ERS of Rhode Island
2020 Experience Review

May 2020

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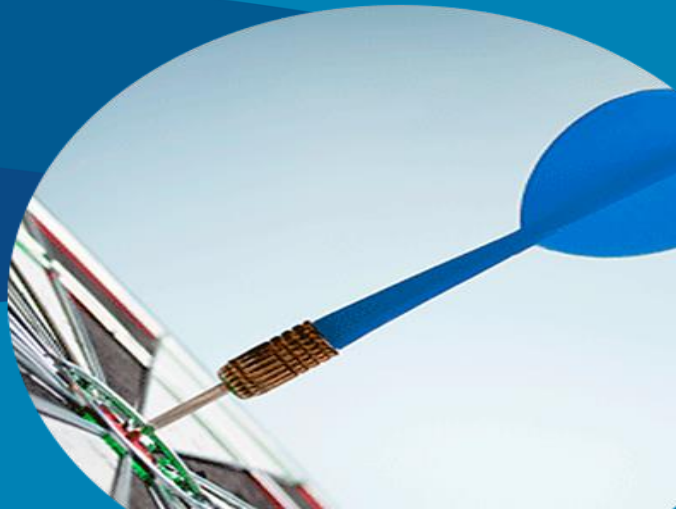


Agenda

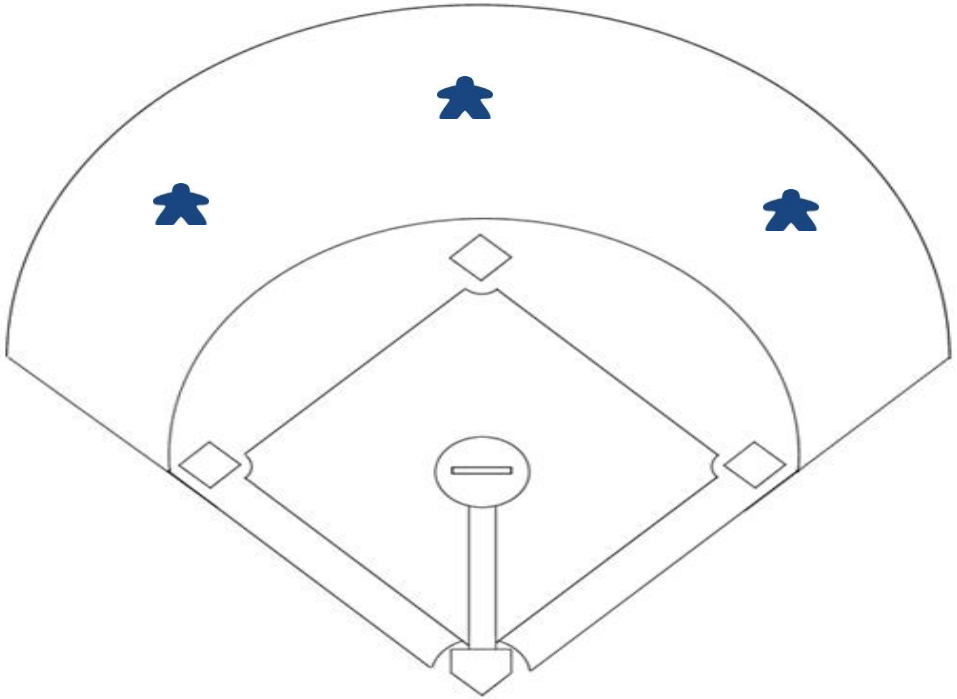
- Review of Current Situation
- Purpose of Study
- Preliminary Findings
- Individual Assumptions
  - Inflation
  - Investment Return
  - Wage Assumptions
- Illustrated Impact
- Risk/Reward Projections

Managing Uncertainty

- Circumstance:
  - There is a future reality that we will have to live with…
  - But there are limitations in our ability to predict it
- Strategy:
  - Narrow the range of possible outcomes
    - Getting right what we can get right
    - Developing defensive, unbiased starting points
  - And then implementing strategic policies that will provide an appropriate and sustainable path to those eventual outcome(s)

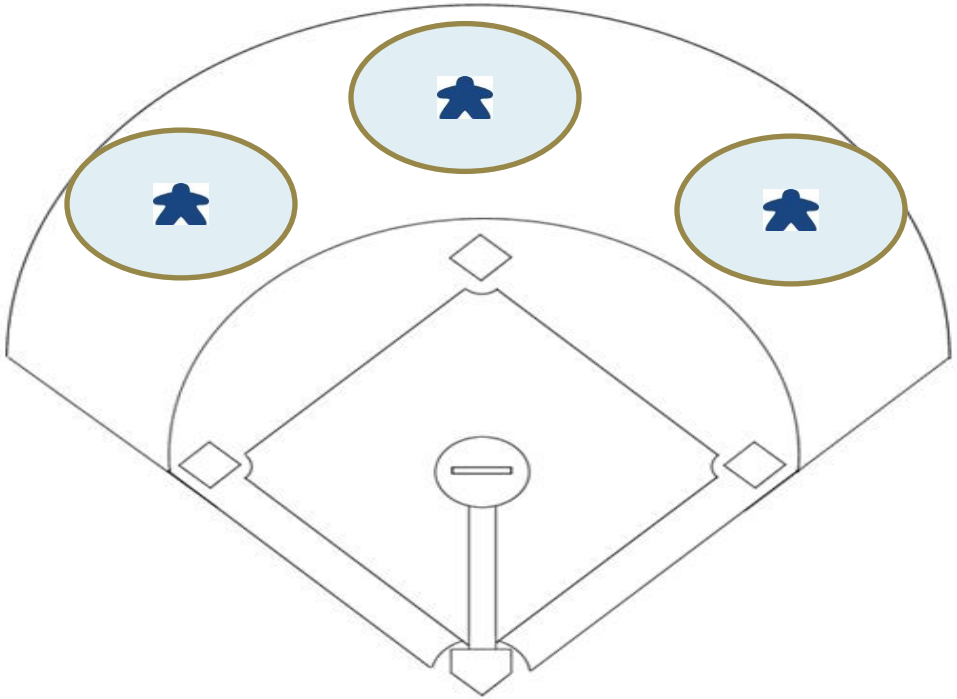
Baseball Analogy

Does a baseball manager put the outfielders in these locations because he believes the ball will be hit right into these locations?



