

FLORIDA RETIREMENT SYSTEM (FRS) PENSION SOLVENCY ANALYSIS

Prepared by:

Pension Integrity Project at Reason Foundation

March 1, 2021





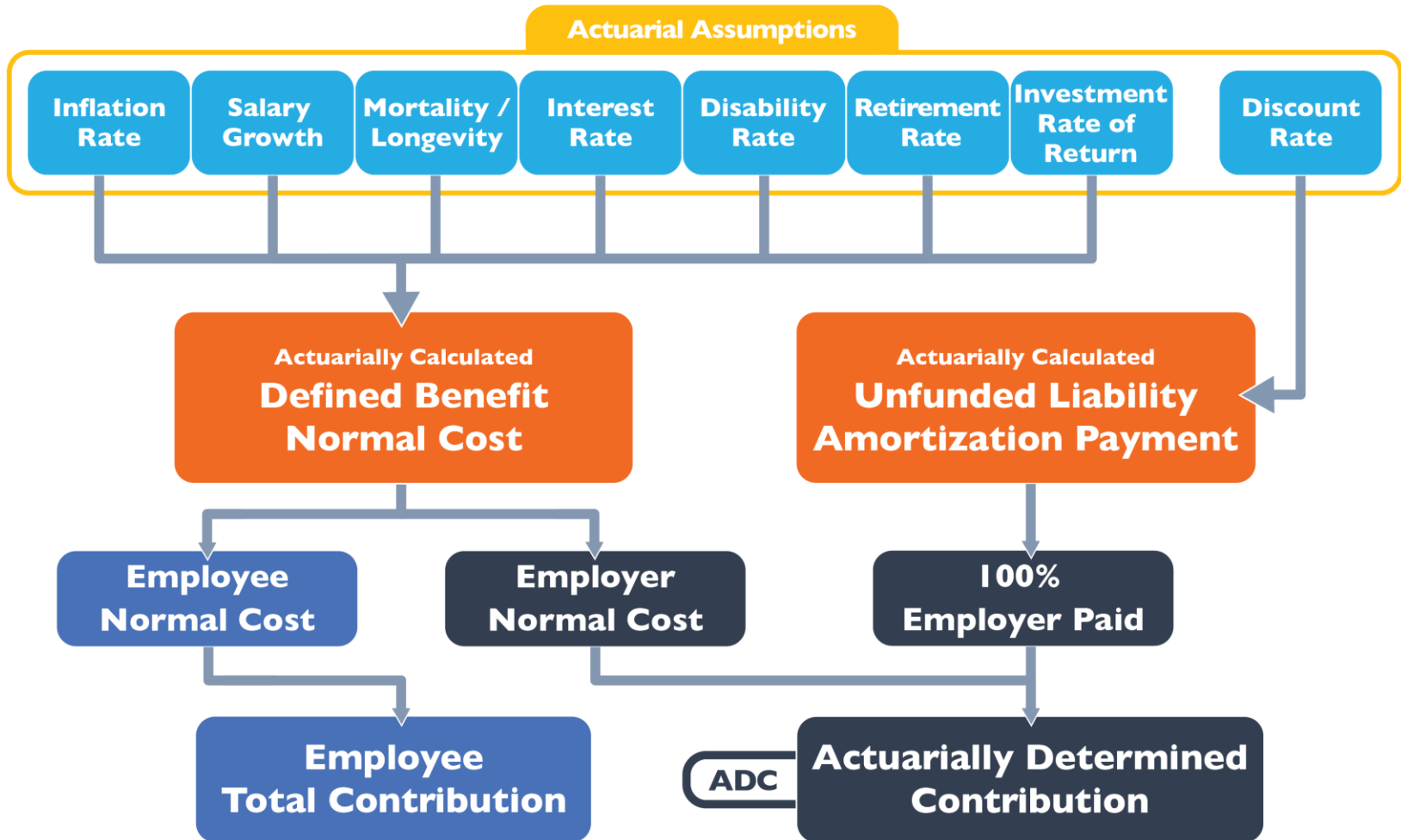
About the Pension Integrity Project

We offer pro-bono technical assistance to public officials to help them design and implement pension reforms that improve plan solvency and promote retirement security, including:

- *Customized analysis* of pension system design, trends
- *Independent actuarial modeling* of reform scenarios
- Consultation and modeling around *custom policy designs*
- Latest pension reform *research and case studies*
- *Peer-to-peer mentoring* from state and local officials who have successfully enacted pension reforms
- Assistance with *stakeholder outreach*, engagement and relationship management
- Design and execution of *public education programs* and media campaigns

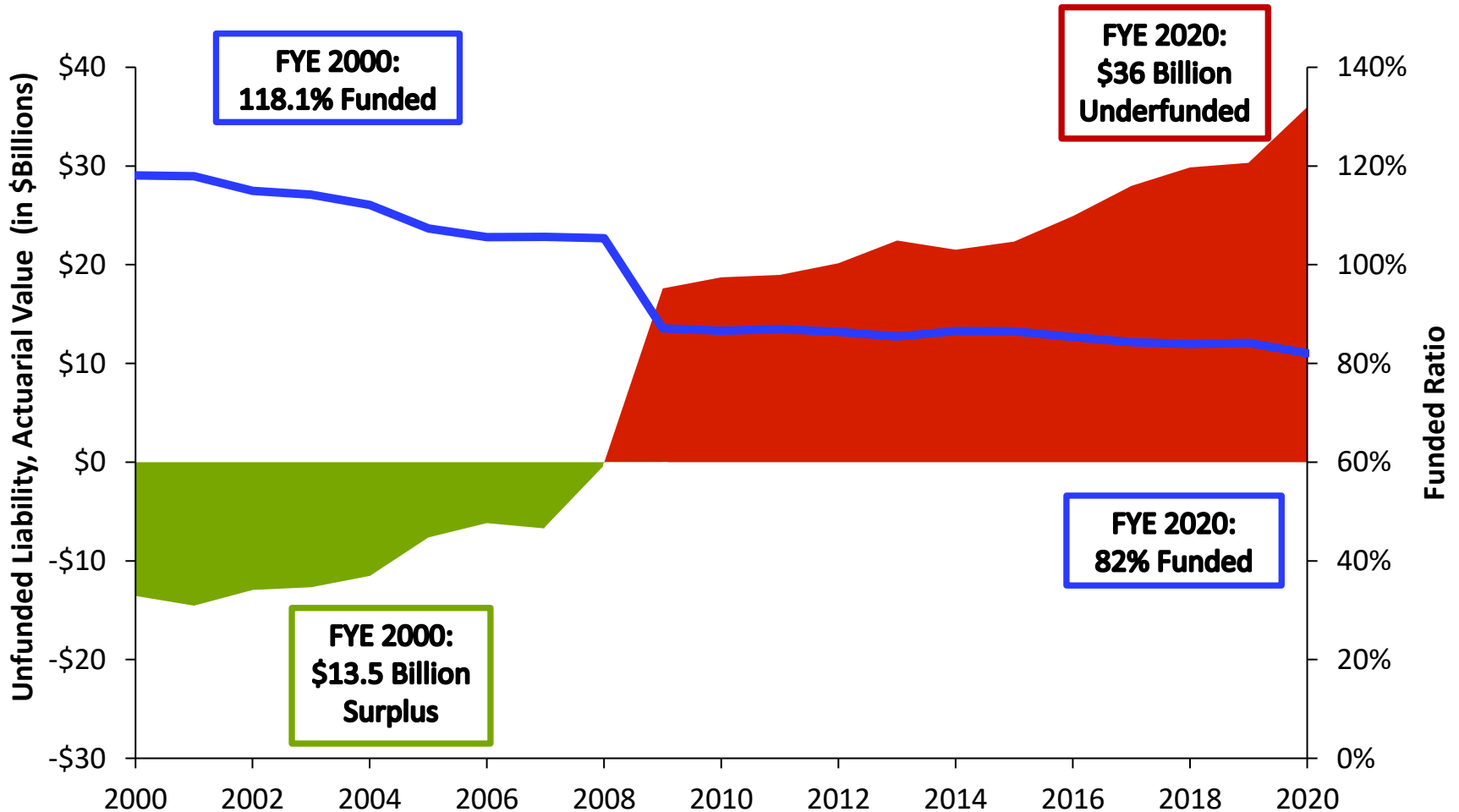


How a Pension Plan is Funded





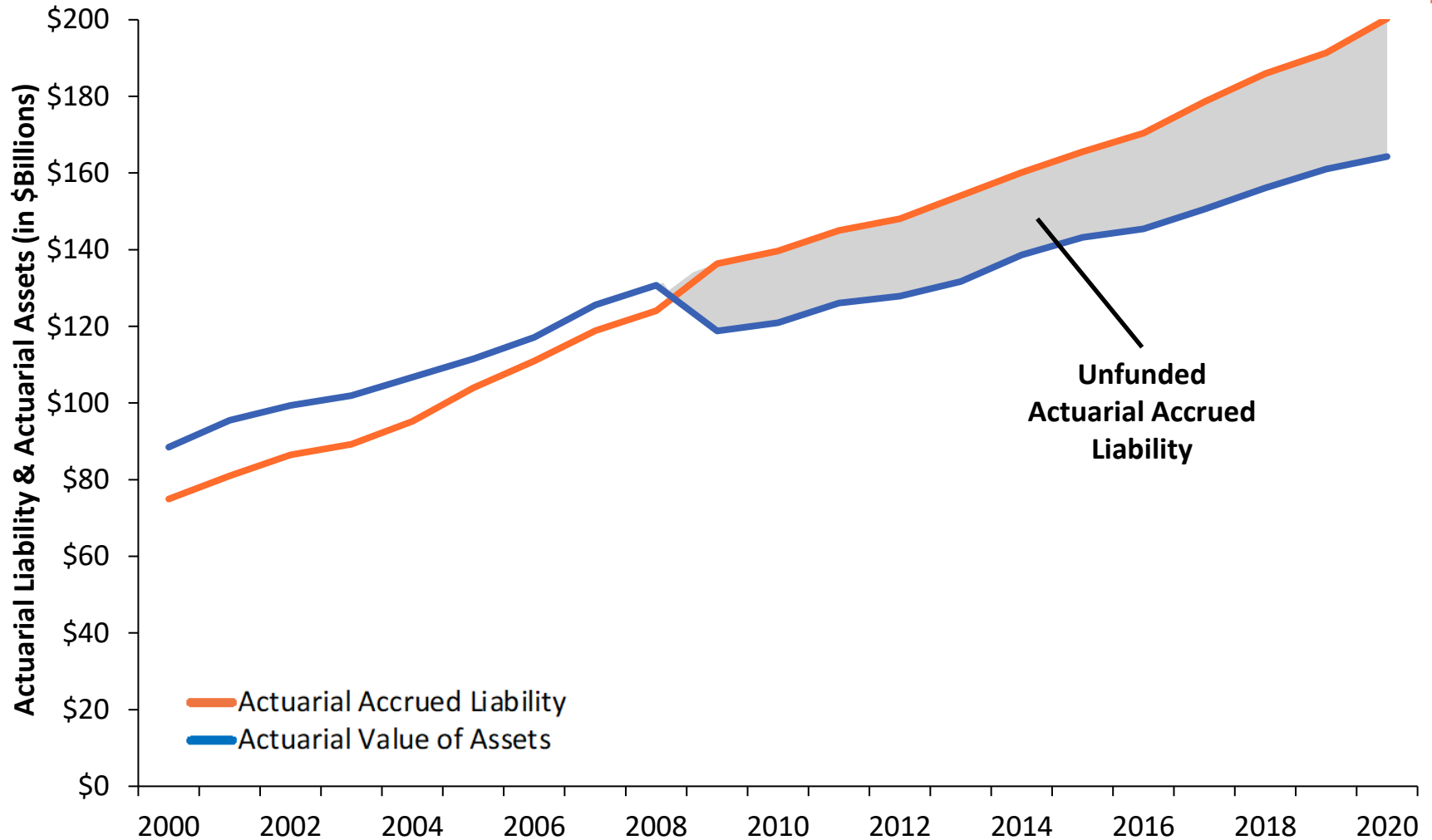
A History of FRS Solvency (2000-2020)



Source: Pension Integrity Project analysis of FRS actuarial valuation reports and CAFRs.

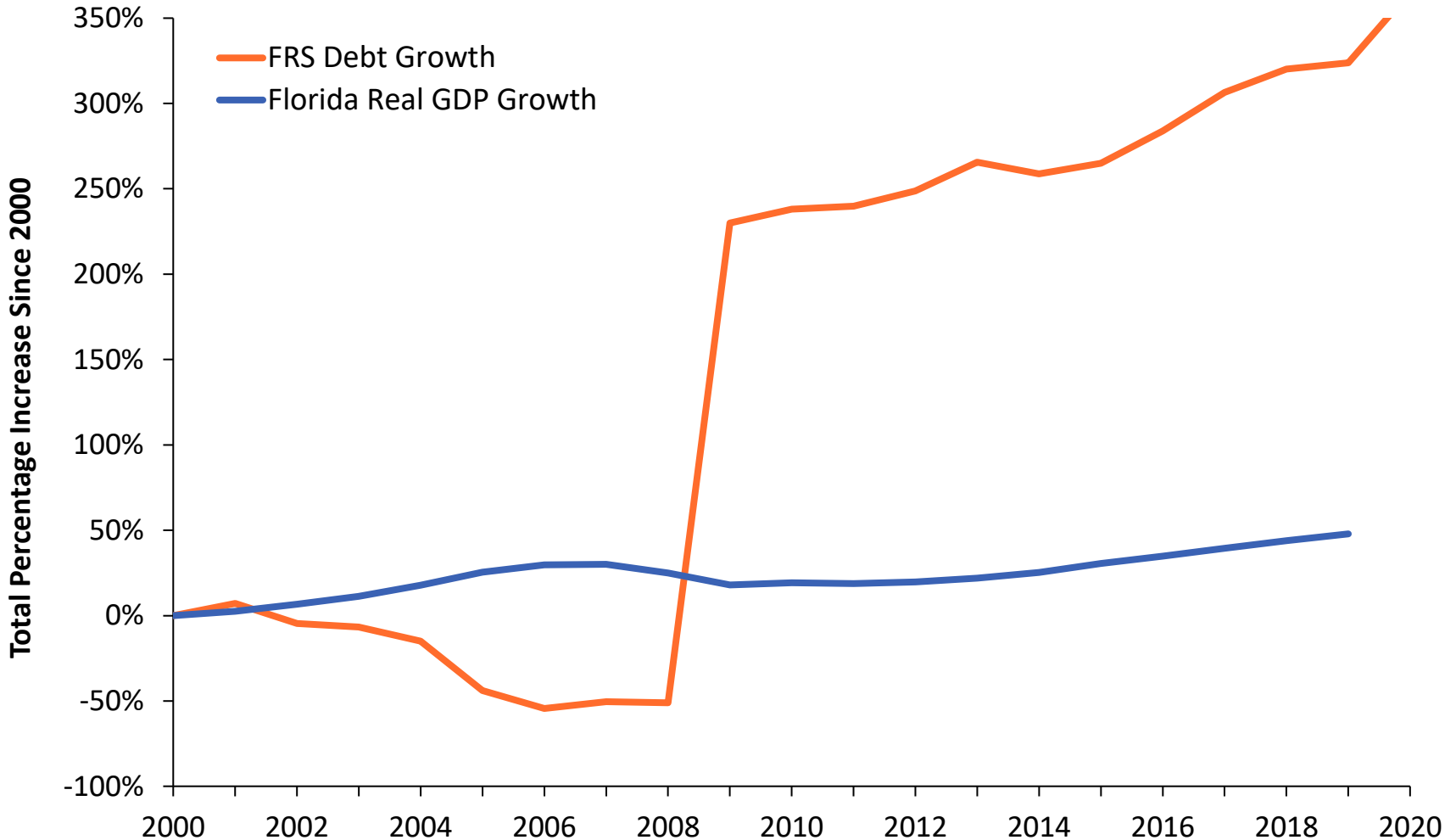


FRS Liabilities are Growing Faster than Assets



Source: Pension Integrity Project analysis of FRS actuarial valuation reports and CAFRs.

FRS Unfunded Liabilities are Growing Faster than the Florida Economy



Source: Pension Integrity Project Analysis of FRS valuation reports and CAFRs, Federal Reserve of St. Louis Data for the Florida gross domestic product.



Makeup of FRS Pension Plan Contributions

	FY2021 Contributions	
	% of Payroll	\$ Value
Total Employees	3.00%	\$1,136,206
Total Employer	11.37%	\$4,066,581
<i>Employer (Normal Cost)</i>	6.60%	\$2,258,445
<i>Employer (Debt Amortization)</i>	4.77%	\$1,808,136
Total FRS Contributions	14.37%	\$5,202,787

The Florida Actuarial Conference sets FRS contribution rates

On occasion, Conference rates have differed with plan actuarial recommendations.



Current Retirement Option Sets

FRS Pension Plan

Type:

- Final Average Salary Defined Benefit Pension Plan

Final Average Salary:

- Average of the 8 highest years

Multiplier:

- 3%

Vesting:

- 8 years

Normal Retirement Eligibility:

- Any age @ 33 YOS or vested by age 65

Regular Member Contribution:

- 3.09% for Normal Cost
- 4.30% for Unfunded Liability Payment (beginning FY2019-20)

Employee Contribution:

- 3%

FRS Investment Plan

*default option as of January 1, 2018

Type:

- Defined Contribution Retirement Plan

Employee Contribution:

- 3%

Employer Contribution:

- 3.3% to member IP account
- 3.56% to legacy FRS Pension Plan unfunded liabilities

Vesting:

- 1 year

Investment Options:

- Investment Funds, Target Date Funds

Default Investment Strategy:

- Target Date Funds



REVIEWING PRIOR REFORMS



Major Reforms to FRS

2000 – House Bill 2393

- Provided a defined, participant-directed contribution (DC) plan option to FRS members.
- One-year vesting for the portability of employer contributions.
- Based retirement benefits on market returns rather than a fixed benefit guarantee.
- Existing members given the option to switch future FRS participation into the DC plan without losing their already earned pension benefits.

2011 – Senate Bill 2100

- Created a new benefit tier for “special-risk” new hires.
- Renamed the FRS defined benefit plan the Florida Retirement System “Pension Plan”.
- Renamed the FRS defined contribution plan from the Public Employee Optional Retirement Program to the Florida Retirement System “Investment Plan.”
- Eliminated post-retirement increases on pension benefits earned after July 2011.
- Decreased both employer and employee contribution rates effective July 2012.
- Led to unfunded accrued liabilities decreasing from \$16.7 billion to \$15.6 billion.

2017 – Senate Bill 7022

- Defaults new employees hired after January 2018 into the FRS Investment Plan (DC plan) if no election taken after eight months of employment.



Previous Reforms Have Not Set the FRS Pension Plan on a Path to Long-Term Sustainability

- The historic 10-year bull market has not helped FRS recover
 - The 2008 financial crisis weakened FRS's funded status, but since then markets have recovered while pension funding has not.
 - Reducing benefits in 2011 reduced some costs at the expense of inflation protection for retirees, but it did not fundamentally address why pension debt continues to grow.
 - Defaulting new FRS members into the Investment Plan in 2018 was better aligned with workforce mobility trends and reduced future financial risk, but it did not address why pension debt has persisted for a decade.
 - For three straight years (2016, 2017 & 2018) FRS's consulting actuary has warned that the assumed rate of return is not reasonable.
 - Additional reforms are necessary to ensure long-term solvency.
-

FRS Remains Unsustainable Despite Recent Reforms



Challenge #1:

FRS Defined Benefit Pension Plan Still Not on a Path to Solvency

- A. Overly optimistic assumed rate of return creates unnecessary risk.
- B. Unmet actuarial assumptions and slow-paced changes to those assumptions increases unfunded liabilities over time.
- C. Insufficient employer contributions inhibits plan assets from compounding growth over decades.
- D. Discount rate misaligned with risk, underpricing pension cost and undervaluing FRS unfunded liabilities.

Challenge #2:

FRS Defined Contribution Retirement Plan Not Built for Retirement Security.

- An inadequate contribution rate is shortchanging worker retirement security.



