THE PEW CHARITABLE TRUSTS

Virginia Commission on Employee Retirement Security & Pension Reform

Public Pensions: Additional Data & Analysis

August 22, 2016

Greg Mennis, Director
Public Sector Retirement Systems Project

Introduction

- July 11 presentation included 50-state and Virginia specific information on pension funding, benefits, and investments
- Today's presentation will cover additional research and analysis on the Virginia Retirement System (VRS), including preliminary feedback to questions raised by members of the Commission
- Goal is to further inform the members of the Commission and to identify areas for further study within the Working Group on Retirement, covering each of the main topics we discussed at the last meeting
- We remain available to meet individually with any member
- We wish to thank the staff at VRS for their ongoing assistance and feedback

Overview

- **Principles for Fiscal Sustainability and Retirement Security**

- **Pension Funding and Fiscal Health**
  - Key Findings
  - Current Funding Policy
  - Future Policy Considerations

- **Benefits**
  - Hybrid Plan – proposed changes and further analysis
  - Virginia Optional Defined Contribution Retirement Plan for Higher Education

- **Investments**

- **Governance**

Principles for Fiscal Sustainability and Retirement Security

No one-size-fits-all solution, but **key principles** can guide any reform process.

- **Fiscal sustainability principles**
  - Commit to fully funding and paying for pension promises.
  - Manage investment risk and cost uncertainty.
  - Follow sound investment governance and reporting practices.

- **Retirement security principles**
  - Target sufficient contributions and savings to help put employees on a path to a secure retirement.
  - Invest assets in professionally managed, pooled investments with low fees and appropriate asset allocations.
  - Provide access to lifetime income in retirement.

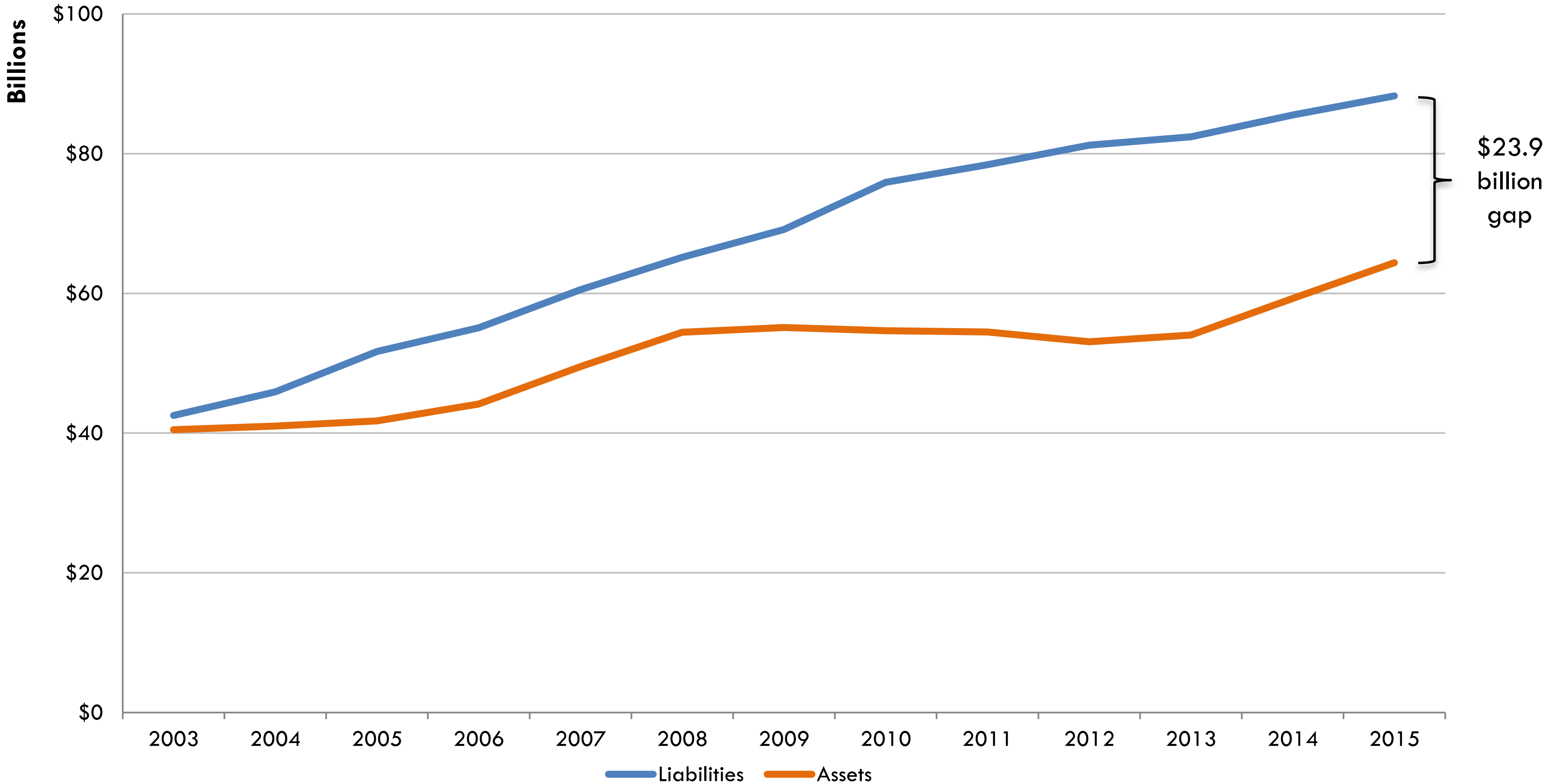
Pension Funding and Fiscal Health

Key Findings

- Virginia is 75% funded - average across the United States
- Historically, Virginia has not made the full actuarially required contribution ("ARC") to fully fund the public pension system - paid an average of 74% of the ARC from 2003-2013
- Pension costs have more than doubled as a percentage of state own source over the past decade, again similar to national trends, with increasing payments on pension debt
- The state is currently following a plan that will ramp up payments to 100% of the ARC by FY 2018

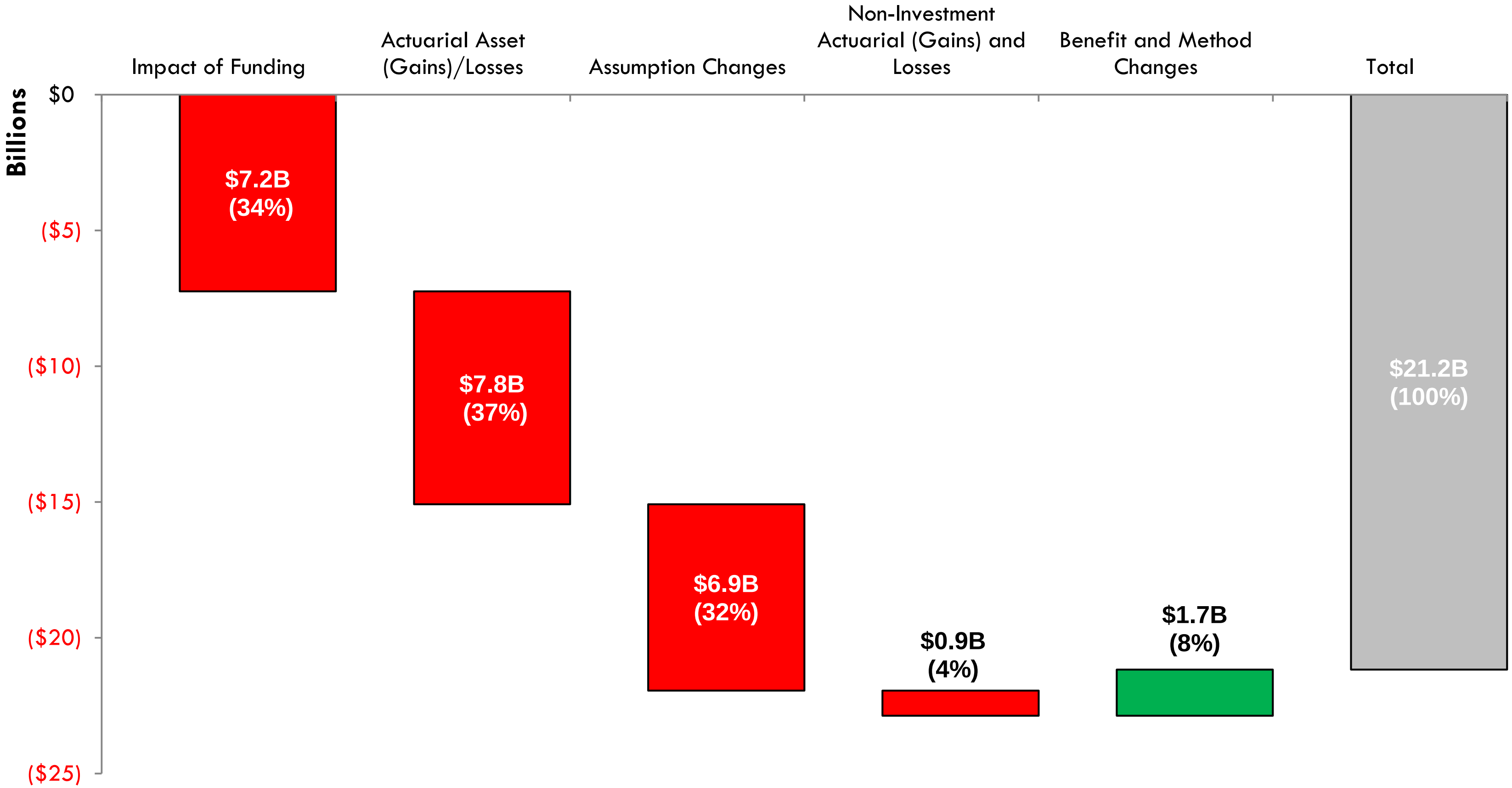
Virginia Retirement System

Assets & Liabilities: 2003 - 2015



Source(s): Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.

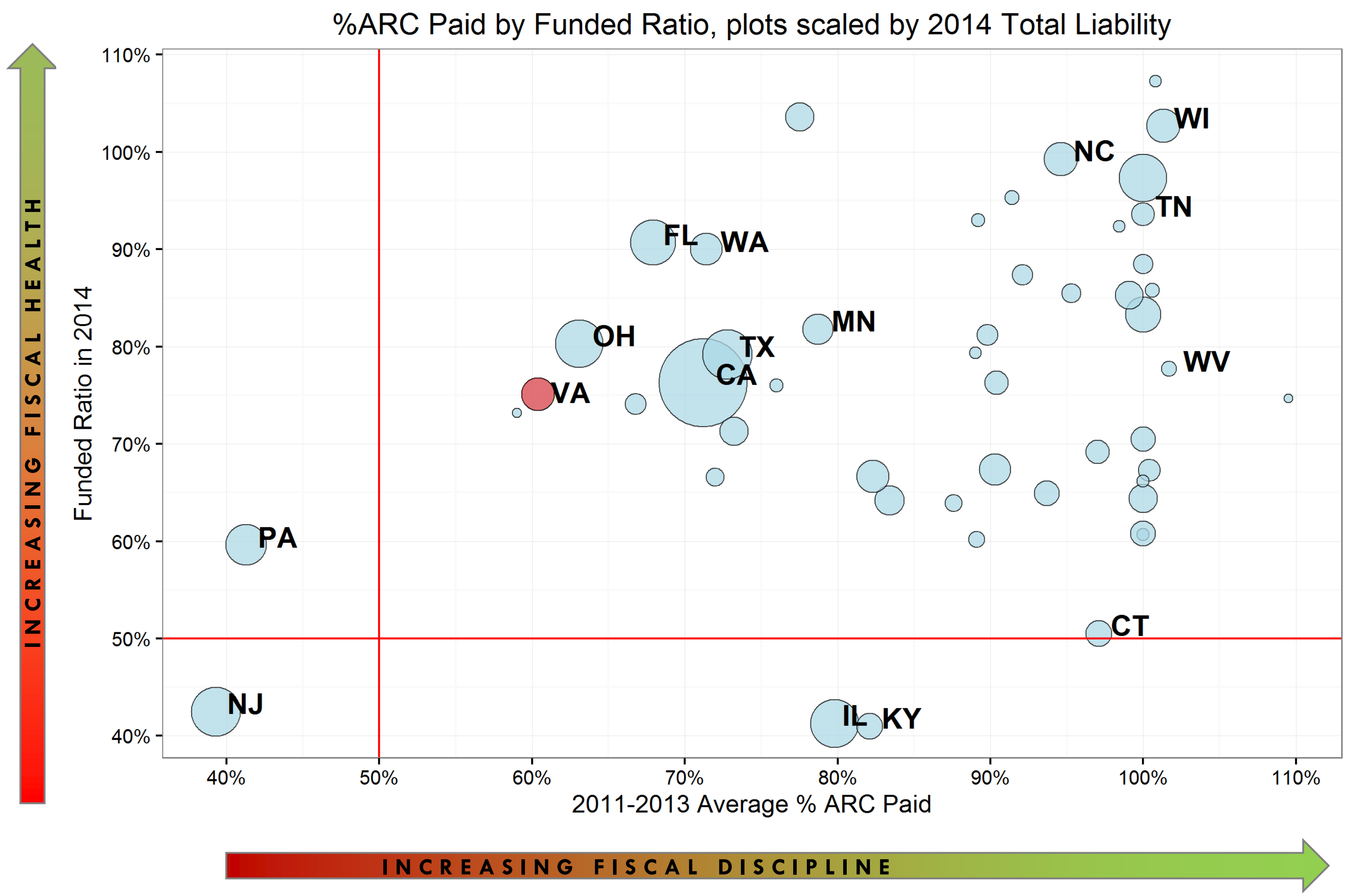
VRS Sources of Growth in Unfunded Liability (AVA) 2004-2015



Note: Figures calculated using actuarial valuation of assets.

Source: Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.