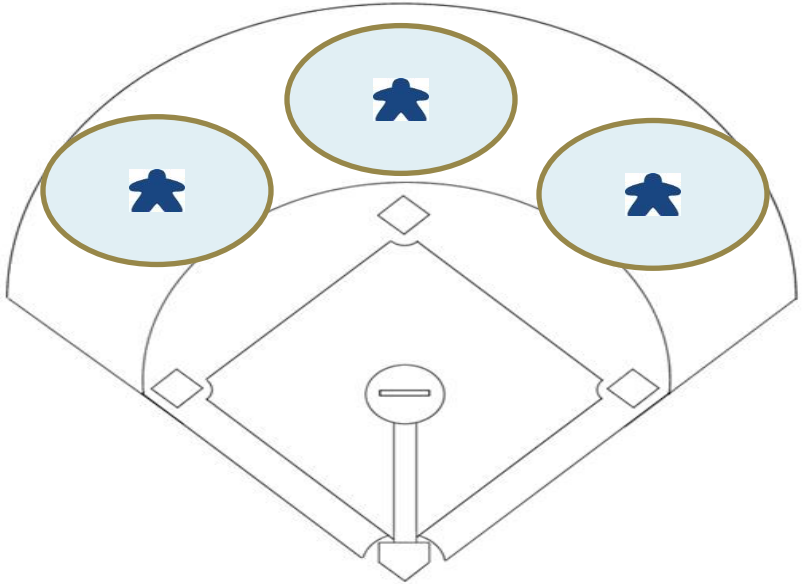
The Outfielders need to be able to run

No. The manager places them in these locations because previous probabilities have shown that the ball will be hit in those areas and an outfielder with the ability to run will be able to either catch the ball or get the ball back into the infield as quickly as possible.



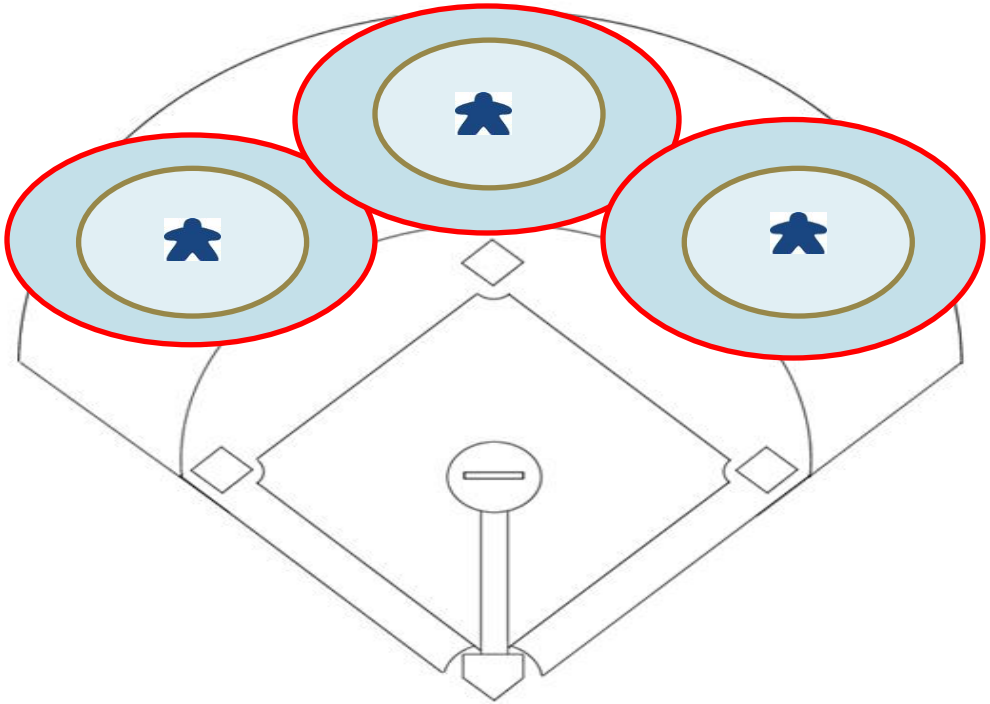
Size of the Field

The smaller the field, the easier to cover more of the area.



Faster Players

Faster players will be able to cover more ground.

