

# Virginia Retirement System

Annual Actuarial Valuation

June 30, 2022



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April 4, 2023

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

**Re: Virginia Retirement System Actuarial Valuation as of June 30, 2022  
Actuarial Disclosures – State Pension Plans**

Dear Trustees:

The results of the June 30, 2022 Annual Actuarial Valuation of the Virginia Retirement System (VRS) are presented in this report. This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The purposes of the valuation are to measure each Statewide System's funding progress and to determine the informational employer contribution rates for the fiscal year ended June 30, 2024. In addition, this report provides select aggregated valuation results for the participating Political Subdivisions. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The employer contribution rates in this report are determined using the actuarial assumptions and methods as adopted by the Board. This report includes risk metrics on pages 18 through 25 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund the VRS. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The findings in this report are based on data and other information through June 30, 2022. The valuation was based upon information furnished by the VRS, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the VRS. For a summary of the benefit provisions used, please refer to the appendix available on the VRS website.

Valuation results are developed through the use of multiple models.

Valuation liabilities were prepared using ProVal's valuation model, a software product of Winklevoss Technologies. We are relying on the ProVal model. We performed tests of the ProVal model with this assignment and made a reasonable attempt to understand the developer's intended purpose of, general operation of, major sensitivities and dependencies within, and key strengths and limitations of the ProVal model. In our professional judgment, the ProVal valuation model has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses.

Financial results were prepared using our financing model which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report was prepared during the COVID-19 pandemic, which is likely to influence demographic and economic experience, at least in the short term. Results in this report are developed based on available data without adjustment. We will continue to monitor these developments and their impact on the Retirement System. Actual experience will be reflected in each subsequent report, as experience emerges.

This report was prepared using assumptions adopted by the Board. All actuarial assumptions used in this report are reasonable for the purposes of this valuation. All actuarial assumptions and methods used in the valuation follow the guidance in the applicable Actuarial Standards of Practice. For a full list of the assumptions and methods used, please refer to the appendix available on the VRS website.

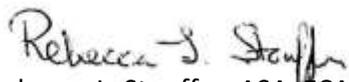
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the VRS as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.



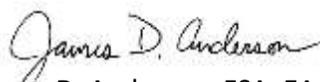
Board of Trustees  
Virginia Retirement System  
April 4, 2023  
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Rebecca L. Stouffer, James D. Anderson, Richard C. Koch Jr., and Michael D. Kosciuk are members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

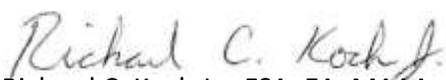
Respectfully submitted,  
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RLS/JDA/RCK/MDK:rmn



## **SECTION A**

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### **EXECUTIVE SUMMARY**

# Executive Summary

## 1. Introduction

Each year actuarial valuations are prepared for the Virginia Retirement System (VRS). This report contains the results of the June 30, 2022 actuarial valuation for each of the Statewide Retirement Systems administered by the VRS.

As referenced throughout this report, the Statewide Retirement Systems are as follows:

- Virginia Retirement System
  - State Employees
  - Teachers
  - Political Subdivisions
- State Police Officer’s Retirement System (State Police)
- Judicial Retirement System (Judicial)
- Virginia Law Officers’ Retirement System (Virginia Law Officers)

In addition, the report presents aggregated results for the participating Political Subdivisions within the agent-multiple employer plan. The funded status and employer contribution rates for participating Political Subdivisions are developed individually at the employer level.

## 2. Total Employer Contribution Rates to Support Retirement System Benefits – Including an Actuarially Determined Employer Contribution (ADEC) Rate

Fiscal Year Ending:	2021 & 2022	2023 & 2024		Informational - 2024		
Valuation Date:	June 30, 2019	June 30, 2021		June 30, 2022		
Employer Contribution Rate / System	Board & General Assembly Approved	Board Approved	General Assembly Approved	ADEC For Defined Benefit (DB) Plan	For Hybrid Defined Contribution (DC) Members	Total Employer Rate (DB) + (DC)
State Employees	14.46%	14.13%	<b>14.46%</b>	12.05%	1.14%	13.19%
Teachers	16.62%	14.76%	<b>16.62%</b>	13.27%	0.86%	14.13%
State Police	26.33%	29.98%	29.98%	28.88%	N/A	28.88%
Judicial	29.84%	30.67%	30.67%	27.11%	1.99%	29.10%
Virginia Law Officers	21.90%	24.60%	24.60%	21.92%	N/A	21.92%
Political Subdivisions (Average) <sup>1,2</sup>	N/A	12.36%	N/A	11.07%	0.82%	11.89%

<sup>1</sup> Calculated as a weighted average starting with the June 30, 2022 valuation, consistent with GASB Statement No. 68 reporting.

<sup>2</sup> Fiscal years ending 2023 and 2024 were restated as weighted average from prior actuary's published results by individual employer. The General Assembly does not approve the Political Subdivision rates.

Contribution rates for the VRS employers are established every two years. Odd valuation years are rate setting valuations. A measure of the funded status and recommended employer contribution rates are determined by the Actuary and approved by the Board of Trustees. Actual employer contribution rates (for all except Political Subdivisions) are established by the General Assembly for the biennium, subject to intermediate updates. Even valuation years, such as this one, are considered informational. Even valuations provide a current measure of the System’s funded status and an illustrative measure of the employer contribution rate, after accounting for updates to demographic data, financial data, plan provisions, and assumption and/or method changes since the previous valuation measurement.



## Executive Summary

The table on the prior page shows the employer contribution rates for fiscal years ending 2021-2024 based on June 30, 2019 and June 30, 2021 actuarial valuations. The budget maintains funding for fiscal years ending 2023 and 2024 based on the prior biennium's higher contribution rates for State (14.46% vs. 14.13%) and Teachers (16.62% vs. 14.76%). Also, the budget included the additional amounts below, contributed to the Virginia Retirement System trust fund in June 2022 in an effort to address the unfunded liabilities associated with each plan:

System	June 2022 Additional Contribution
State Employees	\$219,156,318
Teachers	442,371,085
State Police	10,957,816
Judicial	6,250,014
Virginia Law Officers	19,886,407

The actuarially determined employer contribution rates based on the June 30, 2022 valuation presented in this report are *informational* in nature and the total employer rate includes the average employer rate for the defined contribution component of the Hybrid members based upon the previous year's experience.

### 3. Funded Ratio

The funded ratio of the plan is the percentage of the dollar value of the accrued liability that is covered by the actuarial value of assets. While the funded ratio may be a useful plan measurement, understanding a plan's funding trend may be more important than a particular point in time. The chart below compares the funded ratio for the current valuation with the results of the prior valuation.

System	Funded Ratio	
	June 30, 2022	June 30, 2021
State Employees	78.90%	77.13%
Teachers	78.85%	77.21%
State Police	70.63%	70.65%
Judicial	85.19%	81.90%
Virginia Law Officers	71.36%	69.33%
Political Subdivisions	88.76%	87.19%

### 4. Reasons for Change

There are three general reasons why contribution rates change from one valuation to the next.

- Changes in the benefit or eligibility conditions of the plan;
- Change in the valuation assumptions and/or methods used to project future occurrences; and
- Experience of the plan; the difference during the year between the plan's actual experience and that expected under the actuarial assumptions.



## Executive Summary

There were no significant changes in plan benefits or eligibility conditions since the prior valuation. Some Political Subdivisions made changes to benefits provided to members in hazardous duty positions. Additionally, some entities became participating Political Subdivisions since the previous valuation. In aggregate the impact of these changes on the Political Subdivision plans is not significant. Please refer to the individual reports for the benefit provisions of each participating Political Subdivision.

There were no changes in the valuation assumptions or methods since the last valuation. Plan experience differed from expectations as follows:

- For the period ending June 30, 2022, the VRS reported investment return of 0.6% on a market value basis, compared to the assumed level of 6.75%. Under the asset valuation method, investment gains and losses are spread over a 5-year period, subject to a corridor. Partial recognition of this year's loss, combined with the continued phase-in of investment gains and losses from prior years resulted in a net recognized asset gain for the funding value of assets for all plans. In addition the return on the funding value of assets was approximately 8.9%.
- Pay increases (other than JRS) were greater than assumed.
- Cost of Living Adjustments (COLA) were greater than expected for eligible recipients:
  - An actual COLA of 3.85% for Plan 1 recipients compared to a 2.50% assumption; and
  - An actual COLA of 3.00% for Plan 2 / Hybrid recipients compared to a 2.25% assumption.
- The net impact of plan experience will depend upon the specific make up (demographic and financial) of each Plan and is reflected in the computed Total Employer Contribution Rate determined in this report.

### 5. Change in Service Provider

There was a change in actuarial service provider during calendar year 2022. Throughout this report, information prior to 2022 was provided by the prior actuarial service provider.

### 6. General Comments

HB 473 and SB 70 separate the employer contribution into Defined Benefit and Defined Contribution components effective for contribution rates beginning July 1, 2024. This 2022 informational valuation continues to show the Defined Contribution Rate to allow continued communication to employers in the interim. The 2023 rate-setting valuation will not include the estimated Defined Contribution Rate since the rates set in that valuation will be paid beginning July 1, 2024.

Throughout this report, there may be cases when the schedules do not add due to rounding.

**Conclusion.** Based upon the results of the June 30, 2022 regular annual actuarial valuation, it is our opinion that *the Virginia Retirement System continues to operate in accordance with actuarial principles of level percent-of-payroll financing.*



## Other Observations

### General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.75% on the actuarial value of assets), it is expected that:

- (1) The normal cost as a percentage of pay will trend to the level associated with Plan 2 and/or Hybrid as members are replaced into the ultimate benefit tier.
- (2) The unfunded liability will decrease in dollar amount until it is fully funded.
- (3) The funded status of the plan will move toward a 100% funded ratio.

### Limitations of Funded Status Measurements

Unless otherwise indicated, a funded ratio measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amount of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon actuarial assumptions. A funded ratio measurement in this report of 100% is not synonymous with no required future contributions. If the funded ratio were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

### Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.



## **SECTION B**

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### **VALUATION RESULTS**

# Results Summary State Employees

(\$ In Thousands)

	June 30, 2022	June 30, 2021
Members:		
Active	74,048	73,686
Long Term Disability	2,380	2,005
Retirees and Beneficiaries	71,374	70,231
Inactive, Vested	15,387	14,555
Inactive, Non-Vested	33,016	32,979
Inactive, active elsewhere in VRS	9,393	9,086
Total	205,598	202,542
Annual Covered Payroll	\$ 4,946,307	\$ 4,594,347
Annual Retirement Benefits	\$ 1,546,151	\$ 1,472,727
Total Assets:		
Actuarial Value	\$ 21,917,849	\$ 20,615,301
Market Value	22,579,326	23,112,417
Actuarial Accrued Liability	\$ 27,779,171	\$ 26,727,971
Funded Ratio:		
Actuarial Value of Assets	78.90%	77.13%
Market Value of Assets	81.28%	86.47%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 5,861,321	\$ 6,112,670
<b>Employer Contribution Rate Development for Fiscal Year Ending</b>	<b>Informational June 30, 2024</b>	<b>June 30, 2023 and June 30, 2024</b>
Employer Contribution Rate Defined Benefit Plan:		
Employer Normal Cost Rate	4.48%	4.76%
Administrative Expense	0.29%	0.29%
Amortization of UAAL	7.28%	8.02%
Annual Recommended Contribution	12.05%	13.07%
DC Contribution for Hybrid Members	1.14%	1.06%
Total Employer Contribution Rate Retirement Plans	13.19%	14.13%
Amortization Period (Years)	12-21	13-22



# Results Summary Teachers

(\$ In Thousands)

	June 30, 2022	June 30, 2021
<b>Members:</b>		
Active	153,356	149,793
Long Term Disability	41	15
Retirees and Beneficiaries	108,579	106,011
Inactive, Vested	32,031	28,677
Inactive, Non-Vested	46,596	41,266
Inactive, active elsewhere in VRS	6,218	5,974
<b>Total</b>	<b>346,821</b>	<b>331,736</b>
Annual Covered Payroll <sup>1</sup>	\$ 9,713,229	\$ 8,971,605
Annual Retirement Benefits	\$ 2,708,505	\$ 2,562,291
<b>Total Assets:</b>		
Actuarial Value	\$ 43,970,442	\$ 40,725,782
Market Value	45,211,731	45,617,878
Actuarial Accrued Liability	\$ 55,762,533	\$ 52,747,596
<b>Funded Ratio:</b>		
Actuarial Value of Assets	78.85%	77.21%
Market Value of Assets	81.08%	86.48%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 11,792,090	\$ 12,021,814
<b>Employer Contribution Rate Development for Fiscal Year Ending</b>	<b>Informational June 30, 2024</b>	<b>June 30, 2023 and June 30, 2024</b>
<b>Employer Contribution Rate Defined Benefit Plan:</b>		
Employer Normal Cost Rate	5.53%	5.63%
Administrative Expense	0.29%	0.28%
Amortization of UAAL	7.45%	8.04%
Annual Recommended Contribution	13.27%	13.95%
DC Contribution for Hybrid Members	0.86%	0.81%
<b>Total Employer Contribution Rate Retirement Plans</b>	<b>14.13%</b>	<b>14.76%</b>
Amortization Period (Years)	12-21	13-22

<sup>1</sup> Includes an assumed pay increase on the valuation date.



