Arkansas: Assessing the Risk of Fiscal Distress for Public Pensions

Joint Review & Public Retirement and Social Security Programs Committees
Little Rock, Arkansas
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Strengthening Public Sector Retirement Systems

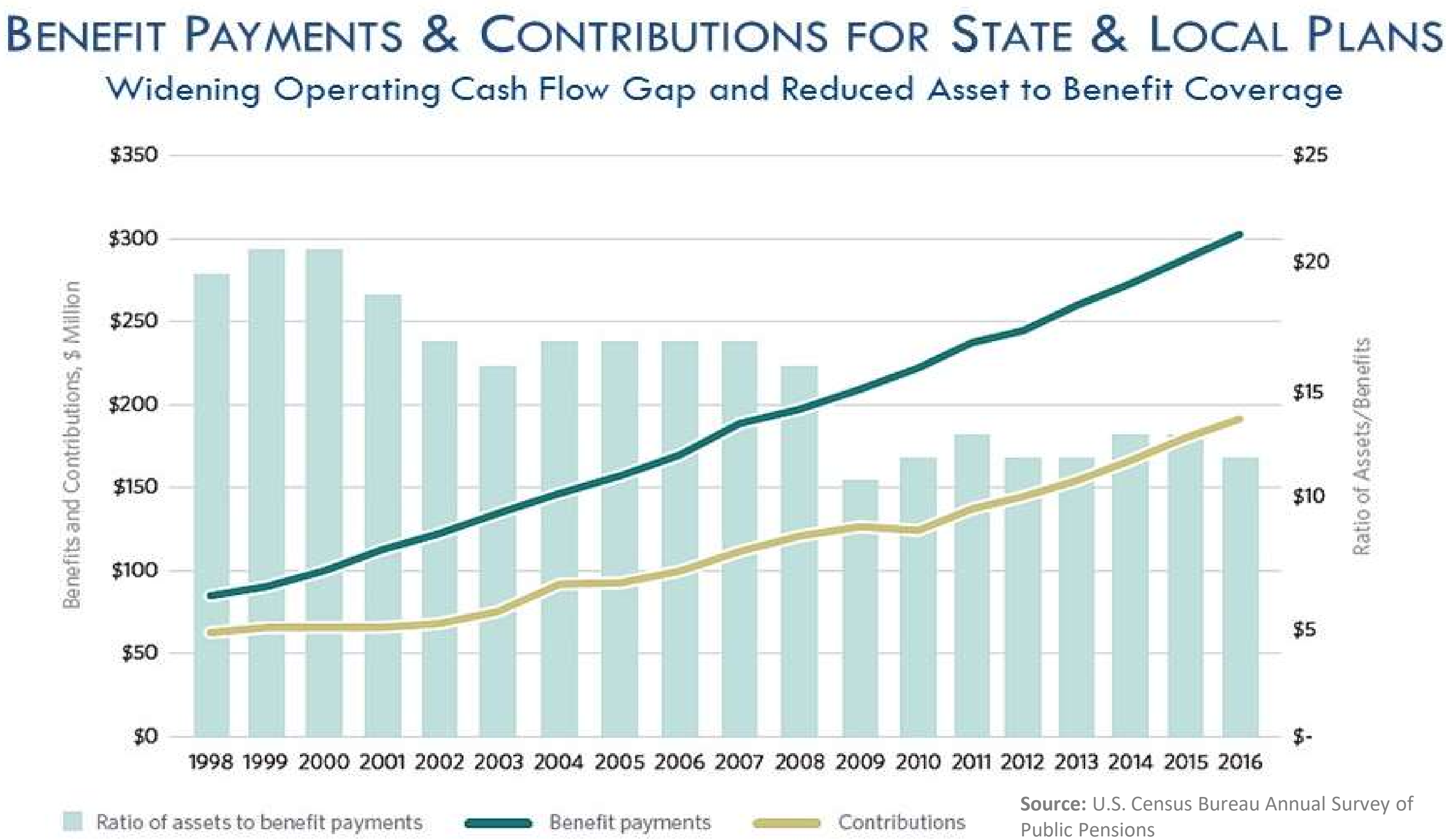
Overview

Goals for today:

1. Review key concepts and components of stress testing.
2. Examine benefits to the budgeting process.
3. Outline how to implement efficiently and effectively.
4. Review Stress Test Analysis for Arkansas

Public Pensions Vulnerable to Next Economic Downturn

In aggregate, state and local pension systems have never been more exposed to market volatility, based on fiscal measures and economic outlook



Source: U.S. Census Bureau Annual Survey of Public Pensions

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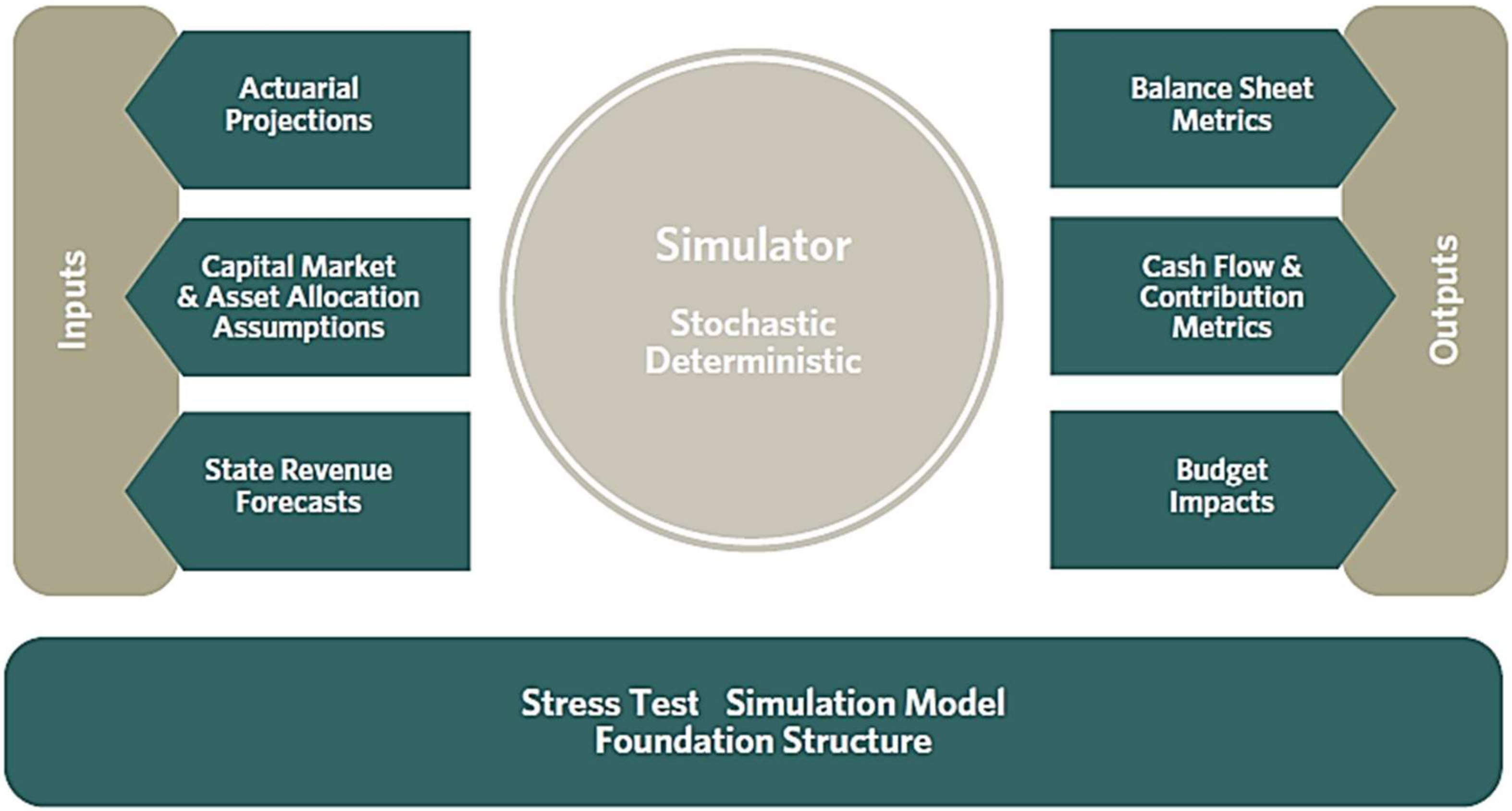
What is Stress Testing?

- Simulation technique used to assess the impact of different economic conditions on pension balance sheets and governmental budgets.

- Central to emerging actuarial reporting standards (Actuarial Standard of Practice No. 51.)

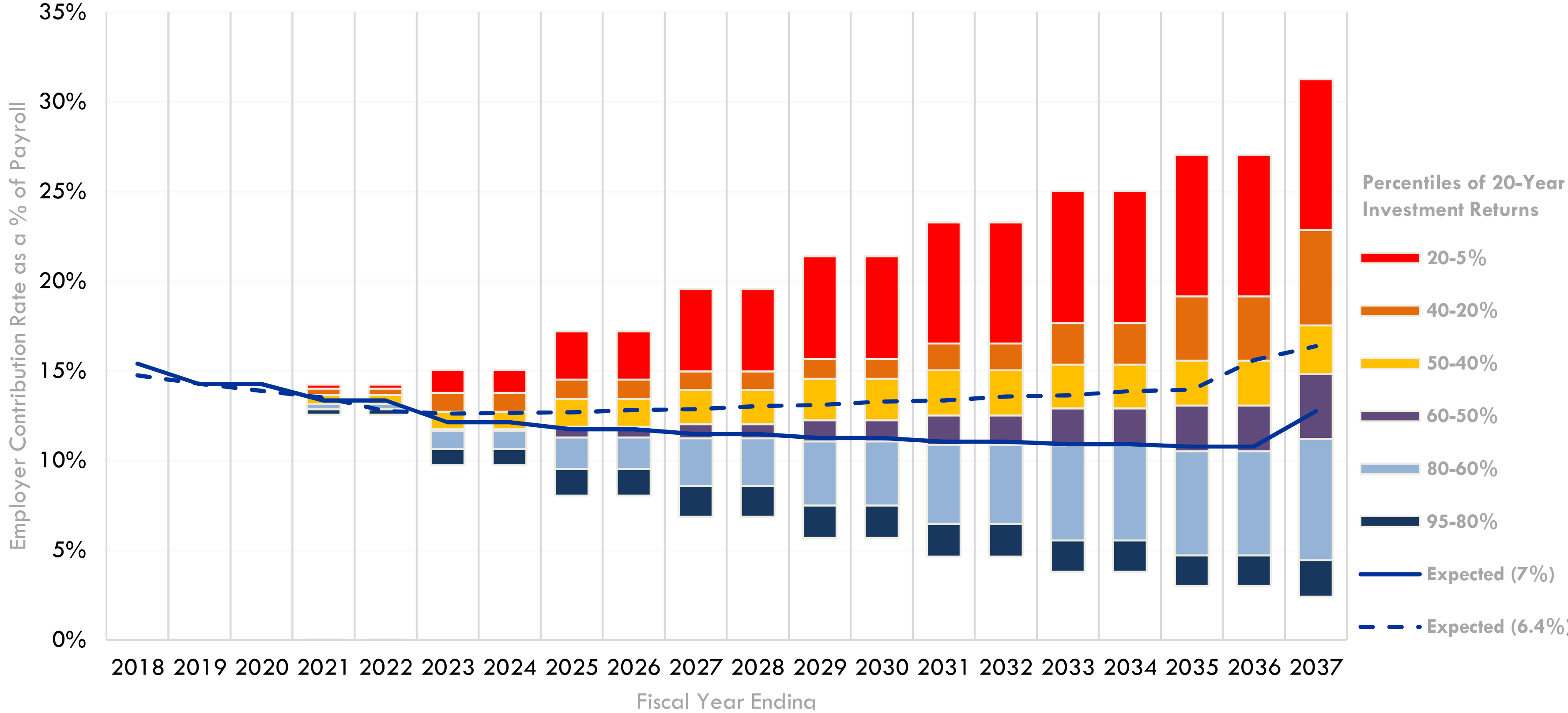
- Budget tool to help policymakers plan for the next recession and better manage economic uncertainty.