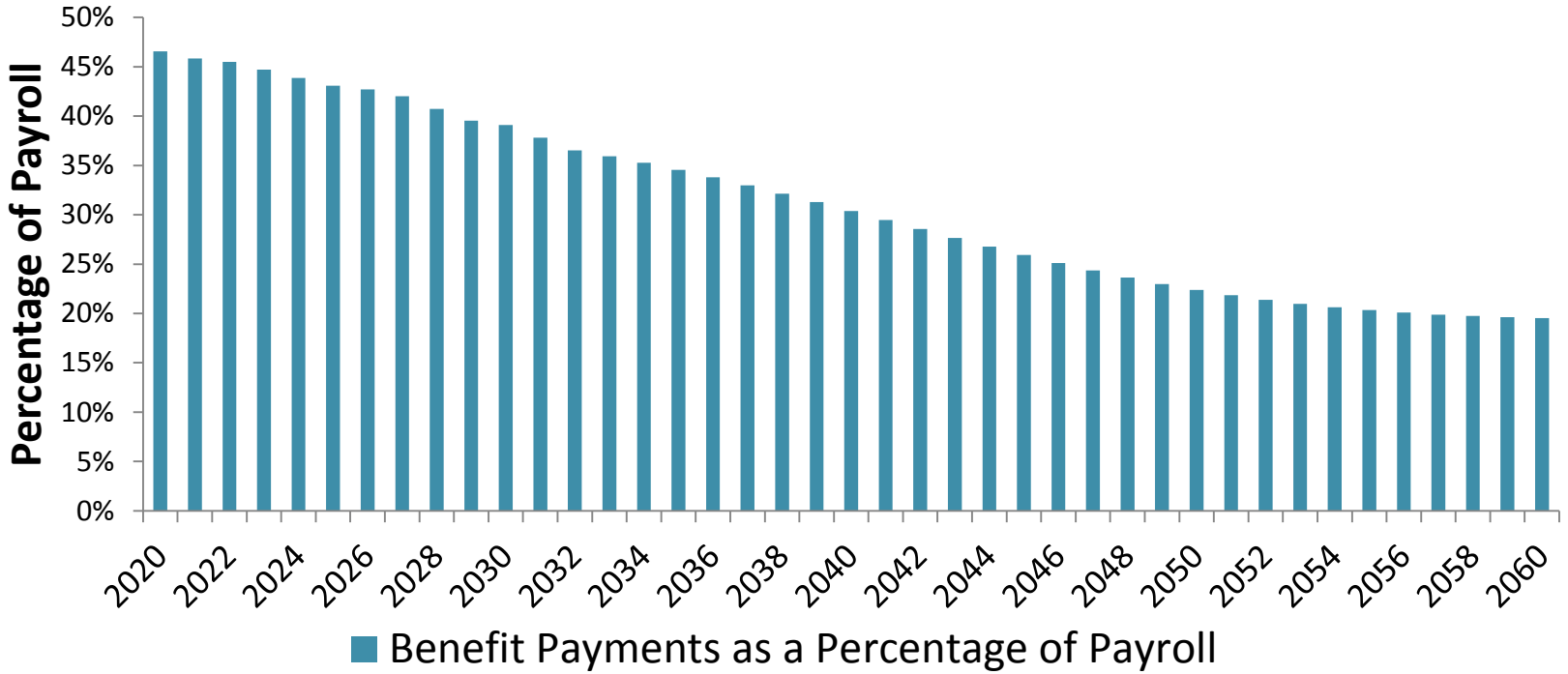


Question: If a manager has fast players in a small field, how important is the starting location?

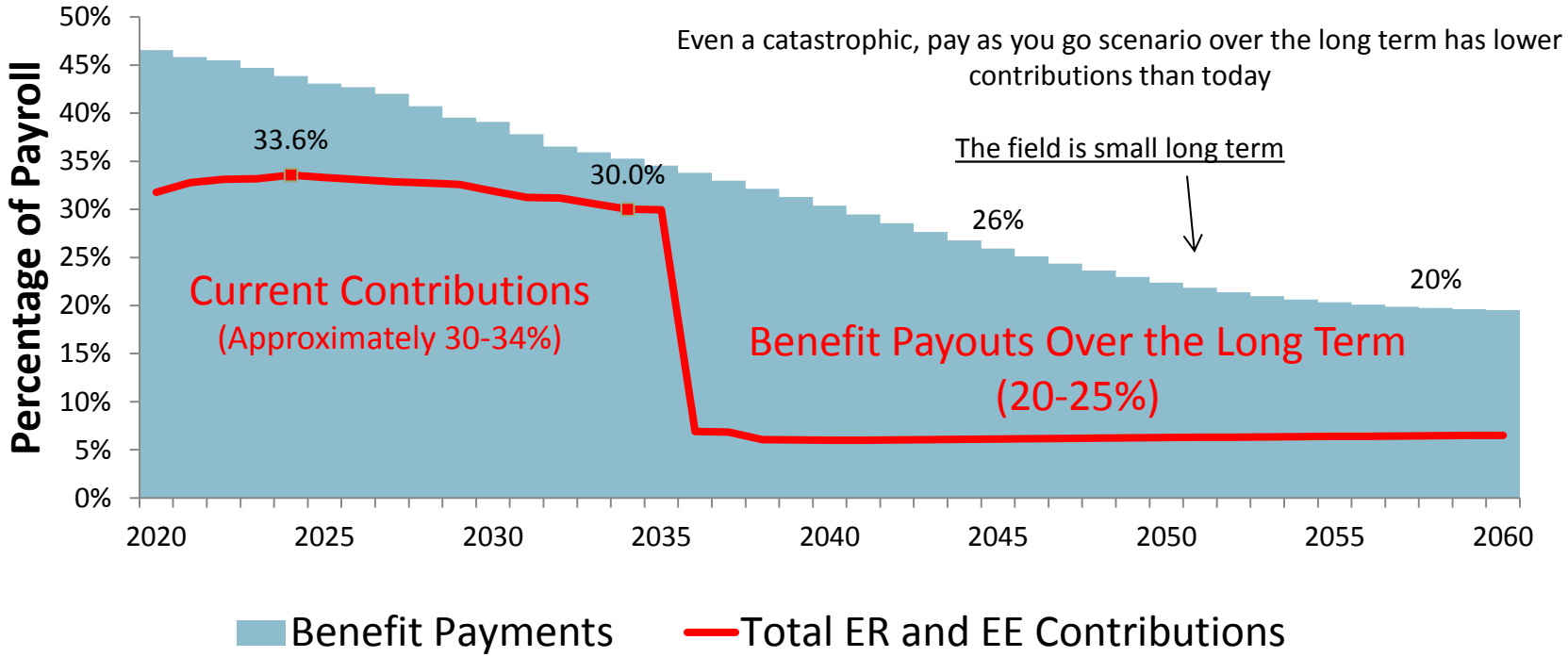
Comparison

Baseball Analogy	Managing Pension Plan Risk
Size of Field	* Potential for Current Contributions to not be enough to fund the Benefits * Typically based on size of benefit package, but also based on sustainability of Plan Sponsor * Potential that a future generation will contribute more than currently being contributed
Speed/Ability of Players	Ability of Funding Policy to react to future adverse experience Ability of Liability to be contingent on future experience
Situational Statistics	Actuarial Model and Assumptions

