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Virginia
Retirement
System

GASB STATEMENT NO. 67 REPORT

FOR THE

VIRGINIA RETIREMENT SYSTEM

PREPARED AS OF JUNE 30, 2016





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 8, 2016

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

Ladies and Gentlemen:

Presented in this report is information to assist the Virginia Retirement System in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 67. The information is presented for the period ending June 30, 2016.

The annual actuarial valuation used as a basis for much of the information presented in this report was performed as of June 30, 2015. The valuation was based upon data, furnished by the Virginia Retirement System staff, concerning active, inactive and retired members along with pertinent financial information.

To the best of our knowledge, this report is complete and accurate. The necessary calculations were performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems.

The calculations were prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board, and, in our opinion, meet the requirements of GASB 67.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the System and on actuarial assumptions that are, individually and in the aggregate, internally consistent and reasonably based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

www.CavMacConsulting.com

Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE



Board of Trustees
November 8, 2016
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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: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

Respectfully submitted,

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

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

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

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

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

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



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**REPORT OF THE ANNUAL GASB STATEMENT NO. 67
REQUIRED INFORMATION FOR THE
VIRGINIA RETIREMENT SYSTEM
PREPARED AS OF JUNE 30, 2016**

SECTION I – INTRODUCTION

The Governmental Accounting Standards Board issued Statement No. 67 (GASB 67), “*Financial Reporting For Pension Plans*,” in June 2012. GASB 67’s effective date is for plan years beginning after June 15, 2013. This report, prepared as of June 30, 2016 (the Measurement Date), presents information to assist the Virginia Retirement System (VRS) in meeting the requirements of GASB 67. Much of the material provided in this report is based on the data, assumptions and results of the annual actuarial valuations of the Virginia Retirement System as of June 30, 2015. The results of that valuation for the following divisions of VRS were detailed in a report dated December 18, 2015.

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

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

GASB 67 replaces GASB 25 and represents a significant departure from the requirements of that older statement. GASB 25 was issued as a funding friendly statement that required pension plans to report items consistent with the results of the plan’s actuarial valuations, as long as those valuations met certain parameters. GASB 67 basically divorces accounting and funding, creating disclosure and reporting requirements that may or may not be consistent with the basis used for funding the System.

A major change in GASB 67 is the requirement to determine the Total Pension Liability (TPL) utilizing the Entry Age Normal actuarial funding method. The Net Pension Liability (NPL) is then set equal to the TPL minus the System’s Fiduciary Net Position (FNP) (basically the market values of assets). The benefit provisions recognized in the calculation of the TPL are summarized in Schedule B. As mentioned above, for the Political Subdivision plans please refer to the individual reports for a summary of their benefit provisions.



Among the assumptions needed for the liability calculation is a Single Equivalent Interest Rate (SEIR). To determine the SEIR, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan's provision applicable to the membership and beneficiaries of the System on the Measurement Date. If the FNP is projected to not be depleted at any point in the future, the long term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the SEIR.

If, however, the FNP is projected to be depleted, the SEIR is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long term expected rate of return, and the present value determined by discounting those benefits after the date of depletion by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate. The rate used, if necessary, for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index published monthly by the Board of Governors of the Federal Reserve System.

The sections that follow provide the results of all the necessary calculations, presented in the order laid out in GASB 67 for note disclosure and Required Supplementary Information (RSI).



SECTION II – FINANCIAL STATEMENT NOTES

The material presented herein will follow the order presented in GASB 67. Paragraph numbers are provided for ease of reference.

Paragraphs 30(a) (1)-(3): The information required is to be supplied by the System.

Paragraph 30(a) (4): The data required regarding the membership of the Virginia Retirement System were furnished by the Virginia Retirement System’s office. The following table summarizes the membership of the system as of June 30, 2015, the valuation date.

Membership

GROUP	COUNT					
	State Employees	Teachers	State Police	Judicial	Virginia Law Officers	Political Subdivisions
Active Members	75,256	147,645	1,994	401	8,820	105,932
LTD	2,285	0	15	0	593	0
Total Active Members	77,541	147,645	2,009	401	9,413	105,932
Inactive Members						
Vested	11,731	20,912	135	5	865	14,951
Non-Vested	24,447	29,048	171	0	3,929	29,015
Active Elsewhere in VRS	8,894	5,345	233	4	2,457	28,953
Total Inactive Members	45,072	55,305	539	9	7,251	72,919
Retirees						
Service	50,529	77,786	1,025	387	3,645	47,823
Disabled	4,067	4,321	188	1	239	7,874
Beneficiaries	4,796	2,870	203	140	230	3,904
Total Retirees	59,392	84,977	1,416	528	4,114	59,601
Totals	182,005	287,927	3,964	938	20,778	238,452

Paragraphs 30(a) (5)-(6) and Paragraphs 30(b)-(f): The information required is to be supplied by the System.



Paragraphs 31(a) (1)-(4): The information is provided in the following table. As stated above, the NPL is equal to the TPL minus the FNP. That result as of June 30, 2016 is presented in the table below.

**Fiscal Year End June 30, 2016
(\$ in Thousands)**

	State Employees	Teachers	State Police	Judicial	Virginia Law Officers	Political Subdivisions
Total Pension Liability	\$22,958,593	\$44,182,326	\$1,086,958	\$621,605	\$1,985,618	\$20,817,088
Fiduciary Net Position	<u>16,367,842</u>	<u>30,168,211</u>	<u>730,688</u>	<u>467,389</u>	<u>1,211,446</u>	<u>17,418,106</u>
Net Pension Liability	\$6,590,751	\$14,014,115	\$356,270	\$154,216	\$774,172	\$3,398,982
Ratio of Fiduciary Net Position to Total Pension Liability	71.29%	68.28%	67.22%	75.19%	61.01%	83.67%



Paragraph 31(b) (1)(a)-(f): This paragraph requires information regarding the actuarial assumptions used to measure the TPL. The actuarial assumptions utilized in developing the TPL are outlined in Schedule C. The total pension liability was determined based on an actuarial valuation as of June 30, 2015, using the following actuarial assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2016.

Inflation	2.5 percent
Salary increases, including inflation	State Employees - 3.5 percent - 5.35 percent Teachers – 3.5 percent – 5.95 percent State Police – 3.5 percent – 4.75 percent Judicial – 4.5 percent VaLORS – 3.5 percent – 4.75 percent Political Subdivisions – General Employees – 3.5 percent – 5.35 percent Public Safety – 3.5 percent – 4.75 percent
Investment rate of return	7.0 percent, net of pension plan investment expenses, including inflation

The rates of mortality are according to the following mortality tables. The mortality tables are adjusted forward and/or back depending on the plan and the group covered. Refer to Schedule C for the specific adjustments for each plan, other than Political Subdivision plans. For the adjustments applicable to the Political Subdivision plans refer to each plan’s individual valuation report.

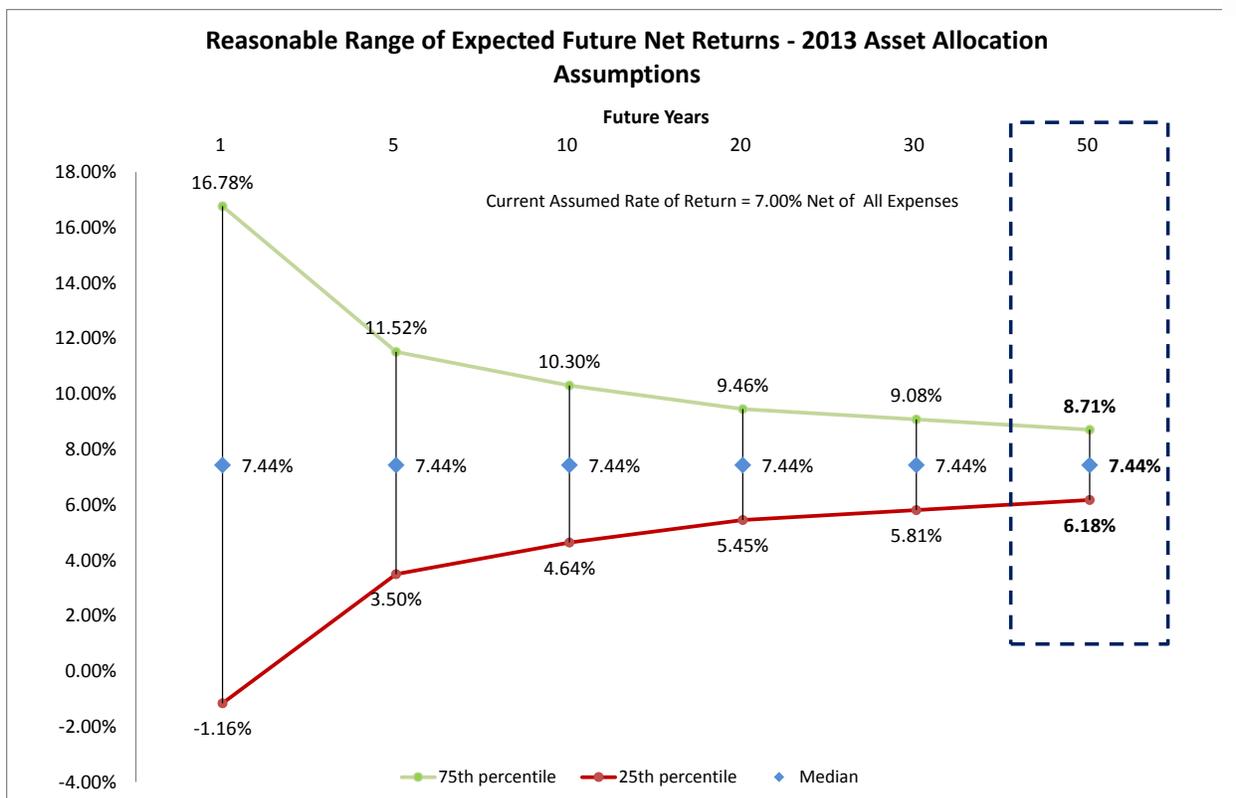
Mortality Table	
For the period before retirement	RP-2000 Employee Mortality Table Projected with Scale AA to 2020
For the period after service retirement	RP-2000 Combined Mortality Table Projected with Scale AA to 2020
For the period after disability retirement	RP-2000 Disabled Life Mortality Table

The actuarial assumptions used in the June 30, 2015 valuation were based on the results of an actuarial experience study for the period from July 1, 2008 through June 30, 2012.



Paragraph 31(b) (1)

- (a) Discount rate.** The discount rate used to measure the total pension liability was 7 percent, except for two Political Subdivision plans—Town of Stuart (55356) and Upper Valley Regional Park Authority (55490)—with a discount rate of 3.01% equal to the municipal bond index rate.
- (b) Projected cash flows:** The projection of cash flows used to determine the discount rate assumed that System member contributions will be made per the VRS Statutes and the Employer contributions will be made in accordance with the VRS funding policy at rates equal to the difference between actuarially determined contribution rates adopted by the VRS Board and the member rate. For the state plans, through the fiscal year ending June 30, 2018 the rates contributed by the employer will be subject to the portion of the Board rates as adopted by the Virginia legislature. From July 1, 2018 on, we assume 100% of the actuarially determined contribution rates will be payable for all the VRS plans.
- (c) Long term rate of return:** The long-term expected rate of return on pension System investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension System investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Using stochastic projection results provides an expected range of real rates of return over various time horizons. Looking at one year results produces an expected real return of 8.3% but also has a high standard deviation, which means there is high volatility. Over larger time horizons, the median return does not change much but the volatility declines significantly. The median return is 7.44%. The following graph provides a summary of results.



The chart above shows the percentile rankings of 5,000 independent 50-year simulations that produce returns of less than the return at that particular percentile level over the given time span. Thus for the 20-year time span, 25% of the resulting real rates of return were below 5.45% and 75% were above that. As the time span increases, the results begin to merge. Over a 50-year time span, the results indicate there is a 25% chance that real returns will be below 6.18% and a 25% chance they will be above 8.71%. In other words there is a 50% chance the real returns will be between 6.18% and 8.71%.

- (d) Municipal bond rate:** The discount rate determination does not use a municipal bond rate, except for the Town of Stuart (55356) and the Upper Valley Regional Park Authority (55490) Political Subdivision plans. To measure the total pension liability for these two plans, the Single Equivalent Interest Rate (SEIR) we have used is the applicable municipal bond index rate of 3.01%, based on the Bond Buyer General Obligation 20-year Municipal Bond Index published monthly by the Board of Governors of the Federal Reserve System as of the measurement date of June 30, 2016.
- (e) Periods of projected benefit payments:** Projected future benefit payments for all current System members were projected through 2123.
- (f) Assumed asset allocation:** The target asset allocation and best estimates of arithmetic real rates of return for each major asset class as provided by the System for use in the last actuarial experience study for the four-year period ending June 30, 2012 are summarized in the following table:



Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
U.S. Equity	19.50%	6.46%
Developed Non U.S. Equity	16.50%	6.28%
Emerging Market Equity	6.00%	10.00%
Fixed Income	15.00%	0.09%
Emerging Debt	3.00%	3.51%
Rate Sensitive Credit	4.50%	3.51%
Non-Rate Sensitive Credit	4.50%	5.00%
Convertibles	3.00%	4.81%
Public Real Estate	2.25%	6.12%
Private Real Estate	12.75%	7.10%
Private Equity	12.00%	10.41%
Cash	1.00%	-1.50%
Total	100.00%	



Paragraph 31(b) (1) (g): This paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the System, calculated using the discount rate of 7 percent, as well as what the System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6 percent) or 1-percentage-point higher (8 percent) than the current rate (\$ thousands). The sensitivity analysis for two Political Subdivision plans is included at the municipal bond index rate of 3.01% and at 2.01% and 4.01%.

State Employees

	1% Decrease (6%)	Current Discount Rate (7%)	1% Increase (8%)
Net pension liability	\$ 9,275,322	\$ 6,590,751	\$ 4,336,889

Teachers

	1% Decrease (6%)	Current Discount Rate (7%)	1% Increase (8%)
Net pension liability	\$ 19,977,164	\$ 14,014,115	\$ 9,102,001

State Police

	1% Decrease (6%)	Current Discount Rate (7%)	1% Increase (8%)
Net pension liability	\$ 484,962	\$ 356,270	\$ 248,328



Judicial

	1% Decrease (6%)	Current Discount Rate (7%)	1% Increase (8%)
Net pension liability	\$ 210,584	\$ 154,216	\$ 105,200

Virginia Law Officers

	1% Decrease (6%)	Current Discount Rate (7%)	1% Increase (8%)
Net pension liability	\$ 1,036,078	\$ 774,172	\$ 558,356

Political Subdivisions

	1% Decrease	Current Discount Rate	1% Increase
Net pension liability	\$ 6,108,168	\$ 3,398,982	\$ 1,145,636

Paragraph 31(c): June 30, 2015 is the actuarial valuation date upon which the TPL is based. That result was rolled forward using standard actuarial techniques to the Measurement Date of June 30, 2016.