Stress Testing Simulation Model Foundation Structure



Why It Stress Testing Matters: Range of Investment Returns Significantly Impact Potential Costs

Stochastic for Projected Employer Contributions from the 5th Through 95th Return Percentiles

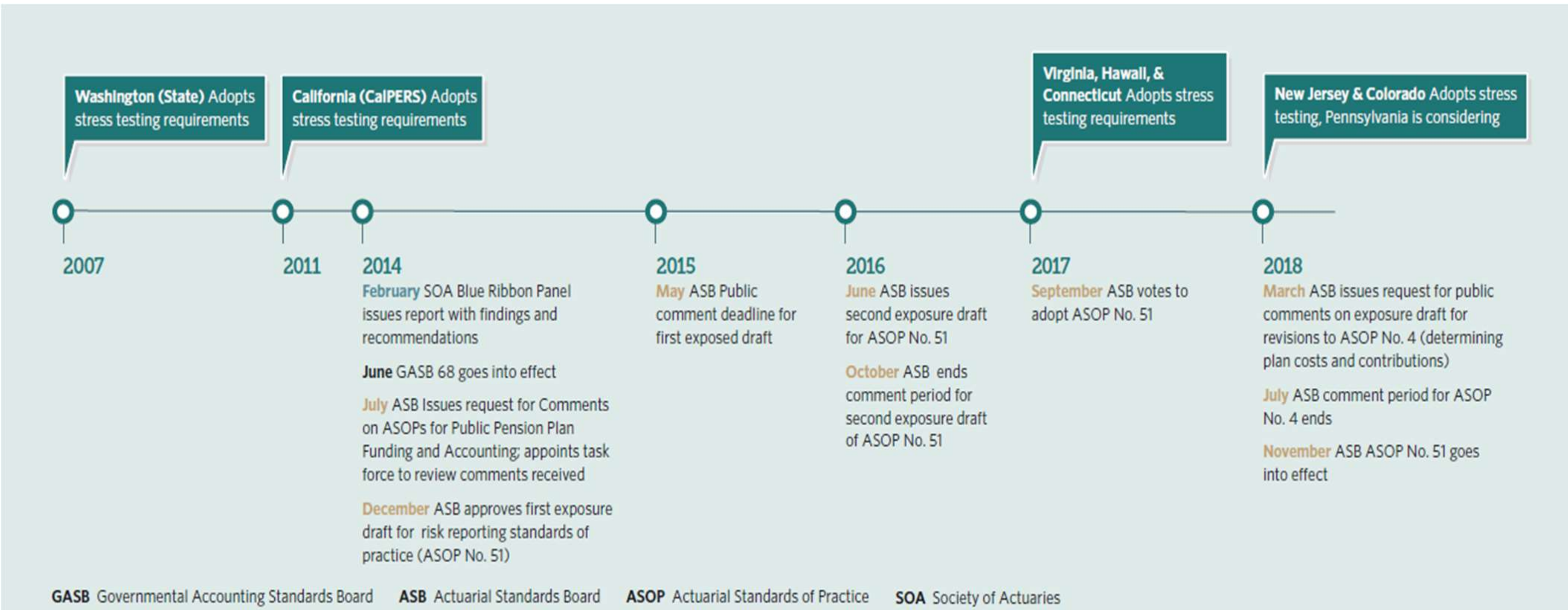


Note: Range of employer contribution rates over time for the Virginia Retirement System using stochastic projections of investment returns. Expected (7%) line shows the employer contribution rate if Virginia Retirement System achieves its assumed return of 7% each year. Expected (6.4%) line shows the employer contribution rate if returns are 6.4% (which represents the 50th percentile using Pew's capital market assumptions) each year.

Source: The Pew Charitable Trusts and The Terry Group.

Risk Reporting Developments for Public Pensions

Recent changes in reporting standards have led to increased momentum among states in adopting stress testing.



Why is Stress Testing Important for Arkansas?

- State budgets are more vulnerable to the next recession.
- Enhanced pensions risk reporting required by Actuarial Standard of Practice (ASOP) No. 51 goes into effect this November.
- Provides a framework to examine the issues that are most important to budget officials as well as evaluate new policy proposals.
- And, ultimately…

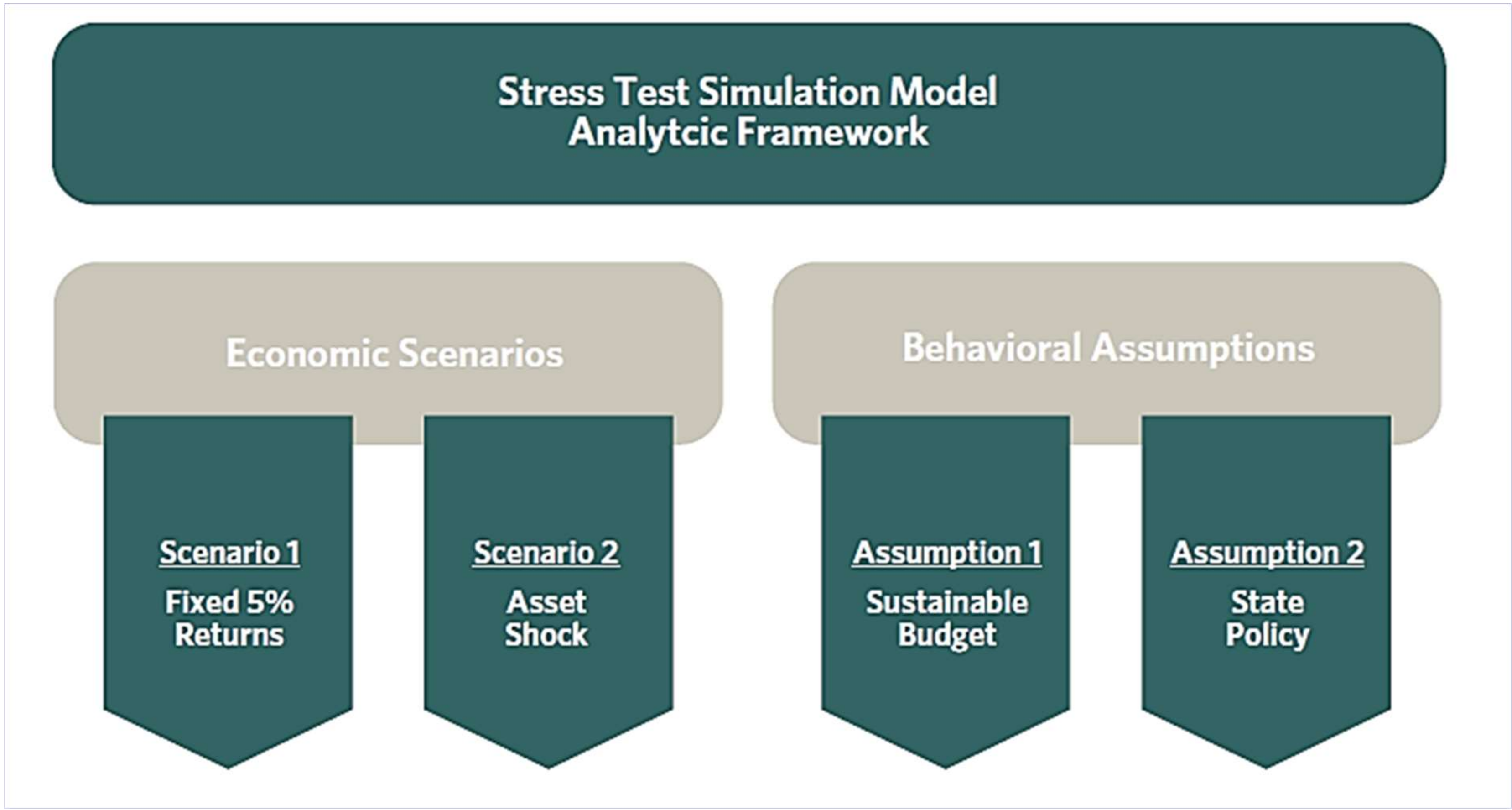
What gets Measured gets Managed!

Efficiently and Effectively Implementing Stress Testing

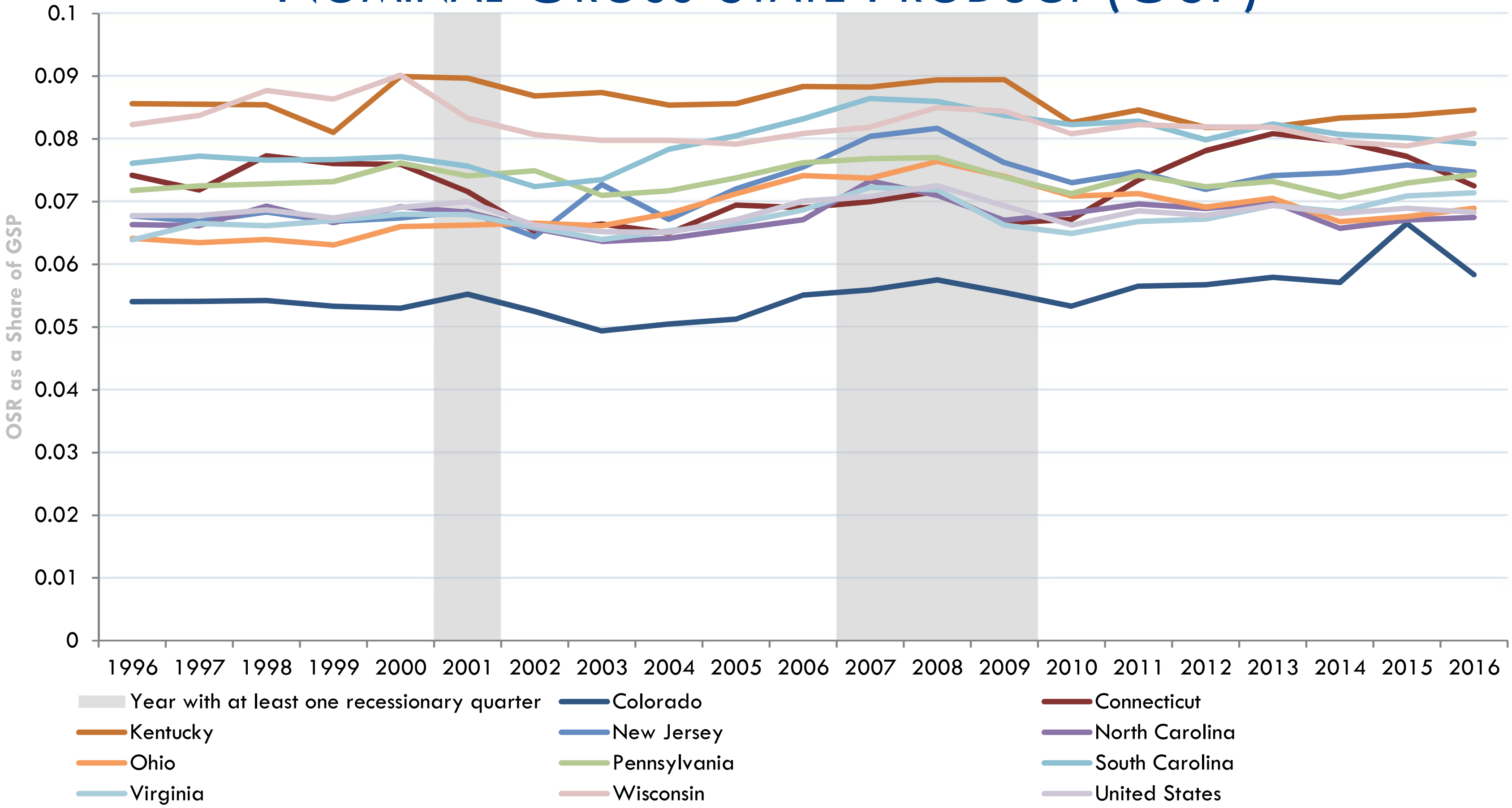
- Primary focus is on ***investment*** and ***contribution risks*** (e.g. ASOP No. 51).
- Build on existing reporting requirements (e.g. GASB) and analyses (e.g. Asset/Liability studies), BUT…
- Incorporates **revenue** and **budget** components.
- Develop report with budget officials and broader audience in mind.
- Establish a standardized approach that is both accessible and extensible.

