



THE PEW CHARITABLE TRUSTS

Promises Made, Promises Kept to Vermont State Employees, Teachers and Taxpayers

**Public Pensions: 50-State Overview & Vermont
October 10, 2017**

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Public Sector Retirement Systems Project**

Presentation Overview

- Introduction
 - Background
- Pension Funding and Fiscal Health
 - 50 State Summary
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- Investments
 - Recent Trends and Emerging Issues
 - Vermont Investments
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 - Updates on State Pension Reforms
 - Emerging Trends



The Pew Charitable Trusts

- More than 40 active, evidence-based research projects
- Projects include public safety, immigration, elections, transportation, pensions, and state tax incentives
- All follow a common approach: data-driven, inclusive, and transparent

Pew's Public Sector Retirement Systems Project

- Research since 2007 includes 50-state trends on public pensions and retiree benefits relating to funding, investments, governance, and employee preferences
- Technical assistance for states and cities since 2011. Recent and current engagements include Connecticut, Pennsylvania, South Carolina, Virginia, and Milwaukee County, Wisconsin.



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 distribution options, including lifetime income in retirement.



Pension Funding & Fiscal Health

50 State Summary & Vermont

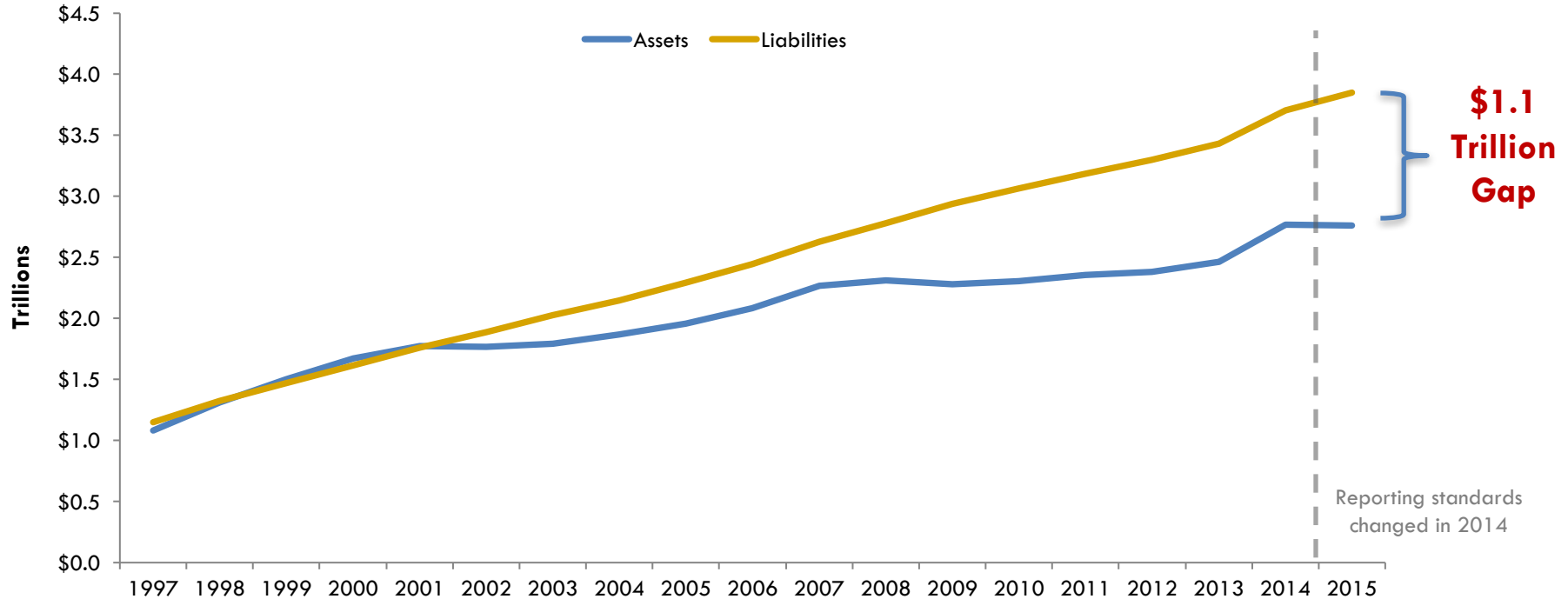
Pension Funding & Fiscal Health – Summary

- States and cities report a gap of over \$1 trillion between pension liabilities and the assets on hand to pay for promised benefits. In addition, states report a gap of \$645 billion between OPEB liabilities and the assets on hand to pay for them.
- As of 2015, Vermont ranks 31st on pension funding and 18th on contribution adequacy, based on standard measures applied across the 50 states.
- The state's operating cash flow to assets ratio, is estimated to be -1.5%, slightly above the US average of -3.2%.
- Vermont also reported a total OPEB liability of \$2.1B in 2015 for its state and teacher plans. The state pays up to 80% of health care premiums in retirement depending upon a retirees years of service.
- See appendix for details on state OPEB liability (retiree health care).

Note: OPEB source, Pew's *State Retiree Health Care Liabilities: An Update*

<http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2017/09/state-retiree-health-care-liabilities-an-update>

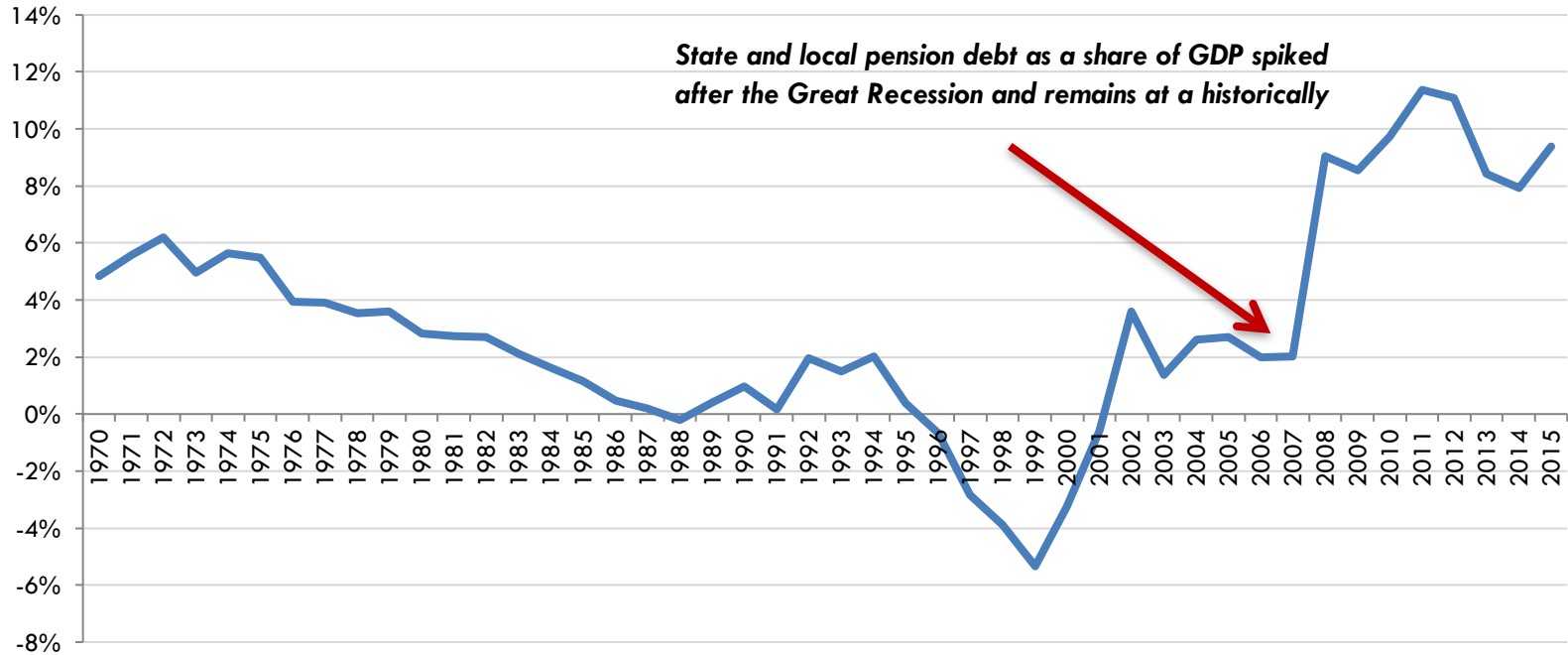
50 State Pension Funding Gap - 2015



Note: GASB reporting standards changed in 2014.