# Results Summary State Police

(\$ In Thousands)

	June 30, 2022	June 30, 2021
<b>Members:</b>		
Active	1,885	1,947
Long Term Disability	28	25
Retirees and Beneficiaries	1,774	1,755
Inactive, Vested	199	184
Inactive, Non-Vested	271	264
Inactive, active elsewhere in VRS	252	229
<b>Total</b>	<b>4,409</b>	<b>4,404</b>
Annual Covered Payroll	\$ 159,212	\$ 142,795
Annual Retirement Benefits	\$ 71,361	\$ 68,652
<b>Total Assets:</b>		
Actuarial Value	\$ 1,001,822	\$ 937,332
Market Value	1,031,383	1,050,148
Actuarial Accrued Liability	\$ 1,418,464	\$ 1,326,646
<b>Funded Ratio:</b>		
Actuarial Value of Assets	70.63%	70.65%
Market Value of Assets	72.71%	79.16%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 416,642	\$ 389,314
<b>Employer Contribution Rate Development for Fiscal Year Ending</b>	<b>Informational June 30, 2024</b>	<b>June 30, 2023 and June 30, 2024</b>
Employer Contribution Rate Defined Benefit Plan:		
Employer Normal Cost Rate	12.06%	13.05%
Administrative Expense	0.39%	0.38%
Amortization of UAAL	16.43%	16.55%
Annual Recommended Contribution	28.88%	29.98%
Amortization Period (Years)	12-21	13-22



# Results Summary Judicial

(\$ In Thousands)

	June 30, 2022	June 30, 2021
Members:		
Active	461	453
Retirees and Beneficiaries	580	577
Inactive, Vested	9	6
Inactive, Non-Vested	1	0
Inactive, active elsewhere in VRS	4	5
Total	1,055	1,041
Annual Covered Payroll	\$ 80,745	\$ 79,125
Annual Retirement Benefits	\$ 48,226	\$ 46,397
Total Assets:		
Actuarial Value	\$ 637,696	\$ 600,670
Market Value	656,964	673,152
Actuarial Accrued Liability	\$ 748,557	\$ 733,408
Funded Ratio:		
Actuarial Value of Assets	85.19%	81.90%
Market Value of Assets	87.76%	91.78%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 110,861	\$ 132,738
<b>Employer Contribution Rate Development for Fiscal Year Ending</b>	<b>Informational June 30, 2024</b>	<b>June 30, 2023 and June 30, 2024</b>
Employer Contribution Rate Defined Benefit Plan:		
Employer Normal Cost Rate	20.49%	20.23%
Administrative Expense	0.49%	0.44%
Amortization of UAAL	6.13%	8.14%
Annual Recommended Contribution	27.11%	28.81%
DC Contribution for Hybrid Members	1.99%	1.86%
Total Employer Contribution Rate Retirement Plans	29.10%	30.67%
Amortization Period (Years)	12-21	13-22



# Results Summary Virginia Law Officers

(\$ In Thousands)

	June 30, 2022	June 30, 2021
<b>Members:</b>		
Active	7,289	7,823
Long Term Disability	489	499
Retirees and Beneficiaries	6,545	6,234
Inactive, Vested	1,494	1,340
Inactive, Non-Vested	6,554	6,460
Inactive, active elsewhere in VRS	3,736	3,493
<b>Total</b>	<b>26,107</b>	<b>25,849</b>
Annual Covered Payroll	\$ 372,486	\$ 351,086
Annual Retirement Benefits	\$ 132,855	\$ 124,807
<b>Total Assets:</b>		
Actuarial Value	\$ 1,789,127	\$ 1,668,802
Market Value	1,841,041	1,868,924
Actuarial Accrued Liability	\$ 2,507,144	\$ 2,407,153
<b>Funded Ratio:</b>		
Actuarial Value of Assets	71.36%	69.33%
Market Value of Assets	73.43%	77.64%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 718,017	\$ 738,351
<b>Employer Contribution Rate Development for Fiscal Year Ending</b>	<b>Informational June 30, 2024</b>	<b>June 30, 2023 and June 30, 2024</b>
Employer Contribution Rate Defined Benefit Plan:		
Employer Normal Cost Rate	9.20%	11.11%
Administrative Expense	0.29%	0.27%
Amortization of UAAL	12.43%	13.22%
Annual Recommended Contribution	21.92%	24.60%
Amortization Period (Years)	12-21	13-22



# Results Summary Political Subdivisions<sup>1</sup>

(\$ In Thousands)

	June 30, 2022	June 30, 2021
Number of Political Subdivisions in VRS (with active members)	598	597
Number of Political Subdivisions in VRS (no active members)	13	12
Total Political Subdivisions in VRS with members	611	609
Members <sup>2</sup> :		
Active	109,906	108,613
Long Term Disability	91	55
Retirees and Beneficiaries	83,667	80,790
Inactive, Vested	22,746	20,372
Inactive, Non-Vested	50,565	46,323
Inactive, active elsewhere in VRS	37,906	35,088
Total	304,881	291,241
Annual Covered Payroll	\$ 6,121,691	\$ 5,494,729
Annual Retirement Benefits	\$ 1,315,611	\$ 1,229,724
Total Assets:		
Actuarial Value	\$ 25,288,728	\$ 23,686,882
Market Value	26,045,031	26,558,350
Actuarial Accrued Liability	\$ 28,491,418	\$ 27,167,815
Funded Ratio:		
Actuarial Value of Assets	88.76%	87.19%
Market Value of Assets	91.41%	97.76%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 3,202,690	\$ 3,480,933
	<b>Informational</b>	<b>June 30, 2023</b>
	<b>June 30, 2024<sup>3</sup></b>	<b>and June 30, 2024<sup>4</sup></b>
Average Employer Contribution Rate Defined Benefit Plan:		
Employer Normal Cost Rate	8.03%	7.96%
Administrative Expense	0.27%	0.27%
Amortization Charge/(Credit)	2.76%	3.39%
Additional Funding Contribution	0.00%	0.00%
Plan Surcharge	0.01%	0.00%
Average Employer Contribution Rate Defined Benefit Plan	11.07%	11.62%
DC Contribution for Hybrid Members	0.82%	0.74%
Total Employer Contribution Rate Retirement Plans	11.89%	12.36%
Amortization Period (Years)	7-21	13-22

<sup>1</sup> Includes Political Subdivisions with no active members.

<sup>2</sup> Includes counts for each plan from which members receive pension benefits or are deferred vested. Members with benefits from more than one Political Subdivision are counted more than once.

<sup>3</sup> Calculated as a weighted average starting with the June 30, 2022 valuation, consistent with GASB Statement No. 68 reporting.

<sup>4</sup> Restated as the weighted average from prior actuary's published results by individual employer.



## Results Summary – Employer Contribution Rate Detail as a Percent of Active Member Payroll

Employer Contribution Rate	State Employees	Teachers	State Police Officers	Judicial	Virginia Law Officers
<b>Defined Benefit (DB) Plan Component</b>					
Normal Cost					
Service Retirement Benefits	5.41%	7.66%	13.47%	23.94%	6.98%
Disability Benefits	1.01%	0.52%	1.44%	0.00%	3.26%
Survivor Benefits	0.37%	0.15%	0.55%	0.89%	0.29%
Separation Benefits	2.18%	1.78%	1.60%	0.00%	3.67%
Total Normal Cost	8.97%	10.11%	17.06%	24.83%	14.20%
Member Current Contributions	4.49%	4.58%	5.00%	4.34%	5.00%
Employer Normal Cost	4.48%	5.53%	12.06%	20.49%	9.20%
Administrative Expense	0.29%	0.29%	0.39%	0.49%	0.29%
Amortization of UAAL	7.28%	7.45%	16.43%	6.13%	12.43%
Employer DB Plan Contribution Rate	12.05%	13.27%	28.88%	27.11%	21.92%
<b>Employer Defined Contribution (DC) Rate for Hybrid Members</b>	1.14%	0.86%	N/A	1.99%	N/A
<b>Total Employer Contribution Rate (DB + DC)</b>	<b>13.19%</b>	<b>14.13%</b>	<b>28.88%</b>	<b>29.10%</b>	<b>21.92%</b>

Note: Unfunded Actuarial Accrued Liability amortization detail is shown on the following pages.

## Amortization of Unfunded Accrued Liability State

Description	Original Amount	Outstanding Balance as of June 30, 2021	BOY 2021/2022 Amortization Payment	Outstanding Balance as of June 30, 2022	BOY 2022/2023 Amortization Payment	Years Remaining June 30, 2022
2013 Original Unfunded	\$ 7,117,727,223	\$ 7,499,684,689	\$ 483,695,777	\$ 7,489,568,164	\$ 498,206,650	21 years
2014 Experience (Gain)/Loss	(414,716,278)	(372,880,018)	(35,231,329)	(360,439,976)	(36,288,269)	12 years
2015 Experience (Gain)/Loss	(637,505,432)	(588,971,617)	(52,530,621)	(572,650,763)	(54,106,539)	13 years
2016 Experience (Gain)/Loss	(87,589,562)	(82,734,293)	(7,000,640)	(80,845,675)	(7,210,659)	14 years
2017 Assumption Change	62,300,692	59,905,397	4,829,932	58,793,059	4,974,830	15 years
2017 Experience (Gain)/Loss	(570,456,389)	(548,523,861)	(44,225,279)	(538,338,736)	(45,552,037)	15 years
2018 Experience (Gain)/Loss	(104,169,714)	(101,579,519)	(7,833,545)	(100,073,827)	(8,068,551)	16 years
2019 Experience (Gain)/Loss	15,231,288	15,012,013	1,111,036	14,839,293	1,144,367	17 years
2019 Assumption Change	671,335,725	661,670,959	48,970,136	654,058,129	50,439,240	17 years
2020 Experience (Gain)/Loss	(90,660,484)	(90,125,756)	(6,420,552)	(89,355,305)	(6,613,168)	18 years
2021 Experience (Gain)/Loss	(740,623,129)	(740,623,129)	(50,923,046)	(736,254,839)	(52,450,737)	19 years
2021 Assumption Change	401,835,129	401,835,129	27,628,990	399,465,053	28,457,859	19 years
2022 Experience (Gain)/Loss	(277,443,138)			(277,443,138)	(19,076,166)	20 years
<b>Total</b>		<b>\$ 6,112,669,994</b>	<b>\$ 362,070,859</b>	<b>\$ 5,861,321,439</b>	<b>\$ 353,856,820</b>	

## Amortization of Unfunded Accrued Liability Teachers

Description	Original Amount	Outstanding Balance as of June 30, 2021	BOY 2021/2022 Amortization Payment	Outstanding Balance as of June 30, 2022	BOY 2022/2023 Amortization Payment	Years Remaining June 30, 2022
2013 Original Unfunded	\$ 14,493,629,234	\$ 15,271,398,560	\$ 984,936,206	\$ 15,250,798,563	\$ 1,014,484,293	21 years
2014 Experience (Gain)/Loss	(958,176,017)	(861,515,959)	(81,399,782)	(832,774,019)	(83,841,775)	12 years
2015 Experience (Gain)/Loss	(1,043,509,874)	(964,066,605)	(85,985,497)	(937,351,583)	(88,565,062)	13 years
2016 Experience (Gain)/Loss	(411,540,187)	(388,727,674)	(32,892,557)	(379,853,987)	(33,879,333)	14 years
2017 Assumption Change	104,287,885	100,278,294	8,085,037	98,416,302	8,327,588	15 years
2017 Experience (Gain)/Loss	(685,386,348)	(659,035,070)	(53,135,354)	(646,797,947)	(54,729,415)	15 years
2018 Experience (Gain)/Loss	(554,684,143)	(540,891,837)	(41,712,154)	(532,874,312)	(42,963,518)	16 years
2019 Experience (Gain)/Loss	(304,039,579)	(299,662,527)	(22,177,964)	(296,214,771)	(22,843,303)	17 years
2019 Assumption Change	1,469,767,609	1,448,608,358	107,211,216	1,431,941,449	110,427,553	17 years
2020 Experience (Gain)/Loss	179,548,117	178,489,119	12,715,551	176,963,284	13,097,017	18 years
2021 Experience (Gain)/Loss	(2,139,250,000)	(2,139,250,000)	(147,088,474)	(2,126,632,429)	(151,501,128)	19 years
2021 Assumption Change	876,189,832	876,189,832	60,244,210	871,021,951	62,051,536	19 years
2022 Experience (Gain)/Loss	(284,552,084)			(284,552,084)	(19,564,956)	20 years
<b>Total</b>		<b>\$ 12,021,814,491</b>	<b>\$ 708,800,438</b>	<b>\$ 11,792,090,417</b>	<b>\$ 710,499,497</b>	



