



## \*Public Agenda Item #12

# *Review of Pension Experience Study Process and Preliminary Results*

March 11, 2020

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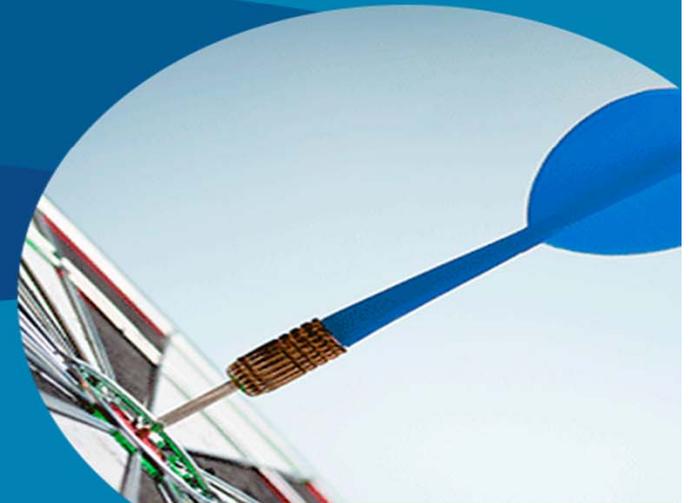
# ERS of Texas Experience Study Preliminary Findings

March 11, 2020

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# Agenda

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- Review of Purpose
- Preliminary Findings
- Individual Assumptions
  - Inflation
  - Investment Return
  - Wage Assumptions

## Reminder

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- 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 ERS, the historical funding policy has been a level “fixed rate” from the employer, and so the valuation is assessing the appropriateness of the current fixed rate



# Inside the Actuarial Valuation: Projecting the Liability for Each Member

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**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...

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- 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 today

*“Projections are difficult, especially ones about the future”*



# Purpose of Experience Study

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- 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
  - GFOA recommends at least once every five years
  - ERS will conduct studies at least every four years based on current statute
- General process for setting assumptions and methods
  - Actuary makes recommendations
  - Board considers actuary's recommendation and makes the final decision for the system



# Experience Study Process

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- 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

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- 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

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- 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.)

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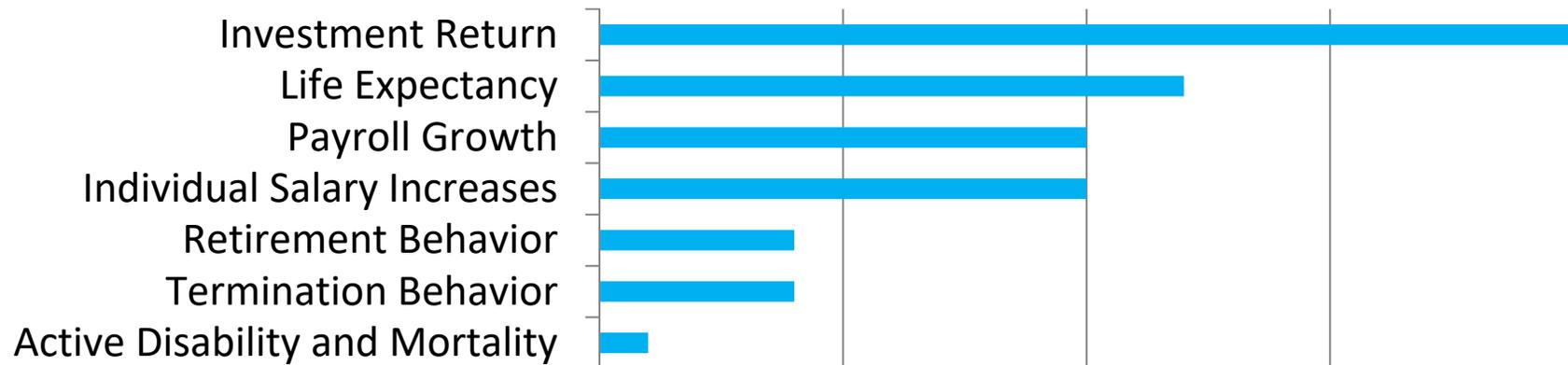
- Each individual assumption must satisfy the standards
- From ASOP 4: Actuary should select assumptions such that the combined effect of the assumptions selected by the actuary has no significant bias (i.e., it is not significantly optimistic or pessimistic) except when provisions for adverse deviation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