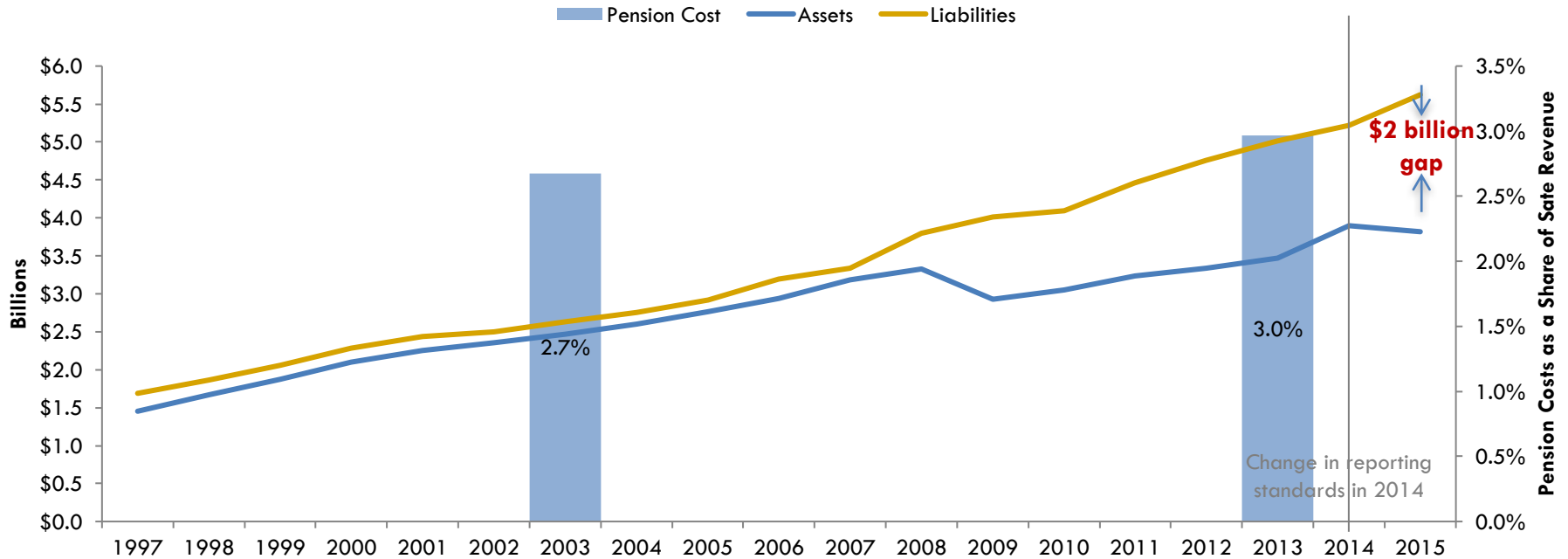
Source: Data for this graph were collected from Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations, or other public documents.

State and Local Pension Debt as a Share of Gross Domestic Product



Source: The Federal Reserve and U.S. Department of Commerce Bureau of Economic Analysis

2015 State Pension Funding Gap (Vermont)

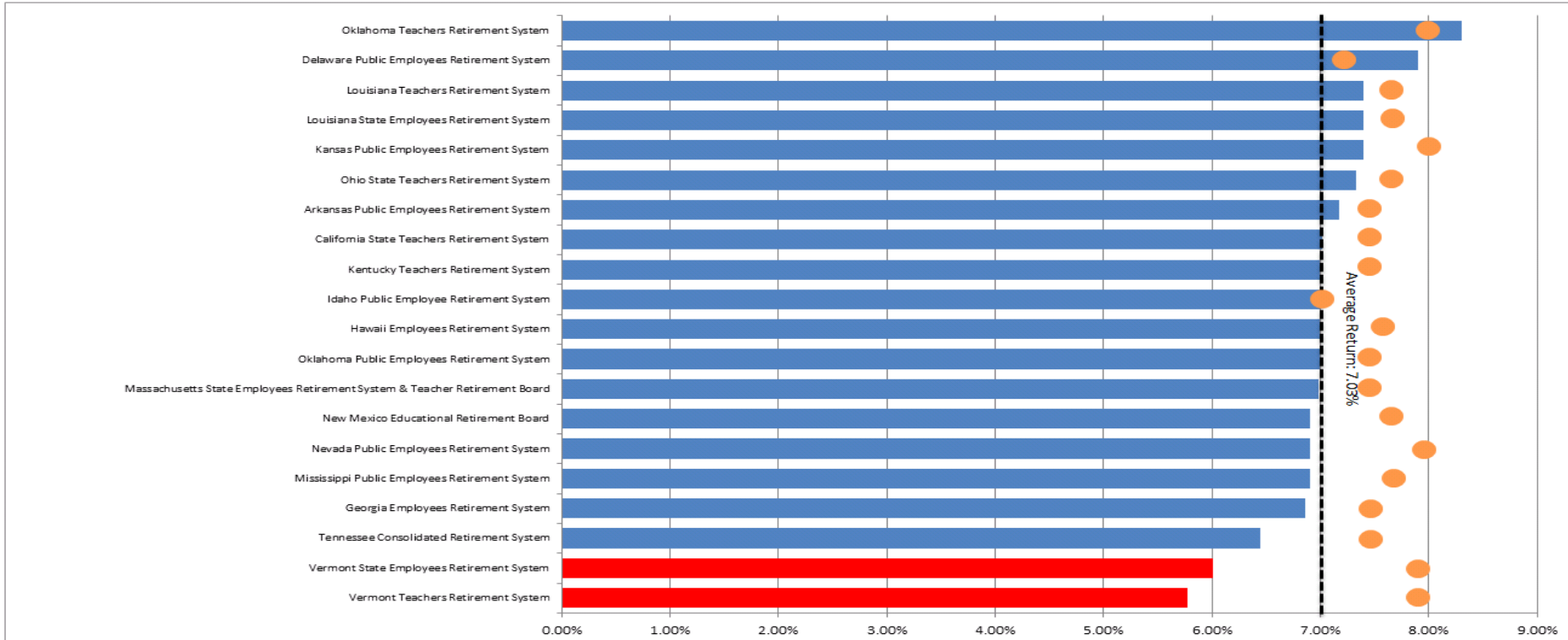


Note: GASB reporting standards changed in 2014.

Source: Data for this graph were collected from Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations, or other public documents.

10-Year Investment Returns

Vermont & Other State Funds That Report Gross of Fees 6/30



Sources: Comprehensive Annual Financial Reports, 2014 & 2015; quarterly investment reports; and plan responses to data inquiries

Funding Policy Definitions

Actuarial Measures

- **Funded Ratio:** The ratio of assets to the accrued pension liability. A measure of fiscal condition at a point in time.
- **Annual Required Contribution (ARC):** Calculation that includes the expected cost of benefits earned for the current year and an amount to reduce some of the unfunded liability. Based on a plan's own assumptions.

Financial Metrics

- **Net Amortization to Payroll:** The sum of the cost of new benefits and interest on the pension debt, minus employee contributions as a share of employee payroll.
- **Operating Cash Flow:** contributions minus benefit payments.

Funding Policy

- **Vermont State Retirement System:** “Title 3 VSA Chapter 16 of Vermont Statutes grant the authority to the retirement board to review annually the amount of state contribution recommended by the actuary of the retirement system as necessary to achieve and preserve the financial integrity of the fund, and submit this recommendation to the Governor and both houses of the Legislature.”
- **Vermont State Teachers’ Retirement System:** “Title 16 VSA Chapter 55 of Vermont Statutes grant the authority to the board of trustees of the system to annually review the amount of State contribution recommended by the actuary of the retirement system to achieve and preserve the financial integrity of the fund, and submit this recommendation to the Governor and both houses of the Legislature.
- Both systems have a 30 year closed amortization period with 22 years remaining as of 2016.

Source: 2016 Vermont State Comprehensive Annual Report

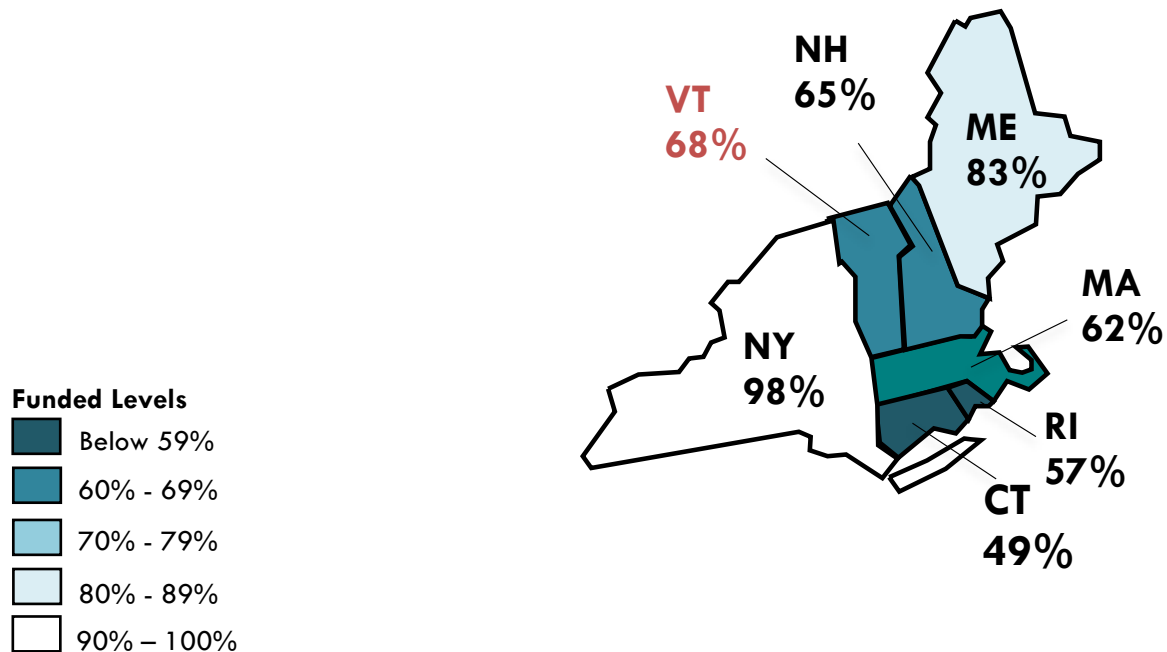
50 State and Regional Report Card

	Vermont	50 State Rank	Northeast Region Rank	Comments
Funded Ratio (2015)	68%	31	3/7	
% of ARC Paid (2004-2013)	93%	26	6/7	MA ranked lower than VT on this benchmark
Net Amortization as a share of Payroll	2.1%	20	3/7	ME, NH, NY, RI, and VT achieved positive net amortization
10 Year Investment Return (2015)	5.89%	20/20 (reporting gross of fees)	5/5	20 report annual returns gross of fees, as of 6/30
Assumed Rate of Return	7.95%	Higher than US Median	Average	
Investment Transparency	Reports some returns net, and some gross of fees and by asset class	VT could benefit from improved transparency	Average	Fee levels are 21st highest among 50 states
Pension Benefits	Defined Benefit Plan with a 1.67% multiplier per year of service	The average general employee DB plan multiplier is 1.8%	Average multiplier for state and teacher DB plans is 1.86%.	New Hampshire and Vermont have the same benefit multiplier for state and teachers.
OPEB Liability as a % of Personal Income	7.0%	8 th largest	2/7 (2 nd highest)	State provides workers with percentage of premium benefit, based on YOS

Notes: Northeast region includes CT, MA, ME, NH, NY, RI, and VT. NY multiplier used from comparison pertains to state employees with 20 years of service credit. Rhode Island currently offers a hybrid plan and is excluded from this analysis. Comparison includes states where plan participants both do and do not participate in Social Security.

