments	\$ 0.1	\$ 0.2
2. End of Year:		
(a) Expected AAL $[(1a) + (1b)] \times 1.07 - [(1c) \times (1 + [0.07 \times 0.50])]$	\$ 1.9	\$ 2.0
(b) Actual AAL	\$ 1.4	\$ 2.7
3. Total AAL Gain (or Loss) (2a) – (2b)	\$ 0.5	\$ (0.7)
4. Actuarial Value of Assets (AVA) Beginning of Year	\$ 0.3	\$ 0.4
5. Net external cash flow during the year	\$ 0.3	\$ 0.4
6. End of Year:		
(a) Expected AVA $[(4) \times 1.07] + [(5) \times (1 + [0.07 \times 0.50])]$	\$ 0.6	\$ 0.8
(b) Actual AVA	\$ 0.7	\$ 0.9
7. AVA Gain (or Loss) (6b) – (6a)	\$ 0.1	\$ 0.1
8. Expected UAAL at End of Year (2a) – (6a)	\$ 1.3	\$ 1.2
9. Actual UAAL at End of Year (2b) – (6b)	\$ 0.7	\$ 1.8
10. UAAL Gain (or Loss) (8) – (9)	\$ 0.6	\$ (0.6)

Schedule A – Results of the Valuation

GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Valuation Date	June 30, 2018	June 30, 2017
1. COVERED PAYROLL	\$ 19,783,323	\$ 19,222,759
2. ACTUARIAL ACCRUED LIABILITY		
Present value of prospective benefits payable in respect of:		
(a) Present active members	\$ 1,824,248	\$ 1,782,581
(b) Present retired and disabled members	<u>1,901,090</u>	<u>1,786,401</u>
(c) Total present value of prospective benefits	\$ 3,725,338	\$ 3,568,982
(d) Present value of future normal contributions	<u>558,805</u>	<u>544,264</u>
(e) Total actuarial accrued liability (2c) – (2d)	\$ 3,166,533	\$ 3,024,718
3. PRESENT ASSETS FOR VALUATION PURPOSES	\$ 1,574,017	\$ 1,410,087
4. UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 1,592,516	\$ 1,614,631
5. NORMAL CONTRIBUTION*	\$ 81,890	\$ 78,867
6. ACCRUED LIABILITY CONTRIBUTION	<u>93,882</u>	<u>93,536</u>
7. TOTAL CONTRIBUTION (6) + (7)	\$ 175,772	\$ 172,403
8. AMORTIZATION PERIOD (YEARS)	16-25	17-26
9. NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (5) ÷ (1)	0.47%	0.47%
10. ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	<u>0.48%</u>	<u>0.50%</u>
11. TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.95%	0.97%
12. ADJUSTMENT FOR ACTIVE GROUP LIFE INSURANCE	<u>0.34%</u>	<u>0.34%</u>
13. TOTAL ANNUAL REQUIRED CONTRIBUTION FOR PLAN (11) + (12)	1.29%	1.31%
14. DISCOUNT RATE	7.00%	7.00%

*Includes total administrative expenses of \$664,000 for 2018 and \$31,000 for 2017.

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, 2018	June 30, 2017
1.	COVERED PAYROLL	\$ 6,635,983	\$ 6,480,712
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 474,860	\$ 484,354
	(b) Present retired, disabled, and deferred members	<u>651,476</u>	<u>638,266</u>
	(c) Total present value of prospective benefits	\$ 1,126,336	\$ 1,122,620
	(d) Present value of future normal contributions	<u>130,677</u>	<u>131,896</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 995,659	\$ 990,724
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 96,294	\$ 79,451
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 899,365	\$ 911,273
5.	AMORTIZATION PERIOD (YEARS)	16-25	17-26
6.	NORMAL CONTRIBUTION*	\$ 18,323	\$ 18,491
7.	ACCRUED LIABILITY CONTRIBUTION	<u>54,427</u>	<u>54,057</u>
8.	TOTAL CONTRIBUTION BASED ON COVERED PAYROLL (6) + (7)	\$ 72,750	\$ 72,548
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	0.31%	0.32%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (7) ÷ (1)	<u>0.84%</u>	<u>0.85%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	1.15%	1.17%
12.	DISCOUNT RATE	7.00%	7.00%

*Includes total administrative expenses of \$149,000 for 2018 and \$131,000 for 2017.

Schedule A – Results of the Valuation (continued)

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

Valuation Date		June 30, 2018	June 30, 2017
1.	COVERED PAYROLL	\$ 8,479,023	\$ 8,303,502
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 690,114	\$ 687,889
	(b) Present retired, disabled, and deferred members	<u>851,963</u>	<u>832,771</u>
	(c) Total present value of prospective benefits	\$ 1,542,077	\$ 1,520,660
	(d) Present value of future normal contributions	<u>163,004</u>	<u>162,739</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 1,379,073	\$ 1,357,921
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 113,136	\$ 96,987
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 1,265,937	\$ 1,260,934
5.	AMORTIZATION PERIOD (YEARS)	16-25	17-26
6.	NORMAL CONTRIBUTION*	\$ 19,759	\$ 19,642
7.	ACCRUED LIABILITY CONTRIBUTION	<u>77,464</u>	<u>75,436</u>
8.	TOTAL CONTRIBUTION BASED ON ACTIVE PAYROLL (6) + (7)	\$ 97,223	\$ 95,078
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	0.26%	0.27%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (7) ÷ (1)	<u>0.93%</u>	<u>0.93%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	1.19%	1.20%
12.	DISCOUNT RATE	7.00%	7.00%

*Includes total administrative expenses of \$152,000 for 2018 and \$121,000 for 2017.

Schedule A – Results of the Valuation (continued)

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

Valuation Date		June 30, 2018	June 30, 2017
1.	COVERED PAYROLL	\$ 1,048,068	\$ 987,951
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 24,889	\$ 24,153
	(b) Present retired, disabled, and deferred members	<u>22,409</u>	<u>21,326</u>
	(c) Total present value of prospective benefits	\$ 47,298	\$ 45,479
	(d) Present value of future normal contributions	<u>6,355</u>	<u>6,179</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 40,943	\$ 39,300
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 23,161	\$ 22,167
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 17,782	\$ 17,133
5.	AMORTIZATION PERIOD (YEARS)	16-25	17-26
6.	NORMAL CONTRIBUTION*	\$ 957	\$ 922
7.	ACCRUED LIABILITY CONTRIBUTION	<u>1,095</u>	<u>1,025</u>
8.	TOTAL CONTRIBUTION BASED ON ACTIVE PAYROLL (6) + (7)	\$ 2,052	\$ 1,947
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL**	0.14%	0.14%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL**	<u>0.32%</u>	<u>0.17%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.46%	0.31%
12.	DISCOUNT RATE	7.00%	7.00%

* Includes total administrative expenses of \$37,000 for 2018 and \$37,000 for 2017.

** 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 7.00% 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, 2018	June 30, 2017
1.	COVERED PAYROLL	\$ 652,041	\$ 630,541
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 17,036	\$ 16,980
	(b) Present retired, disabled, and deferred members	<u>17,190</u>	<u>16,175</u>
	(c) Total present value of prospective benefits	\$ 34,226	\$ 33,155
	(d) Present value of future normal contributions	<u>4,506</u>	<u>4,431</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 29,720	\$ 28,724
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 3,278	\$ 2,427
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 26,442	\$ 26,297
5.	AMORTIZATION PERIOD (YEARS)	16-25	17-26
6.	NORMAL CONTRIBUTION*	\$ 646	\$ 637
7.	ACCRUED LIABILITY CONTRIBUTION	<u>1,631</u>	<u>1,584</u>
8.	TOTAL CONTRIBUTION BASED ON ACTIVE PAYROLL (6) + (7)	\$ 2,277	\$ 2,221
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	0.11%	0.12%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (7) ÷ (1)	<u>0.26%</u>	<u>0.26%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.37%	0.38%
12.	DISCOUNT RATE	7.00%	7.00%

* Includes total administrative expenses of \$4,000 for 2018 and \$4,000 for 2017.