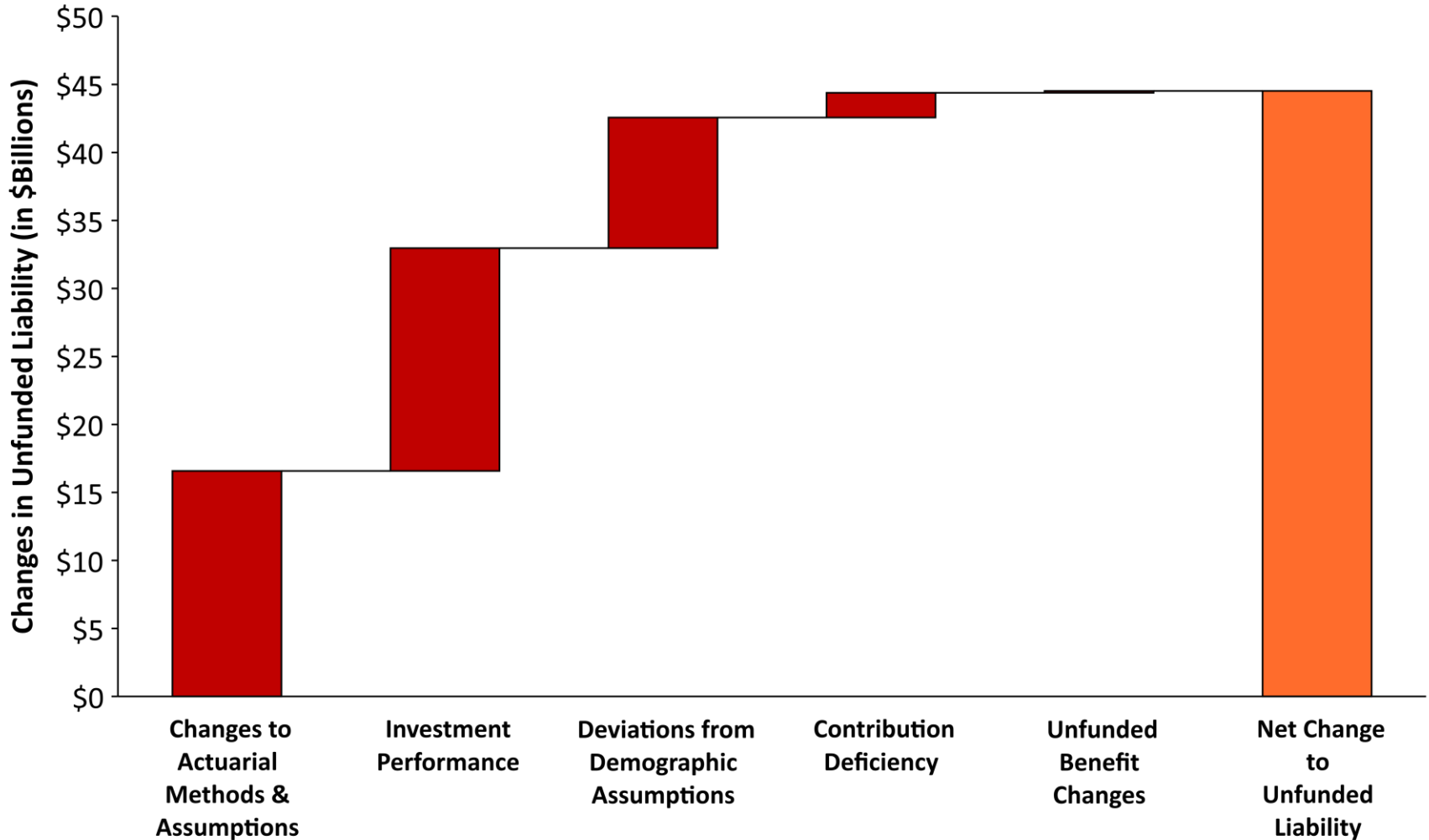
CHALLENGE #1

- FRS Pension Plan is still not on a path to long-term solvency.



Composition of FRS Pension Plan Debt

Actuarial Experience of FRS, 2009-2020



Source: Pension Integrity Project analysis of FRS actuarial valuations. Data represents cumulative unfunded liability by gain/loss category.



Driving Factors Behind FRS Pension Debt

- A. Changes to Actuarial Methods & Assumptions** to better reflect current market and demographic trends have exposed over \$16.6 billion in previously unrecognized unfunded liability.
- B. Deviations from Investment Return Assumptions** have been the largest unintended contributor to the unfunded liability, adding \$16.4 billion since 2008.
- C. Insufficient contributions** contributed \$1.8 million to FRS unfunded liability since 2008.
- D. Undervaluing Debt** through discounting methods has led to the tacit undercalculation of required contributions.



OVERLY OPTIMISTIC ASSUMED RATE OF RETURN

- **Unrealistic Expectations:** Despite the recent change to 7.0%, the Assumed Investment Return for FRS continues to expose taxpayers to significant investment underperformance risk.
- **Underpricing Contributions:** The use of an unrealistic Assumed Return has likely resulted in underpriced Normal Cost and an undercalculated Actuarially Determined Contribution.

FRS Actuaries on Current Return Assumption



Notable disagreement persists regarding the FRS investment return assumption.

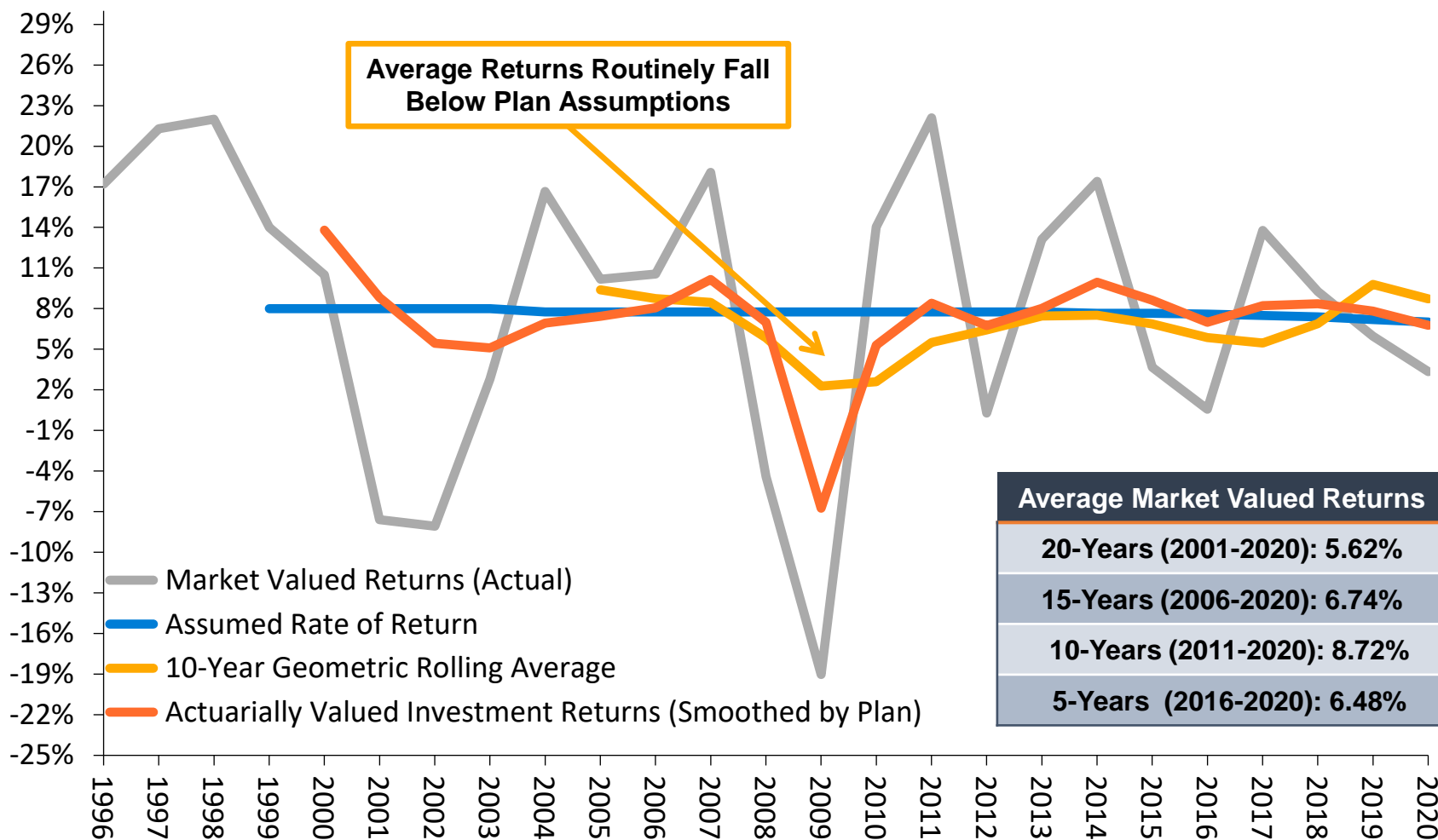
- All models developed in 2017 by Milliman and Aon Hewitt had 50th percentile geometric average annual long-term future returns in the 6.6%-6.8% range.
- Models developed in 2018 by Milliman and Aon Hewitt show the average annual long-term future returns in the 6.4-6.7% range, yet FRS Actuarial Assumption Conference adopted a 7.4% return assumption.
- Presenters at the 2020 FRS Actuarial Conference suggested return assumptions within the range of 6.46% (Aon) to 6.56% (Milliman), with a lower inflation assumption of 2.1% to 2.2% relative to the previous conference assumption of 2.6%.
- The 2020 FRS Actuarial Assumption Conference adopted a 7.0% return assumption.

Year	FRS Assumed Rate of Return
2001	8.00%
2002	8.00%
2003	8.00%
2004	7.75%
2005	7.75%
2006	7.75%
2007	7.75%
2008	7.75%
2009	7.75%
2010	7.75%
2011	7.75%
2012	7.75%
2013	7.75%
2014	7.65%
2015	7.65%
2016	7.60%
2017	7.50%
2018	7.40%
2019	7.20%
2020	7.00%



Challenge I-A: Investment Returns

Investment Return History, 1996-2020



Source: Pension Integrity Project analysis off FRS actuarial valuation reports and CAFRs.



Challenge I-A: Investment Returns

Investment Returns vs. Assumptions

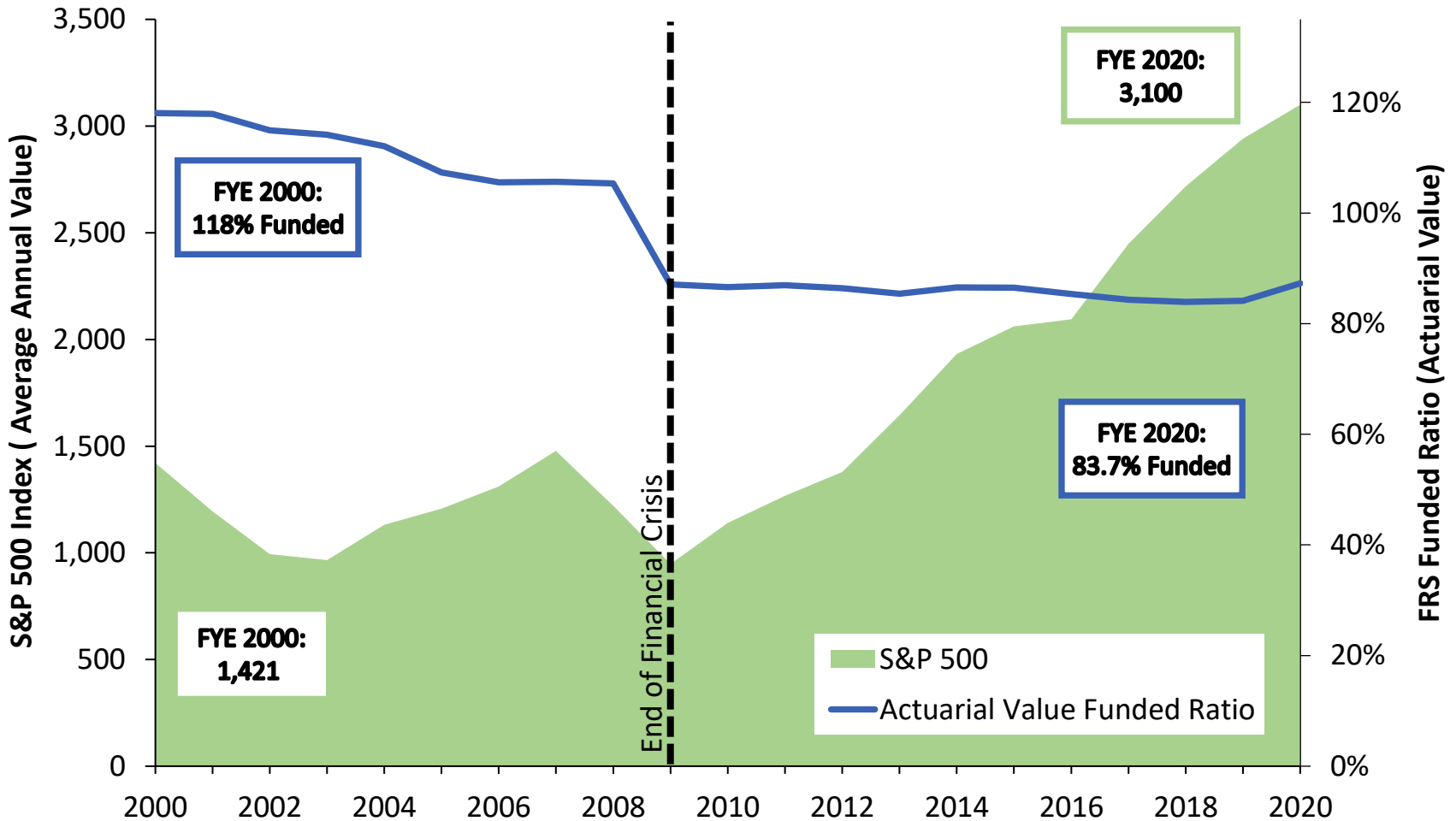
- FRS historically assumed an investment return rate as high as 8.00% before lowering the assumption to 7.75% in 2004. The plan has adjusted the assumption annually since in 2014, to reach the current 7.0% for 2021.
- FRS expanded investments in high-risk holdings in a search for greater investment returns over the past decade.
- The FRS Pension Plan investment portfolio's trends have not matched long-term assumptions:

Average Market Valued Returns	Average Actuarially Valued Returns
20-Years (2001-2020) 5.62%	20-Years (2001-2020): 6.81%
15-Years (2006-2020) 6.73%	15-Years (2006-2020): 6.83%
10-Years (2011-2020): 8.72%	10-Years (2011-2020): 7.98%
5-Years (2016-2020): 6.47%	5-Years (2016-2020): 7.63%

Note: Past performance is not the best measure of future performance, but it does help provide some context to the problem created by having an excessively high assumed rate of return.



FRS Funded Ratio Did Not Recover Despite a Historic Decade for the Stock Market



Source: Pension Integrity Project analysis of FRS actuarial valuation reports and Yahoo Finance data.



New Normal: The Market Has Changed

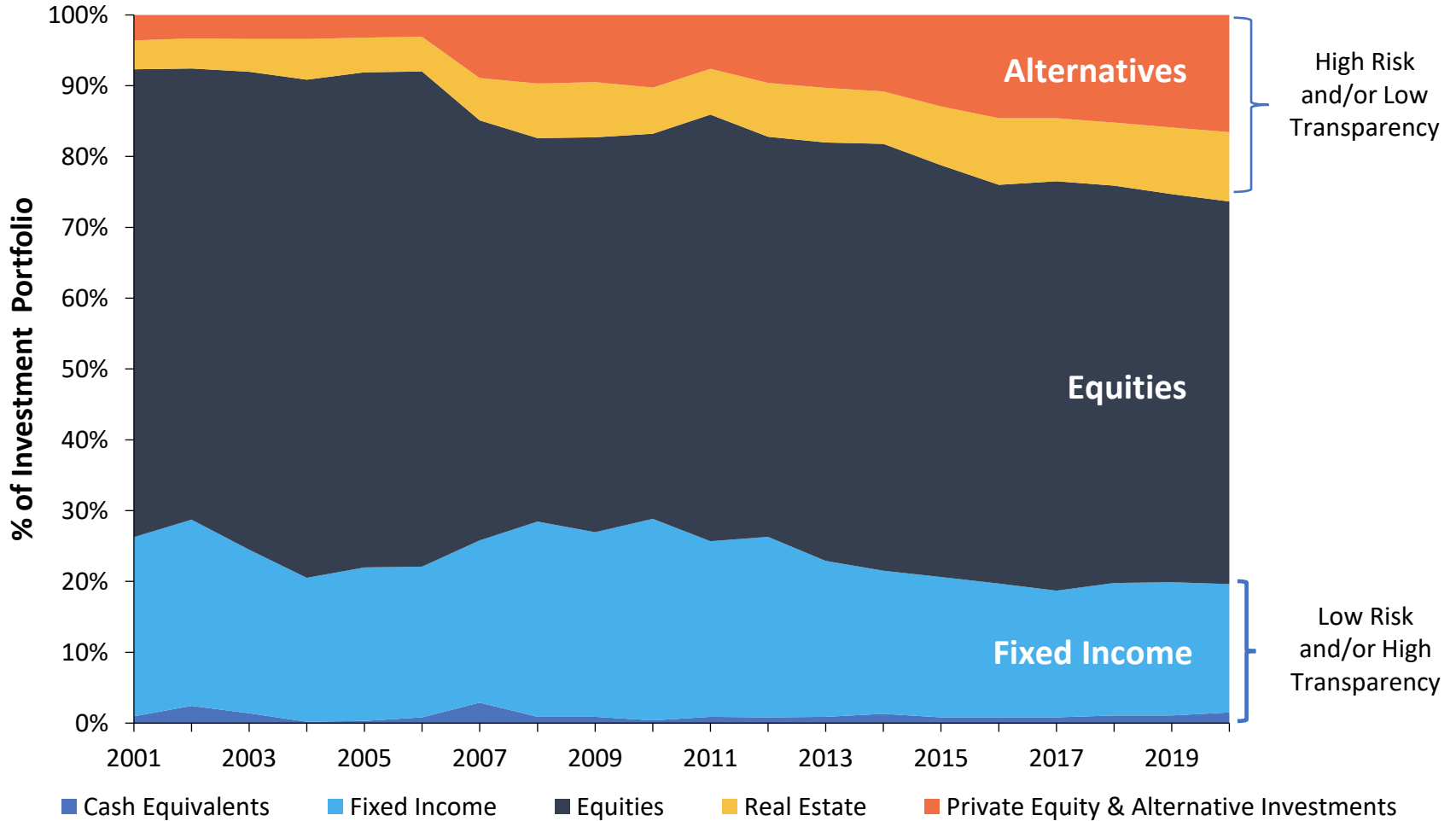
The “new normal” for institutional investing suggests that achieving even a 6% average rate of return in the future is optimistic.

1. Over the past two decades there has been a steady change in the nature of institutional investment returns.
 - 30-year Treasury yields have fallen from near 8% in the 1990s to consistently less than 3%.
 - New phenomenon: negative interest rates, designates a collapse in global bond yields.
 - The U.S. just experienced the longest economic recovery in history, yet average growth rates in GDP and inflation are below expectations.
2. McKinsey & Co. forecast the returns on equities will be 20% to 50% lower over the next two decades compared to the previous three decades.
 - Using their forecasts, the best-case scenario for a 70/30 portfolio of equities and bonds is likely to earn around 5% return.
3. The FRS Pension Plan 5-year average return is around 6.48%, well below the assumed 7% return assumption.



FRS Asset Allocation (2001-2020)

Expanding Risk in Search for Yield



Source: Pension Integrity Project analysis of FRS actuarial valuation reports and CAFRs.

Probability Analysis: Measuring the Likelihood of FRS Achieving Various Rates of Return



Probability of FRS Pension Plan Achieving A Given Return Based On:								
Possible Rates of Return	FRS Assumptions & Experience		Short-Term Market Forecast				Long-Term Market Forecast	
	Based on FRS Assumptions	FRS Historical Returns	BNY Mellon 10-Year Forecast	JP Morgan 10-15 Year Forecast	Research Affiliates 10-Year Forecast	Horizon 10-Year Market Forecast	BlackRock 20-Year Forecast	Horizon 20-Year Market Forecast
9.00%	19%	8%	13%	9%	8%	21%	31%	31%
8.00%	30%	16%	23%	17%	15%	32%	43%	44%
7.50%	36%	21%	29%	21%	20%	38%	50%	51%
7.00%	43%	28%	37%	27%	25%	45%	56%	57%
6.50%	50%	36%	44%	34%	32%	52%	62%	64%
6.00%	57%	44%	52%	41%	39%	59%	68%	70%
5.50%	64%	53%	60%	49%	47%	65%	74%	76%

Source: Pension Integrity Project Monte Carlo model based on FRS asset allocation and reported expected returns by asset class. Forecasts of returns by asset class generally by BNYM, JPMC, BlackRock, Research Affiliates, and Horizon Actuarial Services were matched to the specific asset class of FRS. Probability estimates are approximate as they are based on the aggregated return by asset class. For complete methodology contact Reason Foundation. Aon is the outside investment consultant to FRS. FRS assumptions are based on Aon Assumptions. Horizon is an external consulting firm that surveyed capital assumptions made by other firms.

Probability Analysis: Measuring the Likelihood of FRS Achieving Various Rates of Return



FRS Assumptions & Experience

- A probability analysis of FRS historical returns over the past 20 years (2000-2020) indicates only a modest chance (28%) of hitting the plan's 7.0% assumed return.
- FRS's own investment return assumptions imply a 43% chance of achieving their investment return target over the next 20 years.

Short-Term Market Forecast

- Returns over the short to medium term can have significant negative effects on funding outcomes for mature pension plans with large negative cash flows like FRS.
- Analysis of capital market assumptions publicly reported by the leading financial firms (BlackRock, BNY Mellon, JPMorgan, and Research Affiliates) suggests that over a 10-15 year period, FRS returns are likely to fall short of their assumption.

Long-Term Market Forecast

- Longer-term projections typically assume FRS investment returns will revert back to historical averages.
 - ✓ The "reversion to mean" assumption should be viewed with caution given historical changes in interest rates and a variety of other market conditions that increase uncertainty over longer projection periods, relative to shorter ones.
- Forecasts showing long-term returns near 7.0% likely also show a significant chance that the actual long-term average return will fall far shorter than expected.
 - ✓ For example, according to the BlackRock's 20-year forecast, while the probability of achieving an average return of 7.0% or higher is about 56%, the probability of earning a rate of return below 5.5% is about 26%.