Fiscal Health and Discipline Across States



% ARC Paid Based on 2011-2013 Data

Current Funding Policy

Virginia Retirement System

- Virginia is committed, via statute, to ramp up to 100% funding by FY 2018
  - §51.1-145, subsection K1 outlines the new funding policy in detail

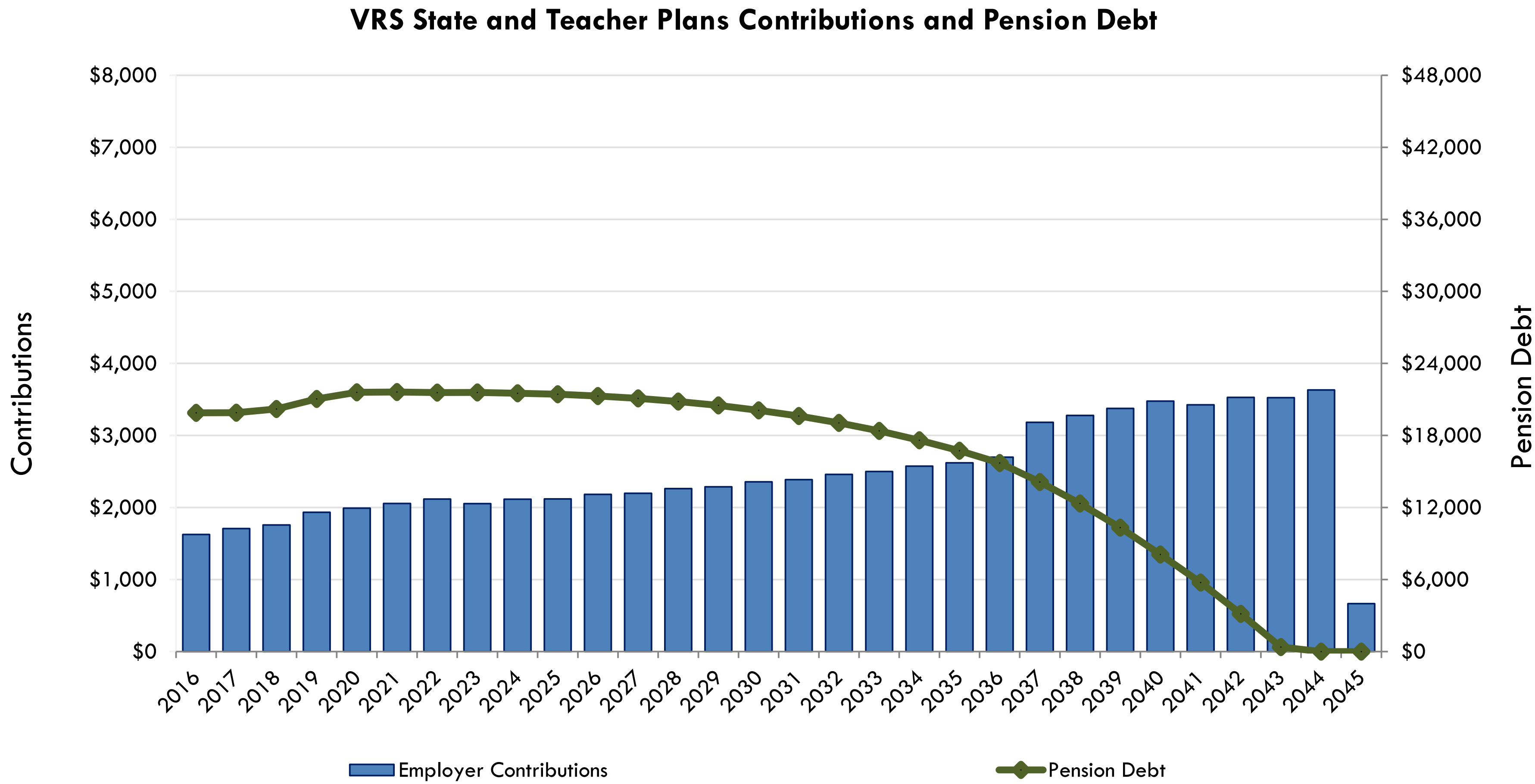
- In June 30, 2013 legacy unfunded liabilities were set to a 30-year closed amortization schedule, with future unfunded liabilities to be amortized on a closed schedule over 20-year periods

- The state has followed the new policy to date

Note: *Projections on pages following study the State and Teachers plans combined. Subsequent analyses will distinguish between budgetary impact at the state vs. local level.*

Funding Projections Through 2045

(Under Current Investment Return Assumption of 7%)



Notes: $ figures in millions.
Source: The Terry Group

Looking Forward - Policy Considerations

- **Strengthening the commitment**
  - The new requirement provides a plan but does not remove the risk of legislative underfunding
  - **Constitutional Amendments*** – Maine & Montana attempted to strengthen funding commitments via constitutional amendments
  - **Consensus Revenue** – Several states have implemented or considered taking pension contributions "off the table" during the budgeting/revenue process
- **Other approaches states have taken on pension funding include**
  - Dedicated Revenue Sources* – An example of dedicated revenue sources to pay for pensions are fees and taxes applied to insurance that are used to help pay for public safety pensions.
  - Non-recurring revenue sources* (West Virginia Tobacco Settlement Funds)
  - Asset Sales* (Kansas surplus property, Pennsylvania municipalities)
  - Pension Obligation Bonds
- **Measuring and managing cost uncertainty**
  - Additional reporting on Debt Amortization (discussed at the last meeting) and Stress Testing to better inform policymakers on the risks of underfunding

***** See Appendix for additional information***

Measuring and Managing Cost Uncertainty

- With interest rates at historically low levels, there is increased attention around both the level of risk in pension fund portfolios and the potential for unplanned costs if return targets are not achieved.

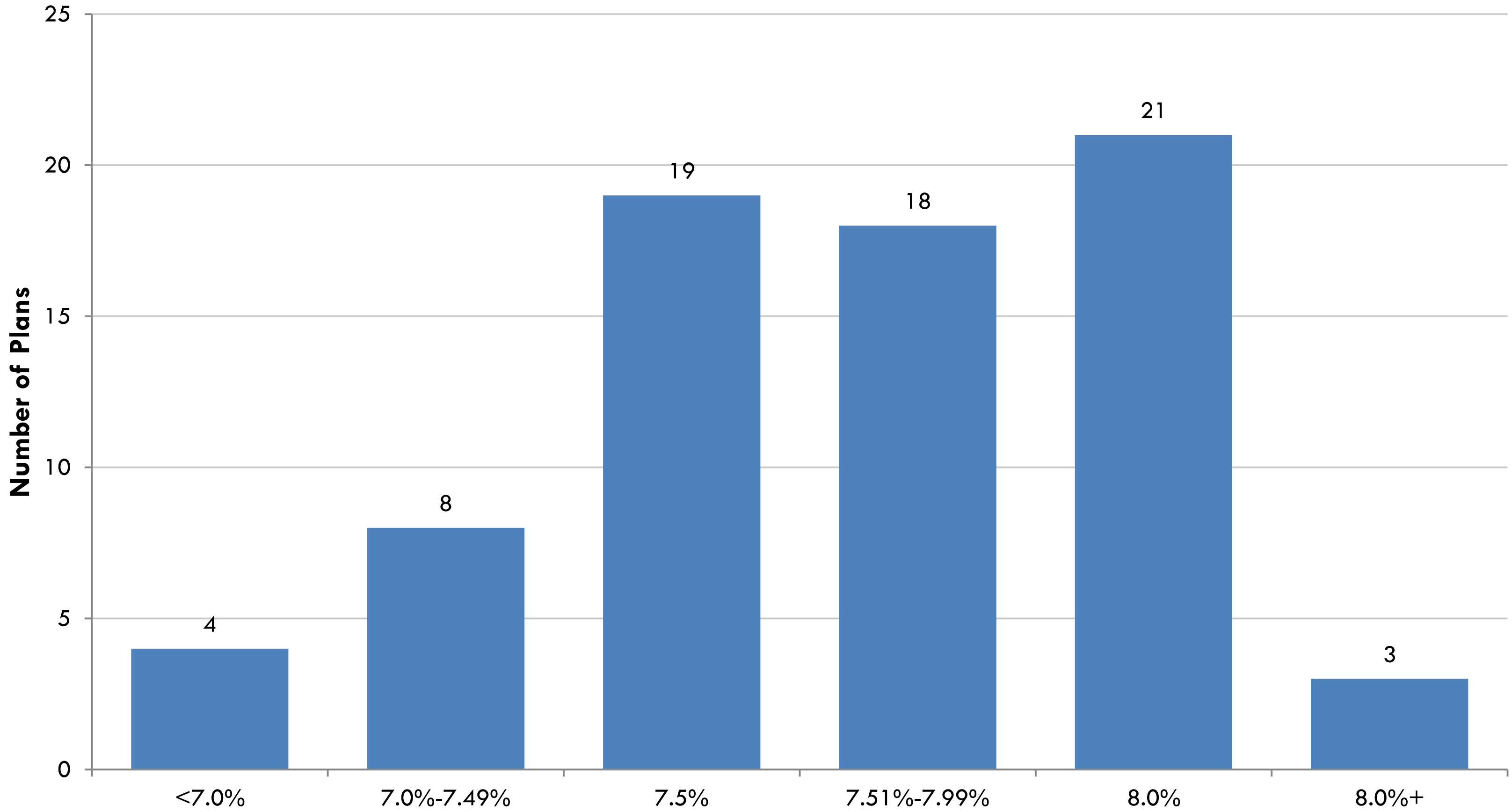
- Public pension funds have taken steps to address these concerns by:
  - Increasing contributions
  - Modifying investment return targets and/or asset allocations
  - Implementing changes to benefit plan design

- Virginia has implemented policies in each of these areas and is considering additional measures

- Stress-testing investment returns and pension costs can further aid policymakers in their efforts to better understand and plan for cost uncertainty.
  - See: Washington state, CALPERs, Society of Actuaries Blue Ribbon panel recommendations

State Pension Fund Expected Rates of Return

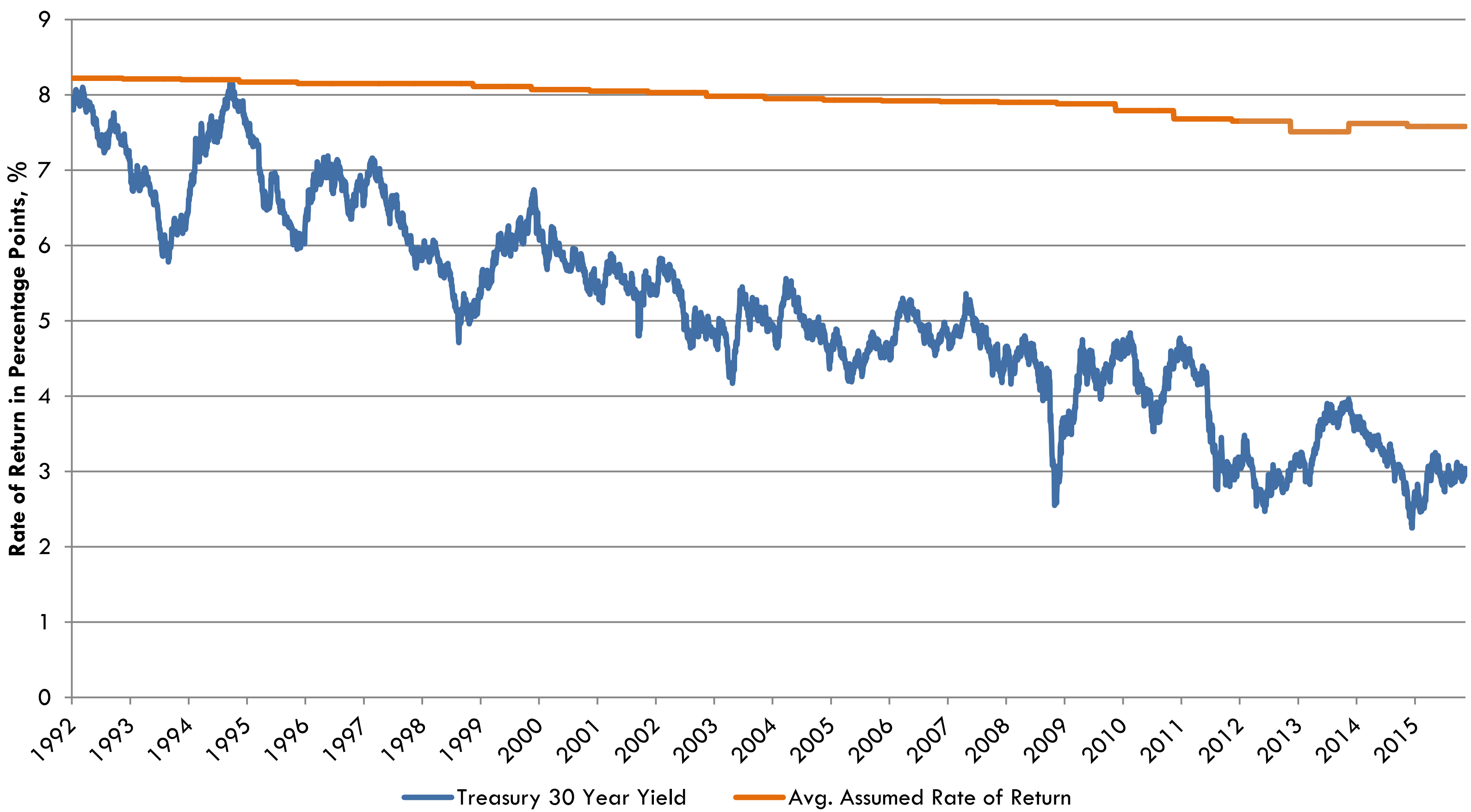
Virginia's investment return assumption of **7%** is one of the lowest among all state sponsored public plans.



Source: Comprehensive Annual Financial Reports (CAFRs), quarterly investment reports, and state responses to data inquiries.

