EMPLOYEES RETIREMENT SYSTEM OF TEXAS (ERS) PENSION SOLVENCY ANALYSIS

Prepared by:

Pension Integrity Project at Reason Foundation
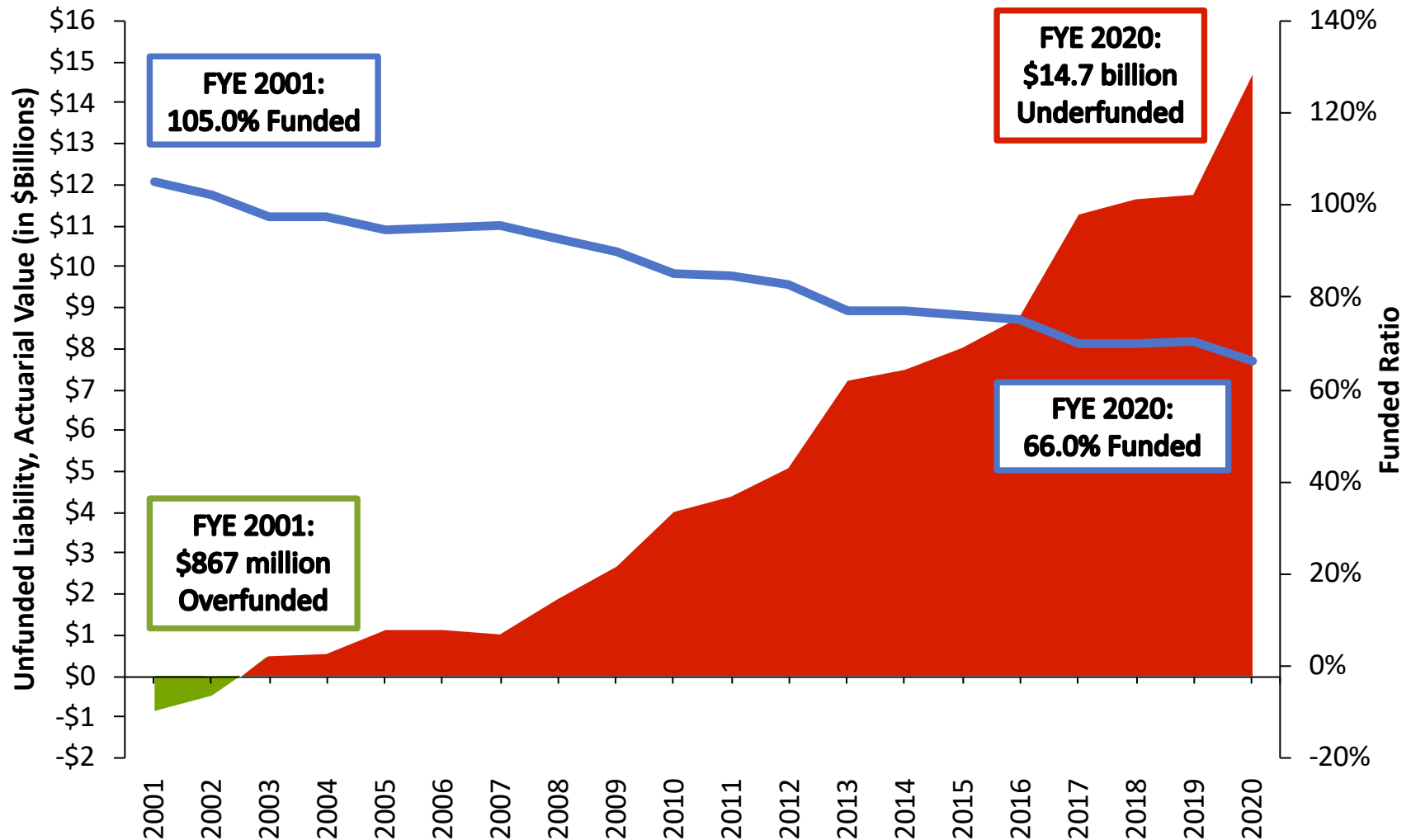
March 8, 2021

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

A History of ERS Solvency (2001-2020)

**FYE 2001:
105.0% Funded**

**FYE 2020:
$14.7 billion
Underfunded**

**FYE 2020:
66.0% Funded**

**FYE 2001:
$867 million
Overfunded**

Unfunded Liability, Actuarial Value (in $Billions)

Funded Ratio

Source: Pension Integrity Project analysis of actuarial value of assets and actuarial accrued liability found in ERS actuarial valuation reports and CAFRs

ERS Liabilities are Growing Faster than Assets
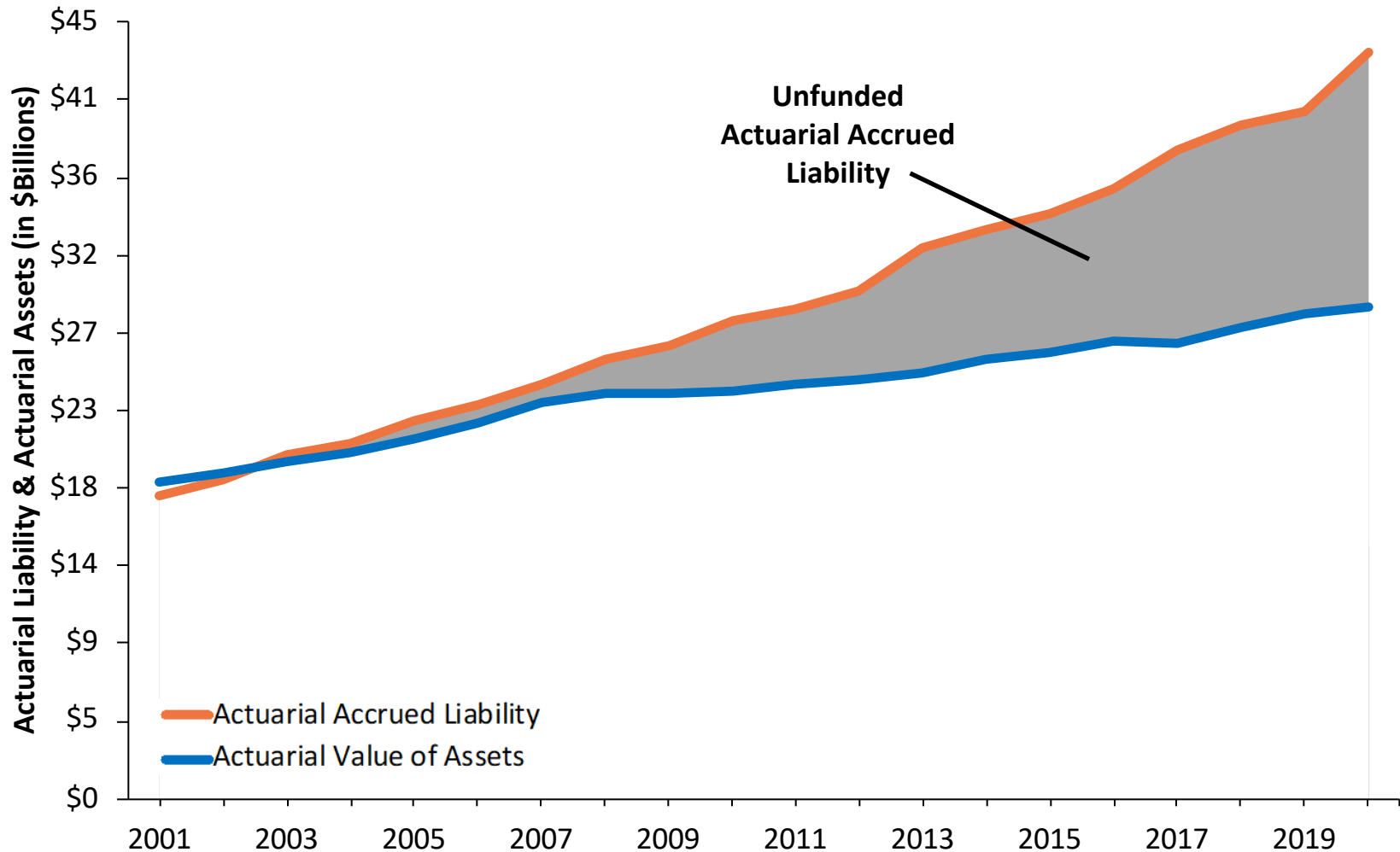
Source: Pension Integrity Project analysis of ERS actuarial valuation reports through FY2020.

Makeup of ERS Contributions

	FY2020 Contributions	
	% of Payroll	**$ Value**
Total Employee	**9.50%**	**$713,985,036**
Total Employer	**10.00%**	**$735,855,712**
State (Normal Cost)	*4.66%*	*$342,908,762*
State (Debt Amortization)	*4.84%*	*$356,154,165*
Agency (Required Agency Contribution)	*0.50%*	*$36,792,785*
Total ERS Contributions	**19.50%**	**$1,449,840,748**

10% Cap

The Texas Constitution caps state contributions to ERS at 10% of payroll, which can only be exceeded under an emergency declaration.
Article 16, Section 67(b)(3)

"The current financial outlook for ERS is very poor. It is important to understand that the currently scheduled contributions are not expected to accumulate sufficient assets in order to pay all of the currently scheduled benefits when due."
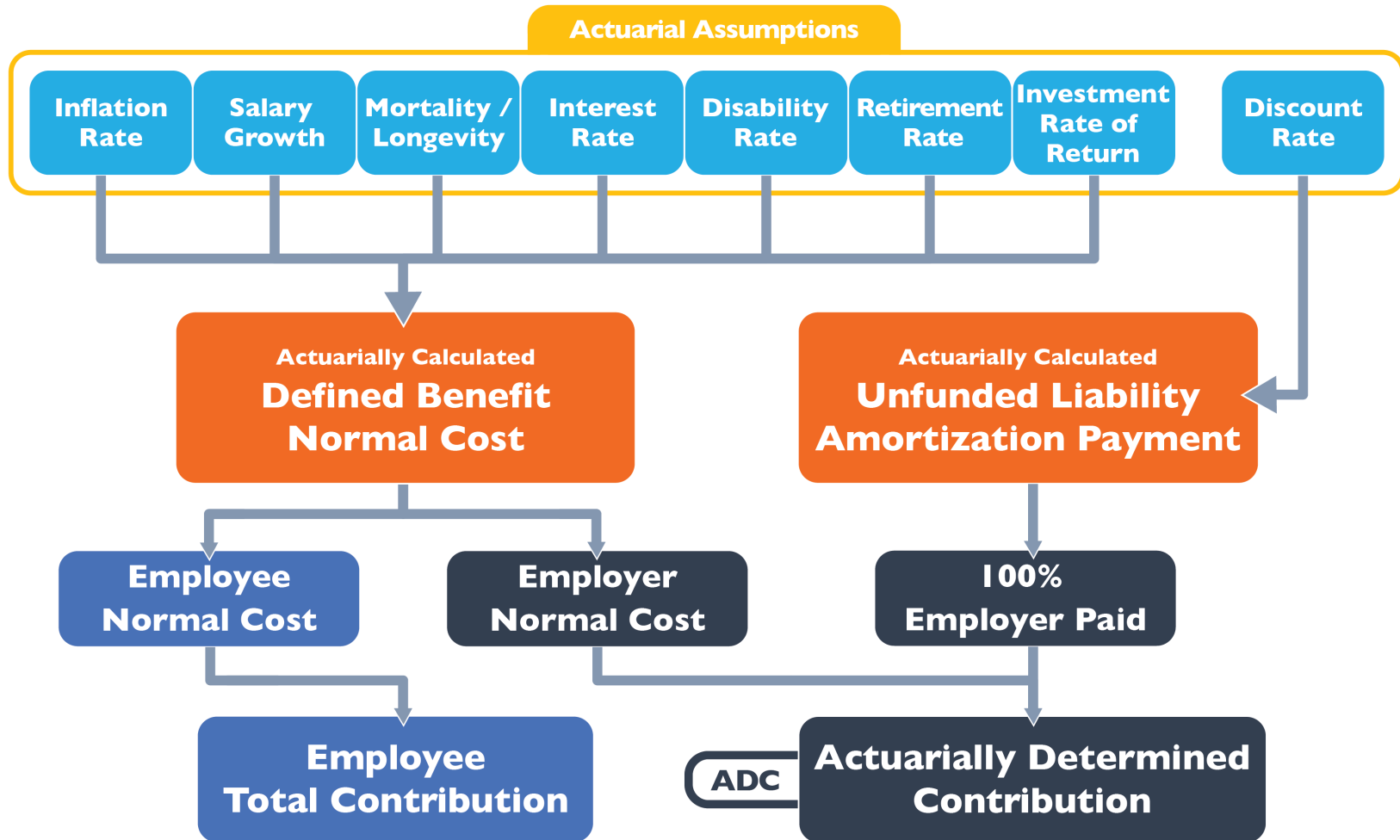-Gabriel Roeder Smith & Company, FY 2019 ERS Actuarial Valuation

Source: Pension Integrity Project analysis of ERS actuarial valuation reports. The State is scheduled to contribute 9.50% of payroll through direct appropriations, and state agencies contribute an additional 0.50% of payroll, resulting in total employer contribution of 10% of payroll for the current biennium.