State Employees: Projected Benefit Payments as a Percentage of Payroll



Sources of Revenue



Funding Policy

Current ERSRI Policy

- The “Funding Policy” of a Pension Plan is a systematic set of procedures used to determine the contributions which will be made in a specific year and series of years
- ERSRI’s is mostly defined in statute
- The funding policy utilizes the Entry Age Normal cost method (EAN), which attempts to create level contributions throughout the working career of the employee
  - Considered a “contribution accrual” method
  - Can be level dollar or a level percentage of payroll
  - By far the most utilized funding method in the public sector
  - Pay higher contributions early to not have a spike in contributions as the member nears retirement
- Employers must contribute the normal cost (EAN) plus a closed amortization of any UAAL that exists
  - Determined as a level percentage of payroll (currently assumed to grow at 3.00% per year)
  - 15 years remaining as of June 30, 2020 for the original RIRSA base
    - New gains and losses are amortized over single bases of 20 years
    - This is called “laddering”
- The Funding Policy used for ERSRI is the model practice in the industry today
- The outfielders are fast

Sustainability Checklist: Page 1

	Stars	Comment
Are there automatic adjustments to the program as necessary as experience unfolds?	9	Sum of next two items needs to be at least 6 stars
Contributions automatically adjust	★★★★★	20 Year layered amortization, no employer discretion, no negative amortization
Are any of the liabilities contingent on future experience?	★★★★	1% COLA contingent on investment performance 2% COLA contingent on funded ratio.
Are there any benefits that are likely to be paid, but not reflected in the liabilities and contributions? Examples include ad hoc colas that occur regularly but are not advanced recognized, subsidized service purchases, or pay spiking patterns.	★★★★★	None
Has the sponsor demonstrated a 10-year history of meeting an actuarially appropriate, required contribution?	★★★★★	Yes, 100%
What is your ratio of non-contingent accrued liability to payroll?	★★★	6.4
What is your longer term ratio of non-contingent accrued liability to payroll?	★★★★★	3.5

Current Circumstance

- The benefit package, with the contingent COLA, has very low less risk long term
- The Funding Policy has been shown in study after study to appropriately protect the funded status of pension plans at an appropriate level of volatility
- Given those two facts, the actuarial model and assumptions need to be seen as a solid, defendable, reliable starting point; and then let time and the funding policy move us forward

Purpose of the Valuation

- The *primary* purpose of the annual actuarial valuation is to either (1) set or (2) assess the adequacy of the contribution policy
  - "Funding" or "contribution allocation procedure"
- For ERSRI, the contributions are determined annually for the period that begins 24 months after the valuation date

Inside the Actuarial Valuation: Projecting the Liability for Each Member

What is the probability the member reaches retirement? (Termination assumption)

When will the member retire? (Retirement assumption)

How much will the benefit be? (Benefit Provisions, Salary increase assumption)

How long will the benefit be paid? (Mortality assumption)

Hired at age 30

Retire with annual benefit

Receive benefit for remaining lifetime

What investment earnings will be available to help pay the benefits?

What overall payroll will be available to provide contributions?

How assumptions factor in…

- Over time, the true cost of benefits will be borne out in actual experience
  - Ultimate benefits paid are NOT affected by actuarial assumptions or methods
  - Determined by actual participant behavior (termination, retirement), plan provisions, and actual investment returns
- Assumptions help us develop a reasonable starting point for decision making and budgeting today

"Projections are difficult, especially ones about the future"

Purpose of Experience Study

- Assumptions should occasionally change to reflect
  - New information and changing knowledge
  - Changing patterns of retirements, terminations, mortality, etc.
- Experience study is a regularly scheduled review of the assumptions and methods
  - ERSRI practice is to perform the analysis every three years
- General process for setting assumptions and methods
  - Actuary makes recommendations
  - Board considers actuary's recommendation and makes the final decision for the system
- Any changes would be reflected in the upcoming 2020 valuations and the FY2023 contribution rates

Experience Study Process

- Compare actual experience to current actuarial assumptions and recommend changes to assumptions if necessary to better align with future expectations
- Reviewed past experience over a given timeframe
  - Identified how many members retired, terminated, became disabled, or died, including their age/service
  - Identified salary increases received by active members
  - Greater emphasis on forward-looking expectations for economic assumptions

Actuarial Standards of Practice

- Guidelines for the assumption setting process are set by the Actuarial Standards of Practice
  - ASOP #4 Measuring Pension Obligations
  - ASOP #25 Credibility
  - ASOP #27 Selection of Economic Assumptions
  - ASOP #35 Selection of Demographic and Other Noneconomic Assumptions
  - ASOP #44 Selection and Use of Asset Valuation Methods

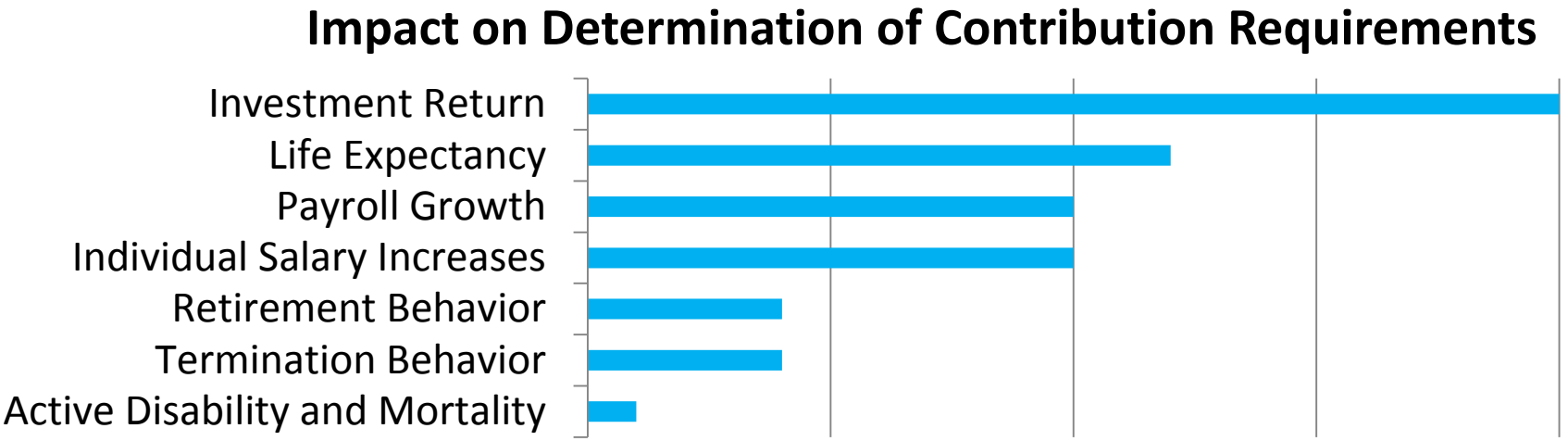
Reasonable Assumptions, per ASOP 27

- An assumption is reasonable if
  - It is appropriate for the purpose of the measurement
  - It reflects the actuary's professional judgement
  - It takes into account historical and current economic data that is relevant as of the measurement date
  - It reflects the actuary's estimate of future experience
  - It has no significant bias (i.e., it is not significantly optimistic or pessimistic)
    - Although some allowance for adverse experience may be appropriate

Reasonable Assumptions, per ASOP 27(cont.)