Schedule A – Results of the Valuation (continued)

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

Valuation Date		June 30, 2018	June 30, 2017
1.	COVERED PAYROLL	\$ 261,272	\$ 251,620
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 6,197	\$ 6,330
	(b) Present retired, disabled, and deferred members	<u>9,677</u>	<u>9,313</u>
	(c) Total present value of prospective benefits	\$ 15,874	\$ 15,643
	(d) Present value of future normal contributions	<u>1,677</u>	<u>1,653</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 14,197	\$ 13,990
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 1,319	\$ 1,091
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 12,878	\$ 12,899
5.	AMORTIZATION PERIOD (YEARS)	16-25	17-26
6.	NORMAL CONTRIBUTION*	\$ 245	\$ 242
7.	ACCRUED LIABILITY CONTRIBUTION	<u>789</u>	<u>773</u>
8.	TOTAL CONTRIBUTION BASED ON ACTIVE PAYROLL (6) + (7)	\$ 1,034	\$ 1,015
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	0.11%	0.11%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL** (7) ÷ (1)	<u>0.31%</u>	<u>0.32%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.42%	0.43%
12.	DISCOUNT RATE	7.00%	7.00%

* Includes total administrative expenses of \$1,000 for 2018 and \$2,000 for 2017.

** Includes an additional funding contribution rate to allow the use of the 7.00% 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
REGISTRARS
(\$ IN THOUSANDS)**

Valuation Date		June 30, 2018	June 30, 2017
1.	COVERED PAYROLL	\$ 11,472	\$ 11,173
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 293	\$ 289
	(b) Present retired, disabled, and deferred members	<u>328</u>	<u>303</u>
	(c) Total present value of prospective benefits	\$ 621	\$ 592
	(d) Present value of future normal contributions	<u>84</u>	<u>71</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 537	\$ 521
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 58	\$ 34
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 479	\$ 487
5.	AMORTIZATION PERIOD (YEARS)	16-25	17-26
6.	NORMAL CONTRIBUTION*	\$ 15	\$ 11
7.	ACCRUED LIABILITY CONTRIBUTION	<u>30</u>	<u>30</u>
8.	TOTAL CONTRIBUTION BASED ON ACTIVE PAYROLL (6) + (7)	\$ 45	\$ 41
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	0.15%	0.12%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (7) ÷ (1)	<u>0.27%</u>	<u>0.27%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.42%	0.39%
12.	DISCOUNT RATE	7.00%	7.00%

* Includes total administrative expenses of \$0 for 2018 and \$0 for 2017.

Schedule A – Results of the Valuation (continued)

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

Valuation Date		June 30, 2018	June 30, 2017
1.	COVERED PAYROLL*	\$ 3,993,073	\$ 3,767,055
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 282,128	\$ 264,666
	(b) Present disabled and ported members and IBNR	<u>187,514</u>	<u>160,283</u>
	(c) Total present value of prospective benefits	\$ 469,642	\$ 424,949
	(d) Present value of future normal contributions	<u>204,350</u>	<u>198,437</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 265,292	\$ 226,512
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 460,466	\$ 437,372
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ (195,174)	\$ (210,860)
5.	AMORTIZATION PERIOD (YEARS)	16-25	17-26
6.	NORMAL CONTRIBUTION**	\$ 35,083	\$ 33,445
7.	ACCRUED LIABILITY CONTRIBUTION	<u>(12,841)</u>	<u>(13,552)</u>
8.	TOTAL CONTRIBUTION BASED ON ACTIVE PAYROLL (6) + (7)	\$ 22,242	\$ 19,893
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	1.00%	0.99%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (7) ÷ (1)	<u>(0.33)%</u>	<u>(0.37)%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.67%	0.62%
12.	DISCOUNT RATE	7.00%	7.00%

* 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 \$7,763,000 for 2018 and administrative expenses of \$7,718,000 for 2017.

Schedule A – Results of the Valuation (continued)

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

Valuation Date		June 30, 2018	June 30, 2017
1.	COVERED PAYROLL*	\$ 377,798	\$ 305,446
2.	ACTUARIAL ACCRUED LIABILITY		
	Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 9,133	\$ 6,810
	(b) Present disabled and ported members and IBNR	<u>271</u>	<u>103</u>
	(c) Total present value of prospective benefits	\$ 9,404	\$ 6,913
	(d) Present value of future normal contributions	<u>8,021</u>	<u>6,101</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 1,383	\$ 812
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 674	\$ 324
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 709	\$ 488
5.	AMORTIZATION PERIOD (YEARS)	16-20	17-20
6.	NORMAL CONTRIBUTION**	\$ 1,377	\$ 1,113
7.	ACCRUED LIABILITY CONTRIBUTION	<u>52</u>	<u>36</u>
8.	TOTAL CONTRIBUTION BASED ON COVERED PAYROLL (6) + (7)	\$ 1,429	\$ 1,149
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	0.42%	0.40%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (7) ÷ (1)	<u>0.01%</u>	<u>0.01%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.43%	0.41%
12.	DISCOUNT RATE	7.00%	7.00%

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

** Includes estimated third party administrator expenses of \$563,000 for 2018 and total administrative expenses of \$489,000 for 2017.

Schedule A – Results of the Valuation (continued)

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

Valuation Date		June 30, 2018	June 30, 2017
1.	COVERED PAYROLL*	\$ 268,121	\$ 206,895
2.	ACTUARIAL ACCRUED LIABILITY Present value of prospective benefits payable in respect of:		
	(a) Present active members	\$ 8,399	\$ 6,065
	(b) Present disabled and ported members and IBNR	<u>1,571</u>	<u>361</u>
	(c) Total present value of prospective benefits	\$ 9,970	\$ 6,426
	(d) Present value of future normal contributions	<u>7,238</u>	<u>5,601</u>
	(e) Total actuarial accrued liability (2c) – (2d)	\$ 2,732	\$ 825
3.	PRESENT ASSETS FOR VALUATION PURPOSES	\$ 853	\$ 413
4.	UNFUNDED ACTUARIAL ACCRUED LIABILITY (2e) – (3)	\$ 1,879	\$ 412
5.	AMORTIZATION PERIOD (YEARS)	16-20	17-20
6.	NORMAL CONTRIBUTION**	\$ 1,821	\$ 1,274
7.	ACCRUED LIABILITY CONTRIBUTION	<u>134</u>	<u>30</u>
8.	TOTAL CONTRIBUTION BASED ON COVERED PAYROLL (6) + (7)	\$ 1,955	\$ 1,304
9.	NORMAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (6) ÷ (1)	0.83%	0.71%
10.	ACCRUED LIABILITY CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (7) ÷ (1)	<u>0.05%</u>	<u>0.01%</u>
11.	TOTAL CONTRIBUTION AS A PERCENT OF COVERED PAYROLL (9) + (10)	0.88%	0.72%
12.	DISCOUNT RATE	7.00%	7.00%

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

** Includes estimated third party administrator expenses of \$708,000 for 2018 and total administrative expenses of \$455,000 for 2017.