Pension Fund Risk Premium at Historic High

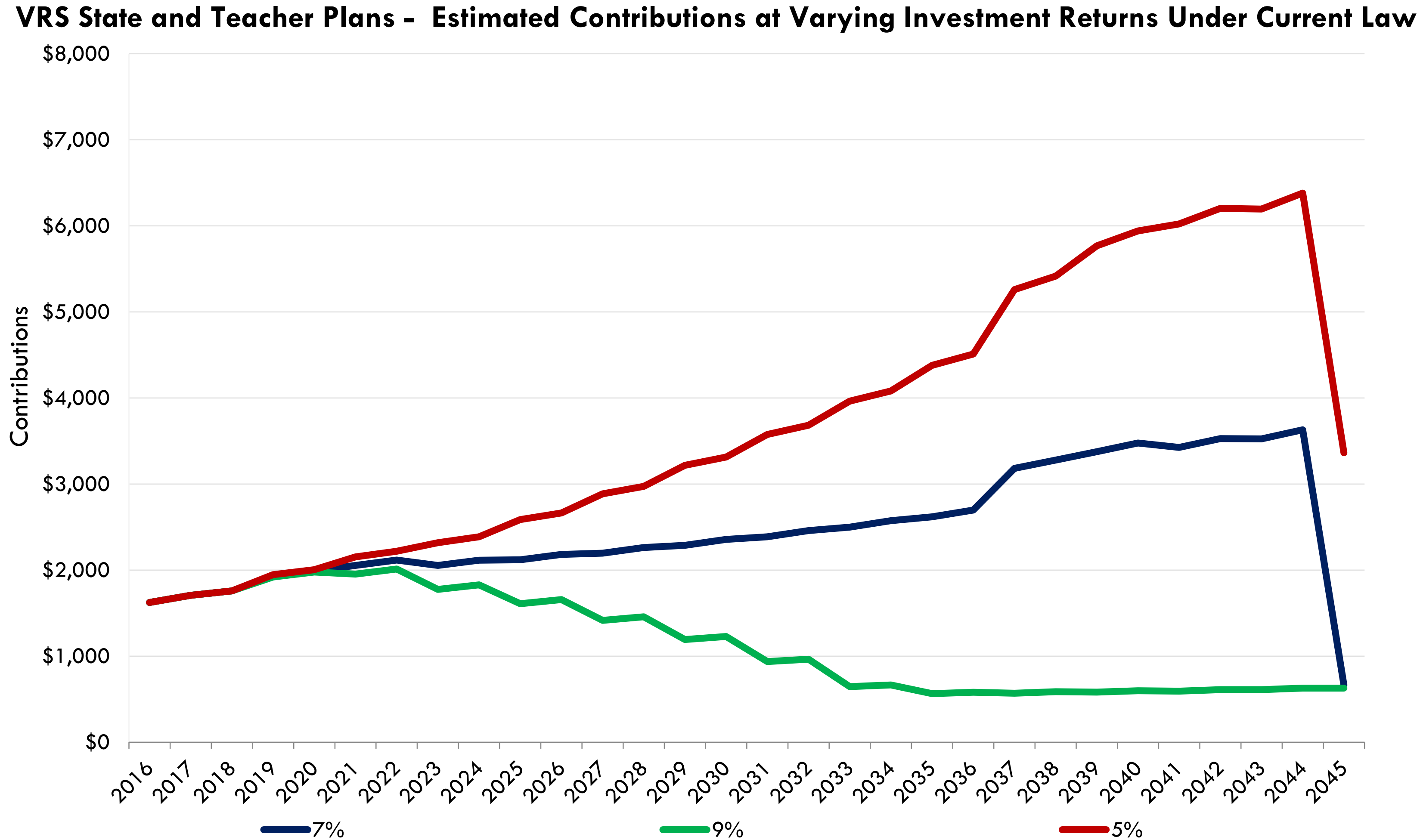
US Public Fund Average Increasing Risk Premium – Plan's Assumed Rate of Return Remains Relatively Stable, While Bond Yields Have Declined



THE PEW CHARITABLE TRUSTS

pewtrusts.org

Pension Cost Sensitivity to Investment Returns



Notes: $ figures in millions.
Source: Analysis by Pew, The Terry Group

Benefits – Hybrid Plan

Proposed Changes to Hybrid Plan - Overview

- **Recap**
  - Policymakers have noted the low level of voluntary retirement contributions to the Hybrid plan
  - Comparisons to other states show that VA has the lowest default contribution rates for the DC portion of the Hybrid
  - VRS recommended several changes to the Hybrid in a 2015 report that informed 2016 legislation (HB 1072 – see appendix for additional detail)
- **Analysis**
  - Minimum retirement savings rate of 6% (employee DB contributions plus mandatory employee/employer DC contributions) is well below minimum standards
  - The majority of younger workers do not remain in public service long enough to receive a pension
  - HB 1072 Fiscal Impact Analysis, estimates additional annual cost of $31M to $137M annually (including local share) over first 5 years
  - Pew has identified other potential options for further study

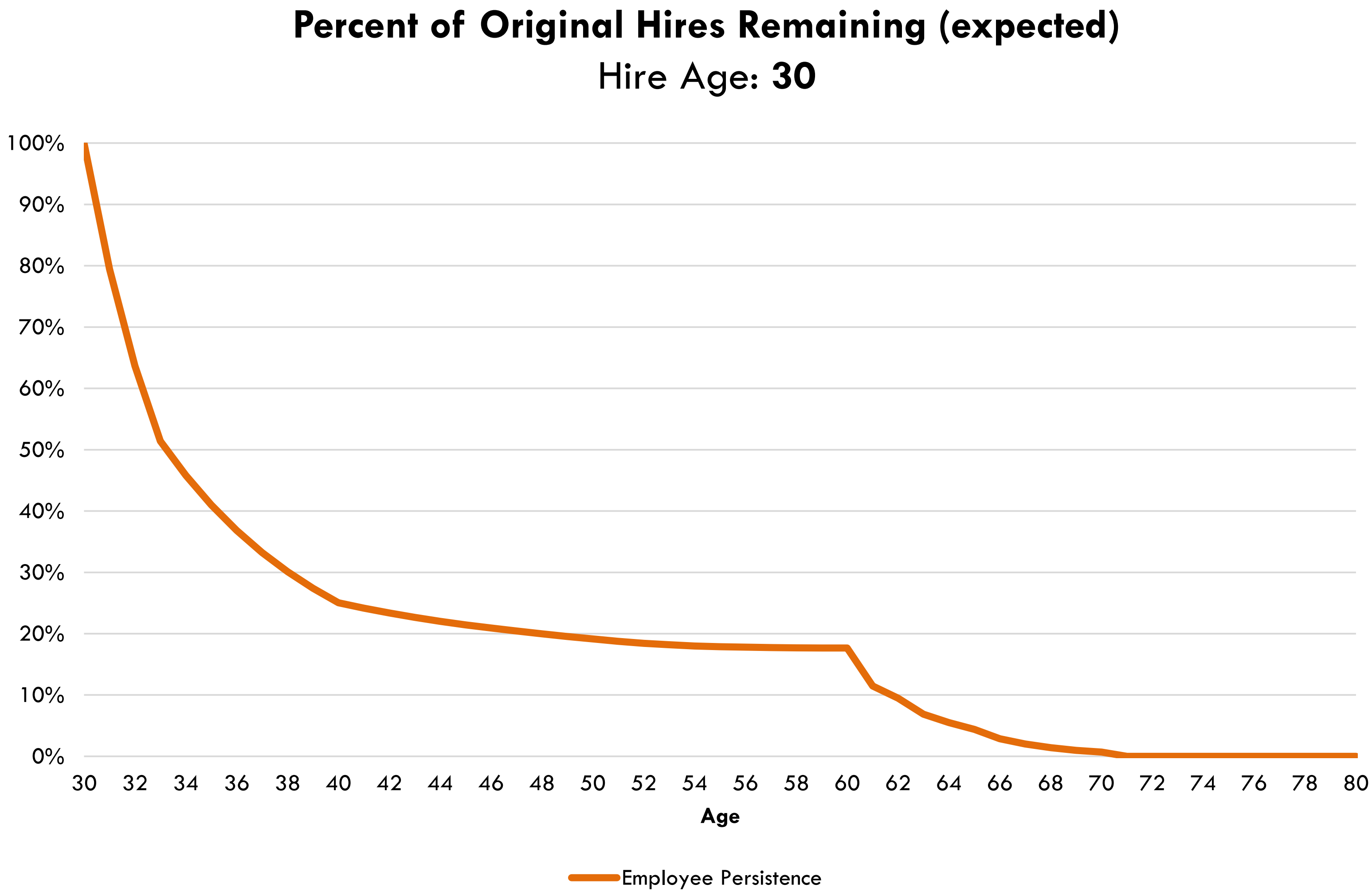
Most Common Example of Hybrid Plan Is Side-By-Side DB/DC Design with 1% Multiplier for DB*

	DB Multiplier	Employee cont. to DB	Employer cont. to DC	Default employee cont. to DC	Number of investment options	Annuity offered for the DC
Georgia Employee's Retirement System	1%	1.25%	3% (3% matching, 0% mandatory)	5% (optional)	21	No
TN Consolidated Retirement System	1%	5%	5% (0% matching, 5% mandatory)	2% (optional)	26	No
Rhode Island Employee Retirement System (state and teachers)	1%	3.75%	1% (0% matching, 1% mandatory)	5% (mandatory)	23	Yes
Virginia Retirement System	1%	4%	3.5% (2.5% matching, 1% mandatory)	1% (mandatory)	23*	Yes
Washington Department of Retirement Services	1%	None	None	5% (mandatory)	13	Yes
Federal Government Retirement System	1%	0.8%	5% (4% matching, 1% mandatory)	3% (optional)	10	Yes

***Note**: VRS has 11 investment options plus a series of 12 target date funds. Note that the number here counts each target date fund separately. Additionally, VRS will be removing the emerging markets fund from their lineup effective July 29th, 2016.

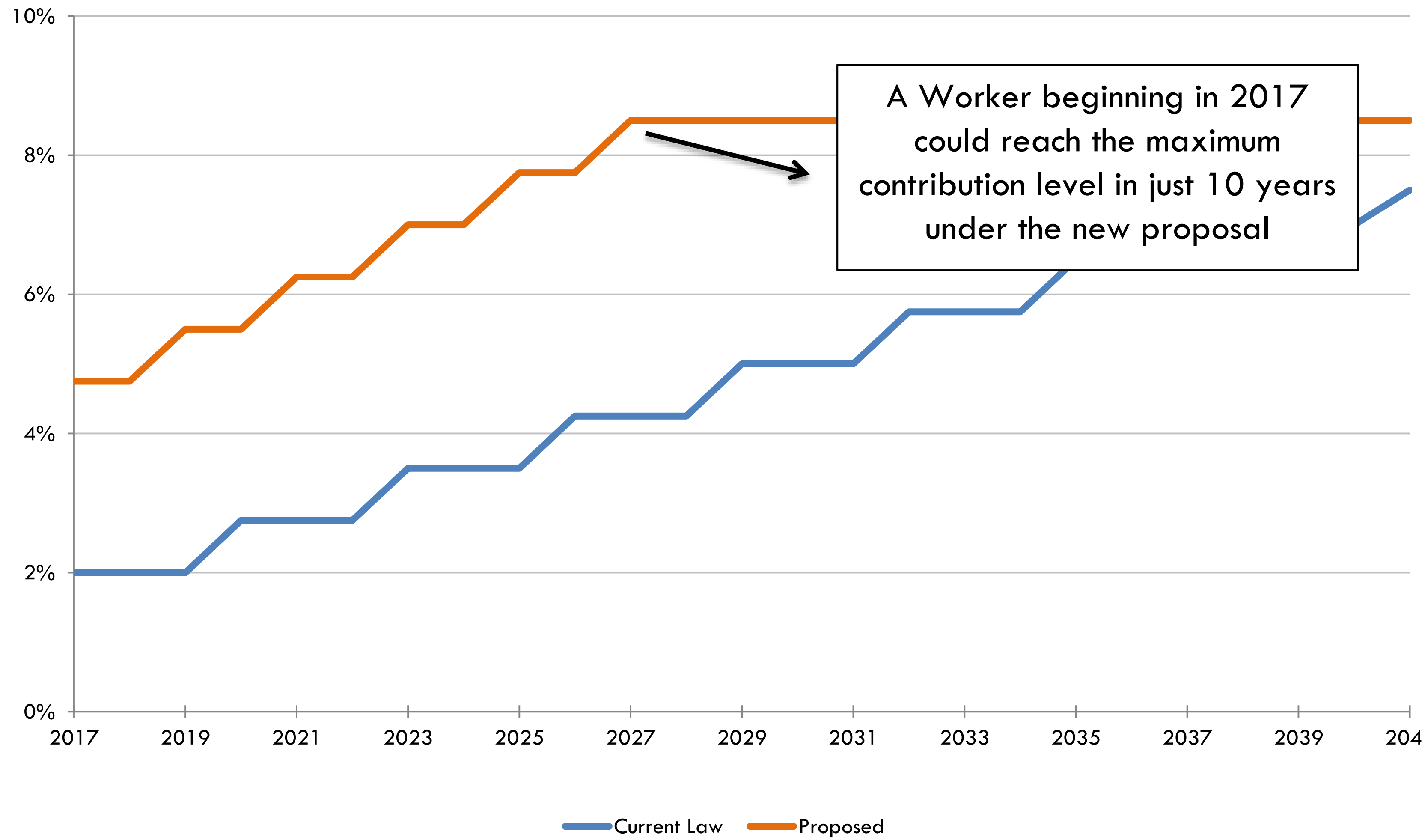
Source: Pew primer on hybrid plan design: www.pewtrusts.org/pensions; Original analysis and additional context initially provided in June 16, 2014 letter to the PA Senate Finance Committee

Attrition Curve – State Employees



Source: Attrition curve based on decrements for Plan 2 and Hybrid plan members as listed in the 2015 actuarial valuation.