- Each individual assumption must satisfy the standards
- From ASOP 4: Actuary should select assumptions such that the combined effect of the assumptions selected by the actuary has no significant bias (i.e., it is not significantly optimistic or pessimistic) except when provisions for adverse deviation are included

Magnitude of Individual Assumptions



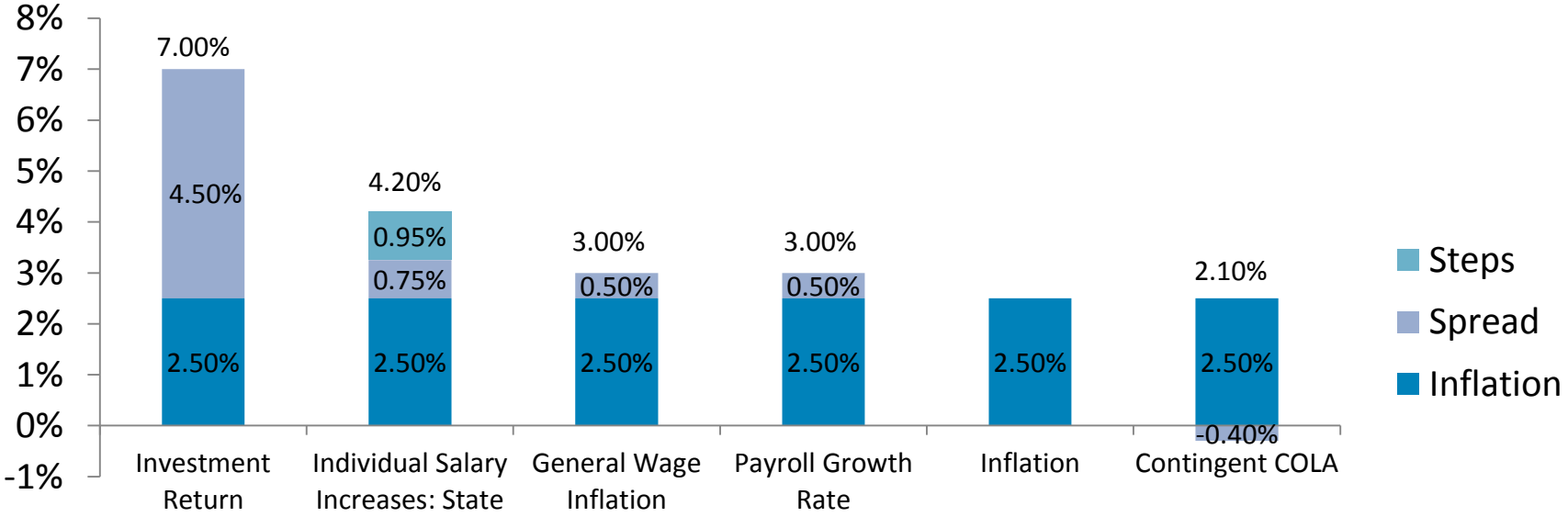
Summary of Preliminary Findings

- In general, the current assumption set is reasonable.
  - We are recommending some small changes to better match recent experience or update to latest available information, but in general they will have minimal impact
- There are new national mortality tables created specifically based on data from public sector retirees. We recommend moving to multiples of those tables, but the end result is minor compared to current assumptions
- We have separated Correctional Officers from General State Employees and developed their own set of demographic assumptions
- Members are pushing off retirement and turnover has slightly increased
- Most of the other assumptions continue to be appropriate
- Full detail is in the report

Inflation

- The assumed core inflation rate (currently 2.50% per year) impacts the development of:
  - Investment return assumption
  - Salary increase assumptions
  - Overall payroll growth rate
  - Half of the COLA formula
- Actual core inflation measured by the CPI-U during:
  - Last 10 years: 1.73%
  - Last 20 years: 2.19%
  - Last 30 years: 2.44%

Inflation is the first building block for other economic assumptions



Current Assumption Set for State Employees

Sources (Inflation)

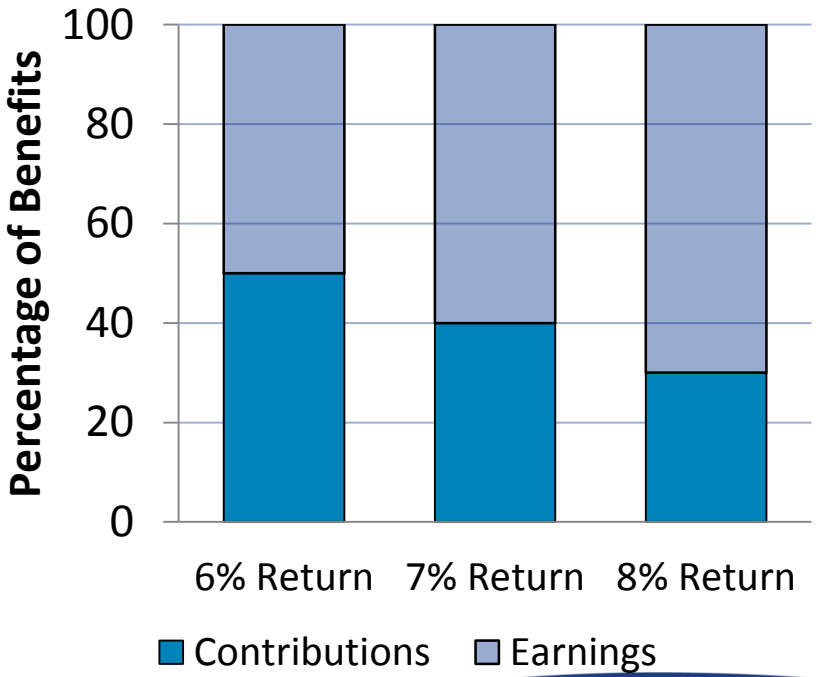
- NEPC Expectation (2020): 2.30% (10 year) and 2.50% (30 year)
- GRS Survey of Investment Firms: 1.70% - 2.50%, 2.18% average
- Social Security Trustee's Report: 2.60% (intermediate)
- TIPs vs. Nominal US Treasuries: 1.85% (20 year)
- Professional Forecasters: 2.20% (10 year)
- Horizon Survey (Summer 2019): 2.21% (10 year) to 2.29% (20 year)