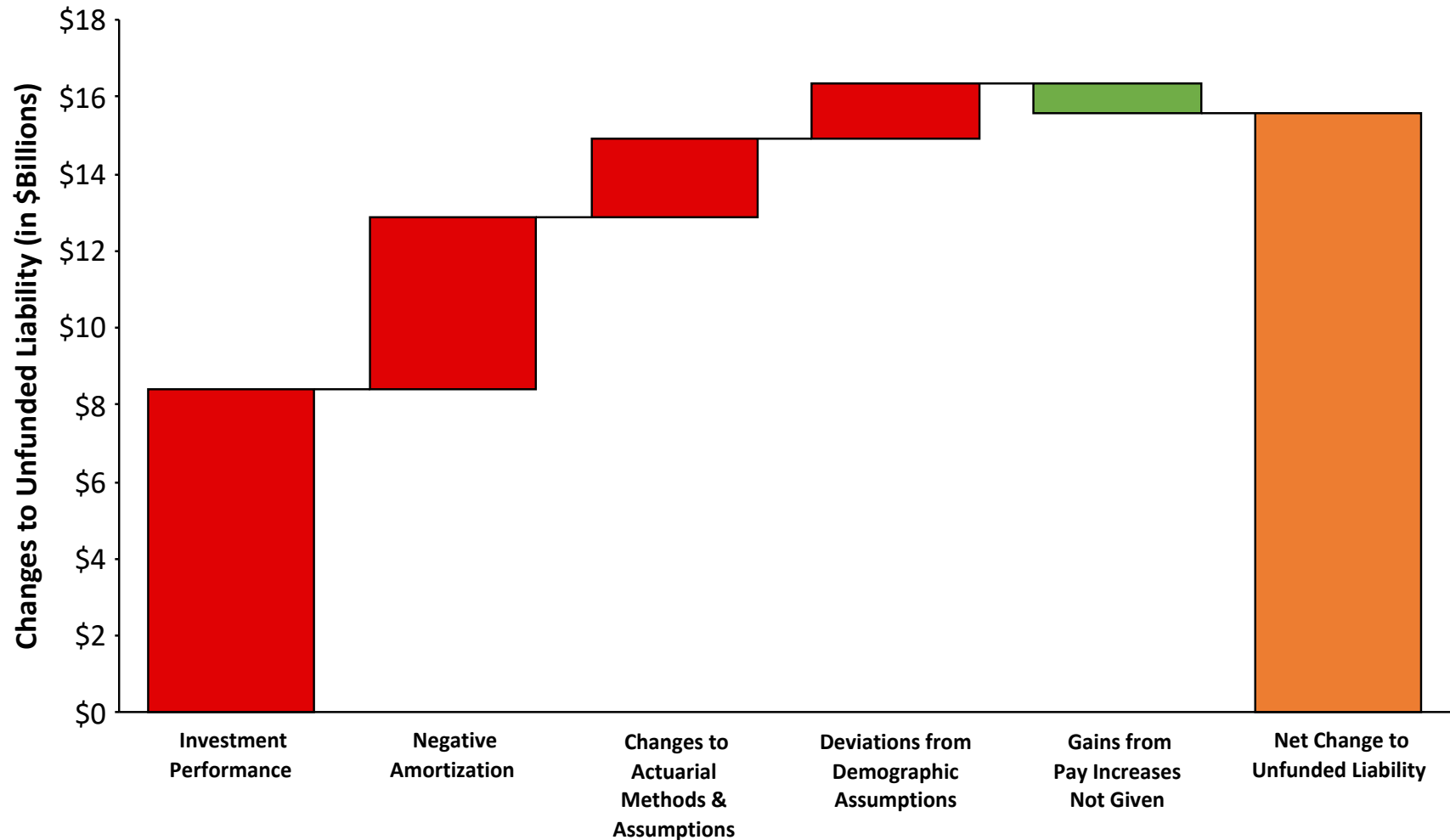# CHALLENGES CURRENTLY FACING TEXAS ERS

How a Pension Plan is Funded
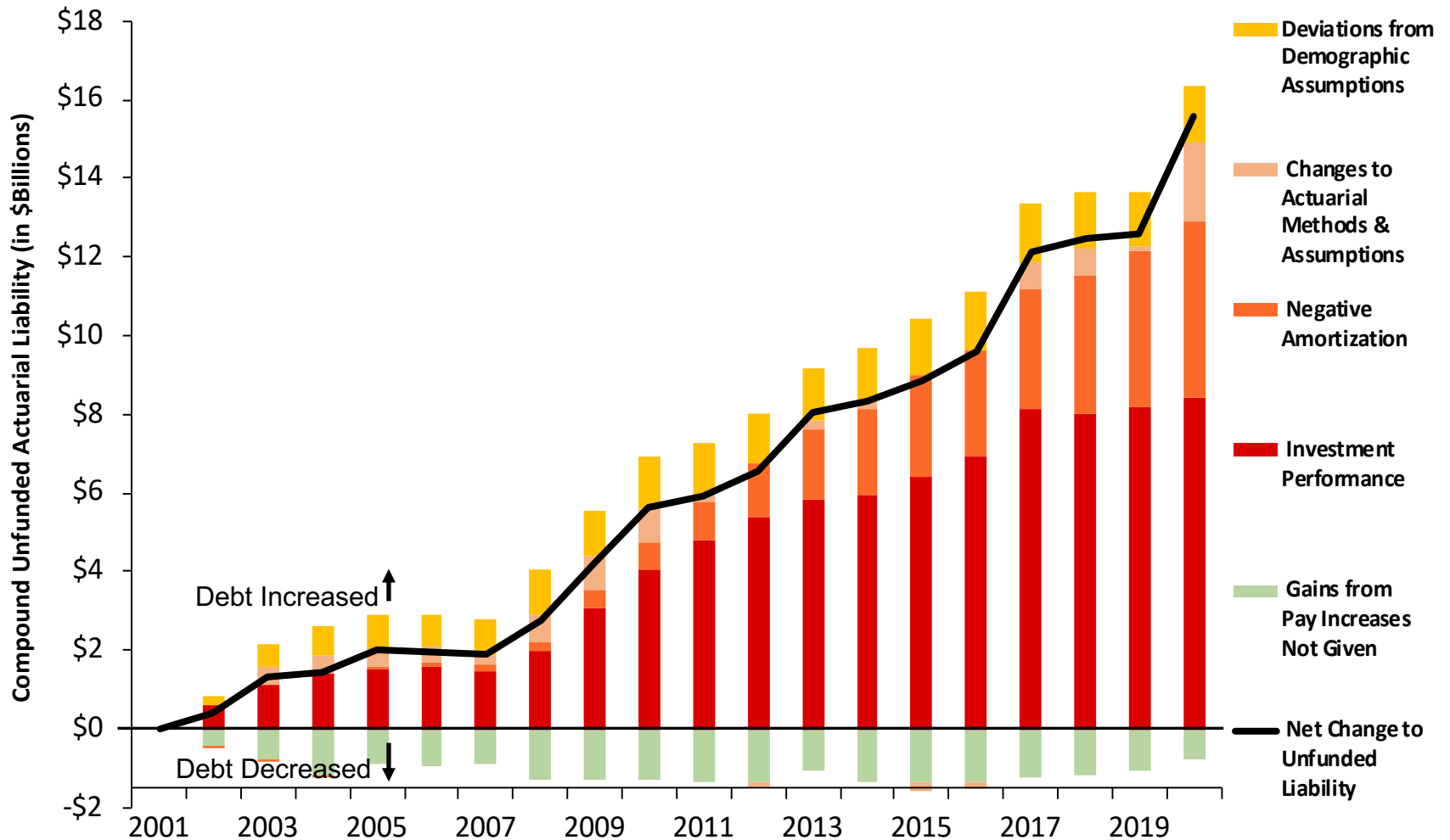
The Causes of the Pension Debt

Actuarial Experience of ERS, 2001-2020

Source: Pension Integrity Project analysis of ERS CAFRs. Data represents cumulative unfunded actuarial liability by gain/loss category. "Negative Amortization" is calculated using ERS valuation reports as a difference between interest accrued on the debt and amortization payments.

Compound Debt Growth by Category
Actuarial Experience of ERS, 2001-2020

Source: Pension Integrity Project analysis of ERS CAFRs. Data represents cumulative unfunded actuarial liability by gain/loss category. "Negative Amortization" is calculated using ERS valuation reports as a difference between interest accrued on the debt and amortization payments.

Driving Factors Behind ERS Challenges

1. **<u>Deviations from Investment Return Assumptions</u>** have been the largest contributor to the ERS unfunded liability, adding $8.43 billion since 2001.

2. **<u>Extended Amortization Timetables and Statutory Contribution Limits</u>** have resulted in interest on ERS debt exceeding the actual debt payments (negative amortization) since 2001 and a net $4.46 billion increase in the unfunded liability.

3. **<u>Changes in Actuarial Methods & Assumptions</u>** to better reflect current market and demographic trends have exposed over $2.0 billion in previously unrecognized unfunded liabilities.

4. **<u>Deviations from Demographic Assumptions</u>** – including deviations from withdrawal, retirement, disability, and mortality assumptions — added $1.5 billion to the unfunded liability since 2001.

5. **<u>Undervaluing Debt</u>** through discounting methods has led to the tacit undercalculation of required contributions.
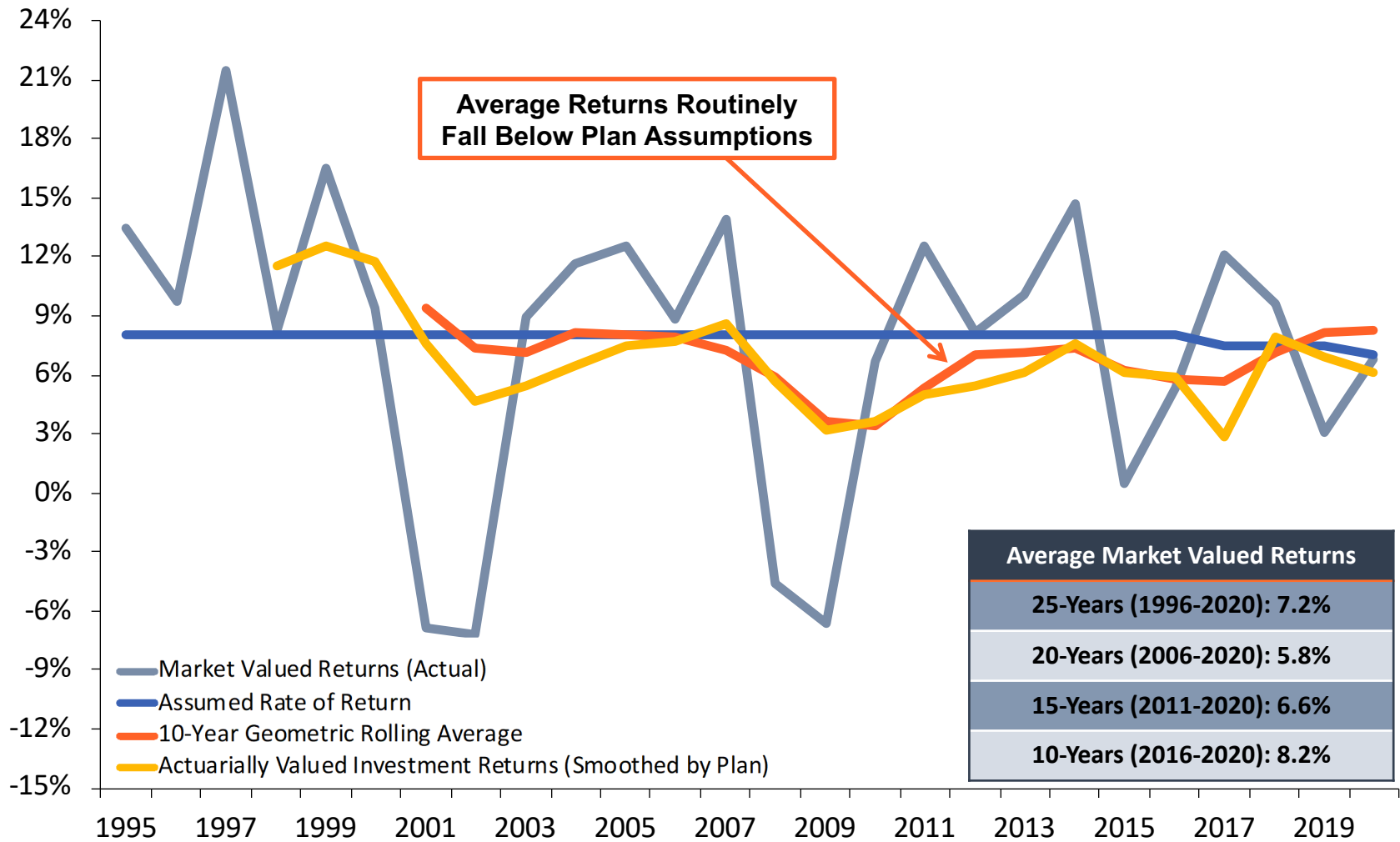
CHALLENGE 1: ASSUMED RATE OF RETURN

- **Unrealistic Expectations:** Despite recently lowering the investment return assumption to 7.0%, ERS remains exposed to significant investment underperformance risk.

- **Underpricing Contributions:** Using an overly optimistic investment return assumption leads to underpricing benefits and an undercalculated actuarially determined contribution rate.

ERS Challenge 1: Investment Returns
Investment Return History, 1995-2020

Average Returns Routinely
Fall Below Plan Assumptions

Market Valued Returns (Actual)
Assumed Rate of Return
10-Year Geometric Rolling Average
Actuarially Valued Investment Returns (Smoothed by Plan)

Average Market Valued Returns
25-Years (1996-2020): 7.2%
20-Years (2006-2020): 5.8%
15-Years (2011-2020): 6.6%
10-Years (2016-2020): 8.2%

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

ERS Challenge 1: Investment Returns
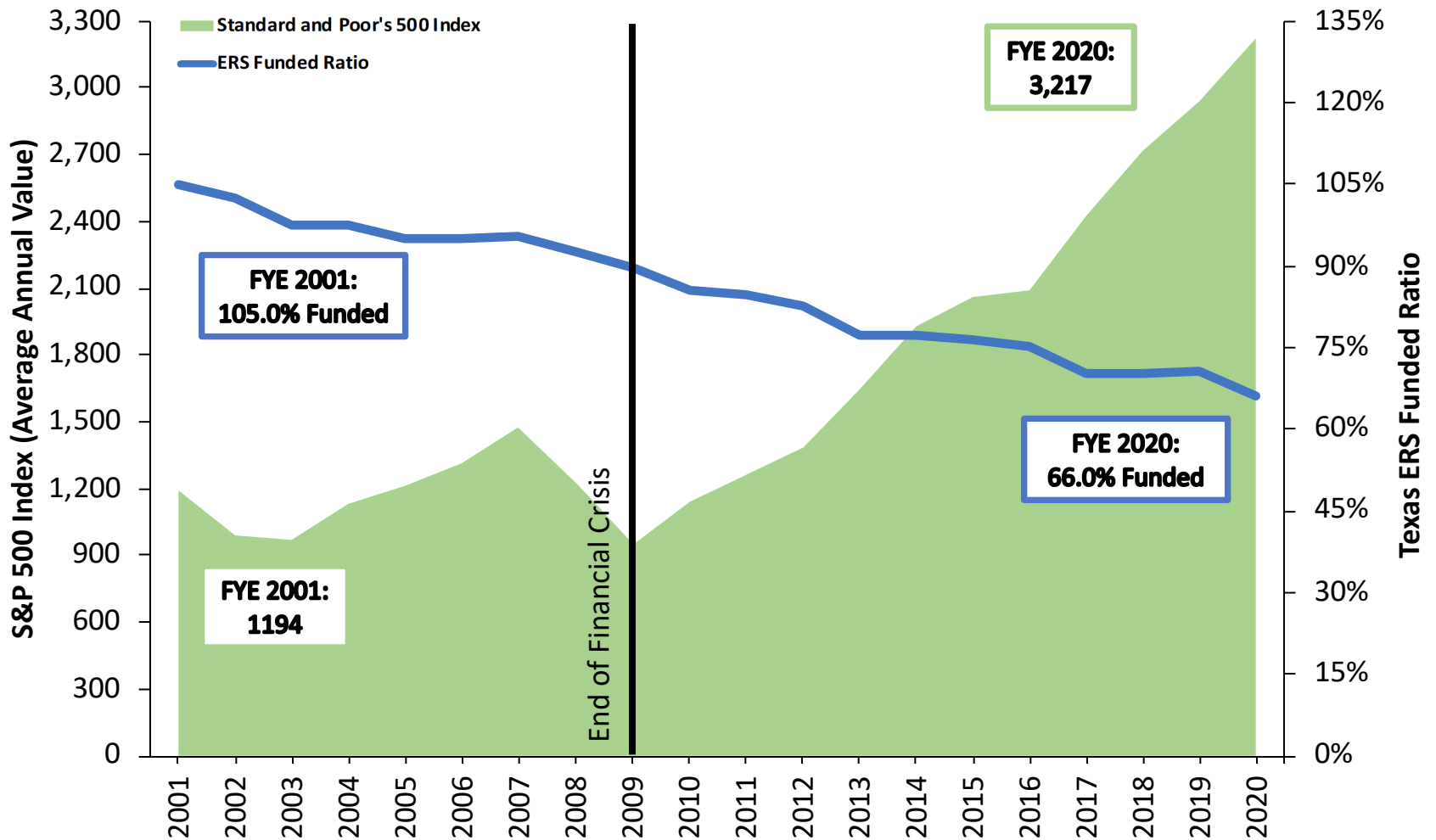
Investment Returns Have Underperformed

- ERS actuaries have historically used an 8% assumed rate of return to calculate member and employer contributions, slowly lowering the rate to 7% over the past two decades in response to significant market changes.

- Average long-term portfolio returns have not matched long-term assumptions over different periods of time:

Average Market Valued Returns	Average Actuarially Valued Returns
25-Years (1996-2020): 7.16%	25-Years (1996-2020): 6.20%
20-Years (2006-2020): 5.77%	20-Years (2006-2020): 6.00%
15-Years (2011-2020): 6.57%	15-Years (2011-2020): 5.89%
10-Years (2016-2020): 8.22%	10-Years (2016-2020): 5.91%

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

Source: Pension Integrity Project analysis of ERS actuarial valuation reports. Average market valued returns represent geometric means of the actual time-weighted returns.

New Normal: Markets Have Recovered Since the Crisis— ERS Funded Ratio Has Not

Source: Pension Integrity Project analysis of ERS 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. ERS consulting actuary comments:
   - "[…] if the investment experience had met the current assumptions over the last 20 years, ERS would effectively be fully funded […]"
   - "[…] actual returns have not been available in the market to meet the assumption."

Source: Texas ERS CAFRs and 2019 valuation report, page 8.

ERS Asset Allocation (2001-2020)
Expanding Risk in Search for Yield
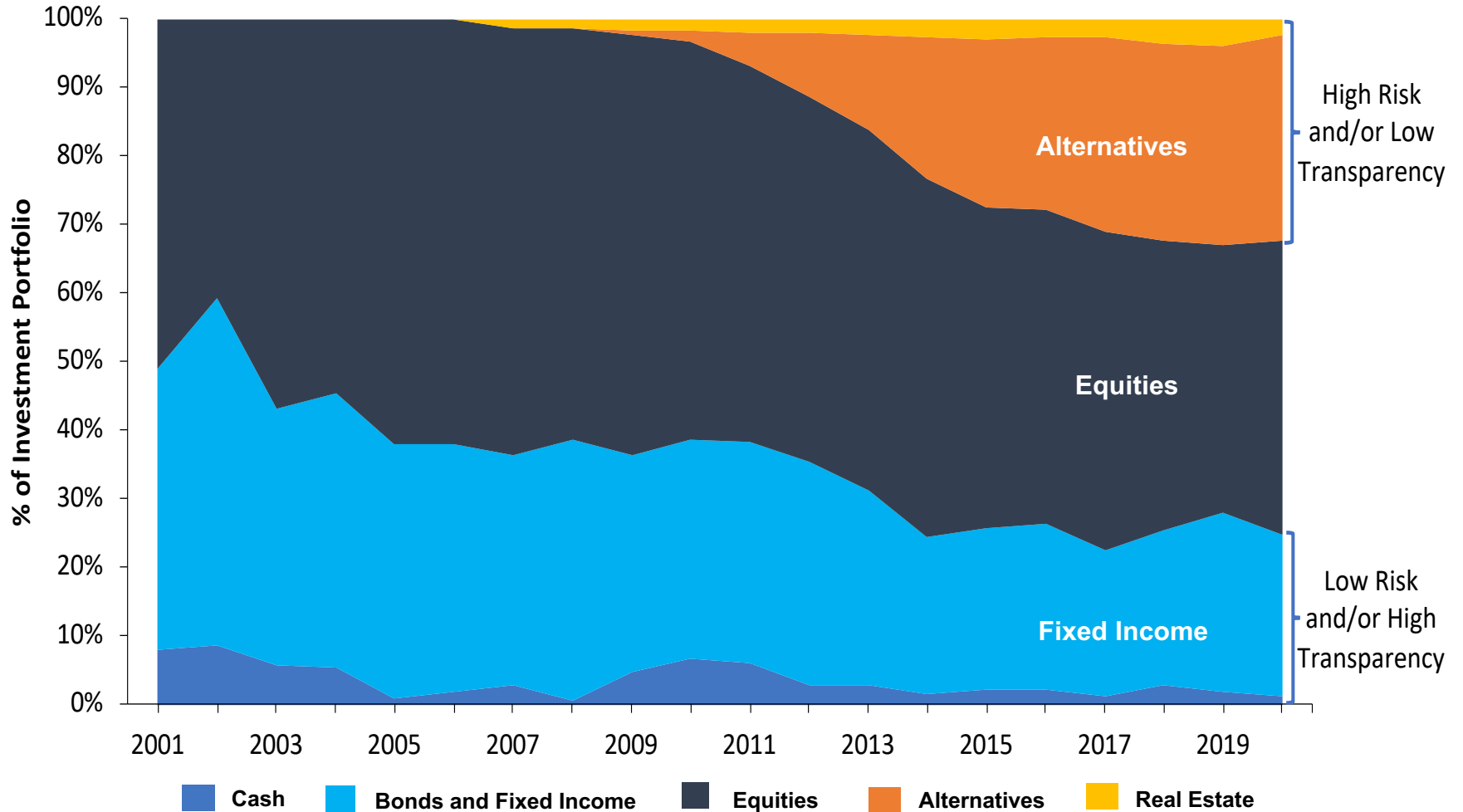
Source: Pension Integrity Project analysis of ERS actuarial valuation reports, CAFRs.

