



ANALYSIS OF ARIZONA CORP PENSION SYSTEM

Prepared by:

Reason Foundation

Pension Integrity Project

April 17, 2017



CORP's Problem: Degrading Solvency

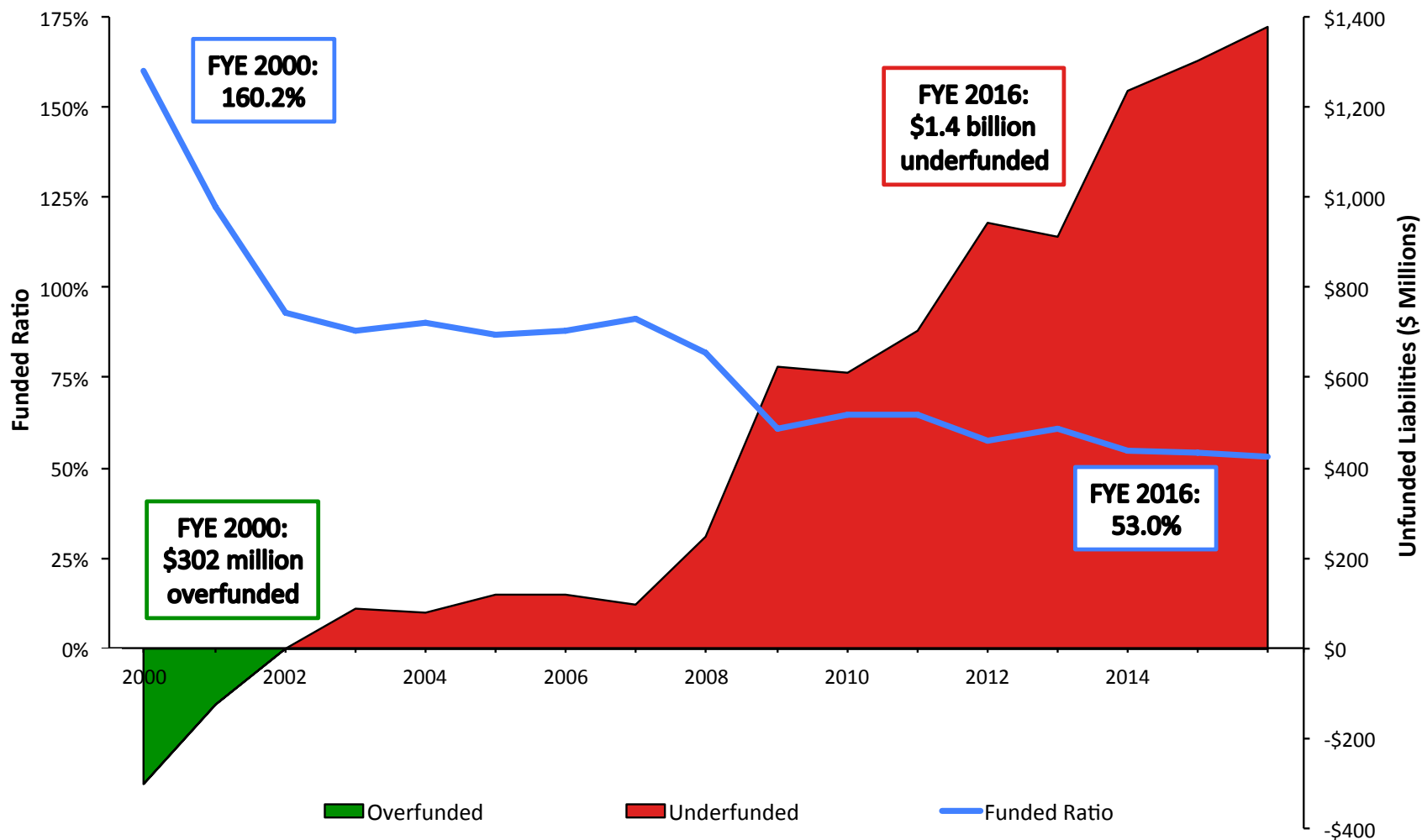
1. Since 2000, CORP's **net fiscal position** has declined approximately \$1.7 billion
 - Peak (1999-2000): Funded Ratio 160%, overfunded surplus \$302 million
 - Today (2015-2016): Funded Ratio 53%, unfunded liability \$1.4 billion
2. Over the last 15 years, the total employer contribution rate has grown from 3.2% to 18.2%
 - This increase is almost entirely due to the increase in unfunded liability amortization payments
3. This increase in employer contribution rates due to skyrocketing debt is only going to keep growing

Reported figures are on a market value of asset basis, using the plan's reported values.



CORP's Degrading Solvency

Fiscal Years Ending 2000 to 2016, Market Value of Assets

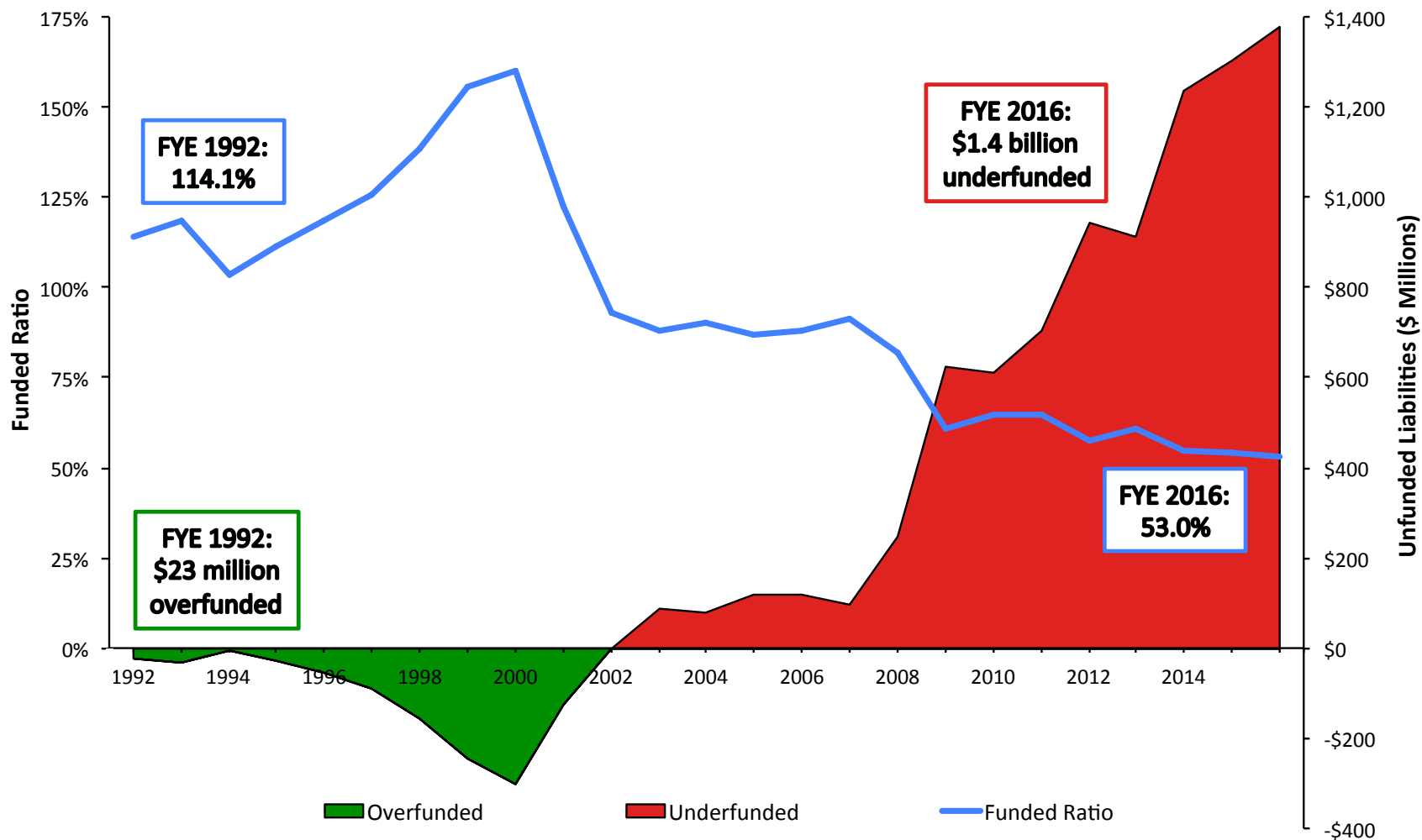


Source: CORP Actuarial Valuation Reports.