Schedule A – Solvency Test

GROUP LIFE INSURANCE PROGRAM (\$ IN THOUSANDS)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued 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)
6/30/2018	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
6/30/2014	n/a	1,522,758	1,178,751	2,701,509	992,221	n/a	65.16	0.00
6/30/2013	n/a	1,422,423	1,149,268	2,571,691	836,547	n/a	58.81	0.00

HEALTH INSURANCE CREDIT PROGRAM (\$ IN THOUSANDS)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued 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)
STATE EMPLOYEES								
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
6/30/2014	n/a	577,291	384,851	962,142	60,645	n/a	10.51	0.00
6/30/2013	n/a	562,448	382,134	944,582	54,773	n/a	9.74	0.00
TEACHERS								
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
6/30/2014	n/a	761,301	536,420	1,297,721	79,177	n/a	10.40	0.00
6/30/2013	n/a	728,612	529,180	1,257,792	67,012	n/a	9.20	0.00

Schedule A – Solvency Test (continued)

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

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued 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)
<u>PARTICIPATING POLITICAL SUBDIVISIONS</u>								
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
6/30/2014	n/a	17,371	17,826	35,197	18,605	n/a	100.00	6.92
6/30/2013	n/a	16,268	17,036	33,304	16,137	n/a	99.19	0.00
<u>CONSTITUTIONAL OFFICERS</u>								
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
6/30/2014	n/a	13,140	12,730	25,870	2,378	n/a	18.10	0.00
6/30/2013	n/a	12,413	12,357	24,770	831	n/a	6.69	0.00
<u>SOCIAL SERVICE EMPLOYEES</u>								
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
6/30/2014	n/a	7,767	5,180	12,947	1,736	n/a	22.35	0.00
6/30/2013	n/a	7,349	5,232	12,581	681	n/a	9.27	0.00
<u>REGISTRARS</u>								
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
6/30/2014	n/a	272	210	482	31	n/a	11.40	0.00
6/30/2013	n/a	239	205	444	(2)	n/a	(0.84)	0.00

Schedule A – Solvency Test (continued)

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

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued 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)
6/30/2018*	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
6/30/2014	n/a	138,511	50,027	188,538	325,354	n/a	100.00	373.48
6/30/2013	n/a	132,842	50,104	182,946	313,480	n/a	100.00	360.53

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

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

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued 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)
TEACHERS								
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
6/30/2014	n/a	n/a	n/a	11	0	n/a	0.00	0.00
POLITICAL SUBDIVISIONS								
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
6/30/2014	n/a	n/a	n/a	48	0	n/a	0.00	0.00

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

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 7.00% 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 are shown on the following pages.

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 1,437,586	\$ 1,224,926
Revenue for the year		
Contributions		
Member	\$ 150,402	\$ 146,002
Employer	<u>98,530</u>	<u>94,082</u>
Total contributions	\$ 248,932	\$ 240,084
Net investment income	\$ 110,917	\$ 158,430
Miscellaneous revenue	<u>0</u>	<u>0</u>
2. Total revenue	\$ 359,849	\$ 398,514
Expenditures for the year		
Benefit payments	\$ 200,285	\$ 184,092
Administrative expenses	664	31
Other expenses	<u>1,713</u>	<u>1,731</u>
3. Total expenditures	\$ 202,662	\$ 185,854
4. Change in net assets (2) – (3)	\$ 157,187	\$ 212,660
5. Market value of assets at end of year (1) + (4)	\$ 1,594,773	\$ 1,437,586

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, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 79,516	\$ 68,685
Revenue for the year		
Contributions	\$ 79,416	\$ 75,058
Other Revenue	536	(538)
Net investment income	<u>5,706</u>	<u>7,698</u>
2. Total revenue	\$ 85,658	\$ 82,218
Expenditures for the year		
Benefit payments	\$ 69,117	\$ 71,256
Administrative expenses	<u>149</u>	<u>131</u>
3. Total expenditures	\$ 69,266	\$ 71,387
4. Change in net assets (2) – (3)	\$ 16,392	\$ 10,831
5. Market value of assets at end of year (1) + (4)	\$ 95,908	\$ 79,516

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 96,090	\$ 82,854
Revenue for the year		
Contributions	\$ 99,469	\$ 87,613
Other Revenue	(446)	447
Net investment income	<u>6,098</u>	<u>8,807</u>
2. Total revenue	\$ 105,121	\$ 96,867
Expenditures for the year		
Benefit payments	\$ 89,420	\$ 83,510
Administrative expenses	<u>152</u>	<u>121</u>
3. Total expenditures	\$ 89,572	\$ 83,631
4. Change in net assets (2) – (3)	\$ 15,549	\$ 13,236
5. Market value of assets at end of year (1) + (4)	\$ 111,639	\$ 96,090

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 22,167	\$ 19,337
Revenue for the year		
Contributions	\$ 2,291	\$ 2,165
Net investment income	<u>1,448</u>	<u>2,385</u>
2. Total revenue	\$ 3,739	\$ 4,550
Expenditures for the year		
Benefit payments	\$ 2,708	\$ 1,683
Administrative expenses	<u>37</u>	<u>37</u>
3. Total expenditures	\$ 2,745	\$ 1,720
4. Change in net assets (2) – (3)	\$ 994	\$ 2,830
5. Market value of assets at end of year (1) + (4)	\$ 23,161	\$ 22,167

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at end of prior year	\$ 2,427	\$ 1,479
2. Adjustment to market value of assets	\$ 0	\$ 0
3. Market value of assets at beginning of year	\$ 2,427	\$ 1,479
Revenue for the year		
Contributions	\$ 2,378	\$ 2,320
Net investment income	<u>200</u>	<u>200</u>
4. Total revenue	\$ 2,578	\$ 2,520
Expenditures for the year		
Benefit payments	\$ 1,723	\$ 1,568
Administrative expenses	<u>4</u>	<u>4</u>
5. Total expenditures	\$ 1,727	\$ 1,572
6. Change in net assets (4) – (5)	\$ 851	\$ 948
7. Market value of assets at end of year (1) + (6)	\$ 3,278	\$ 2,427

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 1,091	\$ 861
2. Adjustment to market value of assets	\$ 0	\$ 0
3. Market value of assets at beginning of year	\$ 1,091	\$ 861
Revenue for the year		
Contributions	\$ 1,120	\$ 1,069
Net investment income	<u>79</u>	<u>91</u>
4. Total revenue	\$ 1,199	\$ 1,160
Expenditures for the year		
Benefit payments	\$ 970	\$ 928
Administrative expenses	<u>1</u>	<u>2</u>
5. Total expenditures	\$ 971	\$ 930
6. Change in net assets (4) – (5)	\$ 228	\$ 230
7. Market value of assets at end of year (1) + (6)	\$ 1,319	\$ 1,091

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 34	\$ 11
2. Adjustment to market value of assets	\$ 0	\$ 0
3. Market value of assets at beginning of year	\$ 34	\$ 11
Revenue for the year		
Contributions	\$ 32	\$ 47
Net investment income	<u>4</u>	<u>3</u>
4. Total revenue	\$ 36	\$ 50
Expenditures for the year		
Benefit payments	\$ 12	\$ 27
Administrative expenses	<u>0</u>	<u>0</u>
5. Total expenditures	\$ 12	\$ 27
6. Change in net assets (4) – (5)	\$ 24	\$ 23
7. Market value of assets at end of year (1) + (6)	\$ 58	\$ 34

Schedule B – Plan Assets (continued)

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

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	<u>26,653</u>	<u>5,420</u>	<u>32,073</u>
2. Total revenue	\$ 51,848	\$ 7,485	\$ 59,333
Expenditures for the year			
Benefit payments	\$ 29,421	\$ 1,652	\$ 31,073
Administrative expenses	<u>7,465</u>	<u>168</u>	<u>7,633</u>
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

Valuation Date – June 30, 2017	LTD	LTC	TOTAL
1. Market value of assets at beginning of year	\$ 341,288	\$ 66,538	\$ 407,826
Revenue for the Year			
Contributions and miscellaneous revenue	\$ 23,399	\$ 1,369	\$ 24,768
Net investment income	<u>40,339</u>	<u>7,867</u>	<u>48,206</u>
2. Total revenue	\$ 63,738	\$ 9,236	\$ 72,974
Expenditures for the year			
Benefit payments	\$ 29,792	\$ 902	\$ 30,694
Administrative expenses	<u>7,646</u>	<u>126</u>	<u>7,772</u>
3. Total expenditures	\$ 37,438	\$ 1,028	\$ 38,466
4. Change in net assets (2) – (3)	\$ 26,300	\$ 8,208	\$ 34,508
5. Market value of assets at end of year (1) + (4)	\$ 367,588	\$ 74,746	\$ 442,334