RISK ASSESSMENT

- How resilient is FRS to volatile market factors?

Important Funding Concepts



Employer Contribution Rates

- **Statutory Contributions:** Annual payments usually based on a rates set in state statute, meaning contributions remain static until changed by legislation.
- **Actuarially Determined Employer Contribution (ADEC):** Unlike statutory contributions, ADEC is the annual required amount FRS's consulting actuary has determined is needed to be contributed each year to avoid growth in pension debt and keep ERS solvent.

Statutory rates are more susceptible to the political risk inherent to the legislative process and often result in systemic underfunding, especially when legislatively established rates fall short of what plan actuaries calculate as necessary to ensure funding progress.

All-in Employer Cost

- The true cost of a pension is not only in the annual contributions, but also in whatever unfunded liabilities remain. The "All-in Employer Cost" combines the total amount paid in employer contributions and adds what unfunded liabilities remain at the end of the forecasting window.

Baseline Rates

- The baseline describes FRS current assumptions using the plan's existing contribution and funding policy and shows the status quo before the 2020 market shock.

Quick Note:

With actuarial experiences of public pension plans varying from one year to the next, and potential rounding and methodological differences between actuaries, projected values shown onwards are not meant for budget planning purposes. **For trend and policy discussions only.**

Stress Testing FRS Using Crisis Simulations



Stress on the Economy:

- Market watchers expect dwindling consumption and incomes to severely impact near-term tax collections – applying more pressure on state and local budgets.
- Revenue declines are likely to undermine employers' ability to make full pension contributions, especially for those relying on more volatile tax sources (e.g., sales taxes) and those with low rainy-day fund balances.
- Many experts expect continued market volatility, and the Federal Reserve is expected to keep interest rates near 0% for years and only increase rates in response to longer-term inflation trends.

Methodology:

- Adapting the Dodd-Frank stress testing methodology for banks and Moody's Investors Service recession preparedness analysis, the following scenarios assume one year of -24.6% returns in 2020, followed by three years of 11% average returns.
- Recognizing expert consensus regarding a diminishing capital market outlook, the scenarios assume a long-term investment return of 6% once markets rebound.
- Given the increased exposure to volatile global markets and rising frequency of Black Swan economic events, we include a scenario incorporating a second Black Swan crisis event in 2035.

Stress Testing Scenarios:

1. Assumed Rate of Return
2. 6% Fixed Annual Return
3. 2020-23 Crisis + 6.0% Fixed Annual Returns
4. 2020-23 Crisis + 2035-38 Crisis + 6% Fixed Annual Returns

Scenario Comparison of Employer Costs

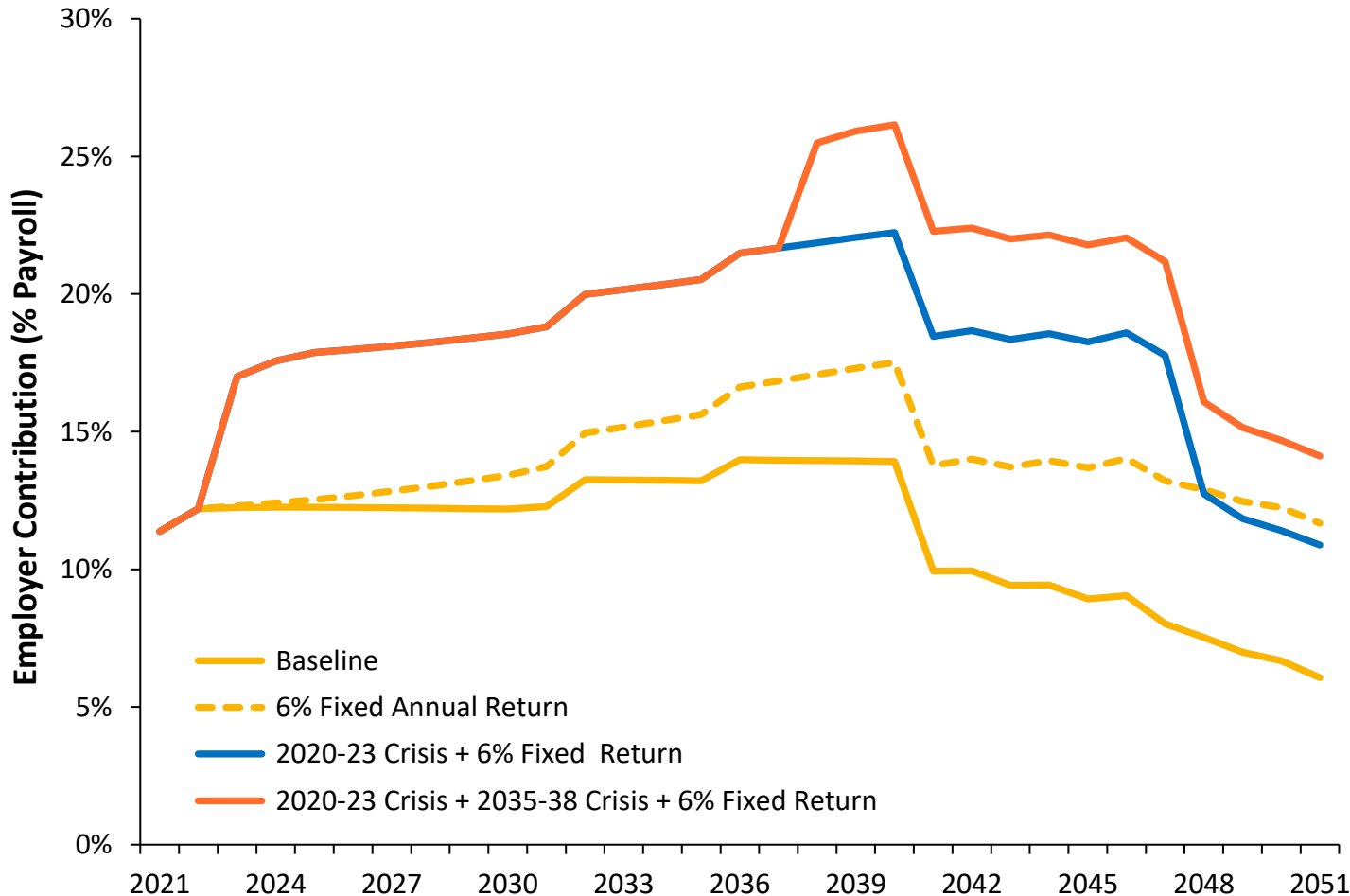
Scenarios	Actuarial Contributions		
	30-Year Employer Contributions	2050 Unfunded Liability (Market Value)	Total All-in Employer Costs
Baseline (Actuarial)	\$137.6B	\$0.6B	\$138.2B
6% Fixed Annual Return	\$172.6	\$35.6B	\$208.2B
2020-23 Crisis + 6% Fixed Return	\$223.9B	\$32.3B	\$256.2B
Two Crises + 6% Fixed Return	\$245.2B	\$45.2B	\$290.4B

Source: Pension Integrity Project actuarial forecast of FRS. All values are rounded and adjusted for inflation. State is assumed to make 100% *actuarially* required contributions. The “All-in Cost” includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

FRS Stress Testing: All-in Employer Cost Projections

How a Crisis Increases FRS Costs

Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current



Scenarios	Total All-in Employer Costs
Pre-Crisis Baseline	\$138 B
6% Fixed Annual Return	\$208 B
2020-23 Crisis + 6% Fixed Annual Return	\$256 B
Two Crises + 6% Fixed Annual Return	\$290 B

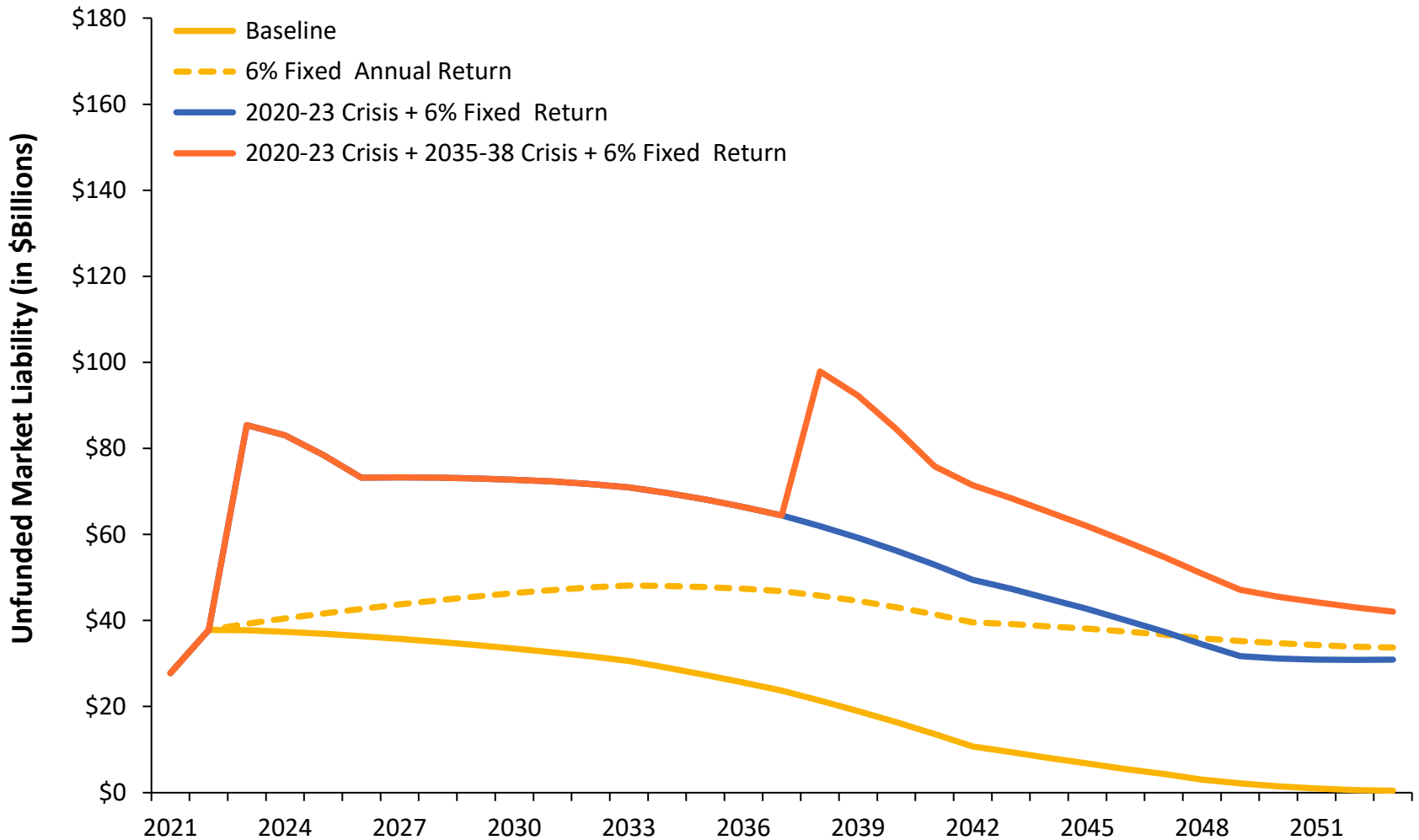
Source: Pension Integrity Project actuarial forecast of FRS. Values are rounded and adjusted for inflation. State is assumed to make 100% *actuarially* required contributions. The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

FRS Stress Testing: Unfunded Liability Projections

Unfunded Liabilities Under Crisis Scenarios



Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current



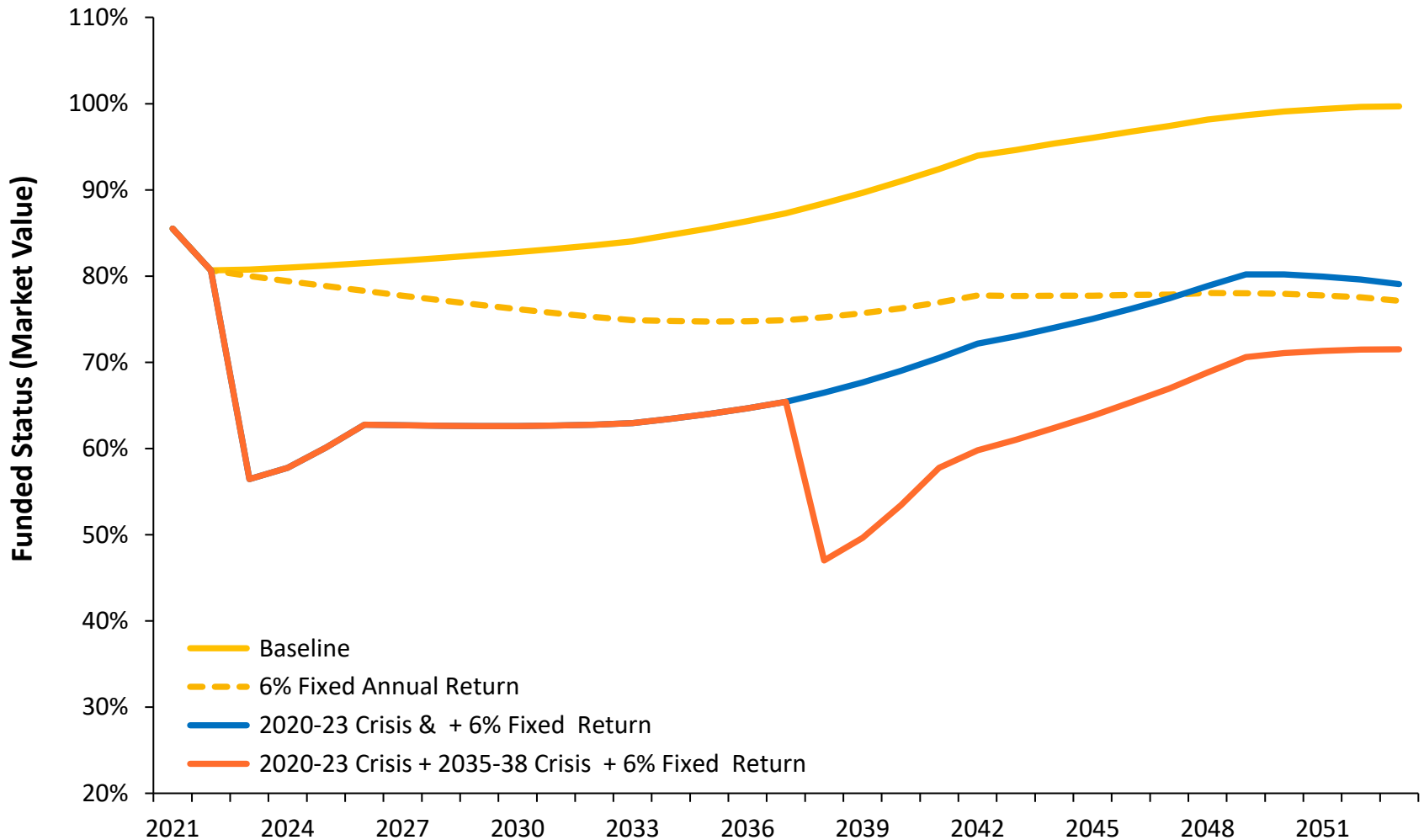
Source: Pension Integrity Project actuarial forecast of FRS. Values are rounded and adjusted for inflation. State is assumed to make 100% *actuarially* required contributions. The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

FRS Stress Testing: Unfunded Liability Projections

Unfunded Benefits Remain Under Crisis Scenarios



Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current



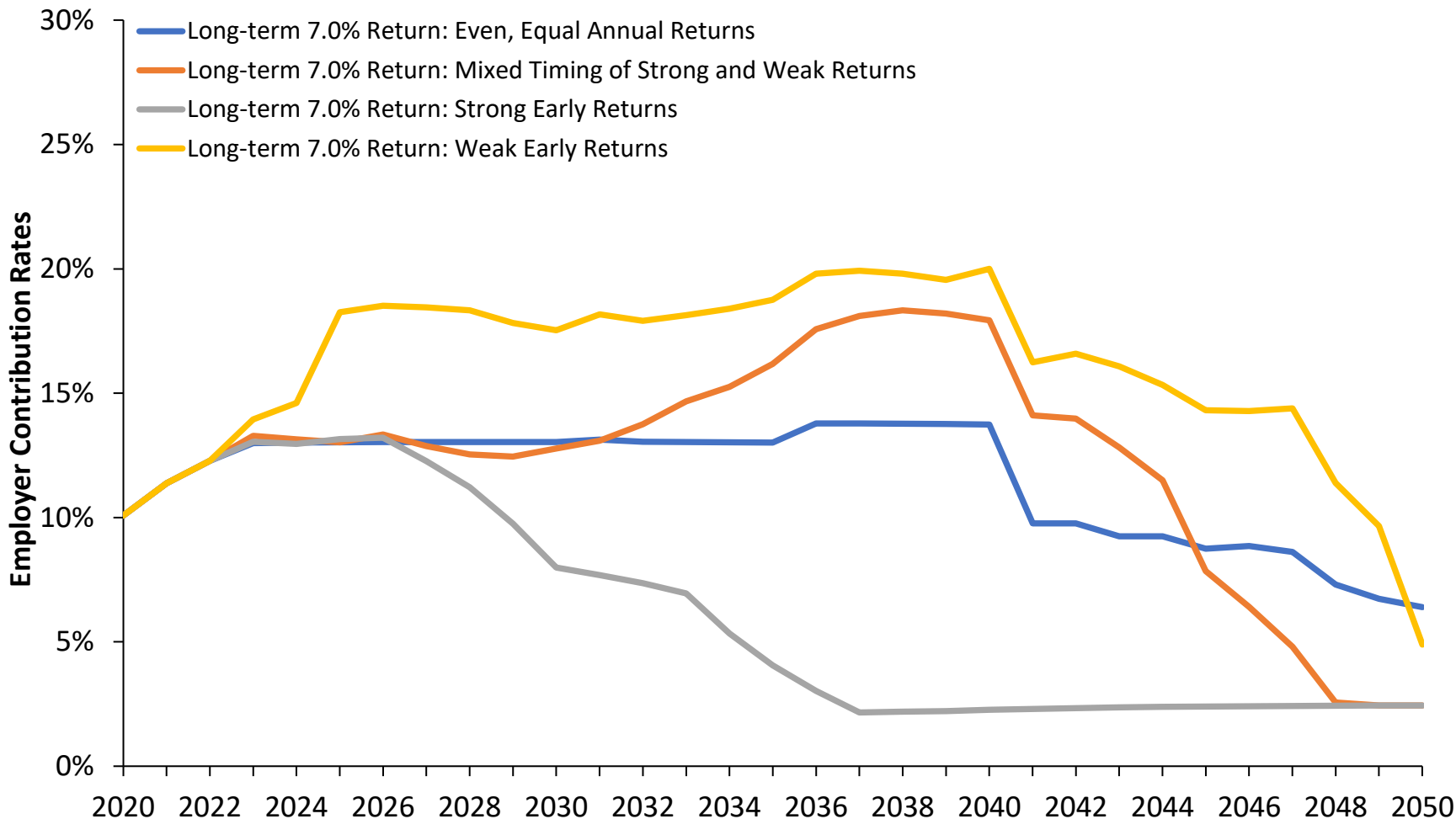
Source: Pension Integrity Project actuarial forecast of FRS. Values are rounded and adjusted for inflation. State is assumed to make 100% *actuarially* required contributions. The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.



30-year Funded Ratio Forecast

All Paths to a 7.0% Average Return Are Not Equal

Long-Term Average Returns of 7.0%



Source: Pension Integrity Project actuarial forecast of FRS plan. Strong early returns (TWRR = 6.99%, MWRR = 8.26%), Even, equal annual returns (Constant Return = 7.0%), Mixed timing of strong and weak returns (TWRR = 6.98%, MWRR = 6.97%), Weak early returns (TWRR = 7.0%, MWRR = 6.26%) Scenario assumes that FRS pays ADEC contribution rates each year. Years are plan's fiscal years.



Forecasting the Impact of Market Volatility

Random Variable Analysis

What is it?

- Model generates 10,000 different random investment return scenarios, creating ranges in required contributions and funding outcomes
- This analysis displays 50 percent of all outcomes that are closest to the median outcome

Why use it?