CORP's Degrading Solvency

Fiscal Years Ending 1992 to 2016, Market Value of Assets

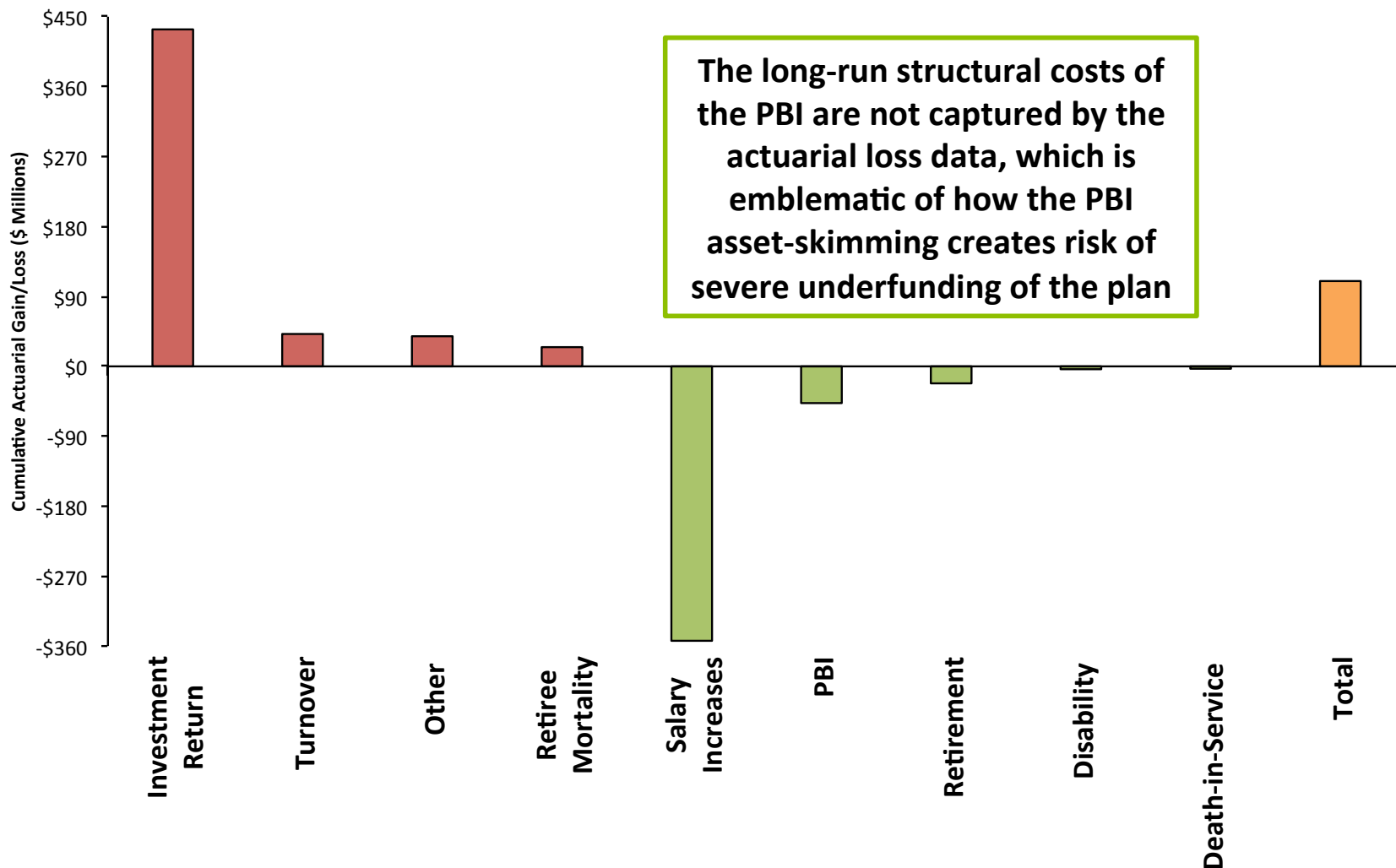


Source: CORP Actuarial Valuation Reports.



What Has Caused the Pension Debt?

Reported Composition of Actuarial Gain/Loss, 2009-2016





Biggest Current Challenges for CORP

1. The Permanent Benefit Increase (PBI) design has undermined the solvency of the plan by skimming asset returns in good years
2. The Assumed Rate of Return for CORP is exposing taxpayers to a range of significant risks
 - Investment returns have underperformed in recent years
 - The assumed return does not reflect the “new normal” realities in investment returns, exposing taxpayers to significant risks
 - The low assumed rate of return means the “normal cost” for benefits is likely being significantly underpriced
3. The High Turnover Rate suggests the current benefit provided does not match the demographics of members

PROBLEM 1: PERMANENT BENEFIT INCREASE (PBI)

The PBI reduces solvency by skimming off the top of returns in large, positive asset performance years



Solvency Challenge of the PBI

1. Permanent Benefit Increases (PBI) have undermined plan's solvency by skimming assets
 - For retirees before July 1, 2011, **50%** of “excess” returns over 9% diverted to separate PBI fund (known as the CORP Reserve for Future Benefit Increases)
 - For retirees after August 1, 2011, returns need to exceed 10.5% and no PBI unless funded ratio >60%
 - Diverted funds cannot be used to reduce unfunded liabilities,
 - Plan assets grow slower with part of the funds not allowed to earn interest over time
2. PBI benefit has historically not been pre-funded like a traditional pension COLA

PROBLEM 2: ASSUMED RATE OF RETURN

CORP investment returns have consistently underperformed



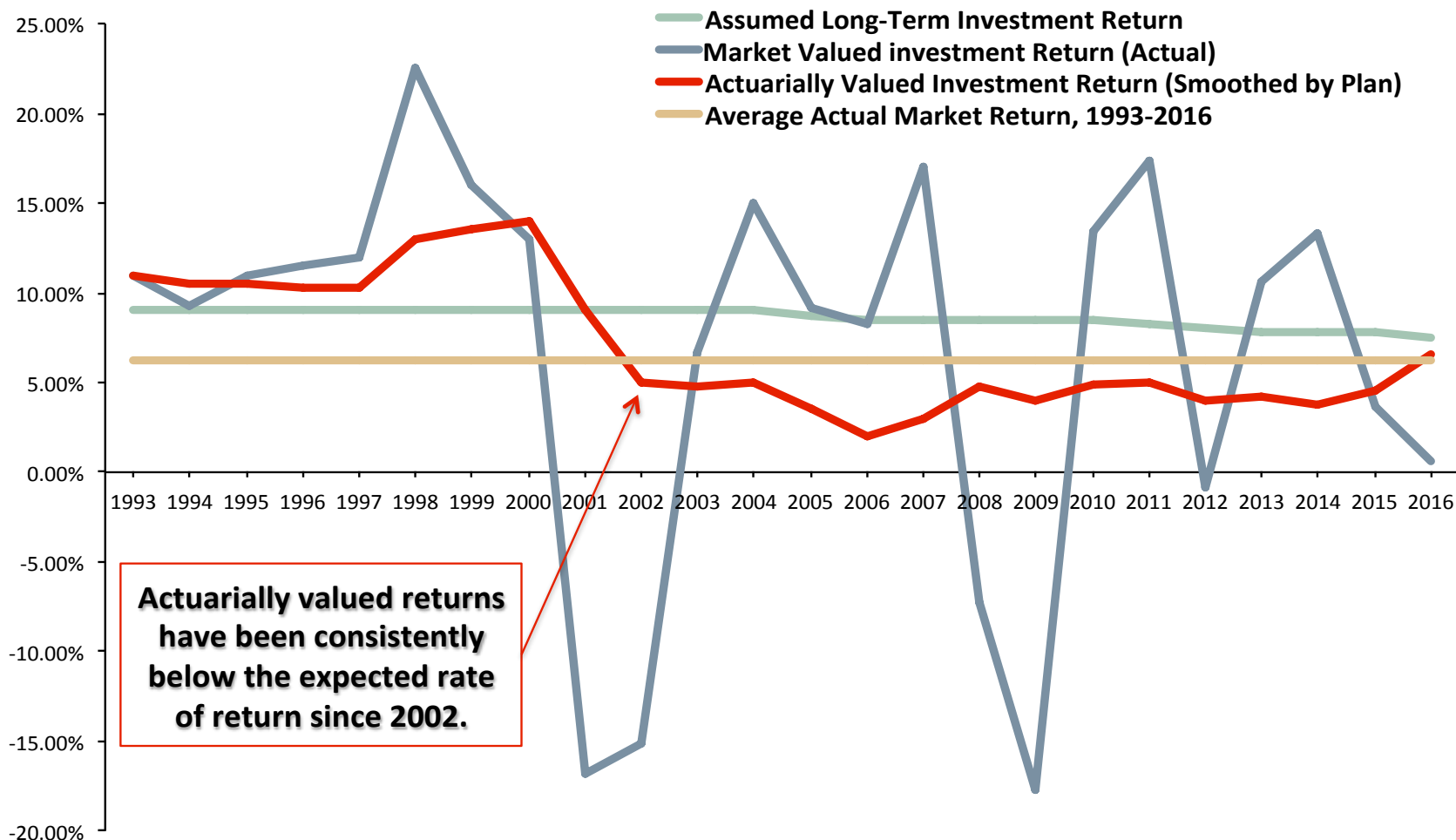
CORP's Unrealistic Assumed Return

1. CORP's recently adopted assumed rate of return is 7.4%, down slightly from 7.5%
 - Historically, the plan has been underperforming
 - Over the **past 24 years** (1992-93 to 2015-16) the plan has averaged **6.22% return** on a market basis (geometric mean)
 - Over the **past 15 years** the plan has averaged just a **4.36% return** on a market basis (2001-02 to 2015-16)
 - Even the smoothed market returns have been poor
 - Actuarially valued **returns have averaged just 4.3% since 2001-02**
 - And the new normal for investment returns suggests it is unlikely CORP will make up these missed returns soon



CORP's Underperforming Returns

Historic Investment Performance, 1993-2016





New Normal: Forecasts for Future Returns are Significantly Lower than Past Returns

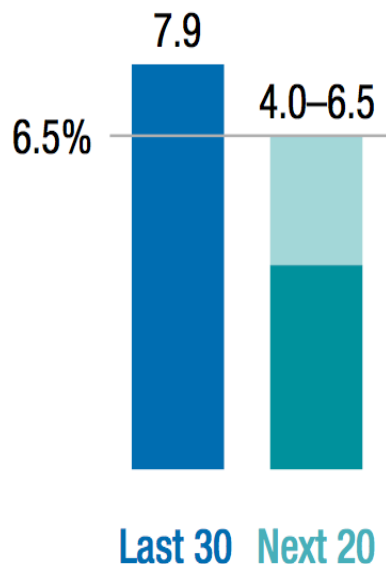
The past 30 years saw returns that exceeded the long-run average