PEW'S ANALYTIC FRAMEWORK

Two-part lens that helps generate broad range of likely outcomes



Ratio of State Own Source Revenue (OSR) Compared to Nominal Gross State Product (GSP)



Notes: United States uses national gross domestic product; there is a discontinuity in gross state product between 1996 and the rest of the time series due to a change from SIC industry definitions to NAICS industry definitions. Years highlighted in gray above include any year in which at least one quarter was in recession, according to the U.S. Federal Reserve. **Sources:** U.S. Census Bureau; Bureau of Economic Analysis; Moody's Analytics.

KEY FISCAL POLICY GOALS FOR BUDGET OFFICIALS

Not just an academic exercise, comprehensive stress testing can help budget officials:

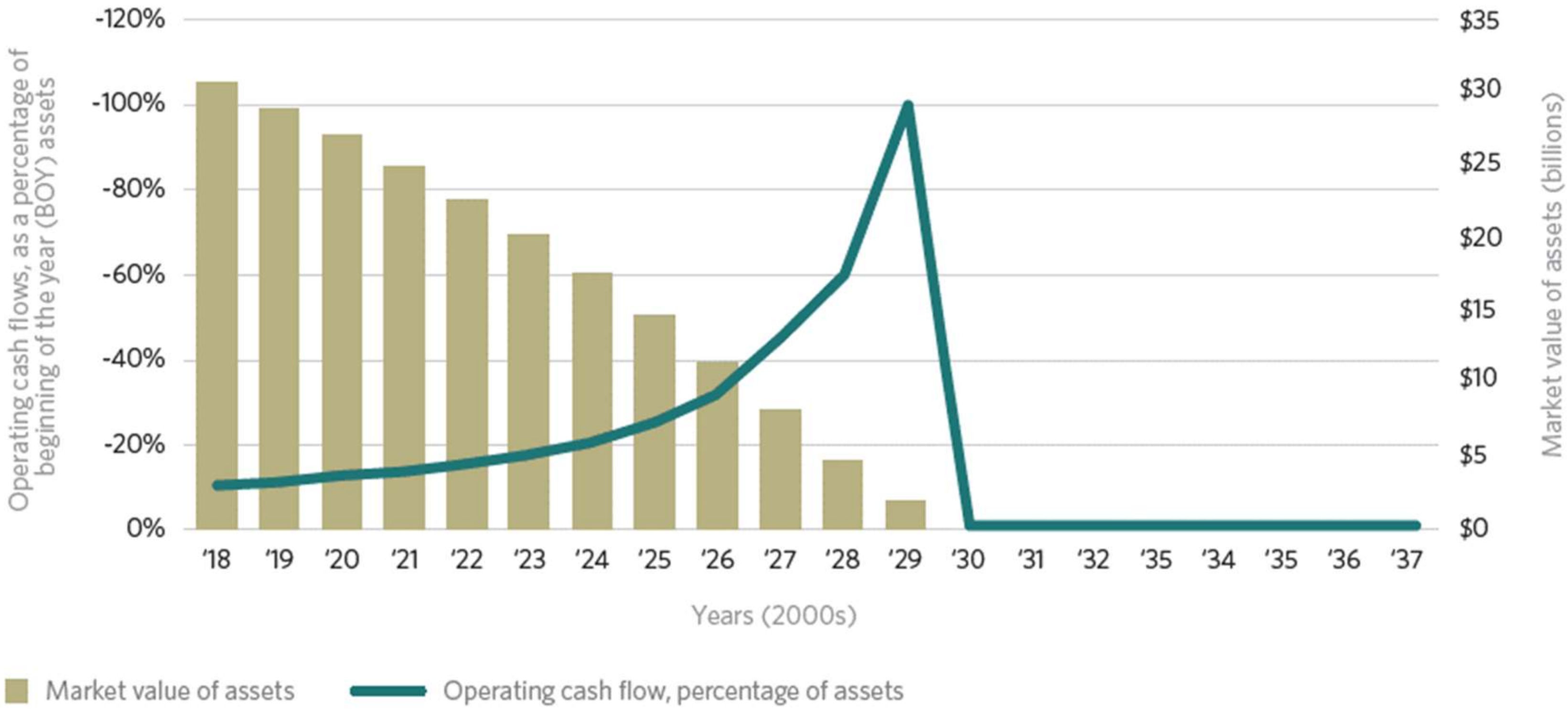
- Plan for the next recession.
- Prepare for periods of ***lower investment returns*** and ***higher contributions (costs)***.
- Manage for financial market volatility through all cycles of the economy.
- Provide a standard analysis to evaluate policy proposals.

Stress Testing in Action:

Planning for the Next Recession

NEW JERSEY'S PROJECTED ASSETS AND OPERATING CASH FLOW

If Investment returns are lower than expected (fixed at 5%) and assuming contributions are made as a fixed percentage of own source revenue (OSR)



Notes: Data for the New Jersey Public Employees Retirement System (PERS)—state portion only—and the Teacher Pension Annuity Fund (TPAF) plans.

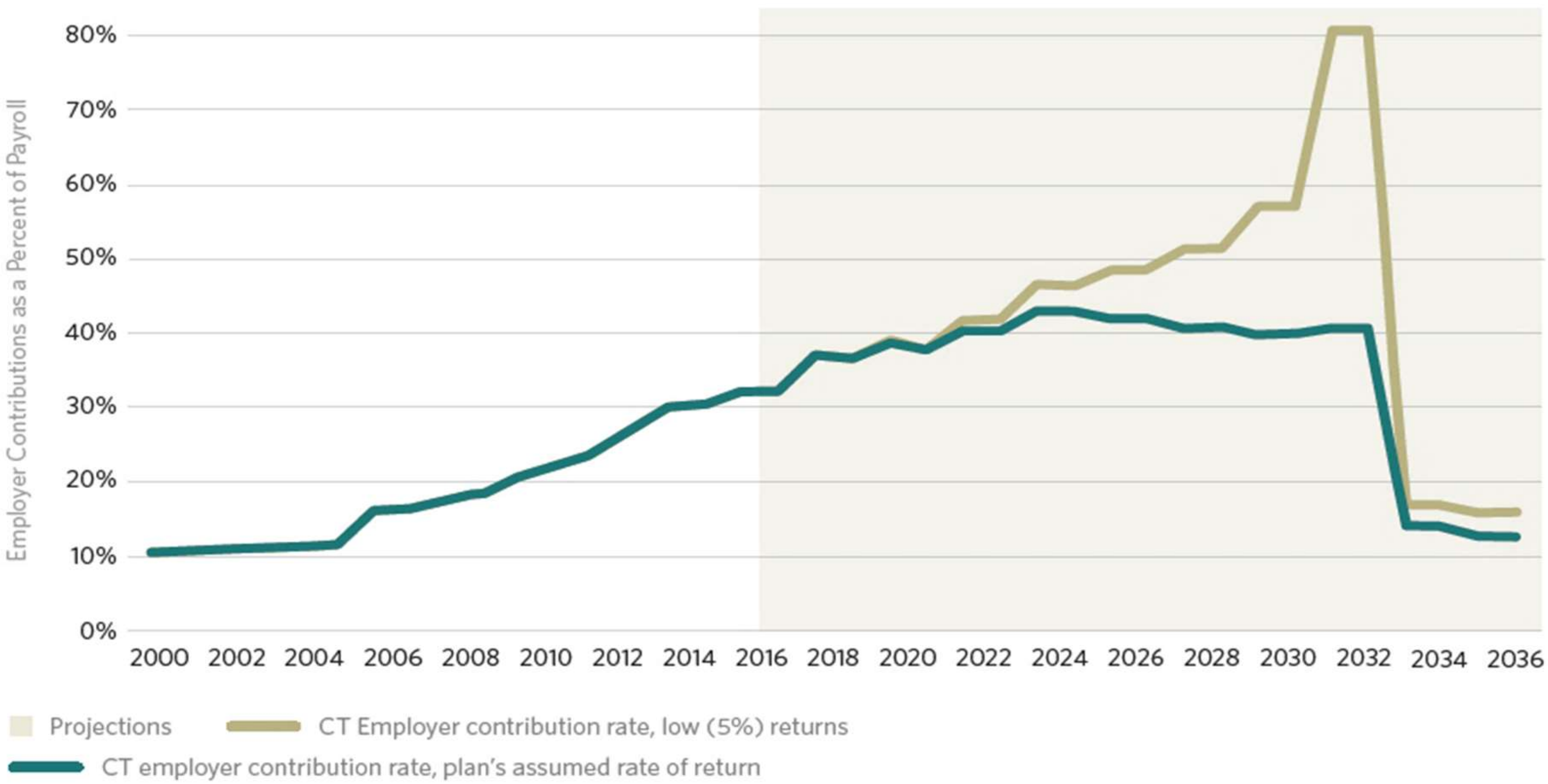
Source: Analysis by The Pew Charitable Trusts and The Terry Group, based on publicly available Comprehensive Annual Financial Reports (CAFR), actuarial reports and valuations, or other public documents, or as provided by plan officials

Stress Testing in Action:

Measuring and Managing Unexpected Costs and Market Volatility through cycles of the Economy