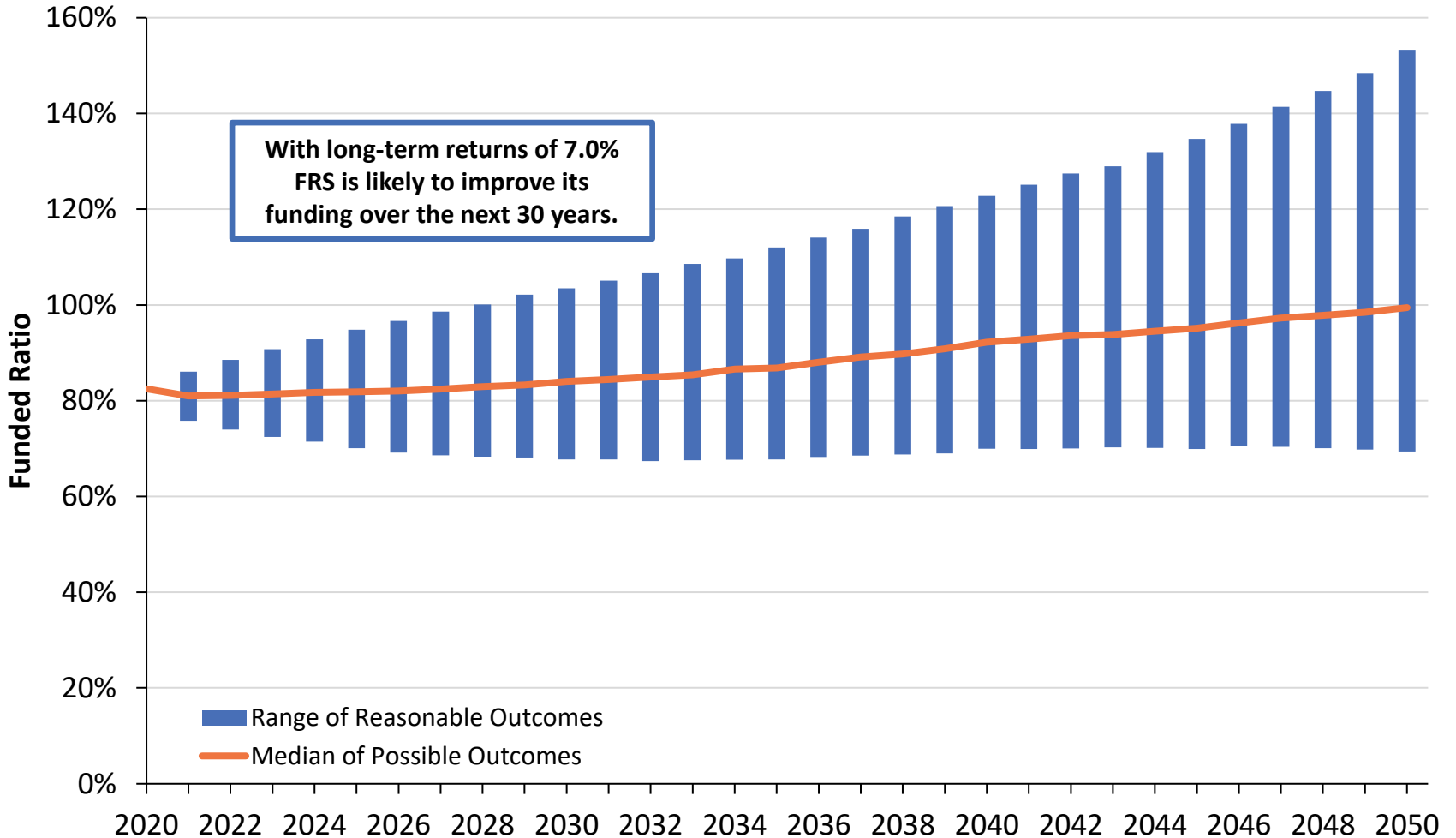
- Using a large sample of potential 30-year return scenarios can show the differences in how plan's funding will react to high or low investment fluctuations.
- The cone of displayed outcomes and the median illustrates the level of risk placed on the plan
- A narrow cone suggests a plan is more resilient—and has less investment risk—than that of a wider cone



30-year Funded Ratio Forecast

Funded Ratios are Expected to Improve

Long-term Average Returns of 7.0%



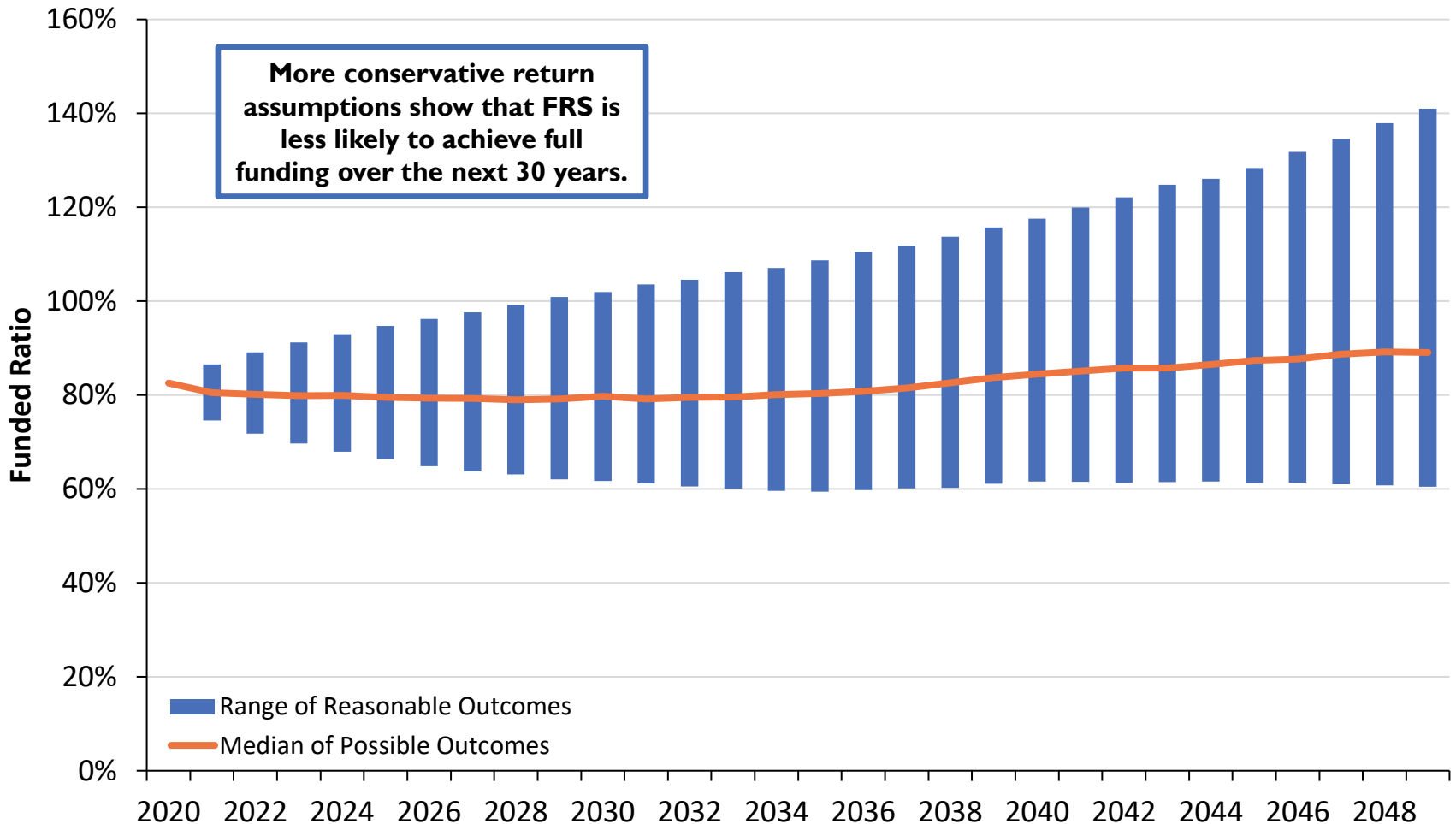
Source: Pension Integrity Project actuarial forecast of FRS plan based on FRS return and risk assumptions. Range of Reasonable Outcomes represents the 50% of possible outcomes closest to the median.



30-year Funded Ratio Forecast

How Do Missed Returns Impact Funded Ratios?

More Conservative Long-term Average Expected Returns



Source: Pension Integrity Project actuarial forecast of FRS plan using the return and risk assumptions of the Monte Carlo analysis.

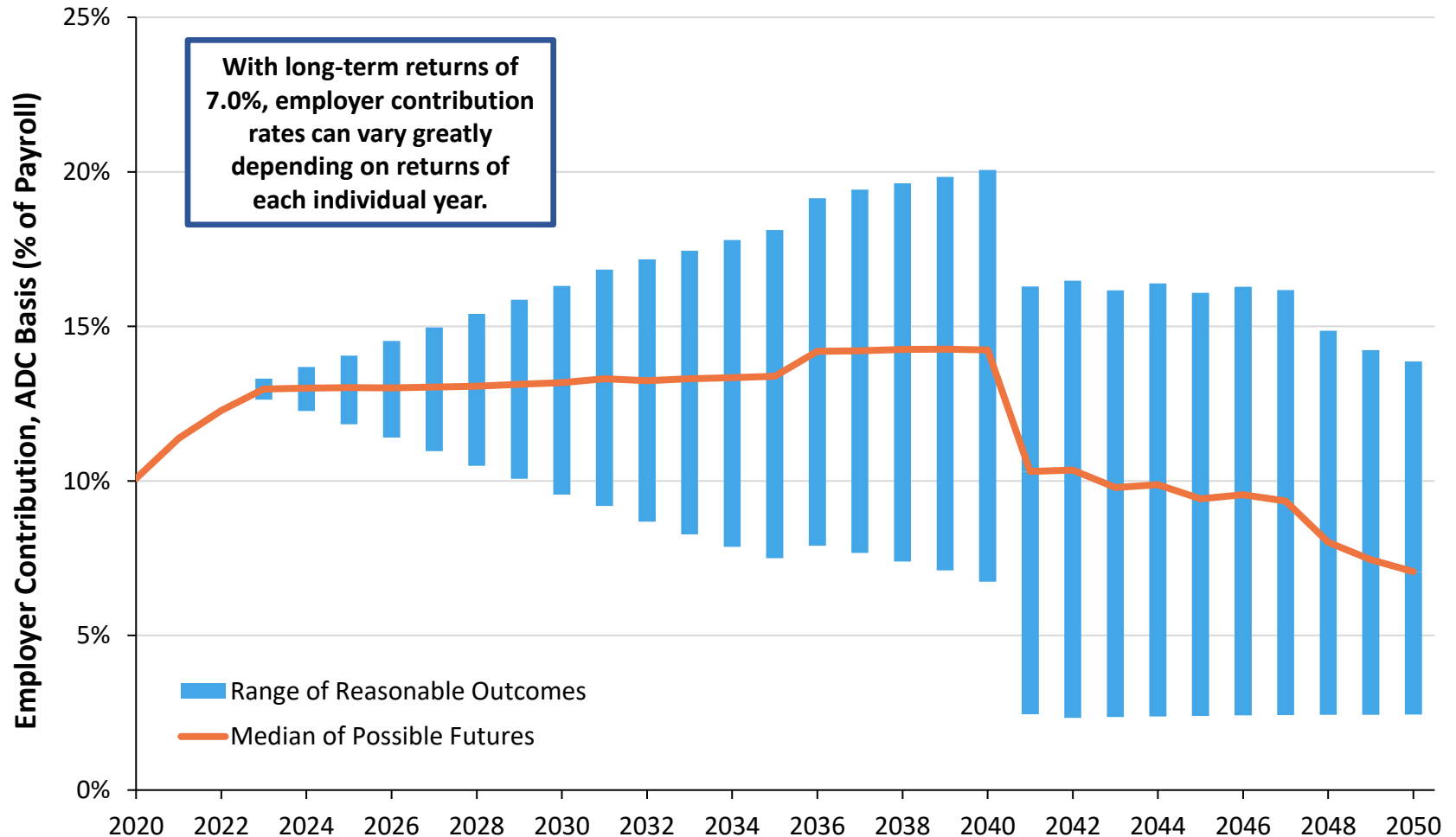
Conservative returns are 5.56%, which are the result of combining the long-term capital market assumptions from four prominent financial firms (see slide 22).



30-year Employer Contribution Forecast

If FRS Performs as Expected, Rates Can Still Vary

Long-term Average Returns of 7.0%

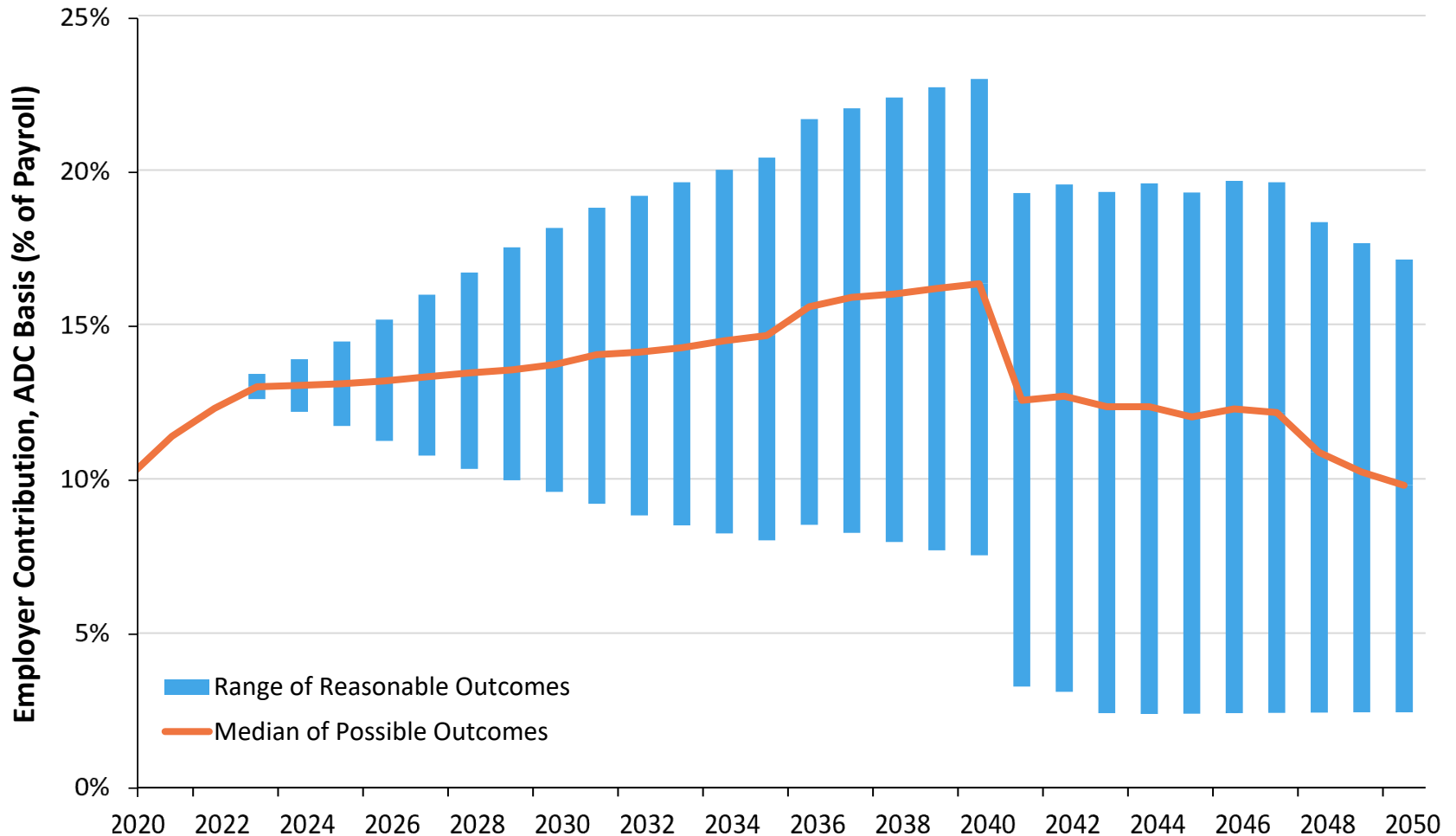


Source: Pension Integrity Project actuarial forecast of FRS plan based on FRS return and risk assumptions. Range of Reasonable Outcomes represents the 50% of possible outcomes closest to the median.

30-year Employer Contribution Forecast

If FRS Underperforms, Expect Higher Contribution Rates

More Conservative Long-term Average Expected Returns



Source: Pension Integrity Project actuarial forecast of FRS plan using the return and risk assumptions of the Monte Carlo analysis.

Conservative returns are 6.3%, which are the result of combining the long-term capital market assumptions from four prominent financial firms (see slide 22).



Sensitivity of Normal Cost Under Alternative Assumed Rates of Return

Amounts to be Paid in 2020-21 Contribution Fiscal Year, % of projected payroll

Assumed Return	Gross Normal Cost	Employer Normal Cost	Employee Normal Cost
7.0% (FYE 2020 Baseline)	10.23%	7.23%	3.0%
6.5%	11.41%	8.41%	3.0%
6.0%	12.73%	9.73%	3.0%
5.5%	14.20%	11.20%	3.0%

Note: These alternative gross normal cost figures should be considered approximate guides to how much more normal cost should be under different discount rates. Any policy changes should be based on more precise normal cost forecasts using detailed plan data. Alternative normal cost rates based reported liability sensitivity from the FYE 2020 FRS CAFR.



OUTDATED AND AGGRESSIVE ACTUARIAL ASSUMPTIONS AND METHODS

- The act of aligning assumptions with realistic expectations spotlights systemic risk in the form of unfunded liabilities.



Challenges from Outdated and Aggressive Actuarial Assumptions

Actuarial Assumptions vs. Actual Experience

- Deviations between actuarial experience and assumptions, and delays updating those assumptions, has led to an underestimation of the total FRS Pension Plan liability.
- Adjusting actuarial assumptions to reflect the changing demographics and new normal in investment markets exposes hidden pension cost by uncovering existing but unreported unfunded liabilities.
- If aggressive assumptions continue to misprice pension benefits, FRS experience will continue to deviate from the plan's expectations and allow for the continued growth of unfunded liabilities.



Challenges from Outdated and Aggressive Actuarial Assumptions

Actuarial Assumptions vs. Actual Experience reluctance

What's the difference between "accruing" UAL and "exposing" UAL?

- Generally, each assumption used by plan actuaries to calculate the cost of benefits over time come with the inherent risk of being wrong any given year resulting in unfunded liabilities.
- When an assumption is off, and assets actuaries were expecting from a given source are not contributed to make up the difference, the plan passively accrues unfunded.
- When an assumption is deliberately adjusted in a way that increases the probability of the expected outcome, cost hidden in the assumption are exposed, resulting in unfunded liabilities increasing in exchange for a more stable assumption and contribution rate.

	Accruing UAL	VS.	Exposing UAL
Investment Return Assumption	Overestimating investment returns short the FRS Pension Plan of expected contributions and increased unfunded liabilities slowly over time.		Lowering investment returns to reflect market conditions instantaneously exposes accrued but unfunded pension benefits.



INSUFFICIENT CONTRIBUTIONS

- Since 2002, FRS pension contributions have often fallen short of levels calculated by FRS actuaries as being needed to ensure solvency, resulting in a need for much higher contributions today.

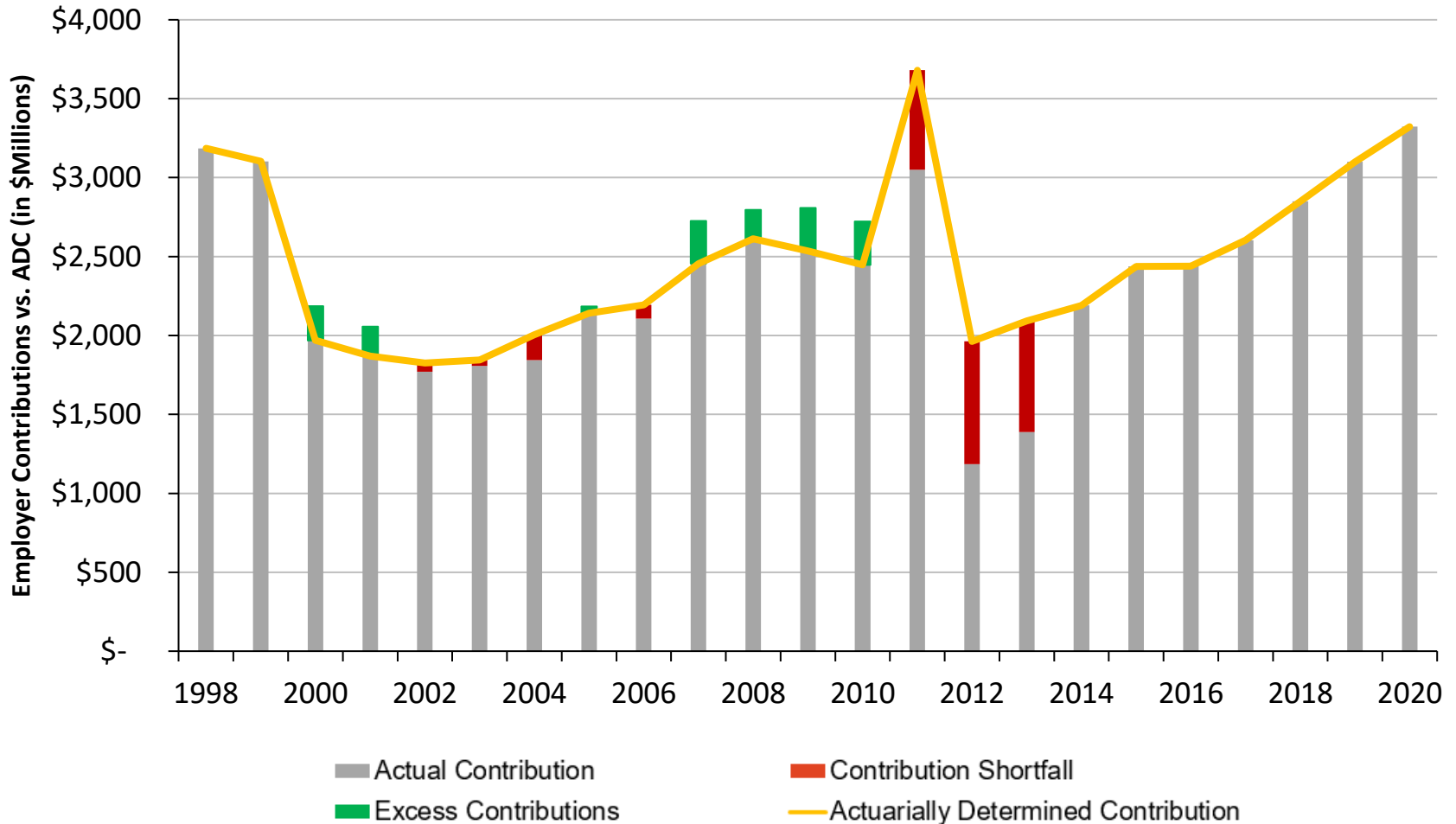
Imprudent Funding Policy is Creating Structural Underfunding for FRS



1. From 2011-2013, FRS employer contributions failed to meet the actuarially determined contribution (ADC), increasing the Unfunded Actuarial Liability by \$2.45 billion.
2. In 7 of the past 17 years, employer contributions have been less than the interest accrued on the pension debt (e.g., negative amortization), which allowed for the unfunded liability to grow in absolute terms.
3. The 30-year period FRS uses to pay off unfunded liabilities is greater than the Society of Actuaries' recommended funding period of 15 to 20 years, resulting in higher overall costs for the plan
 - Due to the long 30-year closed amortization schedule used to pay off the annual unfunded liability employer pension contributions have not always kept up with the interest accrued on the pension debt.