## Amortization of Unfunded Accrued Liability State Police

Description	Original Amount	Outstanding Balance as of June 30, 2021	BOY 2021/2022 Amortization Payment	Outstanding Balance as of June 30, 2022	BOY 2022/2023 Amortization Payment	Years Remaining June 30, 2022
2013 Original Unfunded	\$ 385,000,723	\$ 405,660,957	\$ 26,163,299	\$ 405,113,750	\$ 26,948,198	21 years
2014 Experience (Gain)/Loss	(25,215,304)	(22,671,604)	(2,142,112)	(21,915,233)	(2,206,375)	12 years
2015 Experience (Gain)/Loss	(30,844,770)	(28,496,532)	(2,541,617)	(27,706,872)	(2,617,866)	13 years
2016 Experience (Gain)/Loss	(3,942,276)	(3,723,747)	(315,088)	(3,638,743)	(324,541)	14 years
2017 Assumption Change	(63,376,957)	(60,940,282)	(4,913,371)	(59,808,727)	(5,060,772)	15 years
2017 Experience (Gain)/Loss	(22,588,135)	(21,719,682)	(1,751,171)	(21,316,385)	(1,803,706)	15 years
2018 Experience (Gain)/Loss	23,290,790	22,711,661	1,751,463	22,375,011	1,804,007	16 years
2019 Experience (Gain)/Loss	5,168,037	5,093,636	376,979	5,035,031	388,288	17 years
2019 Assumption Change	32,015,645	31,554,736	2,335,360	31,191,684	2,405,421	17 years
2020 Experience (Gain)/Loss	415,655	413,204	29,437	409,671	30,320	18 years
2021 Experience (Gain)/Loss	2,351,016	2,351,016	161,649	2,337,149	166,498	19 years
2021 Assumption Change	59,080,606	59,080,606	4,062,207	58,732,141	4,184,073	19 years
2022 Experience (Gain)/Loss	25,833,147			25,833,147	1,776,210	20 years
<b>Total</b>		<b>\$ 389,313,969</b>	<b>\$ 23,217,035</b>	<b>\$ 416,641,624</b>	<b>\$ 25,689,755</b>	



## Amortization of Unfunded Accrued Liability Judicial

Description	Original Amount	Outstanding Balance as of June 30, 2021	BOY 2021/2022 Amortization Payment	Outstanding Balance as of June 30, 2022	BOY 2022/2023 Amortization Payment	Years Remaining June 30, 2022
2013 Original Unfunded	\$ 209,625,821	\$ 220,874,939	\$ 14,245,436	\$ 220,576,994	\$ 14,672,799	21 years
2014 Experience (Gain)/Loss	(21,000,605)	(18,882,082)	(1,784,061)	(18,252,137)	(1,837,583)	12 years
2015 Experience (Gain)/Loss	(44,957,373)	(41,534,730)	(3,704,500)	(40,383,771)	(3,815,635)	13 years
2016 Experience (Gain)/Loss	(19,134,811)	(18,074,130)	(1,529,359)	(17,661,543)	(1,575,240)	14 years
2017 Assumption Change	19,588,792	18,835,654	1,518,643	18,485,909	1,564,203	15 years
2017 Experience (Gain)/Loss	(27,709,090)	(26,643,751)	(2,148,179)	(26,149,023)	(2,212,624)	15 years
2018 Experience (Gain)/Loss	(18,377,310)	(17,920,354)	(1,381,970)	(17,654,725)	(1,423,430)	16 years
2019 Experience (Gain)/Loss	(9,407,887)	(9,272,448)	(686,252)	(9,165,764)	(706,840)	17 years
2019 Assumption Change	13,983,016	13,781,711	1,019,982	13,623,146	1,050,581	17 years
2020 Experience (Gain)/Loss	(7,258,262)	(7,215,451)	(514,028)	(7,153,769)	(529,449)	18 years
2021 Experience (Gain)/Loss	(32,650,663)	(32,650,663)	(2,244,963)	(32,458,085)	(2,312,311)	19 years
2021 Assumption Change	51,438,904	51,438,904	3,536,786	51,135,511	3,642,890	19 years
2022 Experience (Gain)/Loss	(24,081,264)			(24,081,264)	(1,655,756)	20 years
<b>Total</b>		<b>\$ 132,737,599</b>	<b>\$ 6,327,535</b>	<b>\$ 110,861,479</b>	<b>\$ 4,861,605</b>	



## Amortization of Unfunded Accrued Liability Virginia Law Officers

Description	Original Amount	Outstanding Balance as of June 30, 2021	BOY 2021/2022 Amortization Payment	Outstanding Balance as of June 30, 2022	BOY 2022/2023 Amortization Payment	Years Remaining June 30, 2022
2013 Original Unfunded	\$ 759,539,883	\$ 800,298,950	\$ 51,615,666	\$ 799,219,406	\$ 53,164,136	21 years
2014 Experience (Gain)/Loss	(27,744,710)	(24,945,846)	(2,356,992)	(24,113,602)	(2,427,702)	12 years
2015 Experience (Gain)/Loss	(16,540,081)	(15,280,871)	(1,362,907)	(14,857,427)	(1,403,794)	13 years
2016 Experience (Gain)/Loss	9,695,693	9,158,242	774,933	8,949,182	798,181	14 years
2017 Assumption Change	(59,590,715)	(57,299,613)	(4,619,838)	(56,235,660)	(4,758,433)	15 years
2017 Experience (Gain)/Loss	(46,004,687)	(44,235,930)	(3,566,566)	(43,414,546)	(3,673,563)	15 years
2018 Experience (Gain)/Loss	(12,006,355)	(11,707,816)	(902,876)	(11,534,273)	(929,962)	16 years
2019 Experience (Gain)/Loss	14,301,783	14,095,889	1,043,234	13,933,709	1,074,531	17 years
2019 Assumption Change	62,981,588	62,074,884	4,594,150	61,360,684	4,731,974	17 years
2020 Experience (Gain)/Loss	(17,739,385)	(17,634,756)	(1,256,299)	(17,484,003)	(1,293,988)	18 years
2021 Experience (Gain)/Loss	(44,102,557)	(44,102,557)	(3,032,361)	(43,842,434)	(3,123,332)	19 years
2021 Assumption Change	67,930,918	67,930,918	4,670,728	67,530,253	4,810,850	19 years
2022 Experience (Gain)/Loss	(21,494,164)			(21,494,164)	(1,477,875)	20 years
<b>Total</b>		<b>\$ 738,351,494</b>	<b>\$ 45,600,872</b>	<b>\$ 718,017,125</b>	<b>\$ 45,491,023</b>	



## Unfunded Accrued Liability Changes Fiscal Year Ending 2022 (\$ In Thousands)

	State Employees	Teachers	State Police	Judicial	Virginia Law Officers	Political Subdivisions	Total
<b>A. Calculation of Expected Unfunded Actuarial Accrued Liability</b>							
1. UAAL as of June 30, 2021	\$ 6,112,670	\$ 12,021,814	\$ 389,314	\$ 132,738	\$ 738,351	\$ 3,480,933	\$ 22,875,821
2. Normal Cost for previous year	418,325	921,904	25,507	18,805	48,982	541,770	1,975,293
3. Actual contributions during the year	(1,056,834)	(2,339,677)	(53,981)	(32,009)	(110,040)	(868,969)	(4,461,510)
4. Interest at previous year's rate of 6.75%							
a. on UAAL	412,605	811,472	26,279	8,960	49,839	234,963	1,544,118
b. on normal cost	28,237	62,229	1,722	1,269	3,306	36,569	133,332
c. on contributions	(35,668)	(78,964)	(1,822)	(1,080)	(3,714)	(29,328)	(150,576)
d. total: (a) + (b) + (c)	405,174	794,737	26,179	9,149	49,431	242,204	1,526,874
5. Expected UAAL as of June 30, 2022 A1 + A2 + A3 + A4	5,879,335	11,398,778	387,019	128,682	726,725	3,395,938	21,916,478
6. Actual UAAL as of June 30, 2022	5,861,321	11,792,090	416,642	110,861	718,017	3,202,690	22,101,621
7. Total Gain/(Loss): A5 - A6	18,014	(393,312)	(29,623)	17,821	8,708	193,248	(185,144)
<b>B. Calculation of Asset Gain/(Loss)</b>							
1. Actuarial Value of Assets (AVA) as of June 30, 2021	\$ 20,615,301	\$ 40,725,782	\$ 937,332	\$ 600,670	\$ 1,668,802	\$ 23,686,882	\$ 88,234,769
2. Contributions during the year	1,056,834	2,339,677	53,981	32,009	110,040	868,969	4,461,510
3. Benefit payments and refunds during the year	(1,568,345)	(2,679,381)	(71,844)	(47,720)	(136,258)	(1,355,877)	(5,859,426)
4. Interest at previous year's rate of 6.75%							
a. on AVA at beginning of year	1,391,533	2,748,990	63,270	40,545	112,644	1,598,865	5,955,847
b. on contributions	35,668	78,964	1,822	1,080	3,714	29,328	150,576
c. on benefit payments	(52,932)	(90,429)	(2,425)	(1,611)	(4,599)	(45,761)	(197,757)
d. total: (a) + (b) + (c)	1,374,269	2,737,525	62,667	40,014	111,759	1,582,432	5,908,666
5. Expected AVA as of June 30, 2022 B1 + B2 + B3 + B4	21,478,058	43,123,603	982,136	624,973	1,754,344	24,782,406	92,745,519
6. Actual AVA as of June 30, 2022	21,917,849	43,970,442	1,001,822	637,696	1,789,127	25,288,728	94,605,665
7. Total Gain/(Loss): B6 - B5	439,791	846,840	19,687	12,722	34,783	506,322	1,860,146
<b>C. Calculation of Liability Gain/(Loss)</b>							
1. Gain/(Loss) due to plan amendments	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ (2,178)	\$ (2,178)
2. Gain/(Loss) due to change in methods	0	0	0	0	0	0	0
3. Liability Experience Gain/(Loss): A7 - B7 - C1 - C2	\$ (421,777)	\$ (1,240,152)	\$ (49,310)	\$ 5,099	\$ (26,075)	\$ (310,897)	\$ (2,043,111)



## Discussion of Risk/Maturity Measures

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements 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 due to changing conditions; 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. **Investment Risk** – actual investment returns may differ from the expected returns;
2. **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements; because of the way most public retirement systems invest, this tends to be synonymous with investment risk;
3. **Contribution Risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The contribution rates shown in this report may be considered as minimum contribution rates that comply with the Board's funding policy and statutes. The timely receipt of the actuarially determined contributions is critical to support the financial health of the VRS. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.



# Discussion of Risk/Maturity Measures

## PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following: ratio of the market value of assets to total payroll, ratio of actuarial accrued liability to payroll, ratio of actives to retirees and beneficiaries, and the ratio of net cash flow to market value of assets.

### RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

### RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time. The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

### RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

### RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

## ADDITIONAL RISK ASSESSMENT

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. Additional assessment of risk including stress testing for the Virginia Retirement System is regularly conducted by the VRS Staff.



# Risk/Maturity Measures

## State Employees

\$ In Thousands									
Valuation Date	(1) Actuarial Accrued Liabilities (AAL)	(2) Market Value of Assets (MVA)	(3) (Overfunded)/ Unfunded AAL (1) - (2)	(4) Valuation Payroll	(5) Change in Valuation Payroll	(6) Funded Ratio (2)/(1)	(7) Retiree Liabilities (RetLiab) <sup>1</sup>	(8) RetLiab/ AAL (7)/(1)	(9) AAL/ Valuation Payroll (1)/(4)
2018	\$ 24,115,157	\$ 18,532,189	\$ 5,582,968	\$ 4,161,922		76.8%	\$ 14,911,769	61.8%	579.4%
2019	25,398,188	19,090,110	6,308,078	4,375,061	5.1%	75.2%	15,831,694	62.3%	580.5%
2020	25,751,335	18,770,068	6,981,267	4,428,496	1.2%	72.9%	16,410,519	63.7%	581.5%
2021	26,727,971	23,112,417	3,615,554	4,594,347	3.7%	86.5%	17,161,682	64.2%	581.8%
2022	27,779,171	22,579,326	5,199,844	4,946,307	7.7%	81.3%	16,351,577	58.9%	561.6%

\$ In Thousands								
Valuation Date	(10) Assets/ Payroll (2)/(4)	(11) Asset Portfolio StdDev	(12) StdDev % of Pay (10) x (11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Asset Return	(17) Ratio of Actives to Retirees
2018	445.3%	9.8%	43.6%	134.1%	\$ (589,592)	-3.2%	7.5%	1.1
2019	436.3%	10.4%	45.4%	144.2%	(653,801)	-3.4%	6.7%	1.1
2020	423.8%	10.4%	44.1%	157.6%	(681,103)	-3.6%	1.4%	1.1
2021	503.1%	11.4%	57.3%	78.7%	(712,813)	-3.1%	27.5%	1.0
2022	456.5%	13.8%	63.0%	105.1%	(511,512)	-2.3%	0.6%	1.0

<sup>1</sup> Years prior to 2022 included vested member liabilities.

The Risk/Maturity measures shown on this page and the following pages have been developed in response to Actuarial Standard of Practice (“ASOP”) No. 51 entitled “Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions.” In a maturing plan, the ratio of retiree liabilities to total liabilities increases, and the ratios of both assets and liabilities to payroll increases, and contribution rates tend to become increasingly volatile. The risk/maturity measures and associated commentary are intended to help keep stakeholders informed of some of the risks that the plan faces, and the potential contribution rate volatility.

