ARIZONA STATE RETIREMENT SYSTEM SOLVENCY ANALYSIS
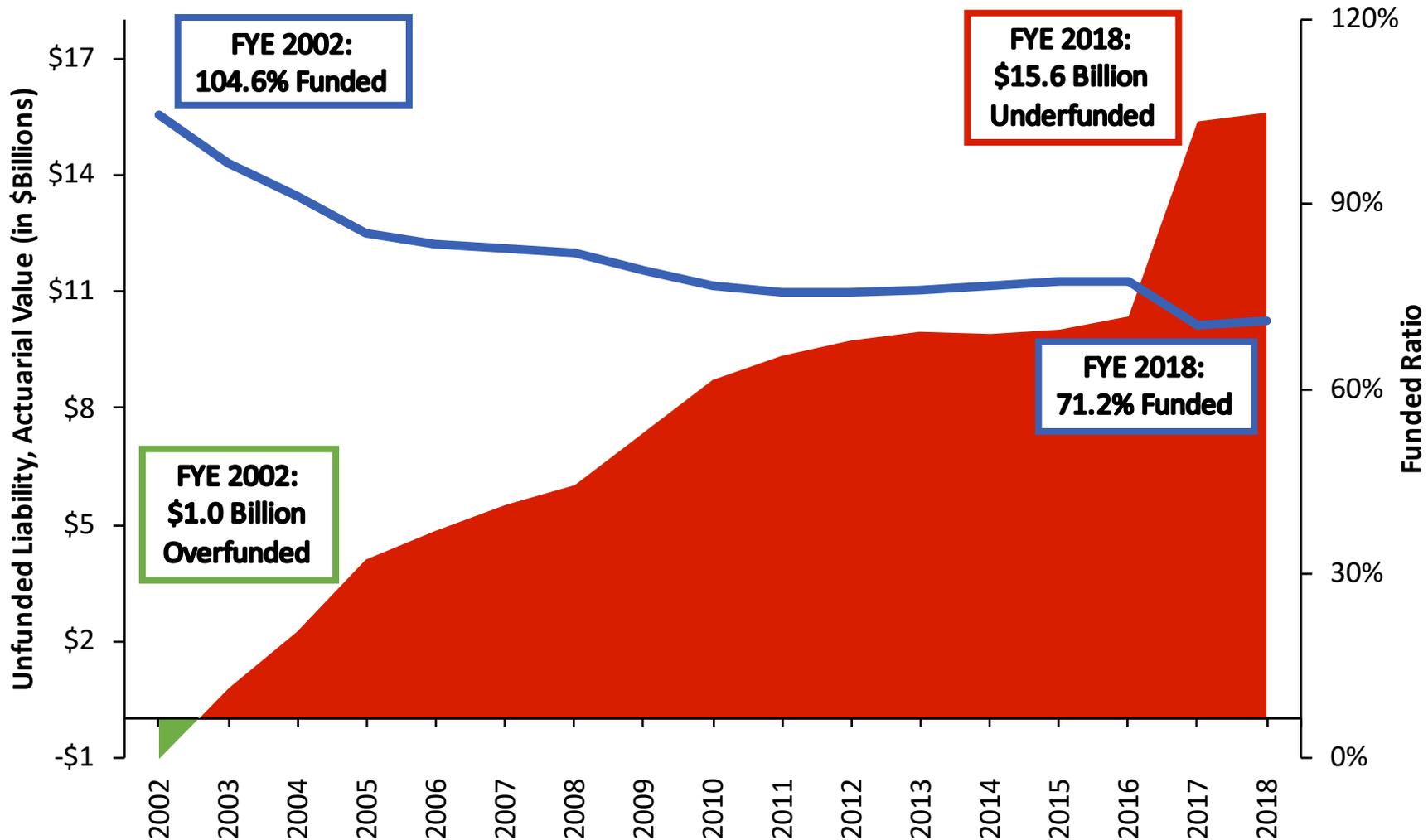
Prepared by:

Pension Integrity Project at Reason Foundation
April 11, 2019—Preliminary Draft

A History of Weakening Solvency (2002-2018)

FYE 2002:
104.6% Funded

FYE 2018:
$15.6 Billion
Underfunded

FYE 2002:
$1.0 Billion
Overfunded

FYE 2018:
71.2% Funded

Unfunded Liability, Actuarial Value (in $Billions)

Funded Ratio

Source: Pension Integrity Project analysis of ASRS actuarial valuation reports and CAFRs.
The significant increase for FYE 2017 was due to changes in assumptions, most notably the decrease of the assumed rate of return to 7.5%.

ASRS Unfunded Liabilities are Growing Faster than the Arizona Economy

Source: Pension Integrity Project analysis of ASRS actuarial valuation reports and CAFRs, Federal Reserve of St. Louis Data for the Arizona gross domestic product.
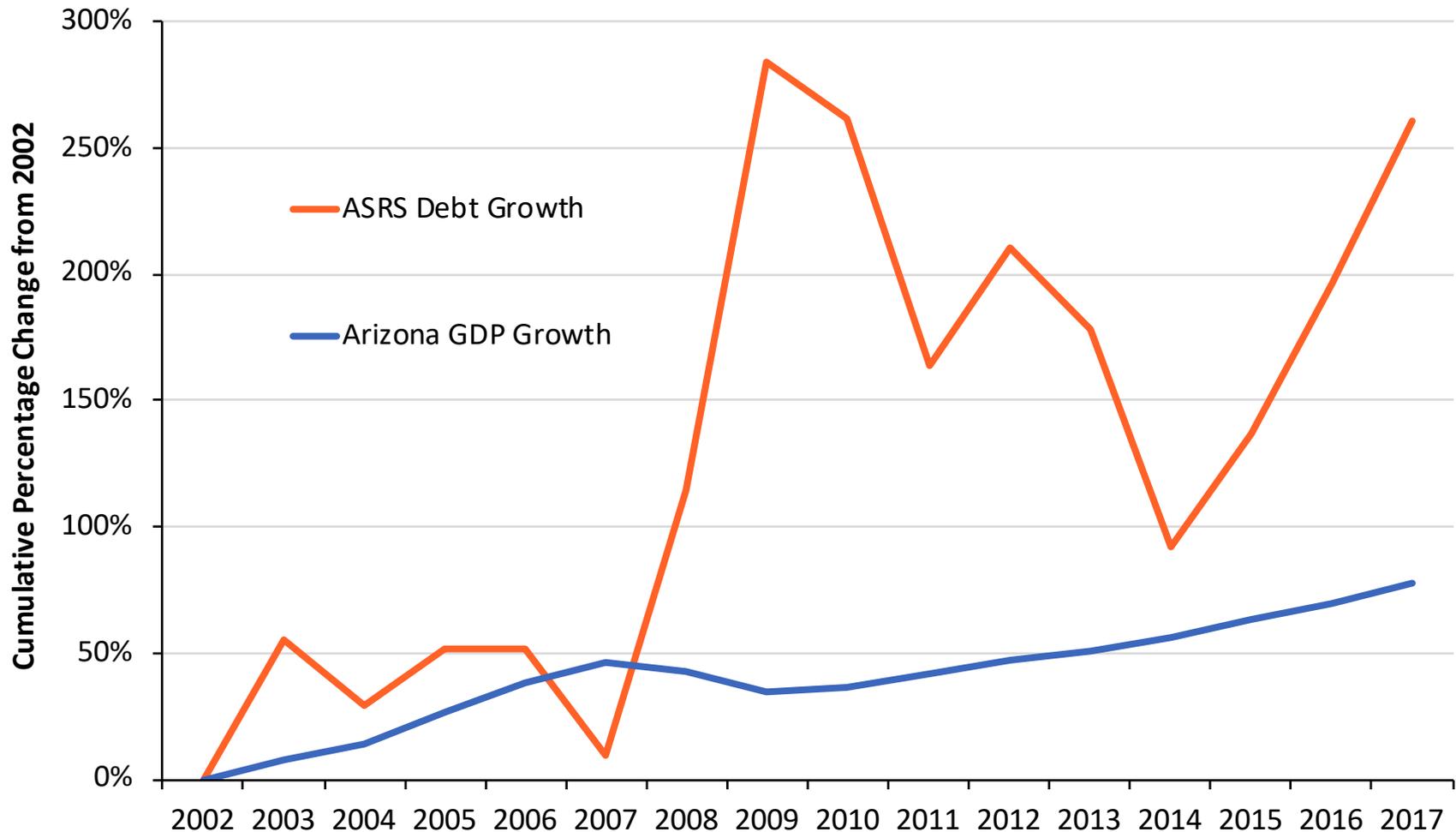
# ASRS Contributions are Growing While the State Budget is Trending Down
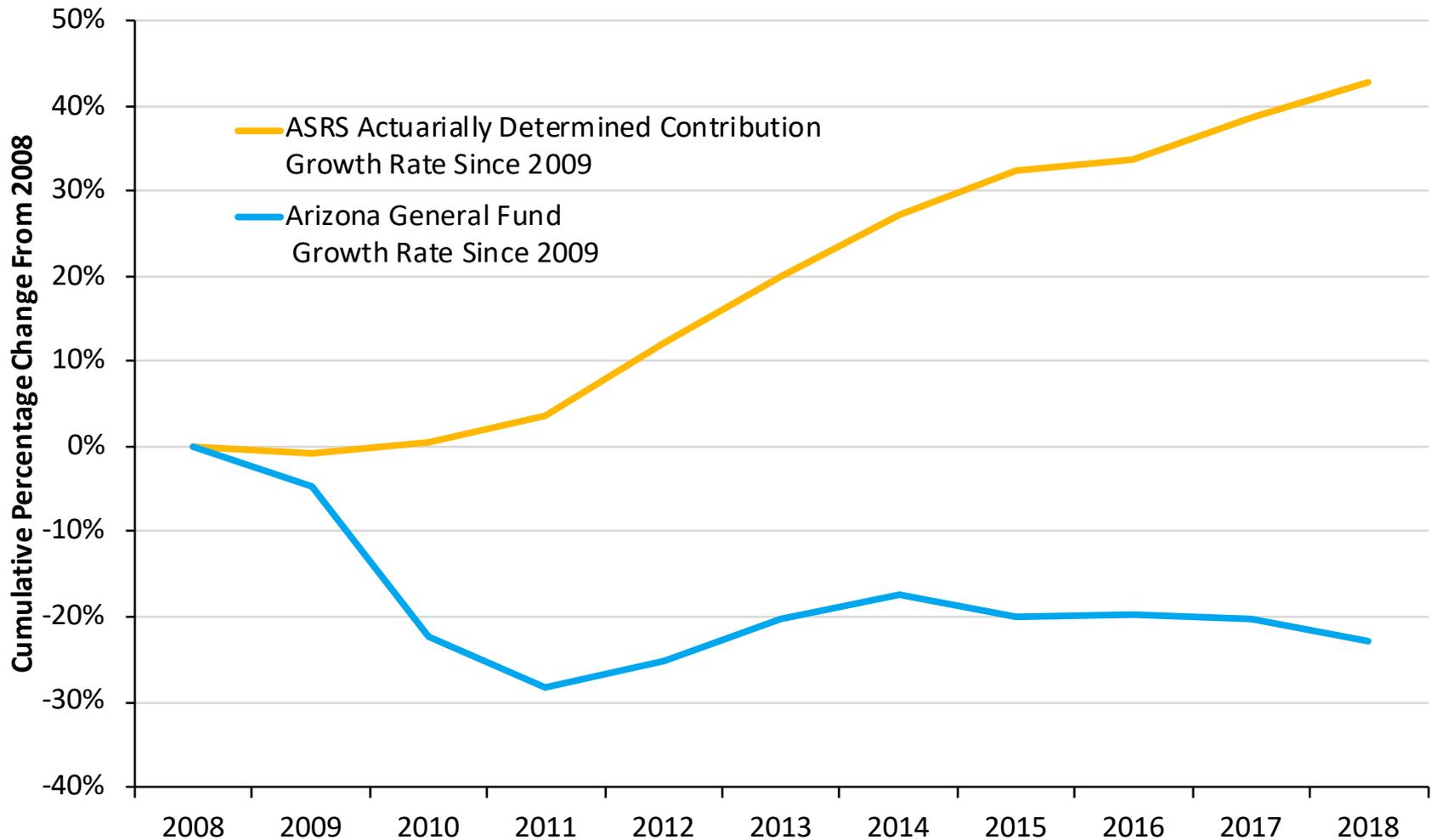
Source: Pension Integrity Project analysis of ASRS actuarial valuation reports and data from NASBO Fiscal Survey of States.
GASB recently changed the definition of Actuarially Required Contribution (ARC) to Actuarially Determined Employer Contribution (ADEC).