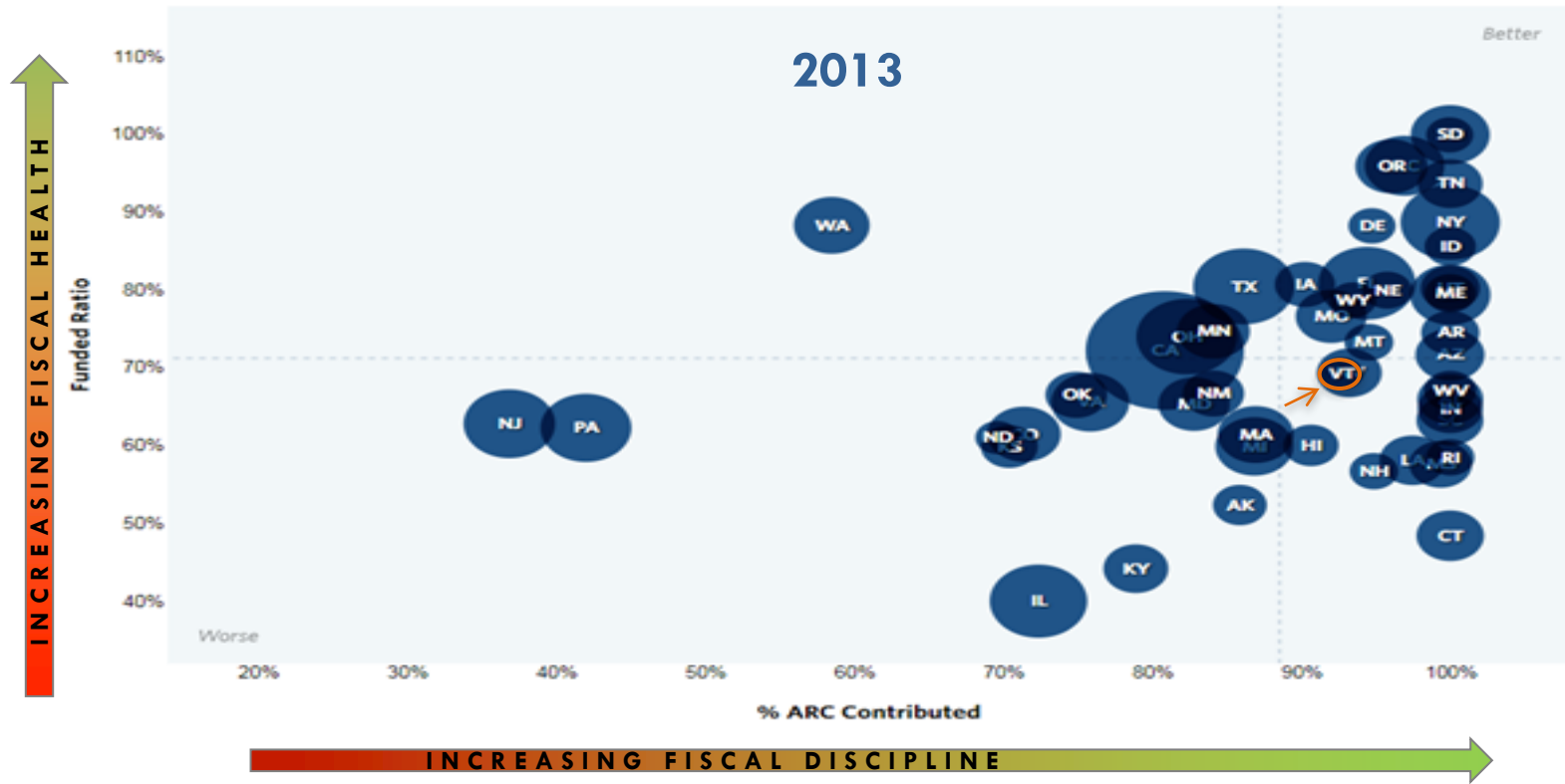
New England (plus New York) Regional Comparison

2015 Funded Ratios



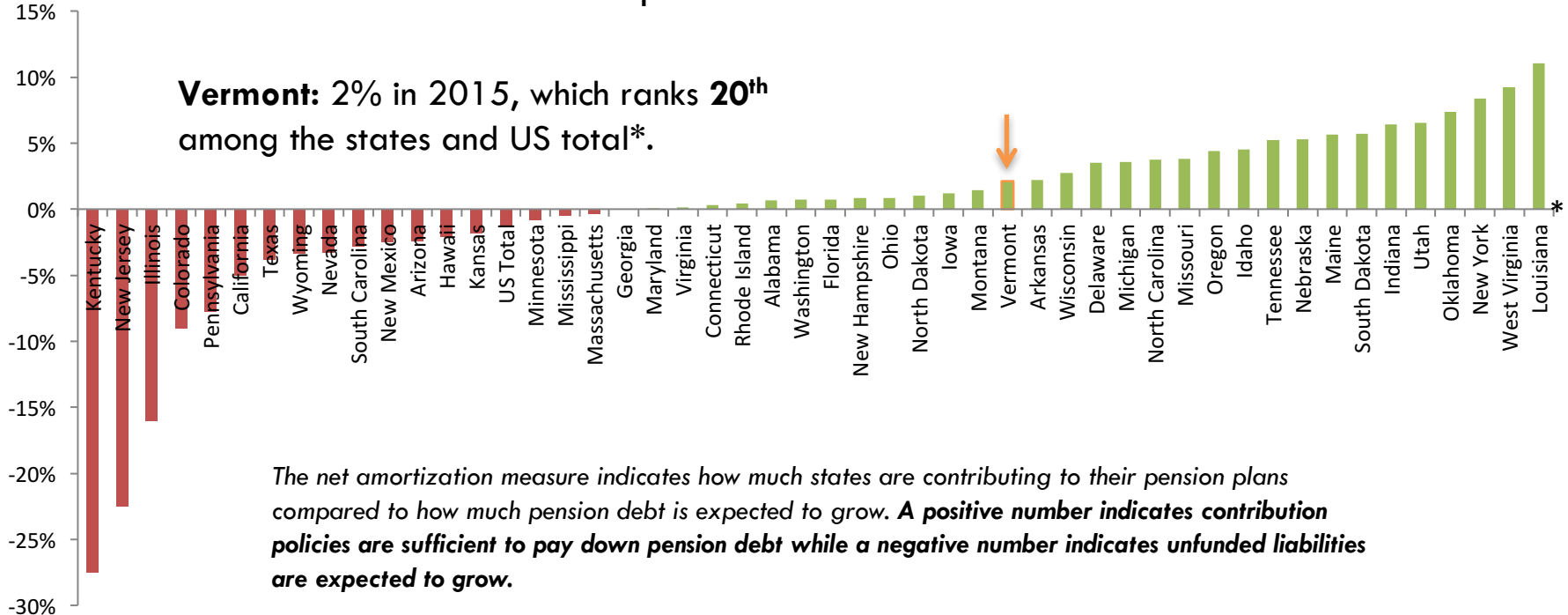
Source: Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.

Fiscal Health and Discipline Across States



Net Amortization as a Share of Covered Payroll – FY 2015

32 states achieved positive amortization in FY 2015.



The net amortization measure indicates how much states are contributing to their pension plans compared to how much pension debt is expected to grow. A **positive number indicates contribution policies are sufficient to pay down pension debt while a negative number indicates unfunded liabilities are expected to grow.**

Note: *Alaska is excluded from the graph.

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.

Benefit Design- Summary

- The state administers three defined benefit retirement plans: Vermont State Retirement System, State Teachers' Retirement System, and the Vermont Municipal Employees' Retirement System.
- In addition, exempt state employees and some municipal employees have access to an optional defined contribution plan.
- Vermont's state and teachers defined benefit design matches closely with US averages for states and teacher DB plans that participate in social security, with the exception of a slightly below average multiplier.