Schedule B – Plan Assets (continued)

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

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	<u>30</u>	<u>35</u>
2. Total revenue	\$ 1,370	\$ 1,726
Expenditures for the year		
Benefit payments	\$ 131	\$ 165
Administrative expenses	<u>870</u>	<u>1,096</u>
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

Valuation Date – June 30, 2017	Teachers	Political Subdivisions
1. Market value of assets at beginning of year	\$ 0	\$ 0
Revenue for the Year		
Contributions and miscellaneous revenue	\$ 882	\$ 1,110
Net investment income	<u>0</u>	<u>0</u>
2. Total revenue	\$ 882	\$ 1,110
Expenditures for the year		
Benefit payments	\$ 41	\$ 51
Administrative expenses	<u>563</u>	<u>708</u>
3. Total expenditures	\$ 604	\$ 759
4. Change in net assets (2) – (3)	\$ 278	\$ 351
5. Market value of assets at end of year (1) + (4)	\$ 278	\$ 351

Schedule B – Plan Assets (continued)

**GROUP LIFE INSURANCE PROGRAM
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
PREPARED AS OF JUNE 30, 2018
(\$ IN THOUSANDS)**

Valuation Date	June 30, 2018
1. Excess (Shortfall) of invested income for current and previous three years	
a. Current Year	\$ 8,667
b. First Prior Year	70,787
c. Second Prior Year	(59,298)
d. Third Prior Year	<u>(24,656)</u>
e. Total for four years	\$ (4,500)
2. Deferral of excess (shortfall) of investment income	
a. Current Year at 80%: (1a) x 0.80	\$ 6,934
b. First Prior Year at 60%: (1b) x 0.60	42,472
c. Second Prior Year at 40%: (1c) x 0.40	(23,719)
d. Third Prior Year at 20%: (1d) x 0.20	<u>(4,931)</u>
e. Total for four years	\$ 20,756
3. Market value of assets at end of year	\$ 1,594,773
4. Preliminary actuarial value of assets at end of year: (3) – (2e)	\$ 1,574,017
5. Actuarial value of assets corridor	
a. 80% of market value at end of year: (3) x 0.80	\$ 1,275,818
b. 120% of market value at end of year: (3) x 1.20	\$ 1,913,728
6. Actuarial value of assets at end of year	\$ 1,574,017

Schedule B – Plan Assets (continued)

**HEALTH INSURANCE CREDIT PROGRAM
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
PREPARED AS OF JUNE 30, 2018
(\$ IN THOUSANDS)**

Group	State Employees*	Teachers
1. Excess (Shortfall) of invested income for current and previous three years		
a. Current year	\$ (234)	\$ (960)
b. First Prior Year	2,780	2,852
c. Second Prior Year	(3,733)	(4,666)
d. Third Prior Year	<u>(1,868)</u>	<u>(2,868)</u>
e. Total for four years	\$ (3,055)	\$ (5,642)
2. Deferral of excess (shortfall) of investment income		
a. Current Year at 80%: (1a) x 0.80	\$ (187)	\$ (768)
b. First Prior Year at 60%: (1b) x 0.60	1,668	1,711
c. Second Prior Year at 40%: (1c) x 0.40	(1,493)	(1,866)
d. Third Prior Year at 20%: (1d) x 0.20	<u>(374)</u>	<u>(574)</u>
e. Total for four years	\$ (386)	\$ (1,497)
3. Market value of assets at end of year	\$ 95,908	\$ 111,639
4. Preliminary actuarial value of assets at end of year: (3) – (2e)	\$ 96,294	\$ 113,136
5. Actuarial value of assets corridor		
a. 80% of market value at end of year: (3) x 0.80	\$ 76,726	\$ 89,311
b. 120% of market value at end of year: (3) x 1.20	115,090	133,967
6. Actuarial value of assets at end of year	\$ 96,294	\$ 113,136

* 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, 2018
(\$ IN THOUSANDS)**

Benefit	LTD	LTC
1. Excess (Shortfall) of invested income for current and previous three years		
a. Current year	\$ 1,331	\$ 179
b. First Prior Year	16,940	3,197
c. Second Prior Year	(18,195)	(3,410)
d. Third Prior Year	<u>(9,129)</u>	<u>(1,640)</u>
e. Total for four years	\$ (9,053)	\$ (1,673)
2. Deferral of excess (shortfall) of investment income		
a. Current Year at 80%: (1a) x 0.80	\$ 1,065	\$ 143
b. First Prior Year at 60%: (1b) x 0.60	10,164	1,919
c. Second Prior Year at 40%: (1c) x 0.40	(7,278)	(1,364)
d. Third Prior Year at 20%: (1d) x 0.20	<u>(1,826)</u>	<u>(328)</u>
e. Total for four years	\$ 2,125	\$ 370
3. Market value of assets at end of year	\$ 382,550	\$ 80,411
4. Preliminary actuarial value of assets at end of year: (3) – (2e)	\$ 380,425	\$ 80,041
5. Actuarial value of assets corridor		
a. 80% of market value at end of year: (3) x 0.80	\$ 306,040	\$ 64,329
b. 120% of market value at end of year: (3) x 1.20	459,060	96,493
6. Actuarial value of assets at end of year	\$ 380,425	\$ 80,041

Schedule B – Plan Assets (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
PREPARED AS OF JUNE 30, 2018
(\$ IN THOUSANDS)**

Benefit	Teachers	Political Subdivisions
1. Excess (Shortfall) of invested income for current and previous three years		
a. Current year	\$ (3)	\$ (4)
b. First Prior Year	(10)	(12)
c. Second Prior Year	0	0
d. Third Prior Year	<u>(94)</u>	<u>(128)</u>
e. Total for four years	\$ (107)	\$ (144)
2. Deferral of excess (shortfall) of investment income		
a. Current Year at 80%: (1a) x 0.80	\$ (2)	\$ (3)
b. First Prior Year at 60%: (1b) x 0.60	(6)	(8)
c. Second Prior Year at 40%: (1c) x 0.40	0	0
d. Third Prior Year at 20%: (1d) x 0.20	<u>(19)</u>	<u>(26)</u>
e. Total for four years	\$ (27)	\$ (37)
3. Market value of assets at end of year	\$ 647	\$ 816
4. Preliminary actuarial value of assets at end of year: (3) – (2e)	\$ 674	\$ 853
5. Actuarial value of assets corridor		
a. 80% of market value at end of year: (3) x 0.80	\$ 518	\$ 653
b. 120% of market value at end of year: (3) x 1.20	776	980
6. Actuarial value of assets at end of year	\$ 674	\$ 853

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 1,437,586	\$ 1,224,926
2. Net external cash flow during the year	\$ 46,270	\$ 54,230
3. Market value of assets at end of year	\$ 1,594,773	\$ 1,437,586
4. Actual investment income during the year based on market value: (3) – (2) – (1)	\$ 110,917	\$ 158,430
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)	\$ 100,631	\$ 85,745
b. Net external cash flow: (2) x (5) x 0.50	<u>1,619</u>	<u>1,898</u>
c. Total: (6a) + (6b)	\$ 102,250	\$ 87,643
7. Excess investment income for the year: (4) – (6c)	\$ 8,667	\$ 70,787

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, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 79,516	\$ 68,685
2. Net external cash flow during the year	\$ 10,686	\$ 3,133
3. Market value of assets at end of year	\$ 95,908	\$ 79,516
4. Actual investment income during the year based on market value: (3) – (2) – (1)	\$ 5,706	\$ 7,698
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)	\$ 5,566	\$ 4,808
b. Net external cash flow: (2) x (5) x 0.50	<u>374</u>	<u>110</u>
c. Total: (6a) + (6b)	\$ 5,940	\$ 4,918
7. Excess investment income for the year: (4) – (6c)	\$ (234)	\$ 2,780