Total DC Contribution Rates – Current and Proposed



Hybrid Plan – Options for Further Study

- Consider "Active Choice" to address concerns that workers may have limited capacity to increase contributions out of take home pay (see appendix)

- Review additional options based on goals identified by the Working Group on Retirement (e.g. replacement income for career workers, savings rate for younger workers, cost to state under different scenarios, maximizing value of annuities and other distribution options, minimizing complexity)

- Include further sensitivity analysis around behavioral assumptions

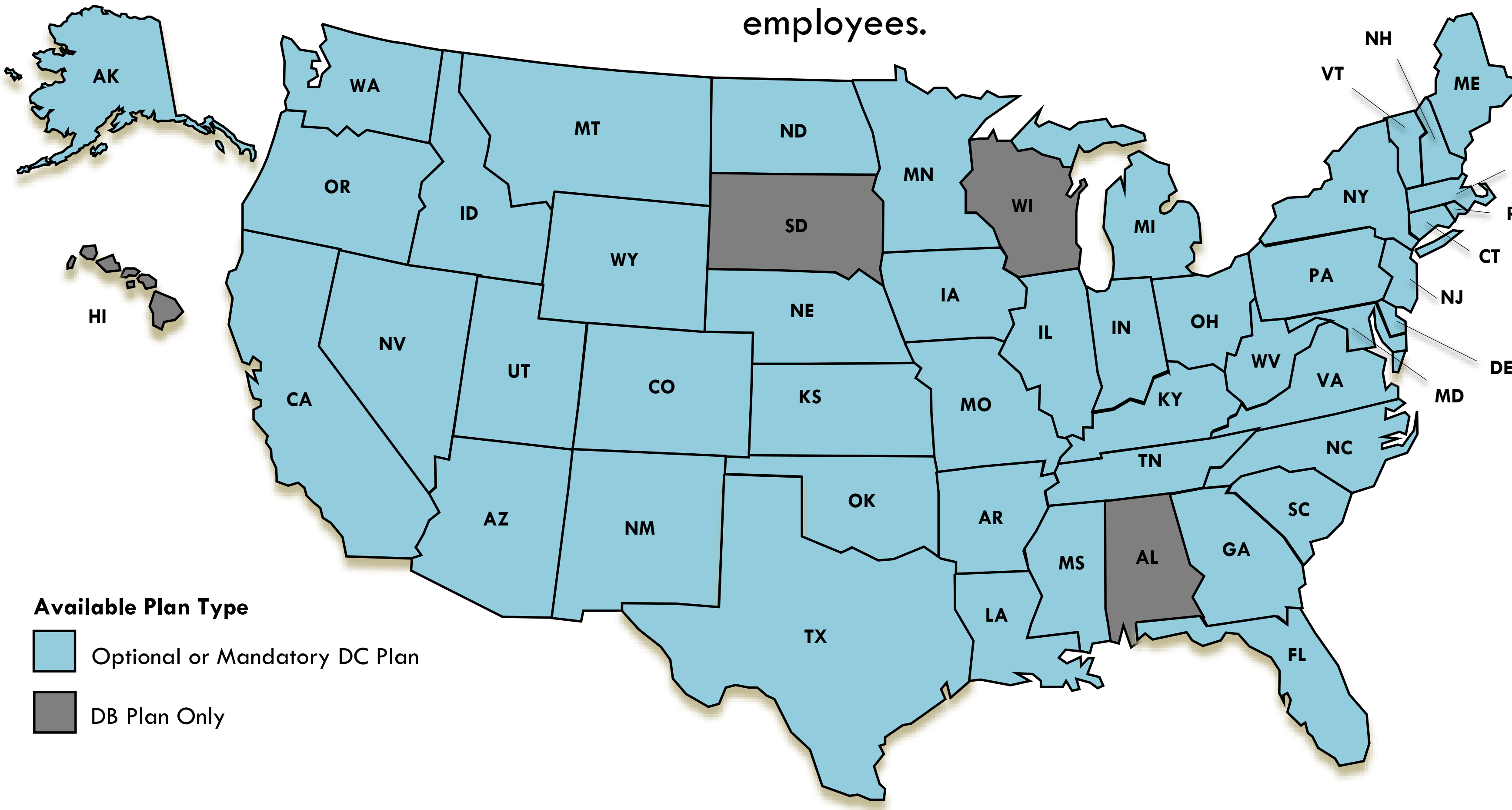
Benefits – Virginia Optional Defined Contribution Retirement Plan for Higher Education

Summary

- Commission members have expressed interested in the DC plan available to higher education employees in the state
- 45 states have similar plans. 11 states also offer DC plans to state workers and teachers.
- States take a variety of approaches in structuring employee and employer contribution rates for these plans
- Participation rates vary by state (analysis forthcoming)

University Plans Across the States

45 States have an optional or mandatory plan for at least some university employees.

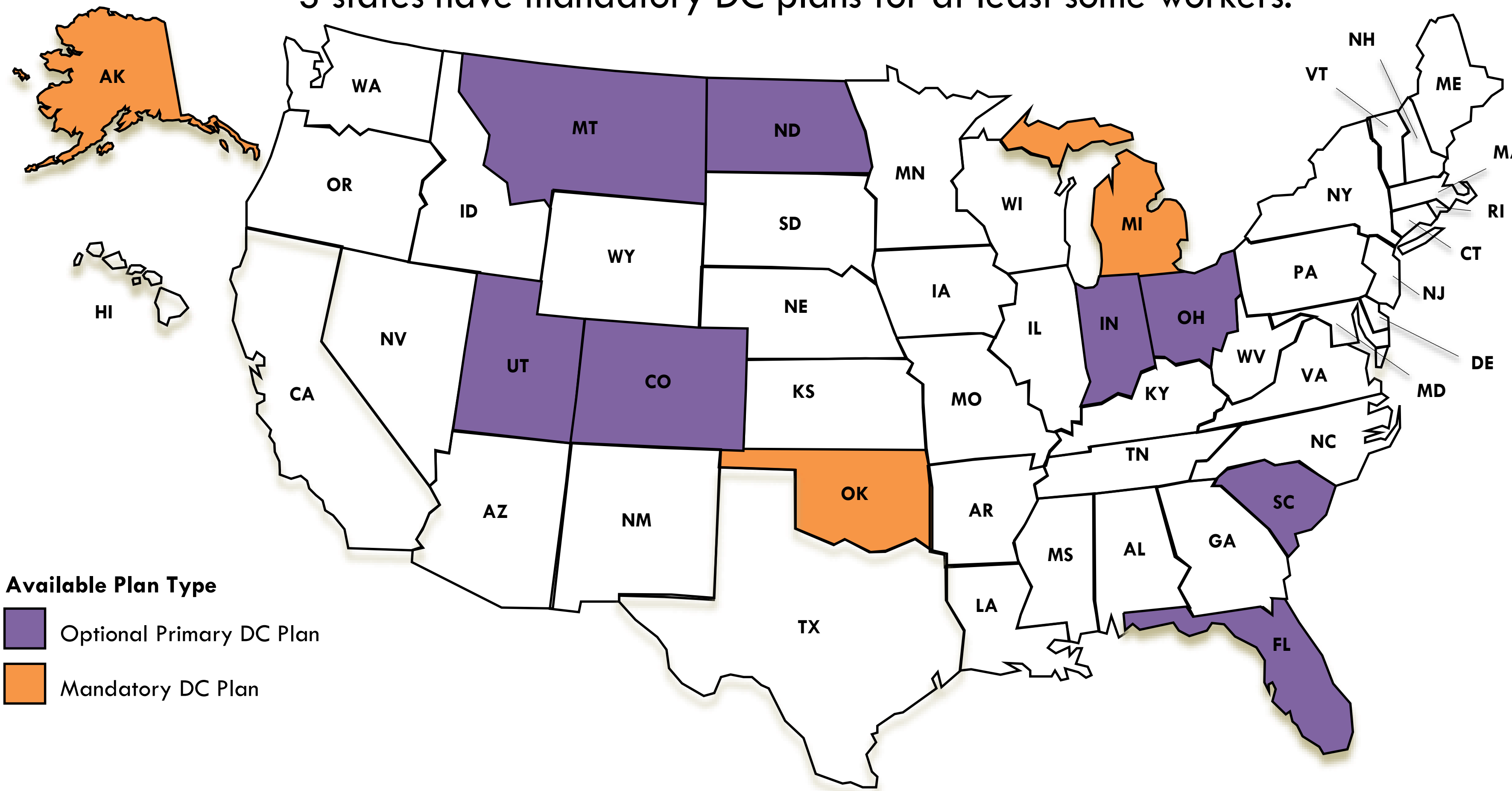


THE PEW CHARITABLE TRUSTS

pewtrusts.org

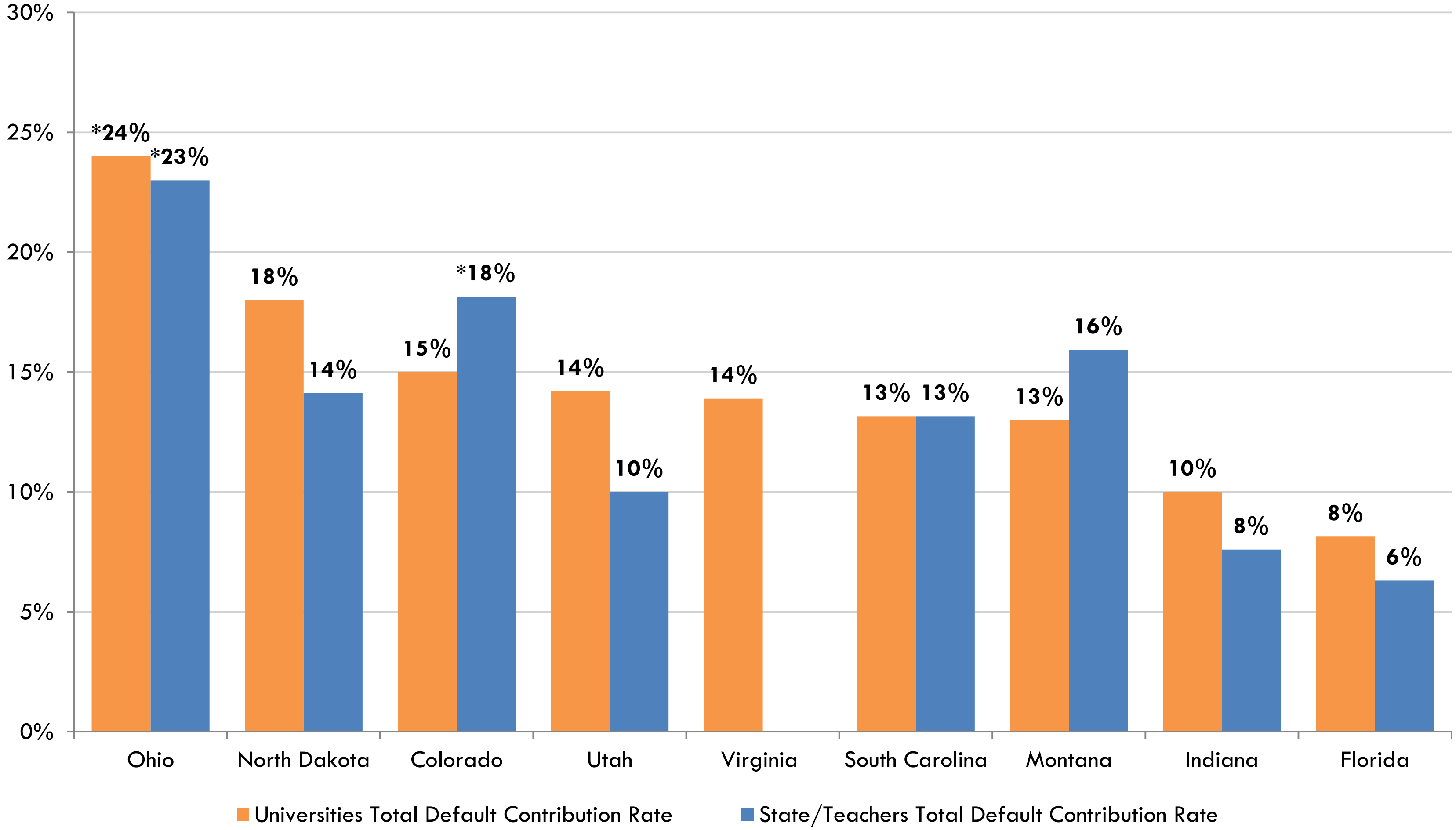
8 States with University DC Plans Provide Employees with Similar Plans as a Primary Plan Option

3 states have mandatory DC plans for at least some workers.