Summary of VSERS and VSTRS Benefits

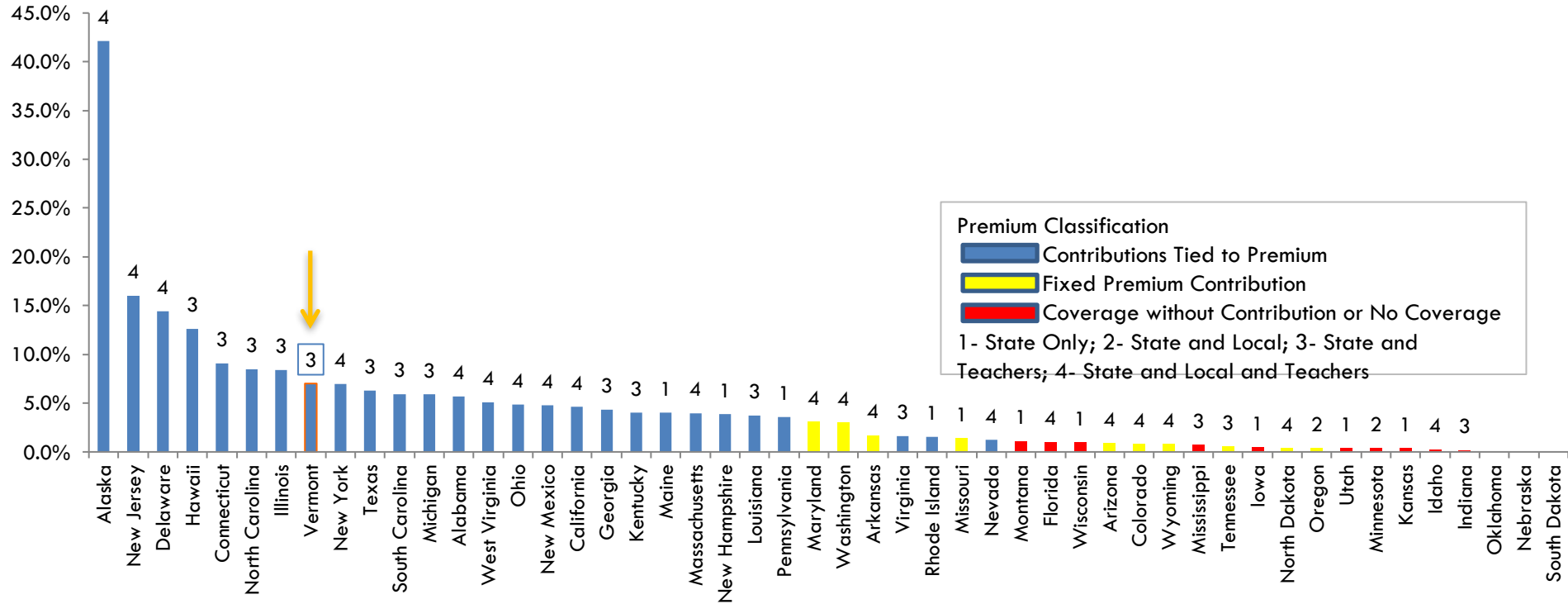
	VSERS: State Employees Hired on or after July 1, 2008	VSTRS: Teachers Hired on or after July 1, 1990 (and younger than 57 with less than 25 YOS on June 30, 2010)	Comparison to Plans for New Employees in Other States
Multiplier	1.67% (cannot exceed 60% of final average salary)	1.67%; 2% for YOS>20 (cannot exceed 60% of final average salary)	Below average. Average multiplier for state/teacher plans is about 1.8%.
COLA	Change in CPI; min. of 1% and max. of 5%	Half of the change in the CPI, min of 1% and max. of 5%.	Average. About 60% of state/teacher plans offer a COLA.
Employee Contribution	6.4%	5%	About average. Average employee contribution to a state/teacher plan is 5-6%.
Vesting	5 years	5 years	Above average. Average vesting period for state/teacher plans is 7 years.
Normal Retirement	65/any; Age + YOS = 87	65/any; Age of YOS =90	About average. Earliest average retirement age for state/teacher plans is 63-65.

Note: Comparisons only include plans that participate in Social Security.

Source: Urban Pension Plans Database

2015 Retiree Health (OPEB) Obligations

Liability as a Percentage of Personal Income



Source: State CAFRs, OPEB actuarial valuations, and plan documents.

Pension Investments

Recent Trends and Emerging Issues

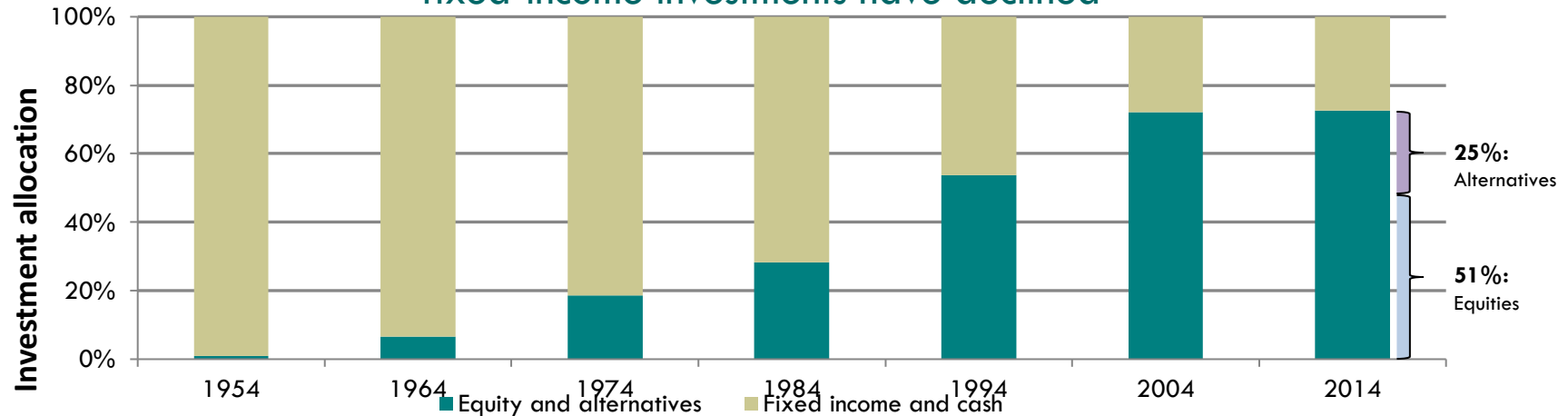
Pension Investments Summary

- US public pension funds have shifted away from bonds towards stocks and alternatives in recent decades. Measures of market risk are at all time highs.
- State funds are now invested 25% in higher fee alternative investments. There is increased attention around fee disclosure and the performance and cost of hedge funds in particular.
- VPIC 10 year investment returns of 5.89% are well below the assumed rate of return and lag other state pension funds that report gross of fees.
- **Pew recommends the use of stress testing to better evaluate funding policy requirements and to provide policymakers with information to better measure and manage cost uncertainty.**

Investments – Key Trends: More in Stocks and Less in Bonds

Public Pension Investments, 1954-2014

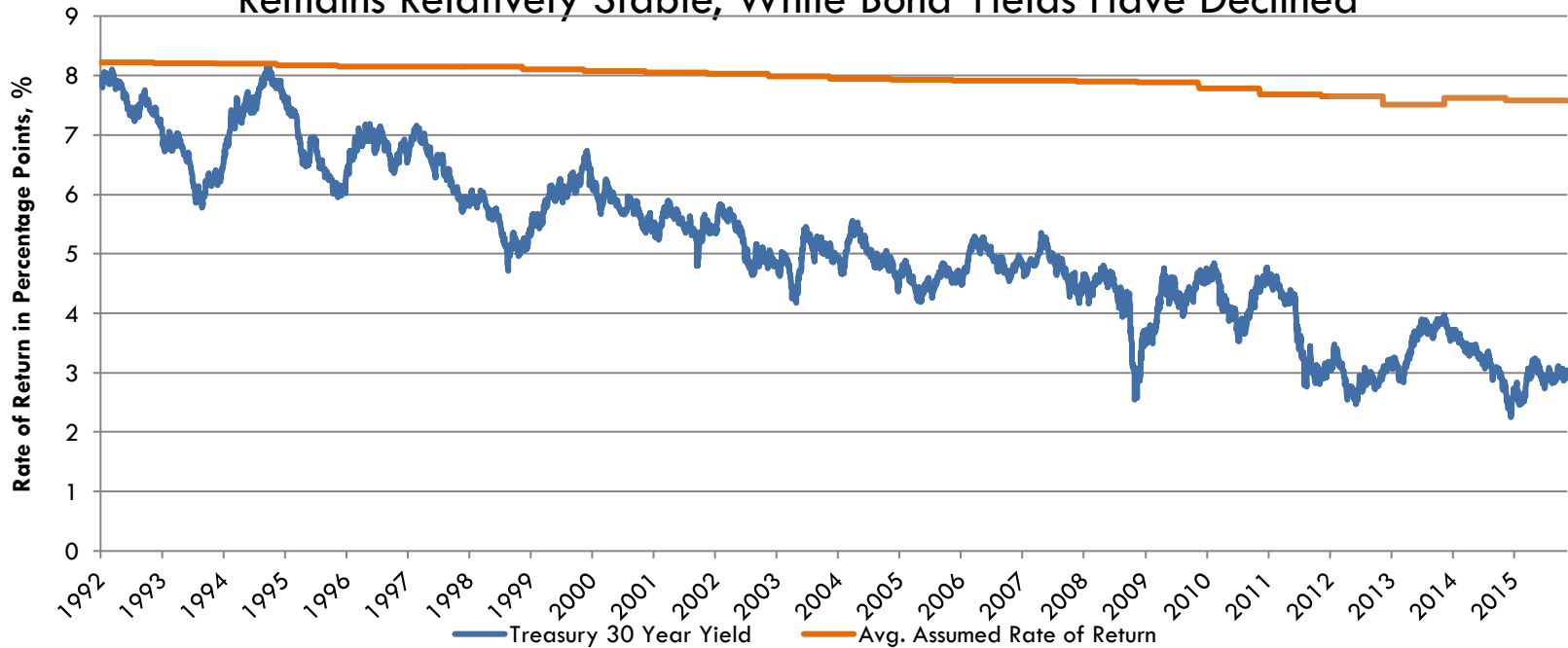
Allocations to equities and alternative investments have increased, while those to fixed-income investments have declined