# Risk/Maturity Measures

## Teachers

\$ In Thousands									
Valuation Date	(1) Actuarial Accrued Liabilities (AAL)	(2) Market Value of Assets (MVA)	(3) (Overfunded)/ Unfunded AAL (1) - (2)	(4) Valuation Payroll <sup>2</sup>	(5) Change in Valuation Payroll	(6) Funded Ratio (2)/(1)	(7) Retiree Liabilities (RetLiab) <sup>1</sup>	(8) RetLiab/ AAL (7)/(1)	(9) AAL/ Valuation Payroll (1)/(4)
2018	\$ 46,516,176	\$ 34,919,563	\$ 11,596,613	\$ 8,086,933		75.1%	\$ 26,726,567	57.5%	575.2%
2019	49,303,959	36,522,769	12,781,190	8,240,129	1.9%	74.1%	28,810,438	58.4%	598.3%
2020	50,834,783	36,449,229	14,385,554	8,498,519	3.1%	71.7%	30,055,902	59.1%	598.2%
2021	52,747,596	45,617,878	7,129,718	8,556,997	0.7%	86.5%	31,496,785	59.7%	616.4%
2022	55,762,533	45,211,731	10,550,802	9,263,309	8.3%	81.1%	30,967,586	55.5%	602.0%

\$ In Thousands								
Valuation Date	(10) Assets/ Payroll (2)/(4)	(11) Asset Portfolio StdDev	(12) StdDev % of Pay (10) x (11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Asset Return	(17) Ratio of Actives to Retirees
2018	431.8%	9.8%	42.3%	143.4%	\$ (621,139)	-1.8%	7.5%	1.6
2019	443.2%	10.4%	46.1%	155.1%	(707,822)	-1.9%	6.7%	1.5
2020	428.9%	10.4%	44.6%	169.3%	(762,552)	-2.1%	1.4%	1.5
2021	533.1%	11.4%	60.8%	83.3%	(718,599)	-1.6%	27.5%	1.4
2022	488.1%	13.8%	67.4%	113.9%	(339,704)	-0.8%	0.6%	1.4

<sup>1</sup> Years prior to 2022 included vested member liabilities.

# Risk/Maturity Measures

## State Police

\$ In Thousands									
Valuation Date	(1) Actuarial Accrued Liabilities (AAL)	(2) Market Value of Assets (MVA)	(3) (Overfunded)/ Unfunded AAL (1) - (2)	(4) Valuation Payroll	(5) Change in Valuation Payroll	(6) Funded Ratio (2)/(1)	(7) Retiree Liabilities (RetLiab) <sup>1</sup>	(8) RetLiab/ AAL (7)/(1)	(9) AAL/ Valuation Payroll (1)/(4)
2018	\$ 1,112,893	\$ 836,702	\$ 276,191	\$ 126,523		75.2%	\$ 646,580	58.1%	879.6%
2019	1,181,120	865,273	315,847	132,230	4.5%	73.3%	682,809	57.8%	893.2%
2020	1,206,424	854,762	351,662	131,255	-0.7%	70.9%	707,082	58.6%	919.1%
2021	1,326,646	1,050,148	276,498	142,795	8.8%	79.2%	782,487	59.0%	929.1%
2022	1,418,464	1,031,383	387,081	159,212	11.5%	72.7%	771,290	54.4%	890.9%

\$ In Thousands								
Valuation Date	(10) Assets/ Payroll (2)/(4)	(11) Asset Portfolio StdDev	(12) StdDev % of Pay (10) x (11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Asset Return	(17) Ratio of Actives to Retirees
2018	661.3%	9.8%	64.8%	218.3%	\$ (17,519)	-2.1%	7.5%	1.2
2019	654.4%	10.4%	68.1%	238.9%	(26,221)	-3.0%	6.7%	1.2
2020	651.2%	10.4%	67.7%	267.9%	(26,843)	-3.1%	1.4%	1.2
2021	735.4%	11.4%	83.8%	193.6%	(33,753)	-3.2%	27.5%	1.1
2022	647.8%	13.8%	89.4%	243.1%	(17,863)	-1.7%	0.6%	1.1

<sup>1</sup> Years prior to 2022 included vested member liabilities.

# Risk/Maturity Measures

## Judicial

\$ In Thousands									
Valuation Date	(1) Actuarial Accrued Liabilities (AAL)	(2) Market Value of Assets (MVA)	(3) (Overfunded)/ Unfunded AAL (1) - (2)	(4) Valuation Payroll	(5) Change in Valuation Payroll	(6) Funded Ratio (2)/(1)	(7) Retiree Liabilities (RetLiab) <sup>1</sup>	(8) RetLiab/ AAL (7)/(1)	(9) AAL/ Valuation Payroll (1)/(4)
2018	\$ 645,662	\$ 540,009	\$ 105,653	\$ 67,424		83.6%	\$ 413,609	64.1%	957.6%
2019	669,741	557,541	112,200	76,848	14.0%	83.2%	427,846	63.9%	871.5%
2020	677,872	549,455	128,417	74,734	-2.8%	81.1%	452,071	66.7%	907.0%
2021	733,408	673,152	60,256	79,125	5.9%	91.8%	498,777	68.0%	926.9%
2022	748,557	656,964	91,593	80,745	2.0%	87.8%	512,895	68.5%	927.1%

\$ In Thousands								
Valuation Date	(10) Assets/ Payroll (2)/(4)	(11) Asset Portfolio StdDev	(12) StdDev % of Pay (10) x (11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Asset Return	(17) Ratio of Actives to Retirees
2018	800.9%	9.8%	78.5%	156.7%	\$ (10,206)	-1.9%	7.5%	0.8
2019	725.5%	10.4%	75.5%	146.0%	(17,840)	-3.2%	6.7%	0.8
2020	735.2%	10.4%	76.5%	171.8%	(18,577)	-3.4%	1.4%	0.8
2021	850.7%	11.4%	97.0%	76.2%	(23,504)	-3.5%	27.5%	0.8
2022	813.6%	13.8%	112.3%	113.4%	(15,711)	-2.4%	0.6%	0.8

<sup>1</sup> Years prior to 2022 included vested member liabilities.

# Risk/Maturity Measures

## Virginia Law Officers

\$ In Thousands									
Valuation Date	(1) Actuarial Accrued Liabilities (AAL)	(2) Market Value of Assets (MVA)	(3) (Overfunded)/ Unfunded AAL (1) - (2)	(4) Valuation Payroll	(5) Change in Valuation Payroll	(6) Funded Ratio (2)/(1)	(7) Retiree Liabilities (RetLiab) <sup>1</sup>	(8) RetLiab/ AAL (7)/(1)	(9) AAL/ Valuation Payroll (1)/(4)
2018	\$ 2,057,504	\$ 1,423,980	\$ 633,524	\$ 346,106		69.2%	\$ 1,317,732	64.0%	594.5%
2019	2,211,238	1,495,990	715,248	369,776	6.8%	67.7%	1,432,206	64.8%	598.0%
2020	2,258,553	1,500,469	758,084	363,896	-1.6%	66.4%	1,498,644	66.4%	620.7%
2021	2,407,153	1,868,924	538,229	351,086	-3.5%	77.6%	1,640,876	68.2%	685.6%
2022	2,507,144	1,841,041	666,103	372,486	6.1%	73.4%	1,474,492	58.8%	673.1%

\$ In Thousands								
Valuation Date	(10) Assets/ Payroll (2)/(4)	(11) Asset Portfolio StdDev	(12) StdDev % of Pay (10) x (11)	(13) Unfunded/ Payroll (3)/(4)	(14) Net External Cash Flow (NECF)	(15) NECF/ Assets (14)/(2)	(16) Asset Return	(17) Ratio of Actives to Retirees
2018	411.4%	9.8%	40.3%	183.0%	\$ (20,199)	-1.4%	7.5%	1.7
2019	404.6%	10.4%	42.1%	193.4%	(21,862)	-1.5%	6.7%	1.6
2020	412.3%	10.4%	42.9%	208.3%	(24,099)	-1.6%	1.4%	1.5
2021	532.3%	11.4%	60.7%	153.3%	(36,762)	-2.0%	27.5%	1.3
2022	494.3%	13.8%	68.2%	178.8%	(26,217)	-1.4%	0.6%	1.1

<sup>1</sup> Years prior to 2022 included vested member liabilities.



## Risk/Maturity Measures (Concluded)

### Notes:

The measures shown on the previous pages provide information in accordance with Actuarial Standard of Practice No. 51.

Columns (1) to (4). These columns provide various items for comparison in Columns 5 through 17.

Column (5). When payroll grows at or faster than the assumed rate of 3.0%, funding of unfunded accrued liabilities is likely to proceed at least at the scheduled rate. Payroll growing slower than the assumed rate can lead to underfunding of the plan because expected contributions for unfunded liability may not be received.

Column (6). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

Columns (7) and (8). The ratio of Retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the investment policy may need to change. A ratio on the order of 50% indicates a maturing system. Ratios near or above 50% are common today.

Column (9). The ratio of liabilities to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

Column (10). The ratio of assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

Columns (11) and (12). The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability.

Column (13). The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

Columns (14) and (15). The ratio of Net External Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

Column (16). Investment return is probably the largest single risk that most systems face. The year by year return gives an indicator of the performance of the portfolio versus the system's assumed return.

Column (17). In the 1970s and 1980s it was common for the ratio of actives to retirees to be 3 or 4 to 1. As plans mature, this ratio can drop significantly. Ratios below 2 are common today. A ratio significantly below 1 usually indicates a closed plan, a shrinking workforce or other special situation.



## Sensitivity of Employer Contribution Rate Under Alternate Investment Return Assumptions

Many assumptions are important in determining the total employer contribution rate. In the following tables we show the sensitivity of the employer contribution rates to varying the Assumed Rate of Investment Return Assumption. Lower investment returns would generally result in higher employer contribution rates, and vice versa. The economic scenarios below provide a quantitative risk assessment for the impact of investment returns on the Plan's future financial condition for funding purposes.

The relative impact of the economic scenarios below will vary from year to year, as the participant demographics change. The impact of each scenario should be analyzed for a given year, not from year to year. It is important to note that calculations in this report are mathematical estimates based upon assumptions regarding future events, which may or may not materialize. Actuarial calculations can and do vary from one valuation to the next, sometimes significantly depending on the group's size.

### State Employees (\$ In Thousands)

Assumed Rate of Investment Return	8.75%	7.75%	Current 6.75%	5.75%	4.75%
Total Normal Cost Rate	6.19%	7.39%	8.97%	11.07%	13.89%
Member Contribution Rate	4.49%	4.49%	4.49%	4.49%	4.49%
Employer Normal Cost Rate	1.70%	2.90%	4.48%	6.58%	9.40%
Administrative Expense Load	0.29%	0.29%	0.29%	0.29%	0.29%
Total Employer Normal Cost Rate	1.99%	3.19%	4.77%	6.87%	9.69%
Total Amortization Rate	0.21%	3.71%	7.28%	10.94%	14.72%
Defined Contribution Hybrid Plan	1.14%	1.14%	1.14%	1.14%	1.14%
Total Employer Rate	3.34%	8.04%	13.19%	18.95%	25.55%
Change in Employer Rate	(9.85)%	(5.15)%	N/A	5.76%	12.36%
Unfunded Liability	\$ 710,794	\$ 3,065,929	\$ 5,861,321	\$ 9,204,677	\$ 13,234,403
Funded Status	96.9%	87.7%	78.9%	70.4%	62.4%

### Teachers (\$ In Thousands)

Assumed Rate of Investment Return	8.75%	7.75%	Current 6.75%	5.75%	4.75%
Total Normal Cost Rate	6.53%	8.06%	10.11%	12.93%	16.76%
Member Contribution Rate	4.58%	4.58%	4.58%	4.58%	4.58%
Employer Normal Cost Rate	1.95%	3.48%	5.53%	8.35%	12.18%
Administrative Expense Load	0.29%	0.29%	0.29%	0.29%	0.29%
Total Employer Normal Cost Rate	2.24%	3.77%	5.82%	8.64%	12.47%
Total Amortization Rate	(0.75)%	3.27%	7.45%	11.81%	16.41%
Defined Contribution Hybrid Plan	0.86%	0.86%	0.86%	0.86%	0.86%
Total Employer Rate	2.35%	7.90%	14.13%	21.31%	29.74%
Change in Employer Rate	(11.78)%	(6.23)%	N/A	7.18%	15.61%
Unfunded Liability	\$ 304,145	\$ 5,509,105	\$ 11,792,090	\$ 19,442,454	\$ 28,840,467
Funded Status	99.3%	88.9%	78.9%	69.3%	60.4%



# Sensitivity of Employer Contribution Rate Under Alternate Investment Return Assumptions (Continued)

## State Police (\$ In Thousands)

Assumed Rate of Investment Return	8.75%	7.75%	Current 6.75%	5.75%	4.75%
Total Normal Cost Rate	10.32%	13.23%	17.06%	22.23%	29.21%
Member Contribution Rate	5.00%	5.00%	5.00%	5.00%	5.00%
Employer Normal Cost Rate	5.32%	8.23%	12.06%	17.23%	24.21%
Administrative Expense Load	0.39%	0.39%	0.39%	0.39%	0.39%
Total Employer Normal Cost Rate	5.71%	8.62%	12.45%	17.62%	24.60%
Total Amortization Rate	5.28%	10.77%	16.43%	22.28%	28.39%
Defined Contribution Hybrid Plan	N/A	N/A	N/A	N/A	N/A
Total Employer Rate	10.99%	19.39%	28.88%	39.90%	52.99%
Change in Employer Rate	(17.89)%	(9.49)%	N/A	11.02%	24.11%
Unfunded Liability	\$ 137,656	\$ 264,889	\$ 416,642	\$ 599,023	\$ 819,940
Funded Status	87.9%	79.1%	70.6%	62.6%	55.0%