Schedule B – Plan Assets (continued)

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

Valuation Date	June 30, 2018	June 30, 2017
1. Market value of assets at beginning of year	\$ 96,090	\$ 82,854
2. Net external cash flow during the year	\$ 9,452	\$ 4,429
3. Market value of assets at end of year	\$ 111,639	\$ 96,090
4. Actual investment income during the year based on market value: (3) – (2) – (1)	\$ 6,097	\$ 8,807
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)	\$ 6,726	\$ 5,800
b. Net external cash flow: (2) x (5) x 0.50	<u>331</u>	<u>155</u>
c. Total: (6a) + (6b)	\$ 7,057	\$ 5,955
7. Excess investment income for the year: (4) – (6c)	\$ (960)	\$ 2,852

Schedule B – Plan Assets (continued)

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

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	<u>(409)</u>	<u>9</u>
c. Total: (6a) + (6b)	\$ 25,322	\$ 5,241
7. Excess investment income for the year: (4) – (6c)	\$ 1,331	\$ 179

June 30, 2017	LTD	LTC
1. Market value of assets at beginning of year	\$ 341,288	\$ 66,538
2. Net external cash flow during the year	\$ (14,039)	\$ 341
3. Market value of assets at end of year	\$ 367,588	\$ 74,746
4. Actual investment income during the year based on market value: (3) – (2) – (1)	\$ 40,339	\$ 7,867
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)	\$ 23,890	\$ 4,658
b. Net external cash flow: (2) x (5) x 0.50	<u>(491)</u>	<u>12</u>
c. Total: (6a) + (6b)	\$ 23,399	\$ 4,670
7. Excess investment income for the year: (4) – (6c)	\$ 16,940	\$ 3,197

Schedule B – Plan Assets (continued)

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

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)	\$ 28	\$ 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	<u>12</u>	<u>15</u>
c. Total: (6a) + (6b)	\$ 31	\$ 40
7. Excess investment income for the year: (4) – (6c)	\$ (3)	\$ (4)

June 30, 2017	Teachers	Political Subdivisions
1. Market value of assets at beginning of year	\$ 0	\$ 0
2. Net external cash flow during the year	\$ 278	\$ 351
3. Market value of assets at end of year	\$ 278	\$ 351
4. Actual investment income during the year based on market value: (3) – (2) – (1)	\$ 0	\$ 0
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)	\$ 0	\$ 0
b. Net external cash flow: (2) x (5) x 0.50	<u>10</u>	<u>12</u>
c. Total: (6a) + (6b)	\$ 10	\$ 12
7. Excess investment income for the year: (4) – (6c)	\$ (10)	\$ (12)

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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2013 Legacy UAAL	\$1,735,144	\$1,802,415	\$107,183	\$1,813,898	\$110,398	25
June 30, 2014 Experience (Gain)/Loss	(\$45,419)	(\$44,371)	(\$3,479)	(\$43,754)	(\$3,584)	16
June 30, 2015 Experience (Gain)/Loss	(\$27,163)	(\$26,821)	(\$2,020)	(\$26,537)	(\$2,081)	17
June 30, 2016 Experience (Gain)/Loss	\$10,216	\$10,165	\$738	\$10,087	\$760	18
June 30, 2017 Assumption and Method Changes	(\$49,110)	(\$49,110)	(\$3,443)	(\$46,724)	(\$3,391)	19
June 30, 2017 Experience (Gain)/Loss	(\$77,647)	(\$77,647)	(\$5,443)	(\$79,398)	(\$5,765)	19
June 30, 2018 Experience (Gain)/Loss	(\$35,074)			(\$35,074)	(\$2,459)	20
Total		\$1,614,631	\$93,536	\$1,592,498	\$93,881	

Date	Projected UAAL (\$ in Thousands)
June 30, 2018	\$1,592,498
June 30, 2019	\$1,603,519
June 30, 2020	\$1,612,298
June 30, 2021	\$1,618,587
June 30, 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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2013 Legacy UAAL	\$889,809	\$924,307	\$54,965	\$930,196	\$56,614	25 Years
June 30, 2014 Experience (Gain)/Loss	1,656	1,617	127	1,594	131	16 Years
June 30, 2015 Experience (Gain)/Loss	(1,294)	(1,279)	(96)	(1,266)	(99)	17 Years
June 30, 2016 Experience (Gain)/Loss	(707)	(702)	(51)	(697)	(52)	18 Years
June 30, 2017 Assumption and Method Changes	(12,857)	(12,857)	(901)	(12,793)	(928)	19 Years
June 30, 2017 Experience (Gain)/Loss	187	187	13	186	13	19 Years
June 30, 2018 Experience (Gain)/Loss	(17,855)			(17,855)	(1,252)	20 Years
Total		\$911,273	\$54,057	\$899,365	\$54,427	

Date	Projected UAAL (\$ in Thousands)
June 30, 2018	\$899,365
June 30, 2019	904,085
June 30, 2020	907,388
June 30, 2021	909,123
June 30, 2022	909,125
June 30, 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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2013 Legacy UAAL	\$1,190,780	\$1,236,946	\$73,557	\$1,244,826	\$75,763	25 Years
June 30, 2014 Experience (Gain)/Loss	14,338	14,007	1,098	13,813	1,131	16 Years
June 30, 2015 Experience (Gain)/Loss	9,296	9,179	691	9,082	712	17 Years
June 30, 2016 Experience (Gain)/Loss	13,656	13,588	986	13,484	1,016	18 Years
June 30, 2017 Assumption and Method Changes	(16,036)	(16,036)	(1,124)	(15,956)	(1,158)	19 Years
June 30, 2017 Experience (Gain)/Loss	3,250	3,250	228	3,234	235	19 Years
June 30, 2018 Experience (Gain)/Loss	(2,546)			(2,546)	(178)	20 Years
Total		\$1,260,934	\$75,436	\$1,265,937	\$77,521	

Date	Projected UAAL (\$ in Thousands)
June 30, 2018	\$1,265,937
June 30, 2019	1,271,605
June 30, 2020	1,275,182
June 30, 2021	1,276,447
June 30, 2022	1,275,160
June 30, 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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2013 Legacy UAAL	\$23,939	\$24,867	\$1,479	\$25,025	\$1,523	25 Years
June 30, 2014 Experience (Gain)/Loss	(716)	(700)	(55)	(690)	(57)	16 Years
June 30, 2015 Experience (Gain)/Loss	1,837	1,814	137	1,795	141	17 Years
June 30, 2016 Experience (Gain)/Loss	502	500	36	496	37	18 Years
June 30, 2017 Experience (Gain)/Loss	(183)	(184)	(13)	(183)	(13)	19 Years
June 30, 2018 Experience (Gain)/Loss	(1)			(1)	(0)	20 Years
Total		\$26,297	\$1,584	\$26,442	\$1,631	

Date	Projected UAAL (\$ in Thousands)
June 30, 2018	\$26,442
June 30, 2019	\$26,548
June 30, 2020	\$26,608
June 30, 2021	\$26,619
June 30, 2022	\$26,575
June 30, 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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2013 Legacy UAAL	\$11,900	\$12,362	\$735	\$12,441	\$757	25 Years
June 30, 2014 Experience (Gain)/Loss	(824)	(805)	(63)	(794)	(65)	16 Years
June 30, 2015 Experience (Gain)/Loss	1,155	1,140	86	1,128	88	17 Years
June 30, 2016 Experience (Gain)/Loss	252	250	18	248	19	18 Years
June 30, 2017 Experience (Gain)/Loss	(48)	(48)	(3)	(48)	(3)	19 Years
June 30, 2018 Experience (Gain)/Loss	(97)			(97)	(7)	20 Years
Total		\$12,899	\$773	\$12,878	\$789	