SECTION III – REQUIRED SUPPLEMENTARY INFORMATION

There are several tables of Required Supplementary Information (RSI) that need to be included in the System's financial statements:

Paragraphs 32(a)-(c): The required tables are provided in Schedule A.

Paragraph 32(d): The money-weighted rates of return required are to be supplied by the System.

Paragraph 34: In addition the following should be noted regarding the RSI:

Changes of benefit terms: There have been no significant changes to the System benefit provisions since the prior actuarial valuation. The mandatory retirement age for most judges was increased from age 70 to age 73. A hybrid plan with changes to the defined benefit plan structure and a new defined contribution component was adopted in 2012. The hybrid plan applies to most new employees hired on or after January 1, 2014 and not covered by enhanced hazardous duty benefits. Some of the Political Subdivision plans have made changes to the benefits provided to members in hazardous duty positions. In aggregate the impact of these changes on the Political Subdivision plans is not significant.

Changes of assumption: There have been no changes to the actuarial assumptions since the prior valuation.

Method and assumptions used in calculations of actuarially determined contributions. The actuarially determined contribution rates are determined every two years. The last determination of the actuarial contribution rates was as of June 30, 2015 payable for the fiscal years 2017 and 2018. For the non-Political Subdivision plans the amortization period of the unfunded liability less the deferred contribution begins at 30 years on June 30, 2013 and will decrease by one each year until reaching 0 years. Each subsequent year, a new base will be added to the unfunded liability and will be amortized over a closed 20 year period. The deferred contribution, as defined under the 2011 Appropriation Act, Item 469(1)(6), is to be amortized using a level-dollar, closed, 10 year period beginning June 30, 2011. For the Political Subdivision plans the amortization period of the unfunded begins at 30 years on June 30, 2013 and will decrease by one each year until reaching 0 years. Each subsequent year, a new base will be added to the unfunded liability and will be amortized over a closed 20 year period. The following actuarial methods and assumptions were used to determine contribution rates as of the June 30, 2015 actuarial valuations of the VRS pension plans:



Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, closed
Remaining amortization period	28 years, 20 years, 19 years, and 6 years
Asset valuation method	5-year smoothed market
Inflation	2.5 percent
Payroll growth	3.0 percent
Salary increases, including inflation	State Employees - 3.5 percent - 5.35 percent
	Teachers – 3.5 percent – 5.95 percent
	State Police – 3.5 percent – 4.75 percent
	Judicial – 4.5 percent
	VaLORS – 3.5 percent – 4.75 percent
	Political Subdivisions –
	General Employees – 3.5 percent – 5.35 percent
	Public Safety – 3.5 percent – 4.75 percent
Investment rate of return	7.0 percent, net of pension plan investment and administrative expenses, including inflation

SCHEDULE A



REQUIRED SUPPLEMENTARY INFORMATION

**SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
(\$ in Thousands)**

State Employees Plan

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability										
Service Cost	\$369,779	\$375,149	\$369,120							
Interest	1,533,764	1,482,951	1,436,064							
Benefit changes	0	0	0							
Difference between expected and actual experience	(245,642)	59,923	0							
Changes of assumptions	0	0	0							
Benefit payments	(1,195,198)	(1,136,102)	(1,081,866)							
Refunds of contributions	<u>(25,240)</u>	<u>(27,724)</u>	<u>(25,036)</u>							
Net change in total pension liability	437,463	754,197	698,282							
Total pension liability - beginning	<u>\$22,521,130</u>	<u>\$21,766,933</u>	<u>\$21,068,651</u>							
Total pension liability - ending (a)	<u>\$22,958,593</u>	<u>\$22,521,130</u>	<u>\$21,766,933</u>							
Plan net position										
Contributions - employer	\$722,617	\$480,657	\$343,259							
Contributions - member	200,184	195,582	198,035							
Net investment income	277,166	728,083	2,243,999							
Benefit payments	(1,195,198)	(1,136,102)	(1,081,866)							
Administrative expense	(10,140)	(10,302)	(12,341)							
Refunds of contributions	(25,240)	(27,724)	(25,036)							
Other	<u>(122)</u>	<u>(154)</u>	<u>123</u>							
Net change in plan net position	(30,733)	230,040	1,666,173							
Plan net position - beginning	<u>\$16,398,575</u>	<u>\$16,168,535</u>	<u>\$14,502,362</u>							
Plan net position - ending (b)	<u>\$16,367,842</u>	<u>\$16,398,575</u>	<u>\$16,168,535</u>							
Net pension liability - ending (a) - (b)	\$6,590,751	\$6,122,555	\$5,598,398							

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
(\$ in Thousands)



Teacher Plan

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability										
Service Cost	\$828,856	\$828,901	\$831,501							
Interest	2,931,065	2,834,138	2,722,787							
Benefit changes	0	0	0							
Difference between expected and actual experience	(391,881)	(212,089)	0							
Changes of assumptions	0	0	0							
Benefit payments	(2,081,069)	(1,980,353)	(1,874,636)							
Refunds of contributions	<u>(35,067)</u>	<u>(36,058)</u>	<u>(36,103)</u>							
Net change in total pension liability	1,251,904	1,434,539	1,643,549							
Total pension liability - beginning	<u>\$42,930,422</u>	<u>\$41,495,883</u>	<u>\$39,852,334</u>							
Total pension liability - ending (a)	<u>\$44,182,326</u>	<u>\$42,930,422</u>	<u>\$41,495,883</u>							
Plan net position										
Contributions - employer	\$1,062,338	\$1,267,250	\$853,634							
Contributions - member	380,314	373,525	371,241							
Net investment income	516,704	1,327,047	4,042,441							
Benefit payments	(2,081,069)	(1,980,353)	(1,874,636)							
Administrative expense	(18,859)	(18,238)	(22,036)							
Refunds of contributions	(35,067)	(36,058)	(36,103)							
Other	<u>(222)</u>	<u>(284)</u>	<u>217</u>							
Net change in plan net position	(175,861)	932,889	3,334,758							
Plan net position - beginning	<u>\$30,344,072</u>	<u>\$29,411,183</u>	<u>\$26,076,425</u>							
Plan net position - ending (b)	<u>\$30,168,211</u>	<u>\$30,344,072</u>	<u>\$29,411,183</u>							
Net pension liability - ending (a) - (b)	\$14,014,115	\$12,586,350	\$12,084,700							

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
(\$ in Thousands)



SPORS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability										
Service Cost	\$18,700	\$18,847	\$18,341							
Interest	72,618	70,350	67,977							
Benefit changes	0	0	0							
Difference between expected and actual experience	(14,711)	(2,890)	0							
Changes of assumptions	0	0	0							
Benefit payments	(53,515)	(53,338)	(50,467)							
Refunds of contributions	<u>(584)</u>	<u>(375)</u>	<u>(685)</u>							
Net change in total pension liability	22,508	32,594	35,166							
Total pension liability - beginning	<u>\$1,064,450</u>	<u>\$1,031,856</u>	<u>\$996,690</u>							
Total pension liability - ending (a)	<u>\$1,086,958</u>	<u>\$1,064,450</u>	<u>\$1,031,856</u>							
Plan net position										
Contributions - employer	\$33,655	\$28,427	\$42,683							
Contributions - member	5,759	5,680	5,646							
Net investment income	12,634	32,466	98,682							
Benefit payments	(53,515)	(53,338)	(50,467)							
Administrative expense	(590)	(471)	(431)							
Refunds of contributions	(584)	(375)	(685)							
Other	<u>(23)</u>	<u>(27)</u>	<u>0</u>							
Net change in plan net position	(2,664)	12,362	95,428							
Plan net position - beginning	<u>\$733,352</u>	<u>\$720,990</u>	<u>\$625,562</u>							
Plan net position - ending (b)	<u>\$730,688</u>	<u>\$733,352</u>	<u>\$720,990</u>							
Net pension liability - ending (a) - (b)	\$356,270	\$331,098	\$310,886							

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
(\$ in Thousands)



JRS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability										
Service Cost	\$21,978	\$23,254	\$24,024							
Interest	42,820	41,759	40,014							
Benefit changes	(15,552)	0	0							
Difference between expected and actual experience	(18,681)	(9,107)	0							
Changes of assumptions	0	0	0							
Benefit payments	(41,341)	(40,205)	(37,984)							
Refunds of contributions	<u>0</u>	<u>0</u>	<u>0</u>							
Net change in total pension liability	(10,776)	15,701	26,054							
Total pension liability - beginning	<u>\$632,381</u>	<u>\$616,680</u>	<u>\$590,626</u>							
Total pension liability - ending (a)	<u>\$621,605</u>	<u>\$632,381</u>	<u>\$616,680</u>							
Plan net position										
Contributions - employer	\$41,502	\$31,503	\$27,727							
Contributions - member	3,236	3,015	3,051							
Net investment income	8,112	20,051	60,833							
Benefit payments	(41,341)	(40,205)	(37,984)							
Administrative expense	(363)	(283)	(268)							
Refunds of contributions	0	0	0							
Other	<u>(15)</u>	<u>(17)</u>	<u>0</u>							
Net change in plan net position	11,131	14,064	53,359							
Plan net position - beginning	<u>\$456,258</u>	<u>\$442,194</u>	<u>\$388,835</u>							
Plan net position - ending (b)	<u>\$467,389</u>	<u>\$456,258</u>	<u>\$442,194</u>							
Net pension liability - ending (a) - (b)	\$154,216	\$176,123	\$174,486							

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
(\$ in Thousands)



VaLORS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability										
Service Cost	\$45,608	\$47,531	\$46,504							
Interest	129,756	124,579	119,040							
Benefit changes	0	0	0							
Difference between expected and actual experience	4,997	(4,849)	0							
Changes of assumptions	0	0	0							
Benefit payments	(92,270)	(84,990)	(78,412)							
Refunds of contributions	<u>(4,524)</u>	<u>(4,797)</u>	<u>(4,665)</u>							
Net change in total pension liability	83,567	77,474	82,467							
Total pension liability - beginning	<u>\$1,902,051</u>	<u>\$1,824,577</u>	<u>\$1,742,110</u>							
Total pension liability - ending (a)	<u>\$1,985,618</u>	<u>\$1,902,051</u>	<u>\$1,824,577</u>							
Plan net position										
Contributions - employer	\$79,392	\$62,084	\$67,483							
Contributions - member	17,574	17,081	17,908							
Net investment income	20,899	52,312	156,786							
Benefit payments	(92,270)	(84,990)	(78,412)							
Administrative expense	(940)	(743)	(681)							
Refunds of contributions	(4,524)	(4,797)	(4,665)							
Other	<u>(38)</u>	<u>(44)</u>	<u>0</u>							
Net change in plan net position	20,093	40,903	158,419							
Plan net position - beginning	<u>\$1,191,353</u>	<u>\$1,150,450</u>	<u>\$992,031</u>							
Plan net position - ending (b)	<u>\$1,211,446</u>	<u>\$1,191,353</u>	<u>\$1,150,450</u>							
Net pension liability - ending (a) - (b)	\$774,172	\$710,698	\$674,127							



SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
(\$ in Thousands)

Political Subdivision Plans

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability										
Service Cost	\$535,322	\$530,945	\$524,758							
Interest	1,362,892	1,309,484	1,243,386							
Benefit changes	2,053	1,135	0							
Difference between expected and actual experience	(87,268)	(185,419)	0							
Changes of assumptions	0	0	0							
Benefit payments	(893,585)	(819,201)	(754,706)							
Refunds of contributions	<u>(37,380)</u>	<u>(36,898)</u>	<u>(36,876)</u>							
Net change in total pension liability	882,034	800,046	976,562							
Total pension liability - beginning	<u>\$19,935,054</u>	<u>\$19,135,008</u>	<u>\$18,158,446</u>							
Total pension liability - ending (a)	<u>\$20,817,088</u>	<u>\$19,935,054</u>	<u>\$19,135,008</u>							
Plan net position										
Contributions - employer	\$543,947	\$533,877	\$539,366							
Contributions - member	231,934	227,060	225,555							
Net investment income	300,995	761,164	2,272,284							
Benefit payments	(893,585)	(819,201)	(754,706)							
Administrative expense	(10,696)	(10,358)	(12,153)							
Refunds of contributions	(37,380)	(36,898)	(36,876)							
Other	<u>(130)</u>	<u>(162)</u>	<u>120</u>							
Net change in plan net position	135,085	655,482	2,233,590							
Plan net position - beginning	<u>\$17,283,021</u>	<u>\$16,627,539</u>	<u>\$14,393,949</u>							
Plan net position - ending (b)	<u>\$17,418,106</u>	<u>\$17,283,021</u>	<u>\$16,627,539</u>							
Net pension liability - ending (a) - (b)	\$3,398,982	\$2,652,033	\$2,507,469							

SCHEDULE OF THE NET PENSION LIABILITY
GASB 67 Paragraph 32(b)
(\$ in Thousands)



State Employees Plan

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability	\$22,958,593	\$22,521,130	\$21,766,933							
Plan net position	<u>16,367,842</u>	<u>16,398,575</u>	<u>16,168,535</u>							
Net pension liability	\$6,590,751	\$6,122,555	\$5,598,398							
Ratio of plan net position to total pension liability	71.29%	72.81%	74.28%							
Covered employee payroll	\$3,977,759	\$3,878,632	\$3,861,712							
Net pension liability as a percentage of covered-employee payroll	165.69%	157.85%	144.97%							

Teacher Plan

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability	\$44,182,326	\$42,930,422	\$41,495,883							
Plan net position	<u>30,168,211</u>	<u>30,344,072</u>	<u>29,411,183</u>							
Net pension liability	\$14,014,115	\$12,586,350	\$12,084,700							
Ratio of plan net position to total pension liability	68.28%	70.68%	70.88%							
Covered employee payroll	\$7,624,612	\$7,434,932	\$7,313,025							
Net pension liability as a percentage of covered-employee payroll	183.80%	169.29%	165.25%							

SCHEDULE OF THE NET PENSION LIABILITY
GASB 67 Paragraph 32(b)
(\$ in Thousands)