Connecticut's Projected Employer Contribution Rates Over Time

Under plan's assumed rate of return compared to a low return scenario

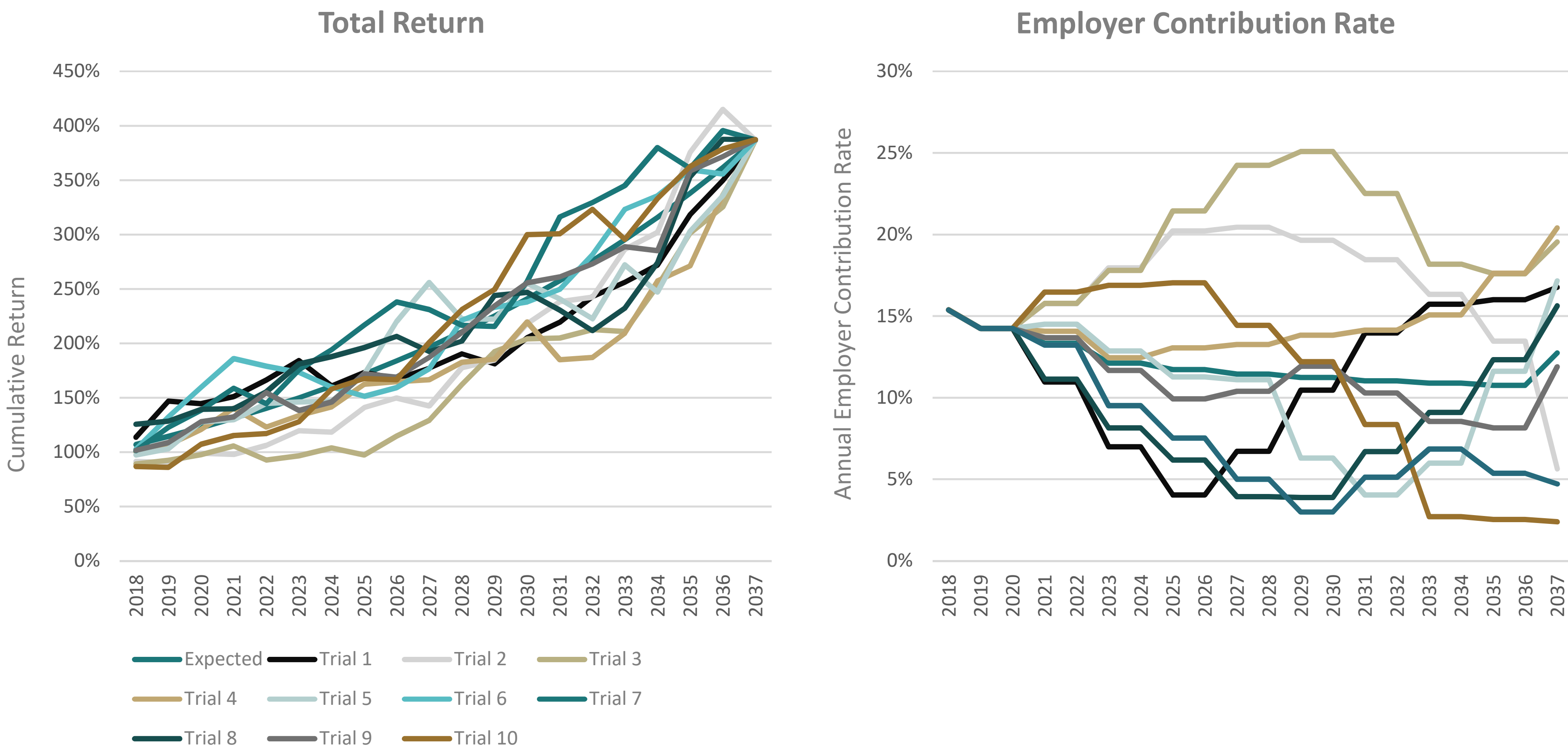


Note: Assumes actual investment returns of 5 percent and that the state adheres to the current funding policies or statutes as written (state policy).

Source: Analysis by The Pew Charitable Trusts and The Terry Group, based on publicly available Comprehensive Annual Financial Reports (CAFR), actuarial reports and valuations, other public documents, or as provided by plan officials

Risky Investments will cause volatility in cost

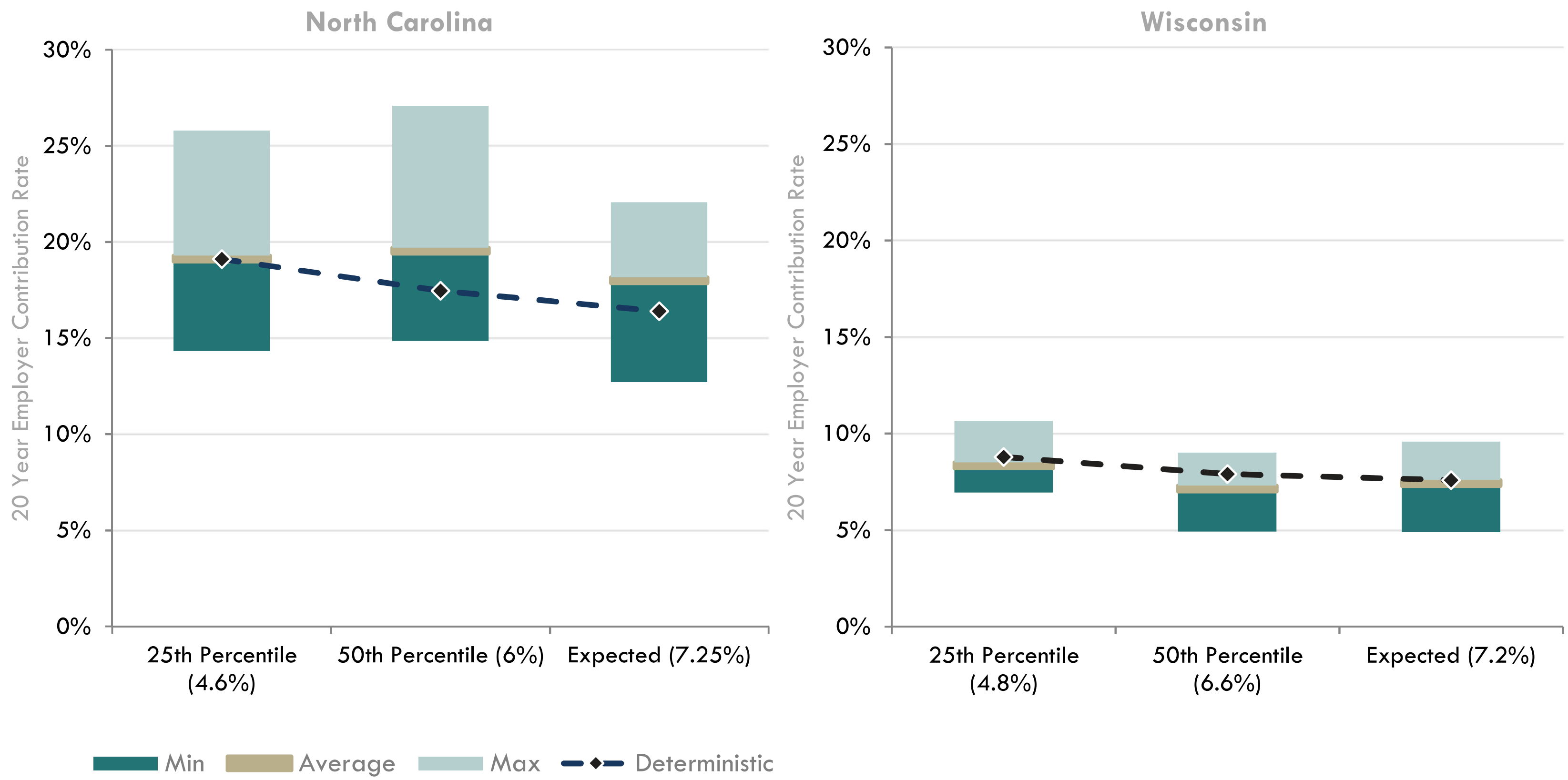
Virginia's stress test results show how 10 different trials with the same long-term returns have very different employer costs over the 20-Year projection



Notes: Each line represents one trial using Pew's stress testing model to project annual returns and the employer contribution rate for the Virginia Retirement System. The first trial shown uses the expected rate of return assumption for the annual return; the subsequent 10 trials use Pew's capital market assumptions to simulate 20 years of returns. Each trial has a geometric average return of 7% over 20 years.

Projected Impact of Volatility of Costs for North Carolina and Wisconsin

Risk-sharing provisions limit costs and volatility for Wisconsin



Notes: Projections above are for total employer contributions as a share of total payroll over a 20-years at different returns. Source: Analysis by The Pew Charitable Trusts and The Terry Group.

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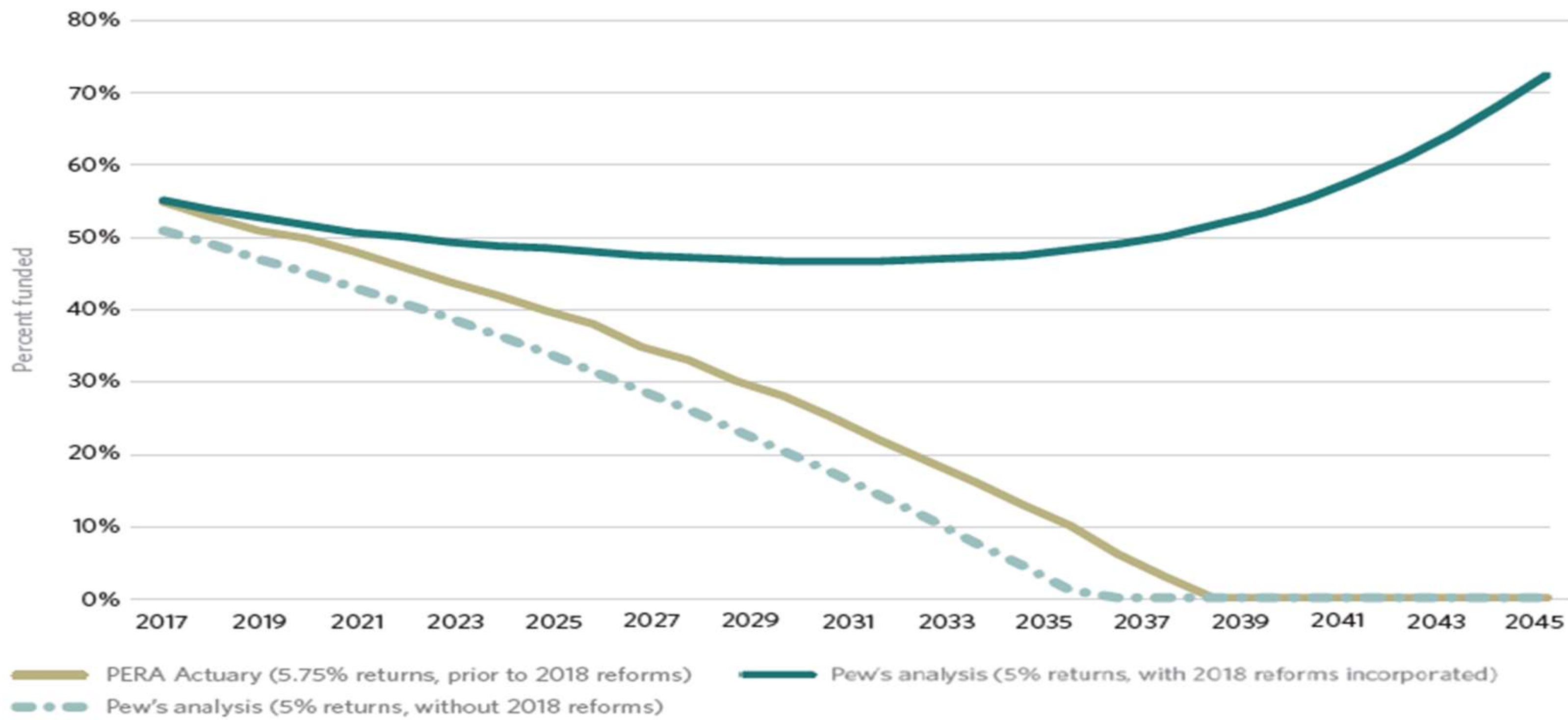
STRESS TESTING IN ACTION:
SCORING REFORM PROPOSALS

Colorado's Projected Funded Status Before and after Pension Reforms

Projected funding status for PERA's state division under lower-than-expected investment returns