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

Possible Rates of Return	Probability of ERS Achieving A Given Return Based On:							
	ERS Assumptions & Experience		Short-to-Mid-Term Market Forecast				Long-Term Market Forecast	
	Based on ERS Assumptions	ERS Historical Returns	JP Morgan 10-15 Year Forecast	Research Affiliates 10-Year Forecast	BNY Mellon 10-Year Forecast	Horizon 10-Year Market Forecast	BlackRock 20-Year Forecast	Horizon 20-Year Market Forecast
8.0%	60.0%	8.5%	11.8%	13.1%	16.0%	25.3%	40.0%	37.9%
7.0%	73.1%	23.2%	22.3%	24.2%	28.3%	38.8%	55.3%	53.3%
6.5%	78.8%	33.4%	29.5%	30.7%	36.5%	46.0%	63.3%	60.5%
6.0%	84.1%	45.3%	37.8%	38.6%	45.5%	53.8%	70.2%	68.1%
5.5%	88.1%	57.5%	46.2%	47.0%	54.4%	61.5%	76.5%	74.9%
5.0%	91.5%	69.4%	55.7%	55.3%	62.5%	68.9%	82.1%	80.7%

Source: Pension Integrity Project Monte Carlo model based on ERS asset allocation and reported expected returns by asset class.
Forecasts of returns by asset class generally by BNYM, JPMC (2021 assumptions), BlackRock, Research Affiliates, and Horizon Actuarial Services were matched to the specific asset class of ERS. Probability estimates are approximate as they are based on the aggregated return by asset class. For complete methodology contact Reason Foundation.

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

ERS Assumptions & Experience

- A probability analysis of ERS historical returns over the past 20 years (2001-2020) indicates a very modest chance (23%) of hitting the plan's 7.0% assumed return.
- ERS's own investment return forecasts only imply a 73% 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 ERS.
- 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, ERS returns are likely to fall short of assumptions.

Long-Term Market Forecast

- Longer-term projections typically assume ERS 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% being 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 55%, the probability of earning a rate of return below 5% is about 18%.

RISK ASSESSMENT

- How resilient is ERS to volatile market factors?

Important Funding Concepts

Employer Contribution Rates

- *Statutory Contributions:* ERS employers make annual payments based on rates set in Texas statute, which are currently at the maximum 10% rate allowed by the Texas Constitution.

- *Actuarially Determined Employer Contribution (ADEC):* Unlike statutory contributions, ADEC is the annual required amount ERS'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 ERS current assumptions using the plan's existing contribution and funding policy and shows the status quo before the 2020 market shock.

Employer & Employee Rates

- The Statutory scenarios in this analysis assume a 9.5% employee contribution rate and a 10% employer contribution rate. ADEC recession scenarios produce unfunded liabilities when over the 10% cap.

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 ERS 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 method long-term investment ology for banks and Moody's Investors Service recession preparedness analysis, the following scenarios assume one year of -24.0% returns in 2020, followed by three years of 11% average returns.
- Recognizing expert consensus regarding a diminishing capital market outlook, the scenarios assume 6% annual returns 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.
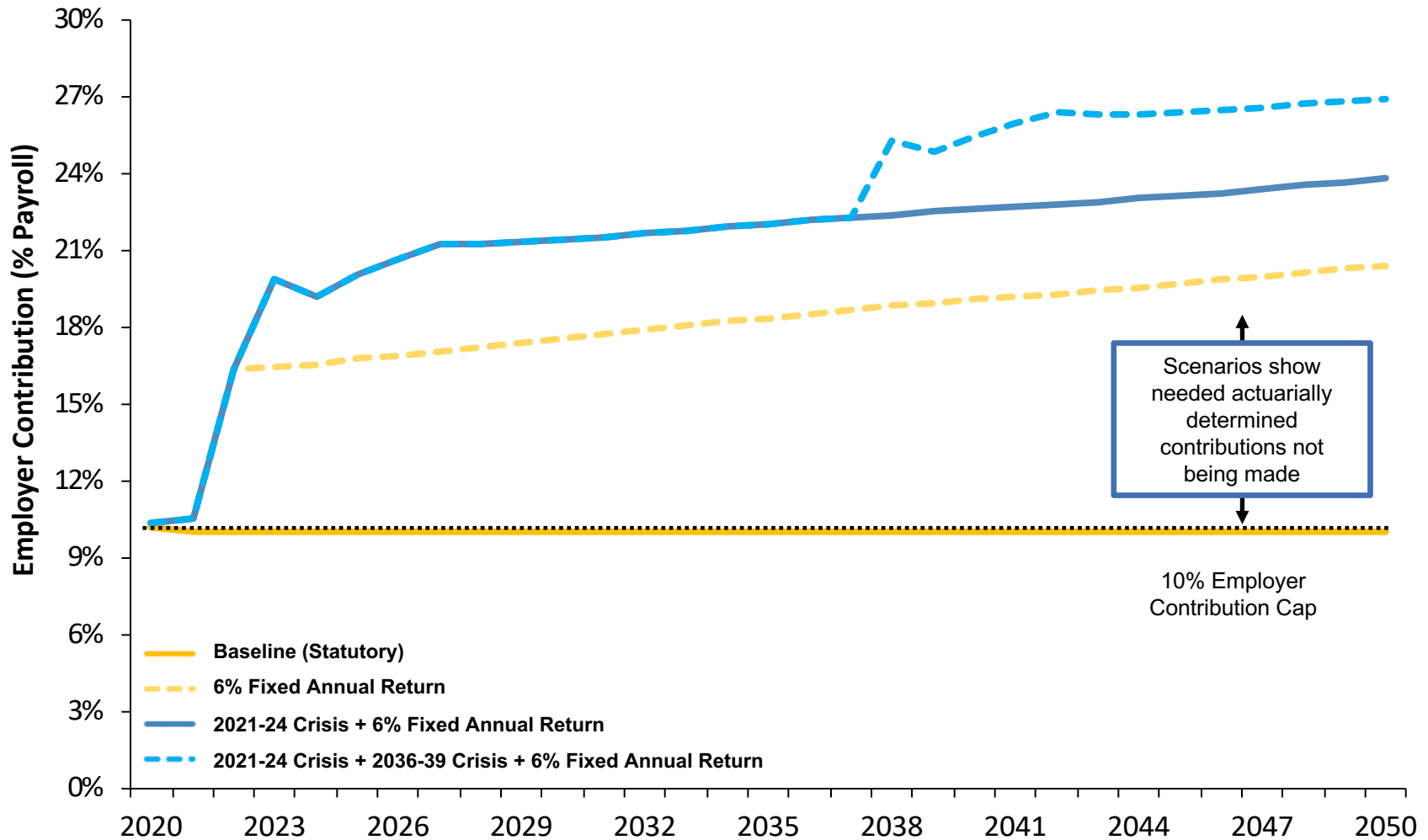
Stress Testing Scenarios:

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

ERS Stress Testing: All-in Employer Cost Projections

Statutory Contributions are Actuarially Insufficient

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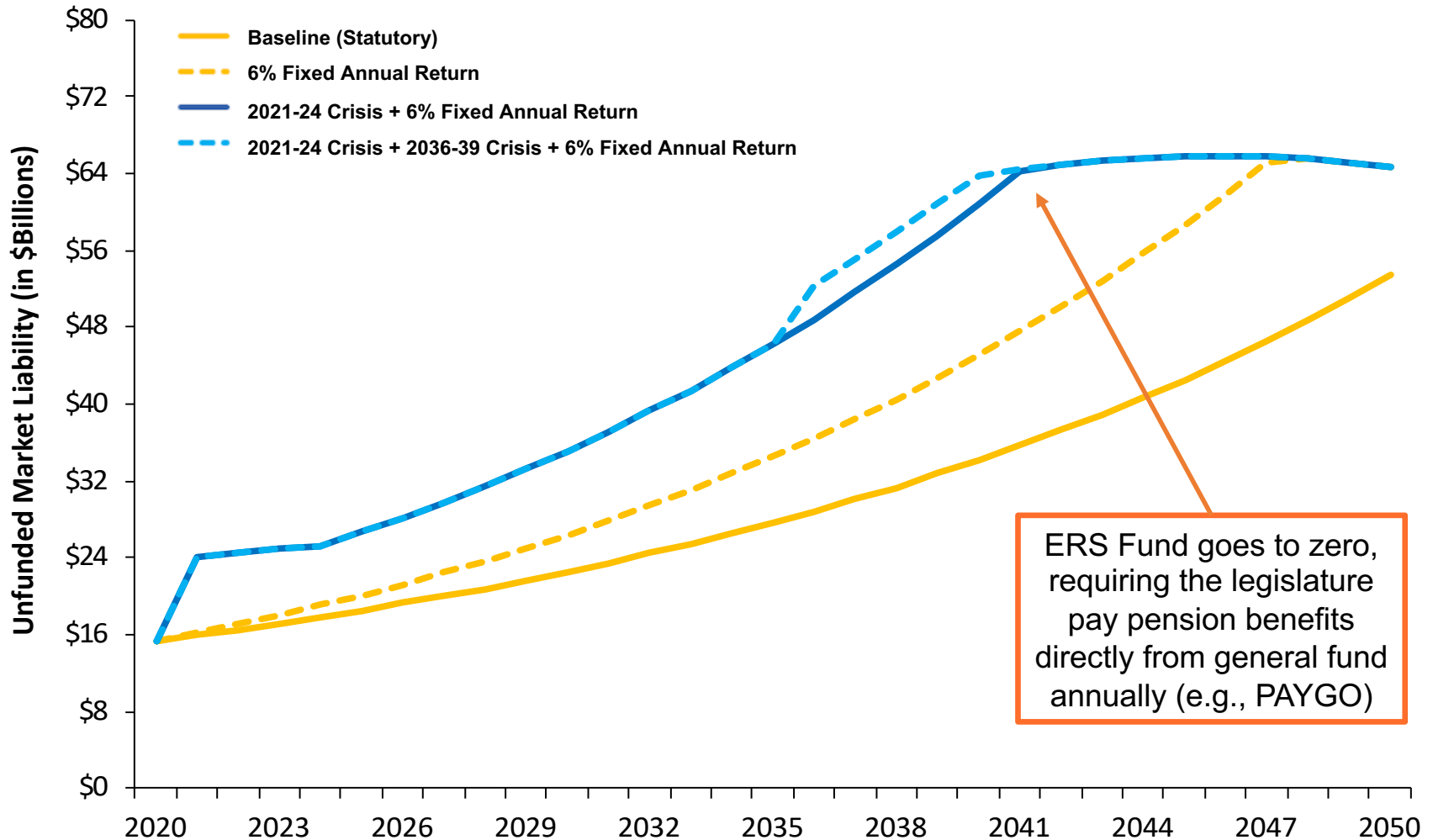

Y-axis: Employer Contribution (% Payroll) — 0%, 3%, 6%, 9%, 12%, 15%, 18%, 21%, 24%, 27%, 30%

X-axis: 2020, 2023, 2026, 2029, 2032, 2035, 2038, 2041, 2044, 2047, 2050

Scenarios show needed actuarially determined contributions not being made

10% Employer Contribution Cap

Legend:
- Baseline (Statutory)
- 6% Fixed Annual Return
- 2021-24 Crisis + 6% Fixed Annual Return
- 2021-24 Crisis + 2036-39 Crisis + 6% Fixed Annual Return

Source: Pension Integrity Project actuarial forecast of ERS. Values are rounded and adjusted for inflation. State is assumed to make 100% *actuarially* required contributions in all scenarios except the current baseline.. 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.

ERS Stress Testing: Unfunded Liability Projections

Unfunded Liabilities Skyrocket Under Crisis Scenarios

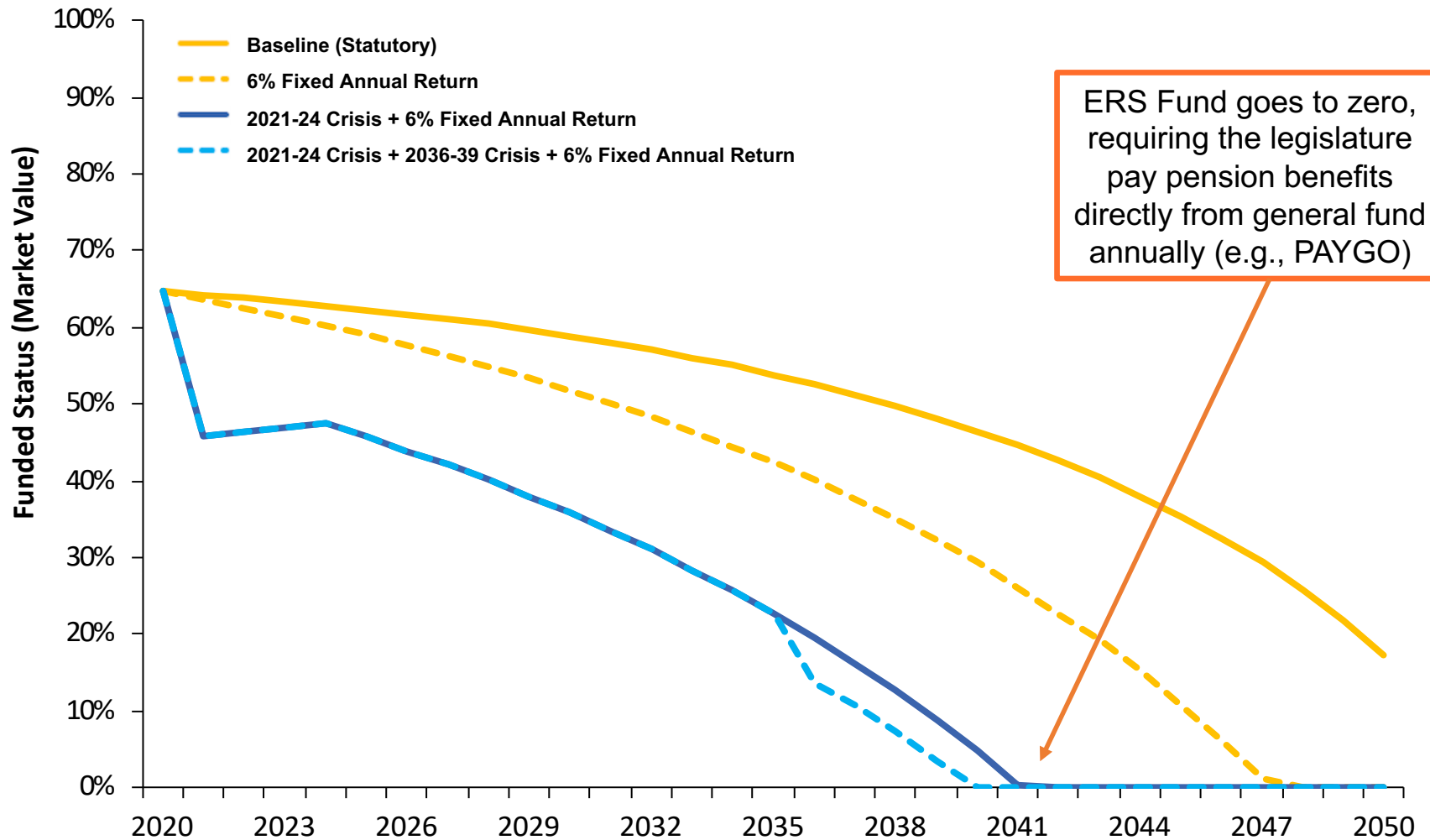Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current