SPORS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability	\$1,086,958	\$1,064,450	\$1,031,856							
Plan net position	<u>730,688</u>	<u>733,352</u>	<u>720,990</u>							
Net pension liability	\$356,270	\$331,098	\$310,866							
Ratio of plan net position to total pension liability	67.22%	68.89%	69.87%							
Covered employee payroll	\$114,395	\$110,059	\$112,010							
Net pension liability as a percentage of covered-employee payroll	311.44%	300.84%	277.53%							

JRS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability	\$621,605	\$632,381	\$616,680							
Plan net position	<u>467,389</u>	<u>456,258</u>	<u>442,194</u>							
Net pension liability	\$154,216	\$176,123	\$174,486							
Ratio of plan net position to total pension liability	75.19%	72.15%	71.71%							
Covered employee payroll	\$66,621	\$61,092	\$61,020							
Net pension liability as a percentage of covered-employee payroll	231.48%	288.29%	285.95%							

SCHEDULE OF THE NET PENSION LIABILITY
GASB 67 Paragraph 32(b)
(\$ in Thousands)



VaLORS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability	\$1,985,618	\$1,902,051	\$1,824,577							
Plan net position	<u>1,211,446</u>	<u>1,191,353</u>	<u>1,150,450</u>							
Net pension liability	\$774,172	\$710,698	\$674,127							
Ratio of plan net position to total pension liability	61.01%	62.64%	63.05%							
Covered employee payroll	\$345,504	\$338,562	\$352,492							
Net pension liability as a percentage of covered-employee payroll	224.07%	209.92%	191.25%							

Political Subdivision Plans

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total pension liability	\$20,817,088	\$19,935,054	\$19,135,008							
Plan net position	<u>17,418,106</u>	<u>17,283,021</u>	<u>16,627,539</u>							
Net pension liability	\$3,398,982	\$2,652,033	\$2,507,469							
Ratio of plan net position to total pension liability	83.67%	86.70%	86.90%							
Covered employee payroll	\$4,628,806	\$4,513,335	\$4,434,764							
Net pension liability as a percentage of covered-employee payroll	73.43%	58.76%	56.54%							

SCHEDULE OF EMPLOYER CONTRIBUTIONS
GASB 67 Paragraph 32(c)
(\$ in Thousands)



State Employees Plan

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined employer contribution	\$628,486	\$612,824	\$504,726	\$485,577	\$309,930	\$294,363	\$285,209	\$290,653	\$260,965	\$246,458
Actual employer contributions	<u>557,160</u>	<u>478,235</u>	<u>338,286</u>	<u>325,452</u>	<u>117,696</u>	<u>74,113</u>	<u>176,751</u>	<u>225,782</u>	<u>218,954</u>	<u>192,997</u>
Annual contribution deficiency (excess)	<u>\$71,326</u>	<u>\$134,589</u>	<u>\$166,440</u>	<u>\$160,125</u>	<u>\$192,234</u>	<u>\$220,250</u>	<u>\$108,458</u>	<u>\$64,871</u>	<u>\$42,011</u>	<u>\$53,461</u>
Covered employee payroll	\$3,977,759	\$3,878,632	\$3,861,712	\$3,715,205	\$3,663,475	\$3,479,484	\$3,556,222	\$3,624,109	\$3,560,228	\$3,362,317
Actual contributions as a percentage of covered employee payroll	14.01%	12.33%	8.76%	8.76%	3.21%	2.13%	4.97%	6.23%	6.15%	5.74%

Teacher Plan

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined employer contribution	\$1,344,981	\$1,353,158	\$1,226,394	\$1,203,856	\$903,655	\$891,237	\$839,550	\$845,999	\$766,559	\$733,633
Actual employer contributions	<u>1,072,020</u>	<u>1,078,065</u>	<u>852,699</u>	<u>837,028</u>	<u>443,078</u>	<u>271,306</u>	<u>450,218</u>	<u>629,497</u>	<u>706,222</u>	<u>603,705</u>
Annual contribution deficiency (excess)	<u>\$272,961</u>	<u>\$275,093</u>	<u>\$373,695</u>	<u>\$366,828</u>	<u>\$460,577</u>	<u>\$619,931</u>	<u>\$389,332</u>	<u>\$216,502</u>	<u>\$60,337</u>	<u>\$129,928</u>
Covered employee payroll	\$7,624,612	\$7,434,932	\$7,313,025	\$7,178,629	\$6,999,653	\$6,903,465	\$7,090,791	\$7,145,260	\$6,856,523	\$6,562,008
Actual contributions as a percentage of covered employee payroll	14.06%	14.50%	11.66%	11.66%	6.33%	3.93%	6.35%	8.81%	10.30%	9.20%

SCHEDULE OF EMPLOYER CONTRIBUTIONS
GASB 67 Paragraph 32(c)
(\$ in Thousands)



SPORS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined employer contribution	\$35,211	\$33,876	\$36,538	\$34,535	\$26,250	\$24,570	\$23,791	\$24,241	\$22,941	\$19,402
Actual employer contributions	<u>31,561</u>	<u>28,417</u>	<u>27,711</u>	<u>26,193</u>	<u>11,441</u>	<u>7,460</u>	<u>15,714</u>	<u>20,175</u>	<u>20,989</u>	<u>16,358</u>
Annual contribution deficiency (excess)	<u>\$3,650</u>	<u>\$5,459</u>	<u>\$8,827</u>	<u>\$8,342</u>	<u>\$14,809</u>	<u>\$17,110</u>	<u>\$8,077</u>	<u>\$4,066</u>	<u>\$1,952</u>	<u>\$3,044</u>
Covered employee payroll	\$114,395	\$110,059	\$112,010	\$105,872	\$102,701	\$96,128	\$98,757	\$100,626	\$101,105	\$97,892
Actual contributions as a percentage of covered employee payroll	27.59%	25.82%	24.74%	24.74%	11.14%	7.76%	15.91%	20.05%	20.76%	16.71%

JRS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined employer contribution	\$37,008	\$35,336	\$33,018	\$32,185	\$27,631	\$28,101	\$23,638	\$23,148	\$23,600	\$22,557
Actual employer contributions	<u>33,291</u>	<u>31,560</u>	<u>27,728</u>	<u>27,028</u>	<u>18,907</u>	<u>17,303</u>	<u>17,065</u>	<u>21,000</u>	<u>22,386</u>	<u>20,530</u>
Annual contribution deficiency (excess)	<u>\$3,717</u>	<u>\$3,776</u>	<u>\$5,290</u>	<u>\$5,157</u>	<u>\$8,724</u>	<u>\$10,798</u>	<u>\$6,573</u>	<u>\$2,148</u>	<u>\$1,214</u>	<u>\$2,027</u>
Covered employee payroll	\$66,621	\$61,092	\$61,020	\$59,481	\$59,053	\$60,058	\$62,139	\$60,853	\$58,896	\$56,293
Actual contributions as a percentage of covered employee payroll	49.97%	51.66%	45.44%	45.44%	32.02%	28.81%	27.46%	34.51%	38.01%	36.47%

SCHEDULE OF EMPLOYER CONTRIBUTIONS
GASB 67 Paragraph 32(c)
(\$ in Thousands)



VaLORS

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined employer contribution	\$72,763	\$71,301	\$68,806	\$66,463	\$55,306	\$53,686	\$57,894	\$60,059	\$61,325	\$56,190
Actual employer contributions	<u>65,101</u>	<u>59,824</u>	<u>52,169</u>	<u>50,392</u>	<u>24,481</u>	<u>17,255</u>	<u>39,027</u>	<u>50,932</u>	<u>55,929</u>	<u>48,338</u>
Annual contribution deficiency (excess)	<u>\$7,662</u>	<u>\$11,477</u>	<u>\$16,637</u>	<u>\$16,071</u>	<u>\$30,825</u>	<u>\$36,431</u>	<u>\$18,867</u>	<u>\$9,127</u>	<u>\$5,396</u>	<u>\$7,852</u>
Covered employee payroll	\$345,504	\$338,562	\$352,492	\$340,489	\$347,181	\$337,010	\$345,020	\$357,922	\$352,643	\$323,115
Actual contributions as a percentage of covered employee payroll	18.84%	17.67%	14.80%	14.80%	7.05%	5.12%	11.31%	14.23%	15.86%	14.96%

Political Subdivision Plans

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Actuarially determined employer contribution	\$554,335	\$540,859	\$551,822	\$537,657	\$400,879	\$391,531	\$363,982	\$364,366	\$351,469	\$319,516
Actual employer contributions	<u>549,408</u>	<u>535,919</u>	<u>539,131</u>	<u>525,385</u>	<u>400,879</u>	<u>391,531</u>	<u>363,982</u>	<u>364,366</u>	<u>351,469</u>	<u>319,516</u>
Annual contribution deficiency (excess)	<u>\$4,927</u>	<u>\$4,940</u>	<u>\$12,691</u>	<u>\$12,272</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Covered employee payroll	\$4,628,806	\$4,513,335	\$4,434,764	\$4,321,565	\$4,142,150	\$4,078,580	\$4,125,087	\$4,144,638	\$3,960,566	\$3,699,629
Actual contributions as a percentage of covered employee payroll	11.87%	11.87%	12.16%	12.16%	9.68%	9.60%	8.82%	8.79%	8.87%	8.64%



Schedule B – Summary of Main Benefit Provisions

SCHEDULE B

SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

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

Benefit Provisions which apply to all VRS Plans

- Plan Year:** Twelve-month period ending June 30th.
- Administration:** All plans are administered by the Board of Trustees of the Virginia Retirement System.
- Plan 1:** Members hired prior to July 1, 2010 and who were vested as of January 1, 2013.
- Plan 2:** Members hired on or after July 1, 2010, or members hired prior to July 1, 2010 and who were not vested as of January 1, 2013. Members hired after January 1, 2014 in the State Police and Virginia Law Officers Plans are in Plan 2.
- Hybrid:** Members hired on or after January 1, 2014 or by member election. There is no Hybrid Plan in the State Police and Virginia Law Officers Plans.
- Eligibility:** All full-time, salaried, permanent employees of the Commonwealth of Virginia or of any participating Virginia city, county, town or political subdivision or of any local Virginia school boards are eligible to become members of VRS. This summary covers the provisions relating to state employees.
- Employee Contributions:**
- Defined Benefit -** Active members in Plan 1 and Plan 2 contribute 5.00% of their creditable compensation per year. Active members in the Hybrid Plan contribute 4% of their creditable compensation per year. The employer may "pick-up" the member's assessments under the provisions of Internal Revenue Code Section 414(h).



Schedule B – Summary of Main Benefit Provisions

Defined Contribution - Active members in the Hybrid Plan are required to contribute 1% of their creditable compensation per year to the defined contribution component of the Hybrid Plan. Active members can make voluntary additional contributions of up to 4% of their creditable compensation.

Creditable Compensation: Annual salary minus any overtime pay, payments of a temporary nature, or payments for extra duties.

Optional Forms of Payment: There are optional forms of payment available on an actuarially equivalent basis, as follows:

100% Survivor Option:

Payable for the member's life. Upon the member's death, 100% of the benefit continues to the contingent annuitant.

50% Survivor Option:

Upon the member's death, 50% of the benefit continues to the contingent annuitant.

Leveling Option:

A temporarily increased retirement allowance payable to a date specified by the member and a reduced retirement allowance (on an actuarially equivalent basis) payable after the specified date for the member's remaining lifetime.

Partial Lump Sum Option:

The member may elect to receive a lump sum payment equal to the sum of 12, 24, or 36 payments of the standard monthly life annuity. The member's monthly benefit will be actuarially reduced to reflect the lump sum payment. The member may then elect to receive the reduced monthly annuity under any of the other optional forms of payment.

Actuarial equivalence is based on tables adopted by the Board of Trustees.



Schedule B – State Employees’ Plan Provisions

STATE EMPLOYEES
Plan Specific Benefit Provisions

Effective Date: March 1, 1952

Type of Plan: VRS is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is considered an agent multiple-employer PERS with separate cost-sharing pools for state employees and teachers.

Service: Employees receive credit of one month of service for each month a contribution is made on their behalf to VRS. A member may also purchase credit for certain periods, such as time spent in the military, by paying a purchase rate (5 or 15 percent of the larger of current creditable compensation or final average compensation times the number of years to be purchased). Special rules and limits govern the purchase of additional service.

Average Final Compensation:

Plan 1: The average of the member’s highest 36 consecutive months of salary.

Plan 2 and Hybrid: The average of the member’s highest 60 consecutive months of salary.

Normal Retirement:

Plan 1: Eligibility:

A member may retire upon Normal Retirement on or after age 65 with credit for 5 years of service.

Annual Benefit:

1.7% of average final compensation (AFC) times years of service.

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the



Schedule B – State Employees' Plan Provisions

member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.

Plan 2:

Eligibility:

A member may retire upon Normal Retirement after reaching Social Security normal retirement age plus five years of service.

Annual Benefit:

1.70% of average final compensation (AFC) times years of service up to January 1, 2013 plus 1.65% of AFC times years of service from January 1, 2013.

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.

Hybrid:

Eligibility:

A member may retire upon Normal Retirement after reaching Social Security normal retirement age plus five years of service.

Annual Benefit:

1.00% of average final compensation (AFC) times years of service.

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.



Schedule B – State Employees’ Plan Provisions

Early Retirement:

Plan 1:

Eligibility:

A member may retire early after reaching age 50 with at least ten years of service credit, or age 55 with credit for at least five years of service.

Annual Benefit:

Calculated the same as the normal retirement benefit, using actual service at retirement and multiplied by a reduction factor. No reduction applies if the member has credit for thirty years of service at retirement and is at least age 50. For members at least age 55, the reduction is 0.5% per month for the first 60 months and 0.4% per month for the next 60 months. This reduction is applied for each month that the retirement age precedes 65, or if more favorable, for each month the service at retirement is less than 30. For members younger than 55 at retirement, the reduction factor determined as though the member were 55 is further reduced by multiplying it by a second factor, to reflect a 0.6% reduction for each month retirement precedes age 55.

Payment Form:

Same as for Normal Retirement above.

Plan 2 and Hybrid:

Eligibility:

A member may retire early after reaching age 60 with five years of service, or upon the sum of their age and their service being 90 (Rule of 90).

Annual Benefit:

Calculated the same as the normal retirement benefit, using actual service at retirement and multiplied by a reduction factor. The reduction is an actuarially equivalent factor. No reduction is applied if the sum of the member’s age and service is equal to 90.



Schedule B – State Employees’ Plan Provisions

Payment Form:

Same as for Normal Retirement above.

**Disability Retirement
- Non-VSDP:**

Eligibility:

A member hired prior to 1/1/1999 and who has declined VSDP coverage is eligible from the first day of employment.