Actuarially Determined Employer Contribution History, 1998-2020

Actual v. Required Contributions



Source: Pension Integrity Project analysis of FRS actuarial valuation reports and CAFRs.

Negative Amortization: Understanding the Current Funding Policy

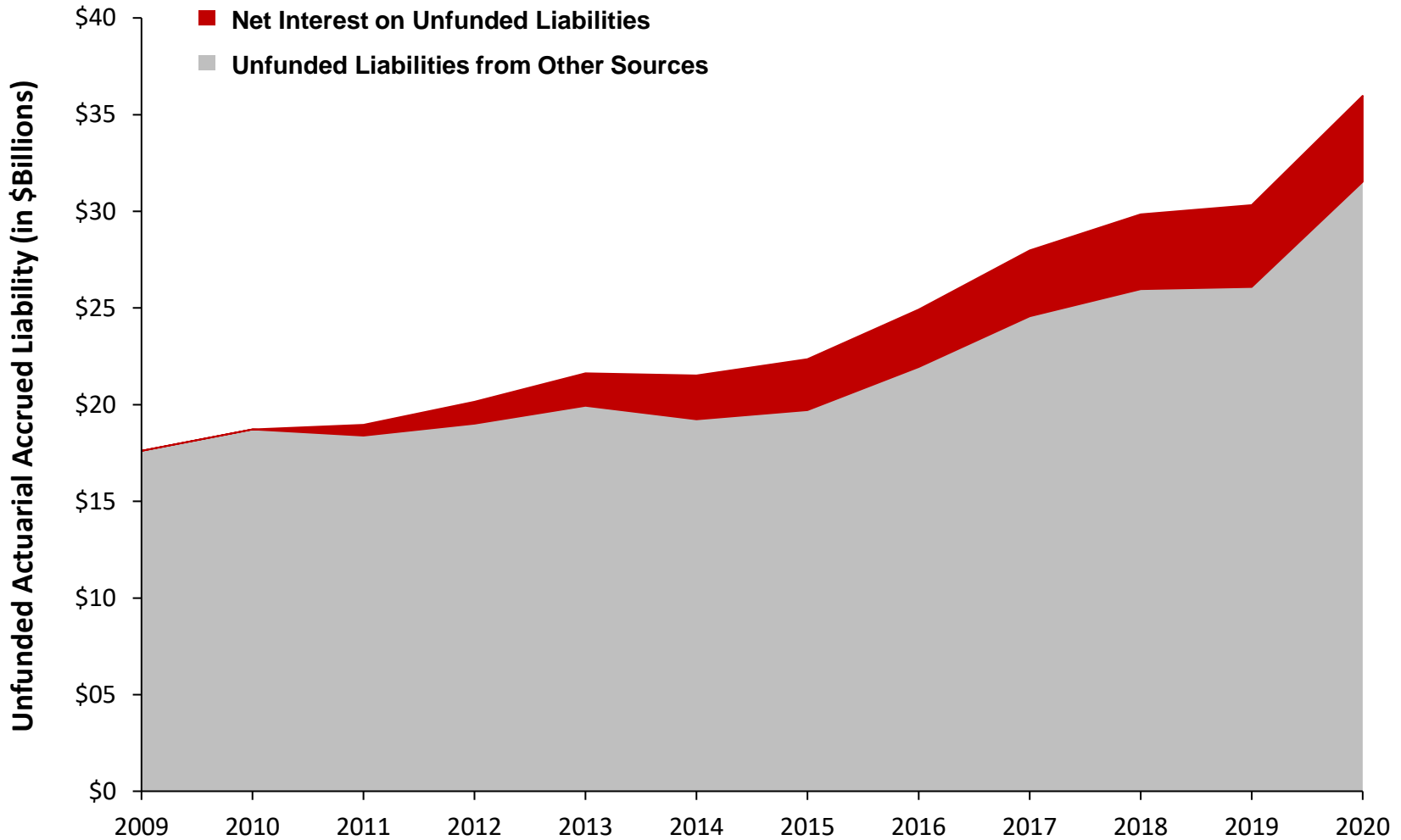


- From 2011-2013, FRS employer contributions failed to meet the actuarially determined contribution (ADC), increasing the Unfunded Actuarial Liability by \$2.45 billion.
- Starting in the 1998 actuarial valuation, the Legislature required all UAL bases in existence to be considered fully amortized, since the plan was in a surplus position.
- As part of the funding policy selected by the Florida Legislature, the actuarially calculated contribution rate is based on a “layered” approach that includes closed 30-year charge and credit bases for the amortization of any accrued UAL.
- The Unfunded Actuarial Liability (UAL) is amortized as a level percentage of projected payroll on which UAL rates are charged in an effort to maintain level contribution rates as a percentage of payroll during the specified amortization period if future experience follows assumptions.



Negative Amortization Growth (2009-2020)

Net Interest on the Debt as a Portion of UAAL



Source: Pension Integrity Project actuarial analysis of FRS plan valuation reports and CAFRs



DISCOUNT RATE AND UNDERVALUING DEBT

- The discount rate undervalues the measured value of existing pension obligations.

FRS Discount Rate Methodology is Undervaluing Liabilities



1. **The “discount rate” for a public pension plan should reflect the risk inherent in the pension plan’s liabilities:**
 - Most public sector pension plans — including FRS — use the assumed rate of return and discount rate interchangeably, even though each serve a different purpose.
 - The **Assumed Rate of Return (ARR)** adopted by FRS estimates what the plan will return on average in the long run and is used to calculate contributions needed each year to fund the plans.
 - The **Discount Rate (DR)**, on the other hand, is used to determine the net present value of all the already promised pension benefits and supposed to reflect the risk of the plan sponsor not being able to pay the promised pensions.

FRS Discount Rate

Methodology is Undervaluing Liabilities



- 2. Setting a discount rate too high will lead to undervaluing the amount of pension benefits actually promised.**
 - If a pension plan is choosing to target a high rate of return with its portfolio of assets, and that high assumed return is then used to calculate/discount the value of existing promised benefits, the result will likely be that the actuarially recognized amount of accrued liabilities is undervalued.
 - Milliman, argues the discount rate for calculating the total pension liability should be equal to the return assumption.
- 3. It is reasonable to conclude that there is almost no risk that Florida would pay out less than 100% of promised retirement income benefits to members and retirees.**
 - State law requires protect pension benefit payouts. Florida State Statutes § 121.011-121.40; 121.4501-121.5912 & Florida Administrative Code 60S-4
- 4. The discount rate used to account for this minimal risk should be appropriately low.**
 - The higher the discount rate used by a pension plan, the higher the implied assumption of risk for the pension obligations.

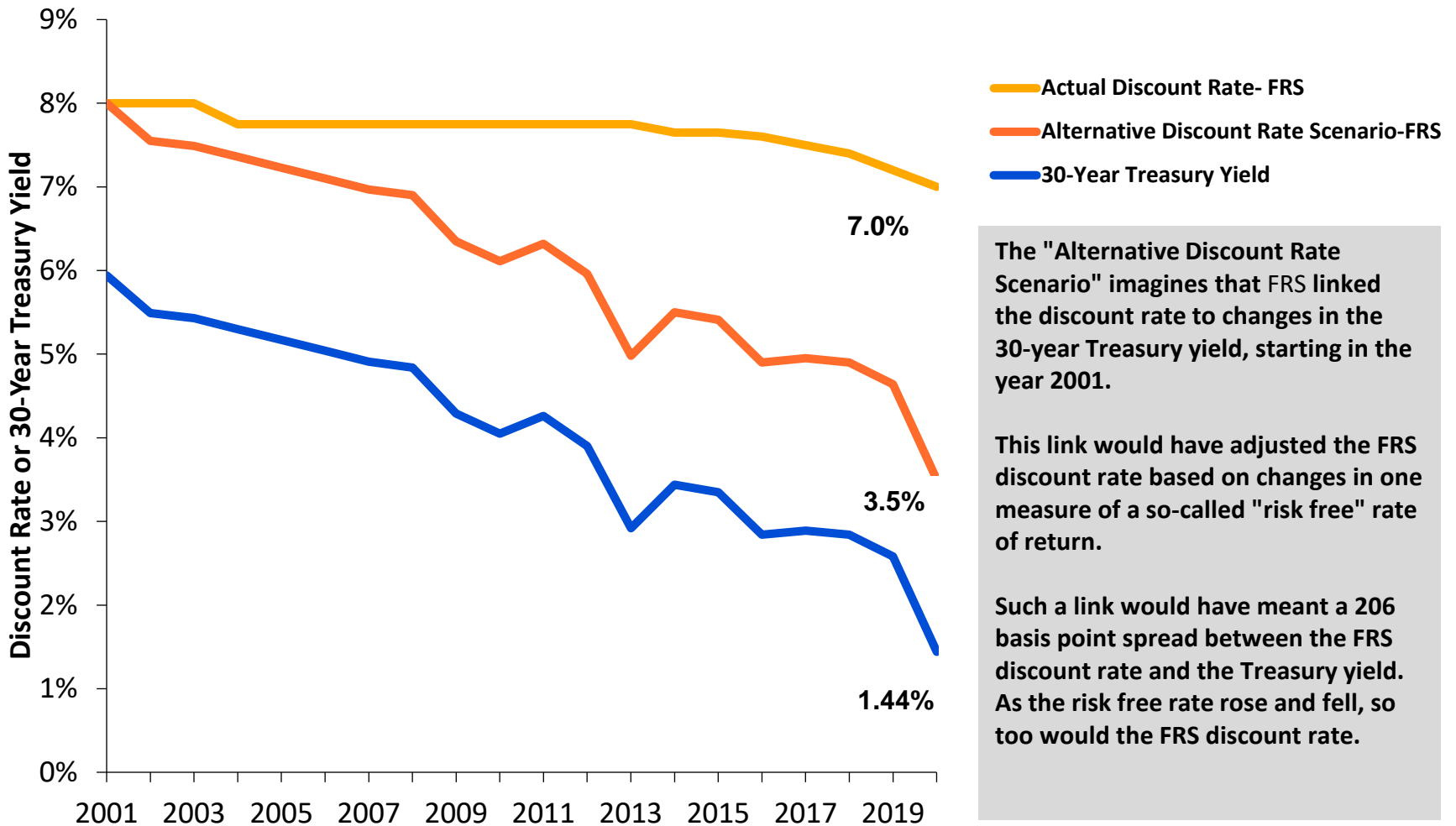
Sensitivity Analysis: Pension Debt Comparison Under Alternative Discount Rates



Discount Rate	Funded Ratio (Market Value)	Unfunded Liability (Market Value)	Actuarial Accrued Liability
7.0% (FYE 2020 Baseline)	80.7%	\$38.7 billion	\$200.3 billion
6.5%	76.1%	\$50.8 billion	\$212.3 billion
6.0%	71.6%	\$64.0 billion	\$225.6 billion
5.5%	67.3%	\$78.5 billion	\$240.0 billion

Note: Both baseline and alternative unfunded liability figures should be considered approximate guides to unfunded liability projections under various discount rates. Any policy changes should be based on more precise actuarial liability forecasts using detailed plan data. Alternative unfunded liability is based on reported liability sensitivity from the FYE 2020 FRS CAFR.

Change in the Risk-Free Rate Compared to FRS Discount Rate (2001-2020)



The "Alternative Discount Rate Scenario" imagines that FRS linked the discount rate to changes in the 30-year Treasury yield, starting in the year 2001.

This link would have adjusted the FRS discount rate based on changes in one measure of a so-called "risk free" rate of return.

Such a link would have meant a 206 basis point spread between the FRS discount rate and the Treasury yield. As the risk free rate rose and fell, so too would the FRS discount rate.

Source: Pension Integrity Project analysis of FRS actuarial valuation reports and Treasury yield data from the Federal Reserve.



CHALLENGE #2

- The FRS defined contribution plan is not built for retirement security.

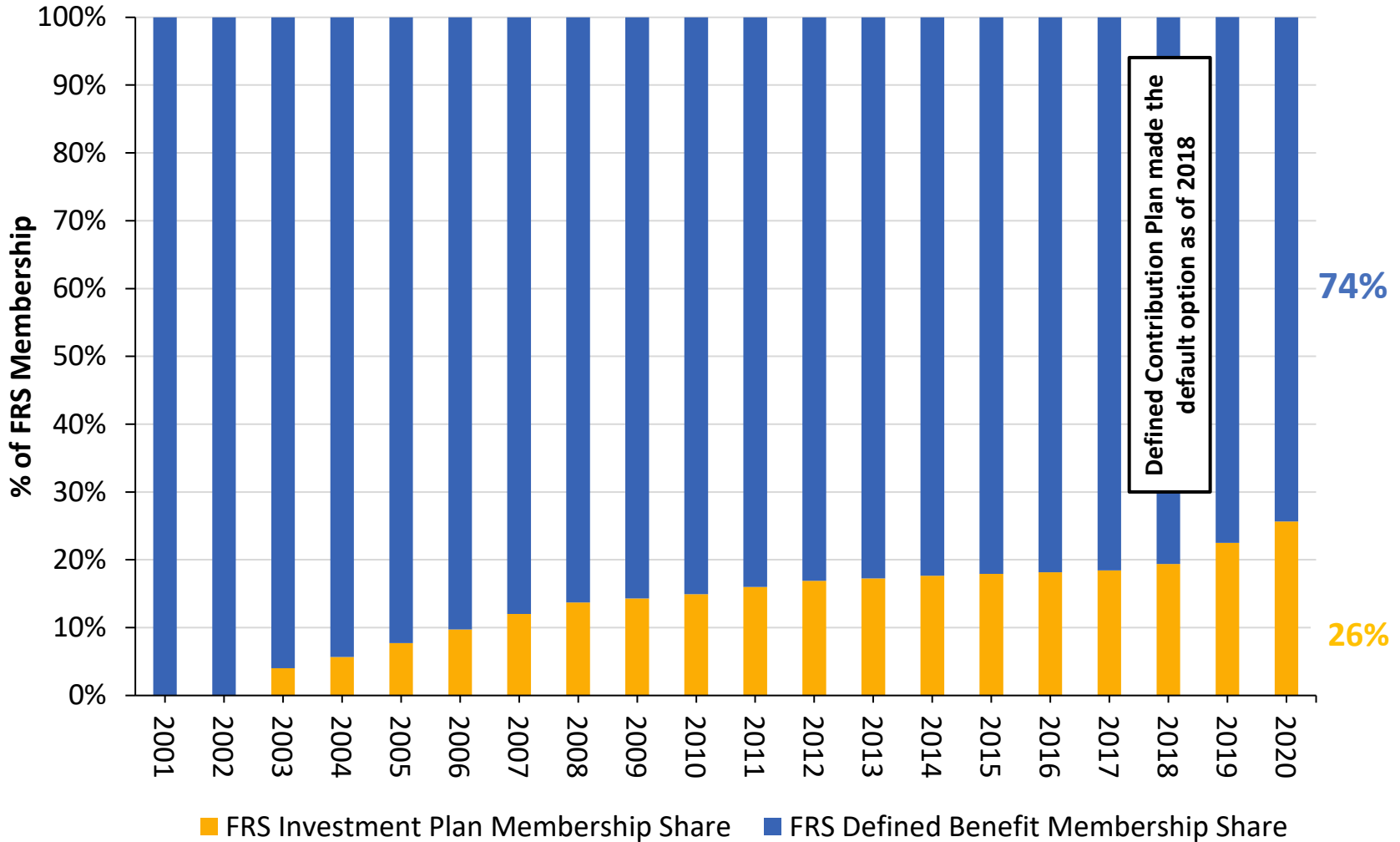


FRS Defined Contribution Plan Overview

- The FRS defined contribution retirement plan—the FRS Investment Plan—is the state’s current default (as of 2018).
 - ✓ Members are vested after one year of service in the FRS Investment Plan.
- Employees may choose to receive their account balance at the end of employment as a lump sum or take periodic withdrawals either on demand or by a pre-determined payout schedule.
- The FRS Investment Plan has shown consistent growth since its introduction in 2002.
 - ✓ FRS Defined Contribution Plan members currently account for nearly 23% of total FRS membership and 26% of total FRS payroll.
- The Legislature can increase or decrease the amount employers and employees contribute to plan members’ accounts.



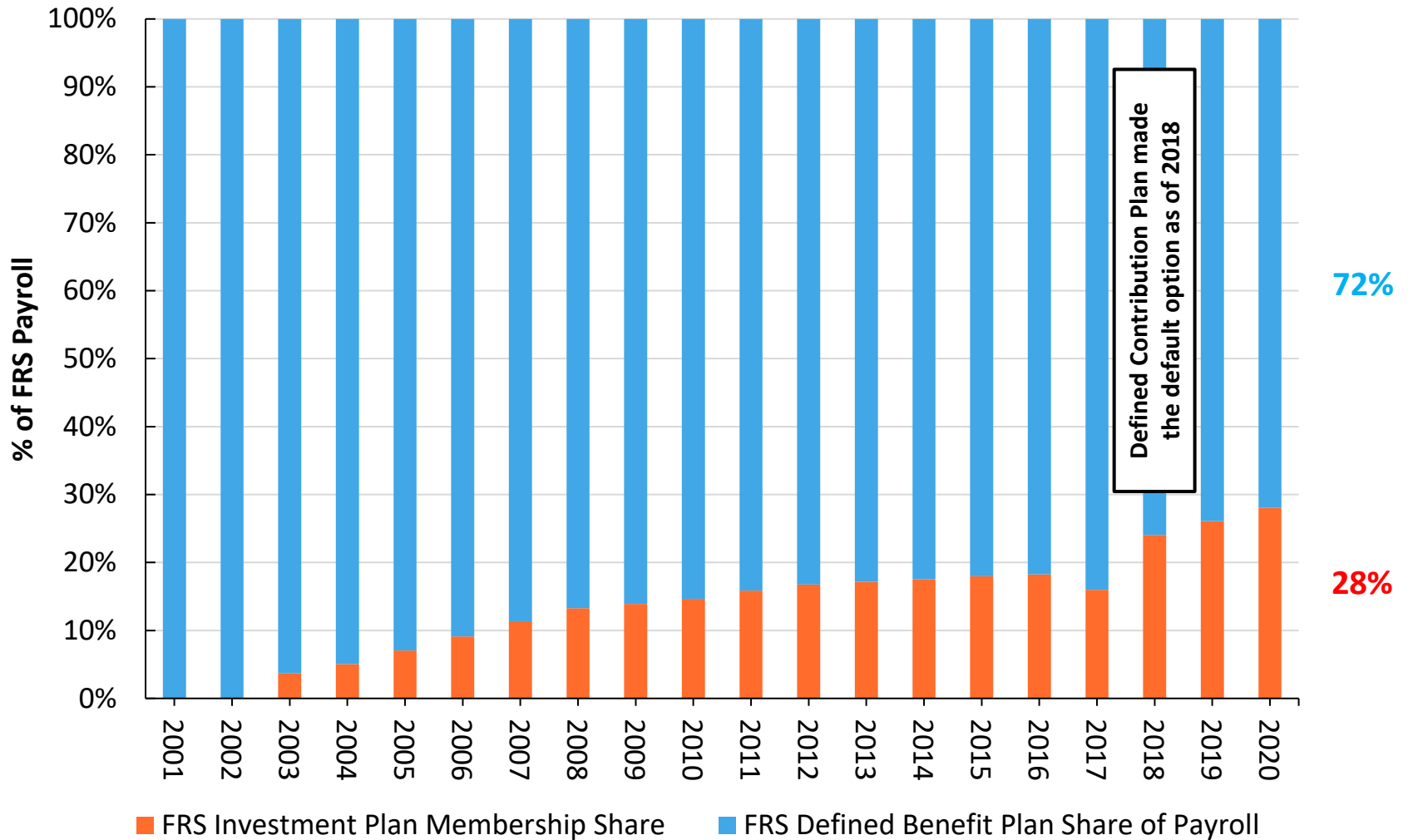
FRS Membership Allocation: DB+DC Plans



Source: Pension Integrity Project analysis of FRS CAFR reports



Change in FRS Payroll Share: DB+DC Plans



Source: Pension Integrity Project analysis of FRS CAFR reports



FRS Investment Plan Funding

- Current FRS Investment Plan contribution breakdown:

From Employee:

3.0% to member Investment Plan account

From Employer:

3.30% to member Investment Plan account

+ 3.44% to legacy FRS Pension Plan unfunded liabilities

- Best practice says employers should continue making payments towards their legacy pension debt as if all new hires were still entering the Pension Plan.