Date	Projected UAAL (\$ in Thousands)
June 30, 2018	\$12,878
June 30, 2019	\$12,935
June 30, 2020	\$12,972
June 30, 2021	\$12,984
June 30, 2022	\$12,970
June 30, 2043	\$0

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

**HEALTH INSURANCE CREDIT PROGRAM
REGISTRARS
UAAL AMORTIZATION SCHEDULE**

Description	Original Balance	Outstanding Balance as of June 30, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2013 Legacy UAAL	\$446,567	\$463,881	\$27,585	\$466,836	\$28,413	25 Years
June 30, 2014 Experience (Gain)/Loss	(530)	(\$517)	(\$41)	(\$510)	(\$42)	16 Years
June 30, 2015 Experience (Gain)/Loss	41,365	\$40,843	\$3,076	\$40,410	\$3,169	17 Years
June 30, 2016 Experience (Gain)/Loss	(1,852)	(\$1,801)	(\$131)	(\$1,787)	(\$135)	18 Years
June 30, 2017 Experience (Gain)/Loss	(15,518)	(\$15,518)	(\$1,088)	(\$15,440)	(\$1,120)	19 Years
June 30, 2018 Experience (Gain)/Loss	(10,877)	n/a	n/a	(10,877)	(763)	20 Years
Total		\$486,888	\$29,401	\$478,632	\$29,522	

Date	Projected UAAL
June 30, 2018	\$478,632
June 30, 2019	\$480,547
June 30, 2020	\$481,649
June 30, 2021	\$481,852
June 30, 2022	\$481,063
June 30, 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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2013 Legacy UAAL	(\$130,534)	(\$134,752)	(\$8,013)	(\$135,607)	(\$8,253)	25 Years
June 30, 2014 Experience (Gain)/Loss	(4,810)	(5,894)	(462)	(5,813)	(476)	16 Years
June 30, 2015 Experience (Gain)/Loss	(24,839)	(24,526)	(1,847)	(24,268)	(1,903)	17 Years
June 30, 2016 Experience (Gain)/Loss	(10,975)	(10,920)	(792)	(10,836)	(816)	18 Years
June 30, 2017 Experience (Gain)/Loss	(34,768)	(34,678)	(2,438)	(34,596)	(2,511)	19 Years
June 30, 2018 Experience (Gain)/Loss	15,946	n/a	n/a	15,946	1,118	20 Years
Total		(\$210,860)	(\$13,552)	(\$195,174)	(\$12,841)	

Date	Projected UAAL (\$ in Thousands)
June 30, 2017	(\$195,173)
June 30, 2018	(195,094)
June 30, 2019	(194,598)
June 30, 2020	(193,644)
June 30, 2020	(192,186)
June 30, 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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2014 Experience (Gain)/Loss	11	11	1	11	1	16 Years
June 30, 2015 Experience (Gain)/Loss	118	116	9	115	9	17 Years
June 30, 2016 Experience (Gain)/Loss	254	253	18	250	19	18 Years
June 30, 2017 Experience (Gain)/Loss	108	108	8	107	8	19 Years
June 30, 2018 Experience (Gain)/Loss	226	n/a	n/a	226	15	20 Years
Total		\$488	\$36	\$709	\$52	

Date	Projected UAAL (\$ in Thousands)
June 30, 2017	\$709
June 30, 2018	702
June 30, 2019	694
June 30, 2020	685
June 30, 2021	672
June 30, 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, 2017	July 1, 2017 Amortization Payment	Outstanding Balance as of June 30, 2018	July 1, 2018 Amortization Payment	Amortization Period as of June 30, 2018
June 30, 2014 Experience (Gain)/Loss	48	47	4	46	4	16 Years
June 30, 2015 Experience (Gain)/Loss	58	57	4	57	5	17 Years
June 30, 2016 Experience (Gain)/Loss	221	220	16	218	16	18 Years
June 30, 2017 Experience (Gain)/Loss	88	88	6	87	6	19 Years
June 30, 2018 Experience (Gain)/Loss	1,471	n/a	n/a	1,471	103	20 Years
Total		\$412	\$30	\$1,879	\$134	

Date	Projected UAAL (\$ in Thousands)
June 30, 2017	\$1,879
June 30, 2018	1,868
June 30, 2019	1,851
June 30, 2020	1,829
June 30, 2021	1,801
June 30, 2043	0

Schedule D – Outline of Actuarial Assumptions and Methods

Assumptions and Methods Applicable to all OPEB Plans

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. 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*.

Investment Return Rate: 7.00% per annum, compounded annually.

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: 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.

The amortization payment includes an adjustment of 1.019233 to account for the passage of time from the valuation date to the date the contribution is made.

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:	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:

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 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 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. 45.00% 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 group is all other political subdivisions not included in the Top 10 group.

Additional Funding Charge: An additional funding charge will be included in the contribution rate, if needed, to allow the use of the 7.00% 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:	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:	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 (if applicable) and Group Life Insurance benefits provided under VLDP are valued under the respective plans.
Disability:	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.

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 90% of rates; females setback 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, 1.5% 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	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.033	0.033	0.125	0.125
51	0.000	0.000	0.000	0.033	0.030	0.080	0.090
52	0.000	0.000	0.000	0.033	0.030	0.080	0.090
53	0.000	0.000	0.000	0.033	0.030	0.050	0.090
54	0.000	0.000	0.000	0.033	0.030	0.050	0.090
55	0.000	0.045	0.045	0.045	0.035	0.050	0.090
56	0.000	0.045	0.040	0.040	0.040	0.050	0.090
57	0.000	0.045	0.040	0.040	0.040	0.075	0.090
58	0.000	0.045	0.040	0.040	0.040	0.100	0.090
59	0.000	0.045	0.040	0.040	0.040	0.100	0.090
60	0.000	0.045	0.050	0.050	0.050	0.115	0.090
61	0.000	0.150	0.075	0.075	0.075	0.165	0.150
62	0.000	0.150	0.100	0.100	0.100	0.200	0.200
63	0.000	0.150	0.100	0.100	0.100	0.200	0.175
64	0.000	0.150	0.135	0.135	0.135	0.200	0.175
65	0.000	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
67	0.000	0.275	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
69	0.000	0.200	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
71	0.000	0.200	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
73	0.000	0.200	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
>=75	0.000	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 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 year, 1.5% increase compounded from ages 65 to 70, and 2.0% increase compounded from ages 75 to 90

Post-Disablement:

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

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: Teachers are assumed to receive their first salary increase on the valuation date. 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
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, 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 uses 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:

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; 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 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

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 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 uses 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		0.03312	0.06223		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-LEO¹

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		0.03312	0.06223		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.

¹ The actuarial assumptions for Political Subdivisions Non-Top 10 Locals are also applied to members of the political subdivisions not providing VRS pension benefits.