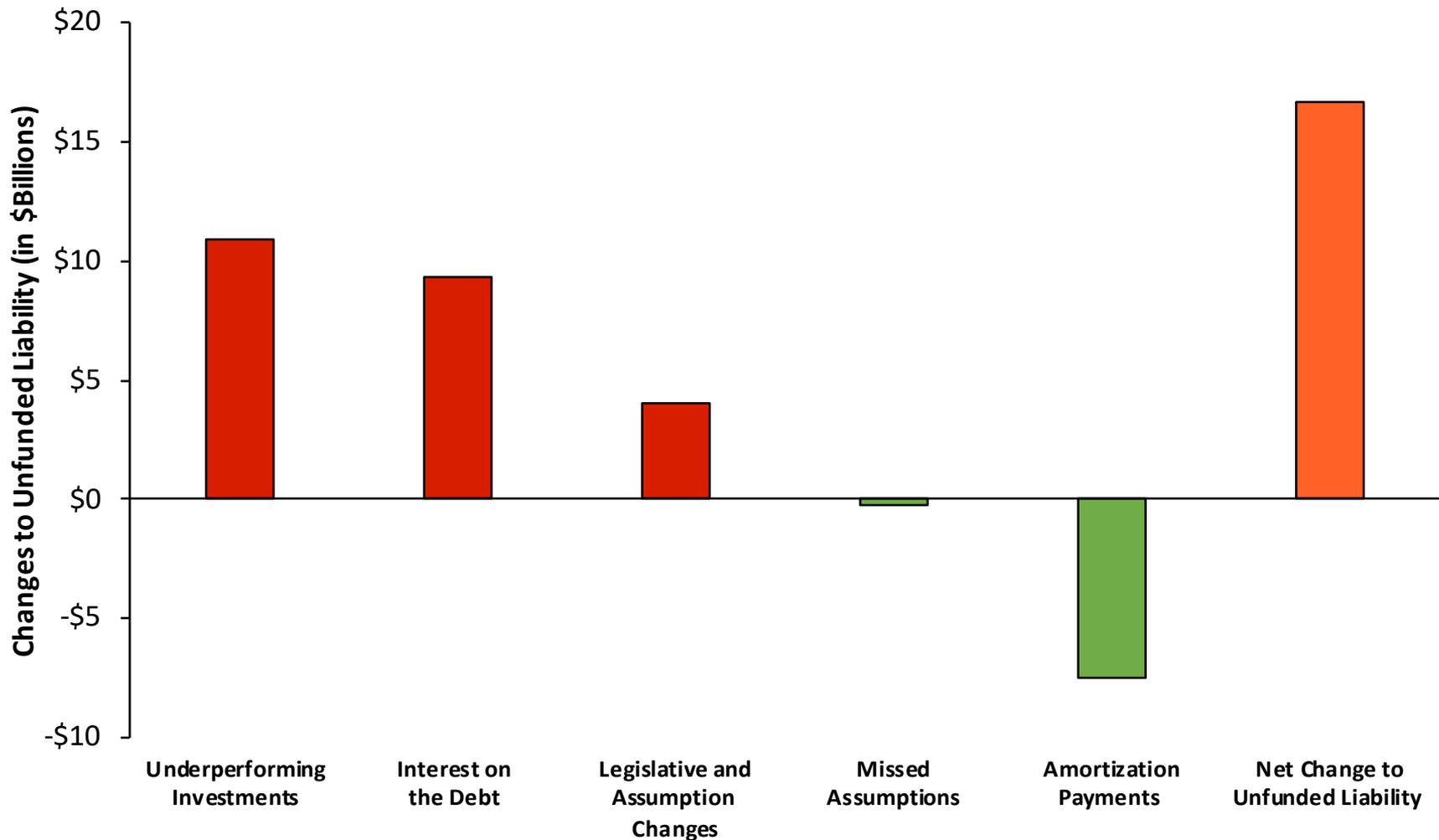# PROBLEMS CURRENTLY FACING ASRS

How a Pension Plan is Funded
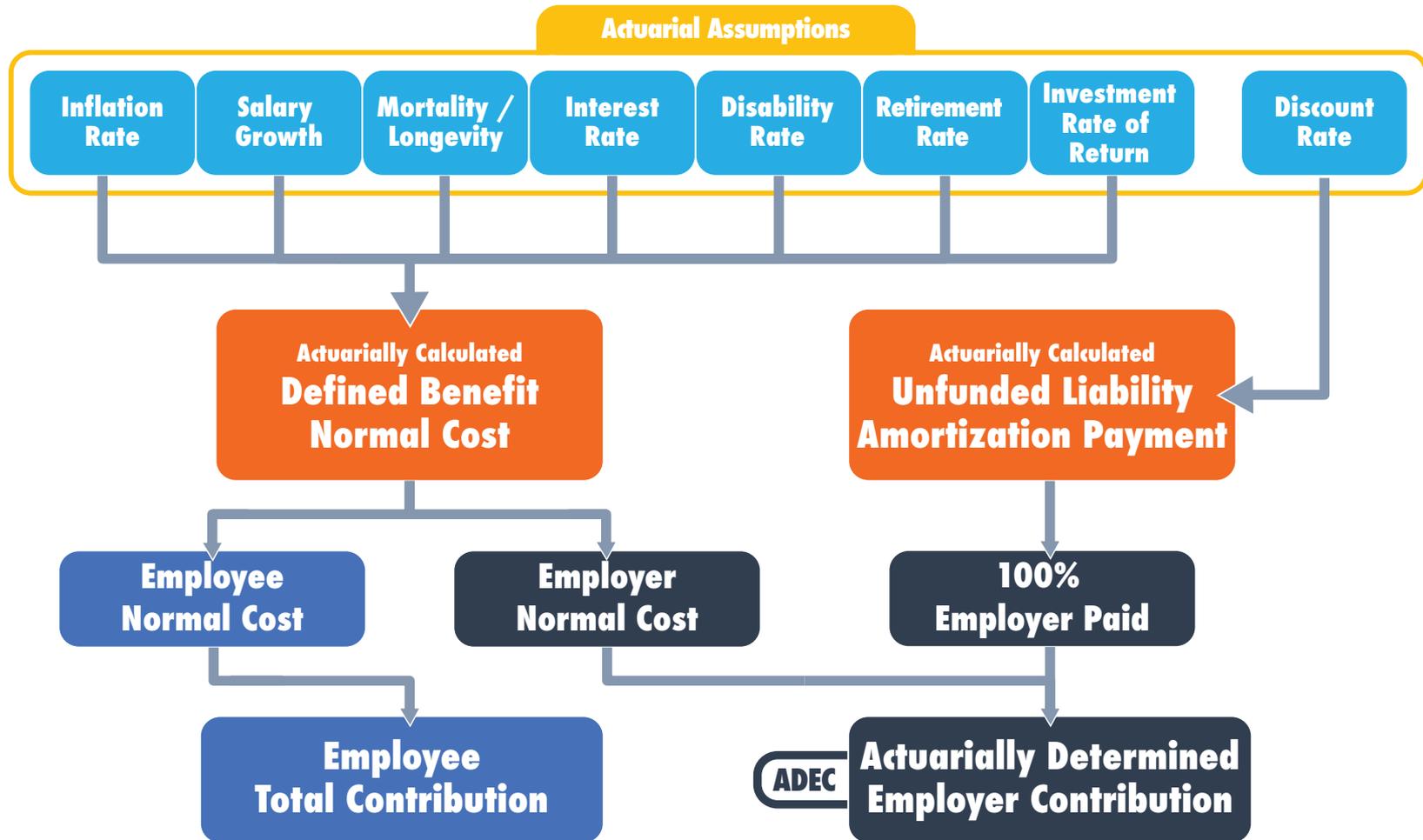
The Causes of the Pension Debt
Actuarial Experience of ASRS, 2002-2018

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

Driving Factors Behind ASRS Problems

1. **<u>Underperforming Investment Returns</u>** have been the largest contributor to the unfunded liability, adding $10.9 billion to the unfunded liability since 2002

2. **<u>Amortization Methods</u>** have resulted in accrued interest payments, resulting in $9.3 billion in additional unfunded liability since 2002. The interest on pension debt exceeded amortization payments over that period by $1.9 billion (aka negative amortization).

3. **<u>Undervaluing Debt</u>** through discounting methods that have remained unchanged, leading to an undercalculation of required contributions
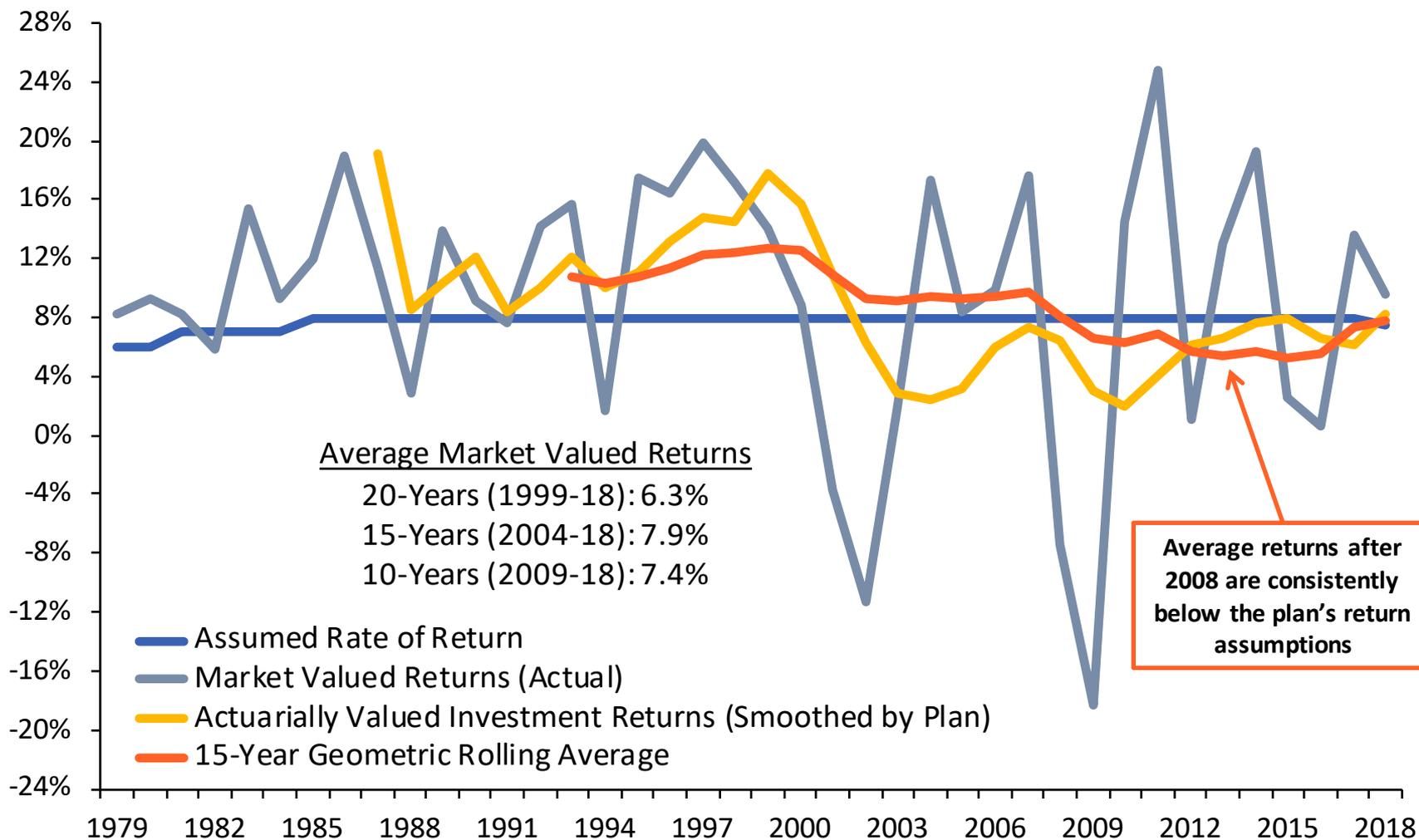
PROBLEM 1:
ASSUMED RATE OF RETURN

- **Unrealistic Expectations:** The *Assumed Return* for ASRS has been and 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*

ASRS Problem: Underperforming Assets
Investment Return History, 1979-2018

Average Market Valued Returns
20-Years (1999-18): 6.3%
15-Years (2004-18): 7.9%
10-Years (2009-18): 7.4%

Average returns after 2008 are consistently below the plan's return assumptions

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

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

ASRS Problem: Underperforming Assets

# Investment Returns Have Underperformed

- ASRS used an 8% assumed rate of return on assets for 33 years, despite significant market changes

- ASRS expanded its equity holdings in a search for greater investment returns (i.e. greater yields) during this time

- However, the investment portfolio's trends have not matched the long-term assumptions:

Average Market Valued Returns	Average Actuarially Valued Returns
20-Years (1999-2018): 6.25%	20-Years (1999-2018): 6.80%
15-Years (2004-2018): 7.86%	15-Years (2004-2018): 5.57%
10-Years (2009-2018): 7.41%	10-Years (2009-2018): 5.82%

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.

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

New Normal: Markets Have Recovered Since the Crisis—ASRS Funded Ratio Has Not
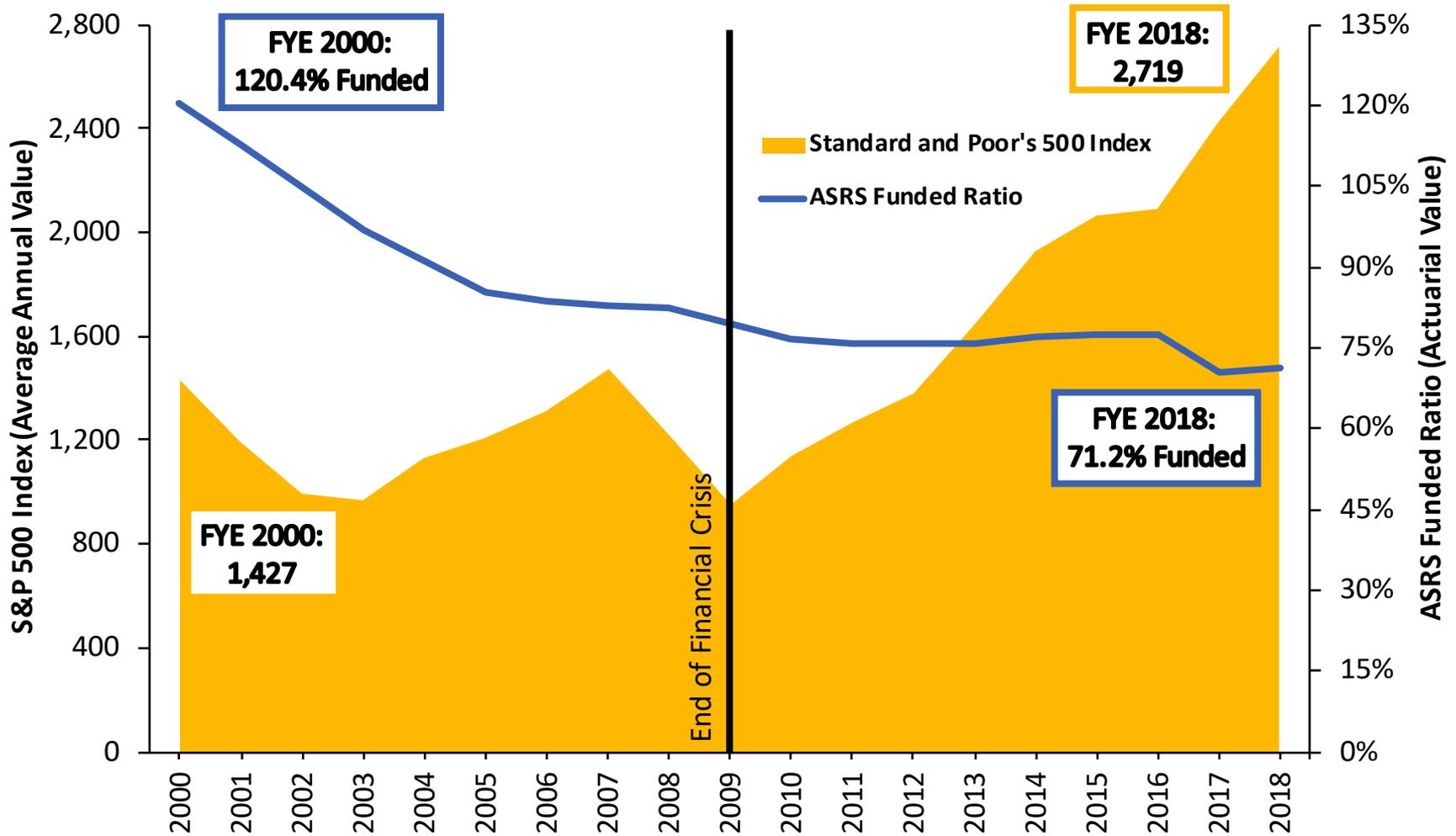
Source: Pension Integrity Project analysis of ASRS actuarial valuation reports and Yahoo Finance data.

New Normal: The So-Called Recovery Has Already Happened, the Market Has Changed

The "new normal" for institutional investing suggests that achieving even a 6% average rate of return 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 around 8% in the 1990s to consistently less than 3% today.
   - Globally, interest rates are at ultralow historic levels, while market liquidity continues to be restrained by financial regulations.

2. McKinsey & Co. forecast the returns to 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, similar to ASRS, is likely to earn around 5% return.

3. As ASRS waits for the "recovery" its unfunded liabilities continue to grow.

ASRS Asset Allocation (1990-2018)
Expanding Equities in Search for Yield
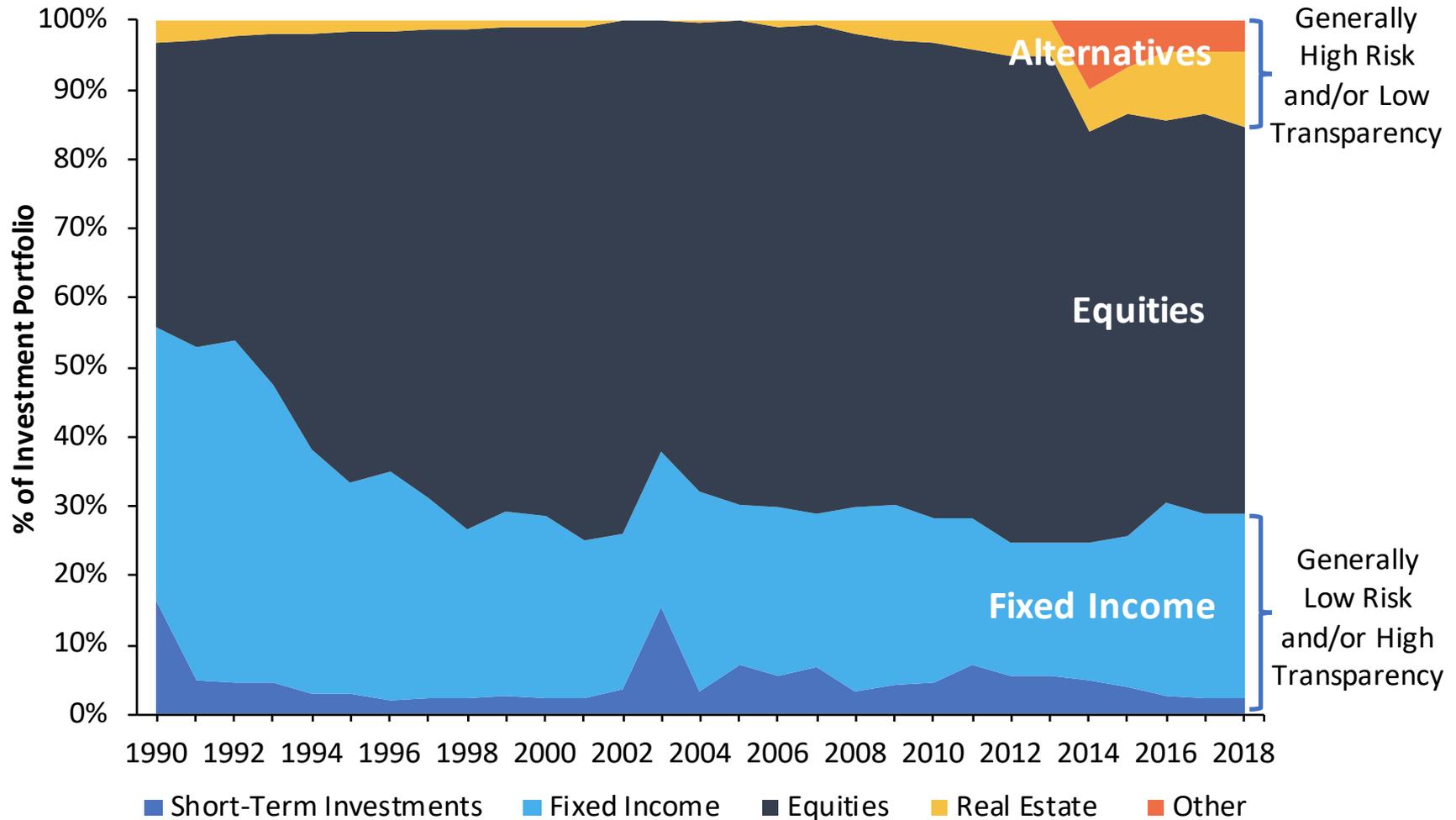
Source: Pension Integrity Project analysis of ASRS actuarial valuation reports and CAFRs.