Inadequate Contribution Rates are Jeopardizing Retirement Security



- The aggregate 6.3% FRS Investment Plan contribution rate falls far below industry standards for retirement benefit adequacy.
- Industry leaders, retirement experts and independent studies consistently estimate 10% to 15% of annual income to be required to provide adequate retirement income.
 - For regular plan members alone contribution rates need to rise at least 400 basis points to provide retirement security.
 - Higher contribution rates may be required for older workers to achieve adequate savings for retirement due to chronic underfunding.



FRS Investment Plan - Gold Standard Score

Gold Standard	FRS Investment Plan
<p>Defined Plan Objectives</p> <p><i>Ensure plan objectives are define in writing as part of a comprehensive benefits policy statement.</i></p>	No
<p>Communication and Education</p> <p><i>Ensure members are educated on the available choices and have all relevant information to make competent retirement choices.</i></p>	Yes
<p>Auto Enrollment</p> <p><i>Enroll new employees into the FRS Investment Plan by default.</i></p>	Yes
<p>Adequate Contributions</p> <p><i>Replace approximately 80% of a worker's final salary.</i></p>	No
<p>Retirement Specific Portfolio Design</p> <p><i>Offer "one-touch" investment options for employees who are not sophisticated investors and do not want to avail themselves of in-plan investment advice.</i></p>	Some
<p>Benefit Portability</p> <p><i>Safeguard the ability to recruit highly mobile 21st Century employees.</i></p>	Yes
<p>Offer Distribution Options</p> <p><i>Provide members with a variety of asset distribution methods while limiting borrowing.</i></p>	Some
<p>Disability Coverage</p> <p><i>Offer a separate disability insurance benefit from a quality insurer.</i></p>	Some



FRS Investment Plan - Gold Standard Score

Objective	Gold Standard	FRS Investment Plan
Defined Plan Objectives	Defines objectives in writing as part of a comprehensive “benefits policy statement” or at least within a “retirement plan policy statement.”	There is little reference in the FRS Investment Plan material that specifically speaks to plan objectives. The “Summary Plan Description” states, “Each FRS plan is designed to provide you with a good foundation for financial security when considered along with Social Security, other retirement programs, and your own personal savings (including savings accounts, IRAs, and deferred compensation programs offered through your employer, among other resources).” This statement falls short of stating plan objectives as it is too general and without supporting detail.
Communication and Education	Educated members on the available choices and relevant information needed to make competent retirement decisions.	The plan sponsor offers various tools for communicating with and educating employees about the different retirement plans available. Once a choice is made by the employee to join the FRS Investment Plan, a good amount of material is available including investment education. The plan also offers robo-advice to participants at no additional charge.
Auto Enrollment	Defaults members into a defined contribution retirement option if no other option is selected upon hire.	New hires are enrolled into the FRS Investment Plan by the end of their eighth month of employment when no other option is selected, providing the member with maximum asset mobility by default.
Adequate Contributions	Replace approximately 80% of a worker’s final salary.	A major challenge facing the FRS Investment Plan is the inadequacy of the combined 6.3% FRS Investment Plan contribution rate (3% Employee /3.3% Employer) to fund lifetime financial security, even in combination with social security and reasonable personal savings. Retirement experts agree that a total contribution rate of between 12% and 15% is necessary over a career to adequately fund retirement when combined with social security and personal savings.
Retirement Specific Portfolio Design	Offer “one-touch” investment options for employees who are not sophisticated investors and do not want to avail themselves of in-plan investment advice.	The FRS Investment Plan offers a solid mix of proprietary investment funds with acceptable fees and a series of reasonably priced target-date funds for participants preferring a “one-choice” option. However, it would be preferable to see some guaranteed investments included in the target-date portfolio constructions, and not offering deferred annuities limit a member’s financial flexibility.
Benefit Portability	Safeguard the ability to recruit highly mobile 21st Century employees.	Accumulations attributable to employer contributions into the FRS Investment Plan are vested in the employee after one year of service. Accumulations attributable to employee contributions are, of course, immediately vested. While much shorter than the FRS pension plan, the one-year vest is somewhat longer than ideal. Full and immediate vesting would be preferred.
Offer Distribution Options	Provide members with a variety of asset distribution methods while limiting borrowing.	The standard distribution method offered under the FRS Investment Plan is a lump-sum withdrawal upon separation of service. The employee can roll this distribution over to an IRA or take periodic distributions. Despite a lifetime annuity option being available to members, generally the distribution choices offered by the FRS Investment Plan limit its attractiveness as a true, core retirement option.
Disability Coverage	Offer a separate disability insurance benefit from a quality insurer.	The FRS Investment Plan’s disability coverage is the same as the FRS Pension Plan. In fact, FRS Investment Plan assets are transferred to the FRS Pension Plan upon a member becoming disabled to help fund the benefit. While the consistency between plans is ideal, the FRS disability benefit is not available until an employee has eight years of creditable service.



FRAMEWORK FOR SOLUTIONS & REFORM



Policy Objectives

- **Keeping Promises:** Ensure the ability to pay 100% of the benefits earned and accrued by active workers and retirees
- **Retirement Security:** Provide retirement security for all current and future employees
- **Predictability:** Stabilize contribution rates for the long-term
- **Risk Reduction:** Reduce pension system exposure to financial risk and market volatility
- **Affordability:** Reduce long-term costs for employers/taxpayers and employees
- **Attractive Benefits:** Ensure the ability to recruit 21st Century employees
- **Good Governance:** Adopt best practices for board organization, investment management, and financial reporting



Defined Benefit Reform Best Practices

1. Adopt Better Funding Policy, Risk Assessment, And Actuarial Assumptions

- Lower the assumed rate of return to align with independent actuarial recommendations.
- These changes should aim at minimizing risk and contribution rate volatility for employers and employees.

2. Establish A Plan To Pay Off The Unfunded Liability As Quickly As Possible

- The Society of Actuaries Blue Ribbon Panel recommends amortization schedules be no longer than 15 to 20 years.
- Reducing the amortization schedule would save the state billions in interest payments.

3. Review Current Plan Options To Improve Retirement Security

- Consider offering additional retirement options that create a pathway to lifetime income for employees that do not stay in public service.



Defined Contribution Reform Best Practices

1. Adopt Better Funding Policy

- Financial experts strongly recommend contributions 10 to 15 percent of pre-tax earnings into a retirement account.
- Older workers with a closer retirement horizon and inadequate savings may need to contribute even more.

2. Encourage Use of Target Date Funds

- Well-designed DC plans should also offer the correct age appropriate investment mix. This is generally accomplished by using target date funds that adjust investment risk to the employee's retirement horizon to protect the value of the account from market fluctuations as the worker nears retirement.

3. Encourage Use of Annuities for Improved Retirement Security

- The mix of proprietary investment funds and reasonably priced target-date funds give participants adequate "one-choice" options. However, without guaranteed investments included in the target-date portfolio constructions and deferred annuities the FRS Investment Plan will continue to limit a members' financial flexibility.
- Despite a lifetime annuity option being available to members, generally the distribution choices offered by the FRS Investment Plan limit its attractiveness as a true, core retirement option.



Questions?

Pension Integrity Project at Reason Foundation

Truong Bui, Managing Director

truong.bui@reason.org

Raheem Williams, Policy Analyst

raheem.williams@reason.org

Steven Gassenberger, Policy Analyst

steven.gassenberger@reason.org

Len Gilroy, Senior Managing Director

leonard.gilroy@reason.org



APPENDIX: REFORM CASE STUDIES



Reform Case Studies:

Michigan Teachers (2017-18)

Why?

- Underperforming investment returns
- Back-loaded debt payments escalating (due to use of level-% amortization method and payroll growth assumption failing to match actual experience)
- Prior reforms (2010, 2012) having limited effect on growth in unfunded liability amortization payments
- History of failing to pay the actuarially determined contribution rate

What?

- Plan to phase-in lower assumed rate of return
- New choice-based retirement system (DC or DB) for new hires
 - Lower assumed return, new amortization method, cost-sharing contribution rate policy for new-hire DB plan
- One-time money added to reduce unfunded liability
- Ratchet-down of payroll growth assumption to eliminate backloaded amortization (unanimous approval in House & Senate)
- July 2018: Standard & Poor's increased the state's credit rating from AA- to AA with a "stable outlook," citing pension reform as a key factor



Reform Case Studies:

Colorado (2018)

Why?

- A stress test requirement built into an earlier reform required the plan to review trends and outcomes after 5 years
- That analysis found that despite the reform, several divisions—including schools—would become insolvent in the next few decades or come very close (with funded ratios below 10%)
- Analysis prompted the pension board and admin to seek additional reform

What?

- Changed pension contributions, cost-of-living adjustments, and the retirement age for future workers
- Expanded access to the optional defined contribution retirement plan to cover most state, local and higher education employees (but not teachers)
- Automatic adjustment mechanism to adjust employer & employee rates if plan underperforms
- New annual contribution (~\$200M/yr.) from state toward debt reduction
- New joint legislative oversight committee
- S&P Global Ratings gave Colorado an improved credit outlook post-reform



Reform Case Studies:

Arizona Police & Fire (2016)

Why?

- Underperforming investment returns
- Permanent benefit increase (PBI) program was skimming investment returns and destabilizing asset growth
- Prior reforms (2011) had negative effect on growth in unfunded liabilities and vesting requirements; reforms making retroactive benefit changes found unconstitutional by AZ Supreme Court

What?

- New choice-based retirement system for new hires (DB or DC)
 - New amortization method, cost-sharing contribution rate policy, and graded multiplier for new-hire DB plan
- Constitutional ballot measure to change the PBI to a pre-paid COLA that adjusts based on funded ratio
- Retroactive benefit improvement for post-2011 employees
- Change board composition to align with risks within the system and incentivize better future funding policy



Reform Case Studies:

Arizona Corrections & Probation (2017)

Why?

- Underperforming investment returns
- Permanent benefit increase (PBI) program skimming investment returns and destabilizing asset growth
- Existing benefit not proving to be a recruiting tool for the high turnover prone jobs represented by the plan

What?

- New choice-based retirement system (DB or DC) for new probation & surveillance officers
 - New amortization method, cost-sharing contribution rate policy, and graded multiplier for new hire defined benefit plan
- New DC plan for correctional officers
- Constitutional ballot measure to change the PBI to a pre-paid COLA that adjusts based on funded ratio



Reform Case Studies:

Pennsylvania State & Teachers (2017)

Why?

- Underperforming investment returns
- History of failing to pay the actuarially determined contribution rate
- Prior reforms having a limited effect on the growth in unfunded liability amortization payments

What?

- Create new choice-based retirement system (Hybrid or DC) for new hires
 - Cost-sharing contribution rate policy for DB component of new Hybrid plans
- Create commission to target savings by lowering investment fees paid to asset managers
- Require that any savings resulting from these changes be put back into the fund to pay down unfunded liabilities



Reform Case Studies:

Oklahoma State Employees (2014)

Why?

- Underperforming investment returns
- History of failing to pay the actuarially determined contribution rate
- Existing benefit structure does not prove itself as an effective recruiting tool leading to higher than desired turnover

What?

- All future COLA increases now required funding by cash before granting the benefit
- New employees (except hazardous duty employees) to participate in a DC plan instead of the previous DB plan



Reform Case Studies:

Utah Retirement System (2010)

Why?

- Underperforming investment returns
- After recession, reaching 100% funding through previous amortization schedule became impossible
- History of failing to pay the actuarially determined contribution rate

What?

- Create new choice-based retirement system for new hires
- New employees could choose to participate in a DC plan or a limited DB plan
- Closed loophole allowing “double-dipping” with retirees returning to the workforce and still receiving pension checks



Reform Case Studies:

Limits of Recent Pension Reforms

- **Michigan Teachers**

- Plan to lower the assumed return requires future action by the MPSERS board, state treasurer, and legislature and that could be politically reversed
- Choice-based approach has a one-time option without ability to change the choice within three to five years once a teacher better understands their own career trajectory
- No guarantee of future amortization policy changes

- **Arizona Police/Fire & Probation**

- More conservative funding policy is needed and will require future action by the PSPRS board, and there is no guarantee the incentive approach will work
- New defined benefit plan uses the same assumed rate of return as the legacy plan, instead of starting at a lower rate

- **Pennsylvania State and Teachers**

- New defined benefit plans (within the DB/DC Hybrid plans) use the same assumed rate of return, amortization method, and other funding policies of the legacy plan instead of starting with better assumptions and methods
- Default for all members is into the max hybrid plan option instead of into the plan option that best aligns with the demographics and participation rates of each group of members within PPSERS and PSERS
- DC Only plan option has just a 2% employer match, which may not be enough to ensure the plan option can provide for retirement security
- No plan for changes to the existing assumed return or amortization policy

Pension Reforms and Addressing the Legacy Unfunded Liability



- **Positive Approaches** to Addressing Legacy UAL
 - *Utah (2014), Oklahoma (2015)* — included in statute a requirement that employers make amortization payments as a percentage of total payroll; effect has been that unfunded liability amortization payments in dollars have been effective the same as if there had been no changes
 - *Arizona Police & Fire (2016), Arizona Corrections (2017), Michigan Teachers (2017)* — included in statute a requirement that employers make amortization payments as a percentage of total payroll + required future UAL to be paid off over 10-year, level-dollar layered amortization bases
- **Negative Approaches** to Addressing Legacy UAL
 - *Michigan State Employees (1996), Alaska State & Teachers (2005), Kentucky State and Local (2014), Pennsylvania (2017)* — made no change with respect to legacy UAL, then made limited or no changes to the assumed rate of return and amortization method + failed to pay 100% of actuarially determined rate, collectively leading to a growth in the legacy UAL
 - *Arizona Elected Officials (2013)* — created a fixed payment schedule for legacy UAL + no change to assumed return over time; led to insufficient funding deemed unconstitutional by trial court in 2017

The Landscape of Changes to Pension Systems Over Past 20 Years



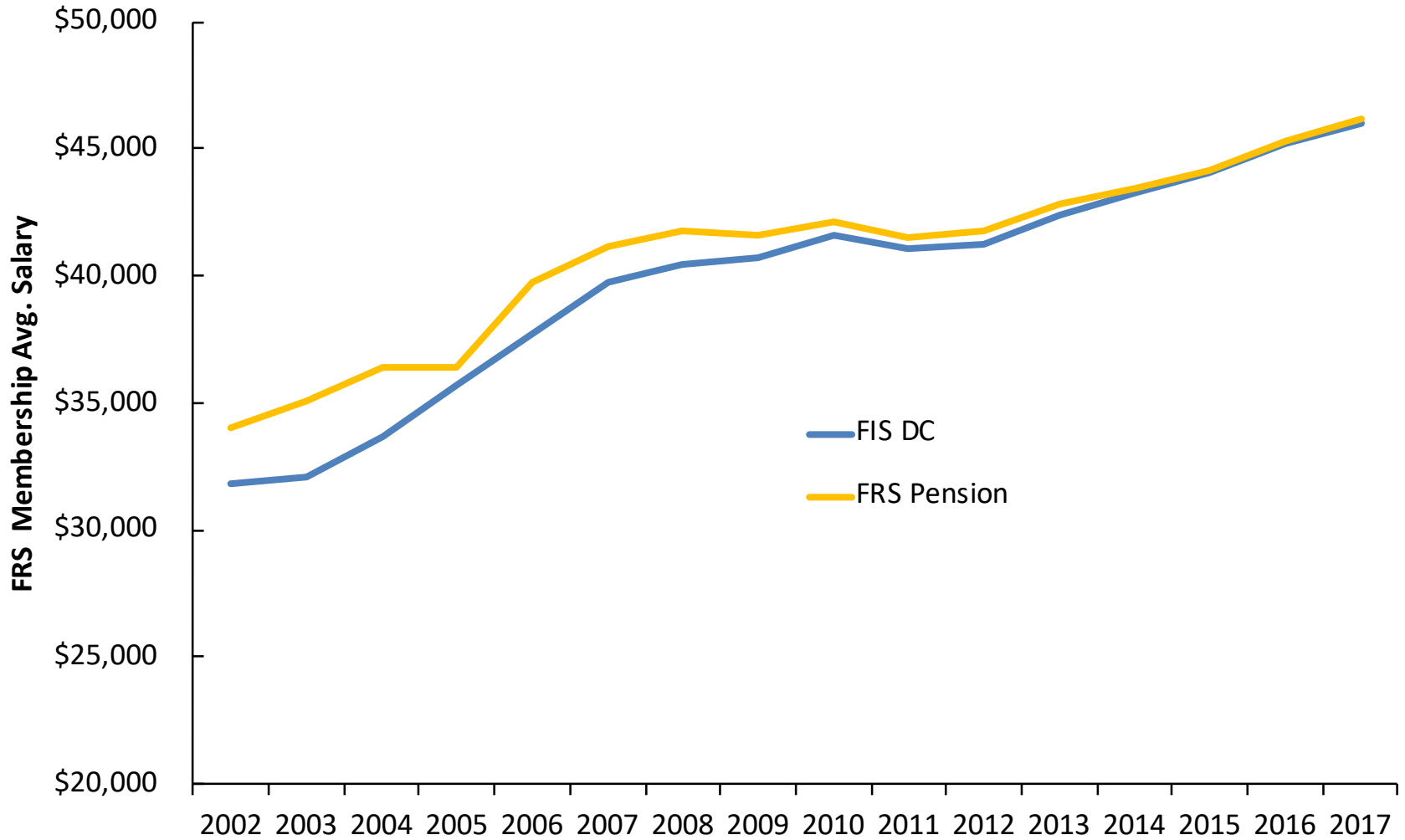
- **Systems creating choice-based DB or DC plans**
 - *Default to DB:* Colorado PERA-State Employees (2005), South Carolina State & Local (2012), Arizona Police/Fire (2016), Arizona Corrections (2017), Colorado PERA-Local Gov & Higher Education (2018)
 - *Default to DC:* Michigan Teachers (2017)
- **Systems creating choice-based Hybrid or DC plans**
 - Utah (2014), Pennsylvania State & Teachers (2017)
- **Systems creating DC-only plans**
 - Michigan State (1996), Alaska State (2005), Alaska Teachers (2005), Arizona Elected Officials (2013), Arizona Corrections (2017)
- **Systems creating CB-only plans**
 - Nebraska State (2002), Nebraska Local (2002), Kansas State (2012), Kentucky State & State Police (2014), Kentucky Local (2014)
- **Systems creating Hybrid-only plans**
 - Oregon State & Teachers (2003), Georgia State (2008), Rhode Island State & Teachers (2011), Virginia (2012), Tennessee (2013)



APPENDIX FOR INTERNAL CONSIDERATION



Comparing Average Salary: FRS Pension vs. DC



Source: Pension Integrity Project analysis of FRS CAFR reports

Understanding the Current Funding Policy:

Back-Loaded Pension Debt Payments



- A level percentage of payroll method sets the amortization contributions as an equal share of the system's payroll. This has the advantage of keeping required contributions as a fixed share of total compensation, but it is also very sensitive to missed assumptions.
- A level percentage funding policy of calculating annual contributions based on a level-percentage of payroll will result in back-loaded pension debt payments if the payroll growth assumption is wrong.

Understanding the Current Funding Policy:

Best Practices Pension Debt Payments



- A level dollar method, on the other hand, sets payments as a fixed dollar amount. This frontloads debt payment, but leads to greater savings in the long run—in addition to preventing lower-than-expected payroll growth from leading to missed contributions
- The emerging best practice is that pension plans aim to use amortization periods of less than two decades, and aiming for 10- to 15-year schedules to pay off the debt that emerges in a given year may be the most appropriate.