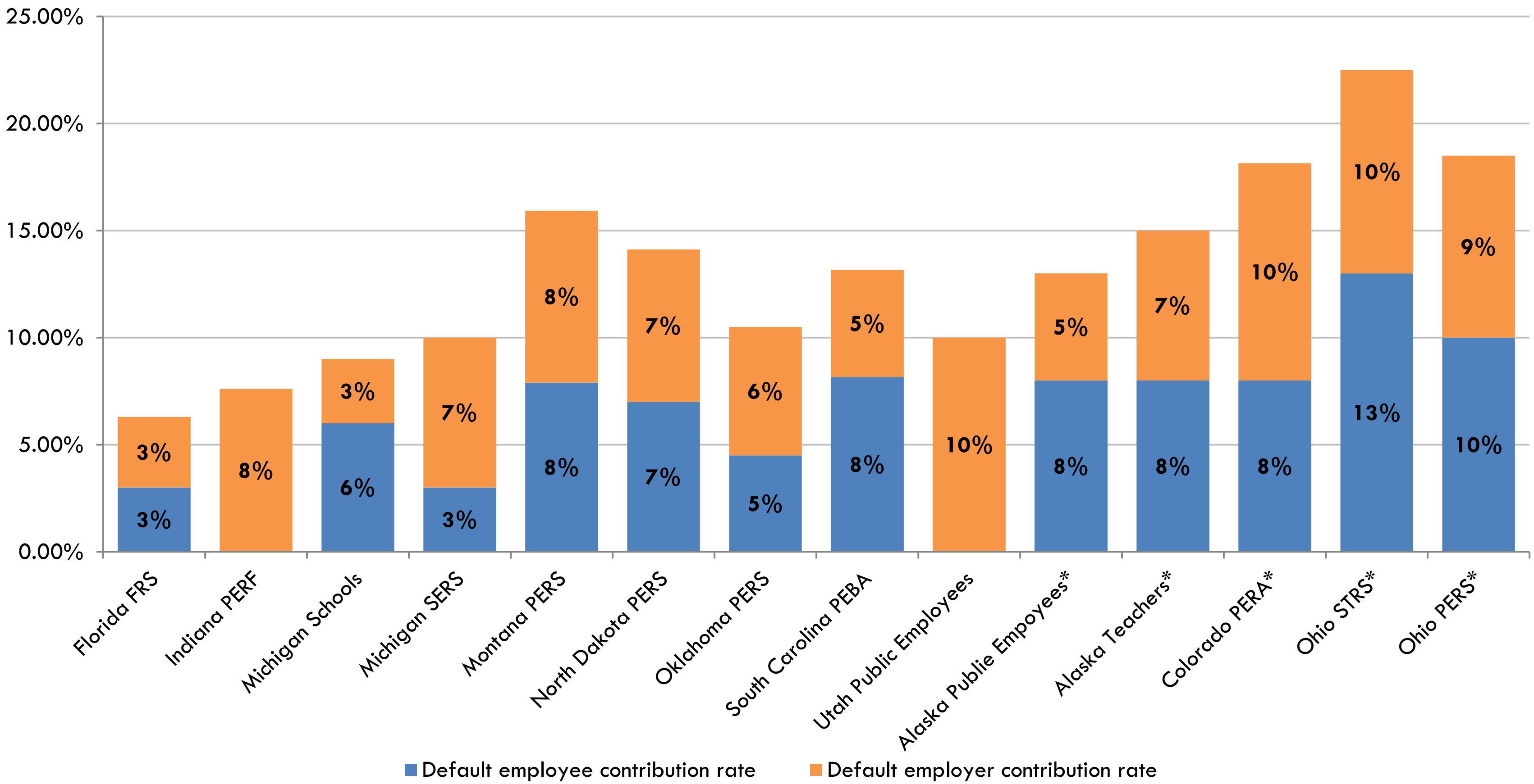
Default Contribution Rates for Primary DC Plans

(total employee and employer contributions)



* Plan does not participate in Social Security.
Note: The following state/teacher plans are shown in this graph: Colorado PERA, Florida FRS, Indiana PERF, Montana PERS, North Dakota PERS, Ohio STRS, South Carolina PEBA, Utah Public Employees. Virginia's ORPHE total contribution rate is typically 13.5% although some employers contribute an additional 0.4% to employee accounts.

Default Employee and Employer Contributions to Primary DC Plans for State Employees and Teachers



* Plan does not participate in Social Security.

Note: Under Oklahoma PERS, if the employee contributes an additional 2.5% (7% total), they will receive an additional 1% employer contribution (7% total), resulting in a total contribution rate of 14%. Under Indiana PERF, the employer pays the employee's 3% contribution rate. The employer contribution rate will fall from 4.6% to 3.3% in FY 2017.

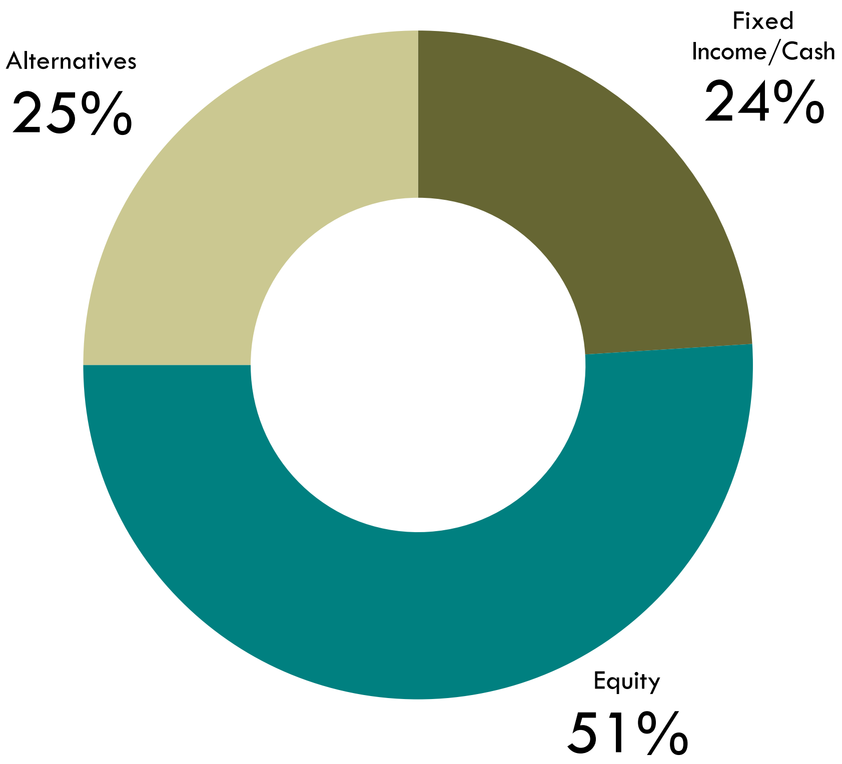
Investments

VRS Investments

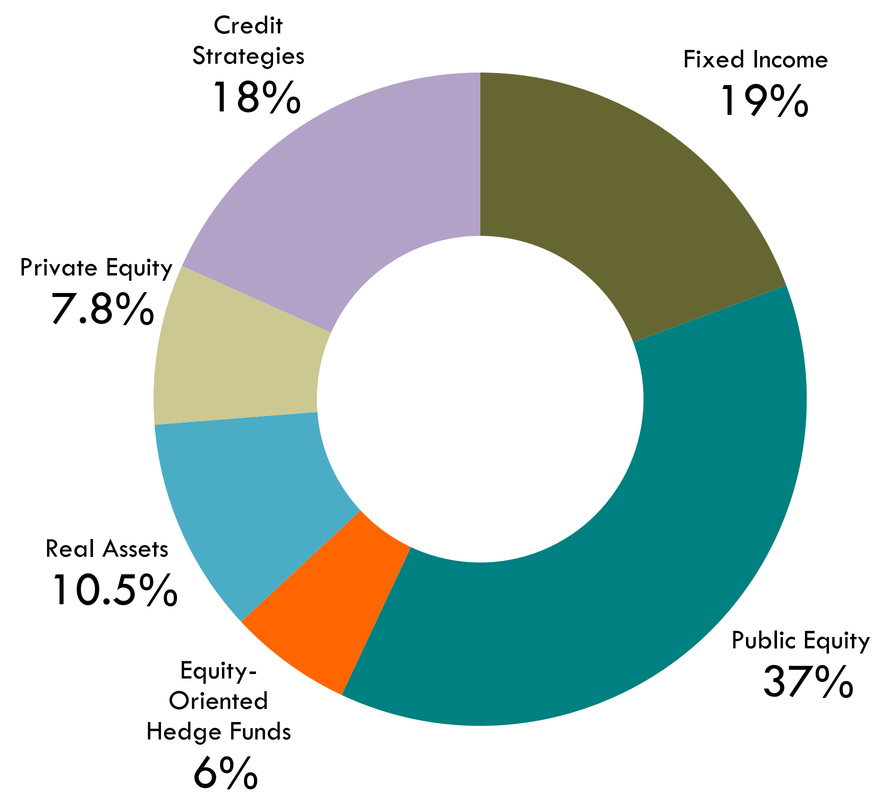
- Over 70% of pension fund investments are in stocks and alternative investments, generally consistent with US average of 75%
- Allocation to alternatives is higher than average
- Target rate of return of 7% is significantly lower than the majority of public plans
- Investment performance exceeds VRS' custom benchmark and is above the median for public plans, although slightly lower than a blended index of 65% equity/35% fixed income
- All VRS board composition are appointed, unusually high level of investment expertise among board members
- VRS reporting and disclosure meets all current standards (GASB, GFOA, CFA) and the system is proactively considering additional measures on reporting and transparency

Investments – Asset Allocations (U.S. Avg. & VRS)

FY14 - US Average Asset Allocation



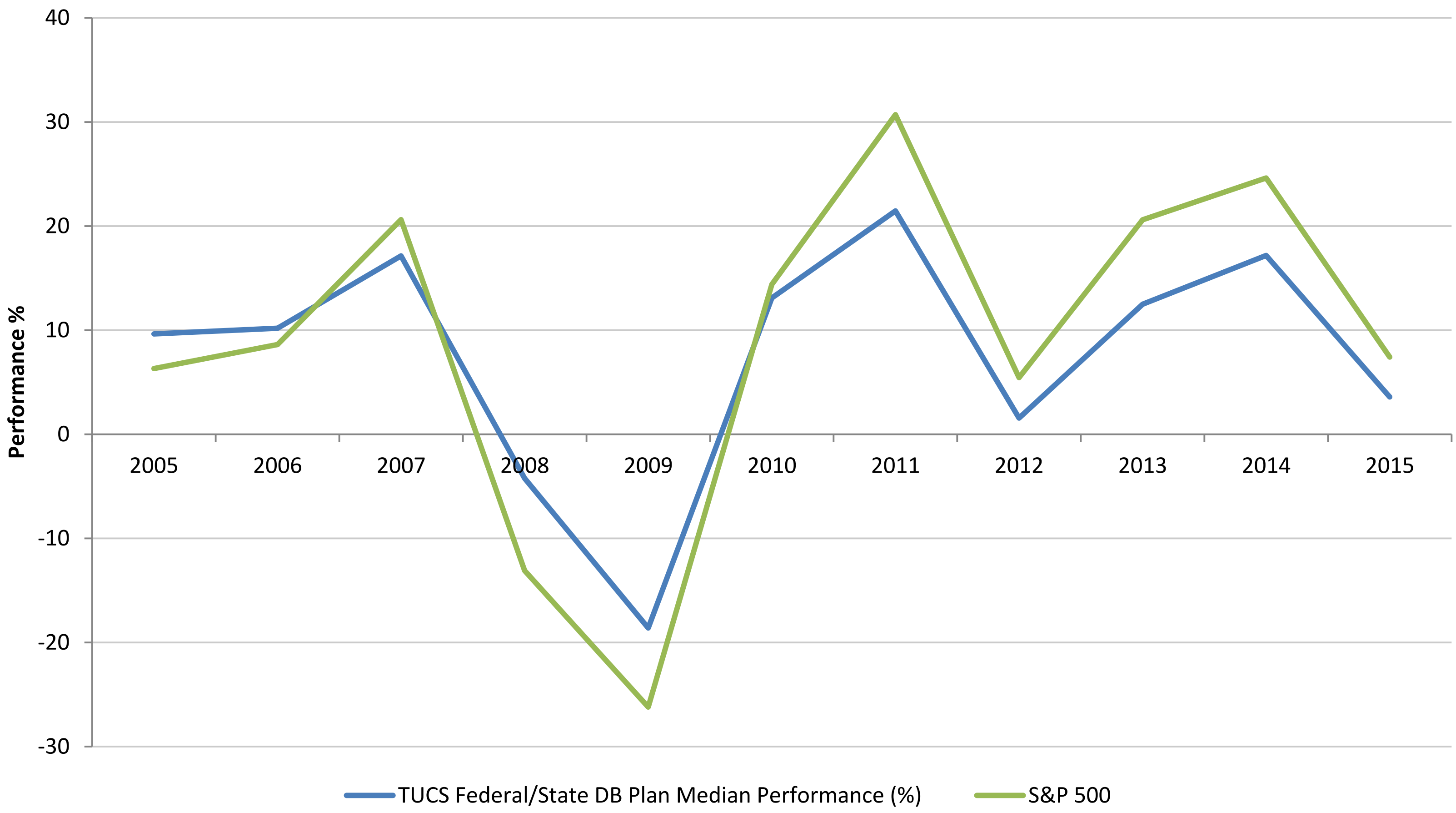
FY14 VRS Asset Allocation



Note: VRS classifies a total of 32% of assets in Alternatives.
Source: Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.

Volatility in Returns – S&P 500 and Pension Plan Returns

FY 2005-2015



Source: Wilshire®, Trust Universe Comparison Service®

VRS Investment Performance – As of March 16, 2016

VRS returns exceed plan benchmarks and the public fund median

	1-yr Return	3-yr Return	5-yr Return	10-yr Return	Reporting Period (as of)
Virginia Retirement System (Net of Fees)	0.49%	6.69%	6.83%	5.36%	3/31/2016
TUCS Data Below Reported ***Gross of Fees***					
TUCS - 25th percentile	0.13%	6.66%	7.02%	5.92%	3/31/2016
TUCS - median	-1.17%	5.51%	6.14%	5.37%	3/31/2016
TUCS - 75th percentile	-2.65%	4.10%	4.94%	4.78%	3/31/2016

Notes: Peer group benchmarks are not calculated using risk-adjusted returns.
Sources: Wilshire®, Trust Universe Comparison Service® report provided by the Virginia Retirement System.

Foundations of Investment Transparency

Investment Transparency Fundamentals	Current Policy	Comments/Recommendations
Clear and Detailed Online Statement of Investment Policy	Investment policy available upon request but not currently posted online.	VRS recently decided to place their investment policy online.
Investment Returns Reported Gross and Net of Fees	VRS reports returns net of fees.	Including both gross and net of fees provides stakeholders with both bottom lines results and cost of investment strategies (e.g., South Dakota discloses 20-year performance net and gross of fees).
Include 20-Year Return Data	VRS reports 1-, 3-, 5-, and 10-year data.	VRS reports 20- and 25-year data annually to JLARC, also included in June 2016 reporting
Report Returns by Asset Class	VRS currently reports returns by all asset classes.	✓
Comprehensive Disclosure Including Performance Fees	VRS does not report comprehensive performance fees.	VRS is currently studying options to report performance fees to the board and could consider including the results in standard reporting. The state discloses fees by asset class but not by investment manager.