New Normal: Forecasts for Future Returns are Significantly Lower than Past Returns
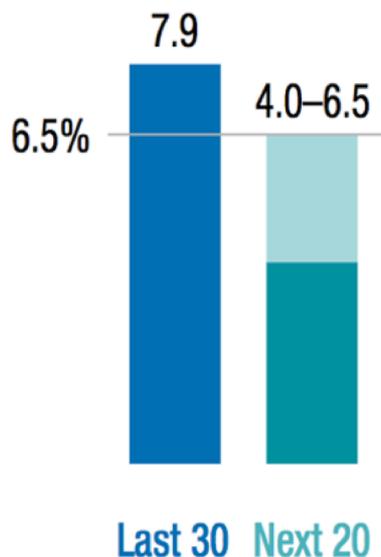
The past 30 years saw returns that exceeded the long-run average

- ■ Historical real returns
- — Last 100 years average return

The next 20 years could be more challenging

- ■ Growth-recovery scenario
- ■ Slow-growth scenario

US equities

7.9
6.5%
4.0–6.5

Last 30 Next 20

European equities

7.9
4.9
4.5–6.0

Last 30 Next 20

US bonds

5.0
1.7
0–2.0

Last 30 Next 20

European bonds

5.9
1.6
0–2.0

Last 30 Next 20

Image & Data Source: McKinsey & Company, *Diminishing Returns: Why Investors May Need To Lower Their Expectations* (May 2016)
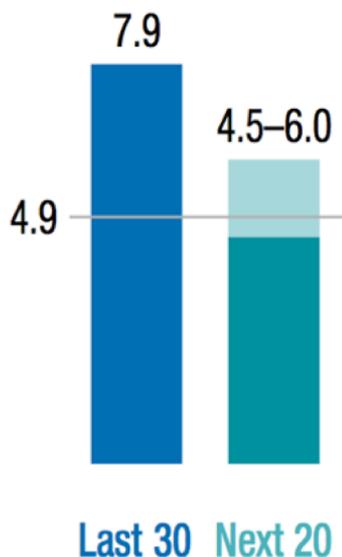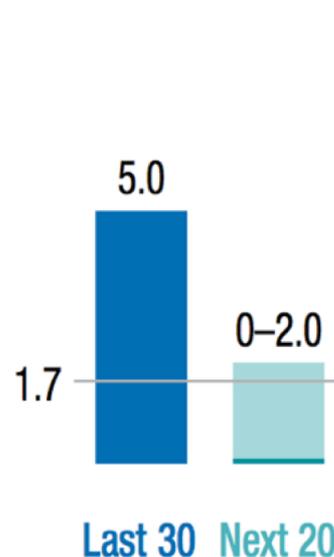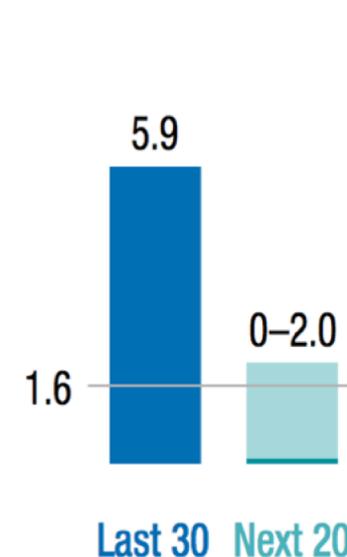
New Normal: Market Trend Towards Risk

ASRS Has Changed its Asset Allocation Towards More Risky Investments Resulting in Higher Annual Standard Deviation of Returns

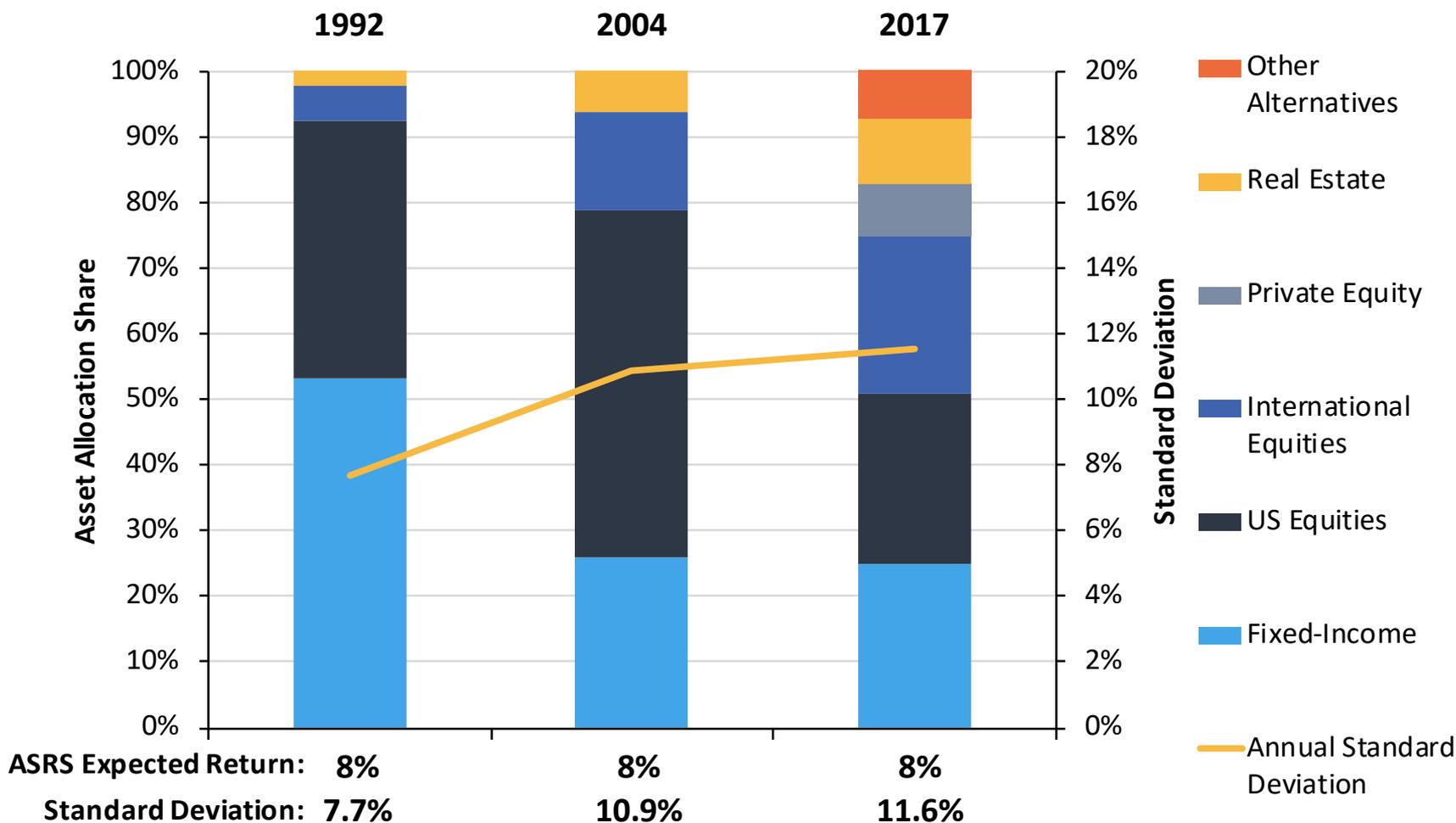Source: Pension Integrity Project Monte Carlo model based on ASRS asset allocation and reported expected of returns by asset class. Asset class returns are based on estimates as of 2017, reflecting the asset allocation in the FYE 2016 valuation.

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

Possible Rate of Return	Probability of ASRS Achieving A Given Return Based On:				
	ASRS Expectations	JP Morgan 10-15 Year Forecast	BNY Mellon 10-Year Forecast	BlackRock Long-Term Forecasts	Research Affiliates 10-Year Forecast
8.0%	48%	20%	20%	23%	16%
7.5%	55%	26%	27%	29%	21%
7.0%	61%	33%	33%	35%	26%
6.5%	67%	41%	41%	41%	33%
6.0%	73%	48%	48%	48%	40%
5.5%	78%	56%	56%	56%	47%
5.0%	83%	64%	64%	63%	55%

Source: Pension Integrity Project Monte Carlo model based on ASRS asset allocation and reported expected of returns by asset class.
Forecasts of returns by asset class generally from BNYM, JPMC, and Research Affiliates were used and matched to the specific asset class of ASRS.
Probability estimates are approximate as they are based on the aggregated return by asset class. For complete methodology contact Reason Foundation.

RISK ASSESSMENT

- **How resilient is ASRS to volatile market factors?**

Current ASRS Baseline: Normal Cost + Amortization

What Happens if ASRS Hits its Investment Target?

Discount Rate: 7.50%, Assumed Return: 7.50%, Actual Return: 7.50%, Amo. Period: 30-Year, Closed
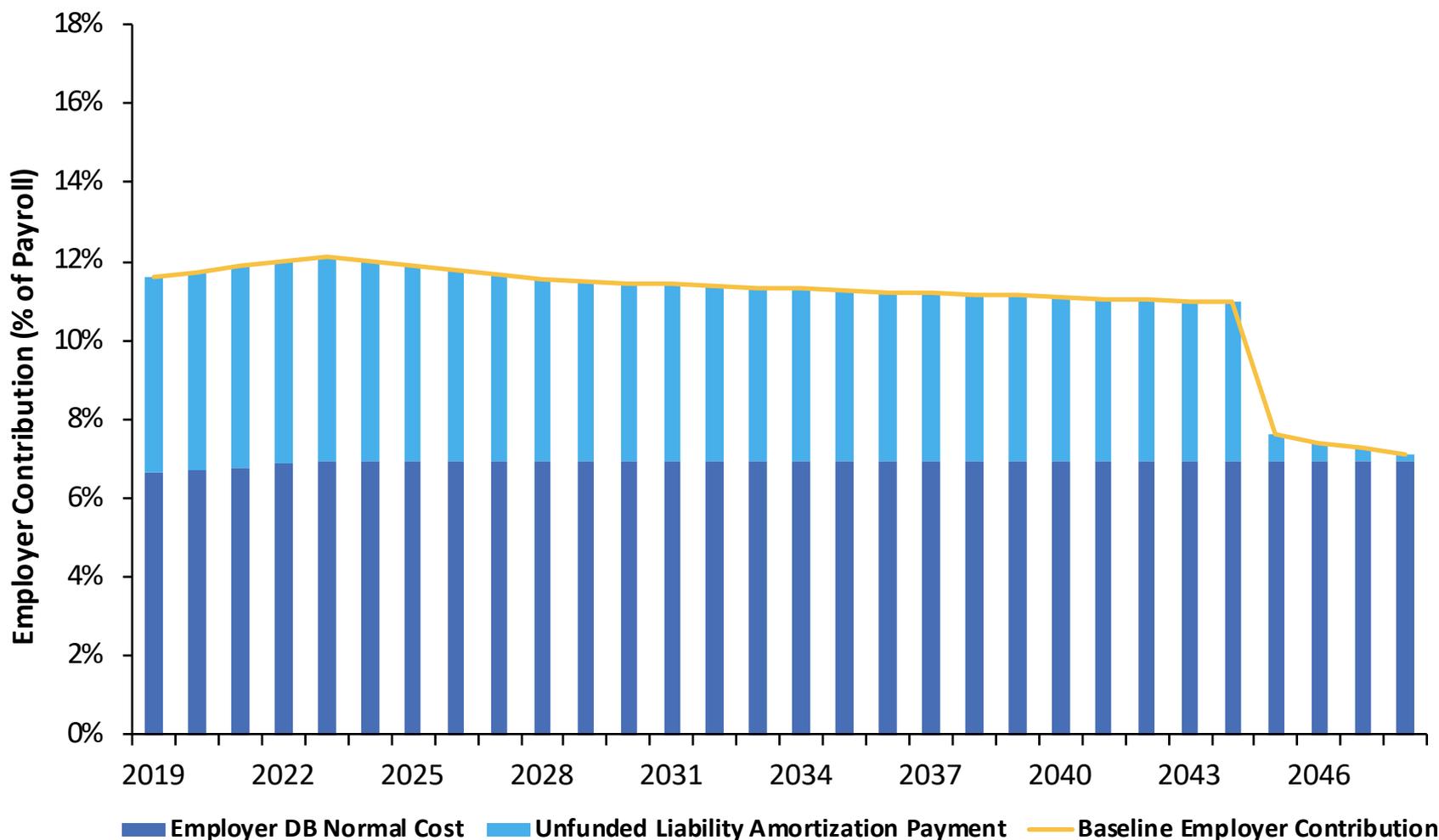
Employer DB Normal Cost   **Unfunded Liability Amortization Payment**   **Baseline Employer Contribution**

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

ASRS Scenario: 1

What Happens if ASRS Underperforms?

Discount Rate: 7.50%, Assumed Return: 7.50%, Actual Return: 6.00%, Amo. Period: 30-Year, Closed

A 6% average return (FY2019-2048) would require $7.07 billion in additional employer contributions
(Inflation adjusted)

Employer DB Normal Cost   **Unfunded Liability Amortization Payment**   **Baseline Employer Contribution**

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

ASRS Scenario: 2

What if the Next 10 Years are the Same as the Last 10?

Discount Rate: 7.50%, Assumed Return: 7.50%, Actual Return: Same as last 10 years, 7.5% Following Years

Returns identical to the previous 10 years would require $1 billion in additional employer contributions
(Inflation adjusted)

Legend: ■ Employer DB Normal Cost ■ Unfunded Liability Amortization Payment — Baseline Employer Contribution
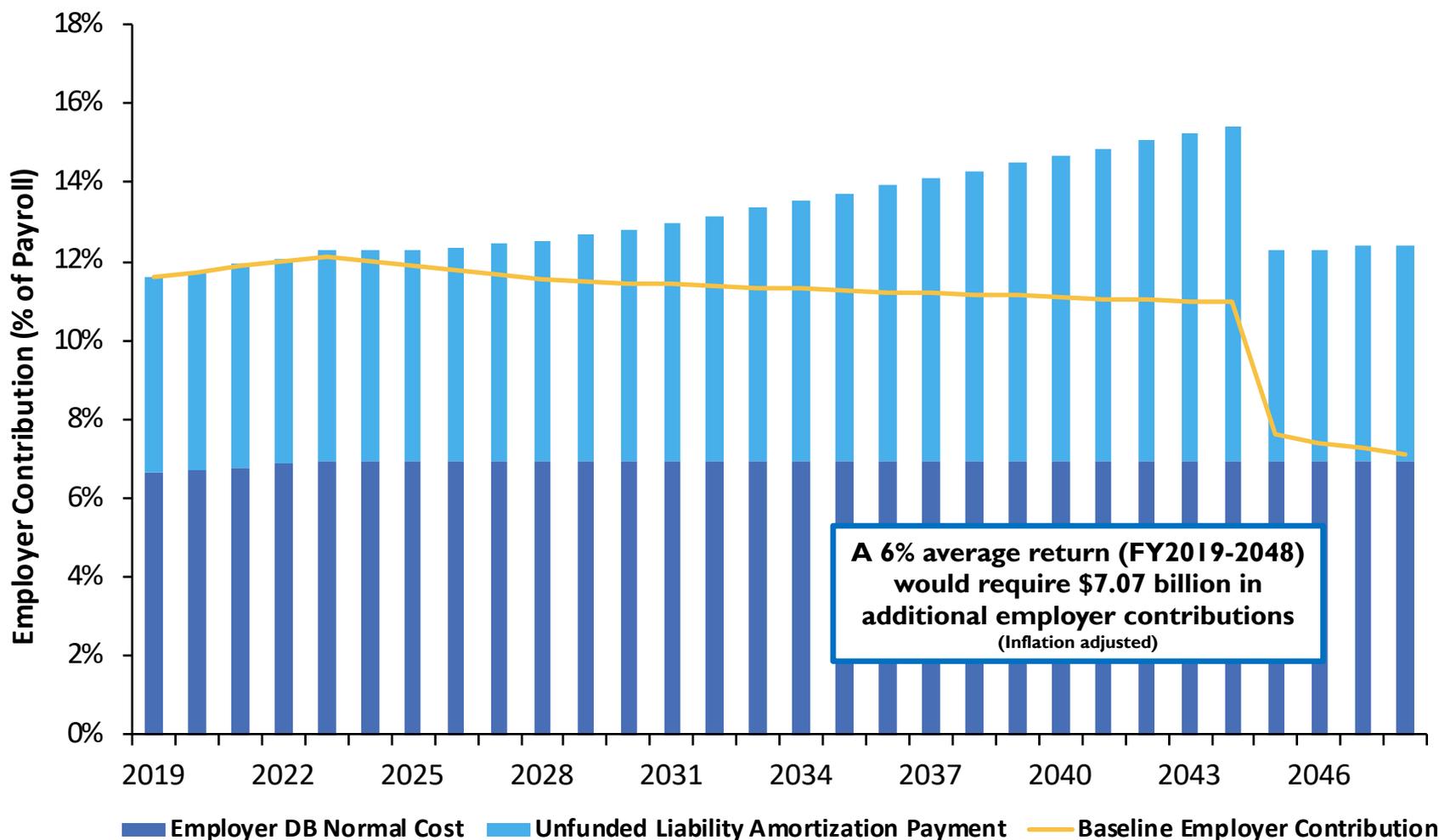
Source: Pension Integrity Project actuarial forecast of ASRS. Scenario assumes that the state continues to pay 100% of the actuarially determined contribution each year. Figures are rounded and adjusted for inflation.

ASRS Scenario: 3

What if the Next 20 Years are the Same as the Last 20?