## Judicial (\$ In Thousands)

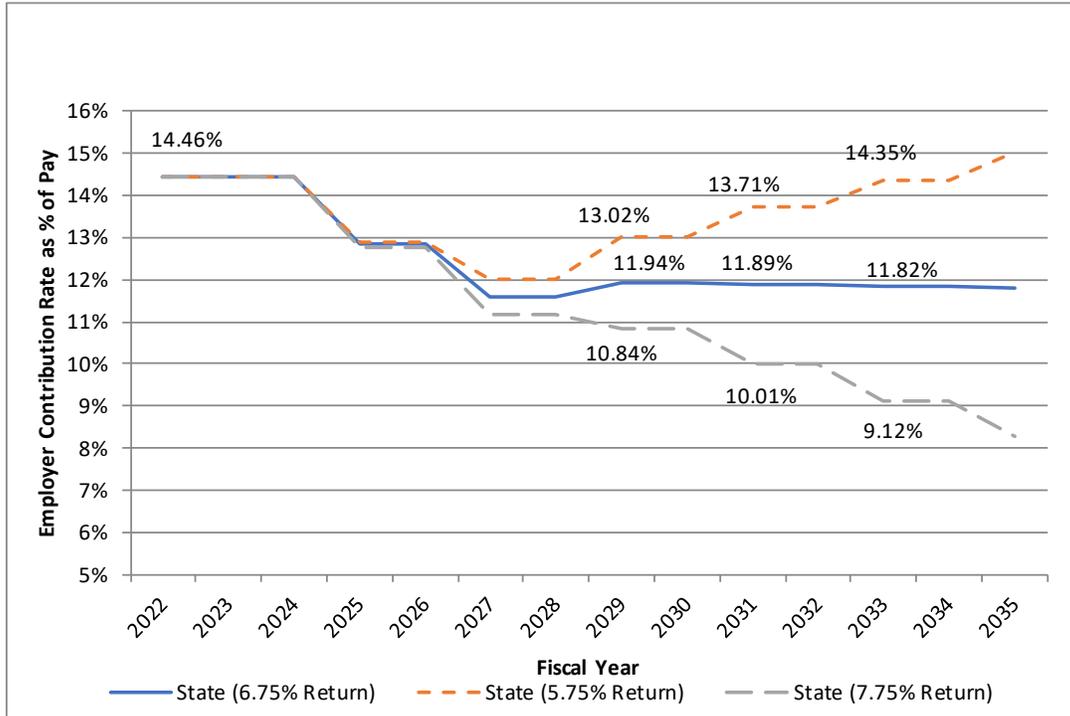
Assumed Rate of Investment Return	8.75%	7.75%	Current 6.75%	5.75%	4.75%
Total Normal Cost Rate	17.57%	20.83%	24.83%	29.78%	35.93%
Member Contribution Rate	4.34%	4.34%	4.34%	4.34%	4.34%
Employer Normal Cost Rate	13.23%	16.49%	20.49%	25.44%	31.59%
Administrative Expense Load	0.49%	0.49%	0.49%	0.49%	0.49%
Total Employer Normal Cost Rate	13.72%	16.98%	20.98%	25.93%	32.08%
Total Amortization Rate	(4.09)%	1.05%	6.13%	11.17%	16.16%
Defined Contribution Hybrid Plan	1.99%	1.99%	1.99%	1.99%	1.99%
Total Employer Rate	11.62%	20.02%	29.10%	39.09%	50.23%
Change in Employer Rate	(17.48)%	(9.08)%	N/A	9.99%	21.13%
Unfunded Liability	\$ (7,381)	\$ 47,499	\$ 110,861	\$ 184,461	\$ 270,498
Funded Status	101.2%	93.1%	85.2%	77.6%	70.2%

## Sensitivity of Employer Contribution Rate Under Alternate Investment Return Assumptions (Concluded)

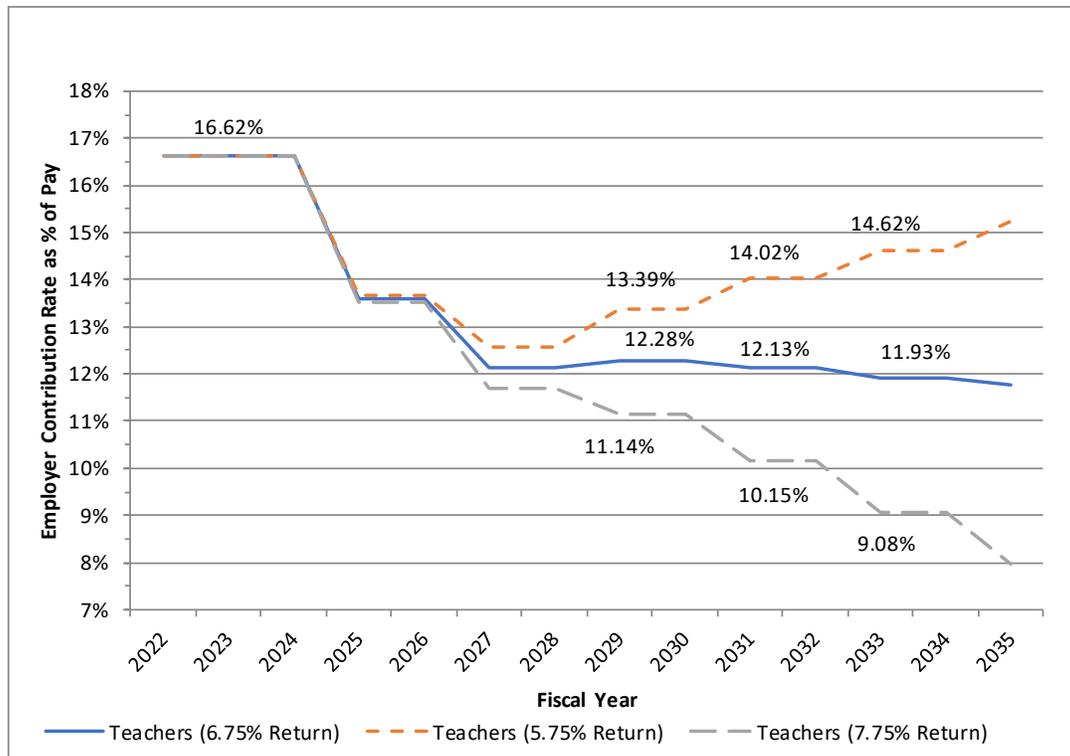
### Virginia Law Officers (\$ In Thousands)

Assumed Rate of Investment Return	8.75%	7.75%	Current 6.75%	5.75%	4.75%
Total Normal Cost Rate	9.61%	11.56%	14.20%	17.81%	22.81%
Member Contribution Rate	5.00%	5.00%	5.00%	5.00%	5.00%
Employer Normal Cost Rate	4.61%	6.56%	9.20%	12.81%	17.81%
Administrative Expense Load	0.29%	0.29%	0.29%	0.29%	0.29%
Total Employer Normal Cost Rate	4.90%	6.85%	9.49%	13.10%	18.10%
Total Amortization Rate	3.80%	8.02%	12.43%	17.11%	22.12%
Defined Contribution Hybrid Plan	N/A	N/A	N/A	N/A	N/A
Total Employer Rate	8.70%	14.87%	21.92%	30.21%	40.22%
Change in Employer Rate	(13.22)%	(7.05)%	N/A	8.29%	18.30%
Unfunded Liability	\$ 218,435	\$ 444,419	\$ 718,017	\$ 1,052,928	\$ 1,467,665
Funded Status	89.1%	80.1%	71.4%	63.0%	54.9%

## Contribution Projections Including Return Sensitivity State Employees



## Teachers



Note: Projections are not predictions. Future valuations will be based on actual future experience.



# Actuarial Balance Sheet State Employees

Present Assets and Prospective Assets	
A. Present Actuarial Value of Assets	\$ 21,917,849,261
B. Present Value of Future Member Contributions	1,592,433,404
C. Present Value of Future Employer Contributions	
1. Normal Contributions	1,588,886,782
2. Unfunded Accrued Liability Contributions	5,861,321,439
3. Total Prospective Employer Contributions ( C.1. + C.2. )	7,450,208,221
D. Present Assets and Prospective Assets ( A. + B. + C.3. )	\$ 30,960,490,886
Present Value of Expected Future Benefit Payments	
A. To Retirees and Beneficiaries	\$ 16,351,577,088
B. To Inactive Members <sup>1</sup>	1,585,344,403
C. To Active Members	
1. Allocated to Service Rendered Prior to the Valuation Date	9,842,249,209
2. Allocated to Service Rendered After the Valuation Date	3,181,320,186
3. Total ( C.1. + C.2. )	13,023,569,395
D. Total Actuarial Present Value of Expected Future Benefit Payments ( A. + B. + C.3. )	\$ 30,960,490,886

<sup>1</sup> Including Long-Term Disability.

# Actuarial Balance Sheet Teachers

Present Assets and Prospective Assets	
A. Present Actuarial Value of Assets	\$ 43,970,442,446
B. Present Value of Future Member Contributions	3,677,563,961
C. Present Value of Future Employer Contributions	
1. Normal Contributions	4,440,377,447
2. Unfunded Accrued Liability Contributions	11,792,090,417
3. Total Prospective Employer Contributions ( C.1. + C.2. )	16,232,467,864
D. Present Assets and Prospective Assets ( A. + B. + C.3. )	\$ 63,880,474,271
Present Value of Expected Future Benefit Payments	
A. To Retirees and Beneficiaries	\$ 30,967,586,313
B. To Inactive Members <sup>1</sup>	1,990,144,641
C. To Active Members	
1. Allocated to Service Rendered Prior to the Valuation Date	22,804,801,909
2. Allocated to Service Rendered After the Valuation Date	8,117,941,408
3. Total ( C.1. + C.2. )	30,922,743,317
D. Total Actuarial Present Value of Expected Future Benefit Payments ( A. + B. + C.3. )	\$ 63,880,474,271

<sup>1</sup> Including Long-Term Disability.

# Actuarial Balance Sheet

## State Police

Present Assets and Prospective Assets	
A. Present Actuarial Value of Assets	\$ 1,001,822,399
B. Present Value of Future Member Contributions	73,641,720
C. Present Value of Future Employer Contributions	
1. Normal Contributions	177,623,827
2. Unfunded Accrued Liability Contributions	416,641,624
3. Total Prospective Employer Contributions ( C.1. + C.2. )	594,265,451
D. Present Assets and Prospective Assets ( A. + B. + C.3. )	\$ 1,669,729,570
Present Value of Expected Future Benefit Payments	
A. To Retirees and Beneficiaries	\$ 771,289,828
B. To Inactive Members <sup>1</sup>	32,342,566
C. To Active Members	
1. Allocated to Service Rendered Prior to the Valuation Date	614,831,629
2. Allocated to Service Rendered After the Valuation Date	251,265,547
3. Total ( C.1. + C.2. )	866,097,176
D. Total Actuarial Present Value of Expected Future Benefit Payments ( A. + B. + C.3. )	\$ 1,669,729,570

<sup>1</sup> Including Long-Term Disability.

# Actuarial Balance Sheet Judicial

Present Assets and Prospective Assets	
A. Present Actuarial Value of Assets	\$ 637,695,624
B. Present Value of Future Member Contributions	25,910,368
C. Present Value of Future Employer Contributions	
1. Normal Contributions	122,327,979
2. Unfunded Accrued Liability Contributions	110,861,479
3. Total Prospective Employer Contributions ( C.1. + C.2. )	233,189,458
D. Present Assets and Prospective Assets ( A. + B. + C.3. )	\$ 896,795,450
Present Value of Expected Future Benefit Payments	
A. To Retirees and Beneficiaries	\$ 512,894,516
B. To Inactive Members <sup>1</sup>	5,956,917
C. To Active Members	
1. Allocated to Service Rendered Prior to the Valuation Date	229,705,670
2. Allocated to Service Rendered After the Valuation Date	148,238,347
3. Total ( C.1. + C.2. )	377,944,017
D. Total Actuarial Present Value of Expected Future Benefit Payments ( A. + B. + C.3. )	\$ 896,795,450

<sup>1</sup> Including Long-Term Disability.

# Actuarial Balance Sheet Virginia Law Officers

Present Assets and Prospective Assets	
A. Present Actuarial Value of Assets	\$ 1,789,127,082
B. Present Value of Future Member Contributions	93,073,892
C. Present Value of Future Employer Contributions	
1. Normal Contributions	171,255,960
2. Unfunded Accrued Liability Contributions	718,017,125
3. Total Prospective Employer Contributions ( C.1. + C.2. )	889,273,085
D. Present Assets and Prospective Assets ( A. + B. + C.3. )	\$ 2,771,474,059
Present Value of Expected Future Benefit Payments	
A. To Retirees and Beneficiaries	\$ 1,474,491,791
B. To Inactive Members <sup>1</sup>	243,667,887
C. To Active Members	
1. Allocated to Service Rendered Prior to the Valuation Date	788,984,529
2. Allocated to Service Rendered After the Valuation Date	264,329,852
3. Total ( C.1. + C.2. )	1,053,314,381
D. Total Actuarial Present Value of Expected Future Benefit Payments ( A. + B. + C.3. )	\$ 2,771,474,059

<sup>1</sup> Including Long-Term Disability.