The next 20 years could be more challenging

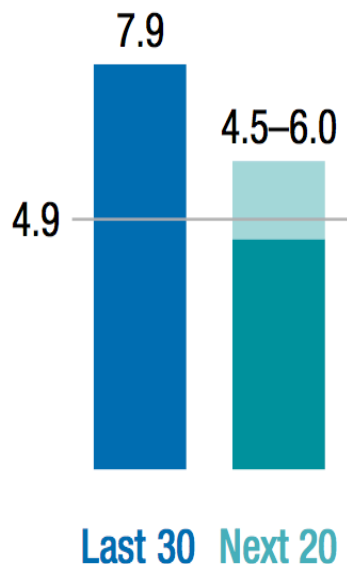
■ Historical real returns
— Last 100 years average return

■ Growth-recovery scenario
■ Slow-growth scenario

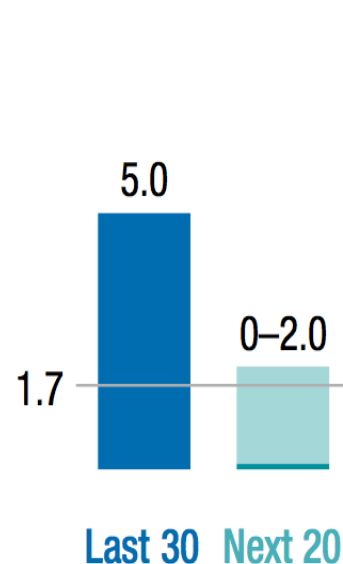
US equities



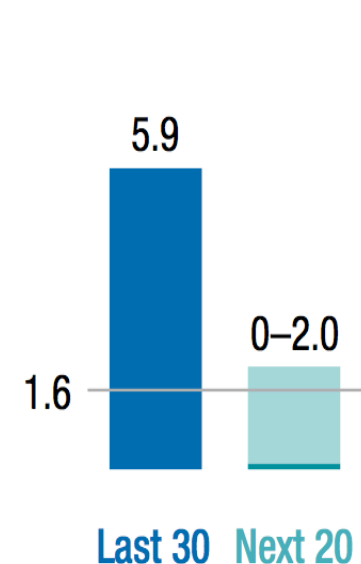
European equities



US bonds

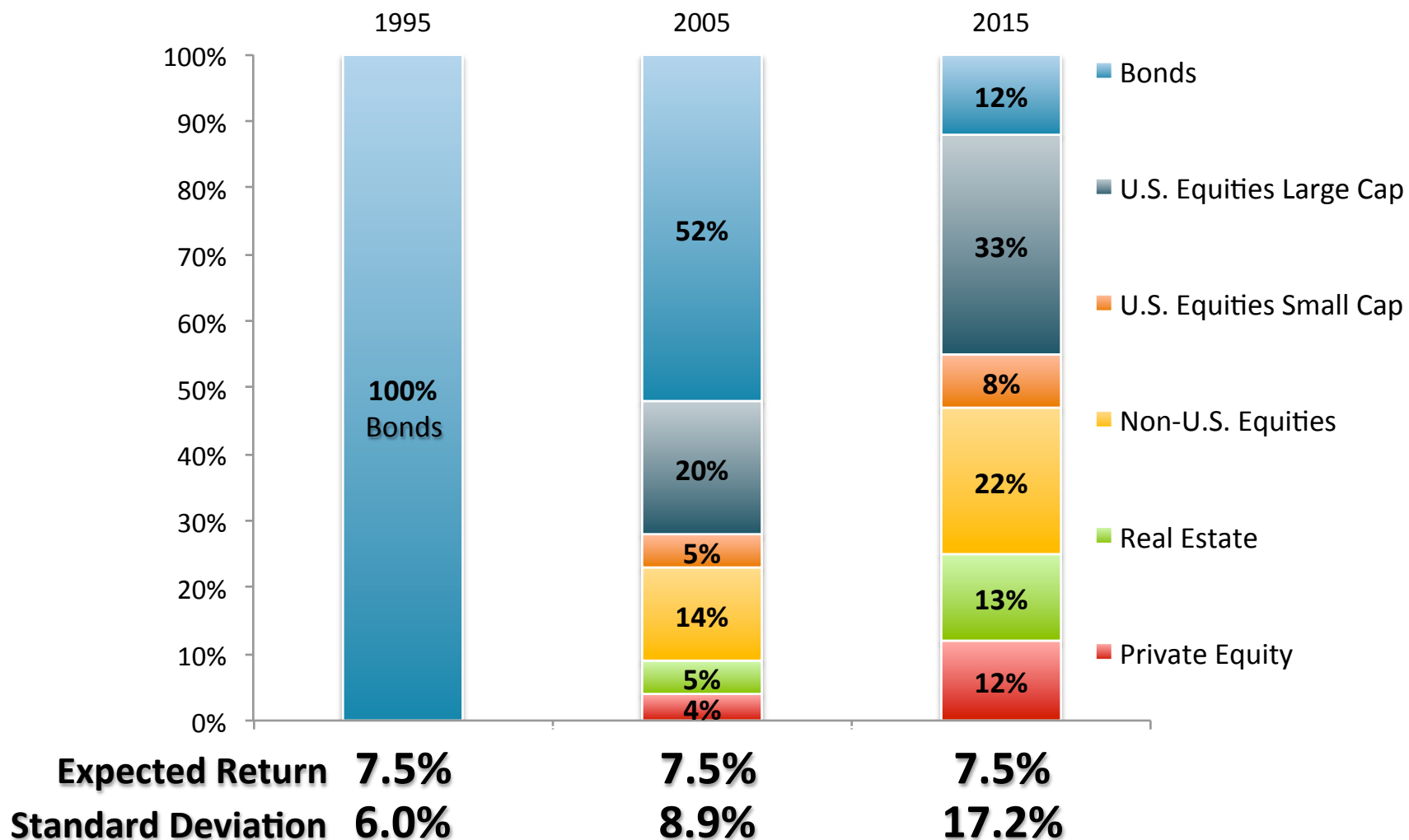


European bonds



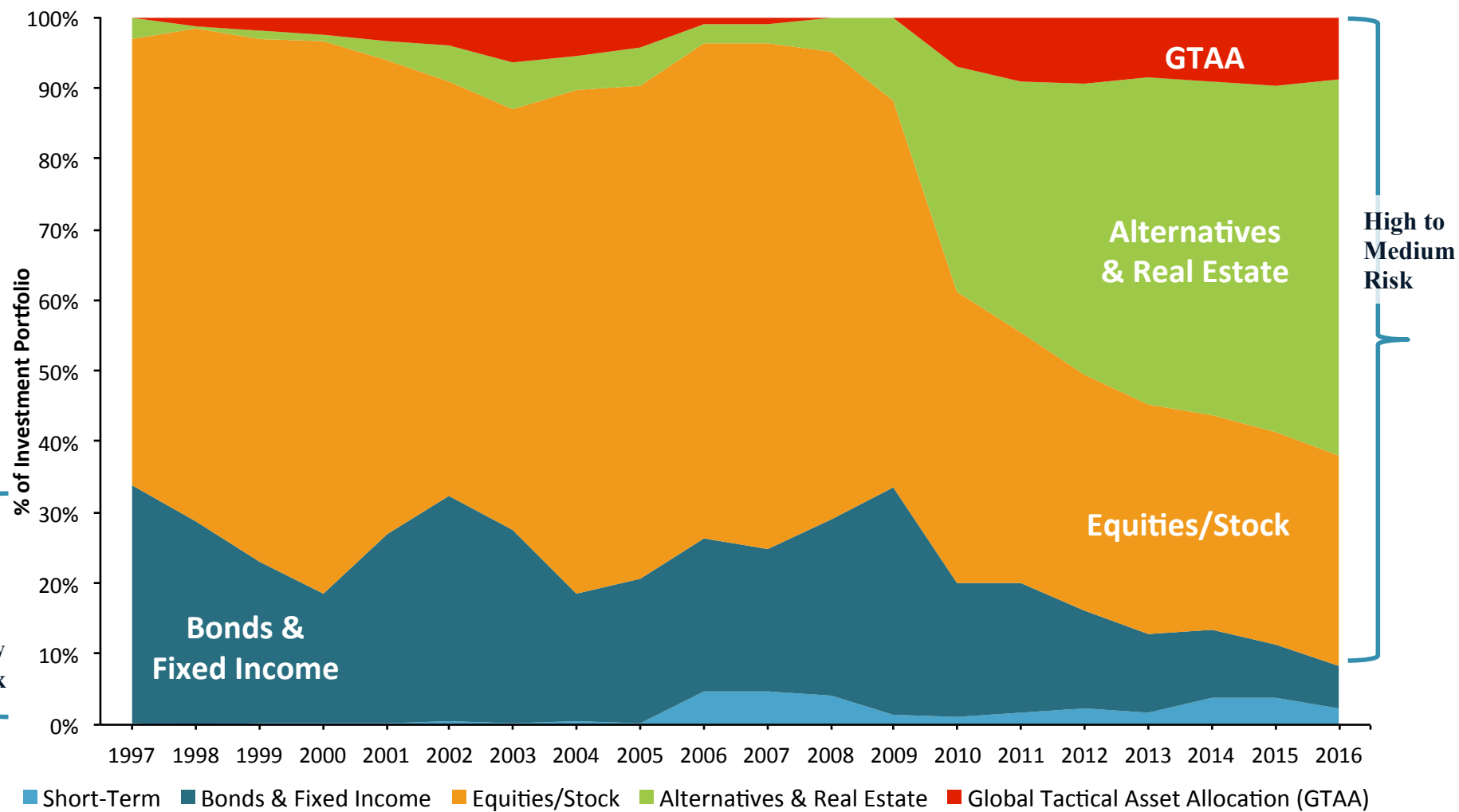
New Normal: Market Trend Towards Risk

Average Portfolio Asset Allocation Necessary for a 7.5% Expected Return Has Required Shifting from 100% Bonds to a Riskier Mix of Asset Classes