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
50.00	0.000	0.000	0.000	0.050	0.050	0.100	0.100
51.00	0.000	0.000	0.000	0.055	0.040	0.100	0.080
52.00	0.000	0.000	0.000	0.055	0.040	0.100	0.080
53.00	0.000	0.000	0.000	0.055	0.040	0.100	0.080
54.00	0.000	0.000	0.000	0.055	0.040	0.100	0.100
55.00	0.000	0.055	0.055	0.055	0.050	0.140	0.100
56.00	0.000	0.055	0.050	0.050	0.050	0.140	0.100
57.00	0.000	0.090	0.055	0.055	0.055	0.110	0.100
58.00	0.000	0.090	0.055	0.055	0.055	0.110	0.100
59.00	0.000	0.100	0.055	0.055	0.055	0.120	0.100
60.00	0.000	0.100	0.060	0.060	0.060	0.120	0.100
61.00	0.000	0.150	0.100	0.100	0.100	0.250	0.220
62.00	0.000	0.130	0.170	0.170	0.170	0.350	0.300
63.00	0.000	0.130	0.150	0.150	0.150	0.200	0.250
64.00	0.000	0.200	0.150	0.150	0.150	0.270	0.250
65.00	0.000	0.270	0.270	0.270	0.270	0.270	0.300
66.00	0.000	0.270	0.300	0.300	0.300	0.300	0.300
67.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
68.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
69.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
70.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
71.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
72.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
73.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
74.00	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
50.00	0.000	0.000	0.000	0.055	0.055	0.060	0.060
51.00	0.000	0.000	0.000	0.055	0.040	0.060	0.100
52.00	0.000	0.000	0.000	0.055	0.045	0.060	0.100
53.00	0.000	0.000	0.000	0.055	0.045	0.120	0.100
54.00	0.000	0.000	0.000	0.055	0.045	0.120	0.100
55.00	0.000	0.070	0.070	0.070	0.055	0.120	0.100
56.00	0.000	0.060	0.055	0.055	0.055	0.120	0.100
57.00	0.000	0.060	0.055	0.055	0.055	0.100	0.100
58.00	0.000	0.060	0.055	0.055	0.055	0.100	0.100
59.00	0.000	0.060	0.055	0.055	0.055	0.150	0.100
60.00	0.000	0.085	0.075	0.075	0.075	0.150	0.100
61.00	0.000	0.085	0.075	0.075	0.075	0.200	0.175
62.00	0.000	0.190	0.170	0.170	0.170	0.200	0.250
63.00	0.000	0.110	0.150	0.150	0.150	0.200	0.250
64.00	0.000	0.110	0.150	0.150	0.150	0.250	0.150
65.00	0.000	0.280	0.280	0.280	0.280	0.280	0.350
66.00	0.000	0.280	0.300	0.300	0.300	0.300	0.300
67.00	0.000	0.175	0.220	0.220	0.220	0.220	0.220
68.00	0.000	0.175	0.220	0.220	0.220	0.220	0.220
69.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
70.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
71.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
72.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
73.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
74.00	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
50.00	0.000	0.000	0.000	0.050	0.050	0.050	0.050
51.00	0.000	0.000	0.000	0.055	0.040	0.040	0.040
52.00	0.000	0.000	0.000	0.055	0.040	0.040	0.040
53.00	0.000	0.000	0.000	0.055	0.040	0.040	0.040
54.00	0.000	0.000	0.000	0.055	0.040	0.040	0.040
55.00	0.000	0.055	0.055	0.055	0.050	0.140	0.140
56.00	0.000	0.055	0.050	0.050	0.050	0.140	0.100
57.00	0.000	0.090	0.055	0.055	0.055	0.110	0.100
58.00	0.000	0.090	0.055	0.055	0.055	0.110	0.100
59.00	0.000	0.100	0.055	0.055	0.055	0.120	0.100
60.00	0.000	0.100	0.060	0.060	0.060	0.120	0.100
61.00	0.000	0.150	0.100	0.100	0.100	0.250	0.220
62.00	0.000	0.130	0.170	0.170	0.170	0.350	0.300
63.00	0.000	0.130	0.150	0.150	0.150	0.200	0.250
64.00	0.000	0.200	0.150	0.150	0.150	0.270	0.250
65.00	0.000	0.270	0.270	0.270	0.270	0.270	0.300
66.00	0.000	0.270	0.300	0.300	0.300	0.300	0.300
67.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
68.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
69.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
70.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
71.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
72.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
73.00	0.000	0.270	0.250	0.250	0.250	0.250	0.250
74.00	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
50.00	0.000	0.000	0.000	0.055	0.055	0.055	0.055
51.00	0.000	0.000	0.000	0.055	0.040	0.040	0.040
52.00	0.000	0.000	0.000	0.055	0.045	0.045	0.045
53.00	0.000	0.000	0.000	0.055	0.045	0.045	0.045
54.00	0.000	0.000	0.000	0.055	0.045	0.045	0.045
55.00	0.000	0.070	0.070	0.070	0.055	0.120	0.120
56.00	0.000	0.060	0.055	0.055	0.055	0.120	0.100
57.00	0.000	0.060	0.055	0.055	0.055	0.100	0.100
58.00	0.000	0.060	0.055	0.055	0.055	0.100	0.100
59.00	0.000	0.060	0.055	0.055	0.055	0.150	0.100
60.00	0.000	0.085	0.075	0.075	0.075	0.150	0.100
61.00	0.000	0.085	0.075	0.075	0.075	0.200	0.175
62.00	0.000	0.190	0.170	0.170	0.170	0.200	0.250
63.00	0.000	0.110	0.150	0.150	0.150	0.200	0.250
64.00	0.000	0.110	0.150	0.150	0.150	0.250	0.150
65.00	0.000	0.280	0.280	0.280	0.280	0.280	0.350
66.00	0.000	0.280	0.300	0.300	0.300	0.300	0.300
67.00	0.000	0.175	0.220	0.220	0.220	0.220	0.220
68.00	0.000	0.175	0.220	0.220	0.220	0.220	0.220
69.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
70.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
71.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
72.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
73.00	0.000	0.300	0.220	0.220	0.220	0.220	0.220
74.00	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	0.120	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	0.100	0.100	0.100	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	0.100	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	0.100	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 7.00%). 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

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 but before January 1, 2014, 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 SPORS, VaLORS, and Political Subdivisions with LEOs/Fire Pension Benefit Coverage are in Plan 2.
Hybrid Plan:	State, Teachers, JRS, and Political Subdivisions with General Employee Pension Benefit Coverage members hired (for JRS, appointed or elected to an original term) on or after January 1, 2014 or members in Plan 1 or Plan 2 who elected to opt into the plan during the election window held January 1, 2014 through April 30, 2014. Members of SPORS, VaLORS, and Political Subdivisions with LEOs/Fire Pension Benefit Coverage are not eligible to participate in the Hybrid Plan.

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 Minnesota Life which in turn pays the life insurance proceeds to the beneficiaries. Payments for postemployment benefits are made by Minnesota Life 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 (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. 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-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. 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).

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

NORMAL RETIREMENT ELIGIBILITY:

Plan 1 Members: 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 Plan Members: 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 Members: 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 Plan Members: 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 – 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 – 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

NORMAL RETIREMENT ELIGIBILITY:

Plan 1 Members: 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 Plan Members: 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 Members: 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 Plan Members: 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 – NON-HYBRID: Plan 1 and Plan 2 members are eligible for disability retirement benefits from the first day of employment.

DISABILITY – HYBRID: 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)***

SPORS

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 – 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 – 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)***

JRS

WEIGHTED SERVICE CREDIT:

Plan 1 Members: 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 Plan Members: 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 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 – NON-HYBRID: Plan 1 and Plan 2 members are eligible for disability retirement benefits from the first day of employment.

DISABILITY – HYBRID: Hybrid Plan members are eligible from the first day of employment for work-related disability benefits, but must have a minimum of one year of service to be eligible for non-work related disability benefits.

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

VaLORS

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 – 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 – 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**

NORMAL RETIREMENT ELIGIBILITY:

Plan 1 Members: 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 Plan Members: 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 Members: 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 Plan Members: 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 – NON-HYBRID: Plan 1 and Plan 2 members are eligible for disability retirement benefits from the first day of employment.