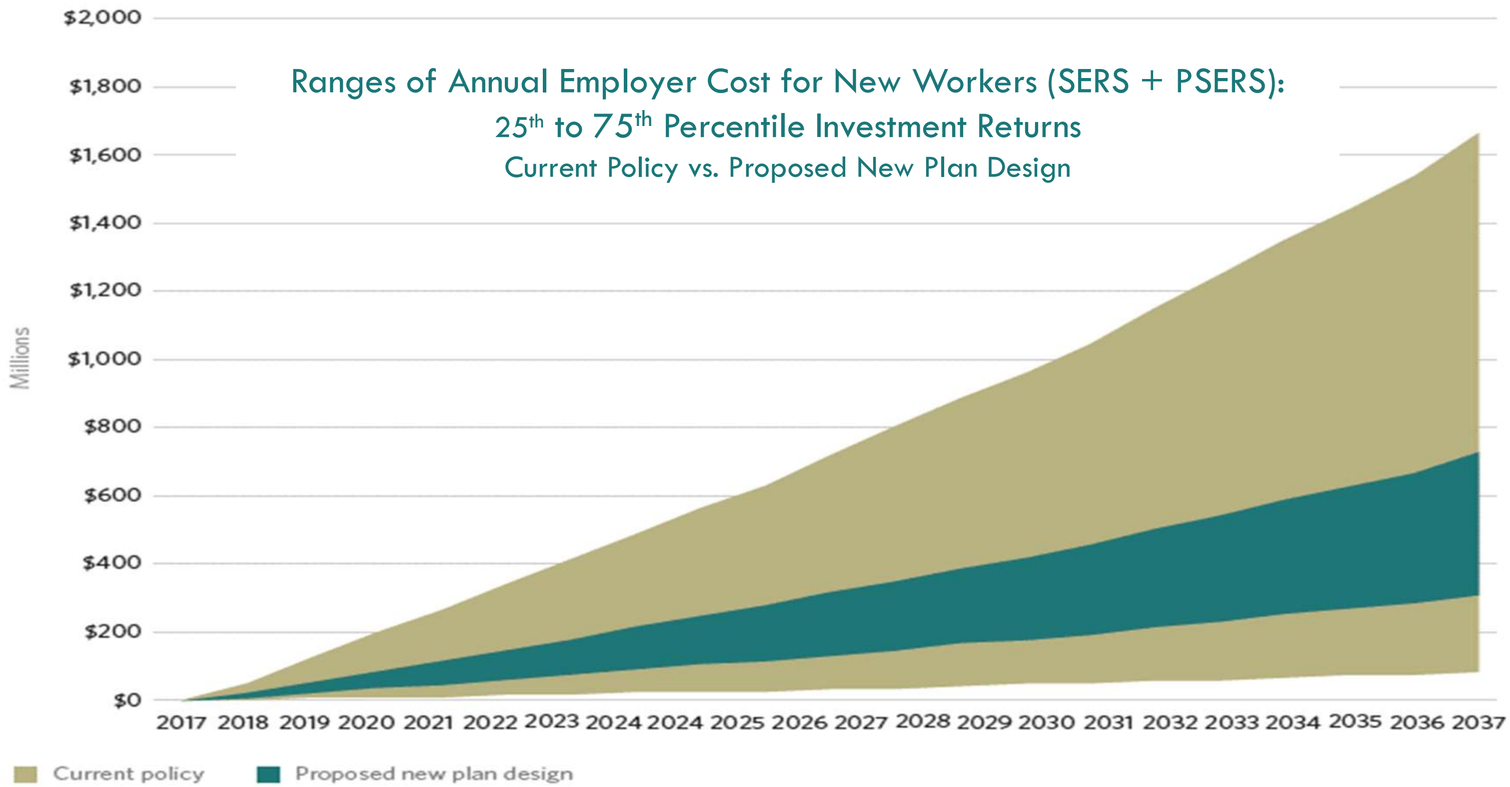


Note: Projections based on Colorado's Public Employees Retirement Association (PERA) 2016 valuation. Reform projections do not include changes to the definition of payroll as outlined in the final legislation as we anticipate the effect on fiscal impact to be minor. Additionally, our model simplified the risk sharing features to be fully on in low return scenarios. Finally, a 20% take-up rate for the DC plan was assumed.

Source: Analysis by The Pew Charitable Trusts and The Terry Group, based on publicly available Comprehensive Annual Financial Reports (CAFR), actuarial reports and valuations, or other public documents, or as provided by plan officials

Pennsylvania's Projected Employer Costs, Under Current vs. Proposed Plan Design

Stress testing showed proposed plan design for new hire benefits in Pennsylvania reduced the risk facing taxpayers



Source: Source: Analysis by The Pew Charitable Trusts and The Terry Group, based on publicly available Comprehensive Annual Financial Reports (CAFR), actuarial reports and valuations, or other public documents, or as provided by plan officials

Arkansas
Preliminary Results

Fiscal Position on a National and Regional Level

1. As of 2016, Arkansas':
   1. Funded ratio was 77% (**15th** in the nation).
   2. Operating cash flow to assets ratio was -3.2% (**33rd** in the nation).
   3. Net amortization to payroll was 0.7% (**19th** in the nation)

2. Regional Comparisons – Funded Ratio (2016):
   - Mississippi: 58%
   - Louisiana: 60%
   - Oklahoma: 72%
   - Texas: 73%
   - Missouri: 77%
   - Tennessee: 94%

Preliminary Modeling of Arkansas

Assumptions

1. Indicative Analysis: Based on Pew's interpretation of existing state policies derived from publicly available plan documents
2. Model includes APERS and ATRS based on 2017 AVs
3. Preliminary results focus on *State Policy*
   A. Stress testing also allows us to test policy maker behavior
4. We applied the following simplifying assumptions for the financing objectives:
   A. ATRS: Fixed rate funding after escalating to 15% in FY 2023.
   B. APERS: Fixed rate funding with a max 30 year amortization and non-decreasing contributions.

Results Highlights

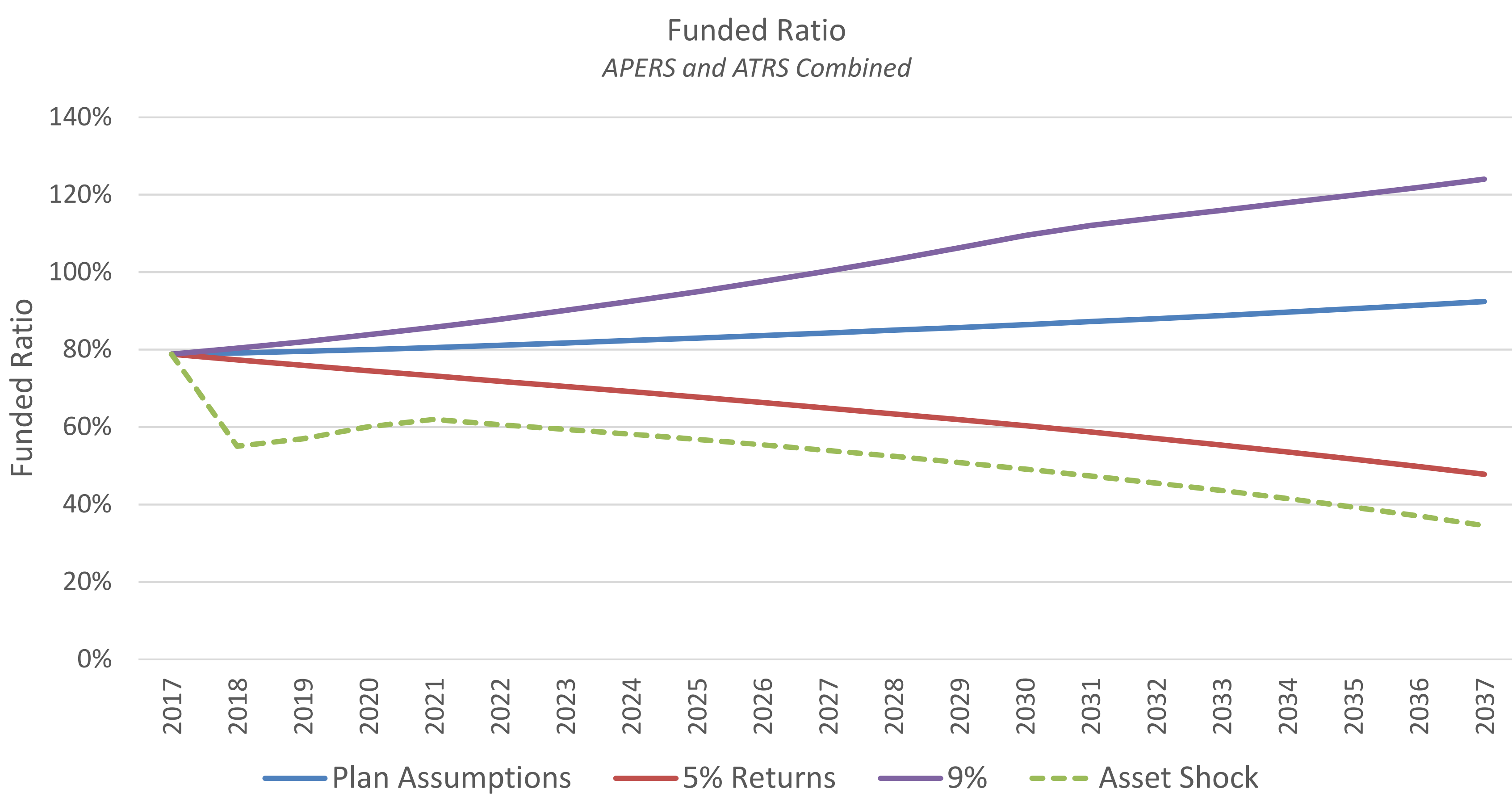
- Both plans on track to reach or surpass full funding in 30 years, at assumed rate of return

- In downside scenarios, contribution increases would be required to avoid substantial funding decreases, but there is no real risk of insolvency over 20 years

- Results highlight how different approaches to contribution policy lead to different outcomes in downside scenarios