Legend:
- Baseline (Statutory)
- 6% Fixed Annual Return
- 2021-24 Crisis + 6% Fixed Annual Return
- 2021-24 Crisis + 2036-39 Crisis + 6% Fixed Annual Return

Y-axis: Unfunded Market Liability (in $Billions)

ERS Fund goes to zero, requiring the legislature pay pension benefits directly from general fund annually (e.g., PAYGO)
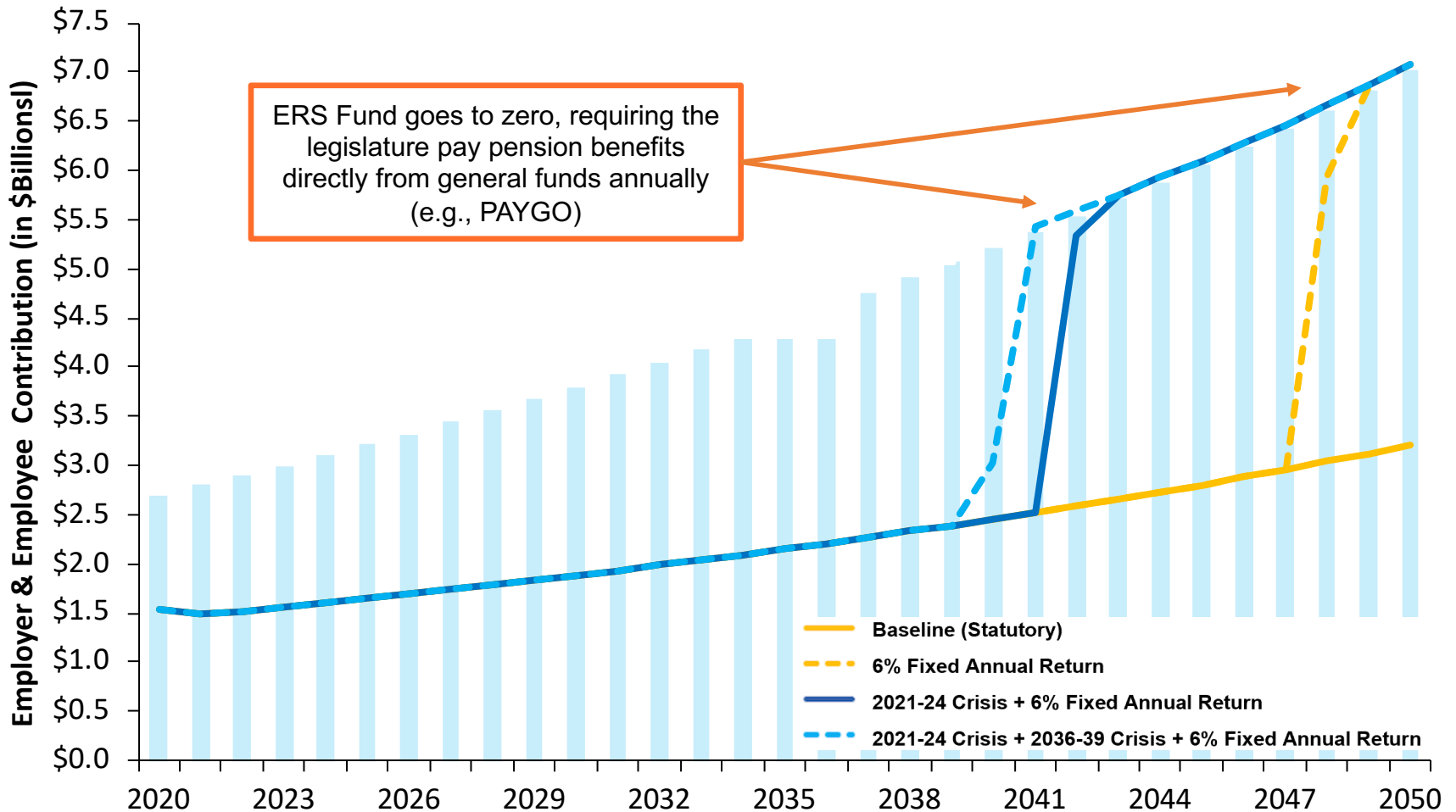
Source: Pension Integrity Project actuarial forecast of ERS. Values are rounded and adjusted for inflation. State is assumed to make *statutory* contributions under both baseline and under crises scenarios. The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

ERS Stress Testing: Funded Status Projections
ERS Solvency Degrades Under Crisis Scenarios
Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current

ERS Stress Testing: Funded Status Projections
ERS Benefit Payouts under Insolvency
Discount Rate: 7.0%, Assumed Return: 7.0%, Actual Return: Varying, Amo. Period: Current

ERS Fund goes to zero, requiring the legislature pay pension benefits directly from general funds annually (e.g., PAYGO)

Legend:
- Baseline (Statutory)
- 6% Fixed Annual Return
- 2021-24 Crisis + 6% Fixed Annual Return
- 2021-24 Crisis + 2036-39 Crisis + 6% Fixed Annual Return

Y-axis: Employer & Employee Contribution (in $Billions)

Scenario Comparison of Employer Costs

Scenarios	Statutory Contributions			Actuarial Contributions		
	30-Year Employer Contributions	2050 Unfunded Liability (Market Value)	Total All-in Employer Costs	30-Year Employer Contributions	2050 Unfunded Liability (Market Value)	Total All-in Employer Costs
Pre-Crisis Baseline	$22.4B	$27.0 B	$49.4 B	$34.9B	-$0.5 B	$34.4 B
6% Fixed Annual Return	$27.8B	$32.6 B	$60.5 B	$41.5B	$5.8 B	$47.3 B
2021-24 Crisis + 6% Fixed Annual Returns	$39.2B	$32.6 B	$71.9 B	$49.3B	$7.0 B	$55.3 B
Two Crises + 6% Fixed Annual Returns	$41.5B	$32.7 B	$74.2 B	$52.6 B	$9.0 B	$61.6 B

Source: Pension Integrity Project actuarial forecast of ERS. All values are rounded and adjusted for inflation.
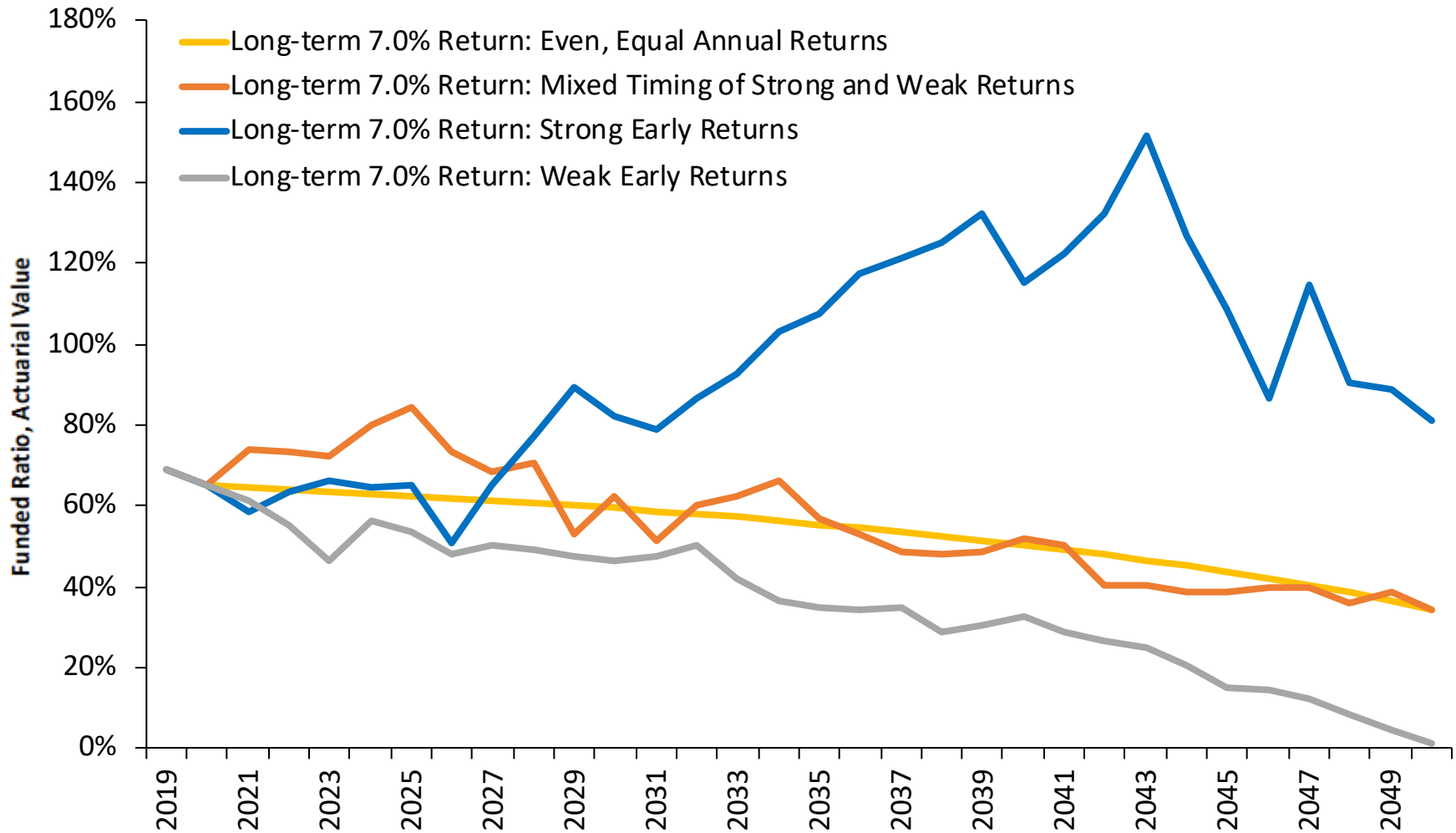The "All-in Cost" includes all employer contributions over the 30-year timeframe, and the ending unfunded liability accrued by the end of the forecast period.

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 ERS plan. Strong early returns (TWRR = 7.0%, MWRR = 8.1%), Even, equal annual returns (Constant Return = 7.0%), Mixed timing of strong and weak returns (TWRR = 7.0%, MWRR = 7.0%), Weak early returns (TWRR = 7.0%, MWRR = 5.8%) Scenario assumes ERS pays statutory contribution rates each year. Years are plan's fiscal years.

Forecasting the Impact of Market Volatility

Random Variable Analysis

What is it?	**Why use 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

- 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 (Statutory Contribution Policy)
Funded Ratios are Not Expected to Improve
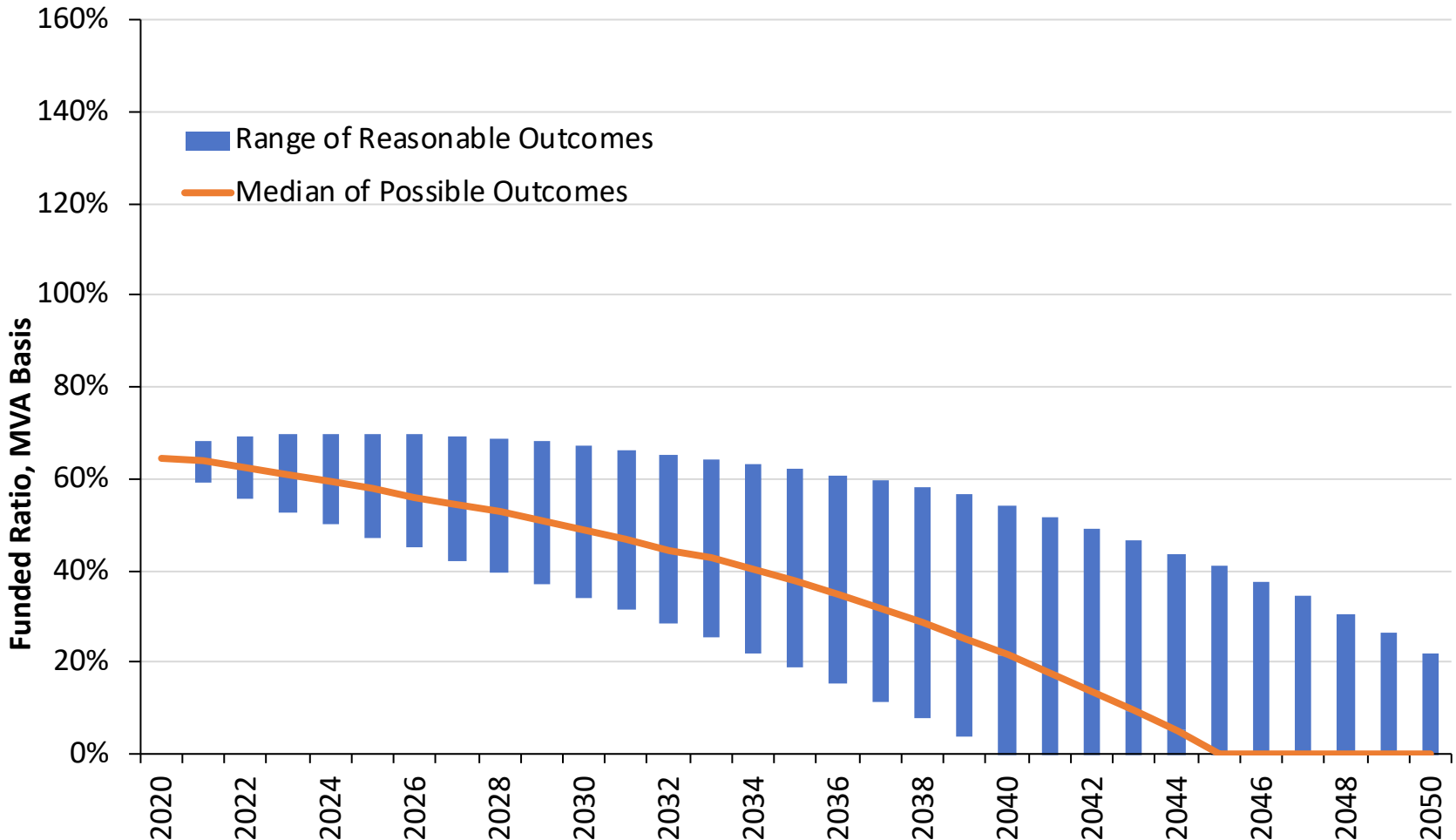Long-Term Average Returns of 7.0%
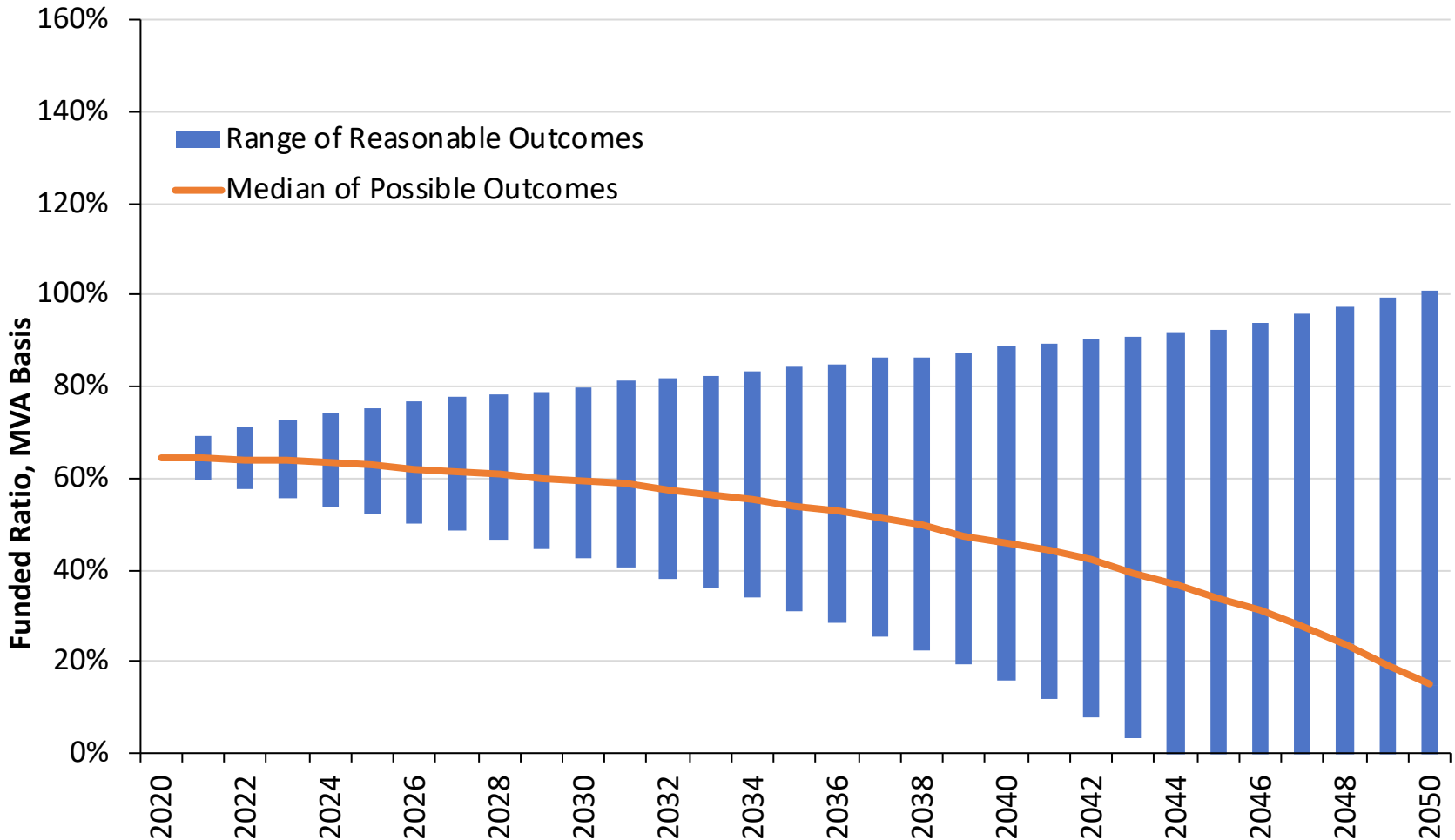
Source: Pension Integrity Project actuarial forecast of ERS plan based on ERS return and risk assumptions.
Range of Reasonable Outcomes represents the 50% of possible outcomes closest to the median.