# Magnitude of Individual Assumptions

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## Impact on Determination of Funding Period



- *Each individual assumption must satisfy the Actuarial Standards*
- *Assumption set should be internally consistent*

# Summary of Preliminary Findings

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- **Notable Findings**
  - Most sources of inflation expectations are lower than the current assumption of 2.50%
  - Most sources anticipate all economic assumptions will continue to be lower than previously anticipated
    - Consistent with what we observed with the ERS experience
    - Both the nominal value assumptions (including inflation) and the “real” value assumptions (net of inflation, or spreads)
- **Minor Findings**
  - Turnover rates (pre-retirement) continue to be high for the LECO groups
  - Small modifications to assumed retirement patterns for LECOs in Groups 2 and 3
- **Confirmation of Current Assumptions**
  - Mortality and retirement experience continue to be right in line with new assumptions adopted in 2017
- Full detail will be in the report



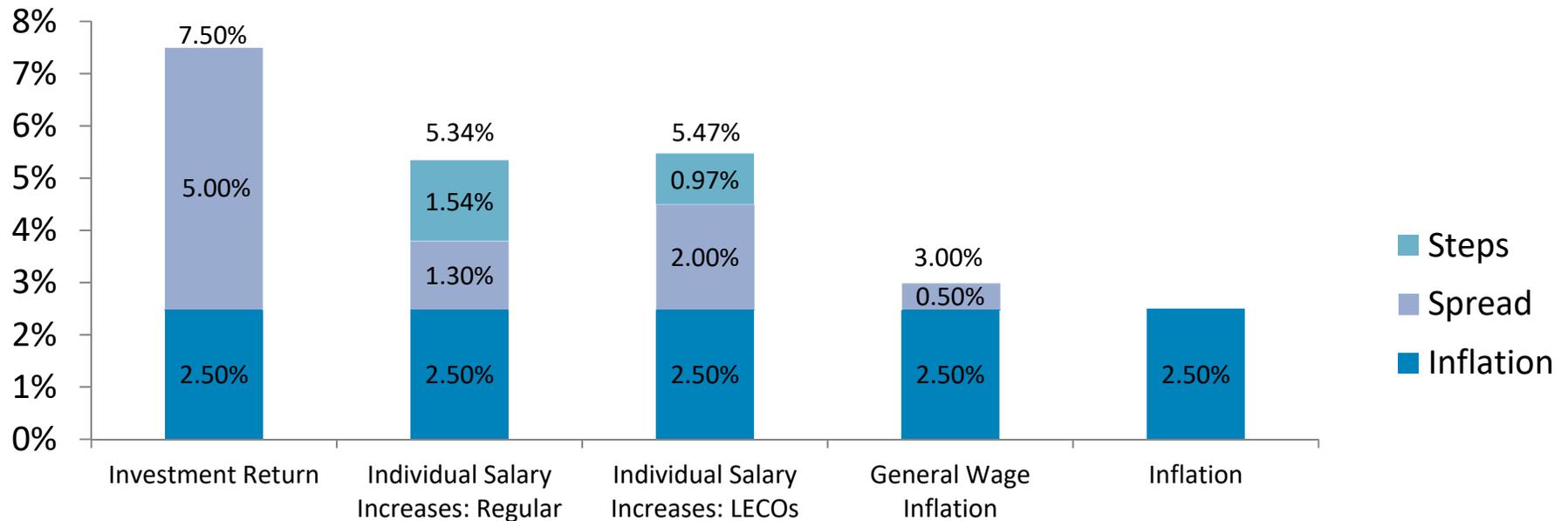
# Inflation

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- The assumed core inflation rate (currently 2.50% per year) is not used directly in the actuarial valuation, but it impacts the development of:
  - Investment return assumption
  - Salary increase assumptions
  - Overall payroll growth rate
  - Inflation assumption has a different impact on a plan like ERS compared to one that has a regular CPI based COLA
- Actual core inflation measured by the CPI-U during:
  - Last 10 years: 1.75%
  - Last 20 years: 2.14%
  - Last 30 years: 2.40%



# Inflation is the first building block for other economic assumptions



Current Assumption Set for ERS



"Steps" refer to pay increases associated with merit, promotion and longevity.