Discount Rate: 7.50%, Assumed Return: 7.50%, Actual Return: Same as last 20 years, 7.5% Following Years

Returns identical to the previous 20 years would require $7.77 billion in additional employer contributions
(Inflation adjusted)

Employer DB Normal Cost　　**Unfunded Liability Amortization Payment**　　**Baseline Employer Contribution**
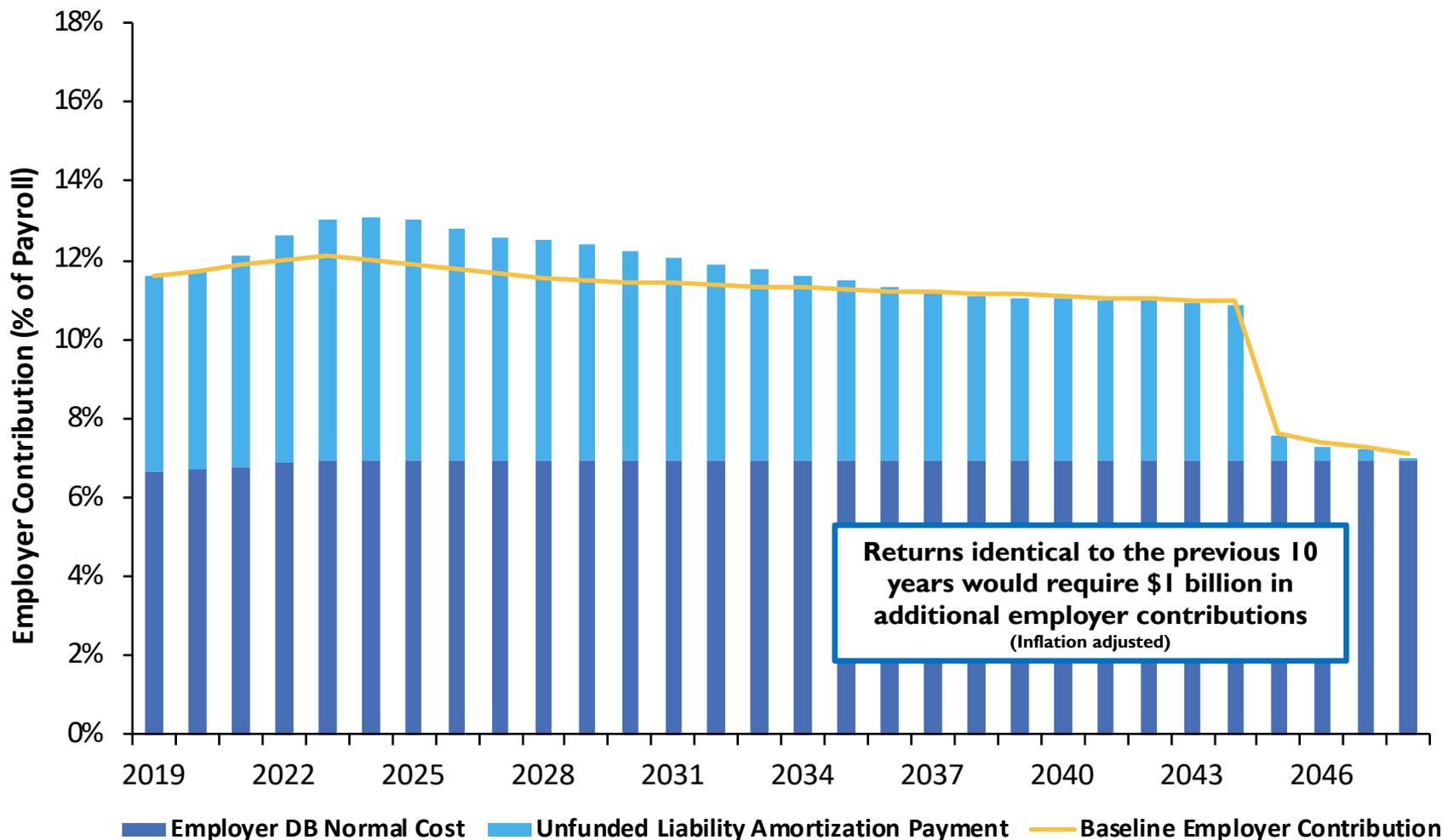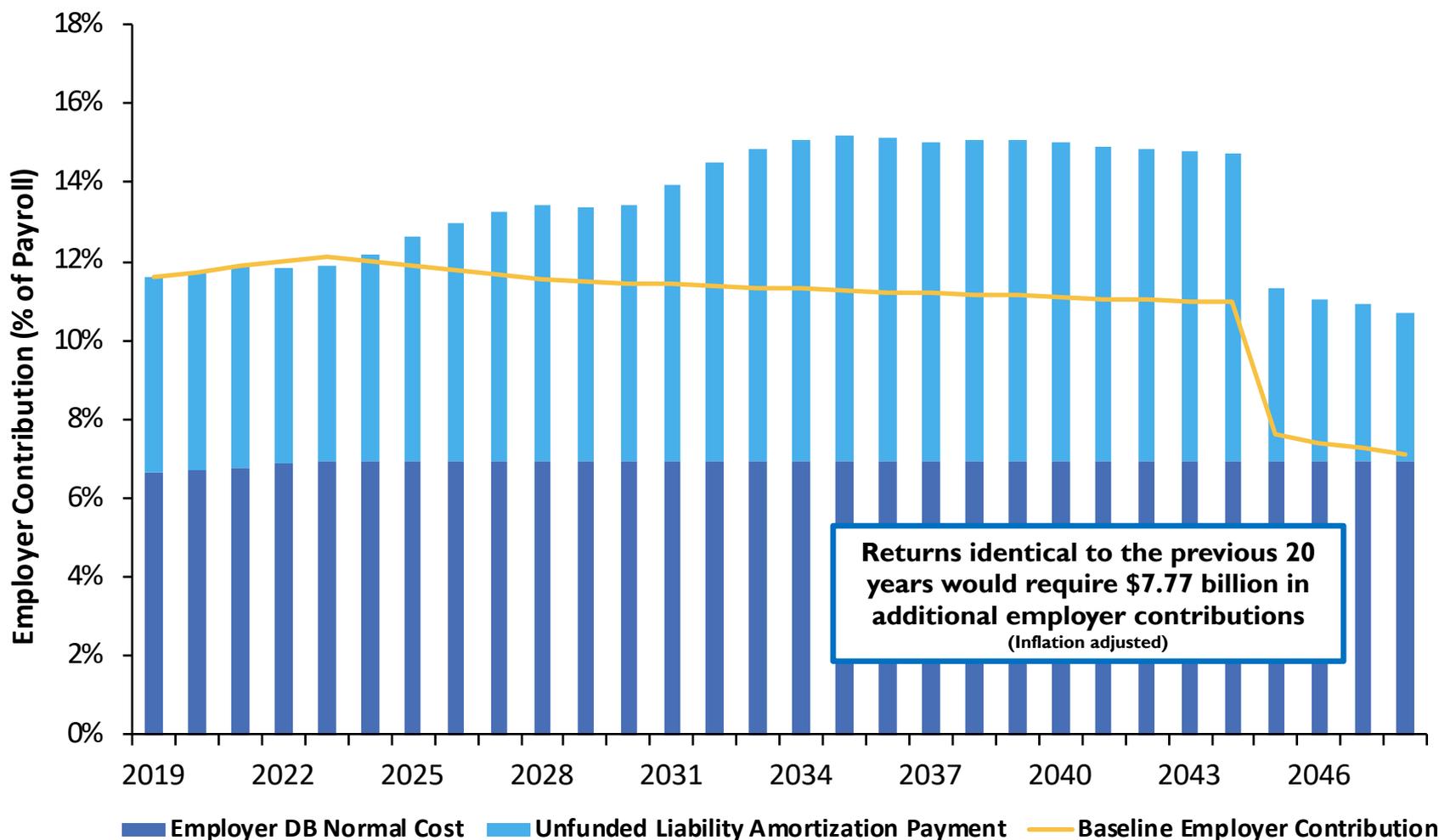
Source: Pension Integrity Project actuarial forecast of ASRS. Scenario assumes that the state continues to pay 100% of the actuarially determined contribution each year. Figures are rounded and adjusted for inflation.

ASRS Scenario: 4

What Happens if ASRS Experiences Another Crisis?

Discount Rate: 7.50%, Assumed Return: 7.50%, Actual Return: Crisis Returns 2020-24, 7.5% Following Years

Another financial crisis identical to 2008-2012 would require $8.91 billion additional employer contributions
(Inflation adjusted)

Employer DB Normal Cost   **Unfunded Liability Amortization Payment**   Baseline Employer Contribution
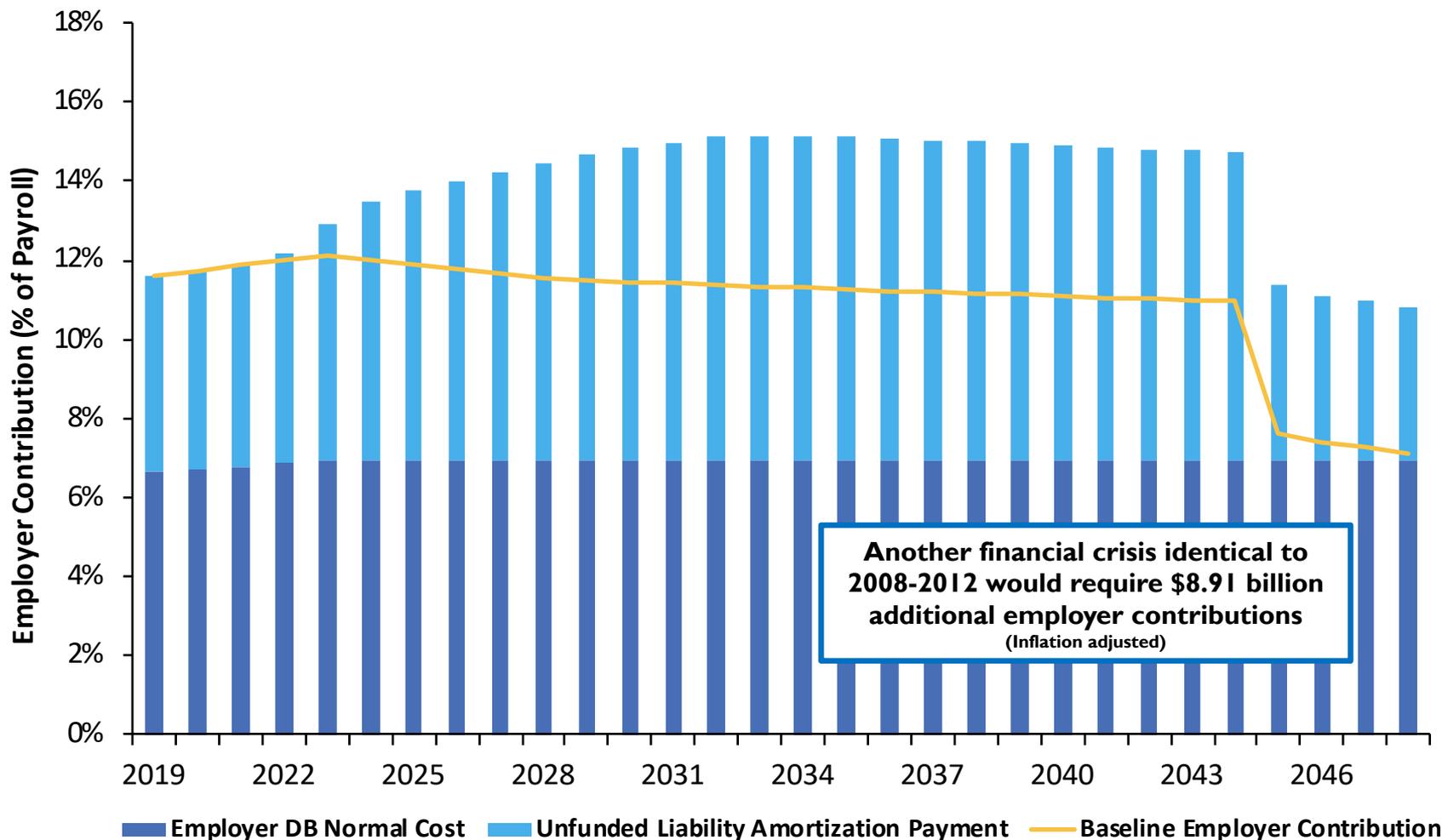
Source: Pension Integrity Project actuarial forecast of ASRS. Scenario assumes that the state continues to pay 100% of the actuarially determined contribution each year. Figures are rounded and adjusted for inflation.

30-year Employer Contribution Forecast

Timing of Returns Affects What Arizona Pays

Long-Term Average Returns of 7.5%

Alternative Scenario: Slow First Decade
(7.5% Long-Term Returns with 5.5% Returns 2020-2029)

Alternative Scenario: Strong First Decade
(7.5% Long-Term Returns with 9.5% Returns 2020-2029)

Historic Employer Contribution

Source: Pension Integrity Project actuarial forecast of ASRS.

30-Year Unfunded Liability Forecast
The Effect of One Bad Year on Pension Debt

One bad year of returns in 2030 would leave **ASRS** funding in a position similar to sustained market underperformance.

Unfunded Actuarial Value Liability (in $Billions)

— What ASRS Assumes Will Happen

— Unfunded Liability: Actual Average Returns of 6.5%

— Unfunded Liability: 20% Market Loss in 2020, with 7.5% Returns Before & After

— Unfunded Liability: 20% Market Loss in 2030, with 7.5% Returns Before & After
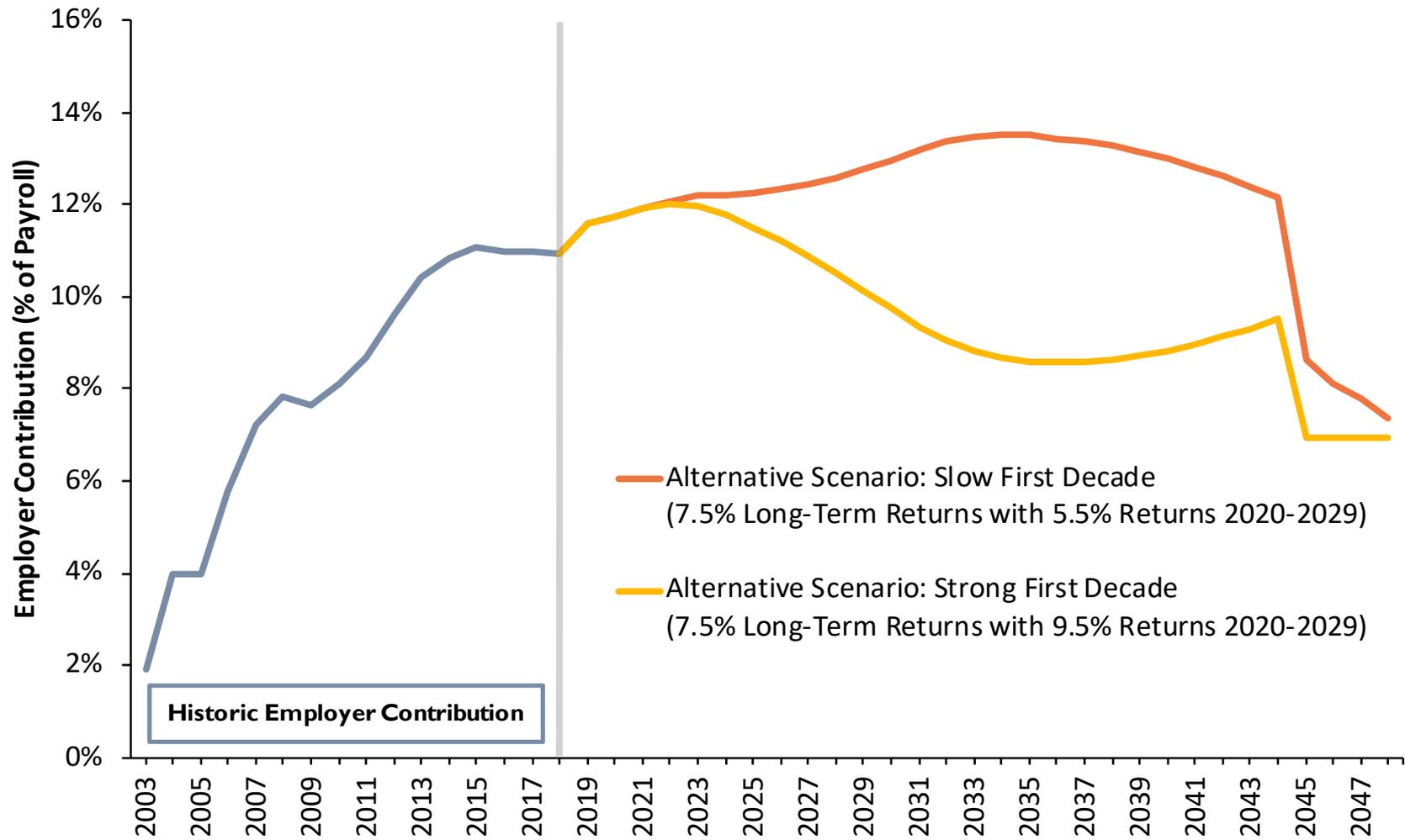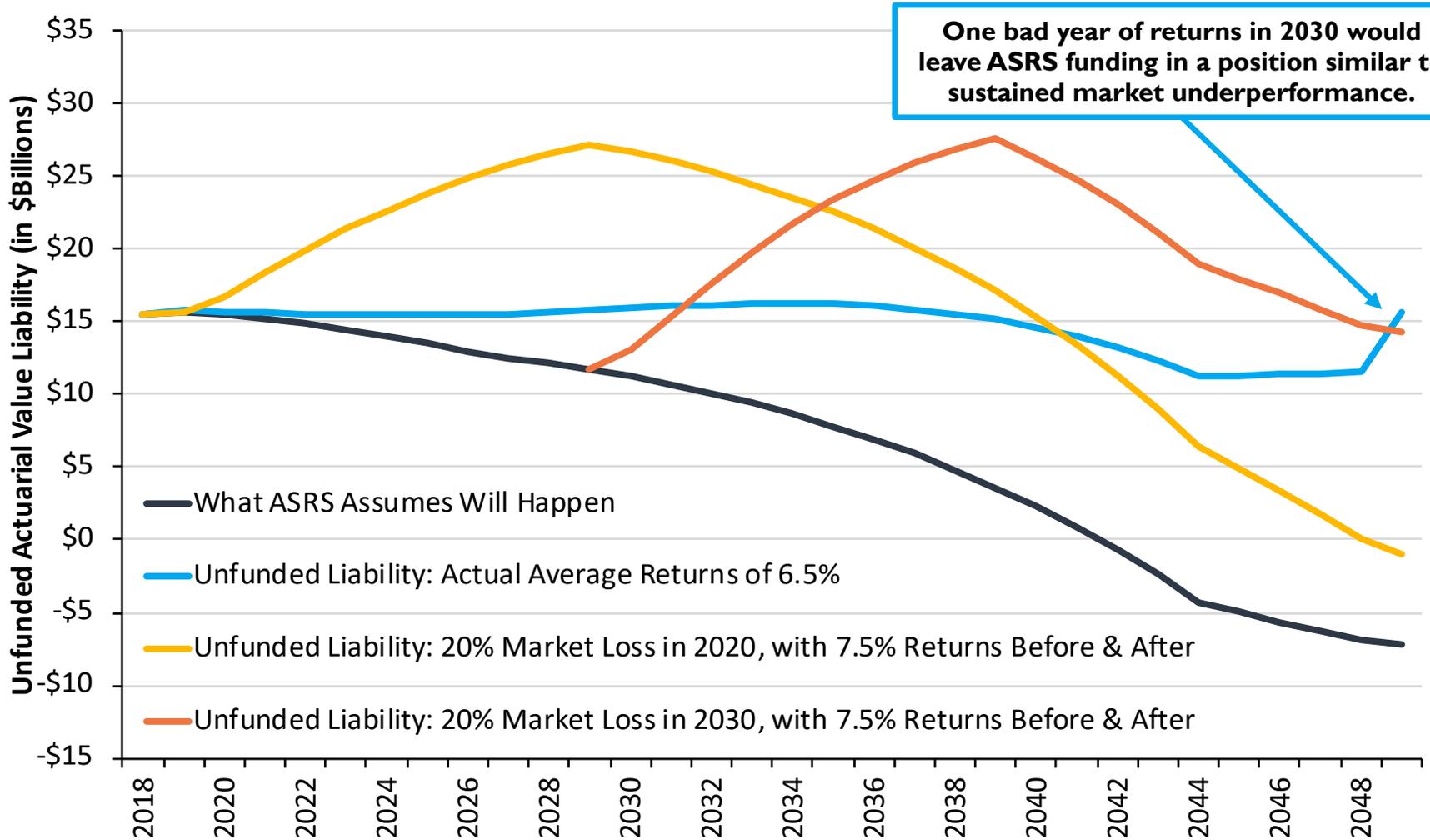
Source: Pension Integrity Project actuarial forecast of ASRS. Scenarios assume that the state continues to make annual payments in full.