Annual Benefit:

For members with less than five years of service credit, the minimum guaranteed benefit. For members with greater than five years of service credit, the greater of the minimum guaranteed benefit and 1.7% of AFC times service credit. Benefit is reduced by Worker's Compensation (if any).

Minimum Guaranteed Benefit:

- Workers Compensation Guarantee:

66 2/3% of AFC if member does not qualify for primary Social Security and 50% of AFC if member qualifies for primary Social Security.
- Special Retirement Allowance Guarantee:

50% of AFC if member does not qualify for primary Social Security and 33 1/3% of AFC if member qualifies for primary Social Security.

Service Credit:

If disability occurs before age 60, service is the smaller of 1) twice actual service, and 2) rendered service plus the number of years remaining between age at disability and age 60.



Schedule B – State Employees’ Plan Provisions

Payment Form:

The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity with a guarantee that, at the member's death, the sum of the member's contributions plus interest as of the date of retirement will be paid in a lump sum to the member's beneficiary. 100% and 50% Survivor Options are also permitted for disability retirement. (A refund of the member's contribution account is paid out for a work-related disability.)

Disability Retirement – VSDP:

Provisions applying to members entering in 1999 or later and continuing members who have elected this benefit: In lieu of the above benefits, these members will be covered by the Virginia Sickness and Disability Program (VSDP). Under VSDP, these members will receive a deferred benefit payable at age 65 from this plan. The deferred benefit will be computed like a normal retirement benefit. For this calculation, a member's creditable service will include the period of disability, and the Average Final Compensation will be adjusted to reflect increases in the cost-of-living between the date of disability and age 65. If the member dies while disabled before age 65, a death benefit will be determined as though the employee were an active member.

Deferred Termination Benefit:

Plan 1:

Eligibility:

A member with at least five years of service who does not withdraw his/her contributions from the fund is eligible for a deferred termination benefit.

Annual Benefit:

Same as normal retirement benefit, but both AFC and service are determined at the time the member leaves active employment. Benefits may commence unreduced at age 65 or at age 50 with at least 30 years of service. Reduced benefits may commence at or after age 55 with more than 5 years of service or age 50 with at least 10 years of service.



Schedule B – State Employees' Plan Provisions

Payment Form:

Same as for Normal Retirement above.

Death Benefit:

The beneficiary of a member who dies after leaving active service but before retiring is entitled to receive a lump sum distribution of the deceased member's contribution account.

Plan 2 and Hybrid:

Eligibility:

A member with at least five years of service who does not withdraw his/her contributions from the fund is eligible for a deferred termination benefit.

Annual Benefit:

Same as normal retirement benefit, but both AFC and service are determined at the time the member leaves active employment. Benefits commence unreduced at Social Security Normal Retirement Age. Reduced benefits may commence on or after age 60 with five years of service.

Payment Form:

Same as for Normal Retirement above.

Death Benefit:

The beneficiary of a member who dies after leaving active service but before retiring is entitled to receive a lump sum distribution of the deceased member's contribution account.

Withdrawal (Refund) Benefit:

Eligibility:

All members leaving covered employment with less than five years of service are eligible. Optionally, vested members (those with five or more years of service) may withdraw their contributions plus interest in lieu of the deferred benefits otherwise due.



Schedule B – State Employees’ Plan Provisions

Benefit:

The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 4%.

Death Benefit:

Eligibility:

Death must have occurred while an active or inactive, non-retired member.

Benefit:

Upon the death of a non-vested member, a refund of the member's contributions and interest is paid. Upon the death of a vested member, if death occurs while in active service the qualifying survivor of the member is entitled to receive a benefit determined as though the member retired, elected the 100% Survivor Option, then died. If the member dies before reaching age 55, the member is assumed to be 55 for benefit calculation purposes. The qualifying survivor may elect to receive a refund of the contributions plus interest in lieu of the monthly benefit. If the death occurs while inactive, benefits payable are described in Section 9(d).

Work-Related Death:

Qualifying survivor would receive 50% of AFC if beneficiary does not qualify for Social Security survivor benefits and 33 1/3% of AFC if beneficiary qualifies for Social Security survivor benefits. This benefit is reduced by Worker's Compensation. In addition, a refund of the member's contribution account is paid to the beneficiary.

Cost-of-Living Increase:

Plan 1:

Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 3% of the



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Consumer Price Index increase plus half of each percentage increase from 3% to 7%.

Plan 2 and Hybrid:

Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 2% increase of the Consumer Price Index plus half of each percent from 2% to 4%, with the maximum cost-of-living increase of 3%.

Plans 1,2 & Hybrid:

The COLA is deferred for one full calendar year after the member reaches unreduced retirement age. The deferred COLA does not apply to employees within 5 years of eligibility for unreduced retirement as of January 1, 2013 and to members who retire with twenty or more years of service.



Schedule B – Teachers’ Plan Provisions

TEACHERS
Plan Specific Benefit Provisions

Effective Date: March 1, 1952

Type of Plan: VRS is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is considered an agent multiple-employer PERS with separate cost-sharing pools for state employees and teachers.

Service: Employees receive credit of one month of service for each month a contribution is made on their behalf to VRS. A member may also purchase credit for certain periods, such as time spent in the military, by paying a purchase rate (5 or 15 percent of the larger of current creditable compensation or final average compensation times the number of years to be purchased). Special rules and limits govern the purchase of additional service.

Average Final Compensation:

Plan 1: The average of the member’s highest 36 consecutive months of salary.

Plan 2 and Hybrid: The average of the member’s highest 60 consecutive months of salary.

Normal Retirement:

Plan 1: Eligibility:

A member may retire upon Normal Retirement on or after age 65 with credit for 5 years of service.

Annual Benefit:

1.7% of average final compensation (AFC) times years of service.

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the



Schedule B – Teachers’ Plan Provisions

member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.

Plan 2:

Eligibility:

A member may retire upon Normal Retirement after reaching Social Security normal retirement age plus five years of service.

Annual Benefit:

1.70% of average final compensation (AFC) times years of service up to January 1, 2013 plus 1.65% of AFC times years of service from January 1, 2013.

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.

Hybrid:

Eligibility:

A member may retire upon Normal Retirement after reaching Social Security normal retirement age plus five years of service.

Annual Benefit:

1.00% of average final compensation (AFC) times years of service.

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.



Schedule B – Teachers’ Plan Provisions

Early Retirement:

Plan 1:

Eligibility:

A member may retire early after reaching age 50 with at least ten years of service credit, or age 55 with credit for at least five years of service.

Annual Benefit:

Calculated the same as the normal retirement benefit, using actual service at retirement and multiplied by a reduction factor. No reduction applies if the member has credit for thirty years of service at retirement and is at least age 50. For members at least age 55, the reduction is 0.5% per month for the first 60 months and 0.4% per month for the next 60 months. This reduction is applied for each month that the retirement age precedes 65, or if more favorable, for each month the service at retirement is less than 30. For members younger than 55 at retirement, the reduction factor determined as though the member were 55 is further reduced by multiplying it by a second factor, to reflect a 0.6% reduction for each month retirement precedes age 55.

Payment Form:

Same as for Normal Retirement above.

Plan 2 and Hybrid:

Eligibility:

A member may retire early after reaching age 60 with five years of service or upon the sum of their age and their service being 90 (Rule of 90).

Annual Benefit:

Calculated the same as the normal retirement benefit, using actual service at retirement and multiplied by a reduction factor. The reduction is an actuarially equivalent factor. No reduction is applied if the sum of the member’s age and service is equal to 90.



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Payment Form:

Same as for Normal Retirement above.

**Disability Retirement
(Plan 1 and Plan 2):**

Eligibility:

A member is eligible from the first day of employment.

Annual Benefit:

For members with less than five years of service credit, the minimum guaranteed benefit. For members with greater than five years of service credit, the greater of the minimum guaranteed benefit and 1.7% of AFC times service credit. Benefit is reduced by Worker's Compensation (if any).

Minimum Guaranteed Benefit:

- Workers Compensation Guarantee:

66 2/3% of AFC if member does not qualify for primary Social Security and 50% of AFC if member qualifies for primary Social Security.
- Special Retirement Allowance Guarantee:

50% of AFC if member does not qualify for primary Social Security and 33 1/3% of AFC if member qualifies for primary Social Security.

Service Credit:

If disability occurs before age 60, service is the smaller of 1) twice actual service, and 2) rendered service plus the number of years remaining between age at disability and age 60.



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Payment Form:

The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity with a guarantee that, at the member's death, the sum of the member's contributions plus interest as of the date of retirement will be paid in a lump sum to the member's beneficiary. 100% and 50% Survivor Options are also permitted for disability retirement. (A refund of the member's contribution account is paid out for a work-related disability.)

**Disability Retirement – VLDP
(Hybrid Plan):**

Provisions applying to Hybrid members: In lieu of the above benefits, these members will be covered by the Virginia Local Disability Program (VLDP). Under VLDP, these members will receive a deferred benefit payable at normal retirement from this plan. The deferred benefit will be computed like a normal retirement benefit. For this calculation, a member's creditable service will include the period of disability, and the Average Final Compensation will be adjusted to reflect increases in the cost-of-living between the date of disability and the date of normal retirement. If the member dies while disabled before normal retirement, a death benefit will be determined as though the employee were an active member.



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Deferred Termination Benefit:

Plan 1:

Eligibility:

A member with at least five years of service who does not withdraw his/her contributions from the fund is eligible for a deferred termination benefit.

Annual Benefit:

Same as normal retirement benefit, but both AFC and service are determined at the time the member leaves active employment. Benefits may commence unreduced at age 65 or at age 50 with at least 30 years of service. Reduced benefits may commence at or after age 55 with more than 5 years of service or age 50 with at least 10 years of service.

Payment Form:

Same as for Normal Retirement above.

Death Benefit:

The beneficiary of a member who dies after leaving active service but before retiring is entitled to receive a lump sum distribution of the deceased member's contribution account.

Plan 2 and Hybrid:

Eligibility:

A member with at least five years of service who does not withdraw his/her contributions from the fund is eligible for a deferred termination benefit.

Annual Benefit:

Same as normal retirement benefit, but both AFC and service are determined at the time the member leaves active employment. Benefits commence unreduced at Social Security Normal Retirement Age. Reduced benefits may commence on or after age 60 with five years of service.



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Payment Form:

Same as for Normal Retirement above.

Death Benefit:

The beneficiary of a member who dies after leaving active service but before retiring is entitled to receive a lump sum distribution of the deceased member's contribution account.

Withdrawal (Refund) Benefit:

Eligibility:

All members leaving covered employment with less than five years of service are eligible. Optionally, vested members (those with five or more years of service) may withdraw their contributions plus interest in lieu of the deferred benefits otherwise due.

Benefit:

The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 4%.

Death Benefit:

Eligibility:

Death must have occurred while an active or inactive, non-retired member.

Benefit:

Upon the death of a non-vested member, a refund of the member's contributions and interest is paid. Upon the death of a vested member, if death occurs while in active service the qualifying survivor of the member is entitled to receive a benefit determined as though the member retired, elected the 100% Survivor Option, then died. If the member dies before reaching age 55, the member is assumed to be 55 for benefit calculation purposes. The qualifying survivor may elect to receive a refund of the contributions plus interest in lieu of the monthly



Schedule B – Teachers’ Plan Provisions

benefit. If the death occurs while inactive, benefits payable are described in Section 9(d).

Work-Related Death:

Qualifying survivor would receive 50% of AFC if beneficiary does not qualify for Social Security survivor benefits and 33 1/3% of AFC if beneficiary qualifies for Social Security survivor benefits. This benefit is reduced by Worker's Compensation. In addition, a refund of the member's contribution account is paid to the beneficiary.

Cost-of-Living Increase:

- Plan 1:** Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 3% of the Consumer Price Index increase plus half of each percentage increase from 3% to 7%.
- Plan 2 and Hybrid:** Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 2% increase of the Consumer Price Index plus half of each percent from 2% to 4%, with the maximum cost-of-living increase of 3%.
- Plans 1, 2 & Hybrid:** The COLA is deferred for one full calendar year after the member reaches unreduced retirement age. The deferred COLA does not apply to employees within 5 years of eligibility for unreduced retirement as of January 1, 2013 and to members who retire with twenty or more years of service.



Schedule B – State Police Plan Provisions

STATE POLICE
Plan Specific Benefit Provisions

Effective Date:	July 1, 1950
Type of Plan:	SPORS is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is considered a single-employer PERS.
Service:	Employees receive credit of one month of service for each month a contribution is made on their behalf to SPORS. A member may also purchase credit for certain periods, such as time spent in the military, by paying a purchase rate (5 or 15 percent of the larger of current creditable compensation or final average compensation times the number of years to be purchased). Special rules and limits govern the purchase of additional service.
Average Final Compensation:	
Plan 1:	The average of the member's highest 36 consecutive months of salary.
Plan 2:	The average of the member's highest 60 consecutive months of salary.
Normal Retirement:	Eligibility: A member may retire upon Normal Retirement on or after age 60 with credit for 5 years of service. Annual Benefit: 1.85% of average final compensation (AFC) times years of service. (Previously 1.7% of AFC times years of service.) Payment Form: Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the member's contributions plus interest, determined as of the date at retirement, the balance will be paid in



Schedule B – State Police Plan Provisions

a lump sum to the member's beneficiary. Optional forms of payment are available.

Temporary supplement:

A member hired on or after July 1, 1974 who has 20 or more years of hazardous service at retirement or a member hired before July 1, 1974 who is vested under SPORS/VaLORS benefits shall receive an additional annual retirement allowance of \$13,548 payable from the date of retirement to their Social Security normal retirement age. This amount is adjusted biennially based upon increases in Social Security benefits during the interim period.

Early Retirement:

Eligibility:

A member may retire early after reaching age 50 with at least five years of service.

Annual Benefit:

Calculated the same as the normal retirement benefit, using actual service at retirement and reduced by 1/2% for the first 60 months and 4/10% for any additional months of early retirement. This reduction is applied for each month that the retirement age precedes 60, or if more favorable, for each month the service at retirement is less than 25. No reduction applies if the member has credit for 25 years of service at retirement.

Payment Form:

Same as for Normal Retirement above.

Temporary Supplement:

A member hired on or after July 1, 1974 who has 20 or more years of hazardous service at retirement or a member hired before July 1, 1974 who is vested under SPORS/VaLORS benefits shall receive an additional annual retirement allowance of \$13,548 payable from the date of retirement to their Social Security normal retirement age. This amount is



Schedule B – State Police Plan Provisions

adjusted biennially based upon increases in Social Security benefits during the interim period.

**Disability Retirement
- Non-VSDP:**

Eligibility:

A member hired prior to 1/1/1999 and who has declined VSDP coverage is eligible from the first day of employment.