# Sources (Inflation)

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- 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

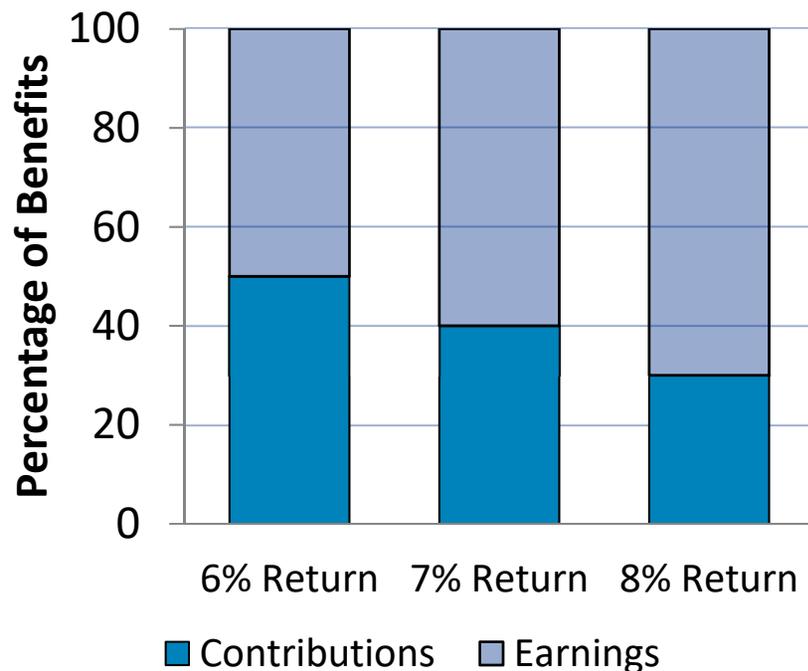
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- Most sources appear to be lower than the current 2.50%
- Deflation is a bigger risk to ERS than high inflation
- 2.30% would be closer to most sources, including ERS' investment consultant
  - Most “sources” decreased assumption by 0.10% to 0.20% since 2017



# 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



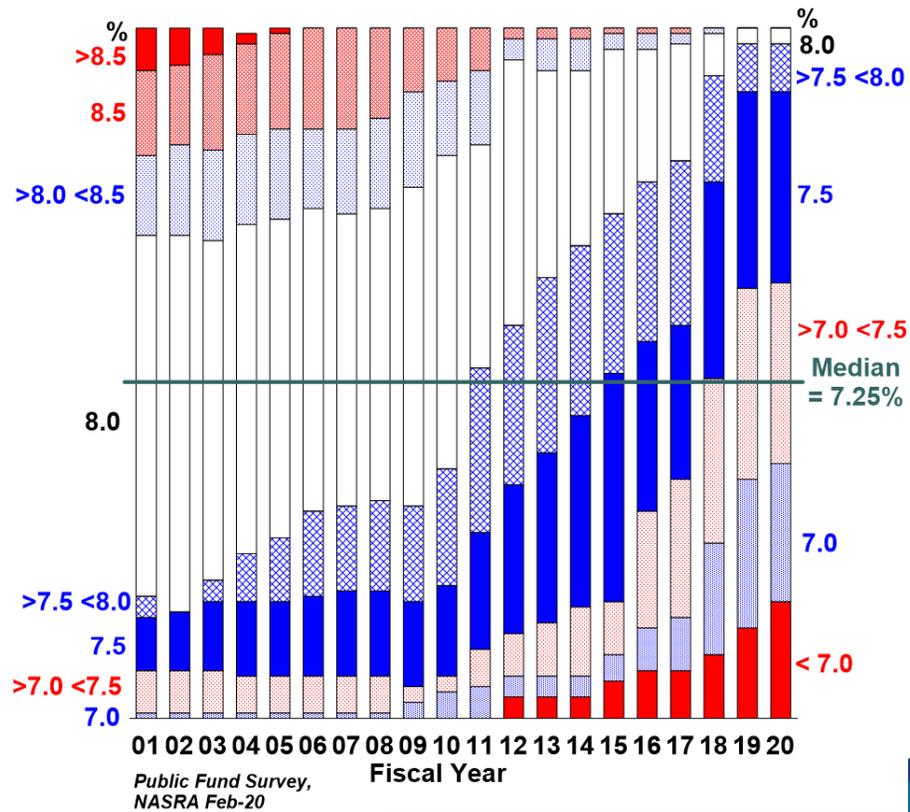
# Investment Return Assumption

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- The assumption selected should be reasonable
  - Not necessarily a single “correct” answer
- Assumption is selected using a process that considers:
  - ERS 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