CORP Historic Asset Allocation, 1997-2015

Assets Commingled with PSPRS, EORP





CORP's Unrealistic Assumed Return Rate

2. Using McKinsey & Co.'s forecast by asset class, we find that the current return assumption is unrealistic
 - For CORP to achieve the assumed return, “alternative” investments will have to average 9% to 11% over the next 20-years
 - There isn't enough public information to develop a good forecast of what the “alternative” investments are going to earn
 - This is a general problem with asset allocations weighted to far towards illiquid, non-transparent assets
 - Assuming that “alternative” investments will have a higher yield than equities, we estimate the following:
 - **Slow-Growth:** If current return averages and economic trends persist, the 20-year average return is likely to be between **4.5% to 5.25%**
 - **Growth-Recovery:** If the economy grows faster, the 20-year average return is likely to be between **5.5% to 6.5%**

Underpricing the Cost of the Benefit

New Hire Normal Cost Under Alternative Assumed Returns



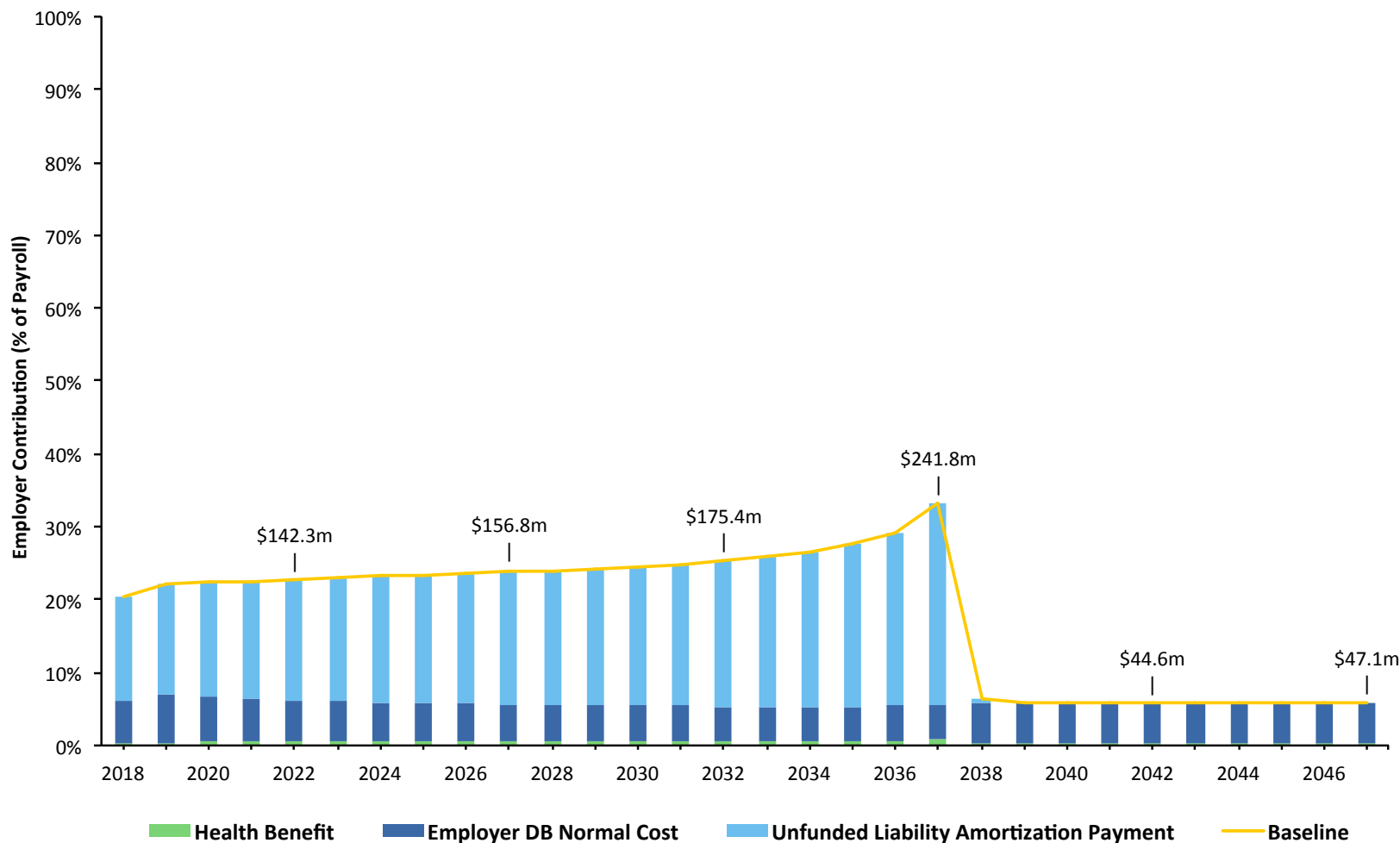
Assumed Return	Total <u>New Hire</u> Normal Cost FY 2017-18	Employer Share of Normal Cost
7.85% Discount Rate (Old DR Baseline)	11.8%	3.4%
7.4% Discount Rate (FYE 2017+ Baseline)	13.3%	4.9%
7% Discount Rate	14.7%	6.3%
6% Discount Rate	19.0%	10.6%
5% Discount Rate	24.5%	16.1%

Source: Reason Foundation analysis based on data provided in GRS memo to PSPRS dated March 9, 2017.

Employer Contribution Forecast FYE 2018-2047

Baseline Scenario

7.4% Assumed Return, 7.4% Actual Return

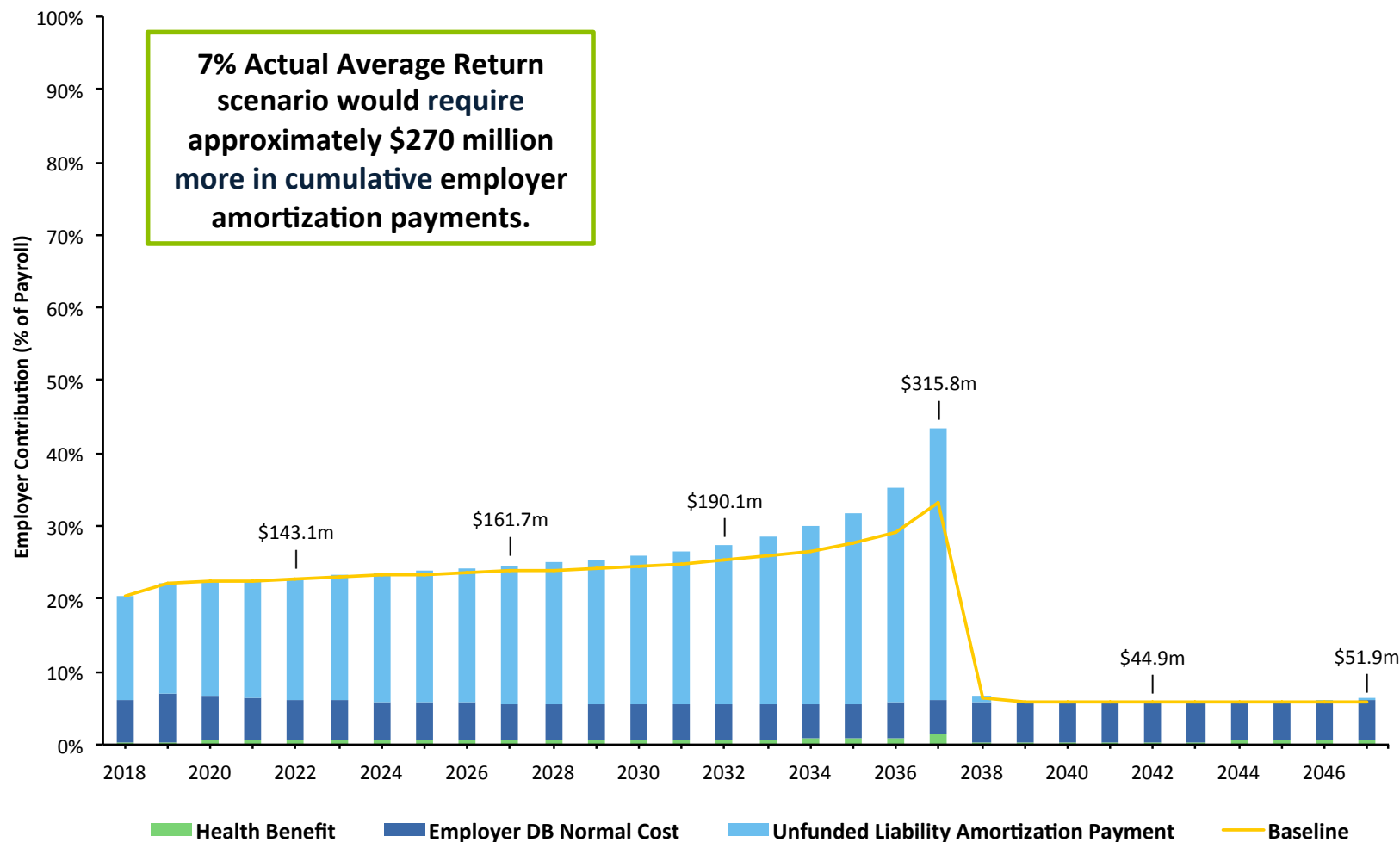


Forecast represents inflation adjusted employer contributions assuming all plan assumptions and methods as a percentage of projected payroll.