## Actuarial Balance Sheet Political Subdivisions

Present Assets and Prospective Assets	
A. Present Actuarial Value of Assets	\$ 25,288,727,708
B. Present Value of Future Member Contributions	2,119,206,117
C. Present Value of Future Employer Contributions	
1. Normal Contributions	3,699,396,765
2. Unfunded Accrued Liability Contributions	3,202,690,192
3. Total Prospective Employer Contributions ( C.1. + C.2. )	6,902,086,957
D. Present Assets and Prospective Assets ( A. + B. + C.3. )	\$ 34,310,020,782
Present Value of Expected Future Benefit Payments	
A. To Retirees and Beneficiaries	\$ 15,081,854,102
B. To Inactive Members <sup>1</sup>	1,629,019,211
C. To Active Members	
1. Allocated to Service Rendered Prior to the Valuation Date	11,780,544,587
2. Allocated to Service Rendered After the Valuation Date	5,818,602,882
3. Total ( C.1. + C.2. )	17,599,147,469
D. Total Actuarial Present Value of Expected Future Benefit Payments ( A. + B. + C.3. )	\$ 34,310,020,782

<sup>1</sup> Including Long-Term Disability.

# Solvency Test

## State Employees, Teachers, and Political Subdivisions (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total		(1)	(2)	(3)
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)			Active Members		
6/30/2022	\$ 11,415,519	\$ 67,605,525	\$ 33,012,077	\$ 112,033,121	\$ 91,177,020	100.00%	100.00%	36.82%
6/30/2021	14,452,659	64,528,079	27,662,643	106,643,382	85,027,965	100.00%	100.00%	21.86%
6/30/2020	14,082,163	60,926,216	26,884,877	101,893,256	78,759,722	100.00%	100.00%	13.95%
6/30/2019	13,613,905	58,337,920	27,182,146	99,133,971	76,244,148	100.00%	100.00%	15.79%
6/30/2018	13,221,525	54,132,392	25,820,901	93,174,818	73,204,795	100.00%	100.00%	22.66%

## State Employees (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total		(1)	(2)	(3)
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)			Active Members		
6/30/2022	\$ 2,814,123	\$ 17,936,921	\$ 7,028,127	\$ 27,779,171	\$ 21,917,849	100.00%	100.00%	16.60%
6/30/2021	3,566,175	17,161,682	6,000,114	26,727,971	20,615,301	100.00%	99.34%	0.00%
6/30/2020	3,514,856	16,410,519	5,825,960	25,751,335	19,333,674	100.00%	96.39%	0.00%
6/30/2019	3,459,343	15,831,694	6,107,151	25,398,188	18,932,104	100.00%	97.73%	0.00%
6/30/2018	3,416,685	14,911,769	5,786,703	24,115,157	18,392,939	100.00%	100.00%	1.11%

## Teachers (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total		(1)	(2)	(3)
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)			Active Members		
6/30/2022	\$ 5,713,400	\$ 32,957,731	\$ 17,091,402	\$ 55,762,533	\$ 43,970,442	100.00%	100.00%	31.01%
6/30/2021	7,036,408	31,496,785	14,214,403	52,747,596	40,725,782	100.00%	100.00%	15.43%
6/30/2020	6,811,064	30,055,902	13,967,817	50,834,783	37,556,121	100.00%	100.00%	4.93%
6/30/2019	6,520,986	28,810,438	13,972,535	49,303,959	36,233,796	100.00%	100.00%	6.46%
6/30/2018	6,282,723	26,726,567	13,506,886	46,516,176	34,673,952	100.00%	100.00%	12.32%

<sup>1</sup> Prior to June 30, 2022 valuation, amounts include contributions for inactive members.



# Solvency Test

## Political Subdivisions (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total		(1)	(2)	(3)
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)			Active Members		
6/30/2022	\$ 2,887,997	\$ 16,710,873	\$ 8,892,548	\$ 28,491,418	\$ 25,288,728	100.00%	100.00%	63.98%
6/30/2021	3,850,076	15,869,613	7,448,126	27,167,815	23,686,882	100.00%	100.00%	53.26%
6/30/2020	3,756,243	14,459,794	7,091,101	25,307,138	21,869,927	100.00%	100.00%	51.53%
6/30/2019	3,633,576	13,695,788	7,102,460	24,431,824	21,078,248	100.00%	100.00%	52.78%
6/30/2018	3,522,117	12,494,055	6,527,313	22,543,485	20,137,904	100.00%	100.00%	63.15%

## State Police (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total		(1)	(2)	(3)
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)			Active Members		
6/30/2022	\$ 100,990	\$ 803,632	\$ 513,842	\$ 1,418,464	\$ 1,001,822	100.00%	100.00%	18.92%
6/30/2021	106,923	782,487	437,236	1,326,646	937,332	100.00%	100.00%	10.96%
6/30/2020	109,787	707,082	389,555	1,206,424	880,834	100.00%	100.00%	16.42%
6/30/2019	105,943	682,809	392,368	1,181,120	858,632	100.00%	100.00%	17.81%
6/30/2018	103,710	646,580	362,603	1,112,893	830,978	100.00%	100.00%	22.25%

## Judicial (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For				Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total		(1)	(2)	(3)
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)			Active Members		
6/30/2022	\$ 40,990	\$ 518,851	\$ 188,716	\$ 748,557	\$ 637,696	100.00%	100.00%	41.25%
6/30/2021	42,082	498,777	192,549	733,408	600,670	100.00%	100.00%	31.06%
6/30/2020	42,320	452,071	183,481	677,872	566,239	100.00%	100.00%	39.16%
6/30/2019	42,660	427,846	199,235	669,741	553,136	100.00%	100.00%	41.47%
6/30/2018	41,009	413,609	191,044	645,662	536,022	100.00%	100.00%	42.61%

<sup>1</sup> Prior to June 30, 2022 valuation, amounts include contributions for inactive members.



# Solvency Test

## Virginia Law Officers (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For					Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total	(1)		(2)	(3)	
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)						
6/30/2022	\$ 157,404	\$ 1,718,160	\$ 631,580	\$ 2,507,144	\$ 1,789,127	100.00%	94.97%	0.00%	
6/30/2021	251,678	1,640,876	514,599	2,407,153	1,668,802	100.00%	86.36%	0.00%	
6/30/2020	250,900	1,498,644	509,009	2,258,553	1,546,528	100.00%	86.45%	0.00%	
6/30/2019	244,233	1,432,206	534,799	2,211,238	1,484,995	100.00%	86.63%	0.00%	
6/30/2018	240,390	1,317,732	499,382	2,057,504	1,413,876	100.00%	89.05%	0.00%	

## Grand Total (\$ In Thousands)

Valuation Date	Aggregate Accrued Liabilities For					Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Actuarial Value of Assets		
	(1)	(2)	(3)	Total	(1)		(2)	(3)	
	Active Member Contributions <sup>1</sup>	Retirees, Survivors and Inactive Members	Active Members (Employer Fin. Portion)						
6/30/2022	\$ 11,714,903	\$ 70,646,168	\$ 34,346,216	\$ 116,707,287	\$ 94,605,665	100.00%	100.00%	35.65%	
6/30/2021	14,853,342	67,450,219	28,807,028	111,110,589	88,234,769	100.00%	100.00%	20.59%	
6/30/2020	14,485,170	63,584,014	27,966,921	106,036,105	81,753,323	100.00%	100.00%	13.17%	
6/30/2019	14,006,741	60,880,781	28,308,548	103,196,070	79,140,911	100.00%	100.00%	15.03%	
6/30/2018	13,606,634	56,510,313	26,873,930	96,990,877	75,985,671	100.00%	100.00%	21.84%	

<sup>1</sup> Prior to June 30, 2022 valuation, amounts include contributions for inactive members.

**SECTION C**

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**FUND ASSETS**

## Market Value of Asset Reconciliation

	State Employees	Teachers	State Police	Judicial	Virginia Law Officers	Political Subdivisions
(1) Market Value of Assets (MVA) Beginning of Year						
a. MVA as of 6/30/2021	\$ 23,112,417,070	\$ 45,617,878,057	\$ 1,050,148,442	\$ 673,151,719	\$ 1,868,924,472	\$ 26,558,349,556
b. Adjustment	0	166,045	0	0	0	(166,045)
c. Adjusted Beginning of Year MVA	\$ 23,112,417,070	\$ 45,618,044,102	\$ 1,050,148,442	\$ 673,151,719	\$ 1,868,924,472	\$ 26,558,183,511
(2) Additions for the Year						
a. Contributions:						
i. Members	\$ 217,945,186	\$ 439,139,284	\$ 7,130,833	\$ 2,032,453	\$ 17,276,267	\$ 276,349,687
ii. Employers	852,894,615	1,485,306,601	36,494,431	24,016,451	73,959,423	608,878,578
iii. Non-Employer Contributing Entities	0	442,371,085	10,957,816	6,250,014	19,886,407	0
iv. Total [(2)a.i. + (2)a.ii. + (2)a.iii.]	\$ 1,070,839,801	\$ 2,366,816,970	\$ 54,583,080	\$ 32,298,918	\$ 111,122,097	\$ 885,228,265
b. Miscellaneous Revenue	295,766	736,100	(144)	96,169	(8,167)	265,948
c. Net Investment Income	(21,579,143)	(66,609,130)	(901,658)	(476,447)	(1,665,880)	(26,243,942)
d. Total Additions [(2)a.iv. + (2)b. + (2)c.]	\$ 1,049,556,424	\$ 2,300,943,940	\$ 53,681,278	\$ 31,918,640	\$ 109,448,050	\$ 859,250,271
(3) Deductions for the Year						
a. Benefit Payments	\$ 1,536,664,842	\$ 2,635,944,718	\$ 71,465,612	\$ 47,678,981	\$ 129,974,023	\$ 1,307,580,098
b. Refunds	31,680,440	43,436,778	378,452	41,025	6,283,501	48,297,037
c. Transfers	0	0	0	0	0	0
d. Administrative Expenses	14,301,972	27,875,772	602,287	385,887	1,073,675	16,525,476
e. Total Deductions [(3)a. + (3)b. + (3)c. + (3)d.]	\$ 1,582,647,254	\$ 2,707,257,268	\$ 72,446,351	\$ 48,105,893	\$ 137,331,199	\$ 1,372,402,611
(4) Change In Value [(2)d - (3)e.]	\$ (533,090,830)	\$ (406,313,328)	\$ (18,765,073)	\$ (16,187,253)	\$ (27,883,149)	\$ (513,152,340)
(5) Market Value of Assets End of Year						
a. MVA as of 6/30/2022 [(1)c. + (4)]	\$ 22,579,326,240	\$ 45,211,730,774	\$ 1,031,383,369	\$ 656,964,466	\$ 1,841,041,323	\$ 26,045,031,171



## Actuarial Value of Asset Reconciliation

	State Employees	Teachers	State Police	Judicial	Virginia Law Officers	Political Subdivisions
(1) Actuarial Value Beginning of Year	\$ 20,615,301,000	\$ 40,725,782,000	\$ 937,332,000	\$ 600,670,000	\$ 1,668,802,000	\$ 23,686,882,000
(2) Market Value End of Year	22,579,326,240	45,211,730,774	1,031,383,369	656,964,466	1,841,041,323	26,045,031,171
(3) Market Value Beginning of Year						
a. Initial Market Value Beginning of Year	23,112,417,070	45,617,878,057	1,050,148,442	673,151,719	1,868,924,472	26,558,349,556
b. Adjustment to Market Value Beginning of Year	-	166,045	-	-	-	(166,045)
c. Adjusted Market Value Beginning of Year: (3)a + (3)b	23,112,417,070	45,618,044,102	1,050,148,442	673,151,719	1,868,924,472	26,558,183,511
(4) Cash Flow						
a. Contributions	1,070,839,801	2,366,816,970	54,583,080	32,298,918	111,122,097	885,228,265
b. Benefit Payments	(1,568,345,282)	(2,679,381,496)	(71,844,064)	(47,720,006)	(136,257,524)	(1,355,877,135)
c. Administrative Expenses	(14,301,972)	(27,875,772)	(602,287)	(385,887)	(1,073,675)	(16,525,476)
d. Miscellaneous revenue and expenses	295,766	736,100	(144)	96,169	(8,167)	265,948
e. Net Cash Flow: [(4)a + (4)b + (4)c + (4)d]	(511,511,687)	(339,704,198)	(17,863,415)	(15,710,806)	(26,217,269)	(486,908,398)
(5) Investment Income						
a. Market total: (2) - (3)c - (4)e	(21,579,143)	(66,609,130)	(901,658)	(476,447)	(1,665,880)	(26,243,942)
b. Assumed Rate	6.75%	6.75%	6.75%	6.75%	6.75%	6.75%
c. Amount of Immediate Recognition [(3)c x (5)b] + [(4)e x (5)b x 0.5]	1,542,824,633	3,067,752,960	70,282,130	44,907,501	125,267,569	1,776,244,229
d. Amount for Phased-in Recognition: (5)a - (5)c	(1,564,403,776)	(3,134,362,090)	(71,183,788)	(45,383,948)	(126,933,449)	(1,802,488,171)
(6) Phased-In Recognition of Investment Income						
a. Current Year: 0.20 x (5)d	(312,880,755)	(626,872,418)	(14,236,758)	(9,076,790)	(25,386,690)	(360,497,634)
b. First Prior Year	762,448,000	1,490,236,000	34,516,000	22,181,000	61,035,000	872,277,000
c. Second Prior Year	(180,907,000)	(350,108,000)	(8,234,000)	(5,303,000)	(14,318,000)	(203,088,000)
d. Third Prior Year	(12,530,000)	(21,714,000)	(572,000)	(361,000)	(1,008,000)	(12,361,000)
e. Fourth Prior Year	15,105,070	24,904,057	598,442	388,719	952,472	16,345,556
f. Total Recognized Investment Gain	271,235,315	516,445,639	12,071,684	7,828,929	21,274,782	312,675,922
(7) Actuarial Value End of Year: [(1) + (4)e + (5)c + (6)f]	\$ 21,917,849,261	\$ 43,970,442,446	\$ 1,001,822,399	\$ 637,695,624	\$ 1,789,127,082	\$ 25,288,727,708



## Summary of Asset Values

System	Market Value	
	June 30, 2022	June 30, 2021
State Employees	\$ 22,579,326	\$ 23,112,417
Teachers	45,211,731	45,617,878
State Police	1,031,383	1,050,148
Judicial	656,964	673,152
Virginia Law Officers	1,841,041	1,868,924
Political Subdivisions <sup>1</sup>	26,045,031	26,558,350
Total Market Value of Assets	\$ 97,365,477	\$ 98,880,869

System	Actuarial Value	
	June 30, 2022	June 30, 2021
State Employees	\$ 21,917,849	\$ 20,615,301
Teachers	43,970,442	40,725,782
State Police	1,001,822	937,332
Judicial	637,696	600,670
Virginia Law Officers	1,789,127	1,668,802
Political Subdivisions <sup>1</sup>	25,288,728	23,686,882
Total Actuarial Value of Assets	\$ 94,605,665	\$ 88,234,769

<sup>1</sup> Includes Political Subdivisions with zero active members.