30-year Funded Ratio Forecast (Statutory Contribution Policy)

How Do Missed Returns Impact Funded Ratios?

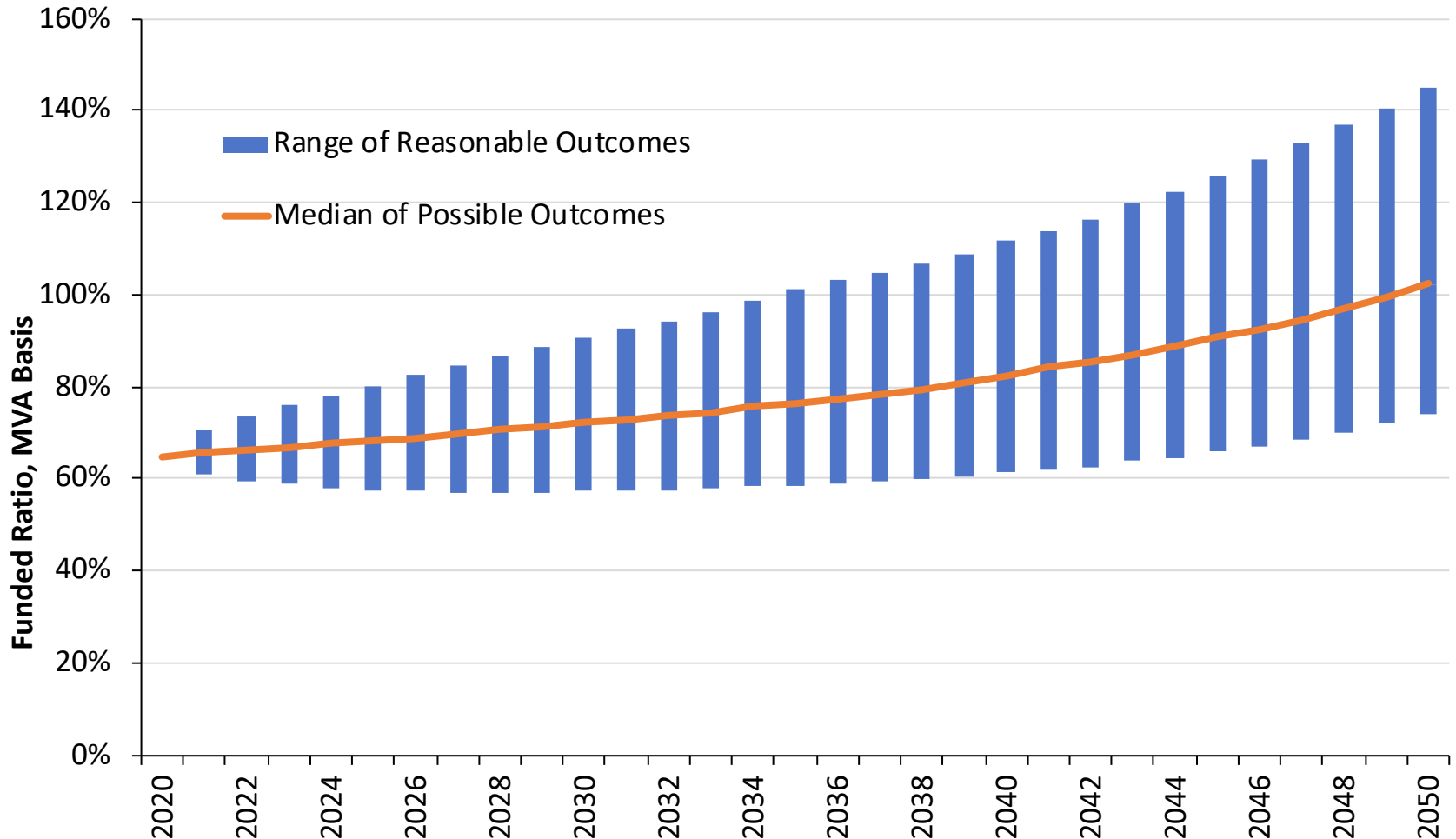Based on More Conservative Long-Term Average Returns

Source: Pension Integrity Project actuarial forecast of ERS plan using the return and risk assumptions of the Monte Carlo analysis. Conservative returns are 6.2%, which are the result of combining the short-term and long-term capital market assumptions from prominent financial firms.

30-year Funded Ratio Forecast (ADEC Contribution Policy)

How do Contribution Methods Affect Funding?
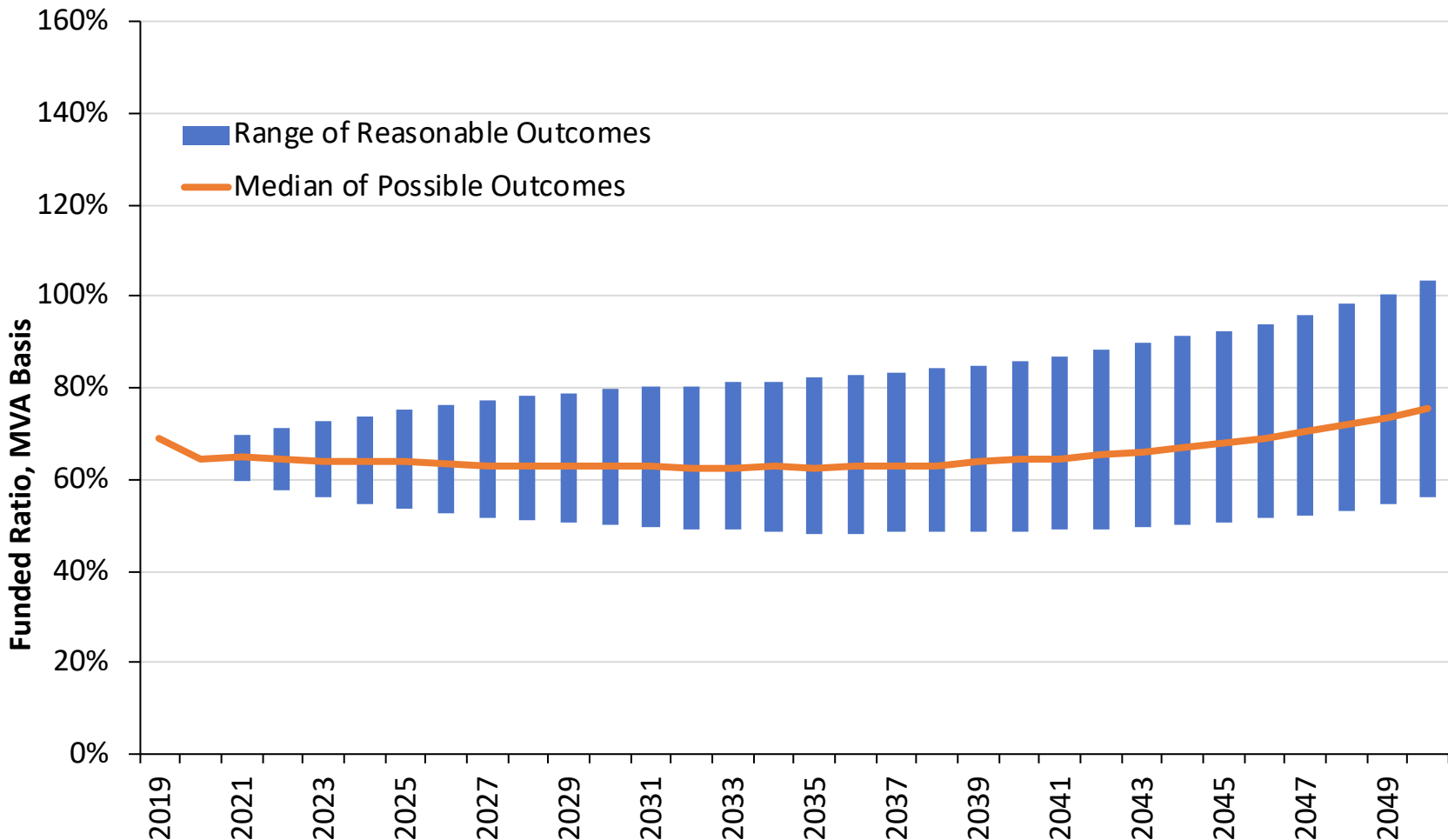
Long-Term Average Returns of 7.0%

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

30-year Funded Ratio Forecast (ADEC Contribution Policy)
How Do Missed Returns Under ADEC Impact Funded Ratios?
Based on More Conservative Long-Term Average Returns

Source: Pension Integrity Project actuarial forecast of ERS plan using the return and risk assumptions of the Monte Carlo analysis. Conservative returns are 6.2%, which are the result of combining the short-term and long-term capital market assumptions from prominent financial firms.

30-year Employer Contribution Forecast (Conceptual ADEC Contribution Policy)
If ERS Performs as Expected, Rates Can Still Vary
Long-Term Average Returns of 7.0%

Even with long-term expected returns of 7.0%, employer contribution rates can vary greatly depending on actual returns for each individual year.

Source: Pension Integrity Project actuarial forecast of ERS plan based on ERS return and risk assumptions. Scenario assumes that the state pays 100% of the actuarially determined contribution each year. Range of Reasonable Outcomes represents the 50% of possible outcomes closest to the median.

30-year Employer Contribution Forecast (Conceptual ADEC Contribution Policy)
If ERS Underperforms, Expect Higher Contributions
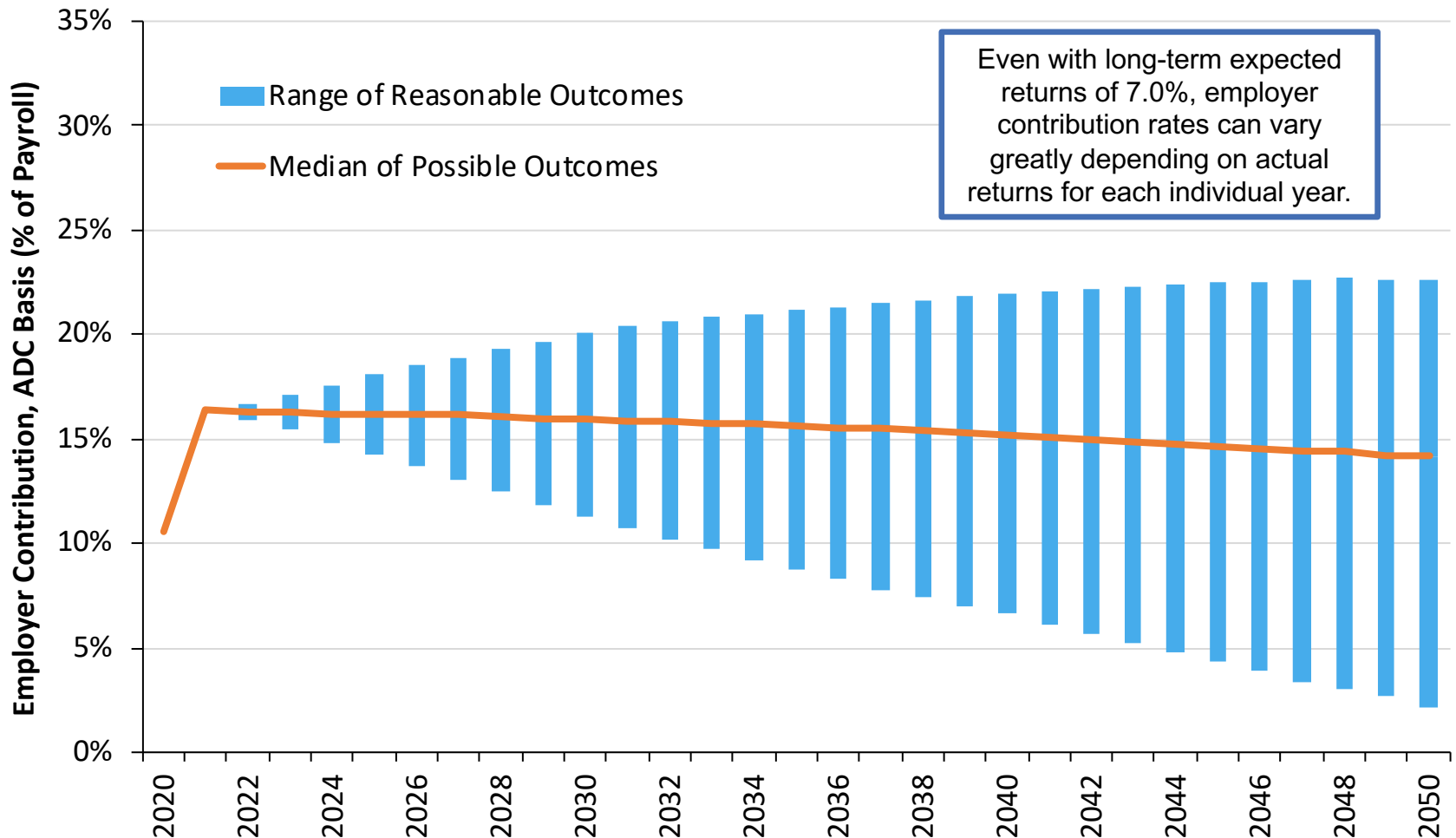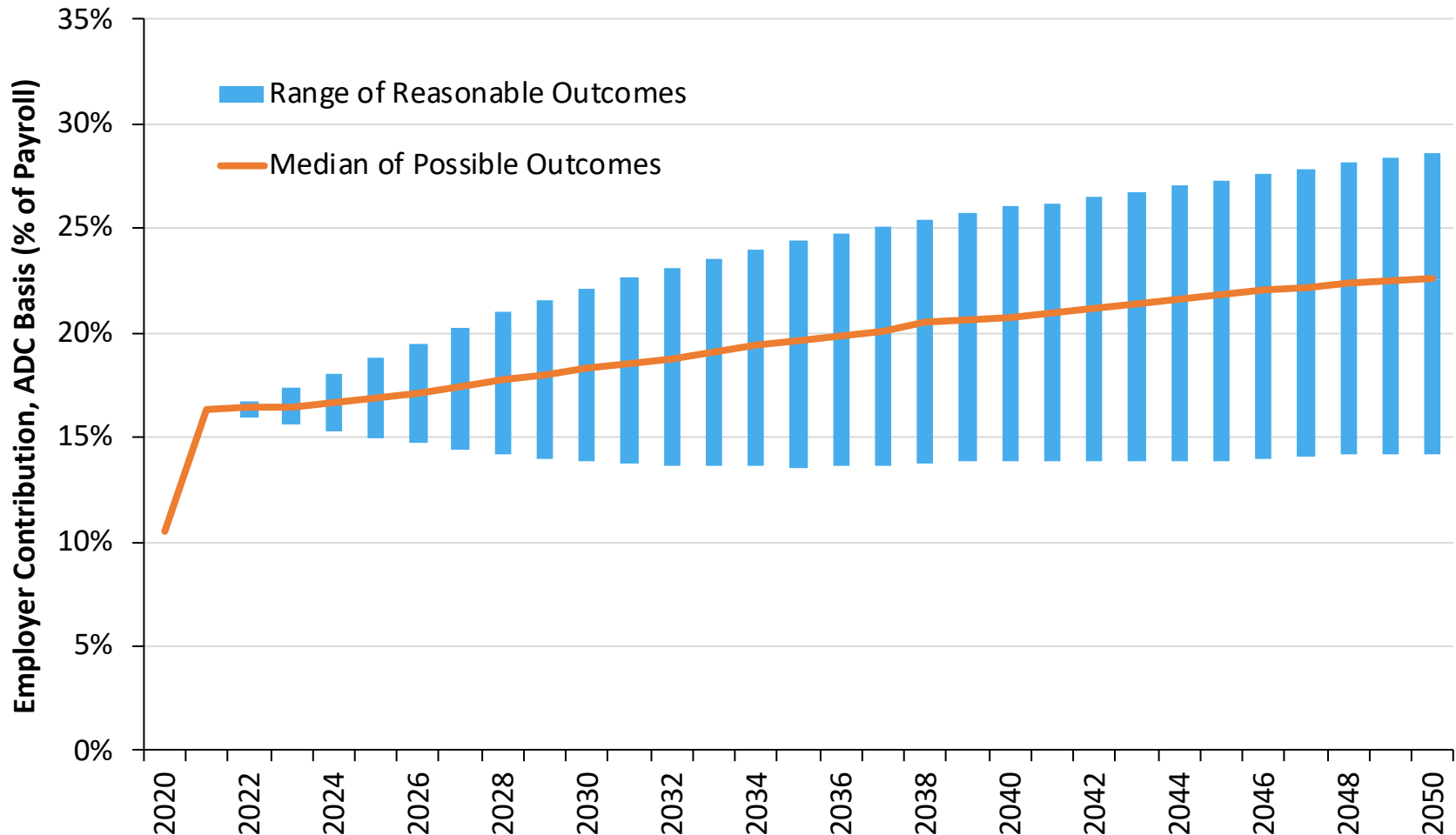More Conservative Long-term Average Expected Returns

Source: Pension Integrity Project actuarial forecast of ERS plan using the return and risk assumptions of the Monte Carlo analysis.
Conservative returns are 6.5%, which are the result of combining the short-term and long-term capital market assumptions from prominent financial firms.