30-year Employer Contribution Forecast
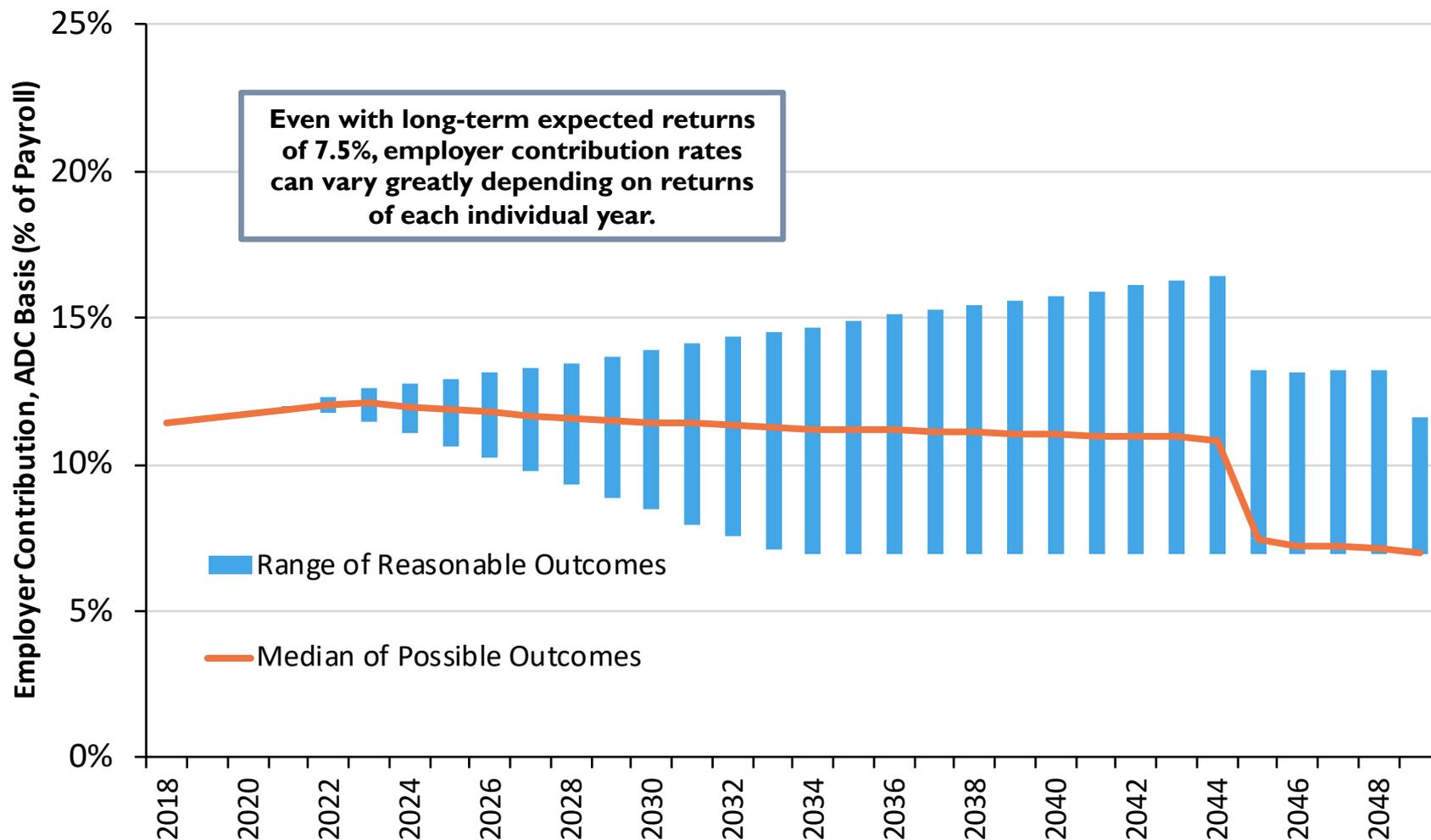
If ASRS Performs as Expected, Rates Can Still Vary

Based on Long-term Average Expected Returns of 7.5%

> **Even with long-term expected returns of 7.5%, employer contribution rates can vary greatly depending on returns of each individual year.**

Y-axis: Employer Contribution, ADC Basis (% of Payroll) — 0%, 5%, 10%, 15%, 20%, 25%

X-axis years: 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048

Legend:
- Range of Reasonable Outcomes
- Median of Possible Outcomes

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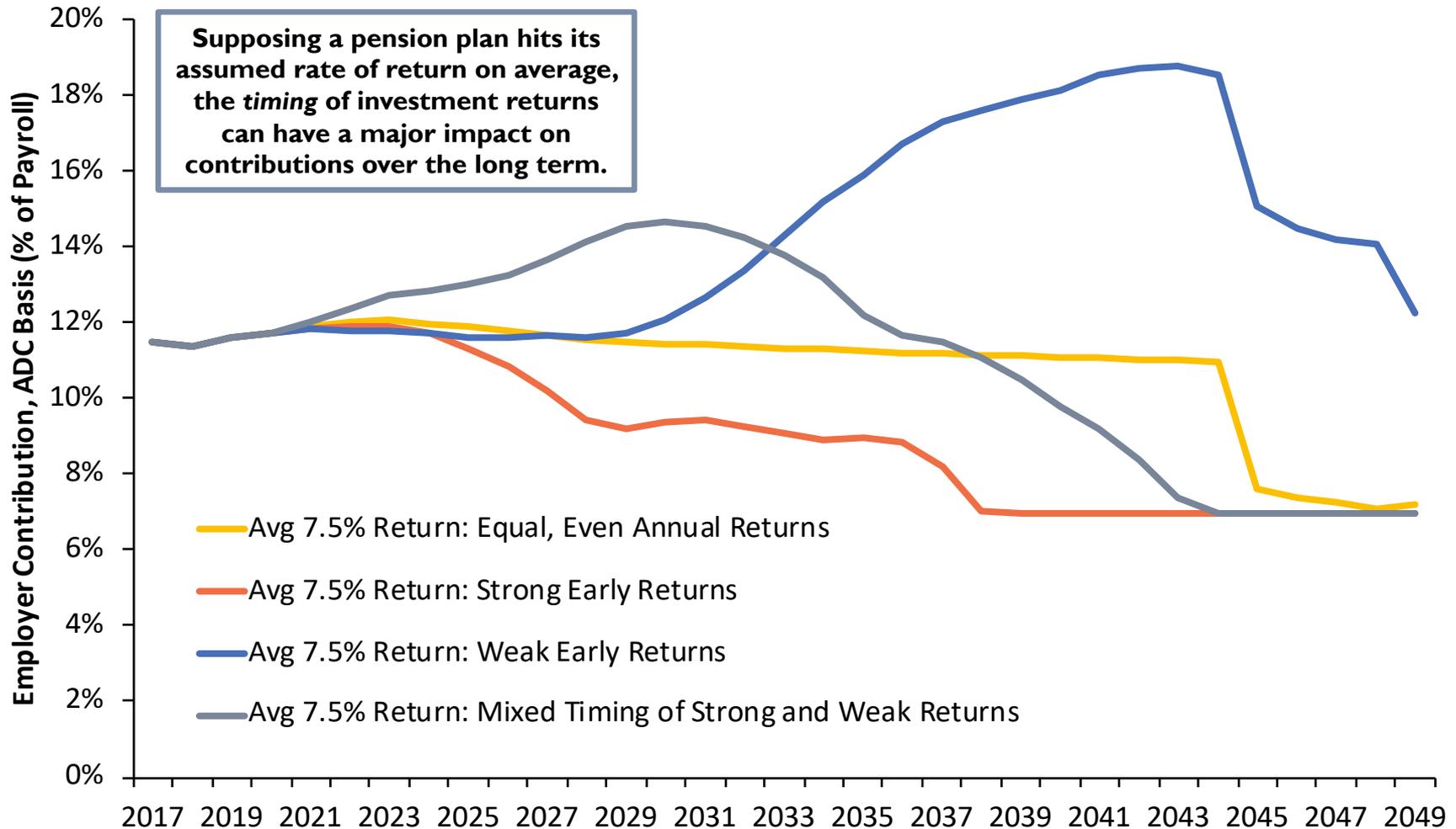Range of Reasonable Outcomes represents the 50% of possible outcomes closest to the median.

30-year Employer Contribution Forecast

All Paths to a 7.5% Average Return Are Not Equal

Long-Term Average Returns of 7.5%

Supposing a pension plan hits its assumed rate of return on average, the *timing* of investment returns can have a major impact on contributions over the long term.

Employer Contribution, ADC Basis (% of Payroll)

—— Avg 7.5% Return: Equal, Even Annual Returns

—— Avg 7.5% Return: Strong Early Returns

—— Avg 7.5% Return: Weak Early Returns

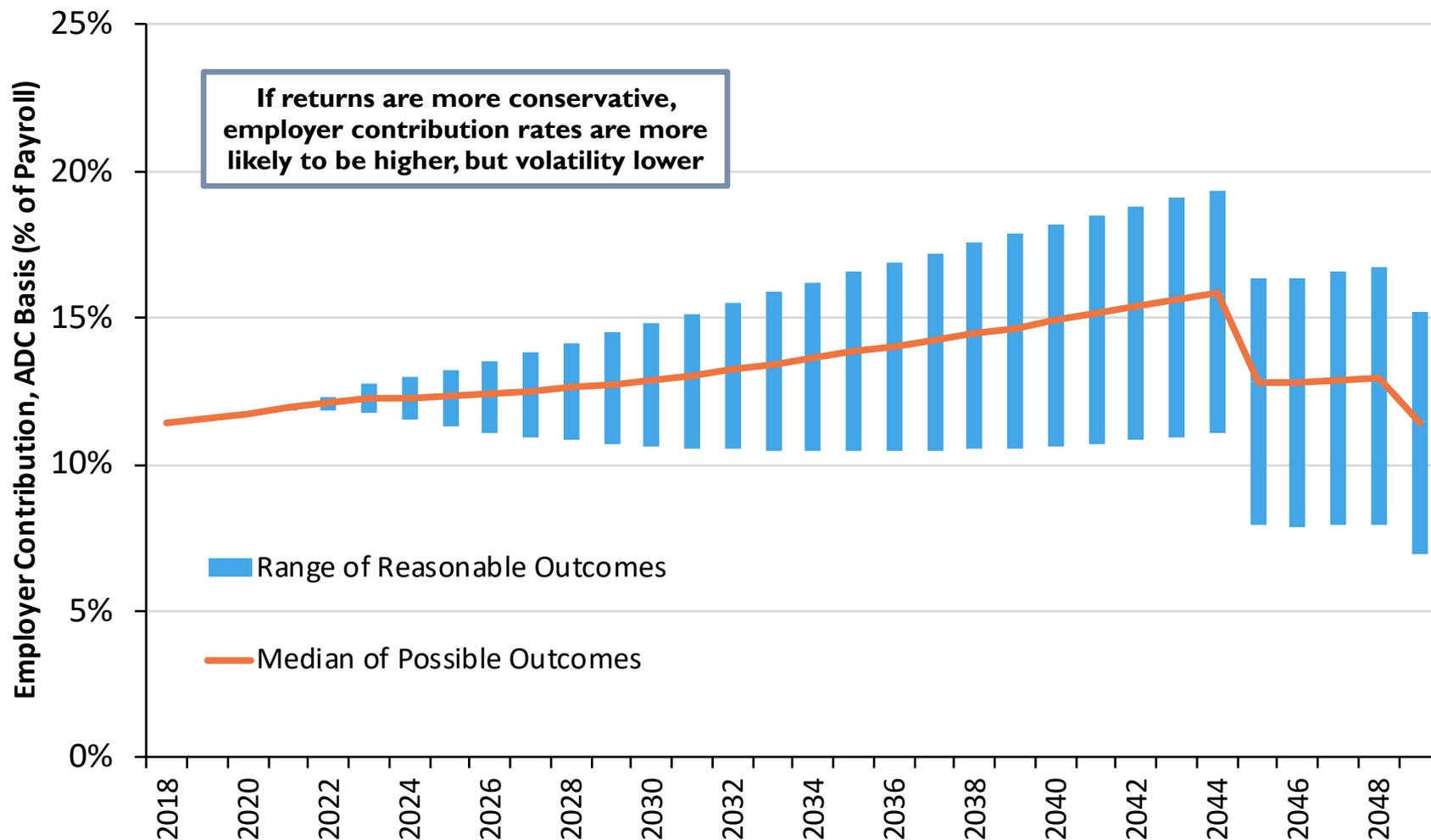—— Avg 7.5% Return: Mixed Timing of Strong and Weak Returns

Source: Pension Integrity Project actuarial forecast of ASRS plan. Strong early returns (TWRR = 7.5%, MWRR = 8.6%), Even, equal annual returns (Constant Return = 7.5%), Mixed timing of strong and weak returns (TWRR = 7.5%, MWRR = 7.5%), Weak early returns (TWRR = 7.5%, MWRR = 6.6%) Scenario assumes that ASRS pays the actuarially required rate each year. Years are plan's fiscal years.