Preliminary Finding

- We find the current 2.50% to be reasonable
- The COLA is tied to inflation so a low assumption could understate that cost
- Also, lowering this assumption would likely lead to lowering all economic assumptions
- Will show sensitivity to this assumption later in the presentation

Investment Return Assumption

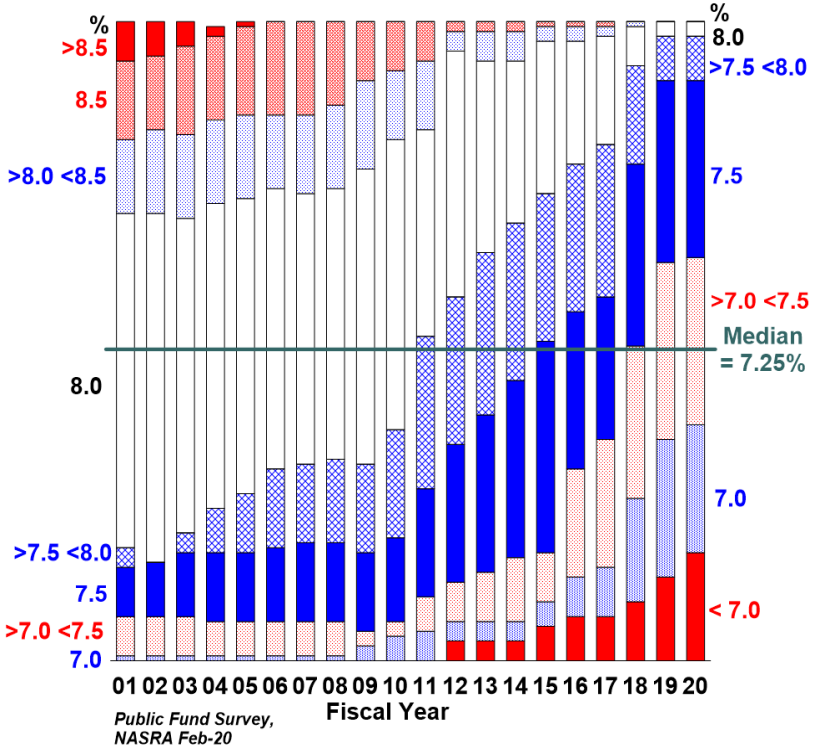
- This assumption is used to predict what percentage of a future benefit payments will be covered by investment return and what percentage by contributions.
- Lower Returns/Higher Contributions



Investment Return Assumption

- The assumption selected should be reasonable
  - Not necessarily a single “correct” answer
- Assumption is selected using a process that considers:
  - ERSRI’s target asset allocation
  - Capital market expectations
    - Utilize a building block approach that reflects expected inflation, real rates of return, and plan related expenses
    - Take into account the volatility of the expected returns produced by the investment portfolio
- Other factors to consider
  - Historical investment performance
  - Comparison with peers

Investment Return Assumption - National Trends



Range of Expected Returns

	2019	2020	Comment
NEPC – Short Term	6.80%	6.26%	*5-7 years in 2019, 10 years in 2020*
NEPC – Longer Term	7.71%	7.14%	*30 years*
Estimated Mid Term	7.26%	6.70%	*~20 years*

- Midpoint of NEPC's expectations from the two years would be 6.98%.
- We find the current 7.00% continues to be reasonable

Wage Assumptions

FY 2010-2019 (actual inflation has been 1.73% during this period)

Long Service Individual Salary Scale (10-Year Experience)				
	State Employees	Teachers	MERS General	MERS P&F
Current Assumption	3.25%	3.00%	3.25%	4.00%
Less Assumed Inflation	2.50%	2.50%	2.50%	2.50%
Assumed General Productivity/Merit/Promotion above Inflation	0.75%	0.50%	0.75%	1.50%
Actual Productivity Above Inflation for last 10 Years	0.89%	0.36%	0.69%	1.89%
Recommended Component	0.75%	0.50%	0.75%	1.50%
Recommended Nominal Assumption	3.25%	3.00%	3.25%	4.00%

Payroll Growth

FY 2010-2019 (actual inflation has been 1.73% during this period)

- Currently assume overall payroll grows at 2.50% per year for Teachers and 3.00% for all other groups
- Actual has been less than currently assumed, mostly explainable by lower inflation
- Current assumptions are the high end of the range, could also defend lower assumptions

Mortality

- Current assumptions have been tracking with experience
- There are new, national public sector tables, we would prefer to use those as our base tables
- We use multiples of the table based on credibility and experience of ERSRI
- After adjustments, very minor difference between previous and proposed assumptions

Retirement Patterns

- Members are putting off retirement, especially at first eligibility
- We are recommending decreasing retirement probabilities for most groups

	State Employees	Teachers
Expected Retirements @ First Eligibility	377	387
Actual	203	292
A/E Ratio Current	54%	75%
A/E Ratio Proposed	75%	94%