Source: The Pew Charitable Trusts, "Making State Pension Investments More Transparent" (2016)

Governance

1994 JLARC Report

- In 1994 the Joint Legislative Audit and Review Commission released a report finding the following regarding VRS:
  - VRS was financially sound and its assets were well managed
  - VRS Board was not independent in its decision-making and trustee qualifications did not reflect a need for investment experience/expertise
    - ALL board appointments were made by the Governor at the time
- The Director's commentary preceding the report recommended the following actions be taken:
  - VRS should be established as an agency independent of the executive branch
  - Trustee appointments should be shared between the Governor and the General Assembly
  - VRS trust funds should be established as independent trusts via the VA Constitution
  - Advisory committee structure should be established in law
  - The General Assembly should establish a permanent joint legislative committee for oversight of the retirement system
- The report detailed **29** separate recommendations that generally address the concerns listed above.

Note: VRS Board composition was modified in the mid 1990's following a comprehensive review by the Joint Legislative Audit and Review Commission.
Source: Comprehensive analysis by the Pew Charitable Trusts of state laws governing VRS.

VRS - Board Composition

VRS is governed by a nine member Board of Trustees appointed in nearly equal measure by the Governor and the Joint Rules Committee of the General Assembly. The Board then appoints a Director, Chief Investment Officer, an Investment Advisory Committee, and an Internal Auditor. No elected official may serve on the Board.

Method of Selection	Elected	Appointed	Ex-Officio
Governor appoints two who must have at least five years of experience in the direct management, analysis, supervision or investment of assets		2	
Governor appoints one who must have five years of direct experience in management and administration of employee benefit plans		1	
Governor appoints one who must be a local government employee.		1	
Governor appoints one who must be a faculty member or employee of a state-supported institution of higher education.		1	
Joint Rules Committee appoints two who must have a minimum of five years of experience in the direct management, analysis, supervision, or investment of assets.		2	
Joint Rules Committee appoints one who must be a state employee.		1	
Joint Rules Committee appoints one who must be a teacher.		1	

Note: VRS Board composition was modified in the mid 1990's following a comprehensive review by the Joint Legislative Audit and Review Commission.
Source: Comprehensive analysis by the Pew Charitable Trusts of state laws governing VRS.

Key Fiduciary Provisions

VA law currently includes all provisions most commonly adopted in the states. Investment policy and board practices address other standards.

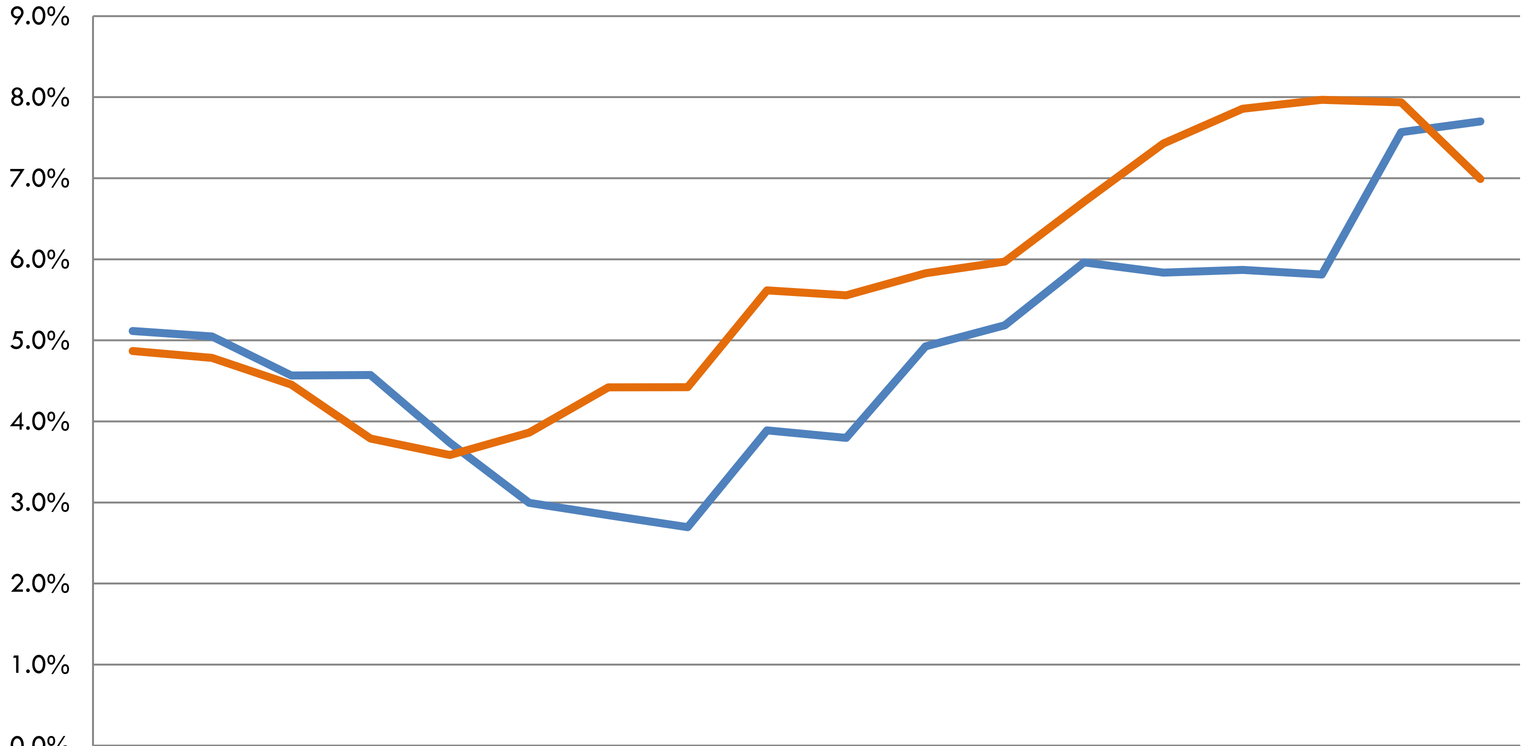
Fiduciary Element	Plans Adopting	VRS
Exclusive purpose of providing benefits	100%	**Yes**
Prudence requirement	97%	**Yes**
Diversification of investments	74%	**Yes**
Solely in the interest of participants	69%	**Yes**
Reasonable administrative expenses	62%	**Yes**
Economically targeted investments first prudent (Note – ETIs not part of Investment Policy)	41%	No (see note)
Impartially for different participants	31%	No
Fiduciary Training Required (Note – Board actively provides training)	26%	No (see note)
Good faith interpretation of law	19%	No

Note: Data should be considered preliminary. The Pew Charitable Trusts continues to analyze statutory language along with evidence of how that language is interpreted by the legal authorities in each state.
Source: Comprehensive analysis by the Pew Charitable Trusts of state laws governing the largest public retirement plans in each state.

Questions?

Appendix

Virginia Actuarial Required Contribution (ARC) as a Share of State Own-Source Revenue



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
VA	5.1%	5.0%	4.6%	4.6%	3.7%	3.0%	2.8%	2.7%	3.9%	3.8%	4.9%	5.2%	6.0%	5.8%	5.9%	5.8%	7.6%	7.7%
US Total	4.9%	4.8%	4.5%	3.8%	3.6%	3.9%	4.4%	4.4%	5.6%	5.6%	5.8%	6.0%	6.7%	7.4%	7.9%	8.0%	7.9%	7.0%

Sources: U.S. Census Bureau, 2013 Census of Governments: Finance - Surveys of State and Local Government Finances; Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.

Pension Funding - Constitutional Amendments

- States have used Constitutional Amendments to Strengthen and Lock-in Good Contribution Policy. For example:
  - **Maine –** In 1995, approved a constitutional amendment requiring existing unfunded liabilities to be paid within 31 years and requiring future benefit increases to be funded upon provision.
    - Maine went from **63%** funded in 1997 when the amendment went into effect to **86%** funded as of 2014.
- **However,** other states illustrate that results can be mixed
  - In Montana, a constitutional amendment requires pensions be funded on an "actuarially sound" basis, yet fell short of meeting minimum ARC payments in 7 of the last 14 years. Further, there is no clear enforcement mechanism if the state falls short.
- In VA, the Constitution can be amended via one of the following two processes:
  - **(1)** As described in § 1 of Article XII of the VA Constitution, a resolution may be introduced in either chamber, after which it must be approved by a simple majority, referred to the next session occurring after the next general election of the House of Delegates, then goes through the normal passage process. Following its passage in both chambers, the amendment can then be submitted to the voting public.
  - **(2)** During a constitutional convention, as described in § 2 of Article XII of the VA Constitution. The legislature may call a convention via a two-thirds vote of all members elected to the legislature.

Pension Funding – Other Approaches

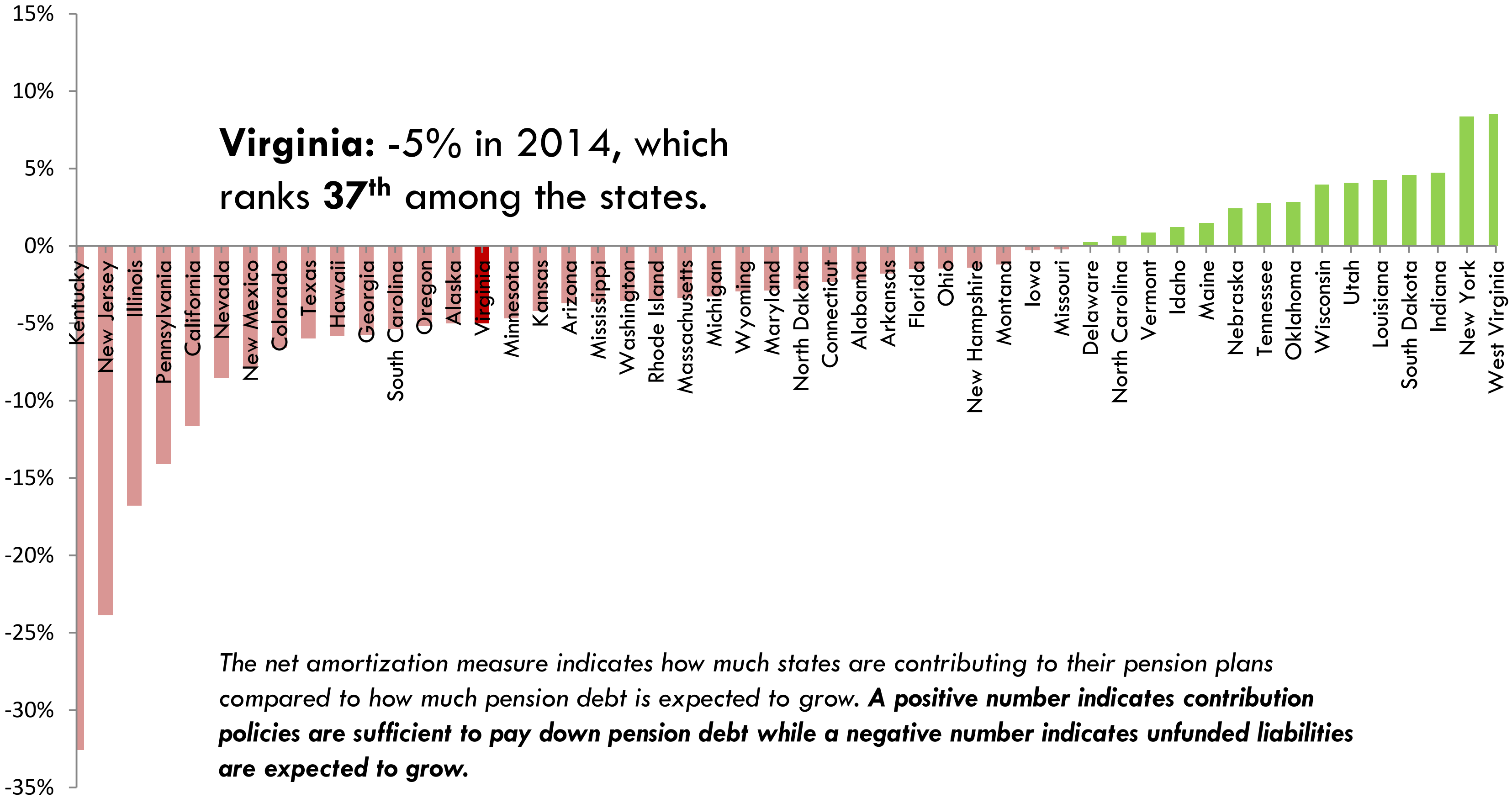
- **One-time revenue sources**
  - In 2007, **WV** dedicated an $807 million tobacco settlement to paying down unfunded liabilities in their teacher's system. The state issued a tobacco settlement bond in the aforementioned amount with the bond debt being paid down by annual payments from the state's tobacco companies.

- **Dedicated Revenue Sources** – An example of dedicated revenue sources to pay for pensions are fees and taxes applied to insurance that are used to help pay for public safety pensions. However, unless dedicated revenue sources represent a significant share of the total pension contribution, they will not solve the challenge for state and local policymakers in finding a sustainable contribution policy.
  - FL - There is a 1.85% excise tax on property insurance and a .85% excise tax on casualty insurance—proceeds to these taxes are to be used for paying for police and fire pensions, subject to minimum requirements included in various state laws.
  - PA - There is a 2% tax on casualty and fire insurance sold in PA by out of state firms. These funds go towards local governments to spend on police and fire services, with a particular focus on police and fire pensions and volunteer fire relief associations.