Understanding the Current Funding Policy:

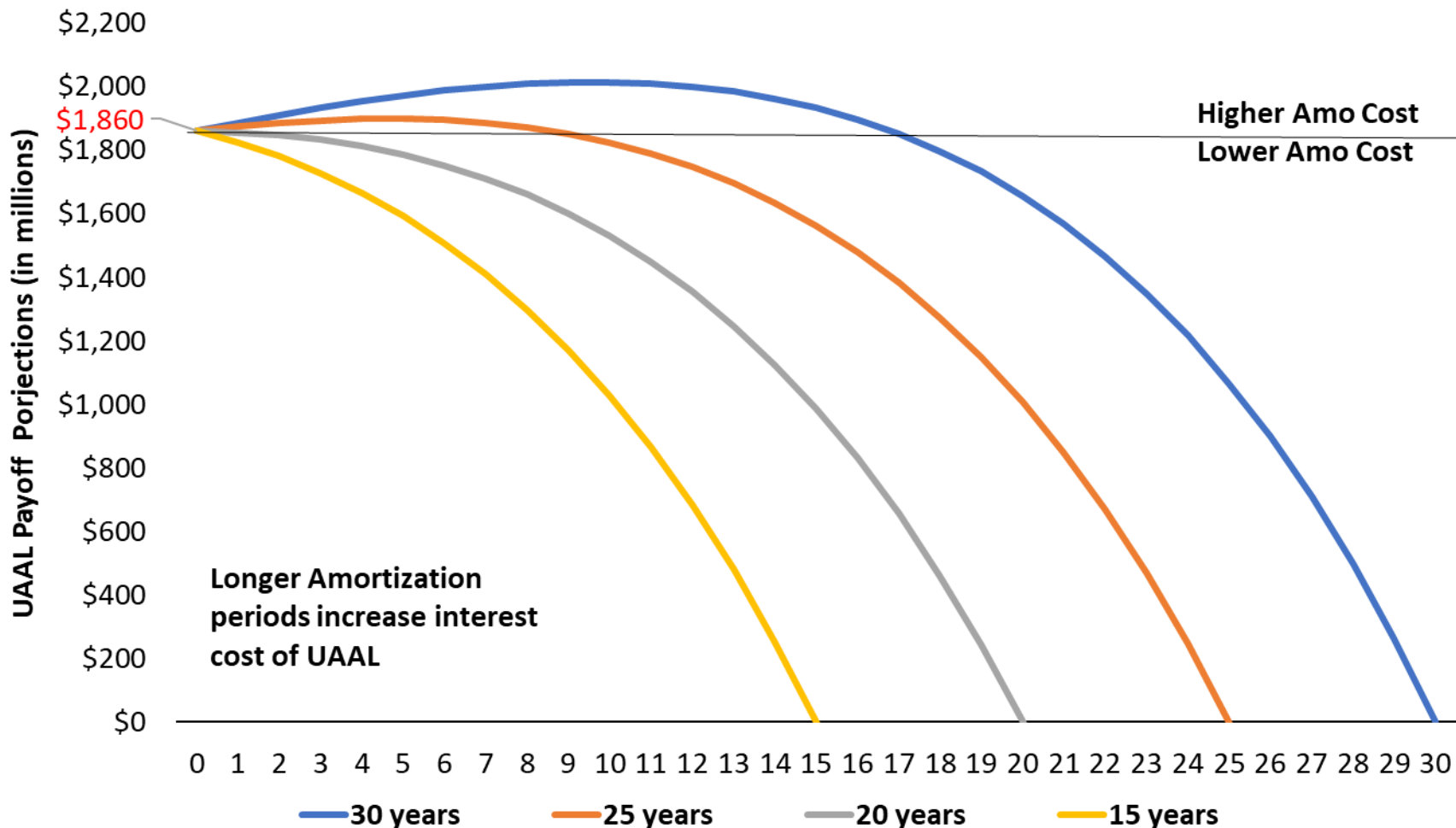
Best Practices Pension Debt Payments



- A closed amortization schedule sets a specific date by which the unfunded liability will be paid off.
- An open amortization schedule, on the other hand, sets amortization payments so the repayment schedule is reset each year, like refinancing a mortgage every year.
- In general, an open amortization schedule may never fully pay off its unfunded liability.
- The best practice is clearly to use a closed period of time for each schedule.

Current Funding Assumptions: Net Increase in UAAL from 2017-18

Waiting Longer Adds Cost



2017-18 Net UAAL Increase Pay-Off Projections Under Varying Amortization Schedules.



FRS Investment Plan Overview

- ✓ The FRS Investment Plan members choose how their account balance is invested.
- ✓ FRS offers members free confidential and unbiased access to financial planners for help choosing investment funds.
- ✓ MyFRS.com is an online tool for information and details about each fund, including Lipper rating, objective, annual fees, historical performance, relative risk. The online portal allows members to estimate retirement needs, choose investments, and create a personal financial plan that includes FRS and non-FRS retirement accounts.
- ✓ Private-sector companies are responsible for the day-to-day operation of buying and selling the investments held by the fund.



FRS Investment Plan Overview:

Retirement Date Funds

					AS OF MARCH 31, 2019				
					FEES PER \$1,000		PERFORMANCE ³		
					Annual ²	Long-Term	1 Year	5 Years	10 Years
FRS 2060 Retirement Date Fund (2060)⁴									
MANAGER: See page 5	OBJECTIVE: Retirement Date	FUND TYPE: Blend of institutional and mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$1.10	\$11	2.49%	6.49%	--
FRS 2055 Retirement Date Fund (2055)									
MANAGER: See page 5	OBJECTIVE: Retirement Date	FUND TYPE: Blend of institutional and mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$1.10	\$11	2.44%	6.49%	--
FRS 2050 Retirement Date Fund (2050)									
MANAGER: See page 5	OBJECTIVE: Retirement Date	FUND TYPE: Blend of institutional and mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$1.10	\$11	2.44%	6.52%	--
FRS 2045 Retirement Date Fund (2045)									
MANAGER: See page 5	OBJECTIVE: Retirement Date	FUND TYPE: Blend of institutional and mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$1.10	\$11	2.55%	6.51%	--
FRS 2015 Retirement Date Fund (2015)									
MANAGER: See below	OBJECTIVE: Retirement Date	FUND TYPE: Blend of institutional and mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$1.90	\$19	3.51%	4.08%	--
FRS Retirement Date Fund (2000)									
MANAGER: See below	OBJECTIVE: Retirement Date	FUND TYPE: Blend of institutional and mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$1.90	\$19	3.51%	3.73%	--



FRS Investment Plan Overview:

Money Market Fund

- These funds invest in short-term securities (financial instruments or obligations) that are high-quality and can be sold quickly with little loss of value.
- The funds have limited risk of declining in value; however, over the long term, returns have been modest and may not keep pace with inflation.
- Money market funds are not FDIC-insured or guaranteed.

					AS OF MARCH 31, 2019				
					FEES PER \$1,000		PERFORMANCE ²		
					Annual ¹	Long-Term	1 Year	5 Years	10 Years
FRS Money Market Fund (60)									
MANAGER: BlackRock	OBJECTIVE: Money Market	FUND TYPE: Institutional	STRATEGY: Active	RISK: 1 2 3 4 5	\$0.61	\$8	2.40%	0.99%	0.62%



FRS Investment Plan Overview:

Multi-Assets Fund

- Multi-Assets funds invest in a diversified array of assets that may offset inflationary pressures.
- These assets include but are not limited to U.S. Treasury inflation-linked securities, commodities, real estate investment trusts, gold, and other securities.
- The funds seek long-term real (net of inflation) returns to preserve the future purchasing power of accumulated assets.

					AS OF MARCH 31, 2019				
					FEES PER \$1,000		PERFORMANCE ²		
					Annual ¹	Long-Term	1 Year	5 Years	10 Years
FRS Inflation Adjusted Multi-Assets Fund (300)									
MANAGER: BlackRock, Principal	OBJECTIVE: Multi- Assets	FUND TYPE: Institutional	STRATEGY: Active	RISK: 1 2 3 4 5	\$4.50	\$48	2.16%	1.22%	--



FRS Investment Plan Overview:

Bond Funds

- These funds invest primarily in bonds. The short-term risk of bond funds is relatively low; The value of a bond is affected by interest rates, inflation, and other factors.
- Bond funds don't always protect savings against inflation.

					AS OF MARCH 31, 2019				
					FEES PER \$1,000		PERFORMANCE ²		
					Annual ¹	Long-Term	1 Year	5 Years	10 Years
FRS U.S. Bond Enhanced Index Fund (80)									
MANAGER: BlackRock, Prudential	OBJECTIVE: Bonds	FUND TYPE: Institutional	STRATEGY: Passive	RISK: 1 2 3 4 5	\$0.50	\$5	4.51%	2.84%	3.80%
FRS Intermediate Bond Fund (90)									
MANAGER: Fidelity	OBJECTIVE: Bonds	FUND TYPE: Institutional	STRATEGY: Active	RISK: 1 2 3 4 5	\$1.20	\$13	3.29%	2.04%	2.04%
FRS Core Plus Bond Fund (310)									
MANAGER: Prudential, Wells Capital	OBJECTIVE: Bonds	FUND TYPE: Institutional	STRATEGY: Active	RISK: 1 2 3 4 5	\$2.40	\$24	5.02%	3.44%	--

Source: FIS Investment Plan: investment Summary 2019



FRS Investment Plan Overview:

U.S. Stock Funds

- U.S. Stock Funds invest in equity shares or stocks issued by U.S. companies.
- The short-term risk of stocks has been much higher than bonds.
- However, over longer periods of time, stocks have generally experienced higher returns.

					AS OF MARCH 31, 2019				
					FEES PER \$1,000		PERFORMANCE ²		
					Annual ¹	Long-Term	1 Year	5 Years	10 Years
FRS U.S. Stock Market Index Fund (120)									
MANAGER: BlackRock	OBJECTIVE: All Cap U.S. Equity	FUND TYPE: Institutional	STRATEGY: Passive	RISK: 1 2 3 4 5	\$0.20	\$2	8.84%	10.46%	16.09%
FRS U.S. Large Cap Stock Fund (320)									
MANAGER: BlackRock, Fidelity, Jennison, QMA, AJO, London Company	OBJECTIVE: Large U.S. Equity	FUND TYPE: Institutional	STRATEGY: Active	RISK: 1 2 3 4 5	\$2.80	\$28	5.52%	10.49%	--
FRS U.S. Small/Mid Cap Stock Fund (330)									
MANAGER: American Beacon, QMA, T. Rowe Price, Stephens	OBJECTIVE: Small/Mid U.S. Equity	FUND TYPE: Blend of institutional and mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$5.90	\$61	5.25%	9.22%	--

Source: FIS Investment Plan: investment Summary 2019



FRS Investment Plan Overview:

Foreign and Global Stock Funds

- These funds invest primarily in equity shares or stocks issued by foreign companies.
- Compared to U.S. stocks, foreign stocks are affected by additional risk factors, such as foreign laws, differences in accounting practices, political and currency risk.

					AS OF MARCH 31, 2019				
					FEES PER \$1,000		PERFORMANCE ²		
					Annual ¹	Long-Term	1 Year	5 Years	10 Years
FRS Foreign Stock Index Fund (200)³									
MANAGER: BlackRock	OBJECTIVE: Foreign Stock	FUND TYPE: Institutional	STRATEGY: Passive	RISK: 1 2 3 4 5	\$0.30	\$3	-5.02%	2.93%	9.39%
FRS Foreign Stock Fund (220)³									
MANAGER: Capital Research	OBJECTIVE: Foreign Stock	FUND TYPE: Mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$4.90	\$50	-4.66%	4.26%	9.95%
FRS Global Stock Fund (210)³									
MANAGER: Capital Research	OBJECTIVE: Global Stock	FUND TYPE: Mutual	STRATEGY: Active	RISK: 1 2 3 4 5	\$4.90	\$50	5.32%	9.16%	14.02%

Source: FIS Investment Plan: investment Summary 2019

Challenges from Aggressive Actuarial Assumptions

FRS Historic Change in Covered Payroll



Source: Pension Integrity Project analysis of FRS actuarial valuation reports and CAFRs.



FRS Investment Plan Overview

- ✓ The FRS Investment Plan members choose how their account balance is invested.
- ✓ FRS offers members free confidential and unbiased access to financial planners for help choosing investment funds.
- ✓ MyFRS.com is an online tool for information and details about each fund, including Lipper rating, objective, annual fees, historical performance, relative risk. The online portal allows members to estimate retirement needs, choose investments, and create a personal financial plan that includes FRS and non-FRS retirement accounts.
- ✓ Private-sector companies are responsible for the day-to-day operation of buying and selling the investments held by the fund.
- ✓ The Retirement Date Funds are composed of the following investment management firms: American Beacon, BlackRock, Fidelity, Principal Financial Group, Prudential, QMA, and Wells Capital.



Distribution Options

Available distribution options include:

- Partial or full lump-sum distribution.
- Partial or full lump-sum direct rollover distribution to an IRA, Roth IRA, 401(k), 403(b), 457, or other qualified retirement plan that accepts rollover contributions.
- A rollover is a tax-free transfer from one eligible retirement plan to another. A non-spouse beneficiary may complete a direct rollover distribution to an inherited/beneficiary IRA.
- A split distribution, part direct rollover and part payable to you.
- Periodic distributions from your account balance.
- Installment distributions, paid monthly, quarterly, or annually, based on a percent of your account balance, or a specific dollar amount.
- A monthly lifetime immediate or deferred income payment guaranteed by an insurance firm. A deferred income payment is designed to provide income lifetime income.



FRS Defined Contribution Plan Details

- **Current Default Option**
- **Employee Contribution:** 3%
- **Employer Contribution:** 3.19%
- **Vesting Employer Contributions:** 1 year
- **Investment Options:** Index Funds, Multi-Assets Funds, Money Market Funds, Bond Funds and Target Date Funds (TDFs)
- **Investment Flexibility:** Members can change investment fund allocations at any time or not at all
- **Default Investment Strategy:** N/A
- **Normal retirement:** 1 year of creditable service or after vesting
- **Official Plan Name:** Florida Retirement System Investment Plan
- The Legislature can increase or decrease the amount employers and employees contribute to the defined contribution plan members' account.

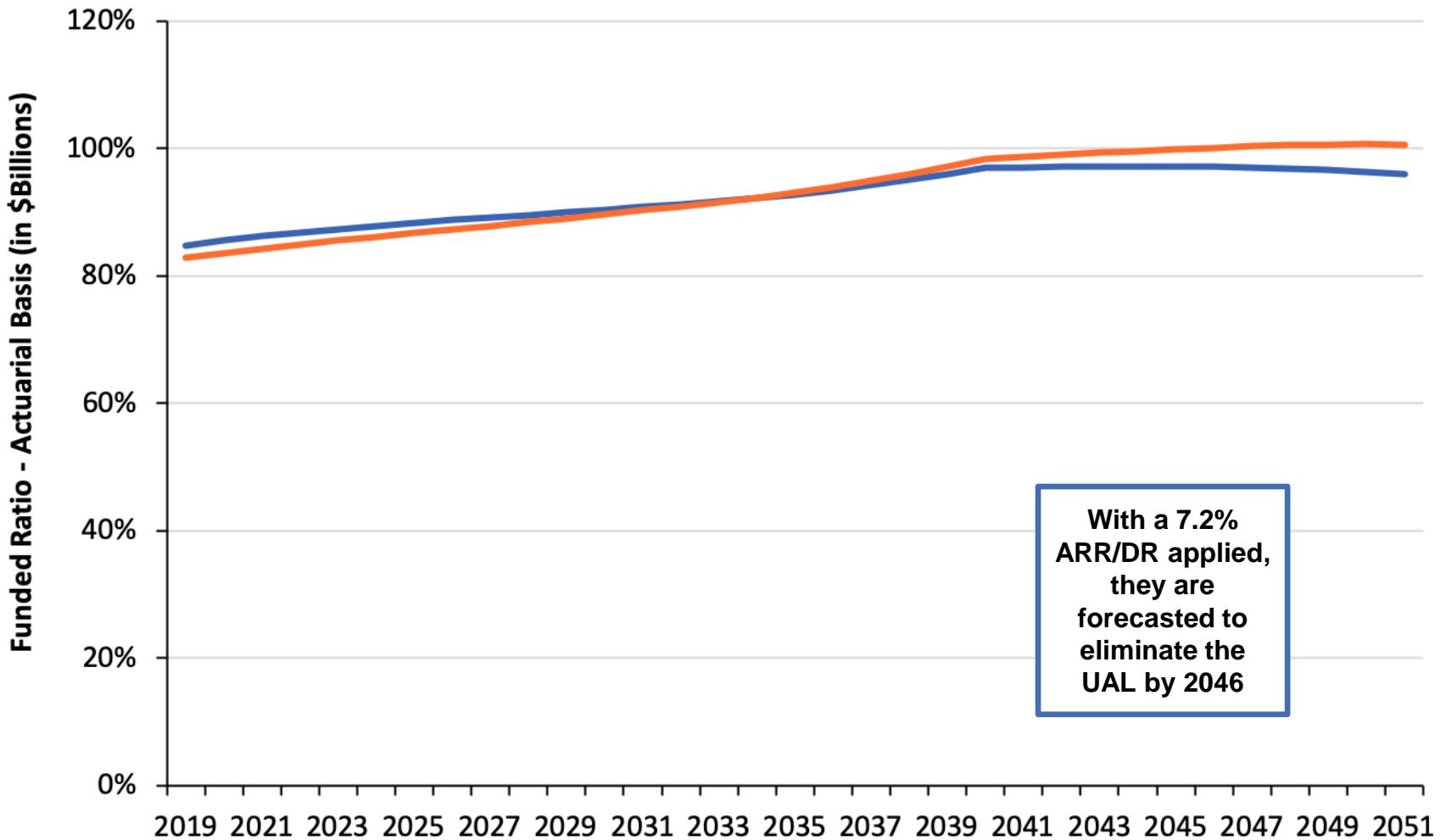
Rollovers from and to Qualified Retirement Plans:

- a qualified Traditional IRA at another custodian,
- an eligible retirement plan (401 defined contribution or 401 defined benefit),
- SEP-IRA, 457(b), 403(b) pre-tax
- Federal Employee's Thrift Savings Plan

FRS Reform Scenario: Lower ARR

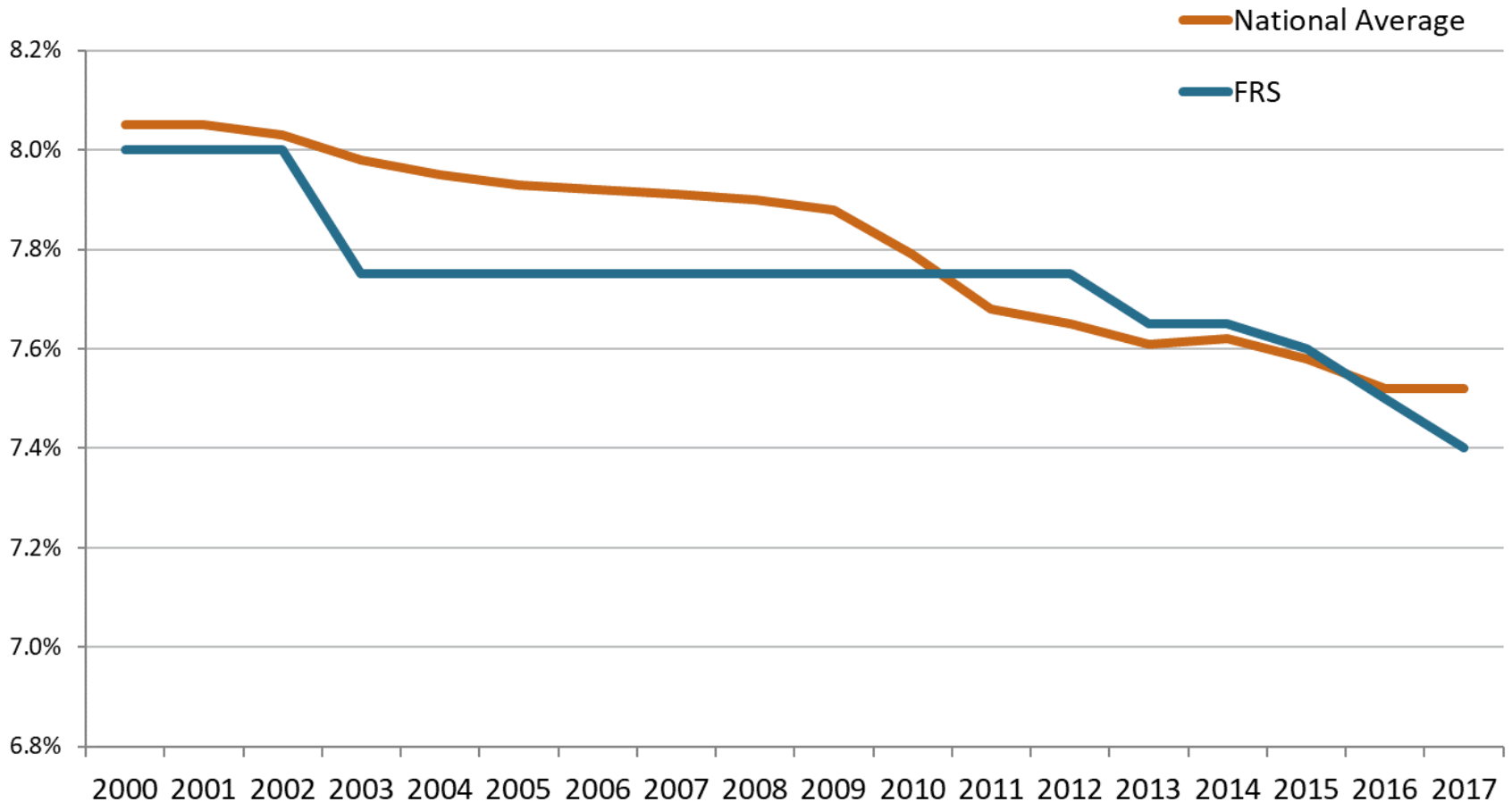
What if FRS Reduces the ARR By 20 Basis Points?

Discount Rate: 7.20%, Assumed Return: 7.20%, Actual Return: 7.20%, Amo. Period: 30-Year, Closed



Source: Pension Integrity Project actuarial forecast of FRS Scenario assumes that the state pays 100% of the actuarially determined contribution each year. Figures are rounded and adjusted for inflation.