30-year Employer Contribution Forecast
If ASRS Underperforms, Expect Higher Contribution Rates
Based on More Conservative Long-term Average Expected Returns

> **If returns are more conservative, employer contribution rates are more likely to be higher, but volatility lower**

Employer Contribution, ADC Basis (% of Payroll)

Legend:
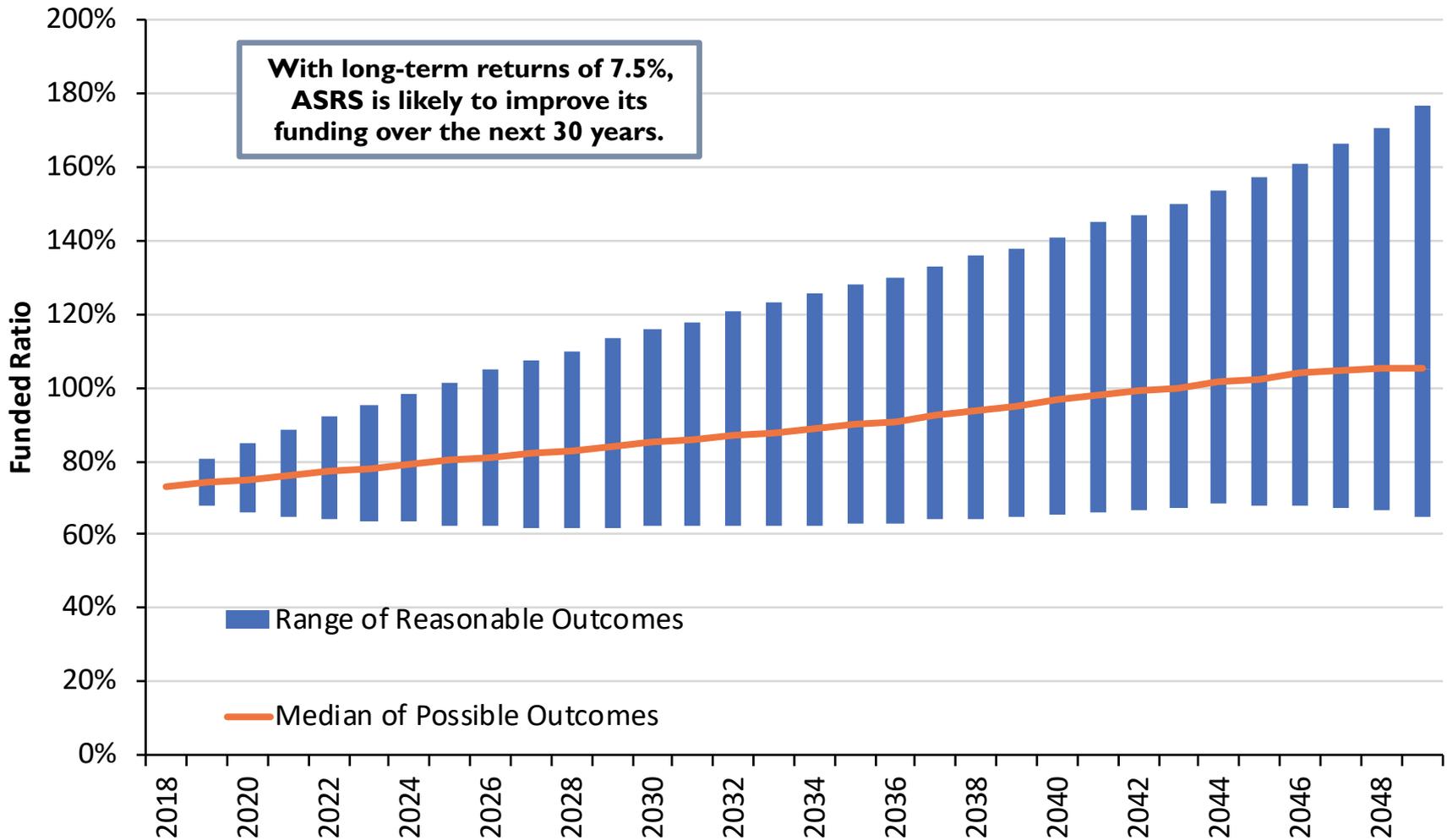- ▇ Range of Reasonable Outcomes
- ▬ Median of Possible Outcomes

Source: Pension Integrity Project actuarial forecast of ASRS plan using the return and risk assumptions of the Monte Carlo analysis.
Conservative returns are 5.72%, which are the result of combining the long-term capital market assumptions from four prominent financial firms (see slide 14)

30-year Funded Ratio Forecast

Funded Ratios are Assumed to Improve

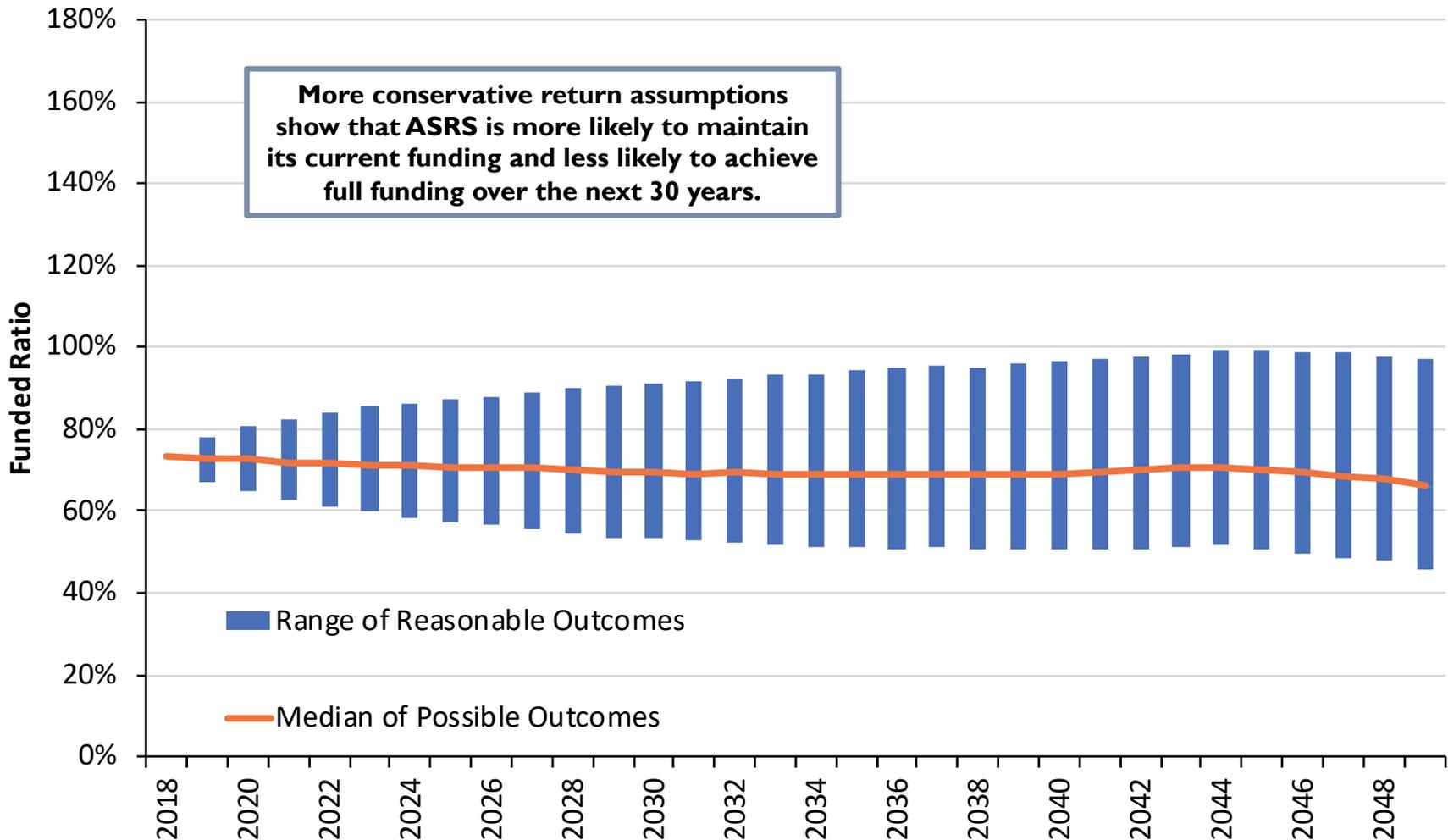Based on Long-term Average Returns of 7.5%

Source: Pension Integrity Project actuarial forecast of ASRS plan based on ASRS 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?

Based on More Conservative Long-term Average Returns

> More conservative return assumptions show that **ASRS** is more likely to maintain its current funding and less likely to achieve full funding over the next 30 years.

Range of Reasonable Outcomes

Median of Possible Outcomes

Source: Pension Integrity Project actuarial forecast of ASRS plan using the return and risk assumptions of the Monte Carlo analysis.
Conservative returns are 5.72%, which are the result of combining the long-term capital market assumptions from four prominent financial firms (see slide 14)

Sensitivity of Normal Cost Under Alternative Assumed Rates of Return

(Amounts to be Paid in 2019-20 Contribution Fiscal Year, % of projected payroll)

	Gross Normal Cost	Employer Normal Cost	Employee Normal Cost
7.5% Assumed Return (Baseline)	14.17%	7.09%	7.08%
7% Assumed Return	15.30%	7.65%	7.65%
6% Assumed Return	17.83%	8.92%	8.91%

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 2018 ASRS CAFR. Assumes the Normal Cost is shared equally among the employees and employer.

Source: Pension Integrity Project forecasting analysis based on ASRS actuarial valuation reports.

PROBLEM 2: ACTUARIAL ASSUMPTIONS & METHODS

- Methods for paying off unfunded liabilities have made the existing pension debt problems worse
- The combination of unmet actuarial assumptions and slow-paced changes to those assumptions is increasing the unfunded liability

Negative Amortization:
Understanding the Current Funding Policy

- Currently, government employers in Arizona make pension contributions based on the "level percent of payroll" actuarial cost method. However, contributions made have not always kept up with the interest accruing on the unfunded liabilities.

- ASRS uses 30-year schedules to amortize its unfunded liabilities, and this frequently leads to amortization payments less than accrued interest.

- In <u>9 of the past 15 years</u>, employer contributions have been less than the interest accrued on the pension debt (i.e. negative amortization).

  - Thus, despite receiving 100% ADEC contributions, the plan's unfunded liability is growing in absolute terms.

- The Society of Actuaries recommends funding periods of 15 to 20 years. Longer periods result in larger long-term costs.

Challenges from Aggressive Actuarial Assumptions
Interest on the Debt v. Accrued Liability Payments
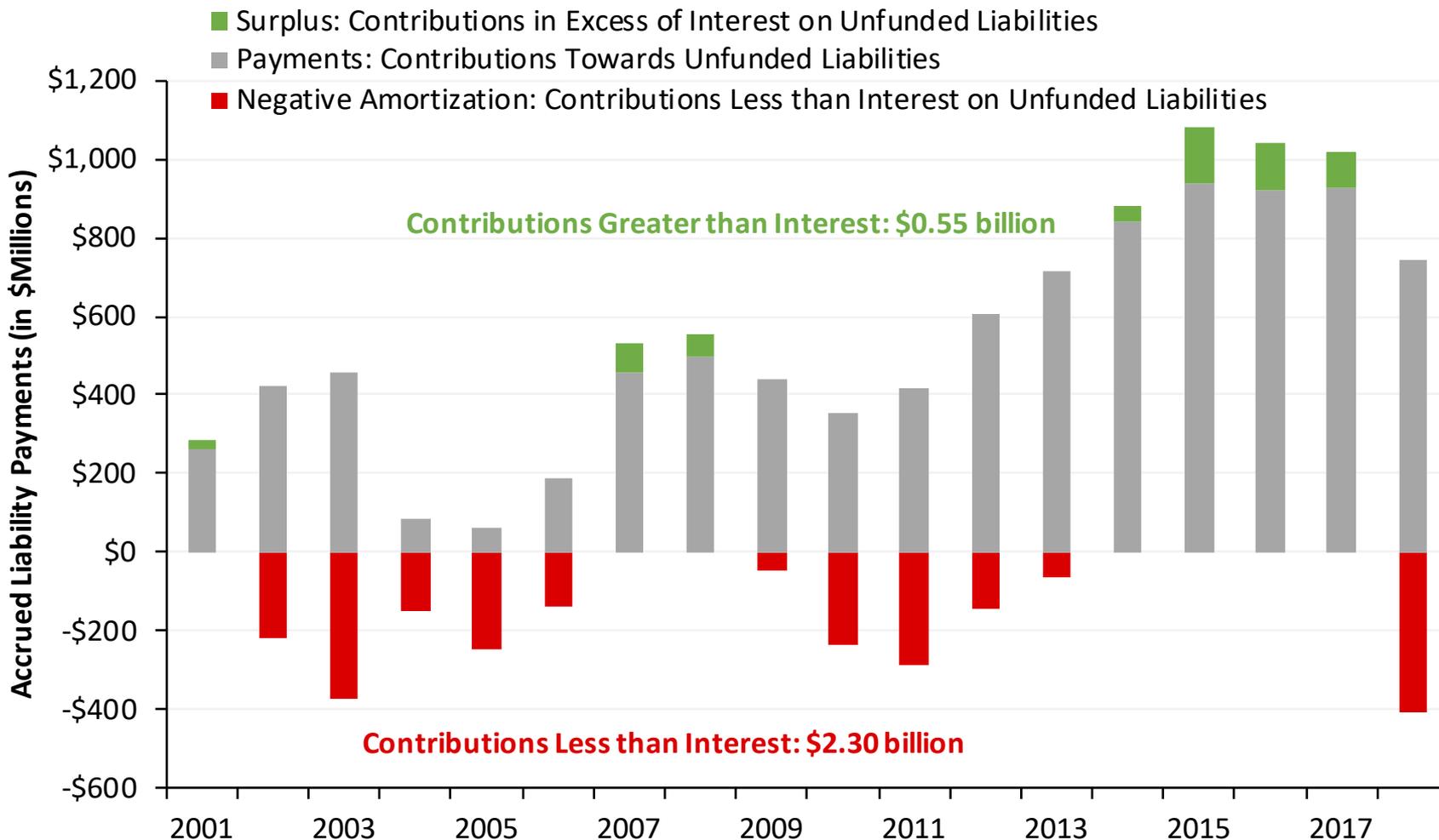
Source: ASRS Actuarial Valuation Reports and CAFRs. Figures are rounded.

Challenges from Aggressive Actuarial Assumptions
Actual Experience Different from Actuarial Assumptions

(-) New Member Rate Assumptions

- ASRS new hire and rehire rates have *differed from expectations* resulting in a $543 million growth in unfunded liabilities from 2009-2014.

(-) Withdrawal Rate Assumptions

- ASRS assumptions on the rates of employer withdrawal have *differed from expectations* resulting in a $21 million growth in unfunded liabilities from 2009-2014.

(-) Disability Rate Benefits

- ASRS disability claims have been more than expected, resulting in a $14 million growth in unfunded liabilities from 2009-2014.

(-) Active Mortality Rate Benefits

- ASRS survivor claims for active members have been more than expected, resulting in a $13 million growth in unfunded liabilities from 2009-2014.

Challenges from Aggressive Actuarial Assumptions
Actual Experience Different from Actuarial Assumptions

(-) Age and Service Retirement

- ASRS members have been retiring at younger than expected ages, resulting in a larger liability than expected and $7 million in growth in unfunded liabilities from 2009 to 2014.

(-) Other Missed Assumptions

- Other ASRS assumptions (not specified in financial documents) have *differed from expectations* resulting in a $285 million growth in unfunded liabilities from 2009-2014.

(+) Inactive Mortality Rate Benefits

- ASRS survivor claims for inactive members have been less than expected, resulting in a $154 million reduction in unfunded liabilities from 2009-2014

Challenges from Aggressive Actuarial Assumptions
Actual Experience Different from Actuarial Assumptions

(+) Overestimated Payroll Growth

- ASRS employers have not raised salaries as fast as expected, resulting in lower payrolls and thus lower earned pension benefits. This has meant a $2 billion reduction in unfunded liabilities from 2009-2014.

(-) Overestimated Payroll Growth

- However, overestimating payroll growth is creating a long-term problem for ASRS 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.

Challenges from Aggressive Actuarial Assumptions
Actual Change in Payroll v. Assumption
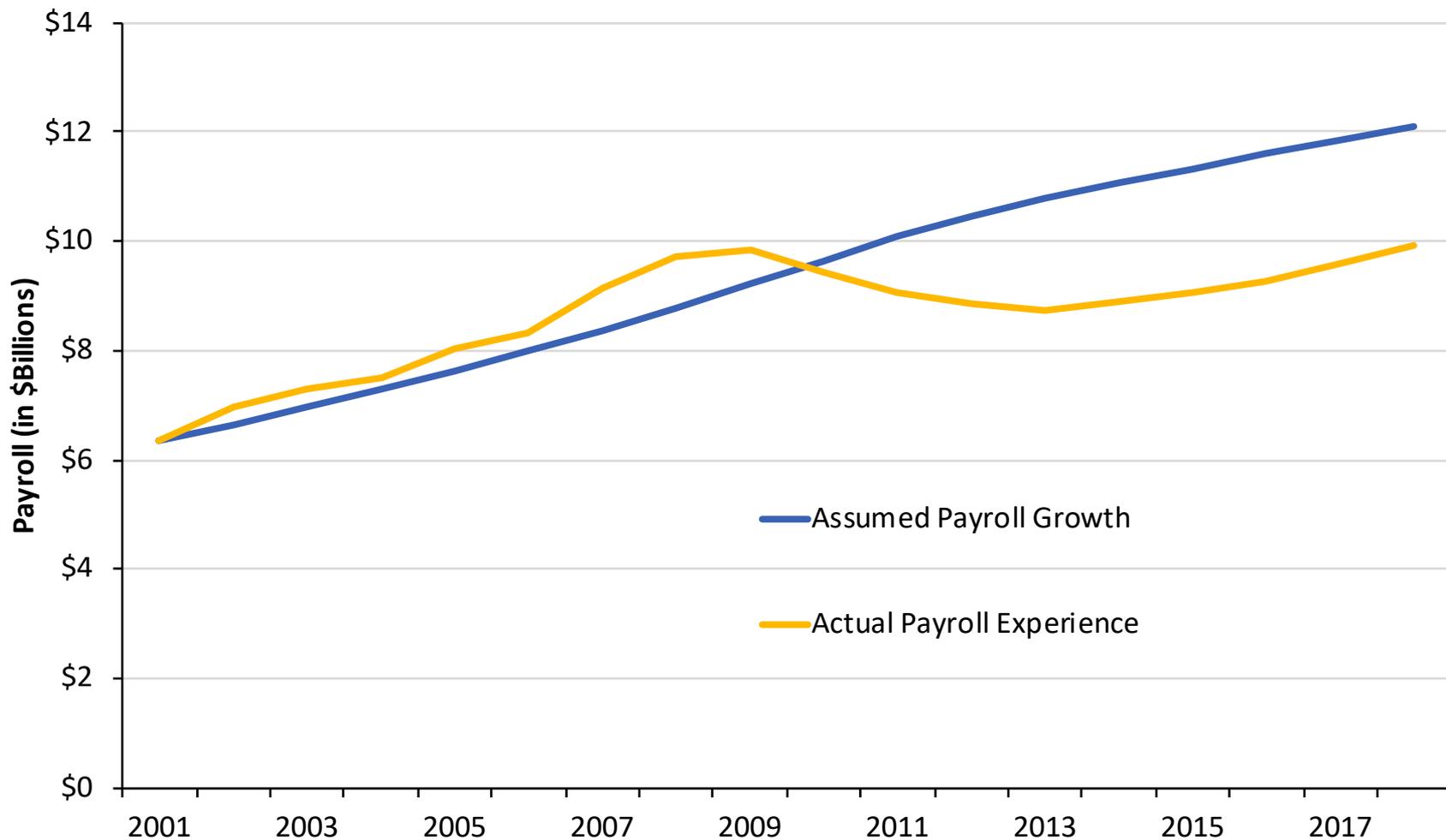
Source: Pension Integrity Project analysis of ASRS actuarial valuation reports and CAFRS.