- **Asset Sales**
  - In March 2016, **Scranton, PA** approved the sale of the sewer system to a private company and is expected to inject a large portion of the proceeds into the pension fund.
  - In 2014, **Middletown, PA** approved a lease agreement for its water and sewer systems with a private company. A large portion of the initial $43 million payment was used to pay off its unfunded liability
  - In 2013, **Allentown, PA** approved a lease agreement with a private company for its water and sewer system and used $160 million of the $211 million initial payment to pay down their unfunded pension liability
  - In 2012, **Kansas** passed a pension reform bill that included a provision requiring 80% of the proceeds received from sales of surplus state property to pay down pension liabilities until the system achieves an 80% funded ratio

Net Amortization as a Share of Covered Payroll – FY 2014

15 states achieved positive amortization in FY 2014.

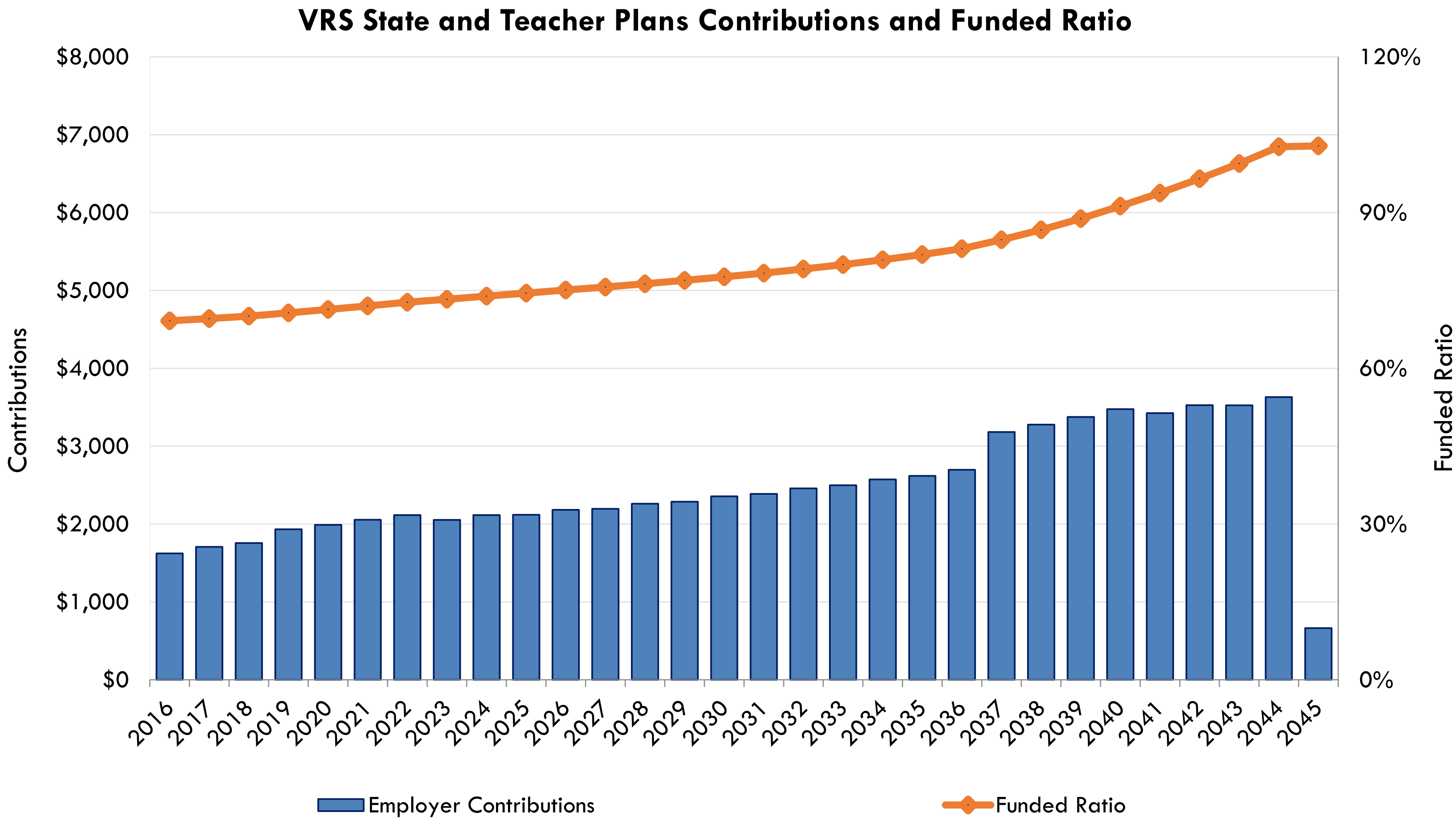


Note: VRS modified its amortization schedule in 2013 to use closed periods.

Source: Data for this graph was collected from Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations, or other public documents, or as provided by plan officials. This data does not include plans where no covered payroll data was reported except for plans that are closed to new members.

VRS State & Teachers - Funding Projections Through 2045

(Under Current Investment Return Assumption of 7%)

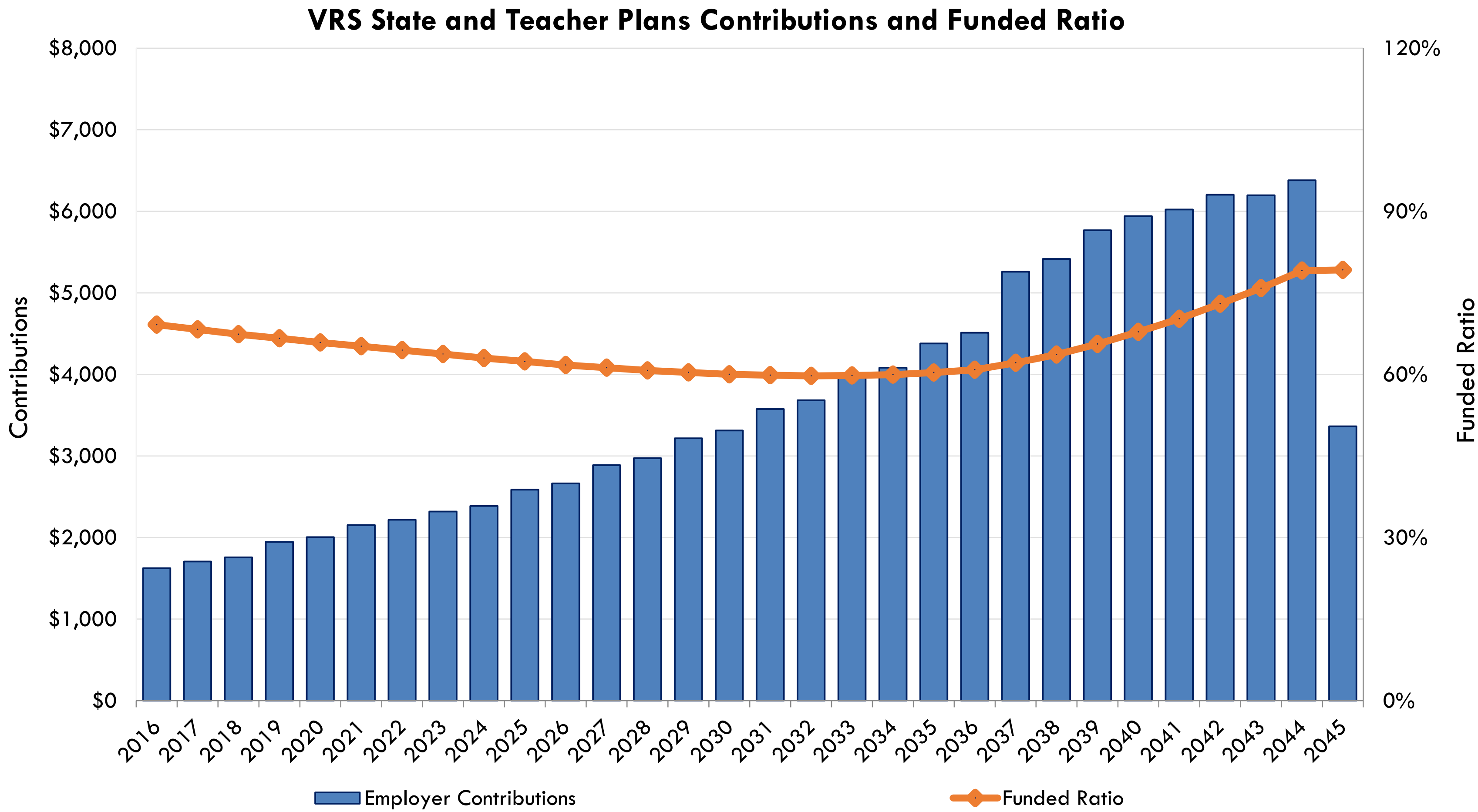


Notes: $ figures in millions.
Source: The Terry Group

THE PEW CHARITABLE TRUSTS

Funding Projections Through 2045

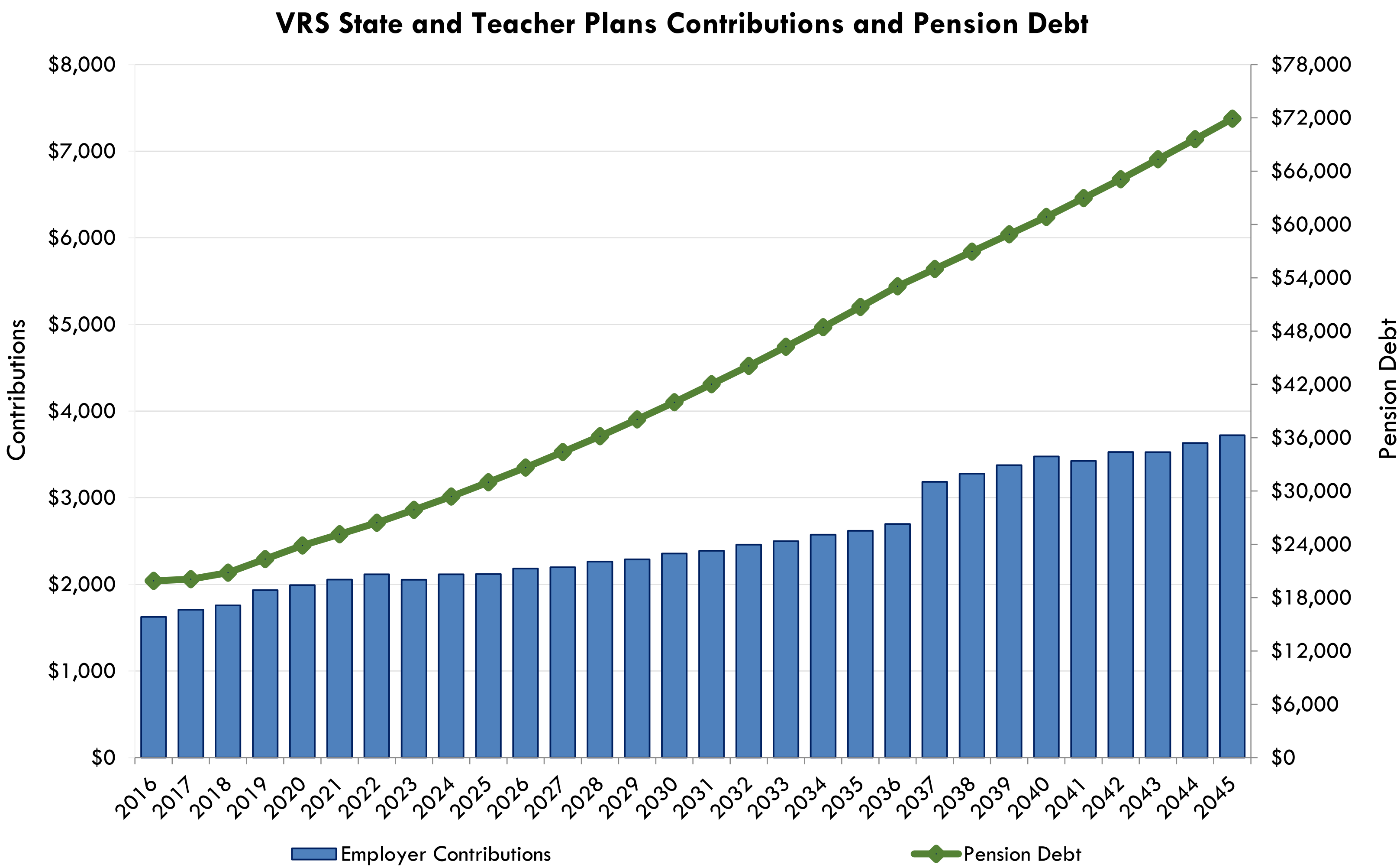
(Under Lower Investment Return Scenario of 5%)



Notes: $ figures in millions. Investment Returns: 5%
Source: The Terry Group

THE PEW CHARITABLE TRUSTS

Stress Testing – 5% Return, Contributions Held Constant



Notes: $ figures in millions. Contributions held constant. Investment Returns: 5% and Discount Rate: 7%
Source: The Terry Group

Summary of Virginia Benefits

Virginia Retirement System	Hired on or after January 1, 2014 (Hybrid Plan Passed via HB 1130/SB 498 in 2012)	Hired after June 30, 2010	Hired before July 1, 2010 and vested on January 1, 2013
Multiplier	1% (DB)	1.65%	1.7%
Normal Retirement Age	Social Security age or rule of 90	Social Security Age or rule of 90	65 with 5 YOS or 50 with 30 YOS
Employer Contribution	Actuarially Determined Contribution (DB)/1%* (DC) plus match	Rate enacted by General Assembly	Rate enacted by General Assembly
Employee Contribution* **	4% (DB); 1%**(DC)	5%	5%
Vesting	5 years (DB); 4 years gradual (DC)	5 years	5 years
COLAs	Matches the first 2% increase in the CPI-U and half of any additional increase (up to 2%), for a maximum COLA of 3%	First 2% increase in the CPI-U and half of any additional increase (up to 2%), for a maximum COLA of 3%.	First 3% increase in CPI-U plus half of any additional increase (up to 4%) for a max. COLA of 5%
Covered by Social Security	Yes	Yes	Yes

*1% is mandatory; employer match of 1% on employee's first contribution, 0.25% match for each additional 0.50%. Employer will contribute 2.5% in matching contributions if employee contributes a total of 5%.