## Development of Actuarial Value of Assets State Employees

Year Ended June 30:	2022	2023	2024	2025	2026
A. Actuarial Value of Assets Beginning of Year (AVA)	\$20,615,301,000				
B. Market Value of Assets End of Year (MVA)	22,579,326,240				
C1. Market Value of Assets Beginning of Year	23,112,417,070				
C2. Adjustment to Market Value Beginning of Year	0				
D. Non-Investment Net Cash Flow (NINCF)	(511,511,687)				
E. Investment Income					
E1. Market Total: B - C1 - C2 - D	(21,579,143)				
E2. Assumed Rate of Investment Return	6.75%				
E3. Amount for Immediate Recognition	1,542,824,633				
E4. Amount for Phased-In Recognition: E1 - E3	(1,564,403,776)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.2 x E4	(312,880,755)				
F2. First Prior Year	762,448,000	\$(312,880,755)			
F3. Second Prior Year	(180,907,000)	762,448,000	\$(312,880,755)		
F4. Third Prior Year	(12,530,000)	(180,907,000)	762,448,000	\$(312,880,755)	
F5. Fourth Prior Year	15,105,070	(12,530,000)	(180,907,000)	762,448,000	\$(312,880,756)
F6. Total Phased-In Recognition	271,235,315	256,130,245	268,660,245	449,567,245	(312,880,756)
G. Preliminary Valuation Assets End of Year: A + C2 + D + E3 + F6	21,917,849,261				
G1. 120% of Market Value End of Year	27,095,191,488				
G2. 80% of Market Value End of Year	18,063,460,992				
G3. Valuation Assets End of Year (G, but not more than G1 or less than G2)	<b>\$21,917,849,261</b>				
H. Difference between Market & Actuarial Value of Assets: B - G3	\$661,476,979	\$405,346,734	\$136,686,489	\$(312,880,756)	\$ 0



## Development of Actuarial Value of Assets Teachers

Year Ended June 30:	2022	2023	2024	2025	2026
A. Actuarial Value of Assets Beginning of Year (AVA)	\$40,725,782,000				
B. Market Value of Assets End of Year (MVA)	45,211,730,774				
C1. Market Value of Assets Beginning of Year	45,617,878,057				
C2. Adjustment to Market Value Beginning of Year	166,045				
D. Non-Investment Net Cash Flow (NINCF)	(339,704,198)				
E. Investment Income					
E1. Market Total: B - C1 - C2 - D	(66,609,130)				
E2. Assumed Rate of Investment Return	6.75%				
E3. Amount for Immediate Recognition	3,067,752,960				
E4. Amount for Phased-In Recognition: E1 - E3	(3,134,362,090)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.2 x E4	(626,872,418)				
F2. First Prior Year	1,490,236,000	\$(626,872,418)			
F3. Second Prior Year	(350,108,000)	1,490,236,000	\$(626,872,418)		
F4. Third Prior Year	(21,714,000)	(350,108,000)	1,490,236,000	\$(626,872,418)	
F5. Fourth Prior Year	24,904,057	(21,714,000)	(350,108,000)	1,490,236,000	\$(626,872,418)
F6. Total Phased-In Recognition	516,445,639	491,541,582	513,255,582	863,363,582	(626,872,418)
G. Preliminary Valuation Assets End of Year: A + C2 + D + E3 + F6	43,970,442,446				
G1. 120% of Market Value End of Year	54,254,076,929				
G2. 80% of Market Value End of Year	36,169,384,619				
G3. Valuation Assets End of Year (G, but not more than G1 or less than G2)	<b>\$43,970,442,446</b>				
H. Difference between Market & Actuarial Value of Assets: B - G3	\$1,241,288,328	\$749,746,746	\$236,491,164	\$(626,872,418)	\$ 0



## Development of Actuarial Value of Assets State Police

Year Ended June 30:	2022	2023	2024	2025	2026
A. Actuarial Value of Assets Beginning of Year (AVA)	\$937,332,000				
B. Market Value of Assets End of Year (MVA)	1,031,383,369				
C1. Market Value of Assets Beginning of Year	1,050,148,442				
C2. Adjustment to Market Value Beginning of Year	0				
D. Non-Investment Net Cash Flow (NINCF)	(17,863,415)				
E. Investment Income					
E1. Market Total: B - C1 - C2 - D	(901,658)				
E2. Assumed Rate of Investment Return	6.75%				
E3. Amount for Immediate Recognition	70,282,130				
E4. Amount for Phased-In Recognition: E1 - E3	(71,183,788)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.2 x E4	(14,236,758)				
F2. First Prior Year	34,516,000	\$(14,236,758)			
F3. Second Prior Year	(8,234,000)	34,516,000	\$(14,236,758)		
F4. Third Prior Year	(572,000)	(8,234,000)	34,516,000	\$(14,236,758)	
F5. Fourth Prior Year	598,442	(572,000)	(8,234,000)	34,516,000	\$(14,236,756)
F6. Total Phased-In Recognition	12,071,684	11,473,242	12,045,242	20,279,242	(14,236,756)
G. Preliminary Valuation Assets End of Year: A + C2 + D + E3 + F6	1,001,822,399				
G1. 120% of Market Value End of Year	1,237,660,043				
G2. 80% of Market Value End of Year	825,106,695				
G3. Valuation Assets End of Year (G, but not more than G1 or less than G2)	<b>\$1,001,822,399</b>				
H. Difference between Market & Actuarial Value of Assets: B - G3	\$29,560,970	\$18,087,728	\$6,042,486	\$(14,236,756)	\$ 0



## Development of Actuarial Value of Assets Judicial

Year Ended June 30:	2022	2023	2024	2025	2026
A. Actuarial Value of Assets Beginning of Year (AVA)	\$600,670,000				
B. Market Value of Assets End of Year (MVA)	656,964,466				
C1. Market Value of Assets Beginning of Year	673,151,719				
C2. Adjustment to Market Value Beginning of Year	0				
D. Non-Investment Net Cash Flow (NINCF)	(15,710,806)				
E. Investment Income					
E1. Market Total: B - C1 - C2 - D	(476,447)				
E2. Assumed Rate of Investment Return	6.75%				
E3. Amount for Immediate Recognition	44,907,501				
E4. Amount for Phased-In Recognition: E1 - E3	(45,383,948)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.2 x E4	(9,076,790)				
F2. First Prior Year	22,181,000	\$(9,076,790)			
F3. Second Prior Year	(5,303,000)	22,181,000	\$(9,076,790)		
F4. Third Prior Year	(361,000)	(5,303,000)	22,181,000	\$(9,076,790)	
F5. Fourth Prior Year	388,719	(361,000)	(5,303,000)	22,181,000	\$(9,076,788)
F6. Total Phased-In Recognition	7,828,929	7,440,210	7,801,210	13,104,210	(9,076,788)
G. Preliminary Valuation Assets End of Year: A + C2 + D + E3 + F6	637,695,624				
G1. 120% of Market Value End of Year	788,357,359				
G2. 80% of Market Value End of Year	525,571,573				
G3. Valuation Assets End of Year (G, but not more than G1 or less than G2)	<b>\$637,695,624</b>				
H. Difference between Market & Actuarial Value of Assets: B - G3	\$19,268,842	\$11,828,632	\$4,027,422	\$(9,076,788)	\$ 0



## Development of Actuarial Value of Assets Virginia Law Officers

Year Ended June 30:	2022	2023	2024	2025	2026
A. Actuarial Value of Assets Beginning of Year (AVA)	\$1,668,802,000				
B. Market Value of Assets End of Year (MVA)	1,841,041,323				
C1. Market Value of Assets Beginning of Year	1,868,924,472				
C2. Adjustment to Market Value Beginning of Year	0				
D. Non-Investment Net Cash Flow (NINCF)	(26,217,269)				
E. Investment Income					
E1. Market Total: B - C1 - C2 - D	(1,665,880)				
E2. Assumed Rate of Investment Return	6.75%				
E3. Amount for Immediate Recognition	125,267,569				
E4. Amount for Phased-In Recognition: E1 - E3	(126,933,449)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.2 x E4	(25,386,690)				
F2. First Prior Year	61,035,000	\$(25,386,690)			
F3. Second Prior Year	(14,318,000)	61,035,000	\$(25,386,690)		
F4. Third Prior Year	(1,008,000)	(14,318,000)	61,035,000	\$(25,386,690)	
F5. Fourth Prior Year	952,472	(1,008,000)	(14,318,000)	61,035,000	\$(25,386,689)
F6. Total Phased-In Recognition	21,274,782	20,322,310	21,330,310	35,648,310	(25,386,689)
G. Preliminary Valuation Assets End of Year: A + C2 + D + E3 + F6	1,789,127,082				
G1. 120% of Market Value End of Year	2,209,249,588				
G2. 80% of Market Value End of Year	1,472,833,058				
G3. Valuation Assets End of Year (G, but not more than G1 or less than G2)	<b>\$1,789,127,082</b>				
H. Difference between Market & Actuarial Value of Assets: B - G3	\$51,914,241	\$31,591,931	\$10,261,621	\$(25,386,689)	\$ 0



## Development of Actuarial Value of Assets Political Subdivisions

Year Ended June 30:	2022	2023	2024	2025	2026
A. Actuarial Value of Assets Beginning of Year (AVA)	\$23,686,882,000				
B. Market Value of Assets End of Year (MVA)	26,045,031,171				
C1. Market Value of Assets Beginning of Year	26,558,349,556				
C2. Adjustment to Market Value Beginning of Year	(166,045)				
D. Non-Investment Net Cash Flow (NINCF)	(486,908,398)				
E. Investment Income					
E1. Market Total: B - C1 - C2 - D	(26,243,942)				
E2. Assumed Rate of Investment Return	6.75%				
E3. Amount for Immediate Recognition	1,776,244,229				
E4. Amount for Phased-In Recognition: E1 - E3	(1,802,488,171)				
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.2 x E4	(360,497,634)				
F2. First Prior Year	872,277,000	\$(360,497,634)			
F3. Second Prior Year	(203,088,000)	872,277,000	\$(360,497,634)		
F4. Third Prior Year	(12,361,000)	(203,088,000)	872,277,000	\$(360,497,634)	
F5. Fourth Prior Year	16,345,556	(12,361,000)	(203,088,000)	872,277,000	\$(360,497,635)
F6. Total Phased-In Recognition	312,675,922	296,330,366	308,691,366	511,779,366	(360,497,635)
G. Preliminary Valuation Assets End of Year: A + C2 + D + E3 + F6	25,288,727,708				
G1. 120% of Market Value End of Year	31,254,037,405				
G2. 80% of Market Value End of Year	20,836,024,937				
G3. Valuation Assets End of Year (G, but not more than G1 or less than G2)	<b>\$25,288,727,708</b>				
H. Difference between Market & Actuarial Value of Assets: B - G3	\$756,303,463	\$459,973,097	\$151,281,731	\$(360,497,635)	\$ 0
I. Ratio of Actuarial to Market Value of Assets	0.970962				



**SECTION D**

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**CENSUS DATA**

## Retiree and Beneficiary Detail – Tabulated by Type of Retirement June 30, 2022

Retired, Disabled, and Survivor participants included in the valuations totaled 272,519 as follows:

Type of Retirement	System <sup>1</sup>						
	State Employees	Teachers	State Police	Judicial	Virginia Law Officers	Political Subdivisions <sup>2</sup>	Total
<b>Service:</b>							
Number	62,845	100,592	1,316	446	5,899	70,103	241,201
Annual Benefits	\$ 1,407,610	\$ 2,549,153	\$ 58,548	\$ 41,491	\$ 125,106	\$ 1,120,230	\$ 5,302,138
Average Age	73.13	72.83	68.80	76.30	65.78	70.51	72.04
<b>Disability:</b>							
Number	2,975	4,249	185	1	248	8,010	15,668
Annual Benefits	\$ 53,374	\$ 100,831	\$ 7,080	\$ 46	\$ 3,997	\$ 137,322	\$ 302,650
Average Age	71.54	68.77	67.36	60.94	60.85	65.86	67.66
<b>Survivors:</b>							
Number	5,554	3,738	273	133	398	5,554	15,650
Annual Benefits	\$ 85,167	\$ 58,521	\$ 5,733	\$ 6,689	\$ 3,752	\$ 58,059	\$ 217,921
Average Age	75.11	71.78	71.99	78.05	64.41	70.21	72.28
<b>Total:</b>							
Number	71,374	108,579	1,774	580	6,545	83,667	272,519
Annual Benefits	\$ 1,546,151	\$ 2,708,505	\$ 71,361	\$ 48,226	\$ 132,855	\$ 1,315,611	\$ 5,822,709
Average Age	73.22	72.63	69.14	76.68	65.51	70.05	71.81

<sup>1</sup> Includes counts for each plan from which members receive pension benefits. Members with benefits from more than one employer are counted more than once.