Challenges from Aggressive Actuarial Assumptions

Assumption & Method Changes

- ## Inflation Assumption
  - Lowered from 4.25% to 3.75% in 2009
  - Lowered from 3.75% to 3.25% in 2011
  - Lowered from 3.25% to 3.00% in 2013
  - Lowered from 3.00% to 2.30% in 2017

- ## Payroll Growth Assumption
  - Lowered from 4.50% to 4.00% in 2011
  - Lowered from 4.00% to 3.00% in 2013
  - Lowered from 3.00% to 2.50% in 2017

PROBLEM 3: DISCOUNT RATE AND UNDERVALUING DEBT

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

ASRS 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 ASRS — 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 ASRS 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.

ASRS 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.

3. **It is reasonable to conclude that there is almost no risk that Arizona would not pay out all retirement benefits promised to members and retirees.**
   - Arizona Constitution—Article 29

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.

ASRS Pension Debt Sensitivity
FYE 2018 Net Pension Liability Under Varying Discount Rates

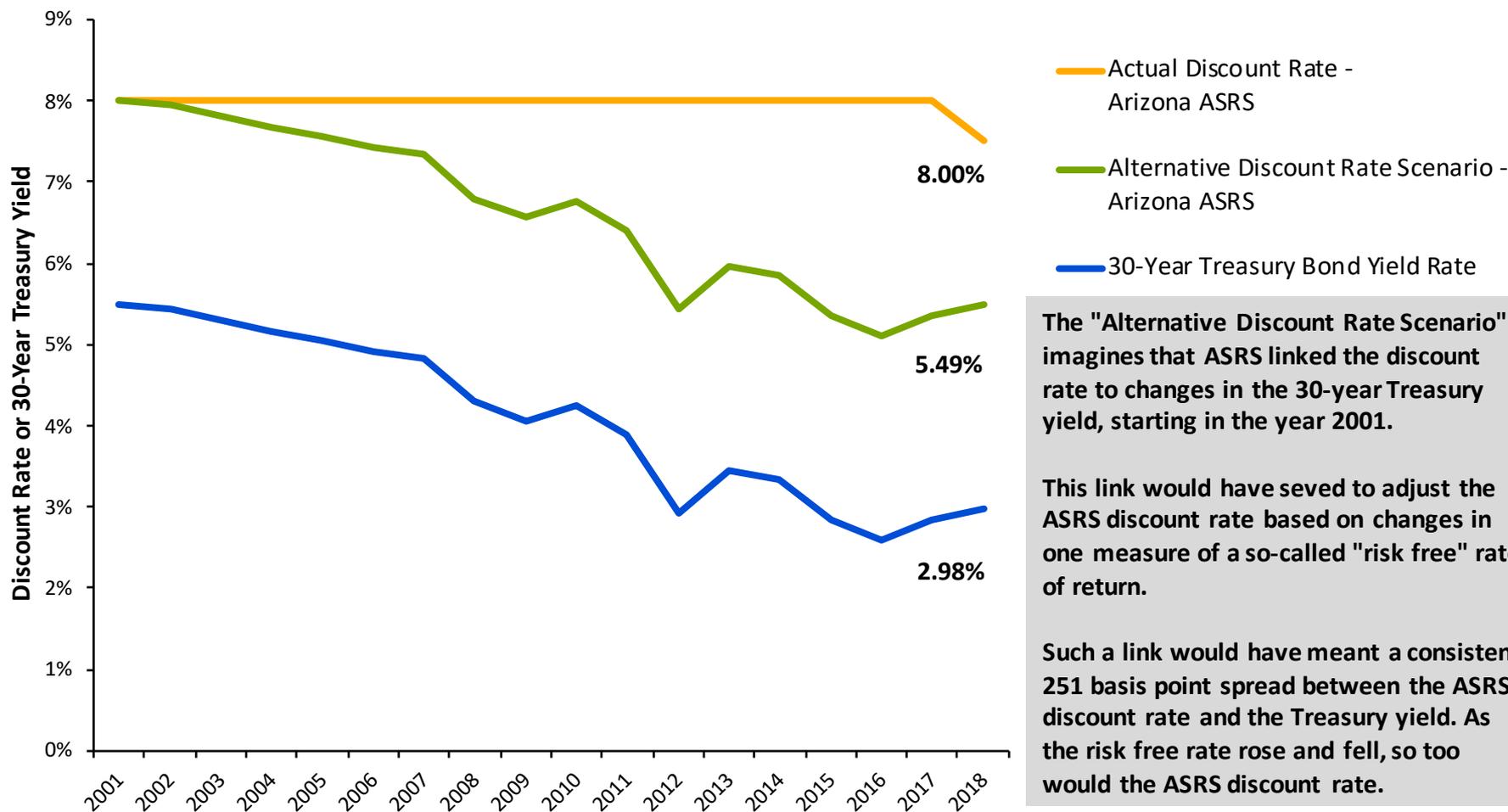|	Funded Ratio (Market Value)	Unfunded Liability	Total Pension Liability
7.5% Discount Rate (Current Baseline)	73.4%	$13.9 billion	$52.4 billion
7% Discount Rate	70.5%	$16.1 billion	$54.6 billion
6% Discount Rate	64.6%	$21.1 billion	$59.6 billion
5% Discount Rate	58.7%	$27.1 billion	$65.6 billion

Source: Pension Integrity Project analysis of ASRS GASB Statements.
Market values shown are fiduciary net position, and unfunded liabilities shown are net pension liabilities. Figures are rounded.

Change in the Risk Free Rate Compared to ASRS Discount Rate (1990-2018)
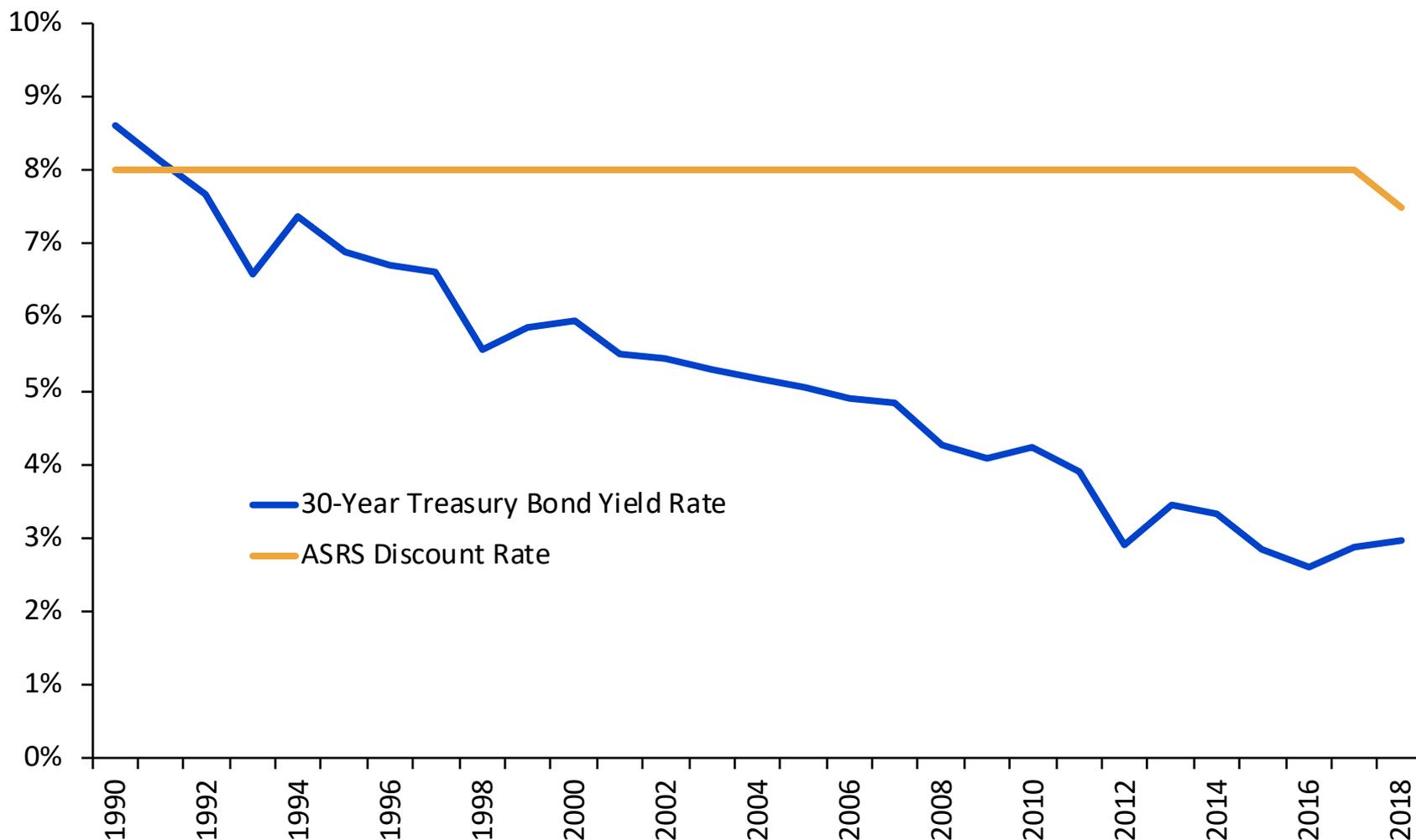
Source: Federal Reserve average annual 30-year treasury constant maturity rate

Comparing Change in Discount Rate to the Change in the Risk Free Rate, 2001-2018

Actual Discount Rate - Arizona ASRS

Alternative Discount Rate Scenario - Arizona ASRS

30-Year Treasury Bond Yield Rate

8.00%

5.49%

2.98%

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

This link would have seved to adjust the ASRS 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 251 basis point spread between the ASRS discount rate and the Treasury yield. As the risk free rate rose and fell, so too would the ASRS discount rate.

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

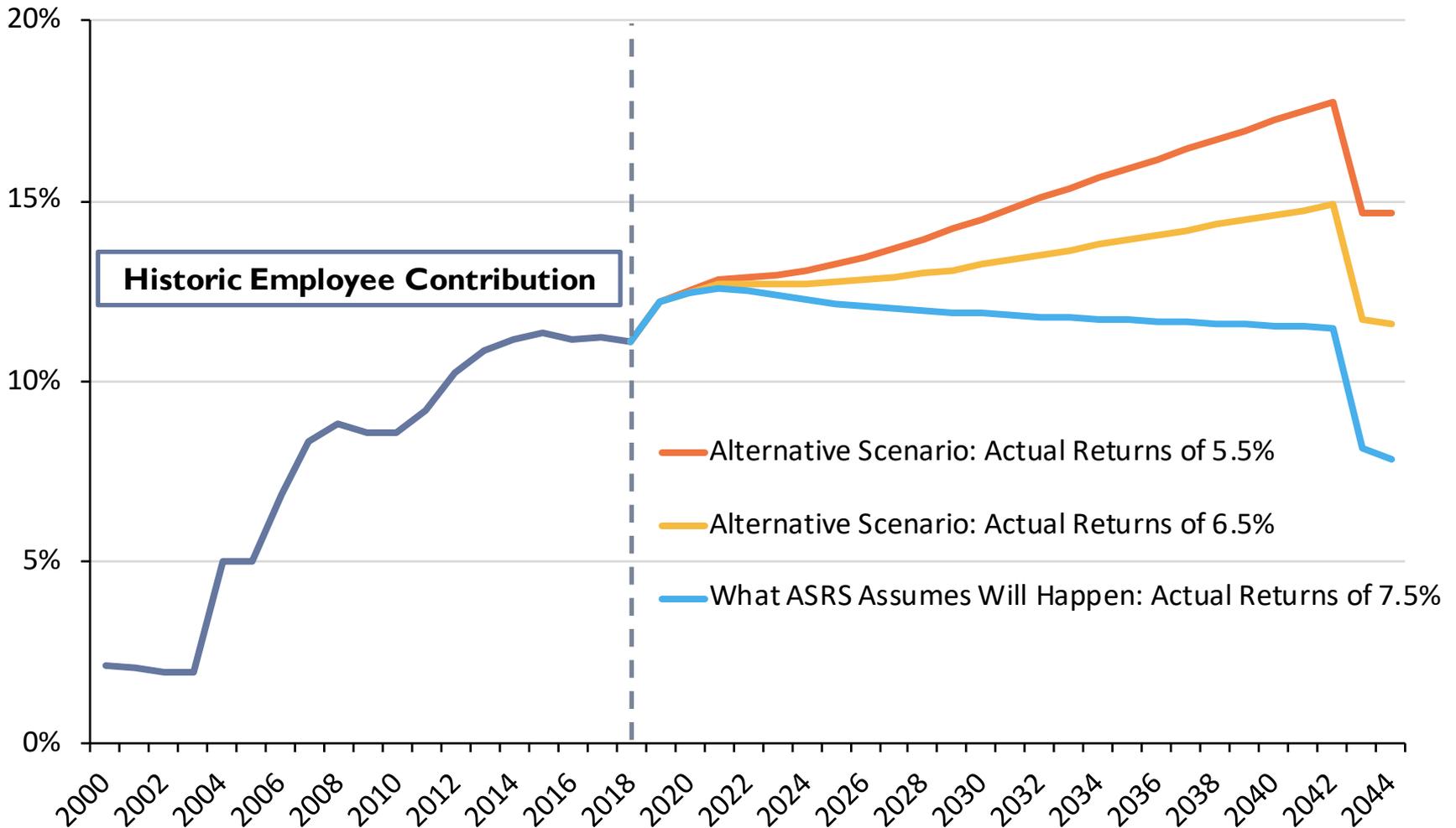# PROBLEM 4: MISSED ASSUMPTIONS & CURRENT FUNDING POLICY ARE DRIVING EMPLOYEE CONTIBUTION RATES HIGHER

- Rising costs for employees are causing strains on the pocketbooks of public workers

Historic and Future Employee Contributions
Will Costs for Employees Continue to Rise?

Source: Pension Integrity Project actuarial forecast of ASRS. Scenario assumes that the state continues to pay 100% of the actuarially determined contribution each year, based on a 30-year amortization period policy.