Arkansas Funding Projections

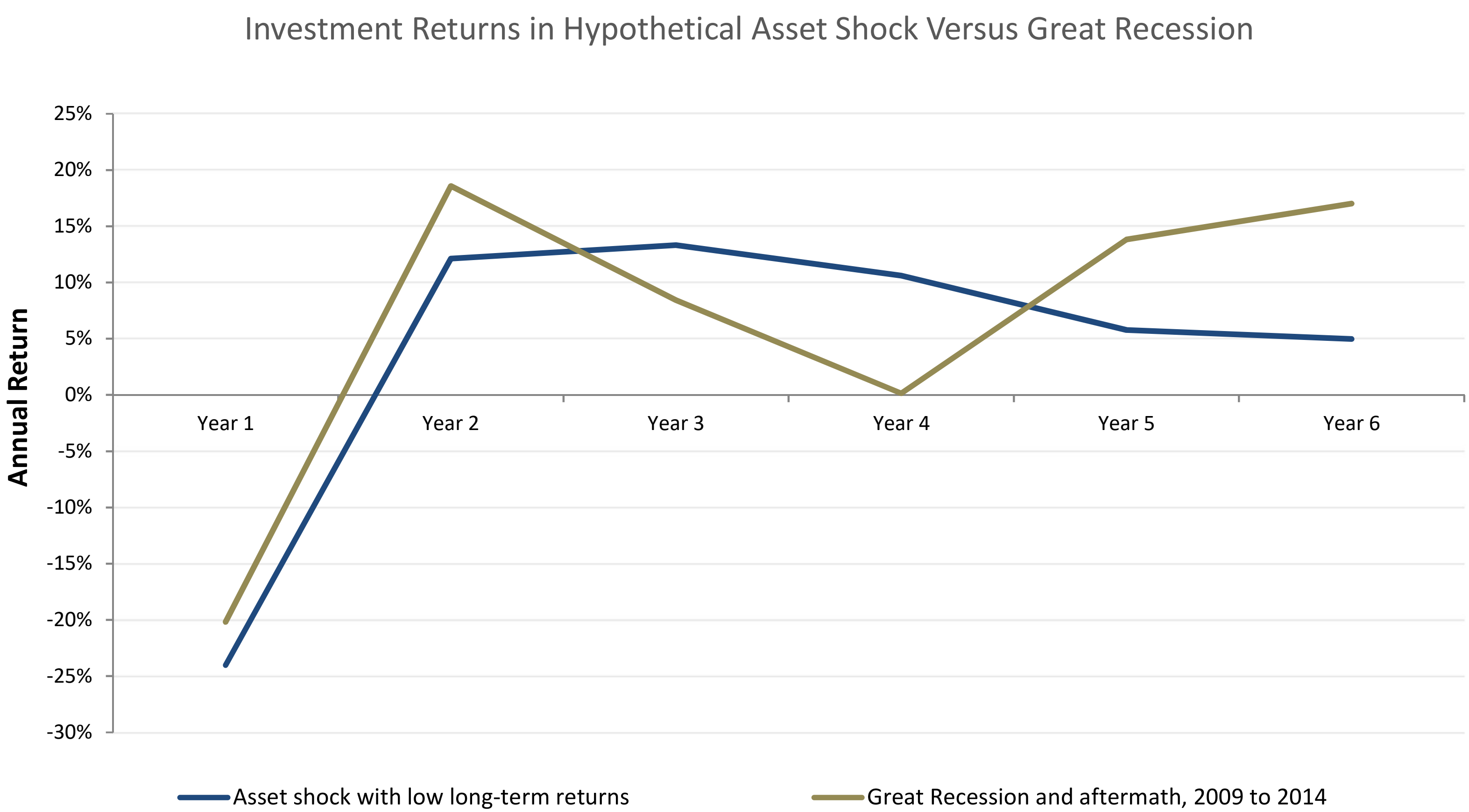
Assuming Different Investment Returns



- Stress Testing <u>focuses on downside scenarios</u> to help policymakers plan

Pew's Asset Shock Scenario

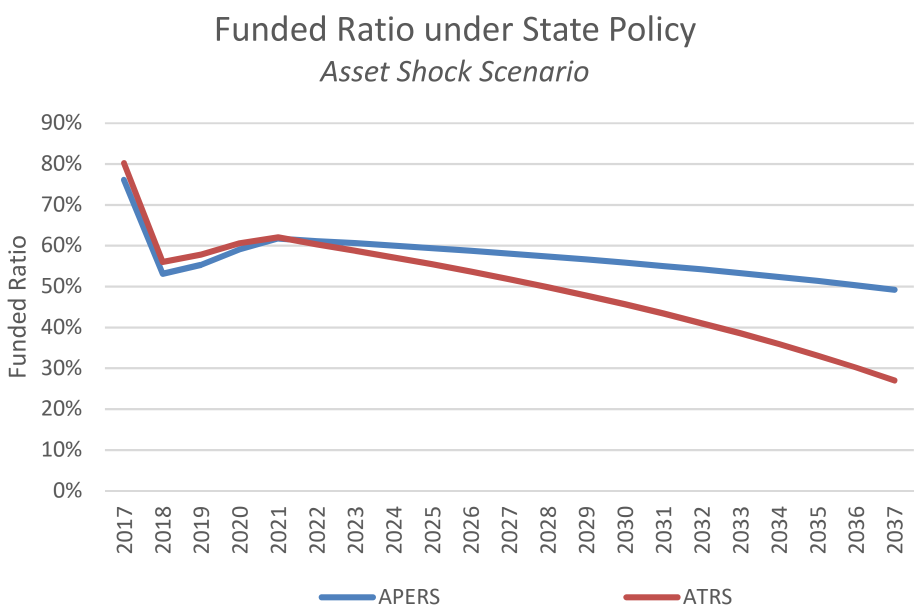
Investment Returns Similar to Great Recession

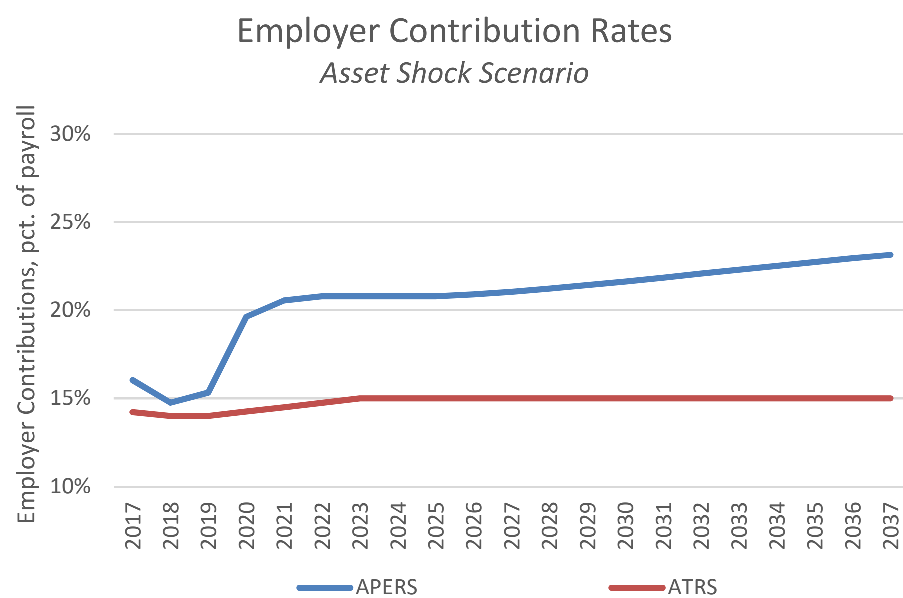


Source: The Pew Charitable Trusts, The Terry Group, and FactSet Research Systems Inc.
Based on Federal Reserve's "2017 Supervisory Scenarios for Annual Stress Tests Required under the Dodd-Frank Act Stress Testing Rules."

Contribution Increases Required In Asset Shock

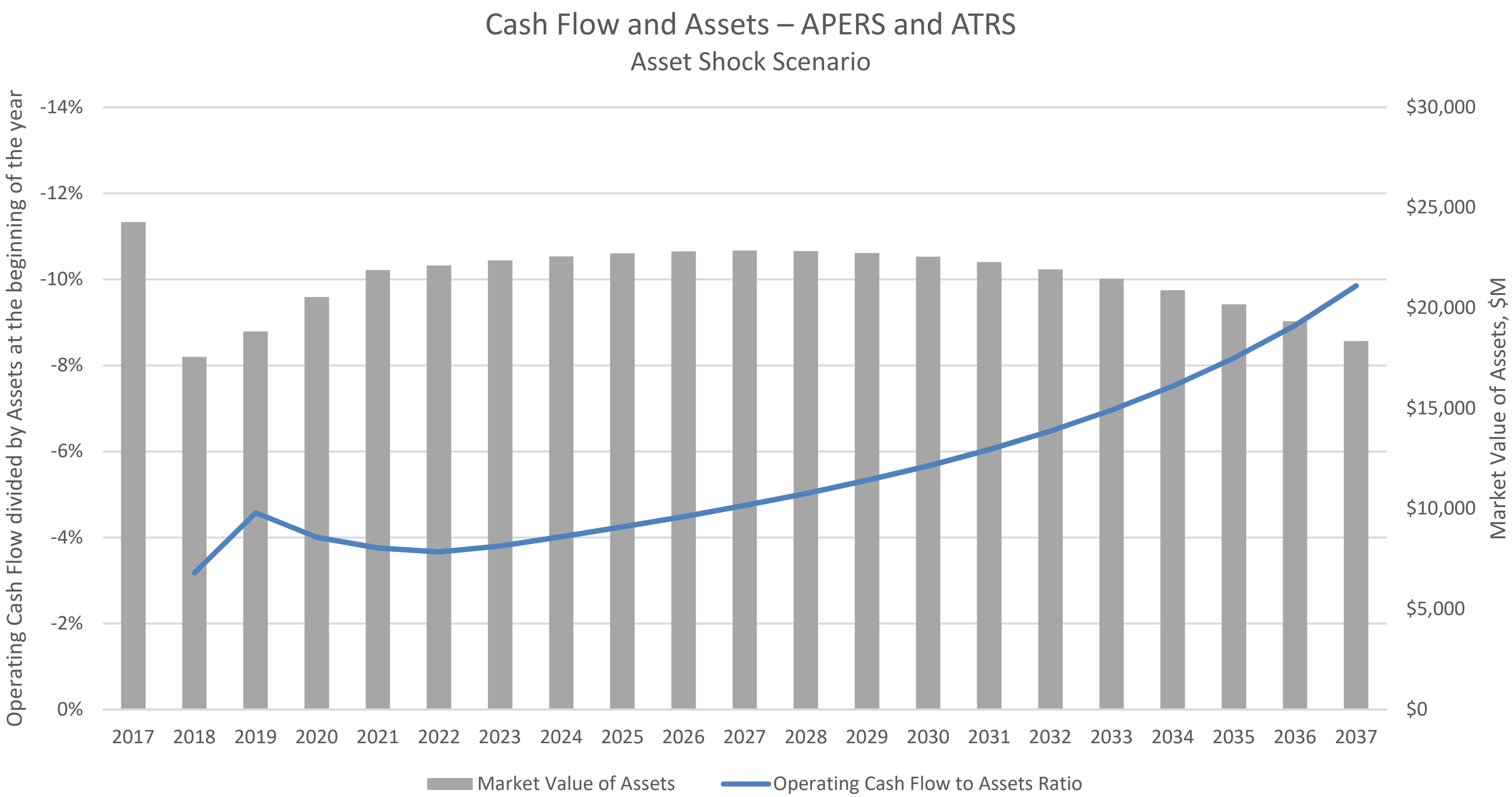
Accelerated funding issues if contributions aren't responsive