<sup>2</sup> Includes counts for Participating Political Subdivisions with zero active members.



## Deferred Detail – Tabulated by Type June 30, 2022

Members with deferred benefits included in the valuations totaled 132,404 as follows:

System <sup>1</sup>	Number	Average Age	Average Service	Average Annual Estimated Benefit
State Employees:				
Inactive, Vested	15,387	51.45	8.60	\$ 6,761
Long Term Disability	2,380	55.86	15.04	\$ 48,116
Inactive, active elsewhere in VRS	9,393	48.36	4.34	\$ 2,532
Teachers:				
Inactive, Vested	32,031	48.32	9.23	\$ 7,777
Long Term Disability	41	47.57	4.37	\$ 21,880
Inactive, active elsewhere in VRS	6,218	49.41	5.82	\$ 4,455
State Police:				
Inactive, Vested	199	43.31	8.74	\$ 8,580
Long Term Disability	28	46.31	11.31	\$ 66,942
Inactive, active elsewhere in VRS	252	41.86	4.49	\$ 3,766
Judicial:				
Inactive, Vested	9	62.93	8.56	\$ 45,038
Long Term Disability	0	N/A	0.00	N/A
Inactive, active elsewhere in VRS	4	56.77	8.17	\$ 46,784
Virginia Law Officers:				
Inactive, Vested	1,494	45.54	6.64	\$ 4,421
Long Term Disability	489	50.42	8.38	\$ 29,719
Inactive, active elsewhere in VRS	3,736	42.62	4.47	\$ 3,055
Political Subdivisions <sup>2</sup> :				
Inactive, Vested	22,746	50.44	7.06	\$ 5,463
Long Term Disability	91	55.38	3.75	\$ 11,474
Inactive, active elsewhere in VRS	37,906	46.63	4.26	\$ 3,185
Total:				
Inactive, Vested	71,866	49.59	8.35	\$ 6,764
Long Term Disability	3,029	54.76	13.44	\$ 43,864
Inactive, active elsewhere in VRS	57,509	46.93	4.46	\$ 3,213

<sup>1</sup> Includes counts for each plan from which members are entitled to deferred pension benefits. Members with benefits from more than one employer are counted more than once.

<sup>2</sup> Includes counts for Participating Political Subdivisions with zero active members.



## Active Participant Detail June 30, 2022

**Active participants** included in the valuations totaled 346,945 with compensation and statistics, as follows:

System	Number	Annual Compensation (\$ in Thousands)	Average				
			Compensation	Age	Employer Type Service	Total Service	Entry Age on Employer Type Service
State Employees	74,048	\$ 4,946,307	\$ 66,799	47.6	11.1	11.9	36.5
Teachers	153,356	9,263,309	60,403	44.8	11.4	11.7	33.4
State Police	1,885	159,212	84,463	40.9	14.1	15.3	26.8
Judicial	461	80,745	175,152	58.0	9.2	14.7	48.8
Virginia Law Officers	7,289	372,486	51,103	40.3	8.4	9.3	31.9
Political Subdivisions	109,906	6,121,691	55,699	45.8	9.1	10.4	36.7
<b>Total</b>	<b>346,945</b>	<b>\$ 20,943,750</b>	<b>\$ 60,366</b>	<b>45.6</b>	<b>10.6</b>	<b>11.3</b>	<b>35.1</b>

Historical active participant member data follows:

Valuation Date	Number	Annual Compensation (\$ in Thousands)	Average Annual Compensation	% Change in Average Annual Compensation
6/30/2022	346,945	\$ 20,943,750	\$ 60,366	7.52%
6/30/2021	342,315	19,219,079	56,144	3.20%
6/30/2020	347,531	18,906,440	54,402	2.08%
6/30/2019	345,678	18,422,511	53,294	3.78%
6/30/2018	345,877	17,762,411	51,355	2.10%



## Active Participants – Tabulated by Age and Total Service State Employees

Attained Age	Completed Years of Service							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
Under 20	73	0	0	0	0	0	0	73	\$ 2,555,961
20-24	1,924	23	0	0	0	0	0	1,947	82,580,458
25-29	4,609	536	7	0	0	0	0	5,152	259,383,538
30-34	4,517	2,129	327	18	0	0	0	6,991	404,811,076
35-39	3,799	2,486	1,339	449	8	0	0	8,081	521,205,723
40-44	3,313	2,253	1,473	1,279	348	11	0	8,677	594,677,098
45-49	2,695	1,937	1,422	1,366	959	237	5	8,621	608,277,837
50-54	2,808	1,894	1,486	1,580	1,322	887	354	10,331	734,909,568
55-59	2,194	1,747	1,405	1,495	1,363	973	1,401	10,578	743,036,958
60	377	284	259	301	287	184	397	2,089	146,646,854
61	325	291	260	301	274	173	405	2,029	141,855,677
62	261	224	215	290	216	155	391	1,752	123,324,173
63	231	197	212	205	221	158	372	1,596	116,371,540
64	173	185	201	213	189	134	320	1,415	102,632,764
65	116	141	172	166	151	104	309	1,159	85,704,017
66	103	115	104	125	100	72	197	816	60,775,900
67	67	83	101	75	71	34	179	610	45,833,700
68	48	66	61	81	72	37	134	499	39,794,339
69	37	42	55	54	52	32	116	388	30,187,047
70 & Over	97	121	142	185	172	96	431	1,244	101,742,579
<b>Totals</b>	<b>27,767</b>	<b>14,754</b>	<b>9,241</b>	<b>8,183</b>	<b>5,805</b>	<b>3,287</b>	<b>5,011</b>	<b>74,048</b>	<b>\$ 4,946,306,807</b>



## Active Participants by Age and Total Service Teachers<sup>1</sup>

Attained Age	Completed Years of Service							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
Under 20	125	0	0	0	0	0	0	125	\$ 2,674,783
20-24	5,235	13	0	0	0	0	0	5,248	235,781,491
25-29	11,333	3,143	2	0	0	0	0	14,478	756,002,370
30-34	6,622	8,242	2,020	2	0	0	0	16,886	969,612,808
35-39	5,704	4,659	5,780	2,391	9	0	0	18,543	1,148,131,534
40-44	5,210	3,827	3,311	6,481	1,937	4	0	20,770	1,379,191,415
45-49	4,637	3,587	2,705	3,948	4,951	1,172	4	21,004	1,442,039,352
50-54	4,042	3,555	2,994	3,704	3,819	3,804	914	22,832	1,600,237,654
55-59	2,696	2,625	2,428	3,380	2,872	1,825	1,814	17,640	1,175,880,505
60	370	367	383	622	527	320	345	2,934	189,548,613
61	370	336	347	545	493	297	328	2,716	173,692,035
62	278	278	301	451	471	242	303	2,324	148,589,139
63	236	254	235	388	377	213	261	1,964	123,843,498
64	181	206	206	345	303	206	203	1,650	106,671,896
65	145	149	140	205	224	113	167	1,143	72,565,618
66	108	106	87	125	111	80	123	740	46,580,584
67	78	59	68	104	94	54	95	552	34,656,278
68	66	62	48	76	80	37	63	432	26,819,777
69	52	46	38	45	61	40	66	348	22,045,750
70 & Over	184	136	110	170	151	72	204	1,027	58,664,033
<b>Totals</b>	<b>47,672</b>	<b>31,650</b>	<b>21,203</b>	<b>22,982</b>	<b>16,480</b>	<b>8,479</b>	<b>4,890</b>	<b>153,356</b>	<b>\$9,713,229,133</b>

<sup>1</sup> Includes an assumed pay increase on the valuation date.



## Active Participants by Age and Total Service State Police

Attained Age	Completed Years of Service							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
Under 20	0	0	0	0	0	0	0	0	\$ 0
20-24	112	0	0	0	0	0	0	112	6,484,418
25-29	195	63	0	0	0	0	0	258	16,060,372
30-34	75	163	54	0	0	0	0	292	20,464,002
35-39	42	64	79	73	0	0	0	258	20,164,545
40-44	19	22	39	142	51	0	0	273	24,212,890
45-49	9	13	14	65	115	36	0	252	24,626,391
50-54	6	8	22	40	51	80	13	220	22,663,706
55-59	2	2	10	23	9	21	72	139	15,076,143
60	0	2	7	0	0	3	10	22	2,466,129
61	0	1	2	0	1	1	14	19	2,195,788
62	0	1	0	1	0	3	6	11	1,292,442
63	0	0	0	0	3	0	4	7	747,577
64	0	0	0	0	1	1	7	9	1,121,278
65	0	0	0	0	0	1	4	5	632,216
66	0	0	0	0	0	0	0	0	0
67	0	0	0	1	0	0	4	5	586,926
68	0	0	0	0	0	0	1	1	186,486
69	0	0	0	0	0	0	2	2	230,724
70 & Over	0	0	0	0	0	0	0	0	0
<b>Totals</b>	<b>460</b>	<b>339</b>	<b>227</b>	<b>345</b>	<b>231</b>	<b>146</b>	<b>137</b>	<b>1,885</b>	<b>\$ 159,212,033</b>



## Active Participants by Age and Total Service Judicial

Attained Age	Completed Years of Service							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
Under 20	0	0	0	0	0	0	0	0	\$ 0
20-24	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	7	0	0	0	0	0	0	7	1,181,601
40-44	30	7	0	0	0	0	0	37	6,383,466
45-49	23	18	2	0	0	0	0	43	7,395,746
50-54	40	27	15	6	0	0	0	88	15,326,773
55-59	23	28	14	11	4	0	0	80	13,975,972
60	3	2	2	3	1	0	0	11	2,003,176
61	2	7	2	2	1	2	0	16	2,876,406
62	10	8	1	6	0	1	0	26	4,550,507
63	3	7	4	4	3	2	0	23	4,015,605
64	6	5	0	5	2	0	0	18	3,170,834
65	1	6	4	5	1	2	0	19	3,350,941
66	0	6	4	2	5	0	0	17	3,051,668
67	4	3	7	2	2	0	0	18	3,212,716
68	2	5	1	1	1	3	0	13	2,270,850
69	3	2	1	3	1	0	3	13	2,289,303
70 & Over	2	6	7	2	6	5	4	32	5,689,465
<b>Totals</b>	<b>159</b>	<b>137</b>	<b>64</b>	<b>52</b>	<b>27</b>	<b>15</b>	<b>7</b>	<b>461</b>	<b>\$ 80,745,028</b>



## Active Participants by Age and Total Service Virginia Law Officers

Attained Age	Completed Years of Service							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
Under 20	69	0	0	0	0	0	0	69	\$ 2,951,744
20-24	640	4	0	0	0	0	0	644	28,586,812
25-29	848	167	1	0	0	0	0	1,016	47,565,751
30-34	687	373	73	2	0	0	0	1,135	54,789,239
35-39	381	225	179	116	0	0	0	901	46,583,957
40-44	273	175	129	182	67	0	0	826	43,048,125
45-49	228	142	120	194	213	81	0	978	53,966,903
50-54	170	113	111	171	126	60	8	759	41,333,602
55-59	132	69	103	132	71	42	25	574	31,872,598
60	13	8	13	31	14	7	5	91	4,991,078
61	8	9	11	12	18	6	4	68	3,823,527
62	8	9	15	9	8	2	0	51	2,605,529
63	4	5	10	9	6	2	0	36	1,950,583
64	7	4	12	11	6	2	3	45	2,479,662
65	3	3	7	2	4	4	6	29	1,815,099
66	2	2	2	6	1	1	3	17	1,051,817
67	3	1	1	1	1	2	2	11	668,268
68	3	3	1	1	3	1	2	14	913,568
69	0	1	1	1	0	2	0	5	342,010
70 & Over	3	3	2	5	3	2	2	20	1,146,398
<b>Totals</b>	<b>3,482</b>	<b>1,316</b>	<b>791</b>	<b>885</b>	<b>541</b>	<b>214</b>	<b>60</b>	<b>7,289</b>	<b>\$ 372,486,271</b>