Monthly Benefit:

For members with less than five years of service credit, the minimum guaranteed benefit. For members with greater than five years of service credit, the greater of the minimum guaranteed benefit and 1.7% of AFC times service credit. Benefit is reduced by Worker's Compensation (if any).

Minimum Guaranteed Benefit:

- Workers Compensation Guarantee:

66 2/3% of AFC if member does not qualify for primary Social Security and 50% of AFC if member qualifies for primary Social Security.
- Special Retirement Allowance Guarantee:

50% of AFC if member does not qualify for primary Social Security and 33 1/3% of AFC if member qualifies for primary Social Security.

Service Credit:

If disability occurs before age 60, service is the smaller of 1) twice actual service, and 2) rendered service plus the number of years remaining between age at disability and age 60.



Schedule B – State Police Plan Provisions

Payment Form:

The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity with a guarantee that, at the member's death, the sum of the member's contributions plus interest as of the date of retirement will be paid in a lump sum to the member's beneficiary. 100% and 50% Survivor Options are also permitted for disability retirement. (A refund of the member's contribution account is paid out for a work-related disability.)

Disability Retirement – VSDP:

Provisions applying to members entering in 1999 or later and continuing members who have elected this benefit: In lieu of the above benefits, these members will be covered by the Virginia Sickness and Disability Program (VSDP). Under VSDP, these members will receive a deferred benefit payable at age 60 from this plan. The deferred benefit will be computed like a normal retirement benefit. For this calculation, a member's creditable service will include the period of disability, and the Average Final Compensation will be adjusted to reflect increases in the cost-of-living between the date of disability and age 60. If the member dies while disabled before age 60, a death benefit will be determined as though the employee were an active member.

Deferred Termination Benefit:

Eligibility:

A member with at least five years of service who does not withdraw his/her contributions from the fund is eligible for a deferred termination benefit.

Annual Benefit:

Same as normal retirement benefit, but both AFC and service are determined at the time the member leaves active employment. Benefits may commence unreduced at age 60 or at age 50 with at least 25 years of service. Reduced benefits may commence at or after age 50 if the member is not eligible for an unreduced benefit.



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Payment Form:

The form of payment is the same as for Normal Retirement above.

Death Benefit:

The beneficiary of a member who dies after leaving active service but before retiring is entitled to receive a lump sum distribution of the deceased member's contribution account.

Withdrawal (Refund) Benefit:

Eligibility:

All members leaving covered employment with less than five years of service are eligible. Optionally, vested members (those with five or more years of service) may withdraw their contributions plus interest in lieu of the deferred benefits otherwise due.

Benefit:

The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 4%.

Death Benefit

Eligibility:

Death must have occurred while an active, non-retired member.

Benefit:

Upon the death of a non-vested member, a refund of the member's contributions and interest is paid. Upon the death of a vested member, if death occurs while in active service the qualifying survivor of the member is entitled to receive a benefit determined as though the member retired, elected the 100% Survivor Option, then died. If the member dies before reaching age 50, the member is assumed to be 50 for benefit calculation purposes. The qualifying survivor may elect to receive a refund of the contributions plus interest in lieu of the monthly



Schedule B – State Police Plan Provisions

benefit. If the death occurs while inactive, benefits payable are described in Section 9(d).

Work-Related Death:

Qualifying survivor would receive 50% of AFC if beneficiary does not qualify for Social Security survivor benefits and 33 1/3% of AFC if beneficiary qualifies for Social Security survivor benefits. This benefit is reduced by Worker's Compensation. In addition, a refund of the member's contribution account is paid to the beneficiary.

Cost-of-Living Increase:

Plan 1: Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 3% of the Consumer Price Index increase plus half of each percentage increase from 3% to 7%.

Plan 2: Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 2% increase of the Consumer Price Index plus half of each percent from 2% to 4%, with the maximum cost-of-living increase of 3%. This COLA will be deferred until the date at which the member is eligible for unreduced retirement.

Plans 1 & 2: The COLA is deferred for one full calendar year after the member reaches unreduced retirement age. The deferred COLA does not apply to employees within 5 years of eligibility for unreduced retirement as of January 1, 2013 and to members who retire with twenty or more years of service.



Schedule B – Judicial Plan Provisions

JUDICIAL
Plan Specific Benefit Provisions

Effective Date: July 1, 1970

Type of Plan: JRS is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is considered a single-employer PERS.

Service:

Appointed or elected
prior to 7/1/2010:

Employees receive credit of one month of service multiplied by a weighting factor of 3.5 (2.5 for judges entering JRS on or after January 1, 1995) for each month a contribution is made on their behalf to JRS. This weighted service is used for all purposes under this plan, including determining a member's vested status, determining whether a member is eligible for retirement, computing early retirement reductions, and computing the amount of the benefit. A member may also purchase credit for certain periods, such as time spent in the military, by paying a purchase rate (5 or 15 percent of the larger of current creditable compensation or final average compensation times the number of years to be purchased). Special rules and limits govern the purchase of additional service.

Appointed or elected
on and after 7/1/2010:

Employees receive credit of one month of service multiplied by a tiered weighting factor for each month a contribution is made on their behalf to JRS. First term judges under age 45 at the time of appointment/election use a weighting factor of 1.5, judges age 45 – 54 use a weighting factor of 2.0, and judges age 55 and above use a weighting factor of 2.5. This weighted service is used for all purposes under this plan, including determining a member's vested status, determining whether a member is eligible for retirement, computing early retirement reductions, and computing the amount of the benefit. A member may also purchase credit for certain periods, such as time spent in the military, by paying a purchase rate (5 or 15 percent of the larger of current creditable compensation or final average compensation times the number of years to be purchased). Special rules and limits govern the purchase of additional service.



Schedule B – Judicial Plan Provisions

Average Final Compensation:

Plan 1: The average of the member's highest 36 consecutive months of salary.

Plan 2 and Hybrid: The average of the member's highest 60 consecutive months of salary.

Normal Retirement

Eligibility:

A member may retire upon Normal Retirement on or after age 65 with credit for 5 years of service. The mandatory retirement age for judges is age 73.

Annual Benefit:

1.7% of average final compensation (AFC) times years of service, not to exceed 78% of AFC. For members appointed or elected on or after January 1, 2013, the benefit multiplier is 1.65% and for members appointed or elected on or after January 1, 2014, the benefit multiplier is 1.0%

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.

Early Retirement

Eligibility:

A member may retire early after reaching age 55 with credit for five years of service.

Annual Benefit:

Calculated the same as the normal retirement benefit, using actual service at retirement and multiplied by a reduction factor. No reduction applies if the member has reached age 60 and has credit for 30 or more years of creditable service. For other members, the



Schedule B – Judicial Plan Provisions

reduction is 0.5% per month for the first 60 months and 0.4% per month for the next 60 months. This reduction is measured from the later of age 60 and the point at which the member would have earned 30 years of service, or if more favorable, from age 65.

Payment Form:

Same as for Normal Retirement above.

Disability Retirement

Eligibility:

A member is eligible from the first day of employment.

Annual Benefit:

For members with less than five years of service credit, the minimum guaranteed benefit. For members with greater than five years of service credit, the greater of the minimum guaranteed benefit and 1.7% of AFC times service credit (1.65% if appointed or elected on or after January 1, 2013 and 1.0% if appointed or elected on or after January 1, 2014). Benefit is reduced by Worker's Compensation (if any).

Minimum Guaranteed Benefit:

- **Workers Compensation Guarantee:**

66 2/3% of AFC if member does not qualify for primary Social Security and 50% of AFC if member qualifies for primary Social Security.
- **Special Retirement Allowance Guarantee**

50% of AFC if member does not qualify for primary Social Security and 33 1/3% of AFC if member qualifies for primary Social Security.



Schedule B – Judicial Plan Provisions

Service Credit:

If disability occurs before age 60, service is the smaller of 1) twice actual service, and 2) rendered service plus the number of years remaining between age at disability and age 60.

Payment Form:

The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity with a guarantee that, at the member's death, the sum of the member's contributions plus interest as of the date of retirement will be paid in a lump sum to the member's beneficiary. 100% and 50% Survivor Options are also permitted for disability retirement. (A refund of the member's contribution account is paid out for a work-related disability.)

Deferred Termination Benefit

Eligibility:

A member with at least five years of service who does not withdraw his/her contributions from the fund is eligible for a deferred termination benefit

Annual Benefit:

Same as normal retirement benefit, but both AFC and service are determined at the time the member leaves active employment. Benefits may commence unreduced at age 65 or at age 60 with at least 30 years of service. Reduced benefits may commence at or after age 55 if the member is not eligible for an unreduced benefit.

Payment Form:

The form of payment is the same as for Normal Retirement above.



Schedule B – Judicial Plan Provisions

Death Benefit:

The beneficiary of a member who dies after leaving active service but before retiring is entitled to receive a lump sum distribution of the deceased member's contribution account.

Withdrawal (Refund) Benefit

Eligibility:

All members leaving covered employment with less than five years of service are eligible. Optionally, vested members (those with five or more years of service) may withdraw their contributions plus interest in lieu of the deferred benefits otherwise due.

Benefit:

The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 4%.

Death Benefit

Eligibility:

Death must have occurred while an active, non-retired member.

Benefit:

Upon the death of a non-vested member, a refund of the member's contributions and interest is paid. Upon the death of a vested member, if death occurs while in active service the qualifying survivor of the member is entitled to receive a benefit determined as though the member retired, elected the 100% Survivor Option, then died. If the member dies before reaching age 55, the member is assumed to be 55 for benefit calculation purposes. The qualifying survivor may elect to receive a refund of the contributions plus interest in lieu of the monthly benefit. If the death occurs while inactive, benefits payable are described in Section 8(d).

Work-Related Death:



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Qualifying survivor would receive 50% of AFC if beneficiary does not qualify for Social Security survivor benefits, and 33 1/3% of AFC if beneficiary qualifies for Social Security survivor benefits. This benefit is reduced by Worker's Compensation. In addition, a refund of the member's contribution account is paid to the beneficiary.

Cost-of-Living Increase:

- Plan 1: Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 3% of the Consumer Price Index increase plus half of each percentage increase from 3% to 7%.
- Plan 2 and Hybrid: Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 2% increase of the Consumer Price Index plus half of each percent from 2% to 4%, with the maximum cost-of-living increase of 3%.
- Plans 1, 2 & Hybrid: The COLA is deferred for one full calendar year after the member reaches unreduced retirement age. The deferred COLA does not apply to employees within 5 years of eligibility for unreduced retirement as of January 1, 2013 and to members who retire with twenty or more years of service.



Schedule B – Virginia Law Officers’ Plan Provisions

**VIRGINIA LAW OFFICERS
Plan Specific Benefit Provisions**

- Effective Date:** October 1, 1999
- Type of Plan:** VaLORS is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is considered a single-employer PERS.
- Service:** Employees receive credit of one month of service for each month a contribution is made on their behalf to VaLORS. A member may also purchase credit for certain periods, such as time spent in the military, by paying a purchase rate (5 or 15 percent of the larger of current creditable compensation or final average compensation times the number of years to be purchased). Special rules and limits govern the purchase of additional service.
- Average Final Compensation:**
- Plan 1: The average of the member’s highest 36 consecutive months of salary.
- Plan 2: The average of the member’s highest 60 consecutive months of salary.
- Normal Retirement:** Eligibility:
- A member may retire upon Normal Retirement on or after age 60 with credit for 5 years of service.
- Annual Benefit:
- For all employees hired on or after July 1, 2001, the benefit is calculated as 2.0% of average final compensation (AFC) times years of service.
- Employees hired before July 1, 2001, must make a one-time election to receive benefits under (i) or (ii) below:
- (i) 1.7% of average final compensation (AFC) times years of service plus the temporary supplement described in 5(d).



Schedule B – Virginia Law Officers’ Plan Provisions

(ii) 2.0% of average final compensation (AFC) times years of service and no temporary supplement.

Payment Form:

Benefits are paid as a monthly life annuity, with a guarantee that if the payments do not exceed the member's contributions plus interest, determined as of the date at retirement, the balance will be paid in a lump sum to the member's beneficiary. Optional forms of payment are available.

Temporary supplement:

Temporary Supplement: A member who is hired before July 1, 2001, and who was either (i) hired on or after July 1, 1974 who has 20 or more years of hazardous service at retirement or (ii) a member hired before July 1, 1974 who is vested under SPORS/VaLORS benefits shall be eligible to receive an additional annual retirement allowance of \$13,548 payable from the date of retirement to age 65. This amount is adjusted biennially based upon increases in Social Security benefits during the interim period. The eligible employee must have made a one-time election to receive benefits under b(i) to receive this supplement.

Early Retirement:

Eligibility:

A member may retire early after reaching age 50 with credit for five years of service.

Annual Benefit:

Calculated the same as the normal retirement benefit, using actual service at retirement and reduced by 0.5% per month for the first 60 months and 0.4% per month for any additional months of early retirement. This reduction is applied for each month that the retirement age precedes 60, or if more favorable, for each month the service at retirement is less than 25. No reduction applies if the member has credit for 25 years of service at retirement.



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Payment Form:

Same as for Normal Retirement above.

Temporary Supplement:

Temporary Supplement: A member who is hired before July 1, 2001, and who was either (i) hired on or after July 1, 1974 who has 20 or more years of hazardous service at retirement or (ii) a member hired before July 1, 1974 who is vested under SPORS/VaLORS benefits shall be eligible to receive an additional annual retirement allowance of \$13,548 payable from the date of retirement to age 65. This amount is adjusted biennially based upon increases in Social Security benefits during the interim period. The eligible employee must have made a one-time election to receive benefits under 5(b)(i) to receive this supplement.

**Disability Retirement
- Non-VSDP:**

Eligibility:

A member hired prior to 1/1/1999 and who has declined VSDP coverage is eligible from the first day of employment.

Monthly Benefit:

For members with less than five years of service credit, the minimum guaranteed benefit. For members with greater than five years of service credit, the greater of the minimum guaranteed benefit and 1.7% of AFC times service credit. Benefit is reduced by Worker's Compensation (if any).



Schedule B – Virginia Law Officers’ Plan Provisions

Minimum Guaranteed Benefit:

- Workers Compensation Guarantee:

66 2/3% of AFC if member does not qualify for primary Social Security and 50% of AFC if member qualifies for primary Social Security.

- Special Retirement Allowance Guarantee:

50% of AFC if member does not qualify for primary Social Security and 33 1/3% of AFC if member qualifies for primary Social Security.