Sensitivity Analysis: Normal Cost Comparison 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)	14.16%	4.66%	9.50%
6.0%	17.20%	7.70%	9.50%
5.0%	20.90%	11.40%	9.50%
4.0%	25.40%	15.90%	9.50%

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 on reported liability sensitivity from the FYE 2020 ERS CAFR.

Source: Pension Integrity Project forecasting analysis based on ERS actuarial valuation reports and CAFRs.

STATE CONSTITUTIONAL PROVISIONS TO CONSIDER

Constitutional Considerations

- The Texas Constitution creates a limit on the "state" share of ERS required contributions. Article 16, Section 67(b)(3):
  - "*The amount contributed by a person participating in [ERS] may not be less than six percent of current compensation.* ***The amount contributed by the state may not be less than six percent nor more than 10 percent of the aggregate compensation*** *paid to individuals participating in the system*."

- Since risk analysis, sensitivity analysis, and stress test analysis all point to the need for larger contributions in general, how those are distributed amongst the state, school district employers, and participants will be an important factor to consider.

Constitutional Considerations (cont'd)

- The Texas Constitution provides an "emergency clause" allowing state contributions to ERS to exceed the 10% of payroll cap. Article 16, Section 67(b)(3):

  - "*In an **emergency, as determined by the governor, the legislature may appropriate such additional sums** as are actuarially determined to be required to fund [ERS] benefits authorized by law*."

- The need for higher contributions is likely to be on-going for at least the next 20 to 30 years. Thus, the use of an emergency clause would likely not be a viable solution should the legislature desire to contribute above the 10% of payroll cap on contributions.

Constitutional Considerations (cont'd)

- The Texas Constitution requires that benefits should be financed in a way that is consistent with best practices. Article 16, Section 67(a)(1):
  - "***Financing of benefits must be based on sound actuarial principles.***"

- The definition of actuarially sound principles is not expressly defined, and there will be some variance among professional actuaries.
  - The Society of Actuaries Blue Ribbon Panel outlined best practices such as ensuring the amortization schedule is less than 30-years and paid off over a fixed period.

CHALLENGE 2: INSUFFICIENT CONTRIBUTIONS & DEBT MANAGEMENT POLICIES

- For 19 of the past 23 years, employer contributions have fallen short of even the interest accrued on the pension debt, resulting in a need for much higher contributions today.

State Statutes Have Created a Structural Underfunding Challenge for ERS

1. Over the past 18 years, statutory employer contributions have routinely fallen below actuarially determined contribution (ADC) rates.

2. Employer contribution rates determined by legislative statute are not enough to keep up with the actual amount necessary to amortize the debt.

3. 2020: Employer ADEC v. Statute
   - *Statutory* Employer Contribution: 10.00% of payroll
   - *Actuarially Determined* Employer Contribution: 15.98% of payroll

Actuarially Determined Employer Contribution History, 1998-2020
Actual v. Required Contributions
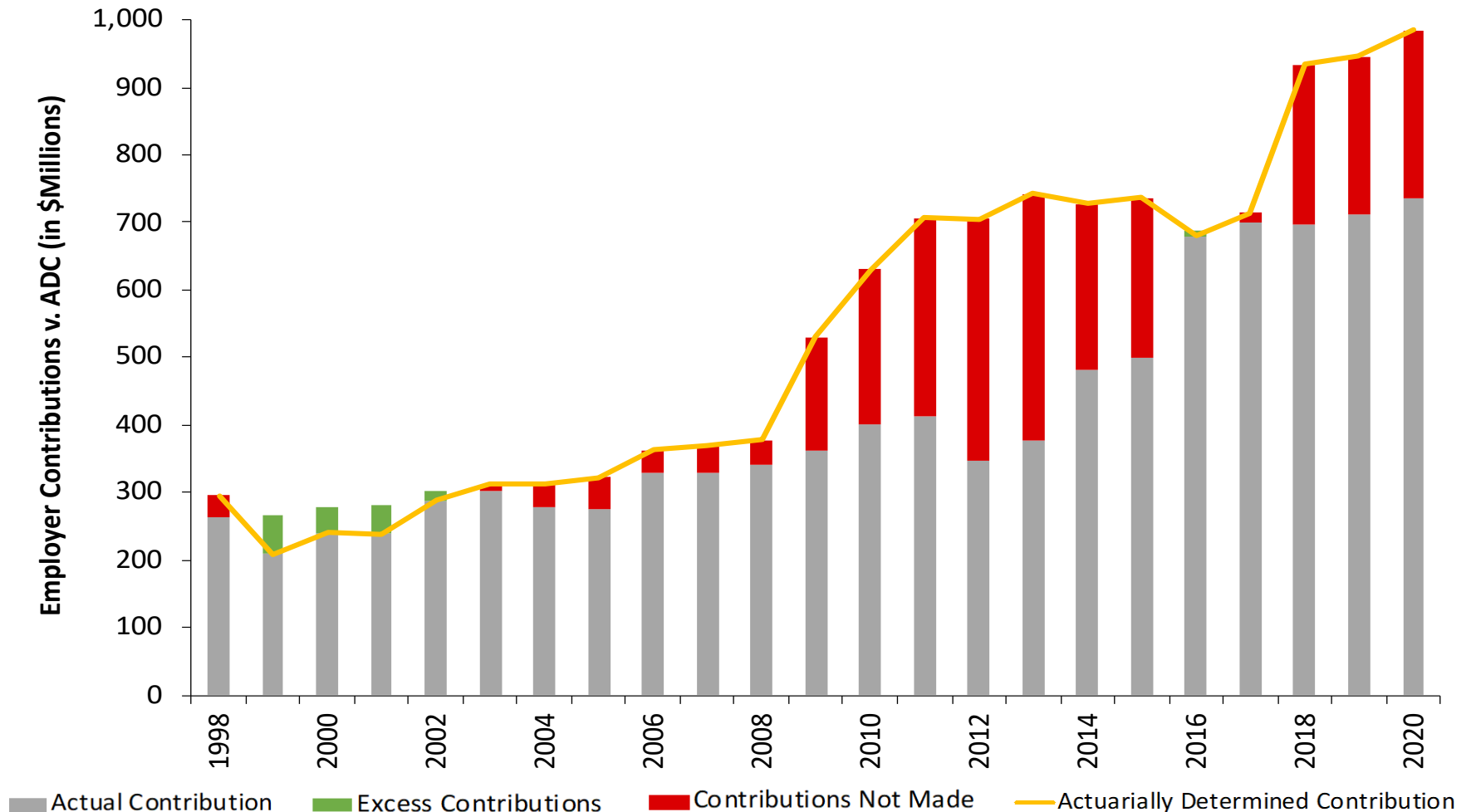
Source: Pension Integrity Project analysis of ERS actuarial reports and CAFRs. Years are contribution fiscal years.

Negative Amortization:
Understanding the Current Funding Policy

- With the employer contribution rate fixed in statute, and a 31-year open amortization policy, ERS now faces an infinite amortization period, meaning it is not projected to ever pay off its unfunded liabilities.

> **ERS Amortization Period History**:
>
> - 2020: Infinite-year amortization period
> - 2015: Infinite-year amortization period
> - 2006: Infinite-year amortization period
> - 2001: 40-year amortization period

- These long amortization periods are indicators that plan amortization payments are not sufficient to pay down the unfunded liability and subsequent interest it accrues (i.e. *negative amortization).*
  - The Society of Actuaries recommends amortization periods of 15 to 20 years.
  - Longer periods result in larger long-term costs, so the shorter the amortization period, the better.

Debt Management Policies
# Shorting ERS Leads to Negative Amortization

1. Due to inadequate and capped statutory rates, ERS valuations routinely show infinite amortization periods, taking ERS well outside industry best practices.

2. ERS officially maintains a 31-year, level percent open amortization target. And as of 2020 ERS's actual amortization period was "Infinite", which means the system will never fully amortize the debt.

3. Long amortization periods are indicators that plan amortization payments are insufficient to pay down ERS's unfunded liability and the interest that debt accrues.

4. Since 2004, employer contributions have fallen below the interest accrued on ERS's unfunded liability (negative amortization), leaving ERS to fall further behind its obligations in absolute terms.

5. Limiting ERS's amortization period to no more that 20 years and addressing any new unfunded liabilities in a given year on separate schedules is the most direct way to limit the impact of unfunded liabilities long-term.

> **Quick Facts:**
> - The Society of Actuaries recommends amortizing new unfunded pension liabilities on a layered basis over a 15 to 20-year period.

ERS: Negative Amortization Growth (2003-2020)
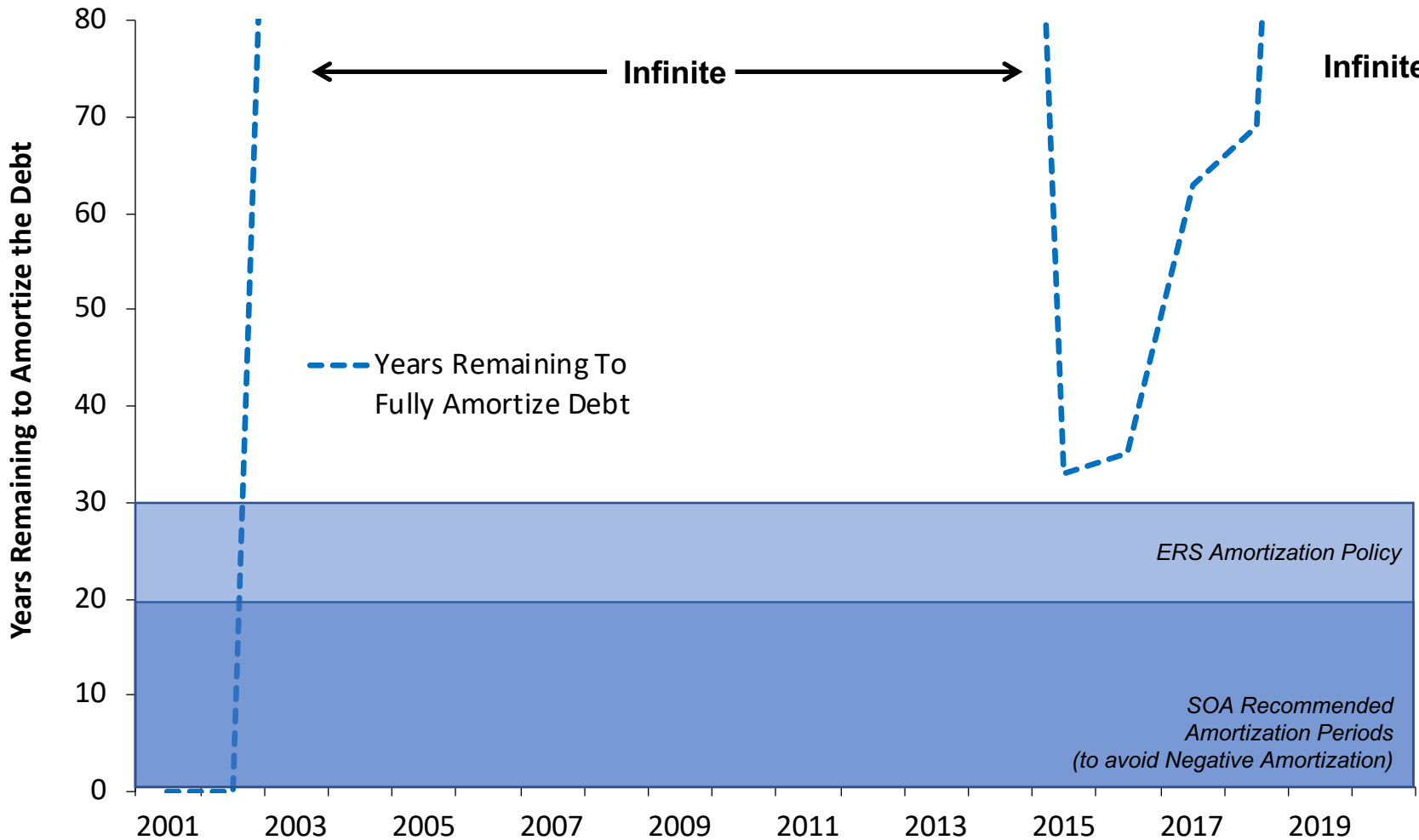# Interest on the Debt as a Portion of UAAL
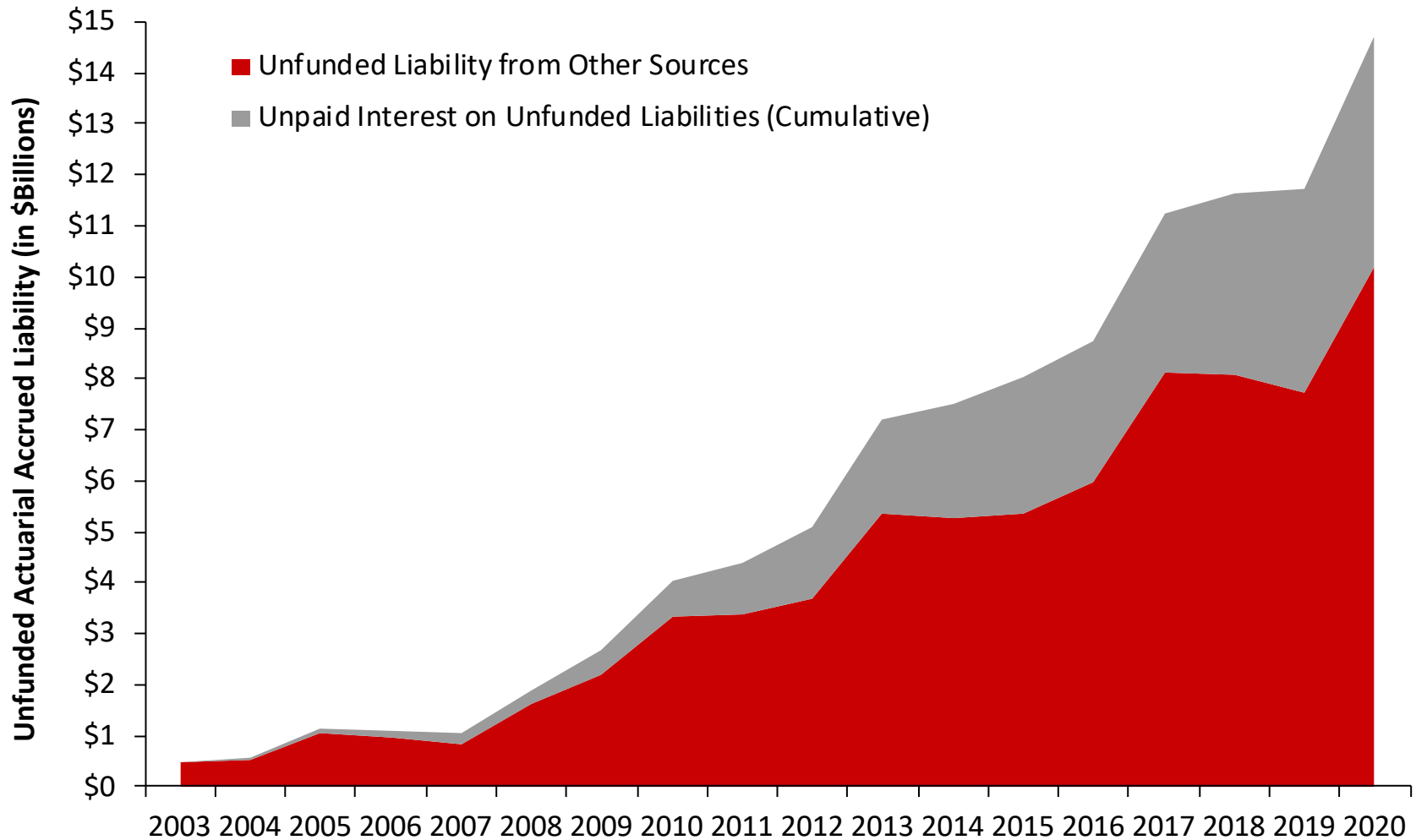
Source: Pension Integrity Project analysis of ERS actuarial valuation reports and CAFRs

Debt Management Policies
Infinite Amortization Means Perpetual Debt

Source: Pension Integrity Project analysis of ERS actuarial valuation reports and CAFRs.
The Society of Actuaries Blue Ribbon Panel recommends amortization periods not exceed 20 years..