Operating Cash Flow to Assets Ratio

An example of Financial Metrics Applied To Pensions



(Benefit Payments – Total Contributions) / Assets at the Beginning of the Year

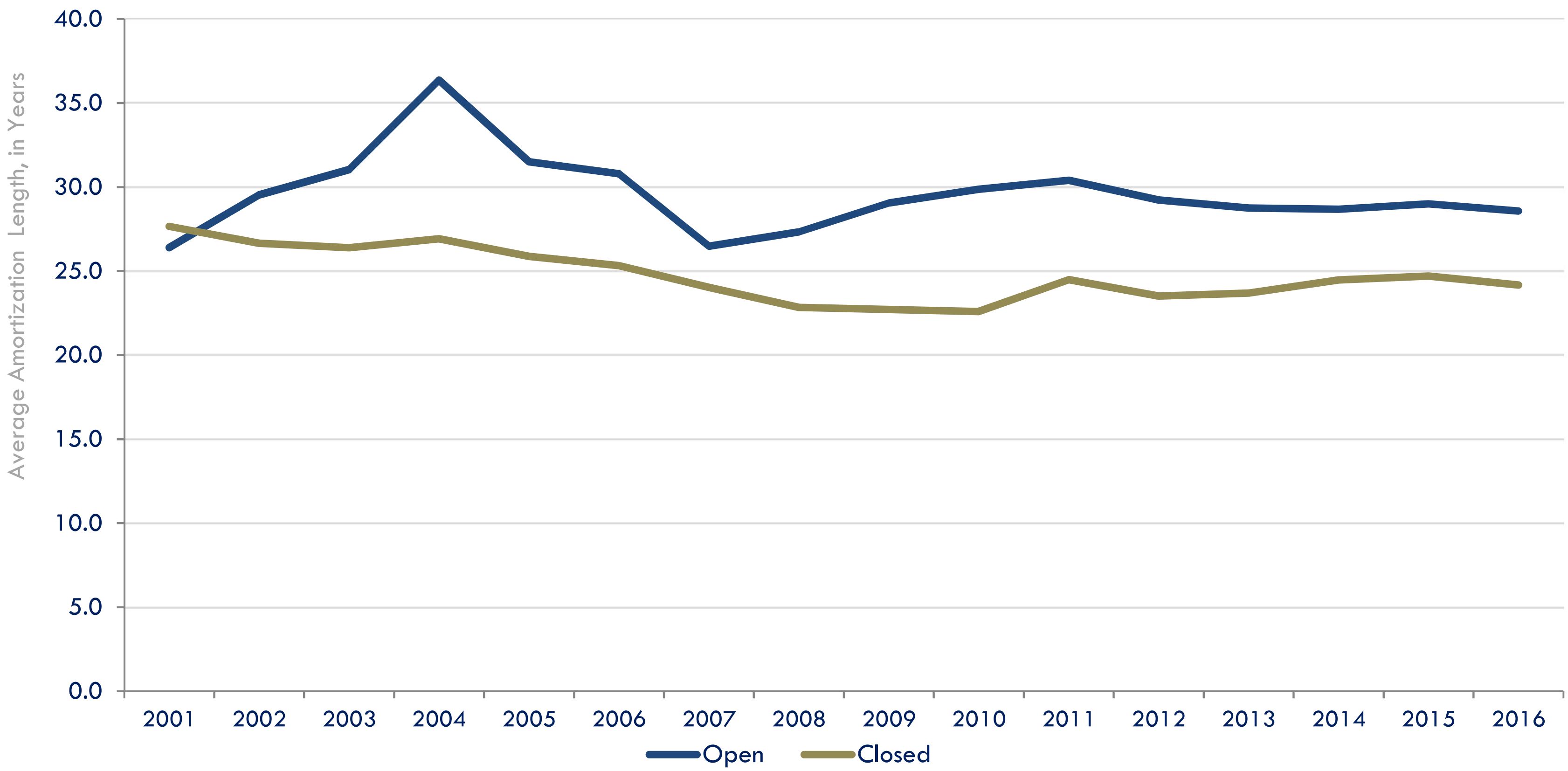
Conclusion: Key Takeaways

- US public pension funds face unprecedented vulnerability to economic downturns.
- Poorly-funded plans project unfunded liabilities, high costs, and in some cases, risk of insolvency when hit with lower returns.
- Keys to protecting pension funds from fiscal distress:
    - Well-funded systems tend to maintain fiscal discipline; and
    - Adopt innovative policies tailored to manage market volatility.
- Stress test analysis helps states prepare for economic uncertainty, improve existing policies, and evaluate reforms.

APPENDIX

50 State Analysis: Average Amortization Period for Open and Closed State Plans that follow Level Percent of Pay, 2001-2016

Amortization periods increased in the early 2000s and after the Great Recession



Note: Includes 87 state and teachers public plans. Observations of plans with an aggregate actuarial cost method are excluded (n=90). Some plans are missing for some years (n=63). Source: Boston College Public Plans Database.

Background

- After nine years of economic recovery and stock market gains, public retirement systems are more vulnerable than ever to the next economic downturn.
- State officials need tools to understand how pension plans and state budgets will weather the next recession.
- Comprehensive stress testing combines existing actuarial projections with state level economic forecasts to assess pension system solvency and impacts to state budgets under different economic scenarios.
- This is not an academic exercise. Stress test analysis prompted needed reforms in Colorado and was central to reform evaluation in Pennsylvania.

Stress Testing in Action: Case Study of Colorado

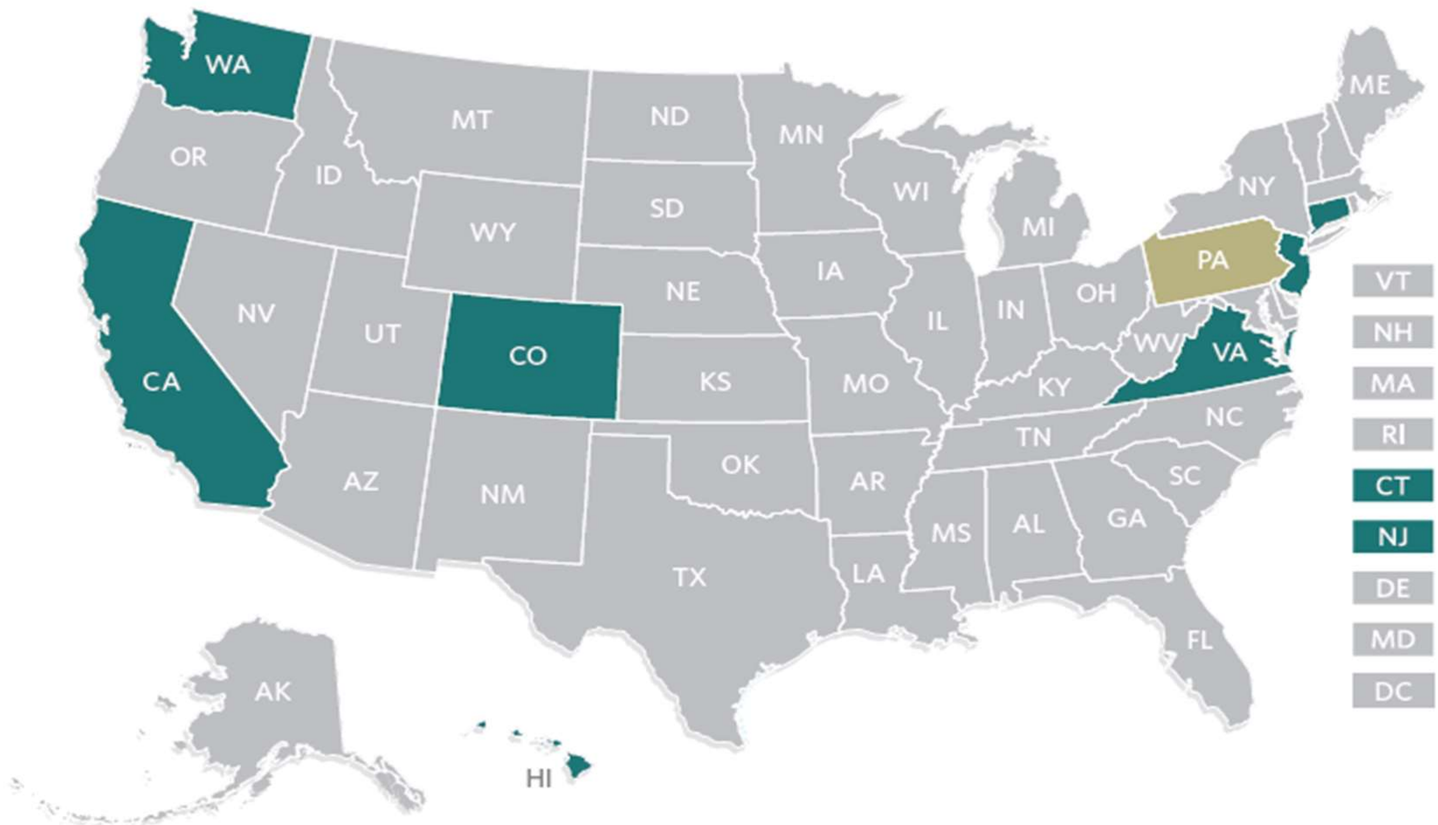
- Reforms adopted in Colorado earlier this year were motivated in-part by a stress test study conducted in 2015, as part of a mandatory requirement to assess the effectiveness of prior reforms adopted in 2010.

- Based on the results of the study, plan actuaries concluded that, without additional policy intervention, there was approximately a one-in-four chance of pension system insolvency within 25 to 30 years.

- The pension reforms recently enacted by Colorado lawmakers demonstrate how states can utilize stress testing as tool to examine and shore up financially troubled retirement systems.