Source: U.S. Board Of Governors of the Federal Reserve System, *Financial Accounts of the United States*, 1954 to 2014; Pew Analysis of State Financial Reports

Pension Fund Risk Premium at Historic High

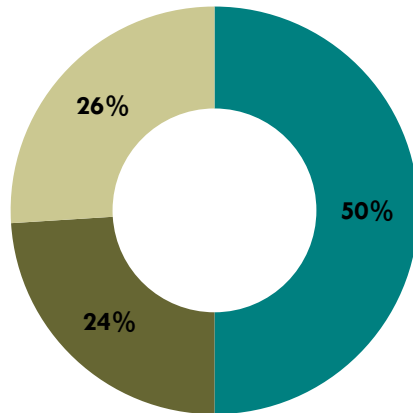
US Public Fund Average Increasing Risk Premium – Plan's Assumed Rate of Return Remains Relatively Stable, While Bond Yields Have Declined



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

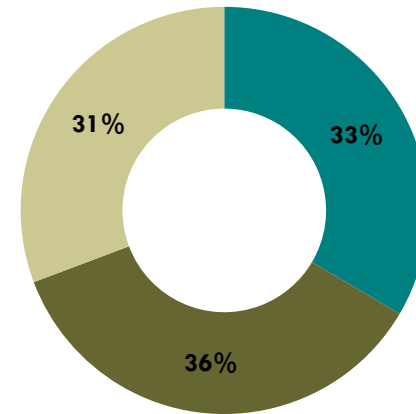
US Average (2015) Asset Allocation

■ Equity ■ Fixed ■ Alternatives



Vermont (2015) Asset Allocation

■ Equity ■ Fixed Income ■ Alternatives

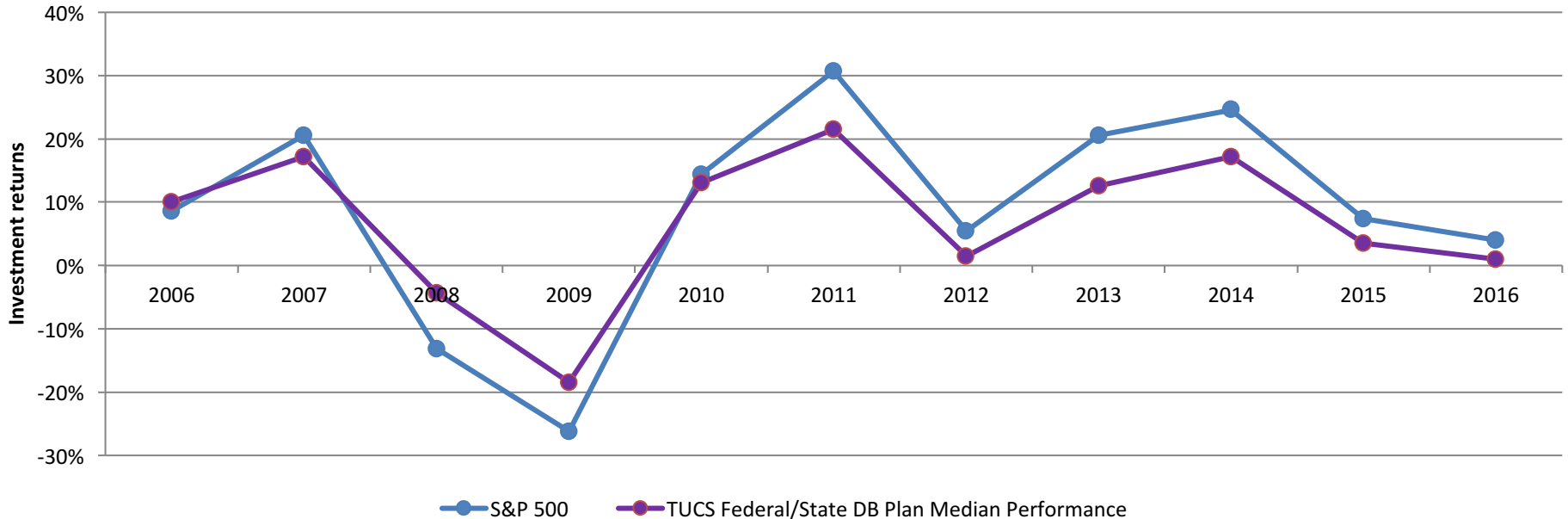


Source: Comprehensive Annual Financial Reports (CAFRs), actuarial reports and valuations.

Note: The total Vermont asset allocation was determined by weighting the individual allocations of the Vermont State Employees Retirement System and Teachers Retirement System by their assets under management.

Pension Investment Comparison - Annual Stock Market and Pension Fund Returns

Equity investments and pension fund returns are highly volatile



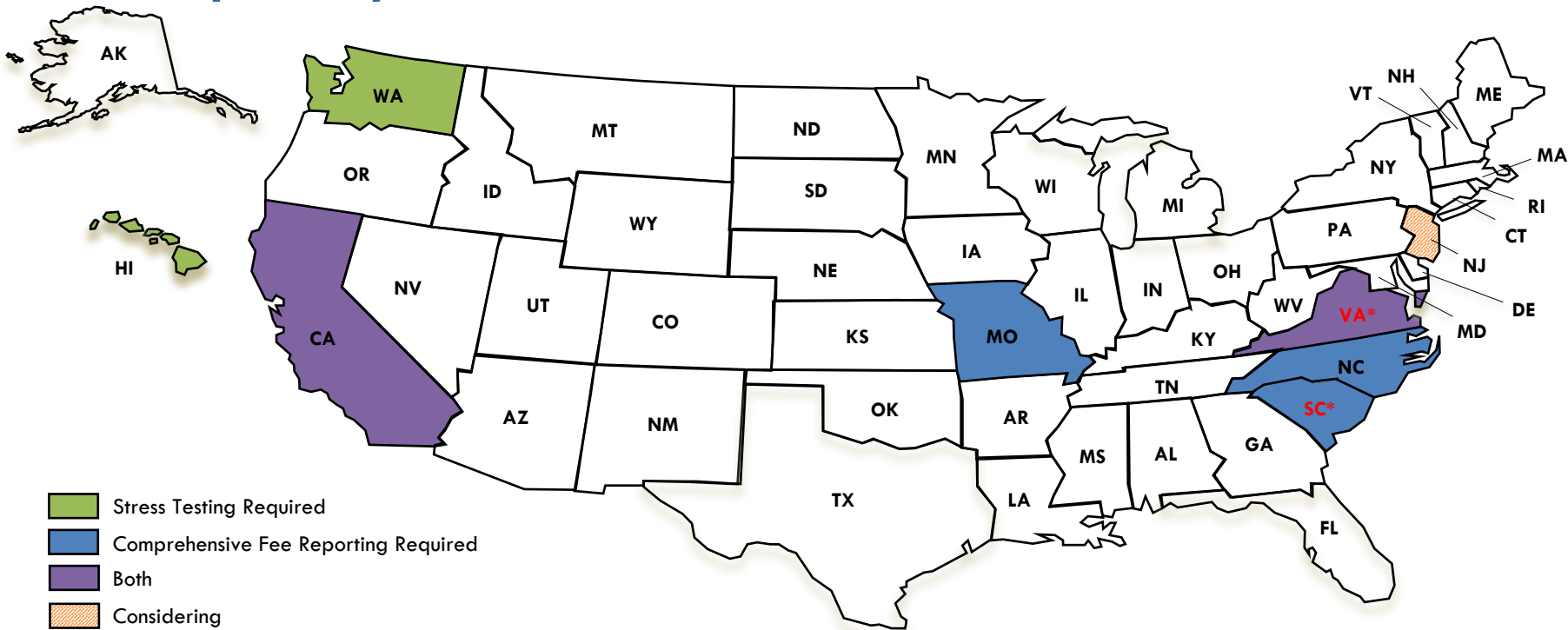
Note: TUCS data is reported gross of fees.

Sources: Wilshire®, Trust Universe Comparison Service®

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
- 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

States That Have Adopted Stress Testing and Investment Fee Transparency Measures*



*Note: South Carolina and Virginia also recently commissioned a 50 state comparative study of retirement benefits and policies

Examples of Cash Flow, pt. 1

Cash flow calculated as the difference between the sum of employer and employee contributions and the sum of benefit payments and other direct expenditures.