Debt Management Policies
Back-Loaded Pension Debt Payments

> ERS uses a 31-year, level-percent of payroll amortization method to amortize accrued unfunded liability.

- What is level percent of payroll amortization?
  - Sets the amortization payment as a fixed share of total member payroll
  - Very sensitive to missed assumptions
  - Often results in back-loaded pension debt payments, especially if payroll growth slows

- What does a 31-year amortization period (or higher) mean?
  - The amount of time over which ERS spreads debt payments
  - Actuaries find amortizing new debt longer than 20 years stretches payments too thin
  - Makes it more likely unfunded liabilities will never be paid off
  - Often leaves debt payments each year short of the interest accrued on the debt (e.g. negative amortization)

CHALLENGE 3: DEVIATIONS AND CHANGES TO ACTUARIAL ASSUMPTIONS AND METHODS

- The combination of unmet actuarial assumptions and slow-paced changes to those assumptions is increasing the size of unfunded liabilities

Acknowledging Outdated Actuarial Assumptions
Actual Experience Different from Actuarial Assumptions

(-) Flawed Contribution and Debt Management Policies
- Setting contribution rates in statute that are below ADEC and using optimistic return assumption resulted in interest on ERS debt exceeding the actual debt payments (aka negative amortization) and a net $4.46 billion increase in the unfunded liability since 2001.

(-) Changes in Actuarial Assumptions and Methods
- ERS made alterations to its actuarial assumptions (e.g. changes in the assumed rate of return in 2017) that have collectively unveiled $2.0 billion of hidden unfunded liabilities from 2001-2020.

(-) Deviations from Service Retirement and Other Demographic Assumptions
- ERS's unfunded liability has increased by $1.45 billion between 2001-2020 due to misaligned demographic assumptions (including deviations from plan's withdrawal, retirement, disability, and mortality assumptions).

Acknowledging Outdated Actuarial Assumptions
Actual Experience Different from Actuarial Assumptions

(+) Overestimated Payroll Growth

- ERS employers have not raised salaries as fast as expected, resulting in lower payrolls and thus lower earned pension benefits. This has meant a reduction in unfunded liabilities of $0.78 billion from 2001 to 2020.

(-) Overestimated Payroll Growth

- However, overestimating payroll growth is creating a long-term Challenge for ERS because of its combination with the level-percentage of payroll amortization method used by the plan.

- This method backloads pension debt payments by assuming that future payrolls will be larger than today (a reasonable assumption). But when payroll does not grow as fast as expected, employer contributions must rise as a percentage of payroll. This means the amortization method combined with the inaccurate assumption is delaying debt payments.

Acknowledging Outdated Actuarial Assumptions
Actual Change in Payroll v. Assumption
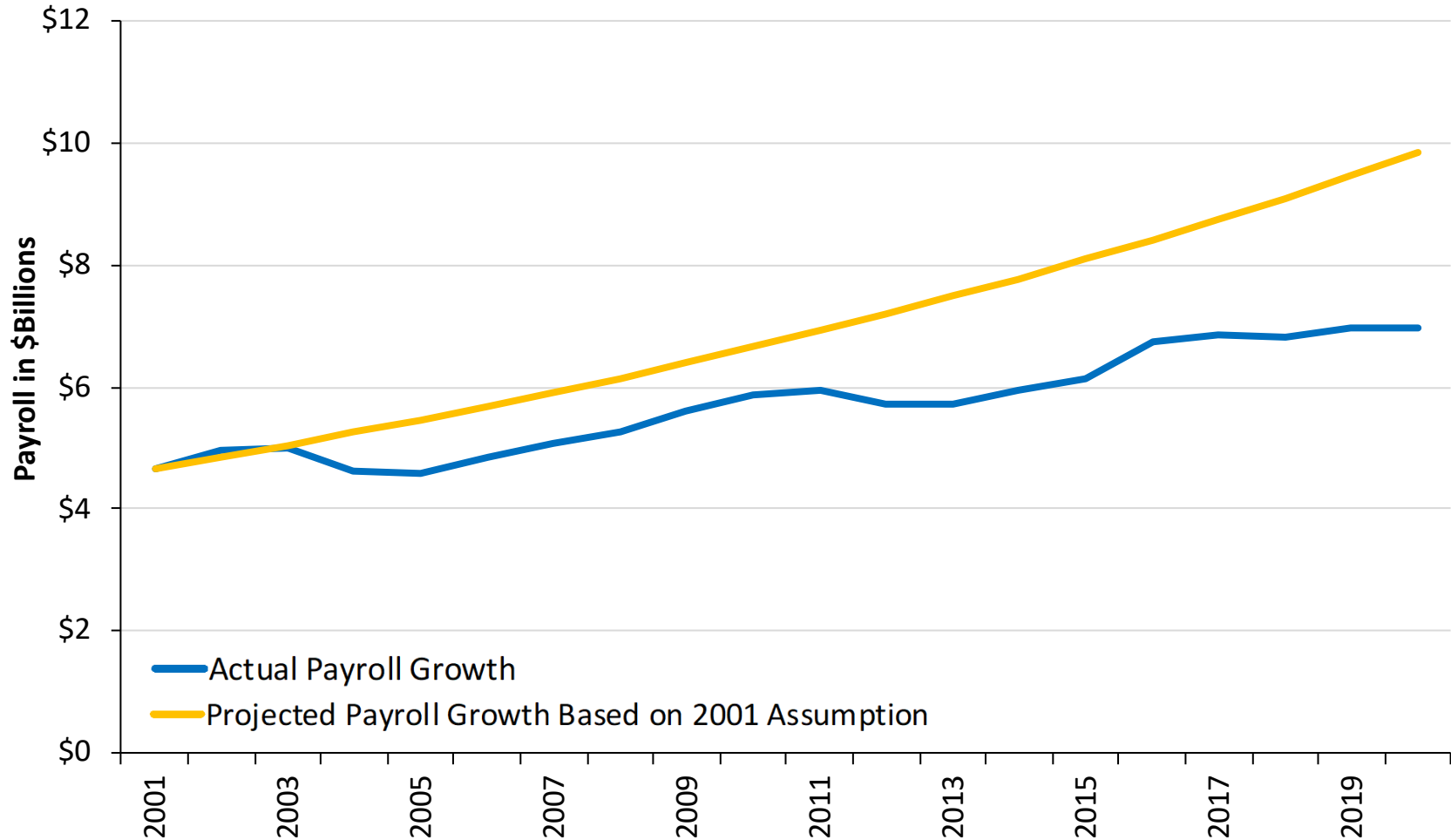
Source: Pension Integrity Project analysis of ERS actuarial valuation reports and CAFRs. Years represent fiscal year ended dates.

Acknowledging Outdated Actuarial Assumptions
Actual Inflation v. Assumption
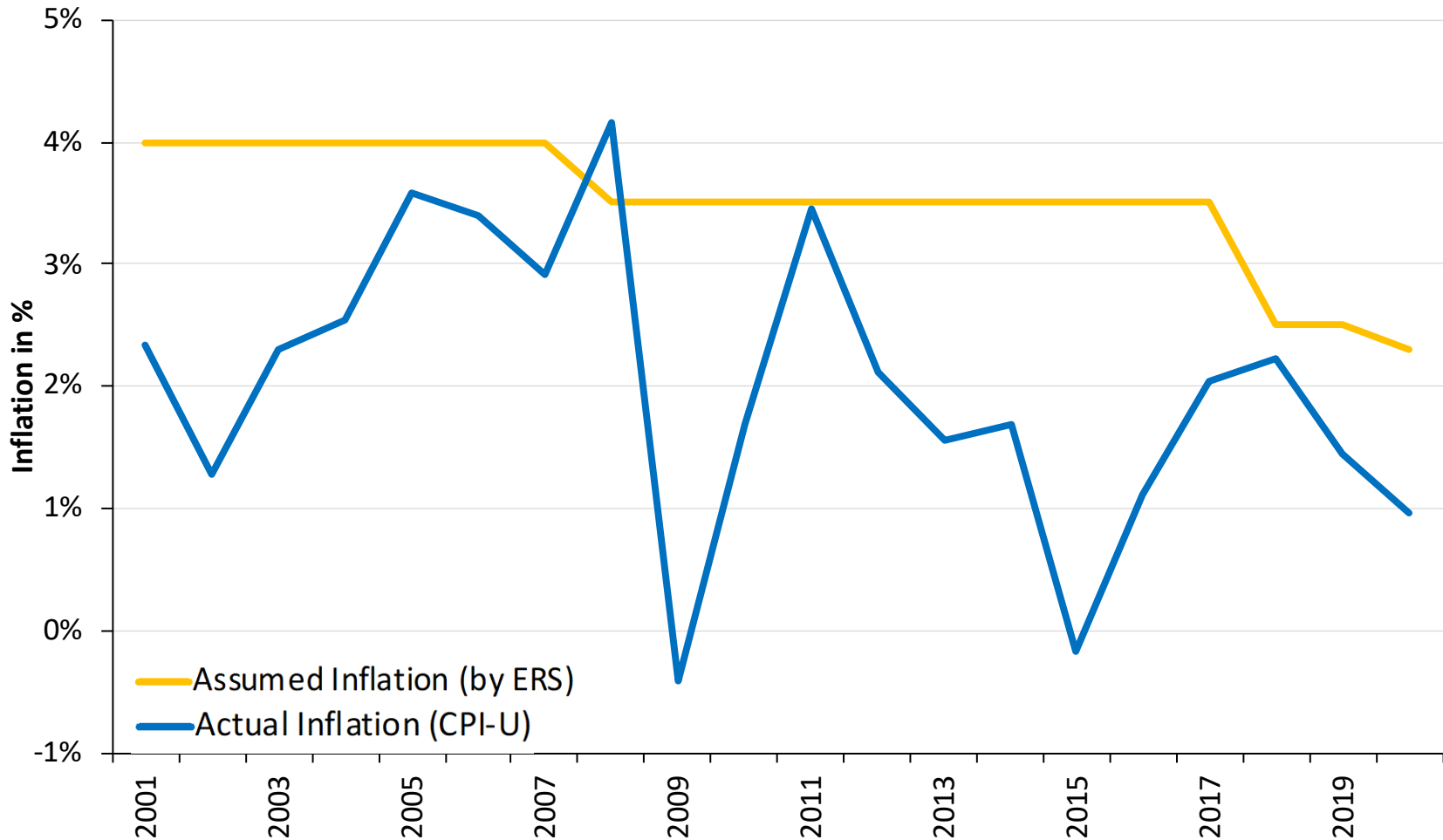
Source: Pension Integrity Project forecasting based on ERS actuarial valuation reports and CAFRs, and data from the Bureau of Labor Statistics.

Acknowledging Outdated Actuarial Assumptions
Assumption Changes Expose Hidden Unfunded Liabilities

Aligning assumptions with realistic expectations spotlights systemic risk

End of Financial Crisis

Investment return assumption reduced from 7.5% to 7.0%

Decreased inflation assumption from 3.50% to 2.50%
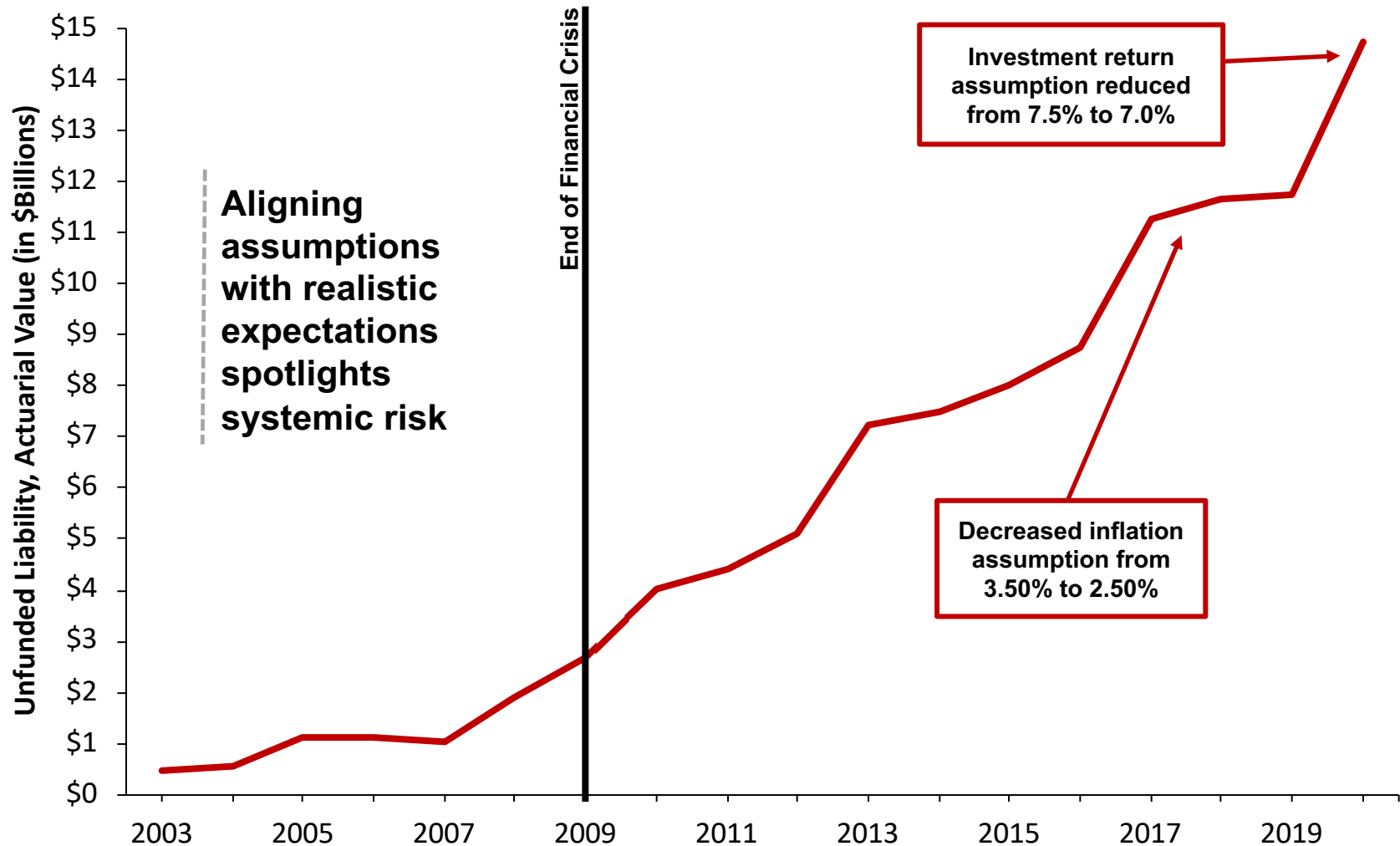
Source: Pension Integrity Project analysis of ERS actuarial reports and CAFRs.

CHALLENGE 4: DISCOUNT RATE AND UNDERVALUING DEBT

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

ERS 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 ERS — 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 ERS 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 of the already promised pension benefits and supposed to reflect the risk of the plan sponsor not being able to pay the promised pensions.

ERS Discount Rate Methodology is Undervaluing Liabilities

2. **Setting a discount rate too high leads to undervaluing the amount of accrued pension benefits**:
   - 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.