Service Credit:

If disability occurs before age 60, service is the smaller of 1) twice actual service, and 2) rendered service plus the number of years remaining between age at disability and age 60.

Payment Form:

The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity with a guarantee that, at the member's death, the sum of the member's contributions plus interest as of the date of retirement will be paid in a lump sum to the member's beneficiary. 100% and 50% Survivor Options are also permitted for disability retirement. (A refund of the member's contribution account is paid out for a work-related disability.

Disability Retirement – VSDP:

Provisions applying to members entering in 1999 or later and continuing members who have elected this benefit: In lieu of the above benefits, these members will be covered by the Virginia Sickness and Disability Program (VSDP). Under VSDP, these members will receive a deferred benefit payable at age 60 from this plan. The deferred benefit will be computed like a normal retirement benefit. For this



Schedule B – Virginia Law Officers’ Plan Provisions

calculation, a member's creditable service will include the period of disability, and the Average Final Compensation will be adjusted to reflect increases in the cost-of-living between the date of disability and age 60. If the member dies while disabled before age 60, a death benefit will be determined as though the employee were an active member.

Deferred Termination Benefit:

Eligibility:

A member with at least five years of service who does not withdraw his/her contributions from the fund is eligible for a deferred termination benefit.

Annual Benefit:

Same as normal retirement benefit, but both AFC and service are determined at the time the member leaves active employment. Benefits may commence unreduced at age 60 or at age 50 with at least 25 years of service. Reduced benefits may commence at or after age 50 if the member is not eligible for an unreduced benefit.

Payment Form:

The form of payment is the same as for Normal Retirement above.

Death Benefit:

The beneficiary of a member who dies after leaving active service but before retiring is entitled to receive a lump sum distribution of the deceased member's contribution account.

Withdrawal (Refund) Benefit:

Eligibility:

All members leaving covered employment with less than five years of service are eligible. Optionally, vested members (those with five or more years of service) may withdraw their contributions plus interest in lieu of the deferred benefits otherwise due.



Schedule B – Virginia Law Officers’ Plan Provisions

Benefit:

The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 4%.

Death Benefit:

Eligibility:

Death must have occurred while an active or inactive, non-retired member.

Benefit:

Upon the death of a non-vested member, a refund of the member's contributions and interest is paid. Upon the death of a vested member, if death occurs while in active service the qualifying survivor of the member is entitled to receive a benefit determined as though the member retired, elected the 100% Survivor Option, then died. If the member dies before reaching age 50, the member is assumed to be 50 for benefit calculation purposes. The qualifying survivor may elect to receive a refund of the contributions plus interest in lieu of the monthly benefit. If the death occurs while inactive, benefits payable are described in Section 9(d).

Work-Related Death:

Qualifying survivor would receive 50% of AFC if beneficiary does not qualify for Social Security survivor benefits and 33 1/3% of AFC if beneficiary qualifies for Social Security survivor benefits. This benefit is reduced by Worker's Compensation. In addition, a refund of the member's contribution account is paid to the beneficiary.

Cost-of-Living Increase:

Plan 1:

Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 3% of the Consumer Price Index increase plus half of each percentage increase from 3% to 7%.



Schedule B – Virginia Law Officers’ Plan Provisions

Plan 2: Members qualify for cost-of-living increases on July 1 of the second calendar year after retirement. Automatic cost-of-living increases are calculated as the first 2% increase of the Consumer Price Index plus half of each percent from 2% to 4%, with the maximum cost-of-living increase of 3%.

Plans 1 & 2: The COLA is deferred for one full calendar year after the member reaches unreduced retirement age. The deferred COLA does not apply to employees within 5 years of eligibility for unreduced retirement as of January 1, 2013 and to members who retire with twenty or more years of service.



Schedule B – Summary of Plan Changes

Summary of Plan Changes

1996 Valuation

1. Any member with at least 25 years of service may purchase prior service credit for a) active duty military service in the armed forces of the United States, b) certified creditable service in the retirement system of another state, or c) both at the rate of 5% of current compensation or average final compensation, if greater, times years of service purchased.
2. VRS may enter into an agreement with any political subdivision of the Commonwealth of Virginia which has a defined benefit plan that is not supplemental to VRS to permit portability of service credit on a cost-neutral basis.
3. Early retirement is allowed at age 50 with 10 years of service. The early retirement benefit is determined as if the member is age 55 (but using actual service and AFC) reduced by 0.6% for each month the member is younger than age 55. This benefit can be no smaller than the value of the member's contributions and interest paid in monthly installments over the member's lifetime.
4. The service multiplier for judges entering the Retirement System after January 1, 1995 is 2.5.
5. Effective 7/1/98, a health credit of \$1.50 per month per year of service (up to 30 years) is automatically provided to teachers in VRS who retire with at least 15 years of service. An additional credit of \$1.00 per month per year of service (up to 30 years) can be provided.

1998 Valuation

1. Effective January 1, 1999, the retirement benefit became 1.7% of average final pay times years of service. The 3% benefit adjustment was eliminated for future retirees. A 1.6% ad hoc benefit increase was provided for all retirees and beneficiaries receiving benefits as of December 31, 1999.
2. On January 1, 1999, the Virginia Sickness and Disability Program became effective. All future new members will be covered by this program, and will only receive a deferred retirement benefit from VRS. Members joining before 1999 were allowed to make a one-time irrevocable election to join this program. (Applies to State Employees and State Police.)
3. Effective July 1, 1999, state employees, teachers and employees of participating local units that had not elected out of this benefit may retire with an unreduced benefit if they are at least 50 years old and they have earned at least 30 years of service.



Schedule B – Summary of Plan Changes

1999 Valuation

1. 100% Joint and Survivor Option is payable in the case of death of a member who dies while in active service.
2. 100% Joint and Survivor Option is payable for disability retirement.

2000 Valuation

1. On October 1, 1999, the Virginia Law Officers' Retirement System became effective.
2. On November 15, 2000 the VRS Board of Trustees adopted the recommended economic and demographic assumptions proposed by the actuary as a result of the June 2000 actuarial experience.
3. The Board of Trustees adopted the use of a "pooled" contribution rate for State Employees and Teachers.

2001 Valuation

1. The State Police System had their temporary supplement starting at retirement extended from age 65 to their Social Security retirement age.
2. The Virginia Law Officers System has changed their benefit multiplier from 1.7% to 2.0% of pay with no temporary supplement for all new hires and rehires after July 1, 2001 as well as for current participants who have made an election to change formulas.
3. The Partial Lump Sum Option was added as an additional optional form of payment. This option provides the retiring member with a lump sum payment equal to the sum of 12, 24, or 36 payments of the standard monthly life annuity. The member's monthly annuity is actuarially reduced to reflect the lump sum payment.

2002 Valuation

No material changes were made to the plan provisions.

2003 Valuation

No actuarially material changes were made to the plan provisions. Listed below are the two minor changes of note.

1. School superintendents with five years of service may now purchase an additional ten years of out-of-state service. The superintendent must not be eligible for an out-of-state benefit.



Schedule B – Summary of Plan Changes

2. The leveling option was restored as an optional form of payment. Benefits may be leveled to age 62 or older, and the benefit cannot reduce more than 50%. Any COLAs are calculated on the basic benefit amount.

2004 Valuation

No material changes were made to the plan provisions.

2005 Valuation

No material changes were made to the plan provisions.

2006 Valuation

No material changes were made to the plan provisions.

2007 Valuation

The State Police changed their benefit multiplier from 1.7% to 1.85% of pay.

2008 Valuation

No material changes were made to the plan provisions.

2009 Valuation

The temporary retirement supplement for SPORS and VaLORS changed from \$11,508 to \$12,456.

2010 Valuation

No material changes were made to the plan provisions.

2011 Valuation

In 2010, VRS adopted a second retirement plan. All employees hired on or after July 1, 2010 are automatically enrolled in this plan. The differences between Plan 1 and Plan 2 are listed below:

1. The Average Final Compensation is now based on the highest 60 consecutive months of service.



Schedule B – Summary of Plan Changes

2. The Cost of Living Adjustment was adjusted to be the first 2% increase of the Consumer Price Index plus half of each percent from 2% to 10%, with the maximum cost-of-living increases of 6%.
3. The Normal Retirement Age is Social Security normal retirement age plus five years of service. A member is eligible for unreduced early retirement when the sum of his or her age plus years of service is 90 (Rule of 90). Eligibility for reduced early retirement is at age 60 with five years of service.
4. Judges service weight has been changed. For first term judges less than age 45 the service weight is 1.5; for judges age 45 – 54 the service weight is 2.0; finally, for judges age 55 and above the service weight is 2.5.

The State Employees Plan and the Teachers Plan adopted changes 1, 2, and 3 listed above. The State Police Plan and the Virginia Law Officers Plan adopted changes 1 and 2 listed above. The Judicial Plan adopted changes 1, 2, and 4

2012 Valuation

In, 2012 HB 1130 / SB 498 was enacted and will go into effect on January 1, 2013. A summary of this bill is listed below:

1. Active non-vested members in Plan 1 will have their Average Final Compensation based on the highest 60 consecutive months of service instead of the highest 36 consecutive months of service. This provision applies to all plans.
2. Active non-vested members in Plan 1 and all Plan 2 members will accrue benefits at 1.65% as of the effective date. This provision applies only to the State and Teacher Plans as well as members in political subdivision plans not covered by hazardous duty benefits members.
3. Active members in the Judicial plan hired after January 1, 2013 will accrue benefits at 1.65%.
4. Active non-vested members in Plan 1 will now have to satisfy the Rule of 90 (sum of age and service at least 90) or reach their Social Security Normal Retirement Age to be eligible for Unreduced Retirement. These same members must attain age 60 with 5 years of service to be eligible for Early Retirement. This provision applies only to the State and Teachers Plans as well as members in political subdivision plans not covered by hazardous duty benefits members.
5. Active non-vested members in Plan 1 and all Plan 2 members will only be able to receive a maximum COLA of 3%. This provision applies to all plans.



Schedule B – Summary of Plan Changes

6. All active employees not within 5 years of eligibility for unreduced retirement as of January 1, 2013 and retiring with less than 20 years of service will have their COLA deferred to one year after their unreduced retirement date after beginning to receive benefits. All active employees within 5 years of eligibility for unreduced retirement as of January 1, 2013 are grandfathered into the old provisions with no deferral of the COLA.

2014 Valuation

The 2014 valuation includes Hybrid Plan members for the first time. The Hybrid Plan covers eligible employees hired on or after January 1, 2014 in the State, Teachers and Judicial plans. The Hybrid Plan does not apply to members in the State Police and VaLORS plans. The Hybrid Plan consists of defined benefit plan and defined contribution plan components.

Defined benefit plan component

The benefits under the defined benefit plan are similar to Plan 2 benefits except that the benefit accrual rate is 1% under the Hybrid Plan.

Defined contribution plan component

Active members in the Hybrid Plan are required to contribute 1% of their creditable compensation per year to the defined contribution component of the Hybrid Plan. Active members can make voluntary additional contributions of up to 4% of their creditable compensation. The maximum employee contribution is 5% of pay.

Employers are also required to contribute 1% of pay to the defined contribution component for members in the Hybrid Plan. In addition, employers match the employee's first 1% of voluntary contributions and 0.5% match for each additional 1% of voluntary employee contributions. The maximum employer contribution is 3.5% of pay of members in the defined contribution component of the Hybrid Plan.

2015 Valuation

The mandatory retirement age for Judges was increased from age 70 to age 73.



Schedule C – Statement of Actuarial Assumptions and Methods

SCHEDULE C

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the valuations were based on the actuarial experience study prepared as of June 30, 2012 and adopted by the VRS Board of Trustees.

Assumptions and Methods which apply to all VRS Plans

Investment Return Rate: 7.00% per annum, compounded annually, net of investment expenses.

Inflation Assumption: 2.50% per year.

Actuarial Cost Method: Entry age normal cost method. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability.

Funding Period: The legacy unfunded actuarial accrued liability less the deferred contribution as of June 30, 2013 is amortized over a closed 30 year period from June 30, 2013. The amortization period of the unfunded less the deferred contribution, will decrease by one each year until reaching 0 years. The deferred contribution, as defined under 2011 Appropriation Act, Item 469(1)(6), is to be amortized using a level-dollar, closed 10 year period beginning June 30, 2011. The actuarial gains and losses and other changes in the unfunded due to benefit and actuarial assumption and method changes for each valuation subsequent to the June 30, 2013 valuation will be amortized over a closed 20 year period. See the Amortization Schedules for more detail.

Payroll Growth Rate: 3% per annum.

Asset Valuation Method: For purposes of GASB 67, the value of assets is equal to the market value of assets.

To calculate the actuarially determined contributions, the method of valuing assets is intended to recognize a “smoothed” market value of assets. Under this method, the difference between actual return on market value from investment experience and the expected return on market value is recognized over a five-year period. The resulting



Schedule C – Statement of Actuarial Assumptions and Methods

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

Cost-of-living Increase: 2.5% per year compounded annually for Plan 1 members receiving benefits or vested as of January 1, 2013 and 2.25% compounded annually for all other members. The temporary supplement for SPORS and VaLORS members is assumed to be adjusted biennially based on increases of 2.5% per annum compounded annually.

Percent Electing a Deferred Termination Benefit: Terminating members are assumed to elect a return of contributions or a deferred annuity, whichever is the most valuable benefit at the time of termination. Termination benefits are assumed to commence at normal retirement age.

Marriage Assumption: 100% of active employees are assumed to be married, with spouses the same age as participants.

Plan 1: Members hired prior to July 1, 2010 and who were vested as of January 1, 2013.

Plan 2: Members hired on or after July 1, 2010, or members hired prior to July 1, 2010 and who were not vested as of January 1, 2013.

Hybrid: Members hired on or after January 1, 2014 or by member election. There is no Hybrid Plan in the State Police and Virginia Law Officers Plans.

Service Related Disability: The service related disability benefits do not include an adjustment for Social Security or Worker’s Compensation benefits.

Hazardous Duty Service: The valuations of SPORS and VaLORS assume that all VRS service is hazardous duty service for purposes of determining eligibility for the temporary supplement.



Schedule C – State Employees’ Actuarial Assumptions and Methods

STATE EMPLOYEES
Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2000 Employee Mortality Table Projected with Scale AA to 2020 with Males set forward 2 years and Females set back 3 years.

Post-Retirement:

RP-2000 Combined Mortality Table Projected with Scale AA to 2020 with Females set back 1 year.

Post-Disablement:

RP-2000 Disabled Life Mortality Table with Males set back 3 years and no provision for future mortality improvement.

Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00026	0.00024	0.00000	0.00014	0.00014	0.00000
25	0.00035	0.00031	0.02257	0.00014	0.00015	0.00745
30	0.00051	0.00040	0.02257	0.00018	0.00020	0.00745
35	0.00082	0.00070	0.02257	0.00030	0.00036	0.00745
40	0.00099	0.00092	0.02257	0.00043	0.00048	0.00745
45	0.00128	0.00116	0.02257	0.00063	0.00076	0.00745
50	0.00163	0.00149	0.02512	0.00092	0.00108	0.01154
55	0.00258	0.00247	0.03156	0.00148	0.00198	0.01654
60	0.00437	0.00489	0.03803	0.00272	0.00402	0.02184
65	0.00662	0.00961	0.04498	0.00421	0.00780	0.02803
70	0.00703	0.01641	0.05445	0.00562	0.01344	0.03764
75		0.02854	0.06941		0.02212	0.05223
80		0.05265	0.09215		0.03607	0.07231
85		0.09624	0.12188		0.06041	0.10020
90		0.16928	0.15524		0.11221	0.14005

14% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale AA.



Schedule C – State Employees’ Actuarial Assumptions and Methods

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

State Employees Retirement Rates, Plan 1				
Age	Males		Females	
	Years of Service			
	0-29	>=30	0-29	>=30
<=49	0.000	0.000	0.000	0.000
50	0.030	0.100	0.032	0.100
51	0.030	0.100	0.031	0.100
52	0.030	0.100	0.030	0.100
53	0.030	0.100	0.030	0.100
54	0.030	0.100	0.035	0.100
55	0.050	0.100	0.050	0.100
56	0.050	0.100	0.050	0.100
57	0.045	0.100	0.045	0.100
58	0.040	0.100	0.055	0.100
59	0.050	0.100	0.055	0.100
60	0.050	0.100	0.055	0.150
61	0.100	0.150	0.100	0.200
62	0.150	0.250	0.150	0.300
63	0.150	0.200	0.150	0.200
64	0.150	0.200	0.150	0.200
65	0.300	0.300	0.300	0.400
66	0.300	0.250	0.300	0.300
67	0.300	0.250	0.300	0.250
68	0.300	0.200	0.300	0.250
69	0.300	0.200	0.300	0.200
>=70	1.000	1.000	1.000	1.000



Schedule C – State Employees’ Actuarial Assumptions and Methods

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 & Hybrid														
Age	Males													
	Years of Service													
	0-4	5-26 *	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
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	0.350
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	0.350	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	0.350	0.100	0.100
53	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350	0.100	0.100	0.100
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350	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	0.350	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	0.350	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	0.350	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	0.350	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	0.350	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
60	0.000	0.050	0.050	0.050	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
61	0.000	0.100	0.100	0.150	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	0.150	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	0.150	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
64	0.000	0.150	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
65	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
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	0.250
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	0.250
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	0.200
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	0.200
>=70	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

* Rate is 35% when age plus service equals 90.



Schedule C – State Employees’ Actuarial Assumptions and Methods

State Employees Retirement Rates, Plan 2 & Hybrid															
Age	Females														
	Years of Service														
	0-4	5-25 *	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
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	0.350
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	0.350	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	0.350	0.100	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	0.350	0.100	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	0.350	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	0.350	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	0.350	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	0.350	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	0.350	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	0.350	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
60	0.000	0.055	0.055	0.055	0.350	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
61	0.000	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
62	0.000	0.150	0.150	0.300	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	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
64	0.000	0.150	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
65	0.000	0.300	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
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
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	0.250
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	0.250
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	0.200
>=70	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

* Rate is 35% when age plus service equals 90.



Schedule C – State Employees’ Actuarial Assumptions and Methods

DISABILITY RATES: As shown below for selected ages. 14% of disability cases are assumed to be service related.

State Employees Disability Rates		
Age	Male	Female
20	0.00090	0.00010
25	0.00090	0.00100
30	0.00180	0.00150
35	0.00180	0.00250
40	0.00180	0.00290
45	0.00360	0.00340
50	0.00450	0.00550
55	0.00540	0.00810
60	0.00720	0.01000
65	0.00630	0.00900
70	0.00630	0.00000



Schedule C – State Employees’ Actuarial Assumptions and Methods

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 Rates of Termination, Plan 1								
Age	Male				Female			
	Years of Service							
	0-2	3-4	5-9	>=10	0-2	3-4	5-9	>=10
20	0.245	0.175	0.175	0.000	0.283	0.198	0.198	0.000
25	0.221	0.130	0.130	0.000	0.256	0.157	0.157	0.000
30	0.199	0.110	0.110	0.050	0.212	0.130	0.130	0.060
35	0.167	0.093	0.093	0.045	0.178	0.110	0.110	0.050
40	0.145	0.075	0.075	0.034	0.155	0.090	0.090	0.036
45	0.129	0.070	0.070	0.023	0.139	0.074	0.074	0.025
50	0.115	0.061	0.061	0.000	0.130	0.063	0.063	0.000
55	0.102	0.060	0.060	0.000	0.125	0.860	0.000	0.000
60	0.106	0.070	0.000	0.000	0.123	0.070	0.000	0.000
65	0.113	0.110	0.000	0.000	0.140	0.120	0.000	0.000
70	0.131	0.140	0.000	0.000	0.249	0.140	0.000	0.000

State Employees Rates of Termination, Plan 2 & Hybrid								
Age	Male				Female			
	Years of Service							
	0-2	3-4	5-9	>=10	0-2	3-4	5-9	>=10
20	0.245	0.175	0.175	0.000	0.283	0.198	0.198	0.000
25	0.221	0.130	0.130	0.000	0.256	0.157	0.157	0.000
30	0.199	0.110	0.110	0.050	0.212	0.130	0.130	0.060
35	0.167	0.093	0.093	0.045	0.178	0.110	0.110	0.050
40	0.145	0.075	0.075	0.034	0.155	0.090	0.090	0.036
45	0.129	0.070	0.070	0.023	0.139	0.074	0.074	0.025
50	0.115	0.061	0.061	0.020	0.130	0.063	0.063	0.020
55	0.102	0.060	0.060	0.004	0.125	0.060	0.060	0.004
60	0.106	0.070	0.000	0.000	0.123	0.070	0.000	0.000
65	0.113	0.110	0.000	0.000	0.140	0.120	0.000	0.000
70	0.131	0.140	0.000	0.000	0.249	0.140	0.000	0.000



Schedule C – State Employees’ Actuarial Assumptions and Methods

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 of 1.21% for members in the Hybrid Plan as reported by VRS.



Schedule C – Teachers Employees’ Actuarial Assumptions and Methods

TEACHERS
Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2000 Employee Mortality Table Projected with Scale AA to 2020 with Males set back 3 years and Females set back 5 years.

Post-Retirement:

RP-2000 Combined Mortality Table Projected with Scale AA to 2020 with Males set back 2 years and Females set back 3 years.

Post-Disablement:

RP-2000 Disabled Life Mortality Table Projected to 2020 with Males set back 1 year and no provision for future mortality improvement.

Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00021	0.00022	0.00000	0.00012	0.00014	0.00000
25	0.00026	0.00028	0.01737	0.00014	0.00014	0.00562
30	0.00035	0.00036	0.02042	0.00016	0.00018	0.00609
35	0.00051	0.00057	0.02042	0.00022	0.00030	0.00597
40	0.00082	0.00086	0.01961	0.00038	0.00043	0.00551
45	0.00099	0.00104	0.01773	0.00052	0.00063	0.00540
50	0.00128	0.00135	0.01965	0.00081	0.00092	0.00819
55	0.00163	0.00195	0.02280	0.00119	0.00152	0.01409
60	0.00258	0.00382	0.02946	0.00215	0.00315	0.01976
65	0.00437	0.00755	0.03644	0.00356	0.00602	0.02535
70	0.00000	0.01348	0.04497	0.00000	0.01100	0.03405
75		0.02246	0.05729		0.01832	0.04448
80		0.04094	0.08287		0.02964	0.06283
85		0.07640	0.11724		0.04892	0.08884
90		0.13623	0.15309		0.08892	0.13188

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 AA.



Schedule C – Teachers Employees’ Actuarial Assumptions and Methods

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

Teachers Rates of Retirement, Plan 1				
Age	Male		Female	
	Years of Service			
	0-29	>=30	0-29	>=30
<=49	0.000	0.000	0.000	0.000
50	0.020	0.175	0.020	0.150
51	0.020	0.175	0.024	0.150
52	0.020	0.175	0.027	0.150
53	0.023	0.175	0.024	0.150
54	0.040	0.175	0.037	0.150
55	0.057	0.225	0.061	0.225
56	0.046	0.225	0.054	0.225
57	0.045	0.225	0.057	0.225
58	0.066	0.225	0.062	0.225
59	0.070	0.225	0.075	0.225
60	0.075	0.225	0.085	0.225
61	0.110	0.300	0.120	0.300
62	0.170	0.350	0.170	0.350
63	0.140	0.350	0.160	0.350
64	0.180	0.300	0.165	0.350
65	0.300	0.400	0.300	0.350
66	0.300	0.400	0.300	0.350
67	0.300	0.400	0.300	0.350
68	0.300	0.400	0.300	0.350
69	0.300	0.400	0.300	0.350
>=70	1.000	1.000	1.000	1.000



Schedule C – Teachers Employees’ Actuarial Assumptions and Methods

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 & Hybrid																	
Age	Males																
	Years of Service																
	0-4	5-21 *	22-23 *	24-25 *	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
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	0.400
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	0.400	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	0.400	0.175	0.175
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	0.400	0.175	0.175	0.175
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	0.400	0.175	0.175	0.175	0.175
55	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.225	0.225	0.225	0.225	0.225
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.225	0.225	0.225	0.225	0.225	0.225
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.225	0.225	0.225	0.225	0.225	0.225	0.225
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
60	0.000	0.075	0.075	0.075	0.075	0.075	0.400	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
61	0.000	0.110	0.110	0.110	0.110	0.110	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
62	0.000	0.170	0.170	0.170	0.170	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	0.140	0.140	0.140	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
64	0.000	0.180	0.180	0.180	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	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
66	0.000	0.300	0.300	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
67	0.000	0.300	0.300	0.400	0.400	0.400	0.300	0.300	0.300	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
68	0.000	0.300	0.400	0.400	0.400	0.400	0.300	0.300	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
69	0.000	0.300	0.400	0.400	0.400	0.400	0.300	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
>=70	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

* Rate is 40% when age plus service equals 90.



Schedule C – Teachers Employees’ Actuarial Assumptions and Methods

Teachers Retirement Rates, Plan 2 & Hybrid																		
Age	Females																	
	Years of Service																	
	0-4	5-21 *	22	23	24-25 *	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	0.350
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	0.350	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	0.350	0.150	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	0.350	0.150	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	0.350	0.150	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	0.350	0.225	0.225	0.225	0.225	0.225
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350	0.225	0.225	0.225	0.225	0.225	0.225
57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350	0.225	0.225	0.225	0.225	0.225	0.225	0.225
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.350	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
60	0.000	0.085	0.085	0.085	0.085	0.085	0.085	0.350	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
61	0.000	0.120	0.120	0.120	0.120	0.120	0.120	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
62	0.000	0.170	0.170	0.170	0.170	0.170	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.350
63	0.000	0.160	0.160	0.160	0.160	0.160	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.350
64	0.000	0.165	0.165	0.165	0.165	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.350
65	0.000	0.300	0.300	0.300	0.400	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.350
66	0.000	0.300	0.300	0.400	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	0.350
67	0.000	0.300	0.400	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	0.350
68	0.000	0.300	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	0.300	0.350
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	0.350
>=70	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

* Rate is 35% when age plus service equals 90.



Schedule C – Teachers Employees’ Actuarial Assumptions and Methods

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	0.00000	0.00000
25	0.00008	0.00004
30	0.00010	0.00010
35	0.00018	0.00030
40	0.00021	0.00036
45	0.00099	0.00042
50	0.00133	0.00090
55	0.00195	0.00204
60	0.00308	0.00240
65	0.00276	0.00330
70	0.00169	0.00180



Schedule C – Teachers Employees’ Actuarial Assumptions and Methods

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

Teachers Rates of Termination, Plan 1								
Age	Male				Female			
	Years of Service							
	0-2	3-4	5-9	>=10	0-2	3-4	5-9	>=10
20	0.182	0.143	0.143	0.008	0.159	0.160	0.160	0.000
25	0.154	0.118	0.118	0.008	0.146	0.120	0.120	0.150
30	0.149	0.090	0.090	0.037	0.164	0.110	0.110	0.047
35	0.141	0.073	0.073	0.031	0.149	0.090	0.090	0.039
40	0.141	0.070	0.070	0.025	0.127	0.075	0.075	0.028
45	0.147	0.075	0.075	0.019	0.117	0.064	0.064	0.021
50	0.138	0.070	0.070	0.000	0.118	0.058	0.058	0.000
55	0.143	0.070	0.000	0.000	0.124	0.058	0.000	0.000
60	0.166	0.080	0.000	0.000	0.129	0.077	0.000	0.000
65	0.170	0.083	0.000	0.000	0.130	0.080	0.000	0.000
70	0.170	0.083	0.000	0.000	0.130	0.080	0.000	0.000

Teachers Rates of Termination, Plan 2 & Hybrid								
Age	Male				Female			
	Years of Service							
	0-2	3-4	5-9	>=10	0-2	3-4	5-9	>=10
20	0.182	0.143	0.143	0.008	0.159	0.160	0.160	0.000
25	0.154	0.118	0.118	0.008	0.146	0.120	0.120	0.150
30	0.149	0.090	0.090	0.037	0.164	0.110	0.110	0.047
35	0.141	0.073	0.073	0.031	0.149	0.090	0.090	0.039
40	0.141	0.070	0.070	0.025	0.127	0.075	0.075	0.028
45	0.147	0.075	0.075	0.019	0.117	0.064	0.064	0.021
50	0.138	0.070	0.070	0.016	0.118	0.058	0.058	0.018
55	0.143	0.070	0.070	0.003	0.124	0.058	0.058	0.003
60	0.166	0.080	0.000	0.000	0.129	0.077	0.000	0.000
65	0.170	0.083	0.000	0.000	0.130	0.080	0.000	0.000
70	0.170	0.083	0.000	0.000	0.130	0.080	0.000	0.000



Schedule C – Teachers Employees’ Actuarial Assumptions and Methods

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

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

EMPLOYER CONTRIBUTION TO DEFINED CONTRIBUTION HYBRID PLAN: The valuation assumes an average employer defined contribution rate of 1.21% for members in the Hybrid Plan as reported by VRS.