State	Employer Contributions	Employee Contributions	Total Contributions	Benefit Payments	Cash Flow	Assets	Cash Flow as Share of Assets	Contributions as Share of Benefit Payments
Alabama	\$1,111,167	\$710,627	\$1,821,794	-\$3,082,318	-\$1,260,524	\$30,909,207	-4.1%	59%
Alaska	\$639,061	\$155,069	\$794,130	-\$1,074,703	-\$280,573	\$10,126,350	-2.8%	74%
Arizona	\$1,488,183	\$1,208,499	\$2,696,682	-\$3,583,326	-\$886,644	\$35,954,829	-2.5%	75%
Arkansas	\$706,239	\$182,289	\$888,529	-\$1,482,184	-\$593,655	\$21,013,789	-2.8%	60%
California	\$12,681,342	\$6,064,288	\$18,745,630	-\$30,658,423	-\$11,912,793	\$429,310,838	-2.8%	61%
Colorado	\$1,410,968	\$693,571	\$2,104,539	-\$4,103,234	-\$1,998,695	\$43,773,867	-4.6%	51%
Connecticut	\$2,234,397	\$419,486	\$2,653,883	-\$3,321,339	-\$667,456	\$23,831,308	-2.8%	80%
Delaware	\$253,735	\$63,019	\$316,754	-\$559,281	-\$242,527	\$8,045,325	-3.0%	57%
Florida	\$2,532,990	\$682,507	\$3,215,497	-\$9,139,933	-\$5,924,436	\$133,219,606	-4.4%	35%
Georgia	\$1,775,671	\$686,583	\$2,462,254	-\$5,334,560	-\$2,872,306	\$73,092,663	-3.9%	46%
Hawaii	\$857,949	\$1,306	\$859,255	-\$1,143,548	-\$284,293	\$12,311,828	-2.3%	75%
Idaho	\$327,917	\$204,407	\$532,324	-\$761,290	-\$228,966	\$12,427,355	-1.8%	70%
Illinois	\$6,939,801	\$1,498,481	\$8,438,282	-\$9,539,756	-\$1,101,474	\$67,993,848	-1.6%	88%
Indiana	\$1,734,473	\$343,782	\$2,078,255	-\$2,379,202	-\$300,947	\$27,448,957	-1.1%	87%
Iowa	\$679,671	\$436,588	\$1,116,258	-\$1,863,076	-\$746,818	\$25,337,555	-2.9%	60%
Kansas	\$701,818	\$332,163	\$1,033,981	-\$1,442,240	-\$408,259	\$14,390,213	-2.8%	72%
Kentucky	\$906,312	\$423,091	\$1,329,403	-\$2,739,104	-\$1,409,701	\$19,898,451	-7.1%	49%
Louisiana	\$1,970,013	\$505,742	\$2,475,755	-\$3,400,862	-\$925,107	\$27,978,809	-3.3%	73%
Maine	\$337,971	\$154,911	\$492,882	-\$829,048	-\$336,166	\$11,309,278	-3.0%	59%
Maryland	\$1,773,402	\$727,726	\$2,501,128	-\$3,225,060	-\$723,932	\$40,553,174	-1.8%	78%
Massachusetts	\$1,887,827	\$1,232,620	\$3,120,448	-\$4,822,644	-\$1,702,196	\$46,776,294	-3.6%	65%
Michigan	\$2,367,030	\$456,176	\$2,823,206	-\$5,818,776	-\$2,995,571	\$51,471,528	-5.8%	49%
Minnesota	\$1,094,925	\$882,237	\$1,977,162	-\$4,112,918	-\$2,135,756	\$52,226,918	-4.1%	48%
Mississippi	\$983,688	\$551,699	\$1,535,387	-\$2,264,432	-\$729,045	\$21,988,741	-3.3%	68%
Missouri	\$1,397,367	\$816,505	\$2,213,872	-\$3,286,902	-\$1,073,030	\$46,401,259	-2.3%	67%

Source: State Comprehensive Annual Financial Reports and state pension plan actuarial valuations and financial reports.

Notes: Data as of fiscal year 2014 except New York, which first adopted GASB 67 in 2015. All dollar figures in thousands.

Examples of Cash Flow, pt.2

Cash flow calculated as the difference between the sum of employer and employee contributions and the sum of benefit payments and other direct expenditures.

State	Employer Contributions	Employee Contributions	Contributions	Benefit Payments	Cash Flow	Assets	Cash Flow as Share of Assets	Contributions as Share of Benefit Payments
Montana	\$334,866	\$184,307	\$519,174	-\$675,423	-\$156,249	\$8,569,338	-1.8%	77%
Nebraska	\$271,797	\$211,785	\$483,582	-\$583,481	-\$99,899	\$10,103,275	-1.0%	83%
Nevada	\$1,411,221	\$152,436	\$1,563,657	-\$1,852,304	-\$288,647	\$28,914,223	-1.0%	84%
New Hampshire	\$329,346	\$199,668	\$529,014	-\$636,375	-\$107,361	\$6,449,568	-1.7%	83%
New Jersey	\$2,255,749	\$1,928,793	\$4,184,541	-\$9,490,654	-\$5,306,113	\$76,882,202	-6.9%	44%
New Mexico	\$738,513	\$444,083	\$1,182,596	-\$1,880,158	-\$697,562	\$23,066,710	-3.0%	63%
New York	\$5,797,449	\$284,793	\$6,082,242	-\$10,390,066	-\$4,307,824	\$181,275,349	-2.4%	59%
North Carolina	\$1,634,357	\$1,181,141	\$2,815,498	-\$5,181,353	-\$2,365,855	\$79,592,022	-3.0%	54%
North Dakota	\$136,375	\$117,248	\$253,624	-\$294,381	-\$40,757	\$3,944,677	-1.0%	86%
Ohio	\$3,006,867	\$2,433,485	\$5,440,353	-\$12,276,122	-\$6,835,769	\$140,740,214	-4.9%	44%
Oklahoma	\$1,208,268	\$425,026	\$1,633,294	-\$2,093,588	-\$460,294	\$24,273,119	-1.9%	78%
Oregon	\$915,200	\$15,300	\$930,500	-\$3,894,600	-\$2,964,100	\$58,478,900	-5.1%	24%
Pennsylvania	\$3,076,084	\$1,332,926	\$4,409,010	-\$9,060,217	-\$4,651,207	\$76,409,561	-6.1%	49%
Rhode Island	\$355,405	\$67,691	\$423,096	-\$823,077	-\$399,981	\$6,077,929	-6.6%	51%
South Carolina	\$1,136,714	\$751,467	\$1,888,181	-\$2,944,306	-\$1,056,125	\$26,900,813	-3.9%	64%
South Dakota	\$104,953	\$106,175	\$211,128	-\$384,824	-\$173,696	\$9,085,707	-1.9%	55%
Tennessee	\$1,035,322	\$269,858	\$1,305,180	-\$2,124,896	-\$819,717	\$37,564,905	-2.2%	61%
Texas	\$3,043,915	\$2,801,970	\$5,845,885	-\$10,980,168	-\$5,134,283	\$141,433,999	-3.6%	53%
Utah	\$989,818	\$38,500	\$1,028,318	-\$1,341,697	-\$313,379	\$25,096,072	-1.2%	77%
Vermont	\$141,158	\$77,538	\$218,696	-\$289,997	-\$71,300	\$3,488,030	-2.0%	75%
Virginia	\$1,874,152	\$821,436	\$2,695,588	-\$4,028,886	-\$1,333,298	\$56,979,164	-2.3%	67%
Washington	\$1,600,867	\$662,813	\$2,263,680	-\$3,525,451	-\$1,261,771	\$62,395,610	-2.0%	64%
West Virginia	\$741,699	\$156,160	\$897,859	-\$1,077,487	-\$179,628	\$11,508,624	-1.6%	83%
Wisconsin	\$1,023,197	\$906,499	\$1,929,696	-\$4,598,686	-\$2,668,990	\$89,924,747	-3.0%	42%
Wyoming	\$148,581	\$157,291	\$305,872	-\$492,151	-\$186,279	\$7,509,140	-2.5%	62%

Source: State Comprehensive Annual Financial Reports and state pension plan actuarial valuations and financial reports.

Notes: Data as of fiscal year 2014 except New York, which first adopted GASB 67 in 2015. All dollar figures in thousands.

Benefit Design

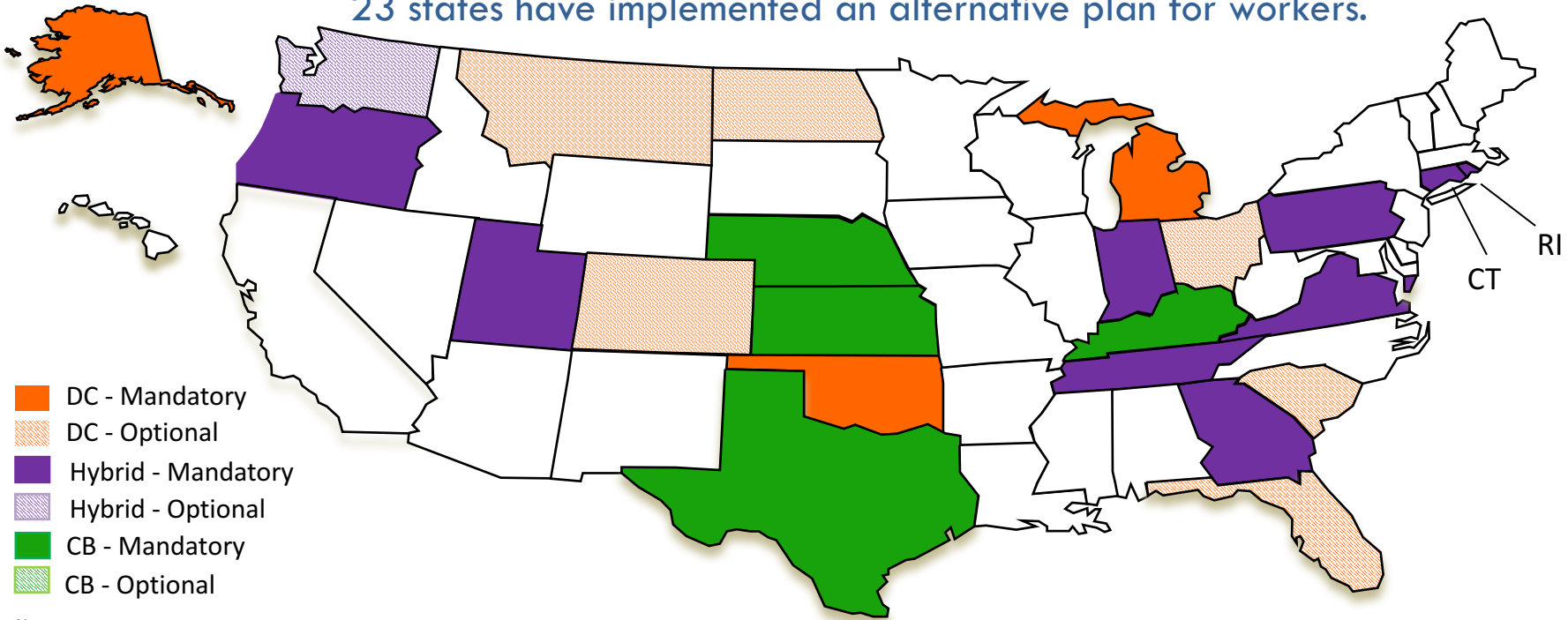
50 State Reform Summary

- 49 states have implemented some kind of reform between 2009 and 2015.
- Many reforms changed plan provisions for new workers, but kept the basic structure of the plan.
- A number of states passed reforms that affected current workers or retirees between 2009 and 2015:
 - 30 states reduced COLAs for active and/or retired members
 - 37 states increased employee contributions for either current or new members
- Between 2009 and 2015, 9 states passed reforms that changed the mandatory benefit design for new employees. Overall, 21 states have a mandatory or optional alternative benefit design.