Employer Contribution Forecast FYE 2018-2047

Underperforming Market Scenario: 7% Return

7.4% Assumed Return, 7% Actual Return

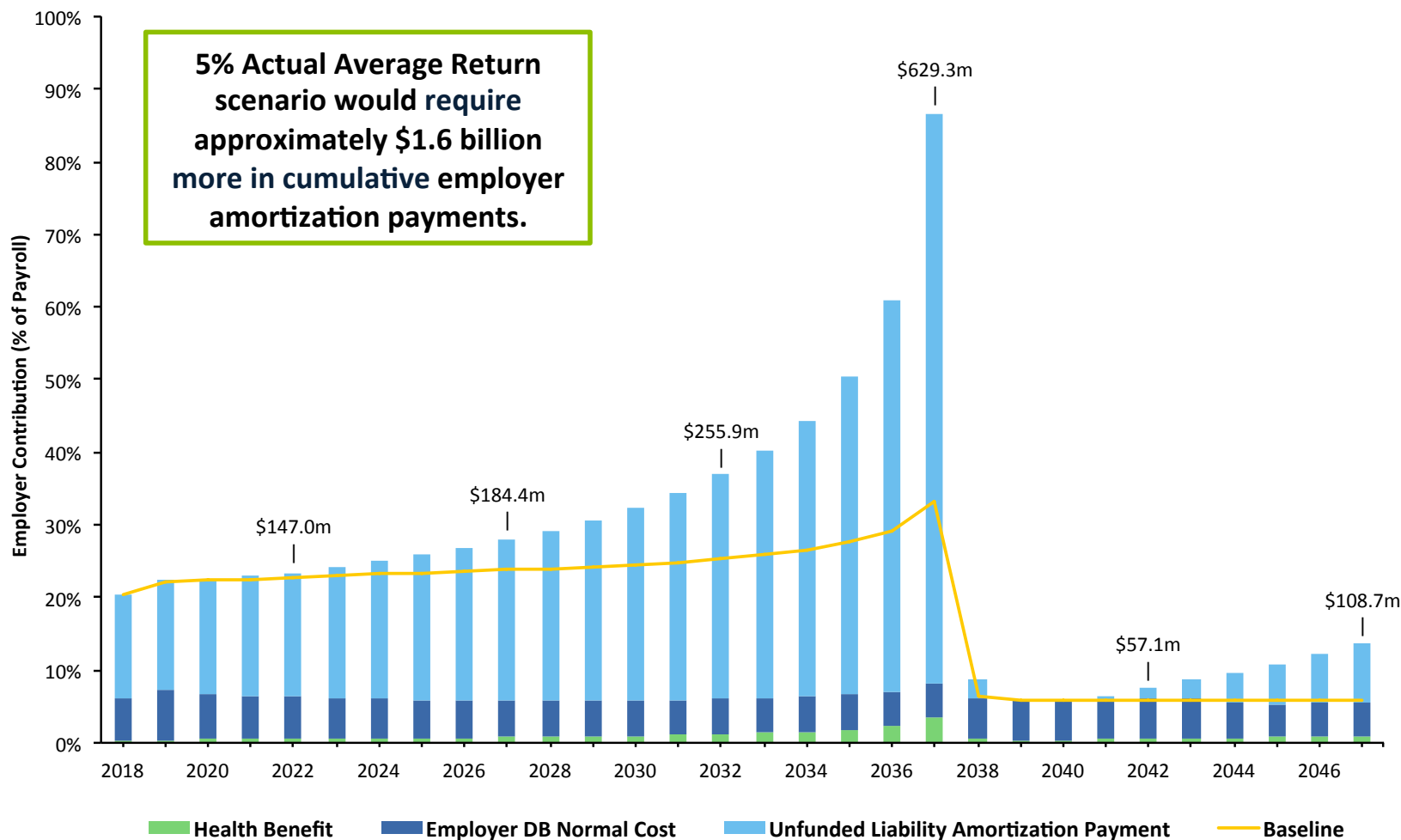


Forecast represents inflation adjusted employer contributions assuming all plan assumptions and methods as a percentage of projected payroll.

Employer Contribution Forecast FYE 2018-2047

Underperforming Market Scenario: 5% Return

7.4% Assumed Return, 5% Actual Return



Forecast represents inflation adjusted employer contributions assuming all plan assumptions and methods as a percentage of projected payroll.

PROBLEM 3: HIGH TURNOVER

The majority of CORP members do not vest in their retirement benefits



CORP Turnover Rate

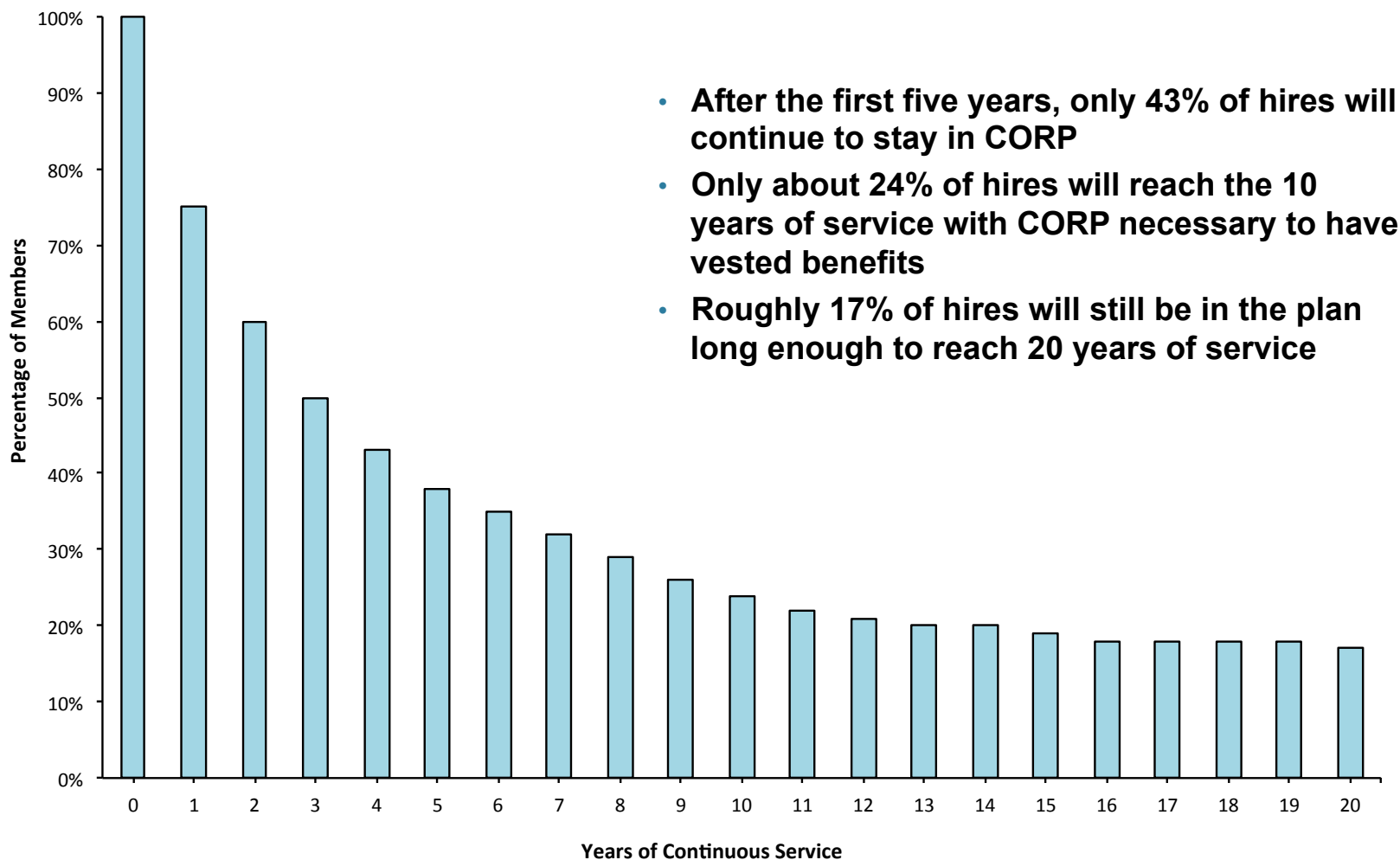
Years of Service	% of Active Members Estimated to Leave Within Next Year	% of Employees Remaining from Starting Class of 100
-	0%	100%
0	25%	75%
1	20%	60%
2	16%	50%
3	14%	43%
4	12%	38%
5	9%	35%
6	9%	32%
7	9%	29%
8	8%	26%
9	8%	24%
10	8%	22%
11	5%	21%
12	4%	20%
13	4%	20%
14	3%	19%
15	3%	18%
16	3%	18%
17	2%	18%
18	2%	18%
19	2%	17%

- Turnover is very high in the first few years after employment.**
 - Less than 50% of employees stay for more than five years
- Most employees hired in CORP will never earn their retirement benefit because they don't stay long enough to vest**
 - Less than 25% of employees stay for the 10 years necessary to reach vested benefit status
- Very few employees will get the plan's full retirement benefit**
 - Less than 20% of employees work the 20 years necessary to reach the "any age with 20 years of service" status

Source: CORP Actuarial Valuation for Fiscal Year End 2016, p. E-7.
Data shown reflects the cumulative totals of the "likelihood of separation data within the next year."



Percentage of CORP Members Who Stay Employed, by Years of Service



Source: CORP Actuarial Valuation for Fiscal Year End 2016, p. E-7.
Data shown reflects the cumulative totals of the "likelihood of separation data within the next year."

REFORM DESIGN POLICY CONSIDERATIONS



The Problems to Solve

1. Like PSPRS, there is a need to replace the current PBI with a benefit design that does not undermine the solvency of the pension plan as a whole.
2. Reduce and/or eliminate the risk exposure of the existing retirement plan that is:
 - putting taxpayers at risk of skyrocketing costs, and
 - placing members/retirees at risk of their pension fund becoming insolvent.
3. The current benefit provided does not match the demographics of members.