FRS Assumed Rate of Return History Relative to National Average

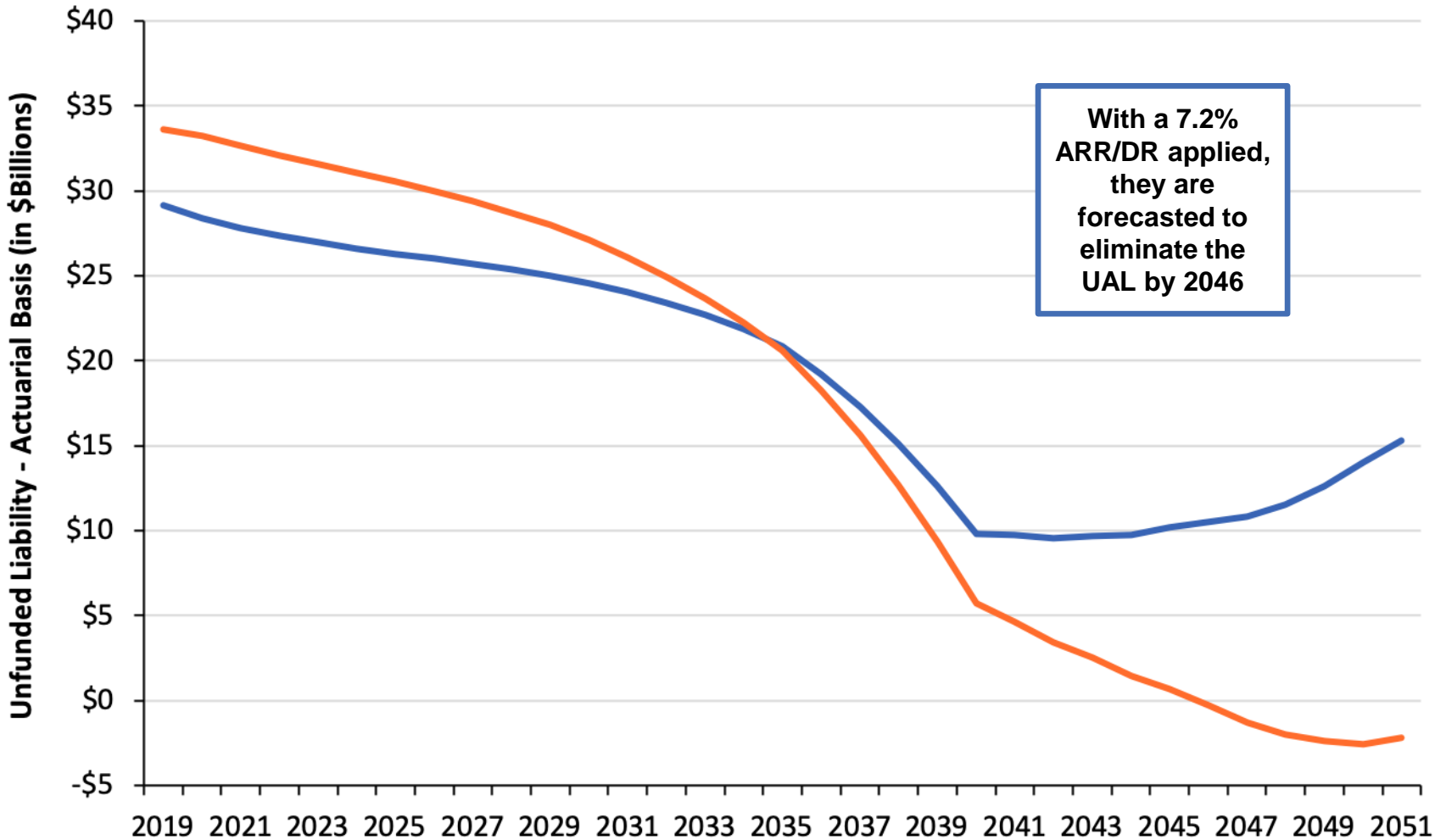


Source: Center for Retirement Research, NASRA, and FRS Valuation Reports

FRS Reform Scenario: Lower ARR

What if FRS Reduces the ARR By 20 Basis Points?

Discount Rate: 7.20%, Assumed Return: 7.20%, Actual Return: 7.20%, Amo. Period: 30-Year, Closed



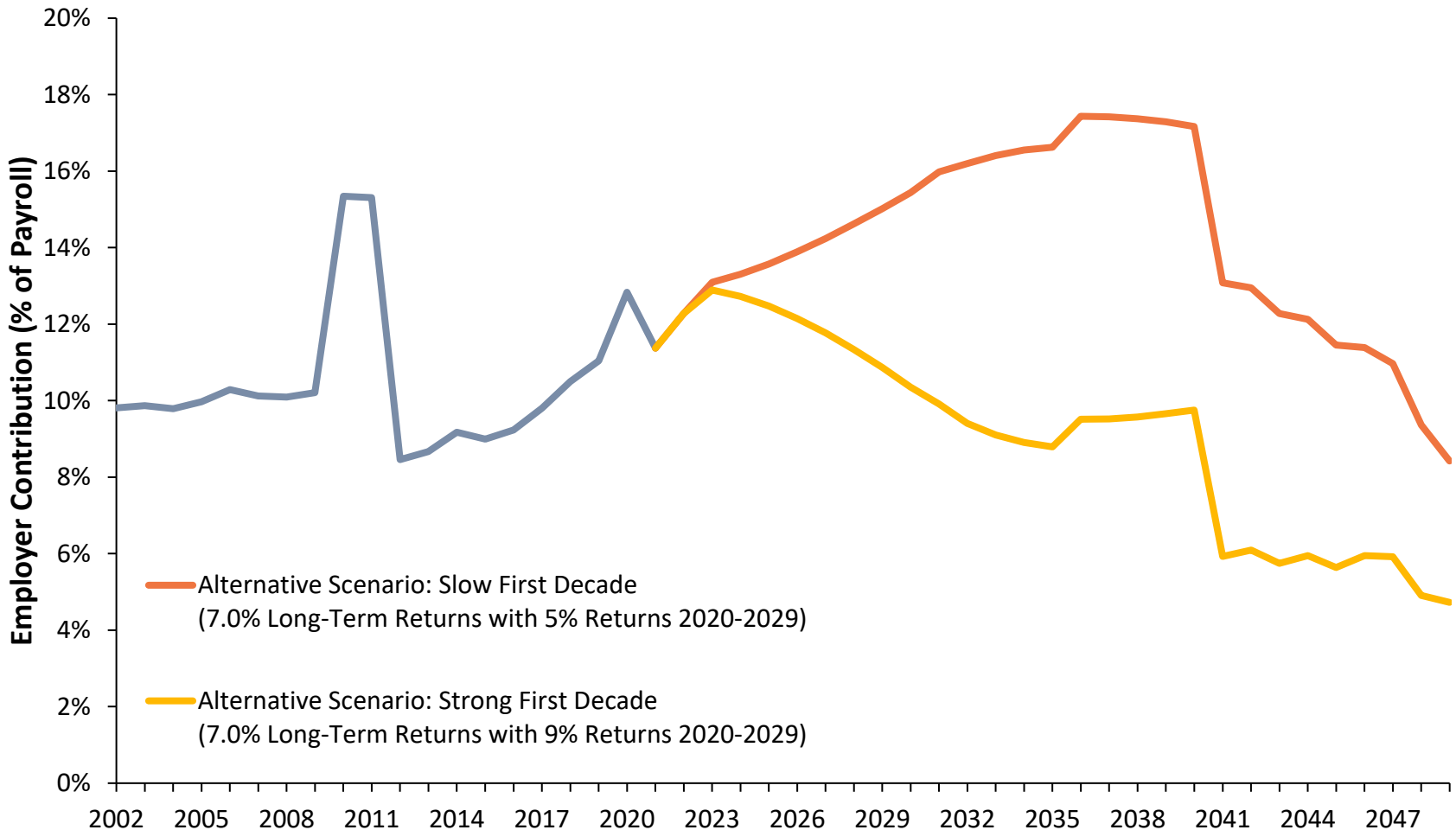
Source: Pension Integrity Project actuarial forecast of FRS Scenario assumes that the state pays 100% of the actuarially determined contribution each year. Figures are rounded and adjusted for inflation.



30-year Employer Contribution Forecast

All Paths to a 7.0% Average Return are Not Equal

Long-Term Average Returns of 7.0%



Source: Pension Integrity Project actuarial forecast of FRS plan. Scenario assumes that FRS pays the actuarially required rate each year. Years are plan's fiscal years.

Challenges from Outdated and Aggressive Actuarial Assumptions

Actual Experience Differs from Actuarial Assumptions



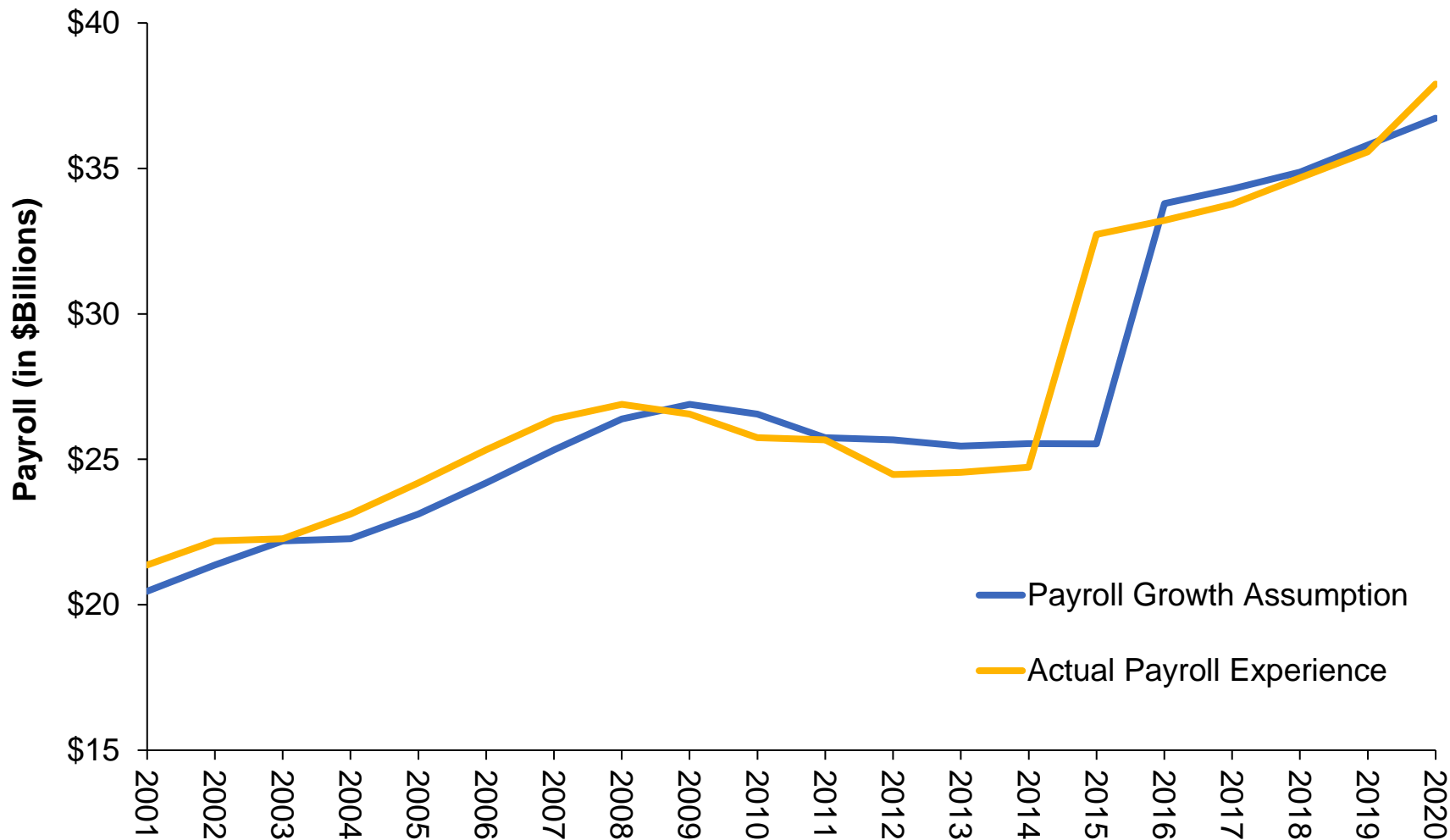
(-) Overestimated Payroll Growth

1. Overestimating payroll growth creates a challenge for FRS due to its policy to set amortization payments as a level percentage of payroll.
2. This method *backloads pension debt payments* by assuming that future payrolls will be larger than today (a reasonable assumption).
3. While in and of itself, a growing payroll is a reasonable assumption, if payroll does not grow as fast as assumed, employer contributions must rise as a percentage of payroll.
 - If payroll does not grow as fast as assumed, employer contributions will end up falling behind as well.



Challenges from Outdated and Aggressive Actuarial Assumptions

Actual Change in Payroll v. Assumption

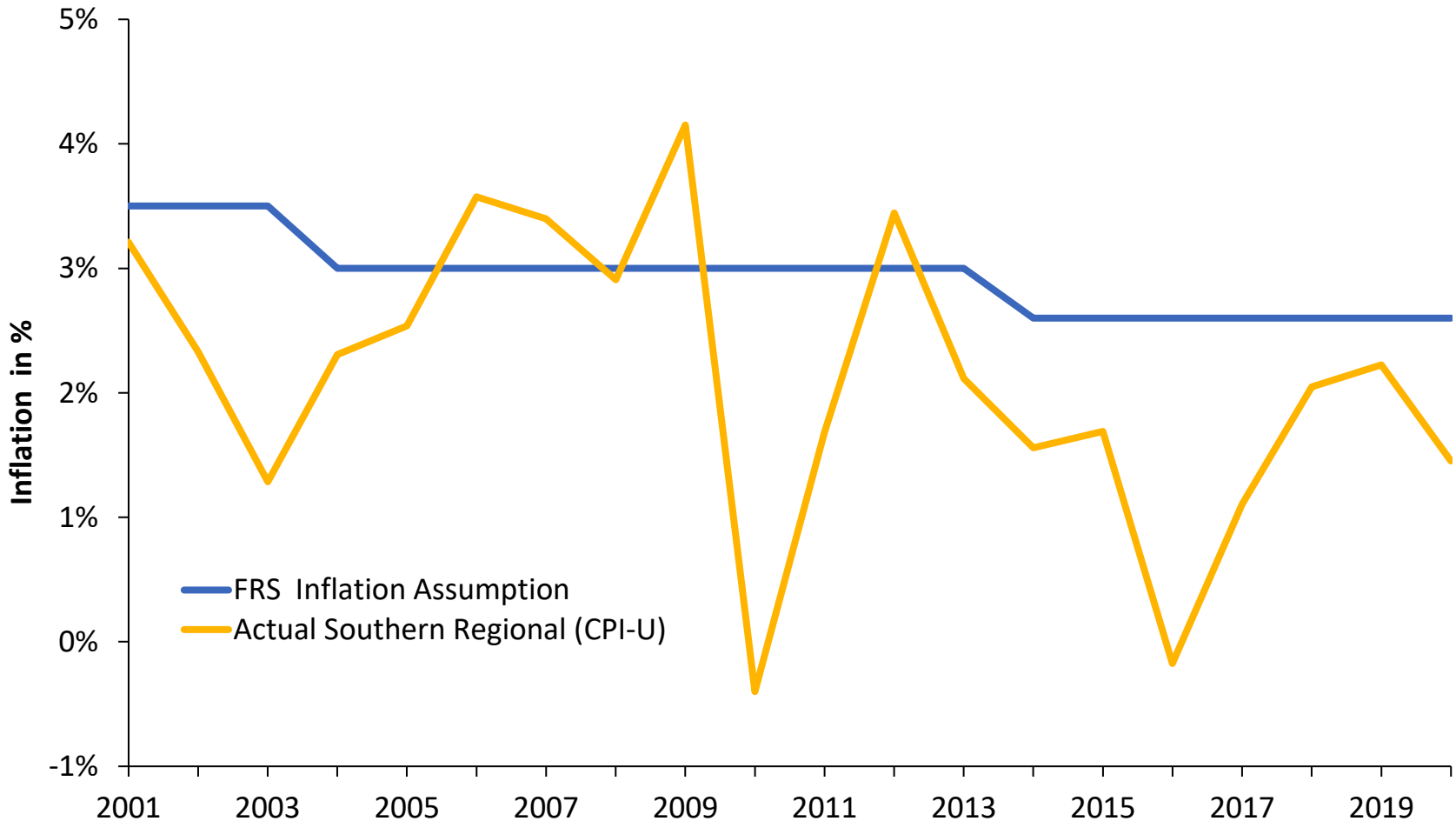


Source: Pension Integrity Project analysis FRS actuarial valuation reports and CAFRs.



Challenges from Outdated and Aggressive Actuarial Assumptions

Actual Inflation vs. Assumption



Source: Pension Integrity Project analysis FRS actuarial valuation reports and CPI-U data from the Bureau of Labor Statistics.

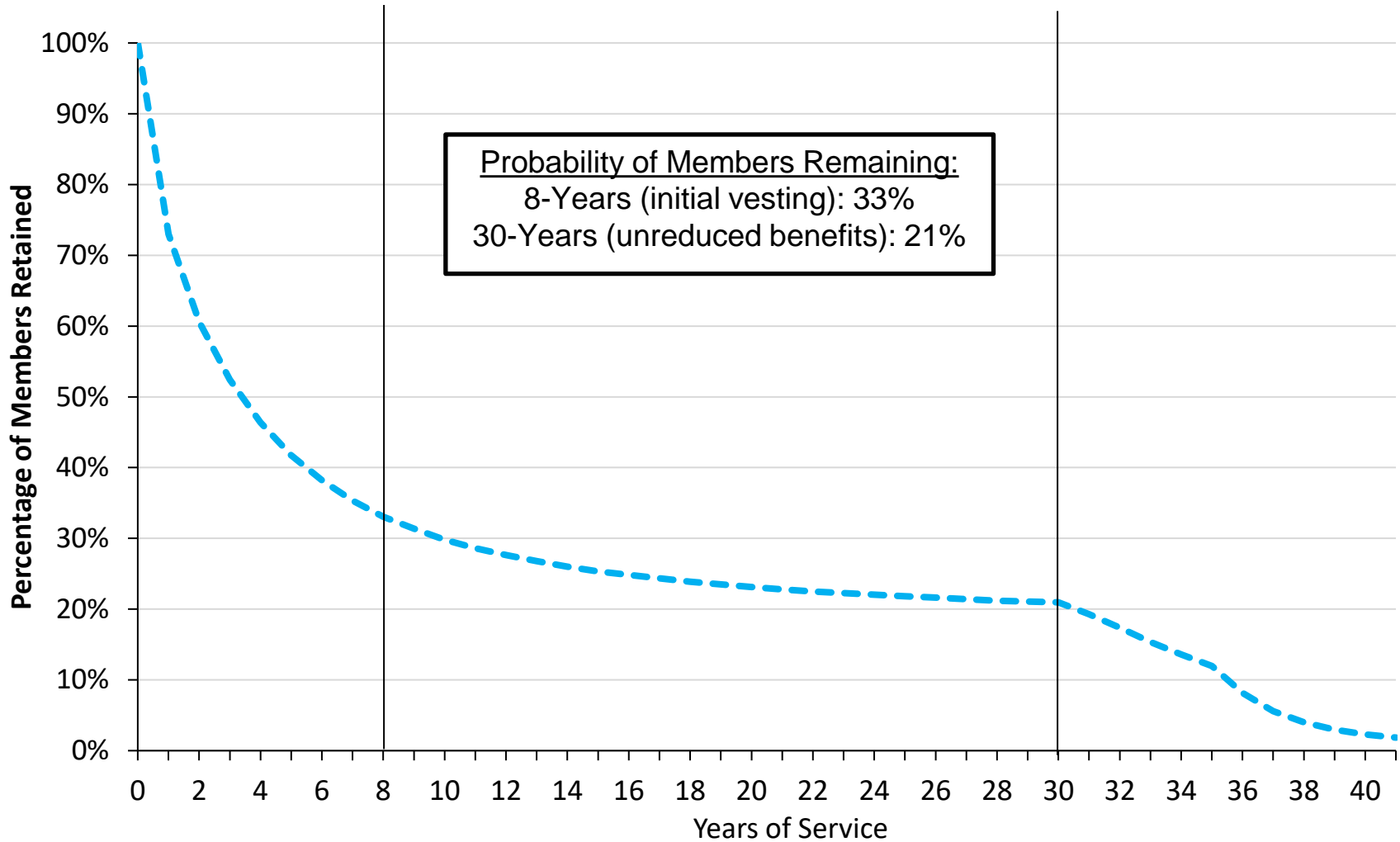


CHALLENGE 3: THE EXISTING BENEFIT DESIGN DOES NOT WORK FOR EVERYONE

- The turnover rate for members of FRS suggests that the current retirement benefit design is not supporting goals for retention



Probability of Members Remaining in FRS



Source: Pension Integrity Project analysis of FRS actuarial reports and CAFRs.
 Illustration is based on *plan* assumptions and a hypothetical analysis of an average member hired at the age of 25



Do ERB Retirement Plans Work for All Employees?

- **66%** of new FRS members leave before 8 years
 - Employees must work 8 years before their benefits become vested.
 - Members who leave the plan before then must forfeit contributions their employer made on their behalf.
- Only **21%** of hires who are still working after 8 years will reach 30 years of service for full benefits.



Recruiting and Retaining Public Employees

■ Recruiting a 21st Century Workforce:

- There is little evidence that retirement plans — DB, DC, or other design — are a major factor in whether an individual wants to enter public employment.
- The most likely incentive to increase recruiting to the public workforce is increased salary.

■ Retaining Employees:

- If worker retention is a goal of the FRS system, it is clearly not working, as around 66% of employees leave within 8 years.
- After 25 to 30 years of service there is some retention effect, but the same incentives serve to push out workers in a sharp drop off after 30 years of service.