Source: National Council of State Legislatures, NASRA, The Pew Charitable Trusts

Growing Number of States with Alternative Public Sector Retirement Plans

23 states have implemented an alternative plan for workers.



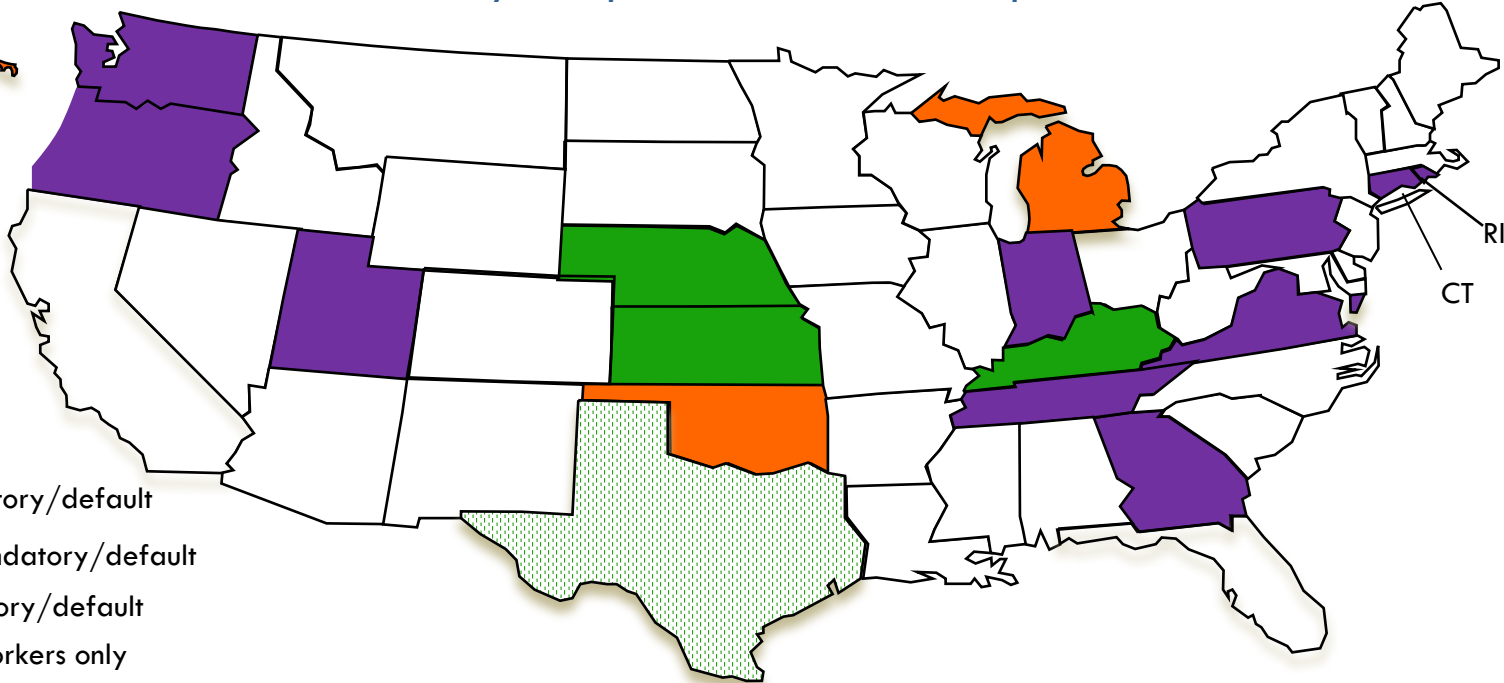
- DC - Mandatory
- DC - Optional
- Hybrid - Mandatory
- Hybrid - Optional
- CB - Mandatory
- CB - Optional

- Notes
- In cases where a state has more than one alternative plan, the plan type with the greater number of participants is marked on the map. This includes Indiana where workers choose between a hybrid and DC plan, Michigan where state workers are in a DC plan and teachers have a choice between a DC and hybrid, and Ohio where workers choose between a DB, hybrid or DC plan, and Utah where workers choose between a hybrid and DC plan.
 - Texas's cash balance plan is only available to local workers.
 - In addition, California provides an optional cash balance plan for part-time workers and adjunct educational employees.

Sources: NASRA, NCSL

Alternative Plans are the Default or Mandatory Option in 16 states

7 of the 10 default hybrid plans have been adopted since 2006



DC – Mandatory/default

Hybrid – Mandatory/default

CB – Mandatory/default

CB – Local workers only

Notes:

- In cases where a state has more than one alternative plan, the plan type with the greater number of participants is marked on the map. This includes Indiana where workers choose between a hybrid and DC plan, Michigan where state workers are in a DC plan and teachers choice between a DC or hybrid plan, and Utah where workers choose between a hybrid and DC plan. Twelve states total offer a default or optional hybrid plan.
- Texas provides a cash balance plan to over 400,000 local workers through the state's Texas Municipal Retirement System and Texas County and District Retirement System.

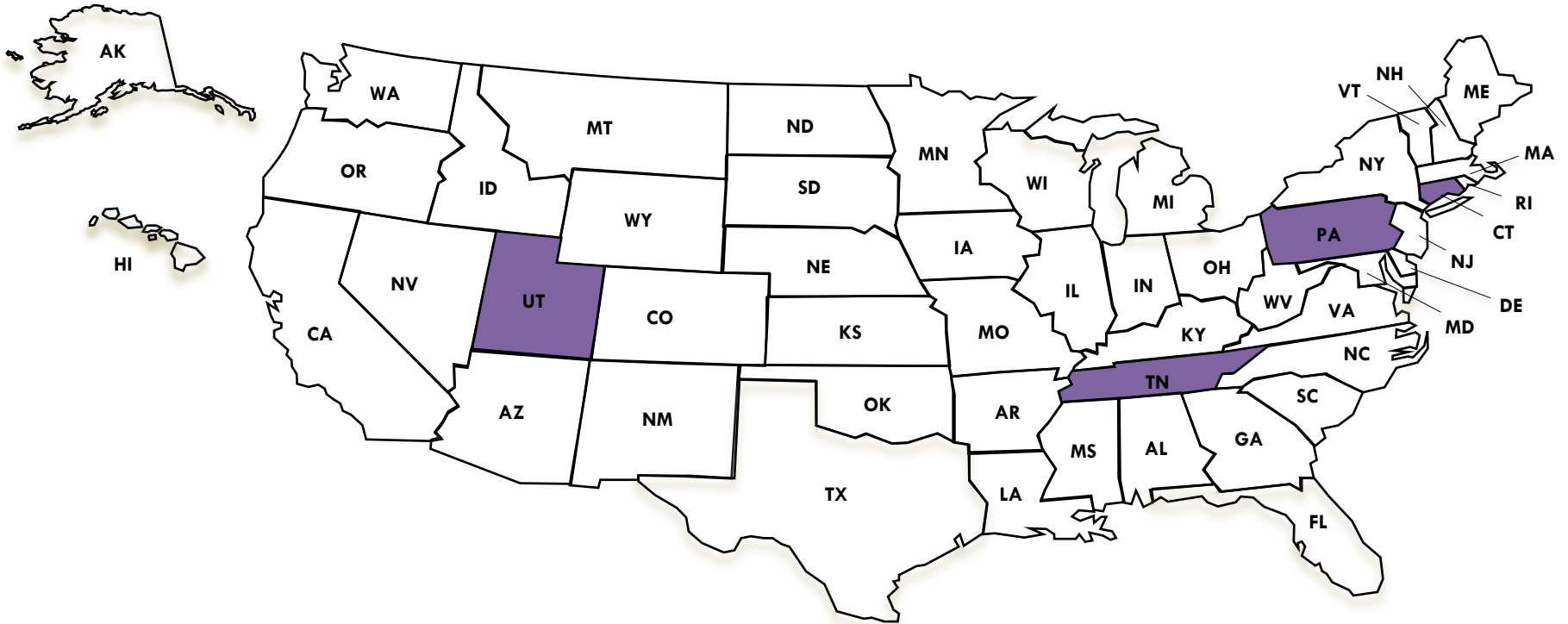
Sources: NASRA, NCSL



Escalating Trends on Risk Managed Hybrids

- Policymakers across the country have taken a closer look at the way they deliver retirement benefits to employees in recent years.
- States have modified their DB plans - such as cost-sharing features – as well as established new alternative plans for workers.
- Twenty three states, including South Carolina, have implemented an alternative such as a hybrid, defined contribution, or cash balance plan for some workers.
- A number of recently adopted hybrid plans incorporate additional risk management features on both the DB and DC portions of the hybrid.
- As of 2017, four states – Pennsylvania, Tennessee, Connecticut, and Utah – have adopted an RMH as their default, primary benefit for at least some state employees.