The Risks of Inaction

1. Rising employer contribution rates result in more money to pensions, crowding out other public services
2. Inability to hire new correctional officers
3. Inability to raise wages
4. New tax & debt proposals
5. Service-level insolvency



Objectives of Good Reform

- Provide retirement security for all employees, current and future
- Stabilize contribution rates for the long-term
- Reduce taxpayer and pension system exposure to financial risk and market volatility
- Reduce long-term costs for employer/taxpayers and employees
- Ensure ability to recruit 21st Century employees
 - Improve portability of benefits
 - Create more retirement planning choices for employees
- Improve governance

PROPOSED REFORM

Pension Reform Scenario

Improvements for Current Members and Retirees



Changing the PBI to COLA

- The PBI would be eliminated for all members and retirees, replaced with an up to 2.0% COLA, tied to regional CPI, and funded out of normal cost
 - The new COLA design would mimic PSPRS reform
 - Constitutional amendment would be modeled after Prop. 124

Keeping the Amortization Schedule

- Existing unfunded liabilities for each employer would be amortized over the total payroll of that employer, such that there would be no change to the dollar amounts in the amortization schedule relative to the baseline expectations (*same as PSPRS Tier 3*)

Pension Reform Scenario: New Hire Changes After 7/2018

Tier 3: Corrections



For New Corrections Hires starting FY 2018-19

- All new CORP hires as of July 1, 2018 that are not sworn probation officers would be offered a defined contribution retirement benefit.
 - Employer Contribution: 5% of payroll
 - Employee Contribution: Default = 7%, Minimum = 5%
 - Employees may make additional contributions up to the IRS limit through an irrevocable election.
 - Three year vesting for employer contributions

Pension Reform Scenario: New Hire Changes After 7/2018

Tier 3: Corrections



For New Corrections Hires (cont'd)

- DC plan would use professionally managed DC structure currently being developed for the PSPRS Tier 3 DC plan, such that PSPRS administration would only maintain one single defined contribution system for PSPRS and CORP.
- Disability & Death benefits will provide an equivalent benefit for new hires relative to legacy members.
 - Benefits would be calculated as if employee was hired into the defined benefit plan; any difference between monthly benefit and annuitized DC account would be paid by CORP.
 - Employers would pay a small normal cost amount into a separate disability and death defined benefit plan in order to fund this benefit.

Pension Reform Scenario: New Hire Changes After 7/2018

Tier 3: Probation



For New Probation Hires starting FY 2018-19

- All new CORP hires as of July 1, 2018 that are sworn probation officers or surveillance officers working for AOC would be offered a retirement benefit choice:
 1. *A defined contribution only retirement plan* with the same contribution rate and terms described for the Corrections Tier 3 plan
 2. *A Tier 3-style defined benefit plan* (detailed next slide)
 - Default option

Pension Reform Scenario: New Hire Changes After 7/2018

Tier 3: Probation



1. **Defined Benefit: Stepped multiplier based on years of credited service:**
 - 1.25% for 10.00-14.99 years of credited service
 - 1.50% for 15.00-19.99 years of credited service
 - 1.75% for 20.00-21.99 years of credited service
 - 2.00% for 22.00-24.99 years of credited service
 - 2.25% for 25+ years of credited service

2. **Cost Sharing**
 - Normal costs and administrative are divided between the employee (paying 2/3, i.e. 66%) and employer (paying 1/3, i.e. 33%)
 - Amortization costs for any potential future unfunded liabilities are divided evenly — i.e. 50/50 — between employee and employer
 - No caps on employer or employee contribution rates.
 - Post-2018 members will only contribute to any future unfunded liabilities on the obligations of the participants in the Post-2018 Plan, and no other tier.

Pension Reform Scenario: New Hire Changes After 7/2018

Tier 3: Probation



3. Adopt pensionable compensation cap of \$70,000
 - Indexed to annualized growth in probation pay scales
4. Adopts sustainable COLA structure
 - Compounding COLA based on regional CPI with cap of 2.0% max, unless the funded ratio of the plan falls below 90%
 - If funded ratio of the plan is between 80-89.99%, cap reduced to 1.5%
 - If funded ratio of the plan is between 70-79.99%, cap reduced to 1.0%
 - No COLA will be issued in any year with a plan funded ratio below 70%
 - Pre-funded, actuarially accounted for in advance as part of normal cost
 - COLAs begin the first calendar year after the retiree reaches the 7th anniversary of their retirement date (or at age 60)
5. Increases minimum benefit eligibility age from 52.5 years old to 55 years old
 - Actuarially equivalent benefit available at age 52.5



Policy Considerations for Defined Contribution Plans

- 1. Primary functions of defined contribution plans:**
 - Establish stable, predictable costs for employers and employees
 - Eliminate all financial risk to state/taxpayers over time; no possibility of new unfunded liabilities for DC plan participants
 - Provide a portable benefit that is attractive to 21st Century employees (e.g. Millennials), more equitable to all employees in CORP.
 - Provide a cost efficient retirement plan

- 2. Recruiting advantages of offering a DC plan to new hires:**
 - Defined benefit plans can be attractive for employees looking to work a lifetime career in one place. However, they are a poor fit for a more mobile workforce or for employee groups with high turnover rates.
 - Offering a DC retirement plan will attract younger workers who are unlikely to spend a full career with one employer. For older new hires, a DC retirement plan is more flexible and attractive than a DB plan that requires at least a decade to earn any benefit at all.



Policy Considerations for Defined Contribution Plans

- 3. How adopting a DC plan for new hires would benefit members in the existing plan:**
 - Existing plan solvency would improve over time because there would be fewer accrued liabilities exposed to the risk of underperforming assets or other aggressively optimistic actuarial assumptions.
 - In years where investment returns are less than expected unfunded liabilities would not grow as much as if new hires were not hired into CORP with a DC only plan.

- 4. Best practices for public sector, professionally managed defined contribution plans:**
 - Focus on income replacement in retirement rather than just emphasizing asset accumulation
 - Offer advice and counseling to plan participants
 - Include some form of full or partial annuitization option
 - Have a limited set of investment choices reflecting varying degrees of risk, retirement time horizons (including target-date funds)
 - Prevent participants from borrowing against plan assets
 - Use vesting periods of 3 years or less



Policy Considerations for Defined Contribution Plans

Key Failures of EORP Reform

- The Elected Officials Retirement Plan's (EORP) defined benefit plan has been closed since January 2014, and new hires are offered a DC plan in the Elected Officials Retirement System (EORS).
- Since then the funded ratio for the plan has fallen and contribution rates have increased, for the following reasons:
 1. Reform legislation passed in 2013 (HB 2608) limited employers to making fixed, annual contributions of 23.5% of payroll, plus \$5 million from general revenue funds. However, the actuarially determined contribution (ADC) rates since 2014 have been 86.5%, 95.6%, and 106.6% -- meaning the fixed statutory rate is too low and consistently underfunding EORP.
 2. The reform legislation did not eliminate the PBI. Then, between 2013 and 2014 the PBI caused the funded ratio to fall by 10% percentage points on its own, and resulted in a 22.9% of payroll increase in the ADC. Changing from PBI to a pre-funded COLA would ensure CORP avoids this problem.
 3. The reform legislation changed the amortization method used to calculate the ADC from level-percent to level-dollar, which meant shifting some amortization payments from future years into the present to pay down the unfunded liability faster. This change contributed to the amortization payment increase of 13.6% of payroll in 2014. This is not required when changing to a defined contribution plan and the proposed CORP reform keeps the current amortization method in place.

ANALYSIS OF PROPOSED REFORM

Proposed Reform: Year 1

Total Employer Contribution



As estimated by the plan's actuarial advisors: GRS

	Status Quo (Total Plan)	Proposed Reform (Total Plan)
Employer Contribution Rate	27.9% of payroll	25.9% of payroll
CORP Funded Ratio	49.3%	51.9%

Note: Figures based on GRS memo to PSPRS dated March 9, 2017. The GRS baseline estimate uses an updated FYE June 30, 2016 valuation that accounts for the recent *Hall v. EORP* Arizona Supreme Court ruling.

Highlights:

- The total employer contribution rate would be reduced in the first year under the reform due to the combined effect of the change from a PBI post-retirement benefit to a COLA post-retirement benefit with the creation of a defined contribution plan for most future CORP hires.
- The PBI to COLA change would also result in an increase in the funded ratio as measured by the CORP plan actuary.

Proposed Reform: New Hires

Normal Costs for First Years v. Fully Funded Years



As estimated by the plan's actuarial advisors: GRS

	Status Quo	Proposed Reform			
	Tier 2 Baseline	Tier 3 Corrections DC Plan	Tier 3 Corrections DC Disability Plan	Tier 3 Probation DB Plan	Tier 3 Weighted Total
Multiplier	2.5%	n/a	2.25%	2.25%	
COLA	PBI	n/a	n/a	Max 2%	
Gross Normal Cost	13.3%	12%	1.1%	10.7%	12.8%
<i>Scenario: CORP Plan Fully Funded (FY 2038+)</i>					
Employer Normal Cost	5.45%	5%	1.1%	3.6%	5.8%
Employee Normal Cost	7.65%	7% (default)	0%	7.1%	7.0%
<i>Scenario: CORP Plan Not Fully Funded</i>					
Employer Normal Cost	4.9%	5%	1.1%	3.6%	5.8%
Employee Normal Cost	7.65%	7% (default)	0%	7.1%	7.0%

Note: Figures based on GRS memo to PSPRS dated March 10, 2017. Scenario modeled included a \$77,000 cap on pensionable compensation, but the actual legislation provides for a \$70,000 cap — thus the DB Plan costs shown are slightly higher than the actual costs are likely to be. Figures for Tier 3 Corrections and Tier 3 Probation are as a % of payroll for that job classification. Tier 2 and Weighted Total figures are as a % of total payroll. The FY2018-19 normal cost for CORP as a whole will be higher than the normal cost rates shown here for new hires. This is because the normal cost for members pre-2011 is higher than normal cost for post-2011 hires.

Highlights:

- In the long run, the proposed reform is essentially cost neutral.
- The proposed reform nearly eliminates the potential for new unfunded liabilities by shifting most new CORP hires into a defined contribution plan.