**1% is mandatory; may contribute an additional 4% in 0.5% increments. If employee wants to receive the full employer match to the DC plan, they need to contribute 5% total.

*** Local employees required to pay 5% contribution by way of salary reduction by SB 497 (2012).

Note: 2015 legislation (HB 2178/SB 1162) allowed school divisions the ability to elect to use 403(b) plans for the voluntary portion of the hybrid plan, and required the Virginia Retirement System to develop a cash balance plan proposal (HB 1969); Hybrid plan does not include hazardous duty employees.

VRS - Recommended Changes to the Hybrid

Recommendation	Commentary
Change Employee Contribution to Defined Benefit Plan from 4% to 3% and to Defined Contribution Plan from 1% to 2%	VRS notes that this would also increase the employer DC match by 1% and that lowering the DB contribution would more closely match the percentage of normal cost contributed by members of the legacy plans.
Change Auto-Escalation from Every 3 Years to Every 2 Years	The current rate of auto escalation gets a worker to the maximum 4% contribution rate in 24 years. Changing the frequency of escalation to two years would get a worker to the maximum in 16 years.
Change Initial Contribution to 1% Mandatory (Current) and 0.5% Voluntary	VRS notes that this change would accelerate the above change in getting to the maximum contribution by an additional two years. Further, VRS estimates that, all changes considered, replacement income for a lifetime worker would be approximately equal to that of Plan 2.
HB 1072 (2016): This legislation proposed to make all the above changes, but would also reduce the employer's maximum matching contribution to the defined contribution component from 2.5% to 1.5% of creditable compensation. **Status:** Continued to 2017 via voice vote.	

Source: 2015 VRS Report, "Cash Balance Retirement Plans"

HB 1072 Fiscal Impact Analysis – Exhibit 2

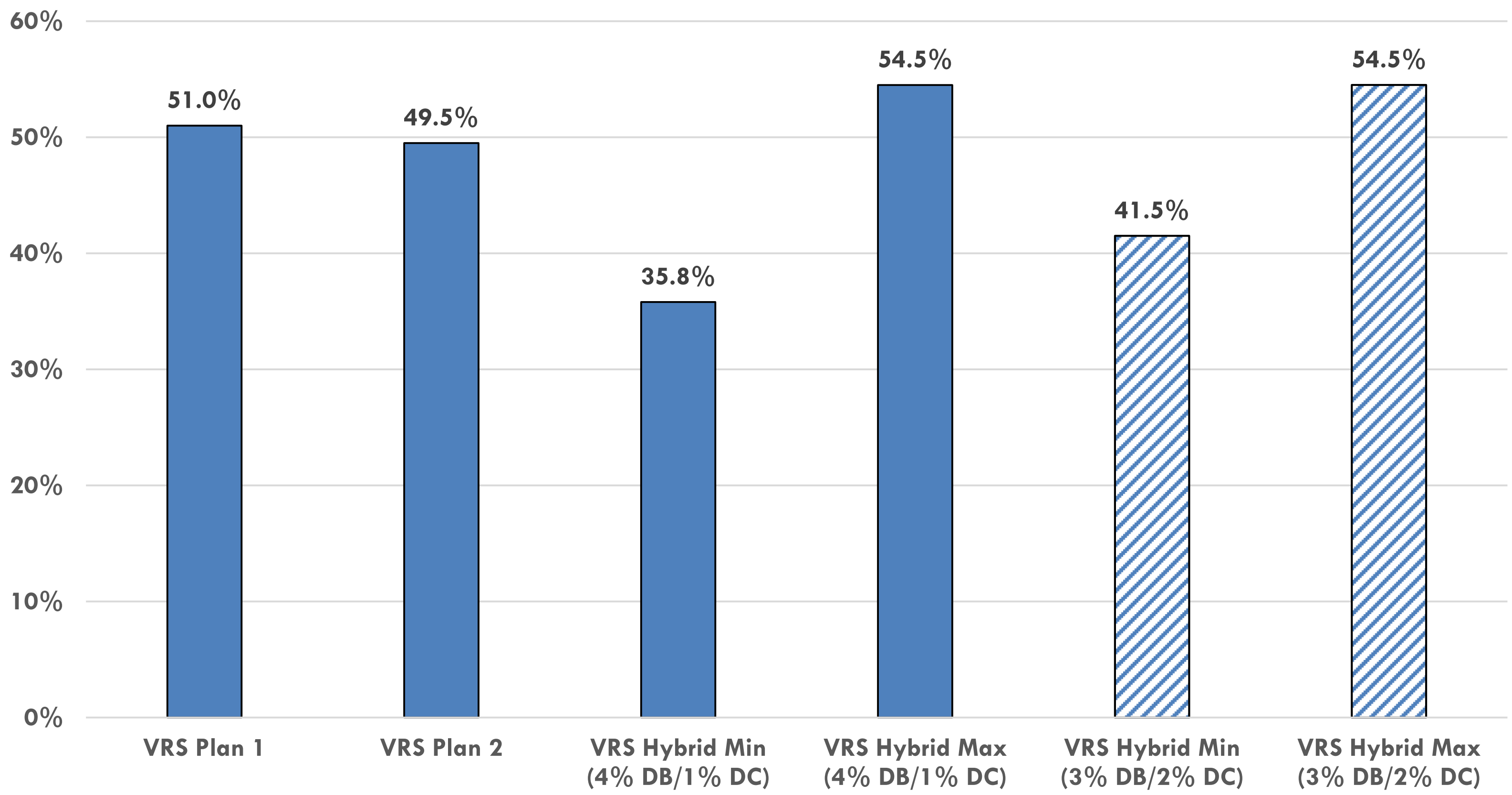
Cost Impact of Hybrid Changes Assuming 50% Do Not Opt-Out

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
State - GF	$3,207,000	$4,473,000	$11,140,000	$10,972,000	$13,504,000	$15,191,000
SPORS - GF	-	-	-	-	-	-
VaLORS - GF	-	-	-	-	-	-
JRS - GF	$120,000	$167,000	$417,000	$410,000	$505,000	$568,000
Teacher - GF	$5,805,000	$8,097,000	$20,165,000	$19,860,000	$24,443,000	$27,498,000
TOTAL - GF	$9,132,000	$12,737,000	$31,722,000	$31,242,000	$38,452,000	$43,257,000
State - Non GF	$4,298,000	$5,995,000	$14,931,000	$14,705,000	$18,098,000	$20,360,000
SPORS - Non GF	-	-	-	-	-	-
VaLORS - Non GF	-	-	-	-	-	-
TOTAL - Non GF	$4,298,000	$5,995,000	$14,931,000	$14,705,000	$18,098,000	$20,360,000
Teacher - Local Funds	$8,708,000	$12,145,000	$30,248,000	$29,790,000	$36,664,000	$41,247,000
Poli Subs - Schools	$982,000	$1,369,000	$3,410,000	$3,359,000	$4,134,000	$4,650,000
Poli Subs - Non-Schools	$7,817,000	$10,903,000	$27,154,000	$26,743,000	$26,743,000	$37,028,000
TOTAL - Local Funds	$17,507,000	$24,417,000	$60,812,000	$59,892,000	$67,541,000	$82,925,000
Grand Totals	$30,937,000	$43,149,000	$107,465,000	$105,839,000	$124,091,000	$146,542,000

Source: HB 1072 Fiscal Impact Note

HB 1072 Fiscal Impact Analysis – Exhibit 5

Replacement Income – 30 Year Career



Note: DC balances assume 6% pre-retirement investment returns. For plan comparison purposes, DC balances are converted to an annuity at retirement using 4% investment return, RP 2000 mortality table, and assume a 2.25% annual COLA.

HB 1072 Fiscal Impact Analysis – Exhibit 7 +12

Current Auto-Escalation Schedule

Date	Employee **Mandatory** Contribution	Employer **Mandatory** Contribution	Employee **Voluntary** Contribution	Employer **Voluntary** Match	Total Contribution
1/1/2017	1.00%	1.00%	0%	0%	2.00%
1/1/2020			0.50%	0.50%	3.00%
1/1/2023			1.00%	1.00%	4.00%
1/1/2026			1.50%	1.25%	4.75%
1/1/2029			2.00%	1.50%	5.50%
1/1/2032			2.50%	1.75%	6.25%
1/1/2035			3.00%	2.00%	7.00%
1/1/2038			3.50%	2.25%	7.75%
1/1/2041			4.00%	2.50%	8.50%

Source: HB 1072 Fiscal Impact Note

HB 1072 Fiscal Impact Analysis – Exhibit 8 +12

New Proposal Auto-Escalation Schedule

Date	Auto-Escalation Amount	Voluntary Rate	Employee Contributions	Employer Contributions	Total Contribution
1/1/2017	0.00%	0.50%	2.50%*	2.25%*	4.75%
1/1/2019	0.50%	1.00%	3.00%	2.50%	5.50%
1/1/2021	0.50%	1.50%	3.50%	2.75%	6.25%
1/1/2023	0.50%	2.00%	4.00%	3.00%	7.00%
1/1/2025	0.50%	2.50%	4.50%	3.25%	7.75%
1/1/2027	0.50%	3.00%	5.00%	3.50%	**8.50%**

***Includes mandatory 2% contribution**

Source: HB 1072 Fiscal Impact Note

HB 1072 Fiscal Impact Analysis – Exhibit 8 +12

Employee Maxes Out Right Away

Date	Auto-Escalation Amount	Voluntary Rate	Employee Contributions	Employer Contributions	Total Contribution
1/1/2017	0.00%	3.00%	5.00%*	3.50%*	8.50%

*Includes mandatory 2% contribution

Source: HB 1072 Fiscal Impact Note

Further Hybrid Options - Active Choice

- **Active Choice** - Requires new employees to affirmatively elect to participate in the plan or affirmatively select non-participation. It differs from both active enrollment – where employees are not enrolled in their plan unless they opt-in – and auto-enrollment – where employees participate by default unless they opt-out.

PARTICIPANT INFORMATION PLEASE SELECT ONE OPTION

☐ 1) **YES**, I would like to contribute 3% of my salary on a pre-tax basis to the Massachusetts Deferred Compensation SMART Plan to supplement my retirement benefit.*

☐ 2) **YES**, I would like to contribute ________% of my salary on a pre-tax basis to the Massachusetts Deferred Compensation SMART Plan to supplement my retirement benefit.*

☐ 3) **NO**, I do not wish to supplement my retirement benefit by contributing any portion of my salary to the Massachusetts Deferred Compensation SMART Plan at this time. I understand there is a ten year creditable service vesting period for members of the separate state retirement system and I am not contributing to Social Security as a state employee.

- Although Active Choice systems are less effective than pure opt-out/default systems, they still result in significant improvements in voluntary retirement participation.

- Research on private-sector 401(k) enrollments indicate that active choice systems result in a **28%** improvement over opt-in systems (opt-out systems show **more than 50%** improvement).

Sources: Carroll et al., **"Optimal Defaults and Active Decisions."** Quarterly Journal of Economics 124, 4 (Nov. 2009); Mass. SMART Plan New Member Enrollment Form

HB 1072 Fiscal Impact Analysis – Pew Analysis

Design	Additional DB: Employer Cost, as a percentage of affected payroll [a]	Additional DC Employer Cost	Total	Change from 4%/1%
Current plan (4% DB, 1% DC)	1%	1.2%[b]	2.2%	0%
FIS proposed (3% / 2%)	2%	2.0%[c]	4.0%	1.8%
Alternate proposal (1% / 4%)	4%	3.0%[d]	7.0%	4.8%
Alternate proposal (ultimate)	4%	3.5%[e]	7.5%	5.3%

Notes:

a. Represents the portion of total normal cost the employer needs to contribute because of the employee contribution that was diverted to the DC plan. May be slightly overstated to the extent that smaller future refunds of contributions would reduce the total normal cost of the plan.

b. Current estimated defined contribution cost for affected employees, as described in the 2015 actuarial valuation report. Includes 1% mandatory employer contribution plus some matching contributions on voluntary employee contributions.

c. Includes 2% mandatory contribution. May be slightly overstated to the extent that some participants may already be contributing more than 2% on a voluntary basis.

d. Includes 3% mandatory contribution (100% of first 2%, 50% of next 2%). Might be slightly overstated to the extent that some participants may already be contributing more than 4% on a voluntary basis. Effectively, this change accelerates most of the auto-escalation to today.

e. Same as d, with another 50% match on the additional 1% voluntary contribution needed to bring the total employee DC contribution to the maximum 5%.

Source: 2015 VRS Report, "Cash Balance Retirement Plans" and HB 1072 Fiscal Impact Note. Analysis by Pew Charitable Trusts and The Terry Group

VRS - Optional Retirement Plans for Higher Education, Political Appointees, and School Superintendents

Virginia Retirement System Optional Retirement Plans	ORP Plan 1 (Hired before Jul. 1, 2010)	ORP Plan 2 (Hired after Jul. 1, 2010
Employer Contribution	10.4% (entire contribution made by employer and set by statute)	8.5%*
Employee Contribution	N/A	5%**
Vesting	Immediate	Immediate
Distribution Options	Systematic, full or partial lump-sum, annuity purchase to produce lifetime benefit, rollover to new plan or into IRA	Systematic, full or partial lump-sum, annuity purchase to produce lifetime benefit, rollover to new plan or into IRA
Covered by Social Security	Yes	Yes

The employer contribution rate has been lowered from previous plan tiers. The employer contribution rate has been lowered from previous plan tiers, which was 10.4% for employees hired between July 1991-2010.
** Some institutions contribute an additional 0.4% of compensation for the employee
Note: The Optional Retirement Plans for Higher Education (ORPHE), Political Appointees (ORPPA), and School Superintendents (ORPSS) are identical with regard to employee and employer contribution rates. As such, the table is intended to represent all three plans.