States With Risk Managed Hybrids as the Default Option



Note: Michigan also recently adopted a risk managed hybrid plan for teachers. However, the risk managed hybrid plan is not the default. New teachers are defaulted into a defined contribution plan with the option to select the hybrid plan.

Appendix

Key Pension Terms

- **Actuarial Required Contribution (ARC)** – This is the sum of the actuarial cost of benefits earned in the current year (called service cost or normal cost) and an additional payment on the unfunded actuarial accrued liability (UAAL) called the amortization payment.
- **Assumed Rate of Return** – Estimated return on investments used by actuaries to project the rate of return on plan assets and calculate the value of plan liabilities.
- **Funded Ratio** – Assets divided by the actuarial accrued liabilities. A measure of fiscal health.
- **Net Amortization** – A measure of whether state pension funding policies are sufficient to reduce, or amortize, pension debt in the near term.
- **Pension Debt** – The difference between the actuarial accrued liability and the value of plan assets on hand. Also referred to as the Unfunded Actuarial Accrued Liability (UAAL).

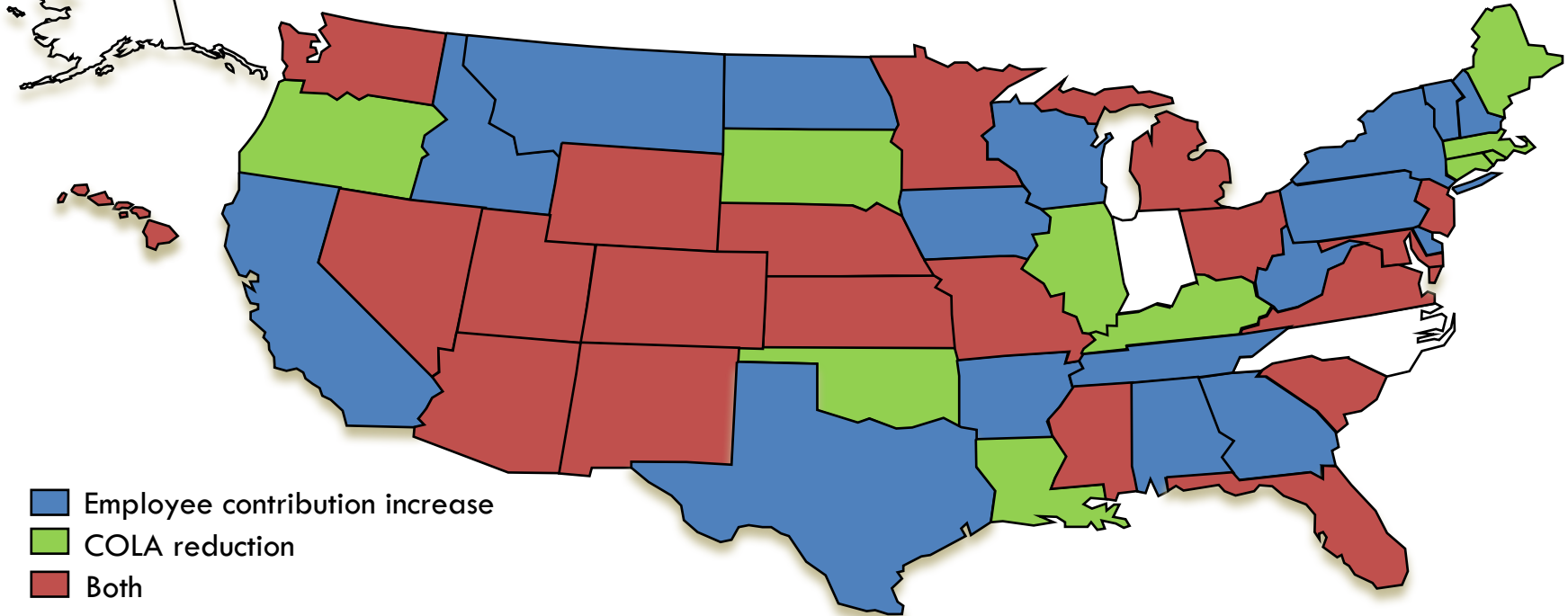


Plan Type Definitions

- **Defined Benefit Plan (DB):** traditional pension plan with a fixed monthly retirement income benefit based on age, years of service, and worker's salary.
- **Defined Contribution Plan (DC):** 401(k)-style plan with the retirement benefit based on accumulated employer and employee contributions, and returns on those investments.
- **Hybrid Plan:** plan that combines elements of DB and DC plans; “Side-by-Side” is the most common type of hybrid plan, where employees get a reduced DB benefit plus a DC account.
- **Cash Balance Plan (CB):** plan where benefit is based on employee and employer contributions that are pooled and professionally managed with a guaranteed minimum rate of return and annuitization option at retirement.



Reform to employee contributions and/or COLA between 2009 and 2015



Notes: 49 states have increased employee contributions, reduced COLA, increased retirement eligibility, or adopted new plan design since 2009. O the blank three states, Alaska adopted a defined contribution plan in 2006, North Carolina capped pension benefits for high earners in 2014, and Indiana began offering an optional defined contribution plan in 2011. Reforms include a reductions to COLA for future, current, or retirees or increases in employee contributions for future or current employees in at least one state administered plan. The COLA changes in Missouri and South Dakota were in 2016.

Source: National Association of State Retirement Administrators, The Pew Charitable Trusts

Example of Net Amortization Calculation

Overall, North Carolina's pension promises are 99% funded compared to South Carolina at 61%. North Carolina and South Carolina both paid their ARC but follow very different contribution policies.

		North Carolina	South Carolina
1	Pension debt, beginning of 2014	\$7,467,231	\$20,225,470
2	Effective interest rate for pension debt	7.3%	7.5%
3=1*2	Interest on pension debt	\$541,695	\$1,516,910
4	Cost of new benefits	\$2,234,931	\$895,467
5	Employee contributions, with interest	\$1,223,208	\$779,138
6=3+4-5	Employer benchmark for net amortization	\$1,553,417	\$1,633,240
7	Employer contributions, with interest	\$1,692,560	\$1,178,570
8=7-6	Expected reduction in pension debt	\$139,143	-\$454,670
9=7/6	Percentage of benchmark contributed	109%	72%

Source: State Comprehensive Annual Financial Reports and state pension plan actuarial valuations and financial reports. All dollar figures in thousands.

OPEB Summary of Current Benefits

State	Date of Hire / Retire	Benefit Provisions						Early Retiree		Medicare Age	
		Premium Contribution Category	Minimum Eligibility Age	Minimum Years of Service Required for Vesting	Minimum Years of Service Required to Qualify for a State Premium Contribution	State Premium Contribution for Dependents	Employer Group Waiver Plan (EGWP)?	State Premium Contribution per Retiree, per Year	State Premium Contribution Prorating Description	State Premium Contribution per Retiree, per Year	State Premium Contribution Prorating Description
Vermont	Hired on or after July 1, 2008	Percentage of Premium	Age upon satisfying YOS requirements	5	10	Yes	Yes	0% to 80%	0 to 9 YOS = 0%, 10 to 14 YOS = 40%, 15 to 19 YOS = 60%, 20+ YOS = 80%	0% to 80%	0 to 9 YOS = 0%, 10 to 14 YOS = 40%, 15 to 19 YOS = 60%, 20+ YOS = 80%
Vermont	Hired prior to July 1, 2008	Percentage of Premium	55	5	5	Yes	Yes	80%	None	80%	None

- The state of Vermont offers a percentage of premium benefit to eligible retirees.
- Employees hired on or after July 1st, 2008 are eligible for the retiree health plan at any age so long as they have satisfied the years of service requirement of 5 years to vest and 10 years to qualify for a premium contribution. Retirees with between 10 and 14 years of service are eligible for a 40% premium contribution. When a retiree has between 15 to 19 years of service they are eligible to receive a 60% premium contribution. Upon attaining 20 years of service, the retiree is eligible to receive a premium contribution of 80% of the monthly plan premium but is responsible for the remainder of the premium.
- Employees hired before July 1st, 2008 are eligible for the retiree health plan at age 55 so long as they have attained at least five years of service. Upon reaching 5 years of service, the retiree will receive an 80% premium contribution and is responsible for the remainder of the premium.

Sample Stress Testing Language

I. Baseline Projections

- 1) Projections of assets, liabilities, pension debt, actuarial recommended contributions, net amortization, benefit payments, payroll, and funded ratio based on plan assumptions for the next 30 years;
- 2) The expected contributions as a percent of payroll, the ratio of benefit payments to payroll, the ratio of funding liability to payroll, and the ratio of market value of assets to payroll

II. Sensitivity Analysis

- 1) Estimates of the items listed in sub-paragraph 1(a) over a 20 year period assuming investment returns are 2 percentage points above plan assumptions, 2 percentage points below plan assumptions, and 3 percentage points below plan assumptions assuming:
 - a. Employer contributions adjust based on current policy
 - b. Employer contributions are held constant at the levels calculated for the Baseline Projections

III. Scenario Analysis (Asset Shock with Low Growth):

- 1) Estimates of the items listed in paragraph (1) if there is a one year loss on investments of 15%, followed by a 20 year period of investment returns 2 percentage points below plan assumptions assuming:
 - a. Employer contributions adjust based on current policy
 - b. Employer contributions are held constant at the levels calculated for the Baseline Projections