DISABILITY – HYBRID: 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

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:

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, 2018**

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	3,416	5,396	29							8,841
25 - 29	4,312	22,907	5,118	54						32,391
30 - 34	3,118	15,943	14,814	4,863	25					38,763
35 - 39	2,340	11,672	9,690	14,598	3,455	25				41,780
40 - 44	1,974	9,725	7,533	10,623	9,992	2,430	21			42,298
45 - 49	1,919	9,101	7,986	10,686	9,156	8,787	2,309	64		50,008
50 - 54	1,635	7,529	7,276	9,782	8,239	6,440	6,437	2,198	45	49,581
55 - 59	1,301	6,126	5,974	8,819	8,380	5,806	5,316	4,856	1,701	48,279
60 - 64	641	3,544	4,014	6,128	6,098	4,731	4,290	3,165	3,819	36,430
65 - 69	213	1,236	1,602	2,458	2,395	1,821	1,699	1,253	1,880	14,557
70 & Up	80	470	594	897	786	504	501	405	738	4,975
Totals	20,949	93,649	64,630	68,908	48,526	30,544	20,573	11,941	8,183	367,903

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, 2018**

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	1,219	1,306	12							2,537
25 - 29	1,569	5,566	956	16						8,107
30 - 34	1,109	5,518	2,890	1,006	11					10,534
35 - 39	798	4,401	2,956	3,142	559	5				11,861
40 - 44	639	3,159	2,537	3,318	1,688	477	11			11,829
45 - 49	612	2,661	2,340	3,655	1,984	1,660	510	17		13,439
50 - 54	496	2,320	2,076	2,940	2,241	1,767	1,590	689	17	14,136
55 - 59	409	1,983	1,892	2,556	2,290	1,779	1,885	1,578	643	15,015
60 - 64	183	1,195	1,386	1,929	1,716	1,461	1,574	1,282	1,624	12,350
65 - 69	44	361	542	896	769	656	701	577	956	5,502
70 & Up	8	112	140	259	257	186	232	248	482	1,924
Totals	7,086	28,582	17,727	19,717	11,515	7,991	6,503	4,391	3,722	107,234

Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
TEACHERS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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	416	2,275	1							2,692
25 - 29	708	11,488	2,651	6						14,853
30 - 34	525	6,068	8,178	2,152	7					16,930
35 - 39	427	4,230	4,115	7,907	1,797	4				18,480
40 - 44	430	3,871	3,030	4,435	5,665	1,121	3			18,555
45 - 49	407	3,796	3,480	4,267	4,426	4,575	1,044	3		21,998
50 - 54	306	2,833	2,946	4,100	3,653	2,685	3,176	775	4	20,478
55 - 59	209	1,919	2,054	3,631	3,759	2,380	2,059	1,996	511	18,518
60 - 64	99	917	1,129	2,209	2,679	2,037	1,774	1,067	1,280	13,191
65 - 69	27	290	369	767	963	728	639	422	546	4,751
70 & Up	10	81	101	178	224	140	139	87	179	1,139
Totals	3,564	37,768	28,054	29,652	23,173	13,670	8,834	4,350	2,520	151,585

Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
POLITICAL SUBDIVISIONS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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	363	389	4							756
25 - 29	424	1,182	265	7						1,878
30 - 34	303	931	662	312	1					2,209
35 - 39	224	682	492	654	170					2,222
40 - 44	192	671	475	556	414	123	1			2,432
45 - 49	213	673	522	642	526	347	119	7		3,049
50 - 54	201	623	544	674	459	324	249	128	1	3,203
55 - 59	149	586	498	620	521	310	281	193	87	3,245
60 - 64	85	378	383	510	374	234	190	108	123	2,385
65 - 69	50	170	187	228	165	106	85	53	60	1,104
70 & Up	18	91	99	124	88	52	31	23	25	551
Totals	2,222	6,376	4,131	4,327	2,718	1,496	956	512	296	23,034

Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
CONSTITUTIONAL OFFICERS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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	235	312	6							553
25 - 29	226	1,045	254	3						1,528
30 - 34	123	602	551	274	1					1,551
35 - 39	91	352	325	562	190	4				1,524
40 - 44	73	268	217	352	425	157				1,492
45 - 49	68	229	230	346	388	510	131	9		1,911
50 - 54	70	190	207	259	306	306	224	91	2	1,655
55 - 59	42	155	147	246	247	200	107	115	65	1,324
60 - 64	19	84	88	163	160	114	73	72	109	882
65 - 69	6	25	37	61	67	51	34	34	45	360
70 & Up	3	6	7	19	16	6	21	8	24	110
Totals	956	3,268	2,069	2,285	1,800	1,348	590	329	245	12,890

Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
SOCIAL SERVICE EMPLOYEES
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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	82	54								136
25 - 29	113	346	34							493
30 - 34	88	351	155	37						631
35 - 39	89	299	151	161	22					722
40 - 44	71	227	137	161	109	16				721
45 - 49	61	210	123	143	136	91	17			781
50 - 54	41	160	103	135	127	95	109	20	1	791
55 - 59	26	97	77	110	105	74	94	59	18	660
60 - 64	10	59	65	87	69	75	69	55	61	550
65 - 69	1	17	16	26	26	23	22	14	28	173
70 & Up		1	3	10	9	7	11	6	8	55
Totals	582	1,821	864	870	603	381	322	154	116	5,713

Schedule G – Schedule of Active Member Data (continued)

**HEALTH INSURANCE CREDIT PROGRAM
REGISTRARS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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								4
25 - 29	1	6	2							9
30 - 34		5	3	1						9
35 - 39		7	3	4	1					15
40 - 44	2	10	3	5	2	1				23
45 - 49	3	7	3	6	5	2				26
50 - 54		8	5	9	7	3	2			34
55 - 59	1	8	9	11	5	4	4	2		44
60 - 64		1	6	8	5	6	4		2	32
65 - 69	1	2	6	5	1		4	2	2	23
70 & Up	1	1	1	3	2	4			2	14
Totals	11	57	41	52	28	20	14	4	6	233

Schedule G – Schedule of Active Member Data (continued)

**VIRGINIA SICKNESS AND DISABILITY PROGRAM
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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	1,114	1,014	5							2,133
25 - 29	1,445	4,152	767	7						6,371
30 - 34	1,046	3,673	2,375	786	6					7,886
35 - 39	753	2,734	2,265	2,371	494	1				8,618
40 - 44	601	2,132	1,876	2,097	1,473	290	3			8,472
45 - 49	581	1,878	1,840	2,098	1,720	1,039	280	10		9,446
50 - 54	471	1,709	1,647	2,071	1,653	1,032	898	356	9	9,846
55 - 59	388	1,433	1,506	2,009	1,712	999	981	872	322	10,222
60 - 64	177	840	1,110	1,519	1,284	846	781	603	771	7,931
65 - 69	40	232	409	678	558	344	317	234	492	3,304
70 & Up	7	58	91	176	163	90	74	77	199	935
Totals	6,623	19,855	13,891	13,812	9,063	4,641	3,334	2,152	1,793	75,164

Schedule G – Schedule of Active Member Data (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
TEACHERS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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	117	435								552
25 - 29	185	2,414	1							2,600
30 - 34	133	1,327	3							1,463
35 - 39	128	951	5	1						1,085
40 - 44	117	935	15	1	1					1,069
45 - 49	118	915	5							1,038
50 - 54	91	677	6	1		1	1			777
55 - 59	60	408	4							472
60 - 64	21	186	4							211
65 - 69	3	47								50
70 & Up	1	14								15
Totals	974	8,309	43	3	1	1	1	0	0	9,332

Schedule G – Schedule of Active Member Data (continued)

**VIRGINIA LOCAL DISABILITY PROGRAM
POLITICAL SUBDIVISIONS
SCHEDULE OF ACTIVE MEMBER DATA
AS OF JUNE 30, 2018**

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	250	231								481
25 - 29	361	812								1,173
30 - 34	300	785	2							1,087
35 - 39	272	658	7	3						940
40 - 44	243	630	4	2	1					880
45 - 49	254	603	14	1						872
50 - 54	219	601	10		1	1			1	833
55 - 59	199	616	9	2	1					827
60 - 64	116	386	10							512
65 - 69	45	168	3				1			217
70 & Up	18	75								93
Totals	2,277	5,565	59	8	3	1	1	0	1	7,915