Comparing Employer Normal Cost Given Varying Assumed Returns, Fully Funded Plan

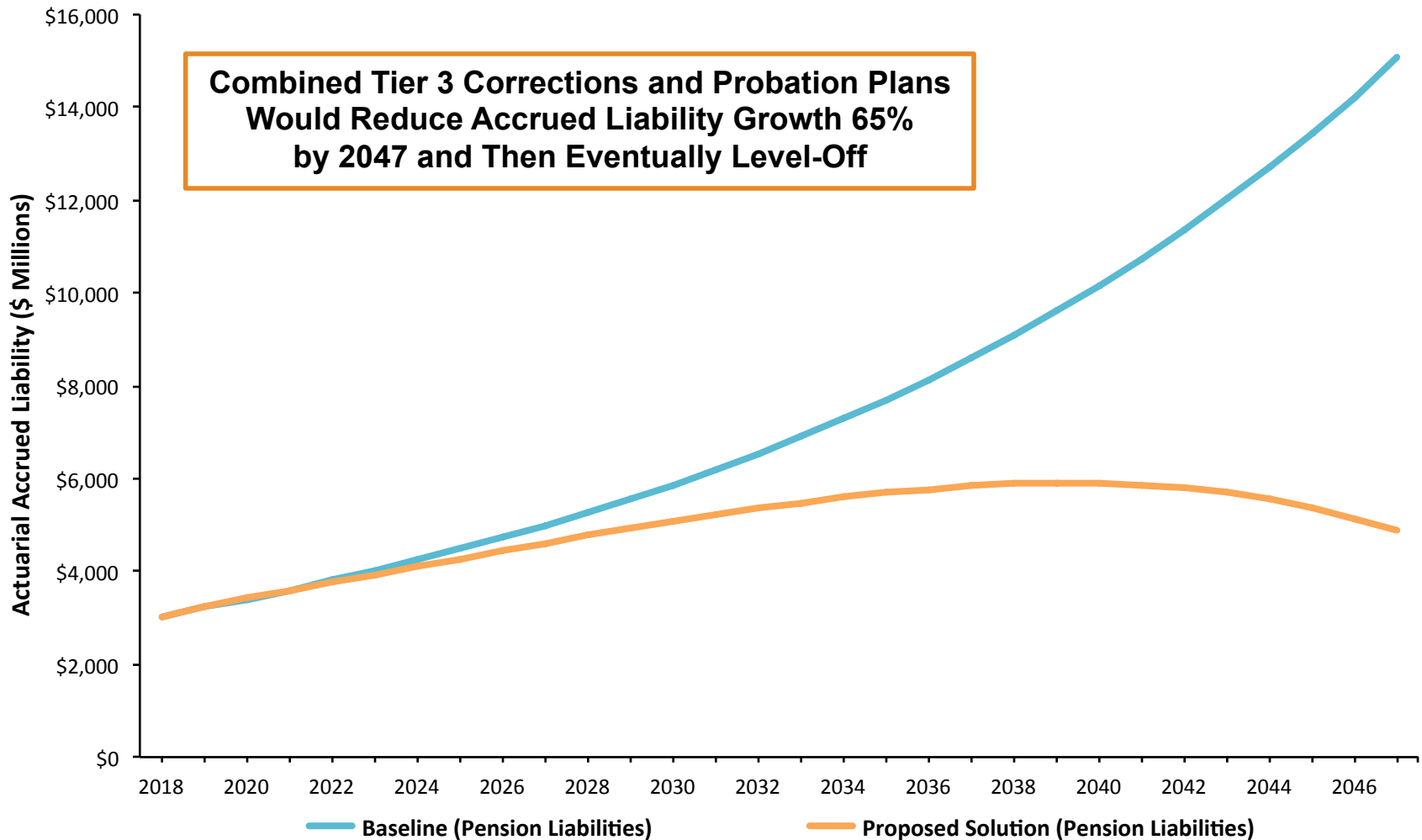
Proposed Reform						Status Quo	
Assumed Return	Tier 3 Probation DB Plan Assuming Full Funding		Tier 3 Corrections DC Plan	Tier 3 Corrections DC Disability	Tier 3 Weighted Average Total	Tier 2 Defined Benefit Assuming Full Funding	
	Gross Normal Cost	Employer Cost	Employer Cost	Employer Cost	Employer Cost	Employer Cost	Gross Normal Cost
7.4%	10.7%	3.6%	5.0%	1.1%	5.8%	5.45%	13.3%
7%	12.0%	4.0%	5.0%	1.1%	5.9%	6.90%	14.7%
6%	15.0%	5.0%	5.0%	1.1%	6.0%	11.17%	19.0%
5%	18.7%	6.2%	5.0%	1.1%	6.1%	16.67%	24.5%

Note: Tier 2 and Tier 3 gross normal cost estimates under a 7.4% assumed return based on GRS memo to PSPRS dated March 10, 2017. 7.4% discount rate scenario modeled included a \$77,000 cap on pensionable compensation, but the actual legislation provides for a \$70,000 cap — thus the DB Plan costs shown are slightly higher than the actual costs are likely to be. Gross normal cost figures under 7% to 5% assumed returns based on Reason Foundation estimates, each of which we expect to be within 200bps of a GRS estimate for similar parameters. All figures are based on the assumption that the plan is fully funded. Figures for Tier 3 Corrections and Tier 3 Probation are as a % of payroll for that job classification. Tier 2 and Weighted Total figures are as a % of total payroll.



Actuarial Liabilities Forecast

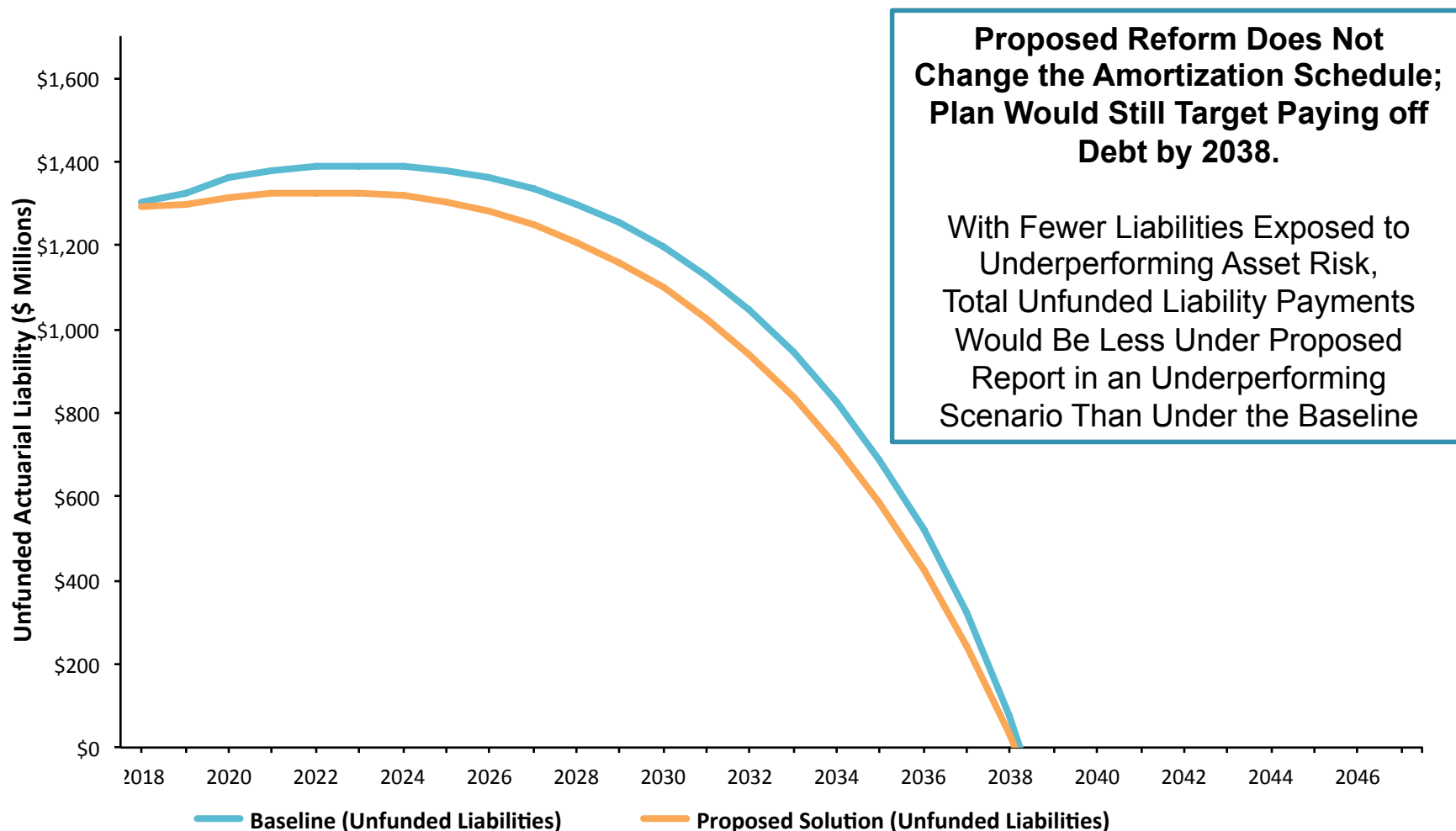
Baseline vs. Proposed Solution





Unfunded Liabilities Forecast

Baseline vs. Policy Reform Scenarios (Market Value)



CONCLUSION



How Well Proposals Meet Objectives

Element	Baseline	Proposed Solution
(1) Provide Retirement Security for Members & Retirees	UNCERTAIN <i>Broken PBI design & unfunded liabilities threaten plan solvency</i>	YES <i>Certain COLA and properly funded, future potential unfunded liability payments reduced</i>
(2) Reduce Costs for Employer/Taxpayers and Employees	NO	YES <i>Combined normal costs of proposed Tier 3 plans will be less than baseline expected rates; liabilities will shrink overtime due to the new DC plan</i>
(3) Stabilize Contribution Rates for the Long-term	NO	YES <i>Stable, predictable DC contribution rates; cost-sharing incentives for the DB plan option</i>
(4) Reduce Taxpayer and Pension System Exposure to Financial and Market Risk	NO	YES <i>65% Reduction in Accrued Liabilities by 2047</i>
(5) Ensure Ability to Recruit 21 st Century Employees	SOME	YES <i>New hires offered portable, flexible DC plan and (for probation) an option for a traditional DB plan</i>
(6) Improve Governance & Transparency	<i>Previously addressed with PSPRS reform and on-going stakeholder discussions on cost-sharing and potential board consolidation</i>	



Questions?