EMERGING TREND: STATE PENSION STRESS TESTING

5 States have Adopted Legislation Requiring Regular Stress Testing in the Past Year

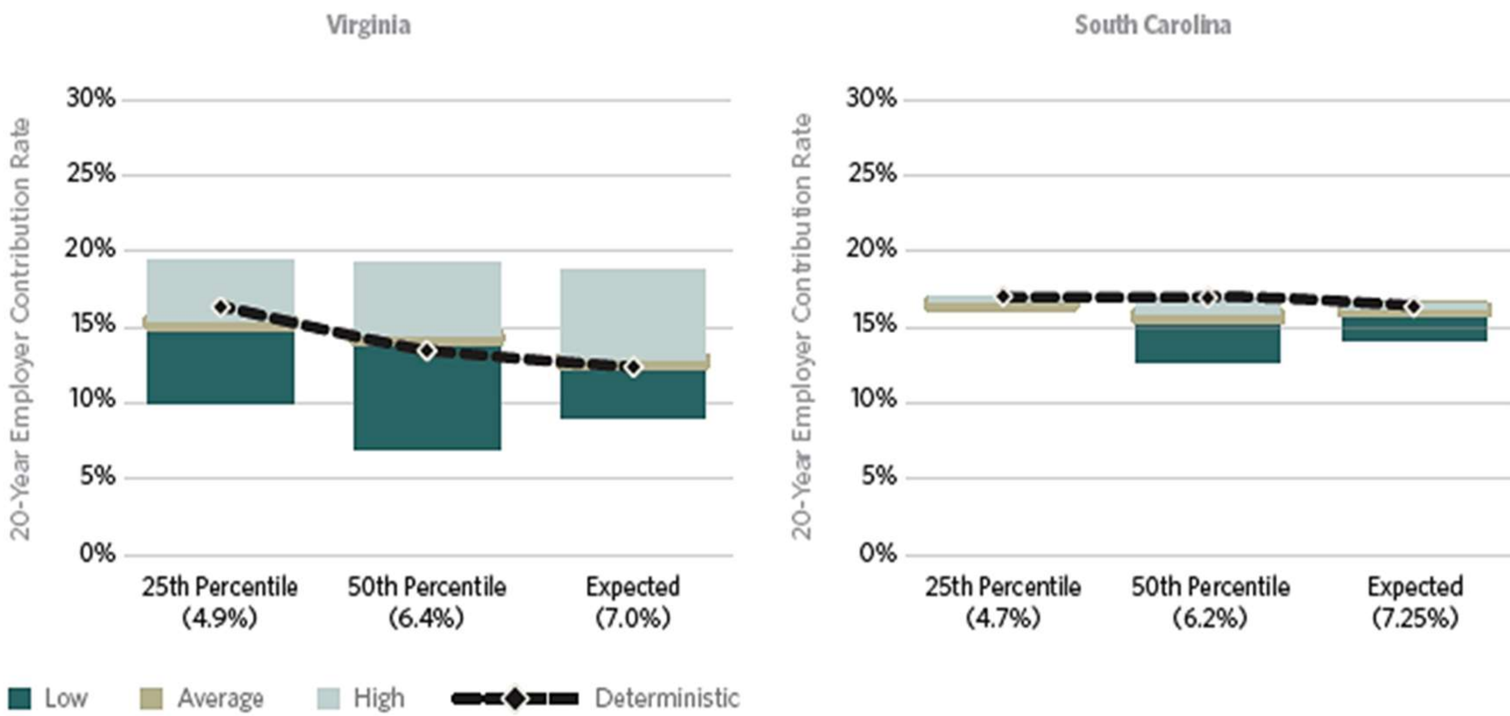


Requires stress test reporting   Considering

Source: The Pew Charitable Trusts

PROJECTED IMPACT OF VOLATILITY OF COSTS FOR VIRGINIA AND SOUTH CAROLINA

Funding policy has a significant impact on the range of required contributions



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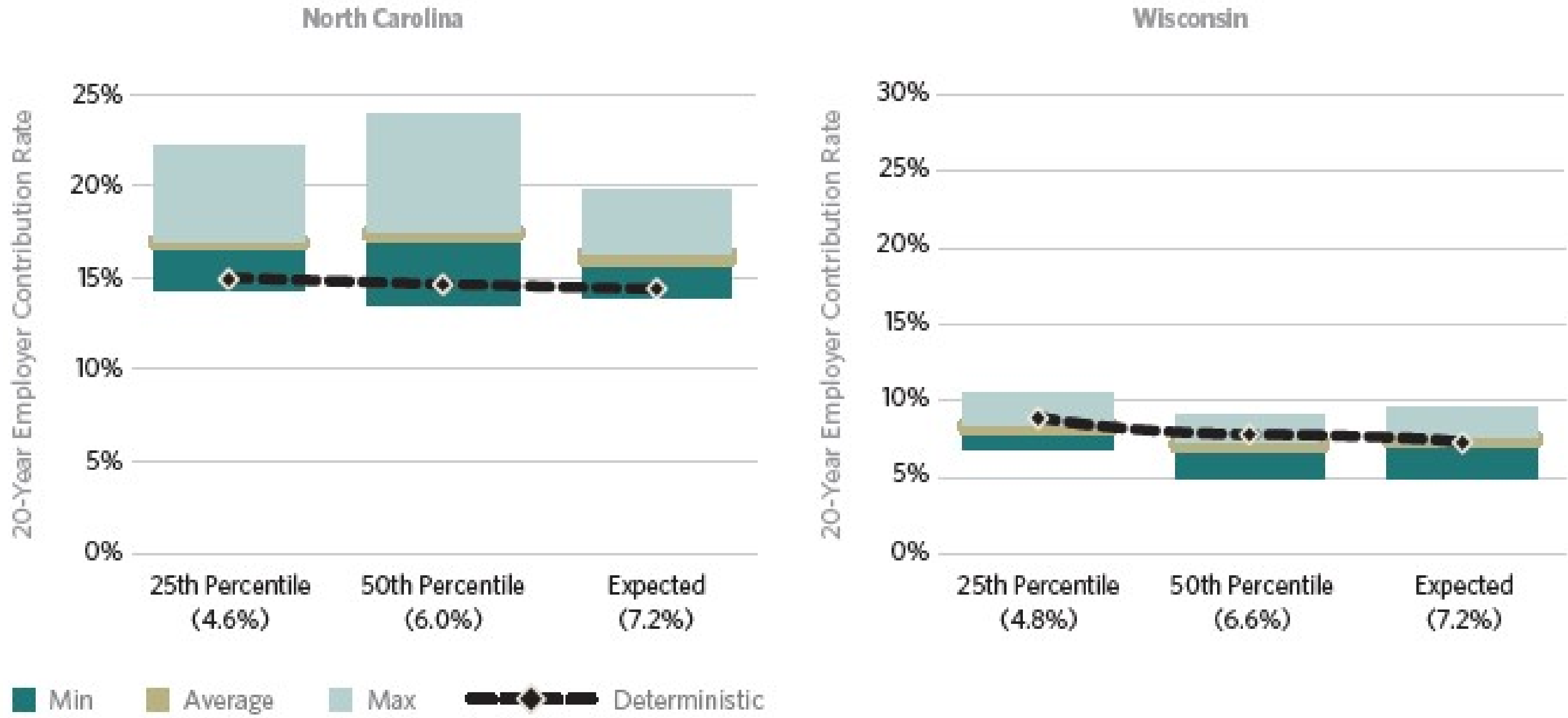

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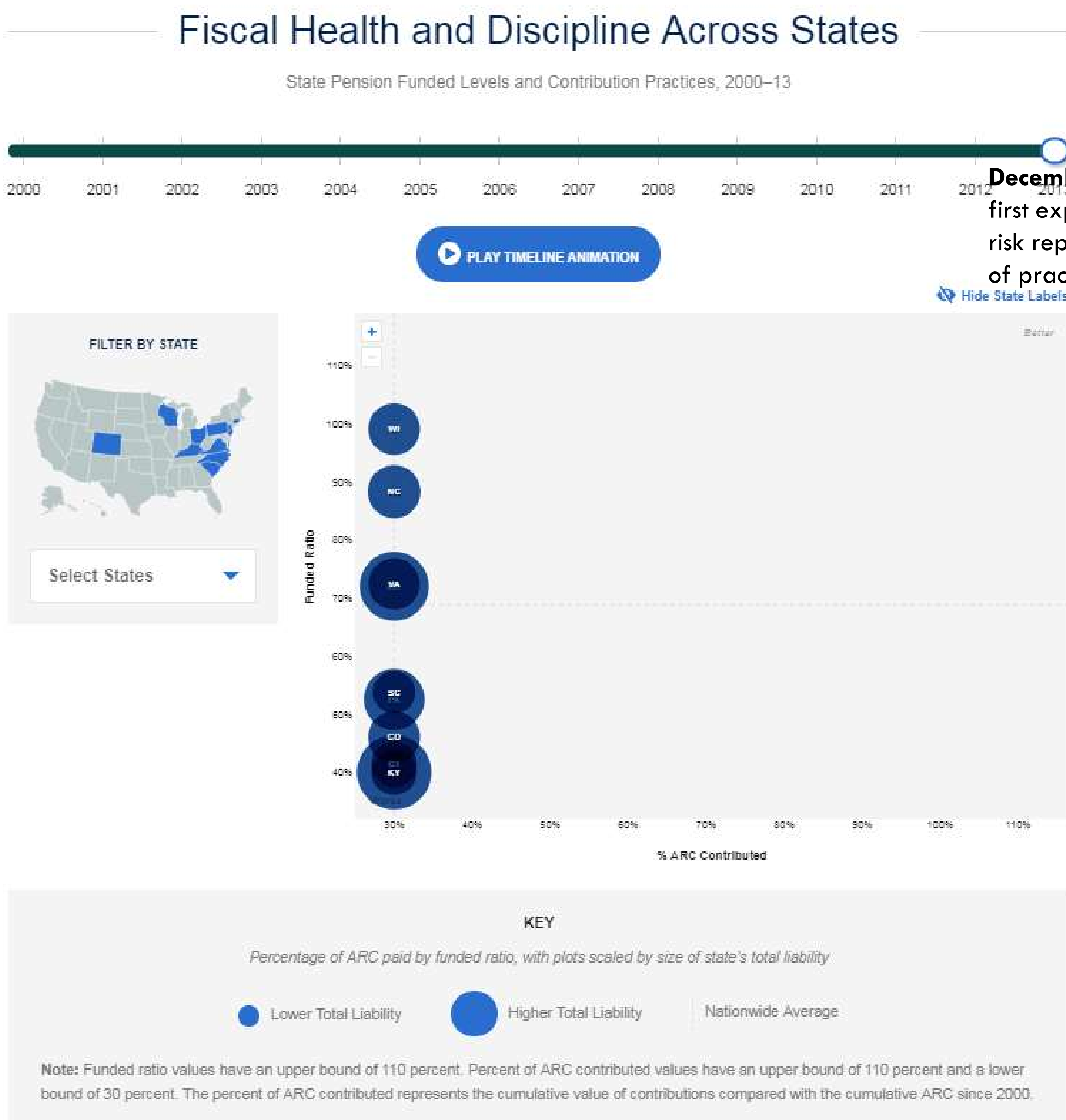

December ASB approves first exposure draft for risk reporting standards of practice (ASOP 51)

Risk Reporting and Other Recommended Practices for Public Pension Plans

Blue Ribbon Panel's 2014 recommendations compared to current and proposed governmental accounting requirements and actuarial guidelines

Blue Ribbon Panel (BRP) Category (Purpose)*	BRP Recommendation	Governmental Accounting Standards Board (GASB)	Actuarial Standards Board (ASB) Actuarial Standards of Practice (ASOP) No. 51 and Proposed Updates to ASOP No. 4**		Comments
			Area of Risk	Method for Assessing Risk	
Risk Measures and Analyses					
Measures of Risk to Financial Position (Understanding Current Risk Levels.)	(1) standard deviation of expected returns on asset portfolio; **(2) plan liability and normal cost at risk free rate;** (3) standardized plan contribution	**Sensitivity** of the net pension liabilities to changes in the discount rate at +/- 1% vs. baseline discount rate. Comparing Projections of the Plan's Fiduciary Net Position to Projected Benefit Payments using a single (blended) discount rate.	**Investment risk defeasement measure** (ASOP No. 4) -Disclose and obligation (plan liability) measures to reflect the cost of defeasing investment risk.	Discount rates consistent with market yields for a bond portfolio whose cash flows match benefits expected to be paid; Yield for US Treasuries or fixed-income securities that receive one of the two highest ratings.	*ASOP No. 4 addresses reporting liabilities at risk-free or lower rates., with some room for interpretation on which benchmark rates to use. This proposed supplemental disclosure does not require calculation of normal cost at lower rate, or includes other BRP recommendations (standard deviation or standardized contribution.)*
Stress Testing (Measuring Investment and Contribution Risks.)	Financial projections over 30 years using baseline investment return assumptions as well as returns at +/- 3% investment returns vs. baseline and 80 to 100% of ARC payments.	N/A	**Investment, Interest Rate, and Contribution Risk (ASOP No. 51)** **Definition of Contribution Risk cites** instances "where contributions are not made in accordance with funding policy."	**Stress Testing, Scenario,** and **Stochastic Analysis**	*Comprehensive stress testing can be designed to address all three risks noted – including budget measures for assessing Contribution Risk – and incorporate Scenario and Stochastic Analysis.*
Enhanced Disclosures					
Un-discounted Cash Flows (Providing data for independent assessment of plan obligations.)	Disclosure of projected benefit payments for current employees to allow for independent assessment of plan obligations	N/A	N/A	Unit credit method in ASOP No. 4 §3.11(b) uses un-discounted cash flows but does not require these calculations to be disclosed.	*Benefit payment projections are not addressed by ASB but are included as supplemental disclosures in some states (e.g. Rhode Island)*
Financial and Demographic Trends	10 years historical data of assets, benefit payments, and liabilities to payroll, as well as recommended contributions to revenue; and actual to recommended contributions	Requires 10-year schedule of historical cash flows (reconciling) changes in the total and net pension liability.	***Plan Maturity Measures*** (ASOP No. 51 3.7) five ratios:	(a) Assets/Payroll; (b) retired liability to total liability (AAL basis) (c) Cash Flow to Assets; (d) benefit payments/ contributions; (e) duration of AAL.	*All underlying data is typically available at the pension plan level. Cash flow measures (c) and (d) have the most direct applicability to assessing future solvency and financial risk.*

Notes: *Recommendations for Risk Measures Analyses and Disclosures. Report also includes recommendations for Funding Principles, Role of the Actuary (actuarial methods) and plan governance. **ASOP No. 51 identifies five risks: investment, asset/liability mismatch, interest rate, longevity, and contribution risk. ASOP 4 proposes supplemental disclosure of plan liabilities and costs at lower discount rates.

Sources: See GASB Statement No. 67, Financial Reporting for Pension Plans (2014), revised previously existing guidance in Statement No. 25. ; Actuarial Standards Board, Actuarial Standards of Practice No. 51: Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contribution (2017), Transmittal Memo; And, Proposed Revision of Actuarial Standard of Practice No. 4, Transmittal Memo.

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