Schedule C – State Police Actuarial Assumptions and Methods

STATE POLICE
Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2000 Employee Mortality Table Projected with Scale AA to 2020 with Males set forward 5 years and Females set back 3 years.

Post-Retirement:

RP-2000 Combined Mortality Table Projected with Scale AA to 2020 with Females set back 1 year.

Post-Disablement:

RP-2000 Disabled Life Mortality Table with Males set back 3 years and no provision for future mortality improvement.

Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00031	0.00024	0.00000	0.00014	0.00014	0.00000
25	0.00040	0.00031	0.02257	0.00014	0.00015	0.00745
30	0.00070	0.00040	0.02257	0.00018	0.00020	0.00745
35	0.00092	0.00070	0.02257	0.00030	0.00036	0.00745
40	0.00116	0.00092	0.02257	0.00043	0.00048	0.00745
45	0.00149	0.00116	0.02257	0.00063	0.00076	0.00745
50	0.00206	0.00149	0.02512	0.00092	0.00108	0.01154
55	0.00353	0.00247	0.03156	0.00148	0.00198	0.01654
60	0.00571	0.00489	0.03803	0.00272	0.00402	0.02184
65	0.00703	0.00961	0.04498	0.00421	0.00780	0.02803
70	1.00000	0.01641	0.05445	1.00000	0.01344	0.03764
75		0.02854	0.06941		0.02212	0.05223
80		0.05265	0.09215		0.03607	0.07231
85		0.09624	0.12188		0.06041	0.10020
90		0.16928	0.15524		0.11221	0.14005

60% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale AA.



Schedule C – State Police Actuarial Assumptions and Methods

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

SPORS Rates of Retirement		
Age	Years of Service	
	Less Than 25	25 or More
<=49	0.000	0.000
50	0.100	0.150
51	0.100	0.150
52	0.100	0.150
53	0.100	0.150
54	0.100	0.150
55	0.100	0.150
56	0.100	0.150
57	0.100	0.150
58	0.120	0.200
59	0.120	0.200
60	0.250	0.400
61	0.350	0.400
62	0.500	1.000
63	0.500	1.000
>=64	1.000	1.000



Schedule C – State Police Actuarial Assumptions and Methods

DISABILITY RATES: As shown below for selected ages. 60% of disability cases are assumed to be service related.

SPORS Rates of Disability	
Age	Unisex
<=29	0.00000
30	0.00028
35	0.00134
40	0.00210
45	0.00411
50	0.00675
55	0.01001
60	0.00000

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

SPORS Rates of Termination								
Age	Males				Females			
	Years of Service							
	0-2	3-4	5-9	>=10	2	5	9	>=10
20	0.075	0.210	0.210	0.030	0.101	0.122	0.053	0.036
25	0.075	0.055	0.055	0.030	0.108	0.105	0.054	0.044
30	0.075	0.045	0.045	0.030	0.119	0.084	0.057	0.055
35	0.075	0.048	0.048	0.024	0.121	0.074	0.060	0.061
40	0.075	0.048	0.048	0.018	0.117	0.074	0.062	0.062
45	0.100	0.045	0.045	0.014	0.108	0.082	0.064	0.059
50	0.100	0.045	0.000	0.000	0.093	0.100	0.066	0.052
55	0.100	0.067	0.000	0.000	0.074	0.126	0.067	0.041
60	0.100	0.075	0.000	0.000	0.049	0.162	0.068	0.026
65	0.100	0.075	0.000	0.000	0.015	0.205	0.069	0.006
70	0.100	0.075	0.000	0.000	0.000	0.264	0.071	0.000



Schedule C – State Police Actuarial Assumptions and Methods

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 C – Judicial Actuarial Assumptions and Methods

JUDICIAL
Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2000 Employee Mortality Table Projected with Scale AA to 2020 with Males set forward 2 years and Females set back 3 years.

Post-Retirement:

RP-2000 Combined Mortality Table Projected with Scale AA to 2020 with Females set back 1 year.

Post-Disablement:

RP-2000 Disabled Life Mortality Table with Males set back 3 years and no provision for future mortality improvement.

Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00026	0.00024	0.00000	0.00014	0.00014	0.00000
25	0.00035	0.00031	0.02257	0.00014	0.00015	0.00745
30	0.00051	0.00040	0.02257	0.00018	0.00020	0.00745
35	0.00082	0.00070	0.02257	0.00030	0.00036	0.00745
40	0.00099	0.00092	0.02257	0.00043	0.00048	0.00745
45	0.00128	0.00116	0.02257	0.00063	0.00076	0.00745
50	0.00163	0.00149	0.02512	0.00092	0.00108	0.01154
55	0.00258	0.00247	0.03156	0.00148	0.00198	0.01654
60	0.00437	0.00489	0.03803	0.00272	0.00402	0.02184
65	0.00662	0.00961	0.04498	0.00421	0.00780	0.02803
70	0.00703	0.01641	0.05445	0.00562	0.01344	0.03764
75		0.02854	0.06941		0.02212	0.05223
80		0.05265	0.09215		0.03607	0.07231
85		0.09624	0.12188		0.06041	0.10020
90		0.16928	0.15524		0.11221	0.14005

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 AA.



Schedule C – Judicial Actuarial Assumptions and Methods

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

Judicial Rates of Retirement								
Age	Service Multiplier = 1.5				Service Multiplier = 2.0			
	Years of Service				Years of Service			
	<=1	2 - 19	20	>=21	<=1	2 - 14	15	>=16
<=59	0	0	0	0	0	0	0	0
60	0	0	0.500	0.500	0	0	0.500	0.500
61	0	0	0.500	0.150	0	0	0.500	0.150
62	0	0	0.500	0.150	0	0	0.500	0.150
63	0	0	0.500	0.150	0	0	0.500	0.150
64	0	0	0.500	0.150	0	0	0.500	0.150
65	0	0.500	0.500	0.150	0	0.500	0.500	0.150
66	0	0.150	0.150	0.150	0	0.150	0.150	0.150
67	0	0.150	0.150	0.150	0	0.150	0.150	0.150
68	0	0.150	0.150	0.150	0	0.150	0.150	0.150
69	0	0.150	0.150	0.150	0	0.150	0.150	0.150
70	0	0.150	0.150	0.150	0	0.150	0.150	0.150
71	0	0.150	0.150	0.150	0	0.150	0.150	0.150
72	0	0.150	0.150	0.150	0	0.150	0.150	0.150
>=73	0	1.000	1.000	1.000	0	1.000	1.000	1.000

Judicial Rates of Retirement								
Age	Service Multiplier = 2.5				Service Multiplier = 3.5			
	Years of Service				Years of Service			
	<=1	2 - 11	12	>=13	<1	1 - 8	9	>=10
<=59	0	0	0	0	0	0	0	0
60	0	0	0.500	0.500	0	0	0.500	0.500
61	0	0	0.500	0.150	0	0	0.500	0.150
62	0	0	0.500	0.150	0	0	0.500	0.150
63	0	0	0.500	0.150	0	0	0.500	0.150
64	0	0	0.500	0.150	0	0	0.500	0.150
65	0	0.500	0.500	0.150	0	0.500	0.500	0.150
66	0	0.150	0.150	0.150	0	0.150	0.150	0.150
67	0	0.150	0.150	0.150	0	0.150	0.150	0.150
68	0	0.150	0.150	0.150	0	0.150	0.150	0.150
69	0	0.150	0.150	0.150	0	0.150	0.150	0.150
70	0	0.150	0.150	0.150	0	0.150	0.150	0.150
71	0	0.150	0.150	0.150	0	0.150	0.150	0.150
72	0	0.150	0.150	0.150	0	0.150	0.150	0.150
>=73	0	1.000	1.000	1.000	0	1.000	1.000	1.000



Schedule C – Judicial Actuarial Assumptions and Methods

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

Judicial Rates of Disability		
Age	Male	Female
<=29	0.00000	0.00000
30	0.00007	0.00007
35	0.00037	0.00045
40	0.00142	0.00090
45	0.00292	0.00210
50	0.00480	0.00397
55	0.00712	0.00600
60	0.00000	0.00000

TERMINATION RATES: There are no assumed rates of withdrawal prior to service retirement. (For causes other than death, disability, 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 of 1.21% for members in the Hybrid Plan as reported by VRS.



Schedule C – Virginia Law Officers’ Actuarial Assumptions and Methods

VIRGINIA LAW OFFICERS
Plan Specific Assumptions and Methods

MORTALITY RATES:

Pre-Retirement:

RP-2000 Employee Mortality Table Projected with Scale AA to 2020 with Males set forward 5 years and Females set back 3 years.

Post-Retirement:

RP-2000 Combined Mortality Table Projected with Scale AA to 2020 with Females set back 1 year.

Post-Disablement:

RP-2000 Disabled Life Mortality Table with Males set back 3 years and no provision for future mortality improvement.

Mortality Rates						
Age	Male			Female		
	Pre Retirement	Post Retirement	Post Disablement	Pre Retirement	Post Retirement	Post Disablement
20	0.00031	0.00024	0.00000	0.00014	0.00014	0.00000
25	0.00040	0.00031	0.02257	0.00014	0.00015	0.00745
30	0.00070	0.00040	0.02257	0.00018	0.00020	0.00745
35	0.00092	0.00070	0.02257	0.00030	0.00036	0.00745
40	0.00116	0.00092	0.02257	0.00043	0.00048	0.00745
45	0.00149	0.00116	0.02257	0.00063	0.00076	0.00745
50	0.00206	0.00149	0.02512	0.00092	0.00108	0.01154
55	0.00353	0.00247	0.03156	0.00148	0.00198	0.01654
60	0.00571	0.00489	0.03803	0.00272	0.00402	0.02184
65	0.00703	0.00961	0.04498	0.00421	0.00780	0.02803
70	1.00000	0.01641	0.05445	1.00000	0.01344	0.03764
75		0.02854	0.06941		0.02212	0.05223
80		0.05265	0.09215		0.03607	0.07231
85		0.09624	0.12188		0.06041	0.10020
90		0.16928	0.15524		0.11221	0.14005

60% of pre-retirement deaths are assumed to be service related. Mortality improvement is anticipated under the post-retirement mortality assumption as projected with Scale AA.



Schedule C – Virginia Law Officers’ Actuarial Assumptions and Methods

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

VaLORS Rates of Retirement		
Age	Years of Service	
	Less Than 25	25 or More
<=49	0.000	0.000
50	0.092	0.250
51	0.090	0.250
52	0.090	0.250
53	0.090	0.250
54	0.100	0.250
55	0.095	0.250
56	0.090	0.250
57	0.120	0.300
58	0.100	0.300
59	0.120	0.400
60	0.200	0.400
61	0.260	0.500
62	0.400	1.000
63	0.200	1.000
64	0.200	1.000
>=65	1.000	1.000



Schedule C – Virginia Law Officers’ Actuarial Assumptions and Methods

DISABILITY RATES: As shown below for selected ages. 50% of disability cases are assumed to be service related.

VaLORS Rates of Disability	
Age	Unisex
20	0.00150
25	0.00300
30	0.00600
35	0.00800
40	0.00800
45	0.01000
50	0.01200
55	0.01200
60	0.01000
65	0.00800
70	0.00600

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

VaLORS Rates of Termination						
Age	Males			Females		
	Years of Service			Years of Service		
	0-2	3-9	>=10	0-2	3-9	>=10
20	0.250	0.150	0.050	0.200	0.150	0.075
25	0.200	0.150	0.050	0.200	0.150	0.075
30	0.200	0.125	0.050	0.200	0.125	0.060
35	0.200	0.125	0.050	0.200	0.125	0.060
40	0.150	0.105	0.040	0.175	0.105	0.050
45	0.150	0.105	0.040	0.175	0.080	0.040
50	0.150	0.080	0.040	0.175	0.080	0.040
55	0.120	0.065	0.040	0.100	0.120	0.040
60	0.125	0.070	0.040	0.100	0.200	0.040
65	0.150	0.070	0.040	0.100	0.100	0.040
70	0.200	0.070	0.040	0.100	0.100	0.040



Schedule C – Virginia Law Officers’ Actuarial Assumptions and Methods

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 C – Summary of Actuarial Assumptions and Methods Changes

2009 Valuation

1. Changes to the actuarial assumptions as a result of the experience study for the four-year period ending June 30, 2008 are stated below.

SYSTEM	ASSUMPTION CHANGE
State	Increase rates of withdrawals Increase rates of disability retirement up to age 52, females Decrease rates of disability retirement after age 52, all members Decrease rates of service retirement
Teachers	Increase rates of withdrawals Increase rates of disability retirement Decrease rates of service retirement
SPORS	Decrease rates of withdrawals, males Decrease rates of service retirement
VaLORS	Increase rates of withdrawals Decrease rates of disability retirement Change rates of service retirement
Judicial	Increase rates of salary increases

2. For the June 30, 2009 valuation the Board suspended application of the 80%/120% market value of assets corridor on the actuarial value of assets.

2010 Valuation

The investment return rate was decreased from 7.50% per annum to 7.00% per annum.

2011 Valuation

The amortization period of the unfunded less the deferred contribution begins at 30 years on June 30, 2011 and will decrease by one each year until reaching the minimum period of 20 years. The deferred contribution, as defined under 2011 Appropriation Act, Item 469(1)(6), is amortized using a level-dollar, closed, 10 year period beginning June 30, 2011.



Schedule C – Summary of Actuarial Assumptions and Methods Changes

2013 Valuation

1. The amortization period of the unfunded as of June 30, 2013 less the deferred contribution under 2011 Appropriation Act, Item 469(1)(6) is amortized using a level-dollar, closed, 30 year period beginning June 30, 2013 decreasing by one each year until reaching 0 years.
2. Changes to the actuarial assumptions as a result of the experience study for the four-year period ending June 30, 2012 are summarized below.

STATE SYSTEM	ASSUMPTION CHANGE
State	Update mortality table Decrease rates of service retirement Decrease rates of withdrawals for less than 10 years of service Decrease rates of male disability retirement Reduce rates of salary increase by 0.25% per year
Teachers	Update mortality table Adjustments to rates of service retirement Decrease rates of withdrawals for three through nine years of service Decrease rates of disability Reduce rates of salary increase by 0.25% per year
SPORS	Update mortality table Increase rate of service retirement at age 54
VaLORS	Update mortality table Adjustments to rates of service retirement Decrease rates of withdrawals for females under 10 years of service Increase rates of disability Decrease service related disability rate from 60% to 50%
Judicial	Update mortality table

2015 Valuation

1. An administrative expense charge was added to the employer contribution rates to cover administrative expenses.
2. The retirement rates for the Judicial plan were extended to age 73 to reflect the change in the mandatory retirement age to 73.