Reason Foundation Pension Integrity Project

Len Gilroy, Senior Managing Director

Based in Arizona

leonard.gilroy@reason.org

Anthony Randazzo, Managing Director

anthony.randazzo@reason.org

Anil Niraula, Analyst

anthony.randazzo@reason.org

Pete Constant, Senior Fellow

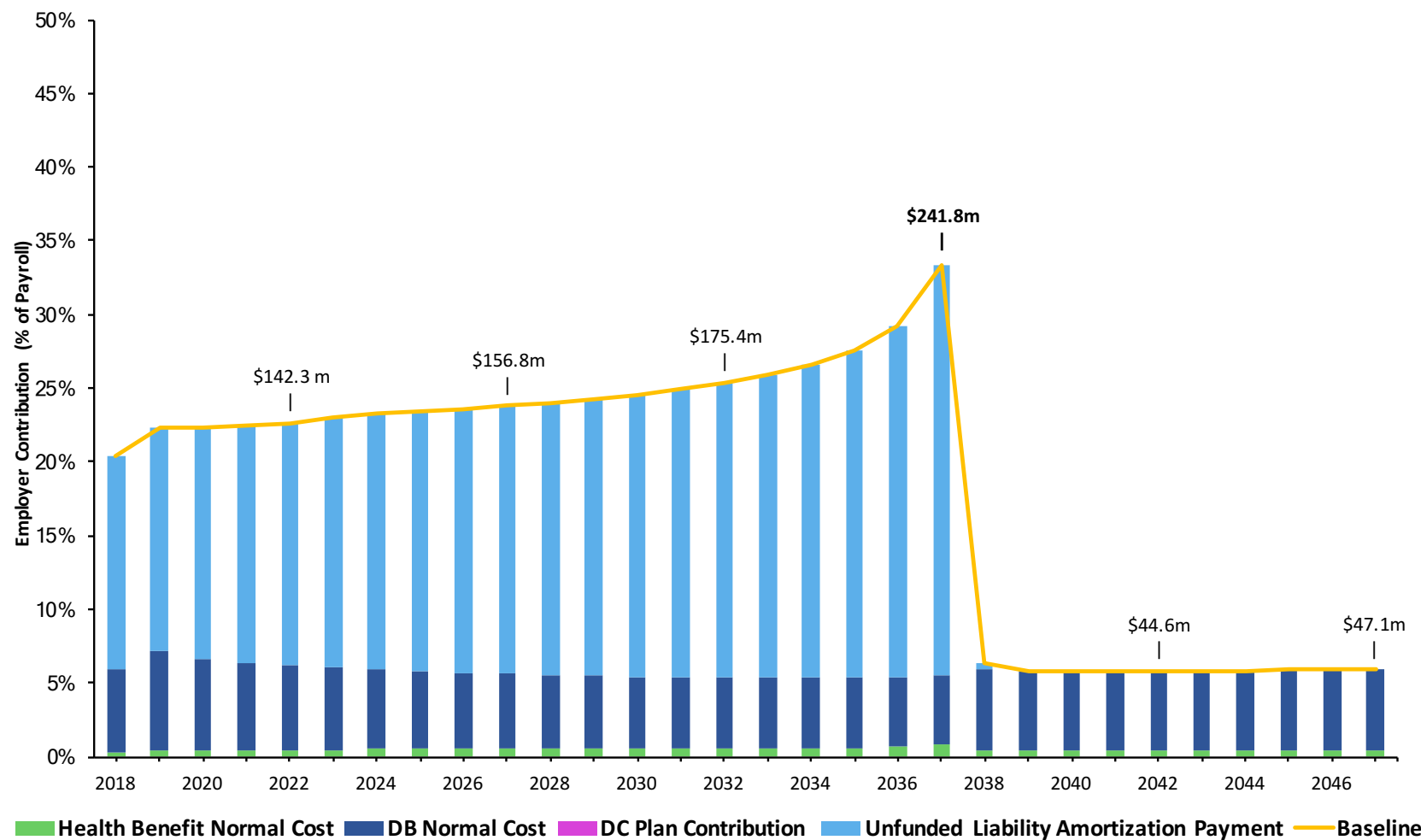
pete.constant@reason.org

APPENDIX: REASON FOUNDATION ESTIMATED FORECASTS

Employer Contribution Forecast FYE 2018-2047

Baseline Scenario

7.4% Assumed Return, 7.4% Actual Return

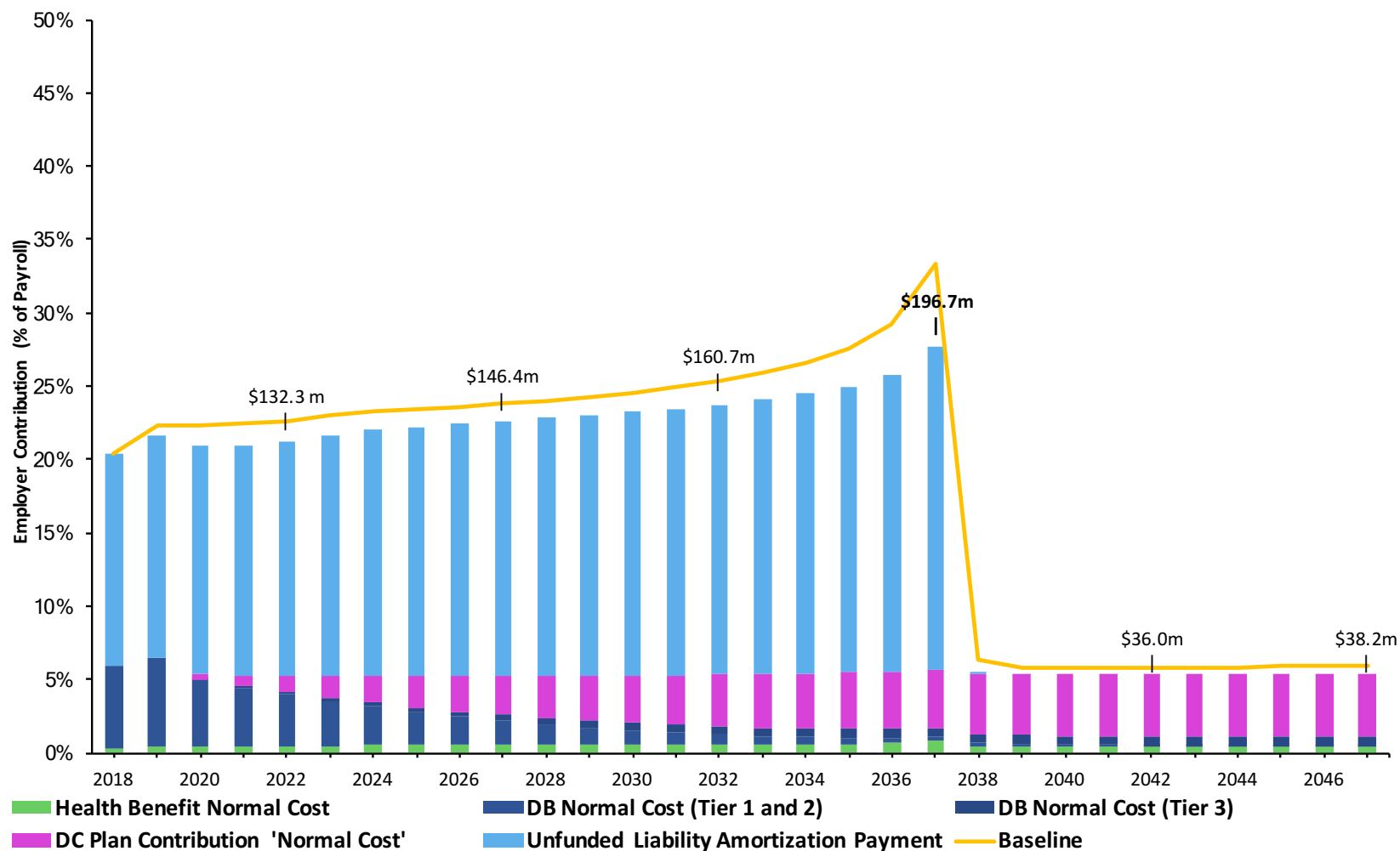


Forecast represents inflation adjusted employer contributions assuming all plan assumptions and methods as a percentage of projected payroll. PBI cost for the baseline is estimated by the actuary to be equivalent of a 2.25% annual COLA. New 2% max COLA is assumed to average 1.75% annually.

Employer Contribution Forecast FYE 2018-2047

Tier 3: Proposed Scenario

7.4% Assumed Return, 7.4% Actual Return



Forecast represents inflation adjusted employer contributions assuming all plan assumptions and methods as a percentage of projected payroll. PBI cost for the baseline is estimated by the actuary to be equivalent of a 2.25% annual COLA. New 2% max COLA is assumed to average 1.75% annually. Scenario assumes all 'Probation' hires are 20% of new hire payroll and that all take the Tier 3 DB plan option with a 2% multiplier & 2% max COLA.