Historic and Future Employee Contributions
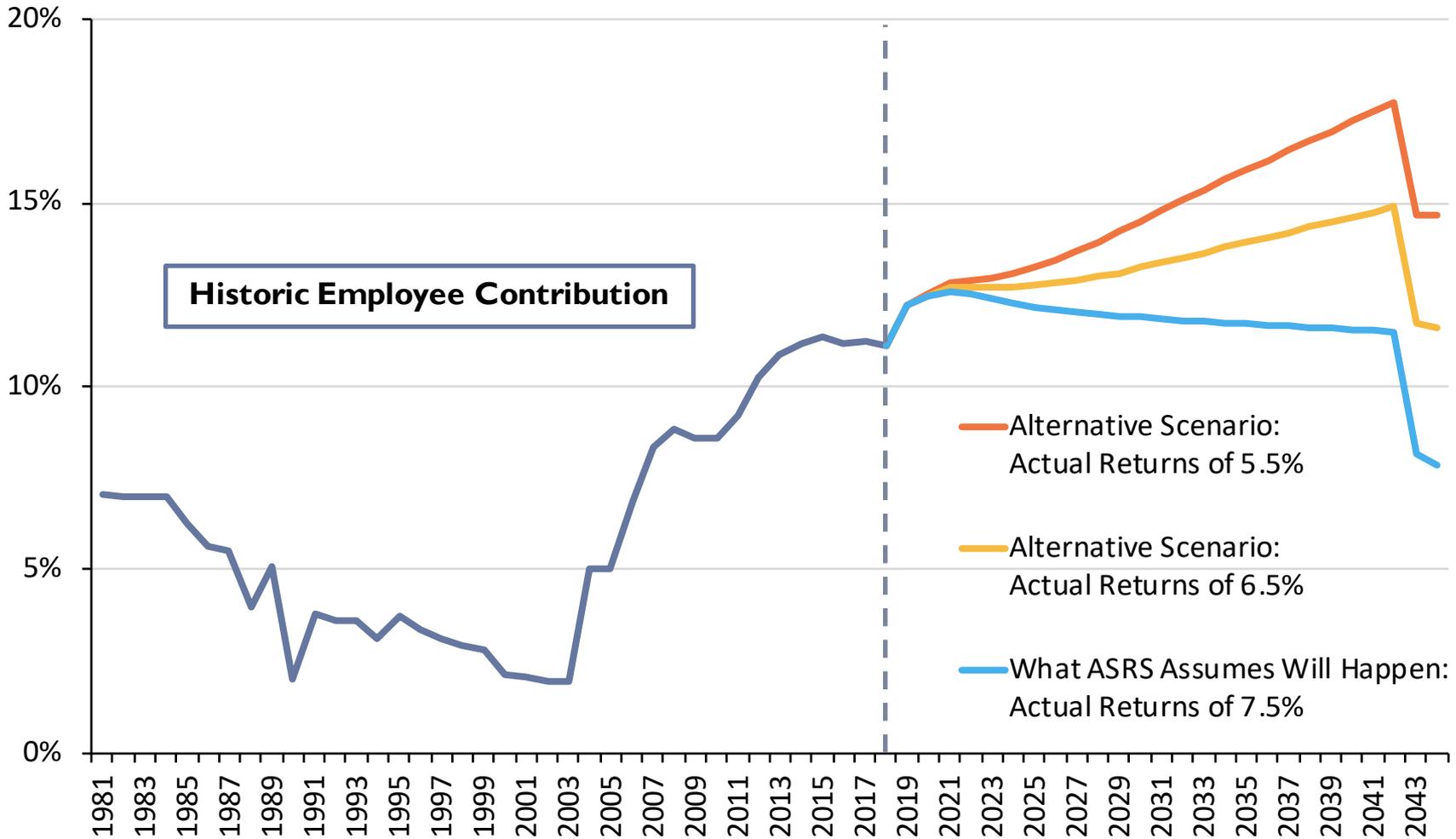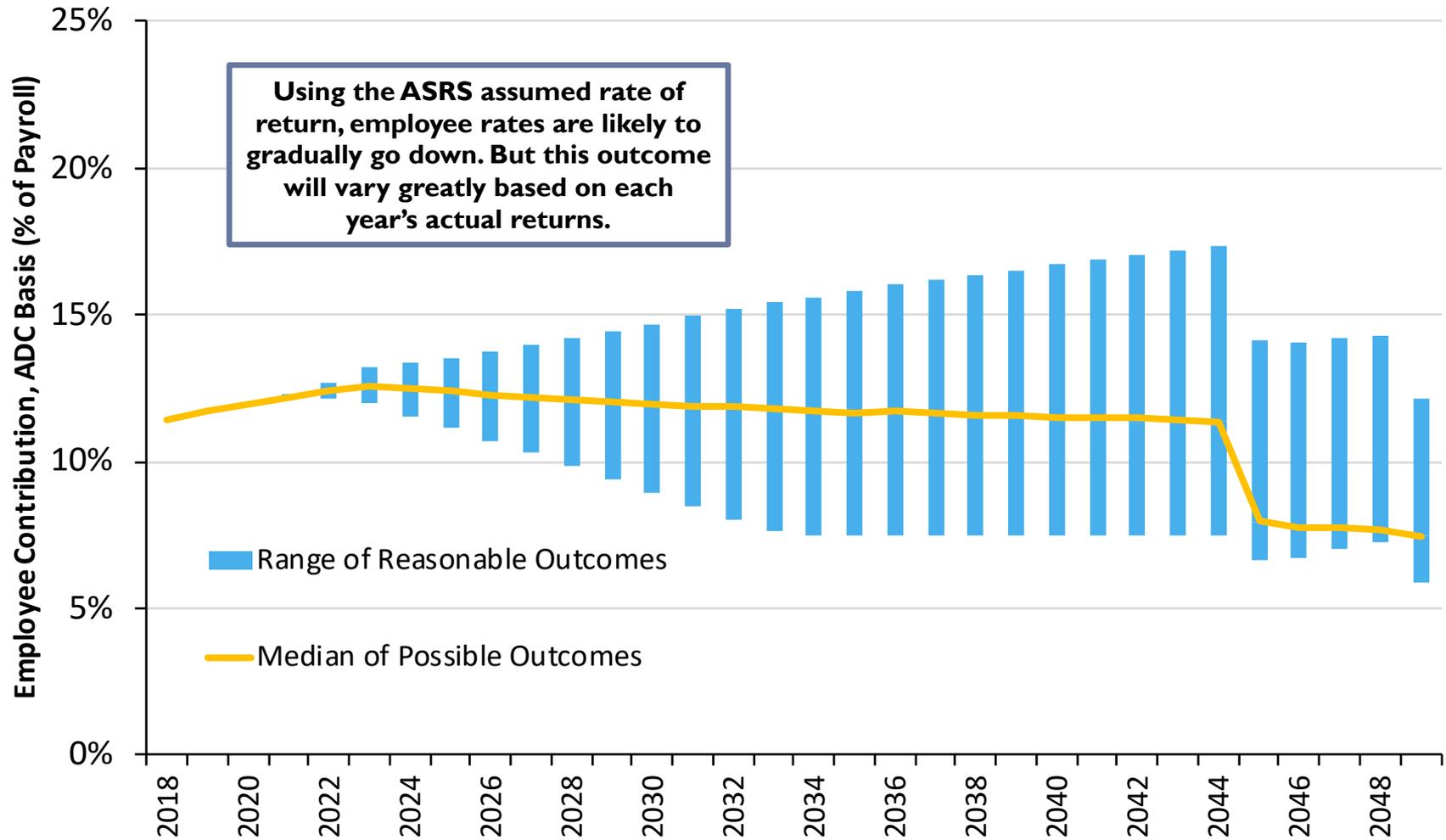# Will Costs for Employees Continue to Rise?

Source: Pension Integrity Project actuarial forecast of ASRS. Scenario assumes that the state continues to pay 100% of the actuarially determined contribution each year, based on a 30-year amortization period policy.

30-year Employee Contribution Forecast
If ASRS Performs as Expected, Employee Rates Can Still Vary
Based on Long-term Average Returns of 7.5%

Using the ASRS assumed rate of return, employee rates are likely to gradually go down. But this outcome will vary greatly based on each year's actual returns.

Range of Reasonable Outcomes

Median of Possible Outcomes

Y-axis: Employee Contribution, ADC Basis (% of Payroll)

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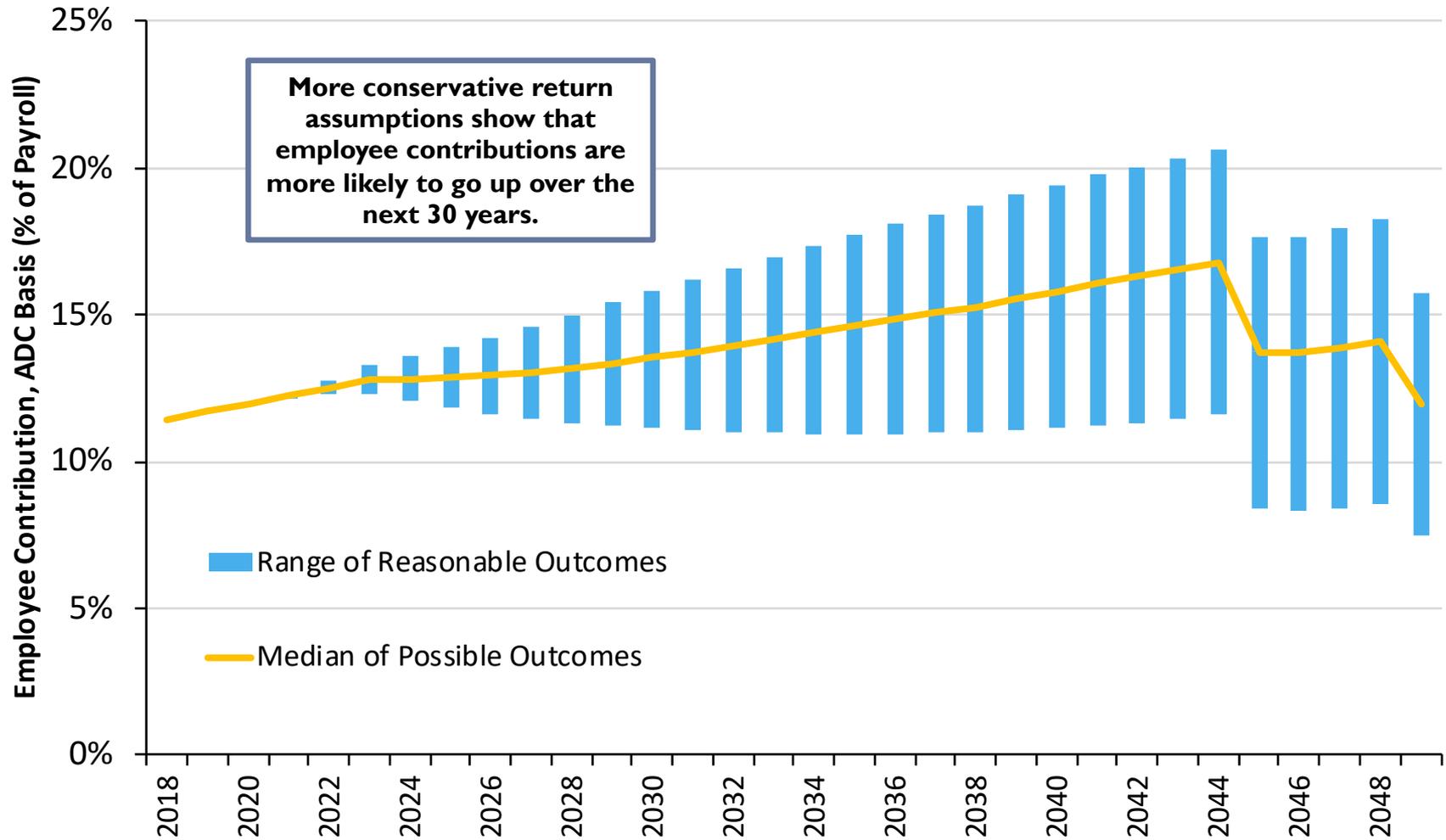Range of Reasonable Outcomes represents the 50% of possible outcomes closest to the median.

30-year Employee Contribution Forecast
If ASRS Underperforms, Expect Employee Rates to Rise
Based on More Conservative Long-term Average Returns

Source: Pension Integrity Project actuarial forecast of ASRS plan using the return and risk assumptions of the Monte Carlo analysis.
Conservative returns are 5.72%, which are the result of combining the long-term capital market assumptions from four prominent financial firms (see slide 14)

ASRS Funding Policy

- ASRS uses a 30-year level dollar amortization method
  - Amortization describes the method in which a debt is paid off over time
  - "Level dollar" amortization means the 30-year amortization is split into 30 annual payments equal in dollar amount
- Each year, actuaries calculate the contribution amount necessary to:
  - Prefund benefits for existing employees
  - Amortize any new unfunded liabilities accrued over the past year on a level dollar basis over the next 30 years
- ASRS splits this amount evenly between employees and employers

ASRS Funding Policy

- Using a 50/50 funding policy has the benefit of maintaining equal responsibility between the employee and the employer.
    - Rising costs will affect both parties equally and not result in one party having to bear a larger financial burden for the benefit
    - 2016 Arizona PSPRS reform embraces 50/50 cost sharing policy for all new sworn law enforcement and firefighters statewide

- Missed assumptions and underperforming investments will result in more variance of workers' annual contributions under a 50/50 cost sharing policy.
    - This requires policymakers and pension board trustees to establish and maintain sound actuarial assumptions and pension funding policy to avoid rapidly rising costs to employees, which ASRS members are currently experiencing
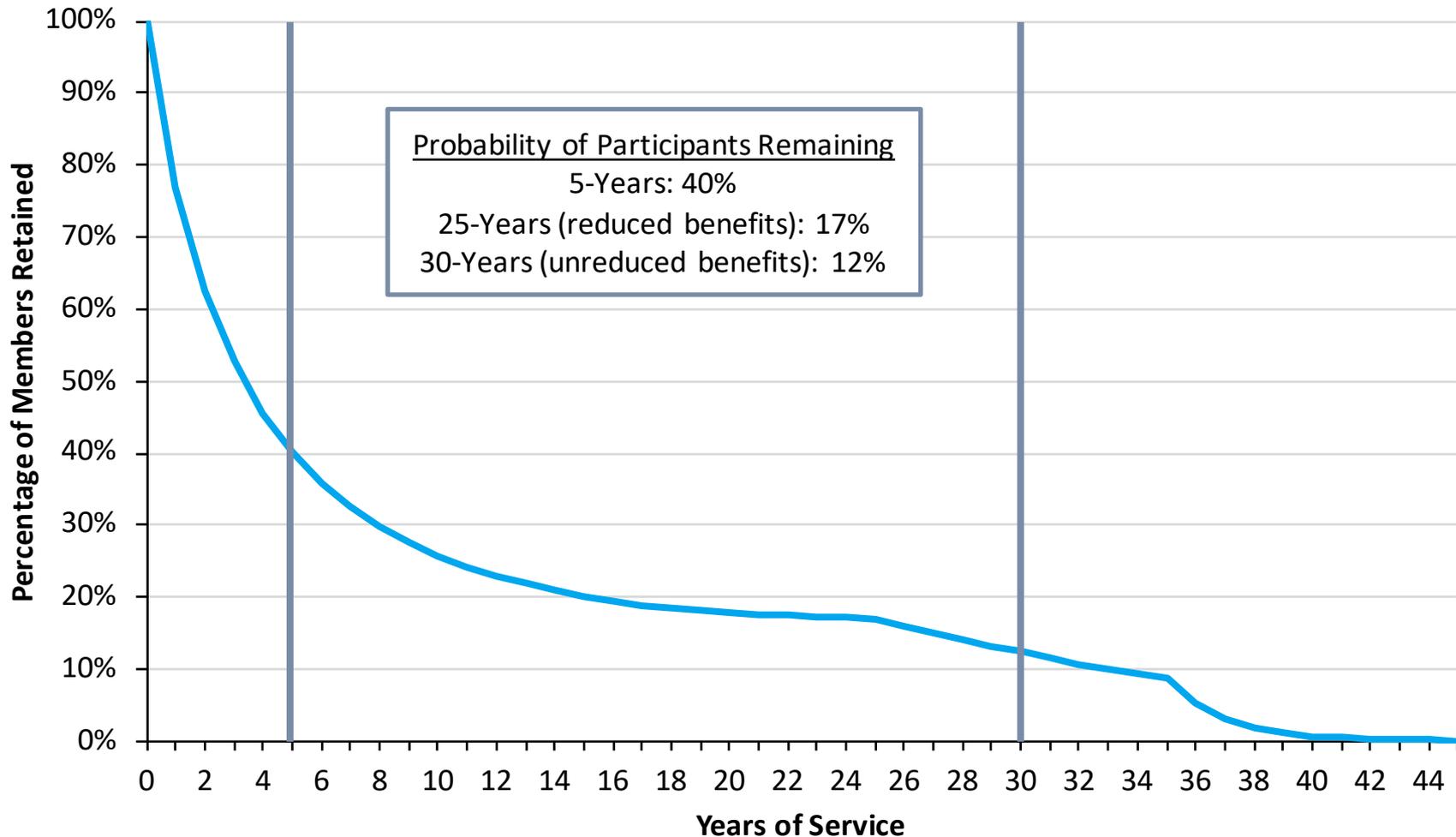
PROBLEM 5:
THE EXISTING BENEFIT DESIGN DOES NOT WORK FOR EVERYONE

- More than 80% of ASRS members do not work long enough to earn a full pension
- The turnover rate for Arizona public workers suggests that the current retirement benefit design is not effective at encouraging retention in the near-term, and may be pushing out workers at the end of their careers

Probability of Members Remaining in ASRS

Probability of Participants Remaining
5-Years: 40%
25-Years (reduced benefits): 17%
30-Years (unreduced benefits): 12%

Source: Pension Integrity Project analysis of ASRS actuarial reports and CAFRs. Analysis assumes worker is hired after 2011 at age 25.

Does ASRS Retirement Plan Work for Today's Employees?

- **60%** of new workers leave before 5 years of service

- **74%** of new workers leave before 10 years of service

- Just **17%** of ASRS workers remain in the system from start to finish to receive **partial** benefits at age 50

- Under **12%** of ASRS workers remain in the system from start to finish to receive **full** benefits at ages 55 to 65 (depending on their age at hiring)

FRAMEWORK FOR SOLUTIONS & REFORM

Objectives of Good Reform

- **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

Pension Reform Strategies

- **<u>Problem 1: Assumed Rate of Return</u>**
  - Reform Area 1: Reduce investment risk and align assumed return with a more realistic probability of success

- **<u>Problem 2: Actuarial Assumptions and Methods</u>**
  - Reform Area 2: Review and adjust assumptions related to withdrawal rates, new hire/headcount growth, payroll growth, retirement rates, inflation, and mortality

- **<u>Problem 3: Discount Rate and Undervaluing Debt</u>**
  - Reform Area 3: Consider changing discount rate method to better price the estimated value of promised benefits

- **<u>Problem 4: Benefit Design</u>**
  - Reform Area 4.1: Consider whether adjustments to the current system—including the employee contribution rate design—could reduce costs and risks for taxpayers and employees alike while ensuring retirement security
  - Reform Area 4.2: Consider whether the choice of a new benefit system design(s) could work for more ASRS members and reduce future risks

Questions?

Pension Integrity Project at Reason Foundation

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APPENDIX 1:
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

Source: Pension Integrity Project analysis of Michigan Public School Employees Retirement System, SB 401 (2017) and HB 5355 (2018)

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

Source: Pension Integrity Project analysis of Colorado PERA and SB 200 (2018)

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

Source: Pension Integrity Project analysis of Arizona Corrections Officer Retirement System and SB 1442

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

Source: Pension Integrity Project analysis of Pennsylvania Public School Employees Retirement System and Pennsylvania Public Employees Retirement System and SB 1 / Act 5 of 2017

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

Source: Pension Integrity Project analysis of Utah Retirement System, SB 63 and SB 43

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 Local Gov Employees & Higher Education (2018)
  - *Default to DC*: Michigan Teachers (2017), Florida State/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)