Funding Pattern

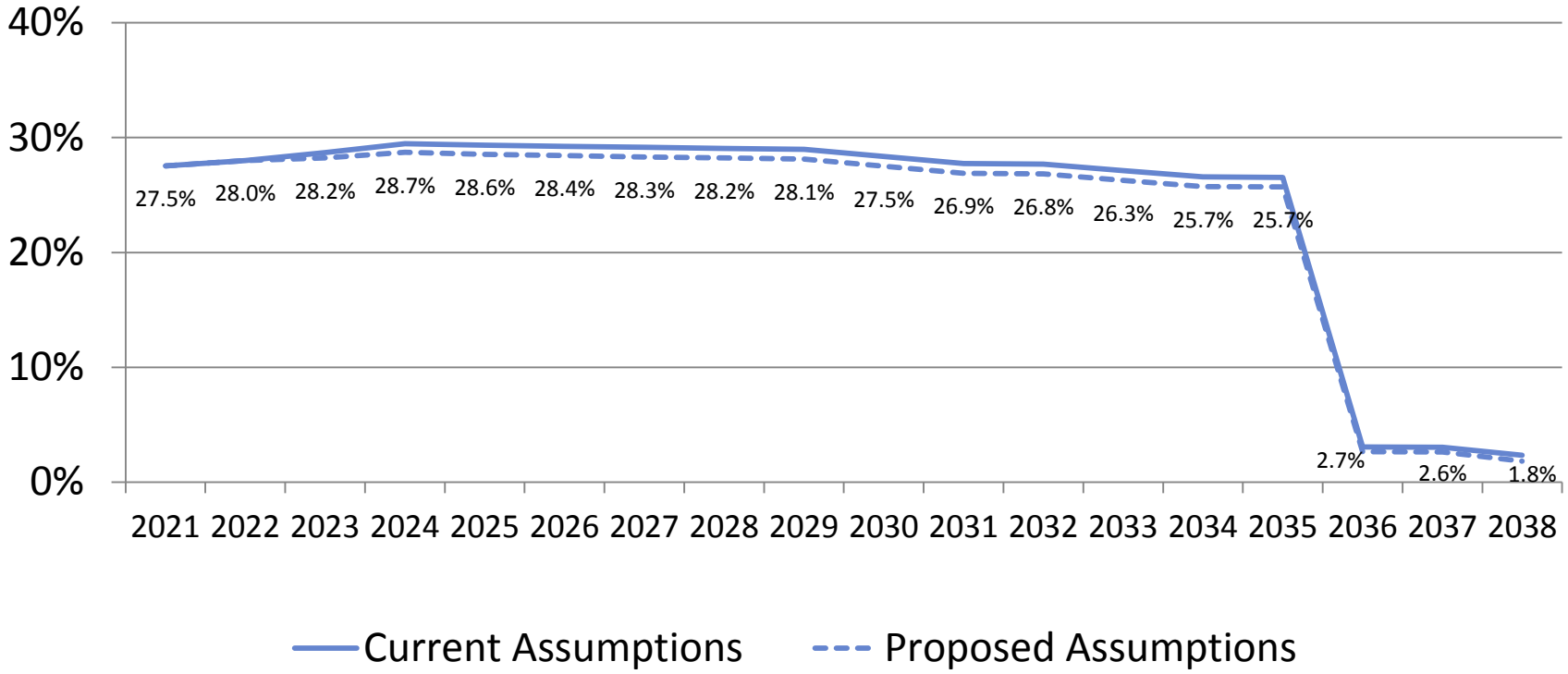
- The large impact from the last experience study was staggered in over 5 years
- As of the upcoming valuation, there are two additional step ups in the contribution requirements
- The aggregate impact from this experience study is a decrease in costs
- We recommend splitting this decrease into two pieces, to coincide with the two increases remaining from the last experience study
- The net will still be increases in the next two valuations, but about half as large as previous expectations

Actuarial Impact – State Employees

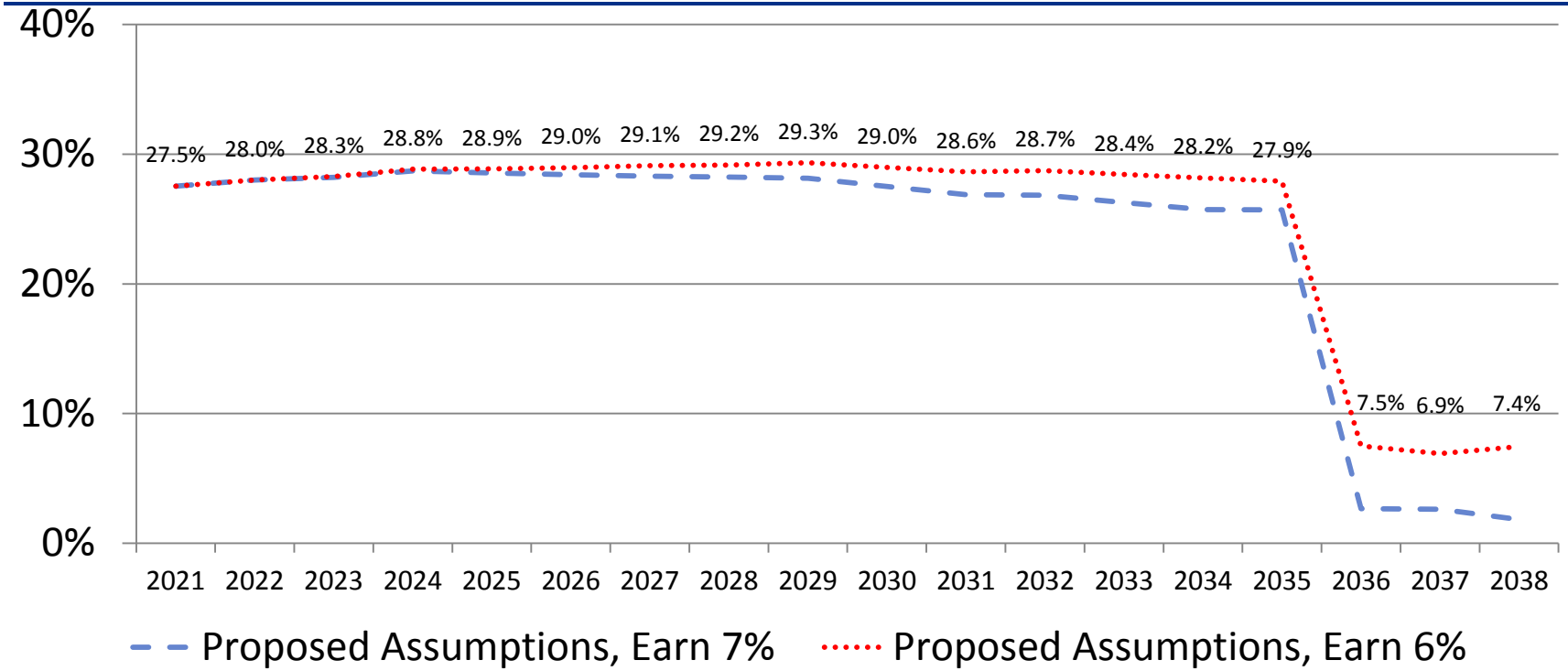
	Current Assumptions	With Proposed Changes	Impact
	(1)	(2)	(3)
1. Actuarial accrued liability			
a. Actives & Inactives	$ 1,608	$ 1,591	$ (17)
b. Annuitants	3,193	3,159	(33)
2. Total actuarial accrued liability (1a +1b)	$ 4,801	$ 4,750	$ (51)
3. Actuarial value of assets *	2,558	2,558	-
4. UAAL (2 - 3)	$ 2,244	$ 2,193	$ (51)
5. Funded ratio (3 / 2)	53.3%	53.8%	0.6%
6. UAAL/Payroll	307.6%	300.6%	-7.0%
7. Normal Cost	8.44%	8.30%	-0.14%
Projected Impact on Contribution Rates			
8. FY2022 Contribution Rate	28.01%	28.01%	0.00%
9. FY2023			
a. Projected Contribution Rate	28.68%	28.22%	-0.47%
b. Estimated Contributions	$ 232.0	$ 228.3	$ (3.8)
10. FY2024			
a. Projected Contribution Rate	29.46%	28.71%	-0.76%
b. Estimated Contributions	$ 245.5	$ 239.2	$ (6.3)