3. **It is reasonable to conclude that there is almost no risk that Texas would pay out less than 100% of promised retirement income benefits to members and retirees.**
   - Article 16, § 66(d) of the Texas Constitution protects against impairment or reduction of accrued pension benefits "[A] change in service or disability retirement benefits or death benefits of a retirement system may not reduce or otherwise impair benefits accrued by a person…"

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.
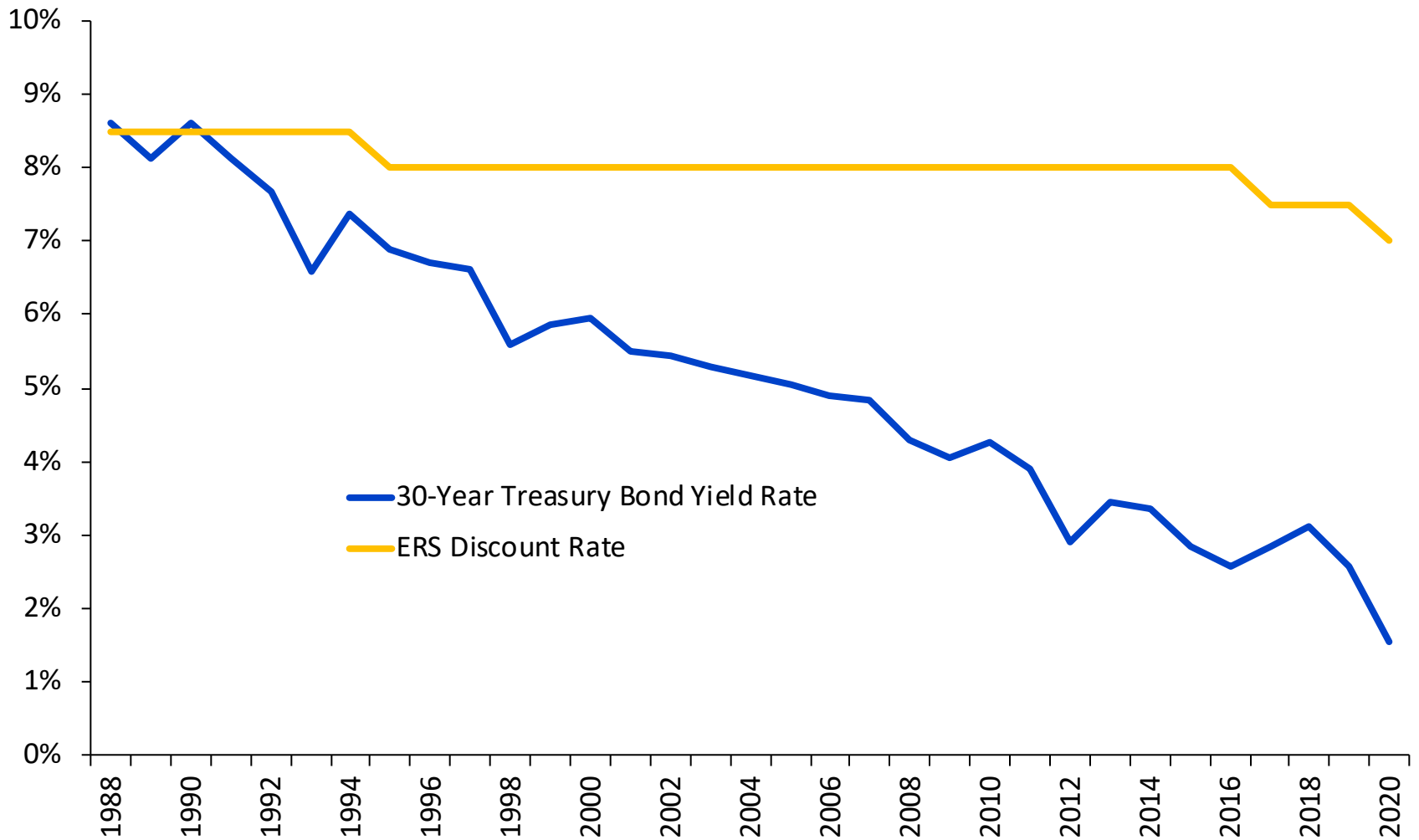
ERS Pension Debt Sensitivity
FYE 2020 Actuarial Liability Projections Under Varying Discount Rates

Discount Rate	Funded Ratio (Market Value)	Net Pension Liability (Market Value)	Total Pension Liability
7.0% (FYE 2020 Baseline)	64.6%	$15.3 billion	$43.3 billion
6.0%	60.3%	$19.1 billion	$48.1 billion
5.0%	53.8%	$24.9 billion	$53.9 billion
4.0%	47.7%	$31.8 billion	$60.8 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 Texas ERS CAFR.

Source: Pension Integrity Project analysis of ERS actuarial reports and CAFRs.
Projections are based on fiduciary net position and total pension liability. Figures are rounded.
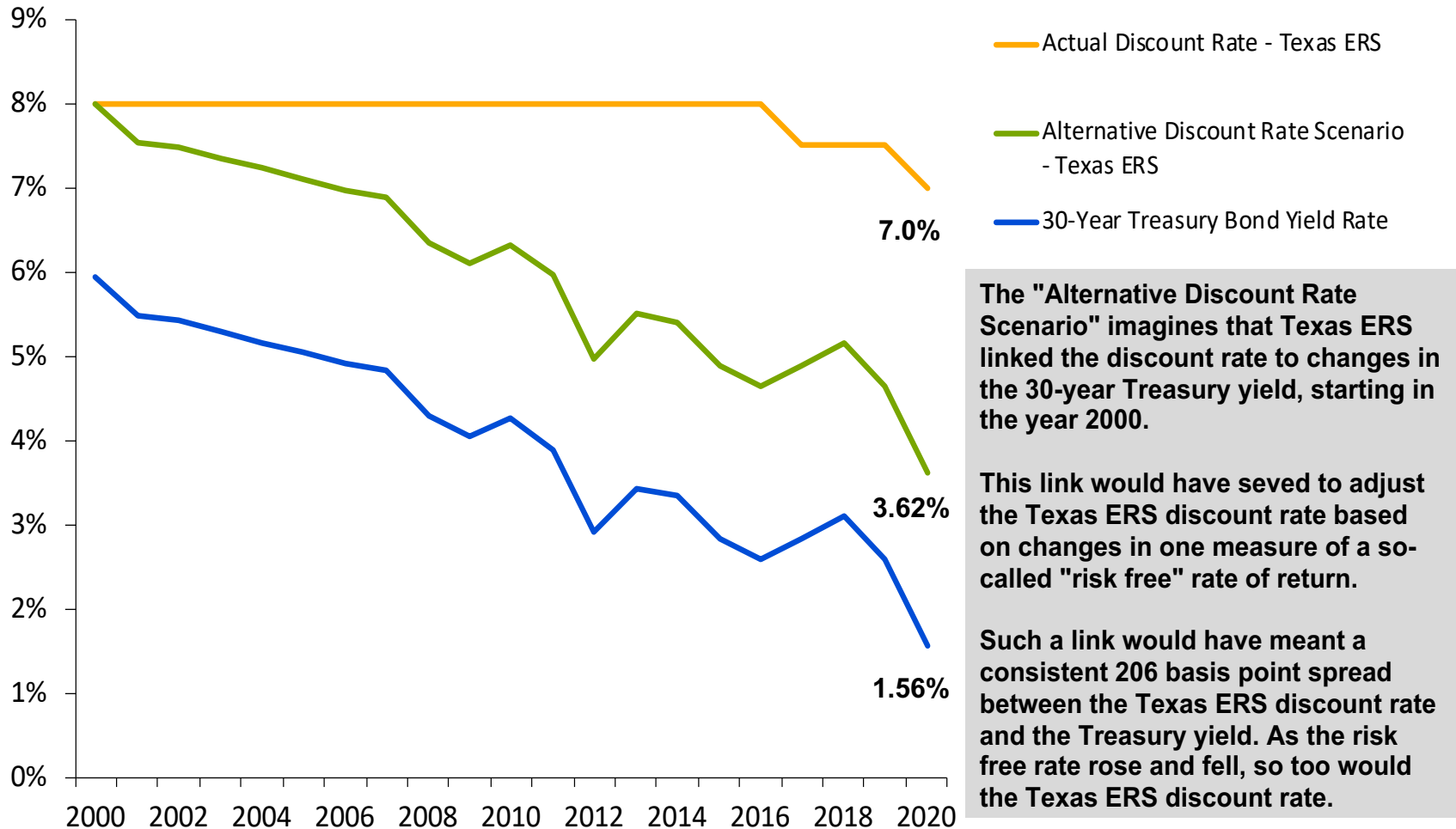
Change in the Risk-Free Rate
Compared to ERS Discount Rate (1988-2020)

Source: Federal Reserve average annual 30-Year Treasury constant maturity rate.

Change in the Risk-Free Rate Compared to ERS Discount Rate (2000-2020)

Legend:
- Actual Discount Rate - Texas ERS
- Alternative Discount Rate Scenario - Texas ERS
- 30-Year Treasury Bond Yield Rate

7.0%

3.62%

1.56%

The "Alternative Discount Rate Scenario" imagines that Texas ERS linked the discount rate to changes in the 30-year Treasury yield, starting in the year 2000.

This link would have seved to adjust the Texas ERS discount rate based on changes in one measure of a so-called "risk free" rate of return.

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

Source: Pension Integrity Project analysis of ERS actuarial valuation reports and Treasury yield data from the Federal Reserve.
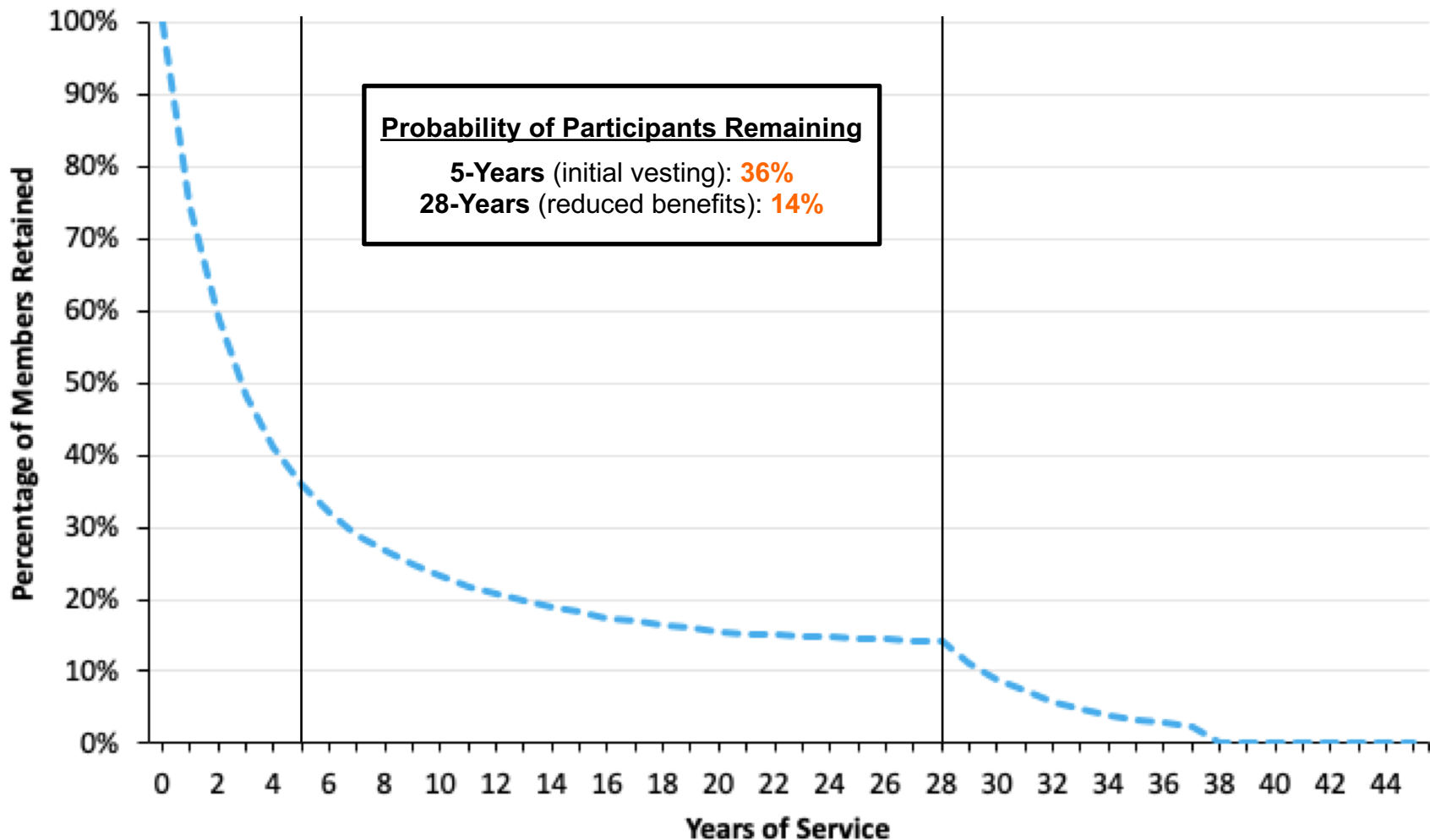
CHALLENGE 5:
THE EXISTING BENEFIT DESIGN DOES NOT WORK FOR EVERYONE

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

Probability of Members Remaining in ERS
Hired at Age 25

Probability of Participants Remaining

5-Years (initial vesting): **36%**
28-Years (reduced benefits): **14%**

Source: Pension Integrity Project analysis of ERS actuarial reports and CAFRs. Illustration is based on plan's assumptions and a hypothetical analysis of an average Regular State Employee hired at the age of 25. The unreduced benefit is calculated using 28-Years under the Rule of 80.

Do ERS Retirement Plans Work for All Employees?

- **64%** of new ERS members (at age 25) leave before 5 years
  - Regular State employees must work 5 years before their benefits become vested.
  - Members who leave the plan before then must forfeit contributions from their employer made on their behalf.
  - Another 17% of new members still working after 5 years will leave before 15 years of service, long enough to qualify for reduced benefits.

- **14%** of Regular State members hired next year (age 25) will still be working after 28 years, long enough to qualify for reduced benefits under the system's rules for retirement eligibility.

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 ERS system, it is clearly not working, as nearly 64% of employees leave within 5 years.
  - After 15 to 25 years of service there is some retention effect, but the same incentives serve to push out workers in a sharp drop off after 28 years of service or reaching "Rule of 80" threshold.

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

Practical Policy Framework

1. 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.

2. Adopt better funding policy, risk assessment, and actuarial assumptions
   - Changes should aim at minimizing risk and contribution rate volatility for employers and employees.
   - Lower the assumed rate of return to align with independent actuarial recommendations.

3. Review current plan options to improve retirement security
   - Consider offering members that won't accrue a full pension benefit access to other plan design options (e.g., cash balance, DC, hybrid, etc.).

1. Establish a Plan to Pay Off the Unfunded Liability as Quickly as Possible

- **Current amortization policy for ERS targets time horizons that are too long**
  - The ERS board targets a 31-year window to pay off unfunded liabilities.
  - The Society of Actuaries Blue Ribbon Panel recommends amortization schedules be no longer than 15 to 20 years.

- **Rethink amortization in two steps**

  Step 1: Address the Current Unfunded Liability
  - Segmenting accrued unfunded liabilities from any gains or losses in future years can allow policymakers to set the past debt on a direct and fiscally realistic course to being fully funded.
  - Prevents the need to revisit the issue in subsequent sessions.

  Step 2: Develop a Plan to Tackle Future Debt
  - Adopting "layered" amortization for future unfunded liabilities. would ensure that any new pension debt accrued in a given year is paid off much faster—preferably 10 years or less—than the current 30+ year period.
  - Covering future pension losses with consistent annual payments over a decade or less would align TRS amortization policy with actuarial best practice.

2. Adopt Better Funding Policy, Risk Assessment, and Actuarial Assumptions   (1 of 2)

- **Current funding policy has created negative amortization and exposes the plan to significant risk of additional unfunded liabilities**
  - Establishing ERS contribution rates in statute, and requiring political intervention with uncertain outcomes, makes it difficult in practice to respond quickly to changing economic circumstances.
    - This policy is in contrast with the more common funding method based on normal cost and the amortization cost that pays down unfunded liabilities over a predetermined, closed period.
  - Under current contribution rates and actuarial assumptions will never amortize current unfunded liabilities, exposing ERS to major financial risks.
  - Options to consider include:
    - Requiring employers and future employees that accrue defined benefits to make contributions on a pre-defined cost sharing basis (such as a 50-50 split) as actuarially determined
    - Using short (10-year or less) periods to pay off any new, annual unfunded liabilities that might accrue

2. Adopt Better Funding Policy, Risk Assessment, and Actuarial Assumptions (2 of 2)

- **Improve risk assessment and actuarial assumptions**

  - Look to lower the assumed return such that it aligns with more realistic probability of success

  - Adjust the portfolio to reduce high risk assets no longer needed with lower assumed return target

  - Work to reduce fees and costs of active management

  - Consider adopting an even more conservative assumption for a new hire defined benefit plan

  - Require regular stress testing for contribution rates, funded ratios, and cash flows with look-forward forecasts for a range of scenarios

    - While pension plans can, and some do, implement a limited risk assessment under current financial reporting, an independent risk assessment/stress test review using a range of pre-built stress scenarios is the ideal approach

3. Create a Path to Retirement Security for All Participants of ERS

- **ERS is not providing a path for retirement income security to all public employees**
  - For example, only 14% of members (age 25) make it to the 28 years necessary for reduced benefits. This means the majority would be better served by having the choice of an alternative plan design — such as a cash balance, hybrid or defined contribution retirement plan.

- **Employees should have the opportunity to select a retirement plan design that fits their career and lifestyle goals**
  - Cash balance plans are a guaranteed return plan design that can provide a steady accrual rate, offer portability, and ensure a path to retirement security.
  - Defined contribution plans can be designed to auto-enroll members into professionally managed accounts with low fees that target specified retirement income and access to annuities across careers.

Questions?

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