$ in millions

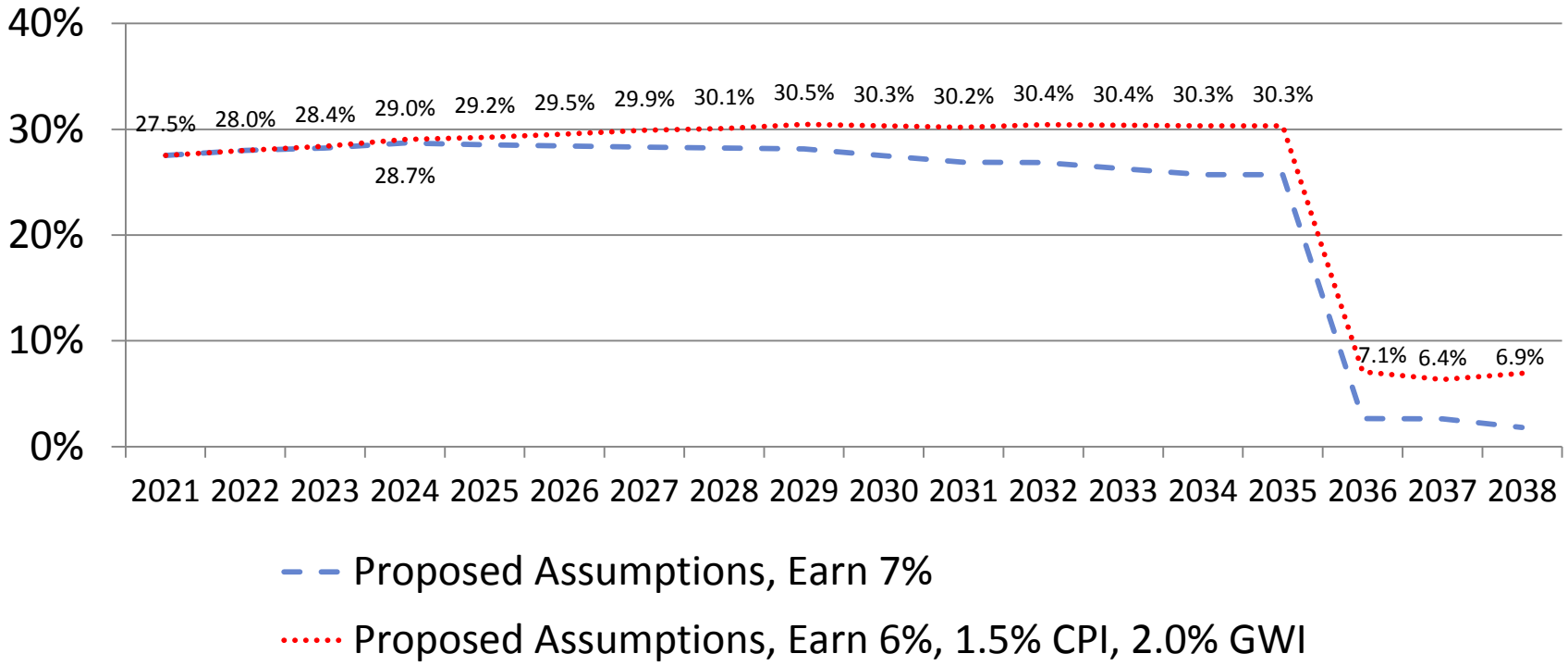
Projected Contribution Rates: State Employees



Projected Contribution Rates: State Employees
Sensitivity to Investment Returns



Projected Contribution Rates: State Employees
Sensitivity to All Economic Factors



Summary

- Full Detail, including impact to all other groups, in the full report
- We believe the recommended assumptions provide a better reflection of future experience and will provide more stability when compared to the current assumption set

Actuary's Qualifications

- We believe the recommended set of actuarial assumptions should present a more accurate portrayal of ERSRI's financial condition and should reduce the magnitude of future experience gains and losses.
- The study was conducted in accordance with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board
- Joe and Paul meet the Qualification Standards of the American Academy of Actuaries