# Volatility Scenarios

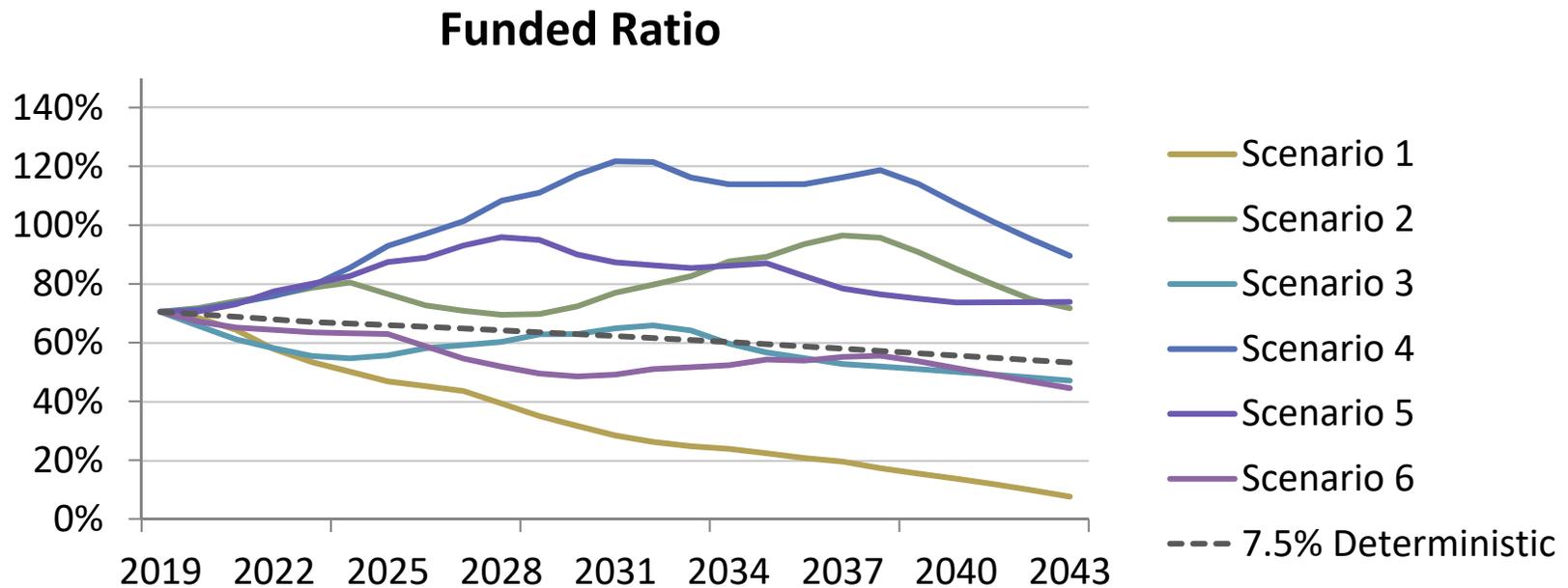
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- Investment Risk is typically illustrated based on absolute return
  - If the System actually earns 6% over time, the outcome would look like this.....
- However, there is more than that, especially when negative cash flows are introduced
  - Volatility can put a drag on actual asset values
  - Order matters
- To illustrate these other areas of risk, we have prepared illustrative projections using ERS' 2019 valuation results
  - Scenarios that all achieve an 7.5% return over a 20 year time horizon
  - In fact, all scenarios have the same annual returns, just in a different order



# Projection Scenarios Based on Historical Volatility Patterns

All scenarios generate 7.5% compound return over 20 years



*The above scenarios all achieve an 7.5% compound return over a 20 year period. All scenarios have the same annual returns, just in a different order.*

# Volatility Scenarios

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- Takeaway:
  - Without cash flows, order doesn't matter when compounding returns
  - With cash flows, ORDER MATTERS!
  - Benefits will be paid with trust assets (dollars), not returns
  - Two scenarios can have the same “rate of return” and produce very different ending asset values
  - Not enough to just say, we are “long term” investors, must also pay attention to the shorter to intermediate term



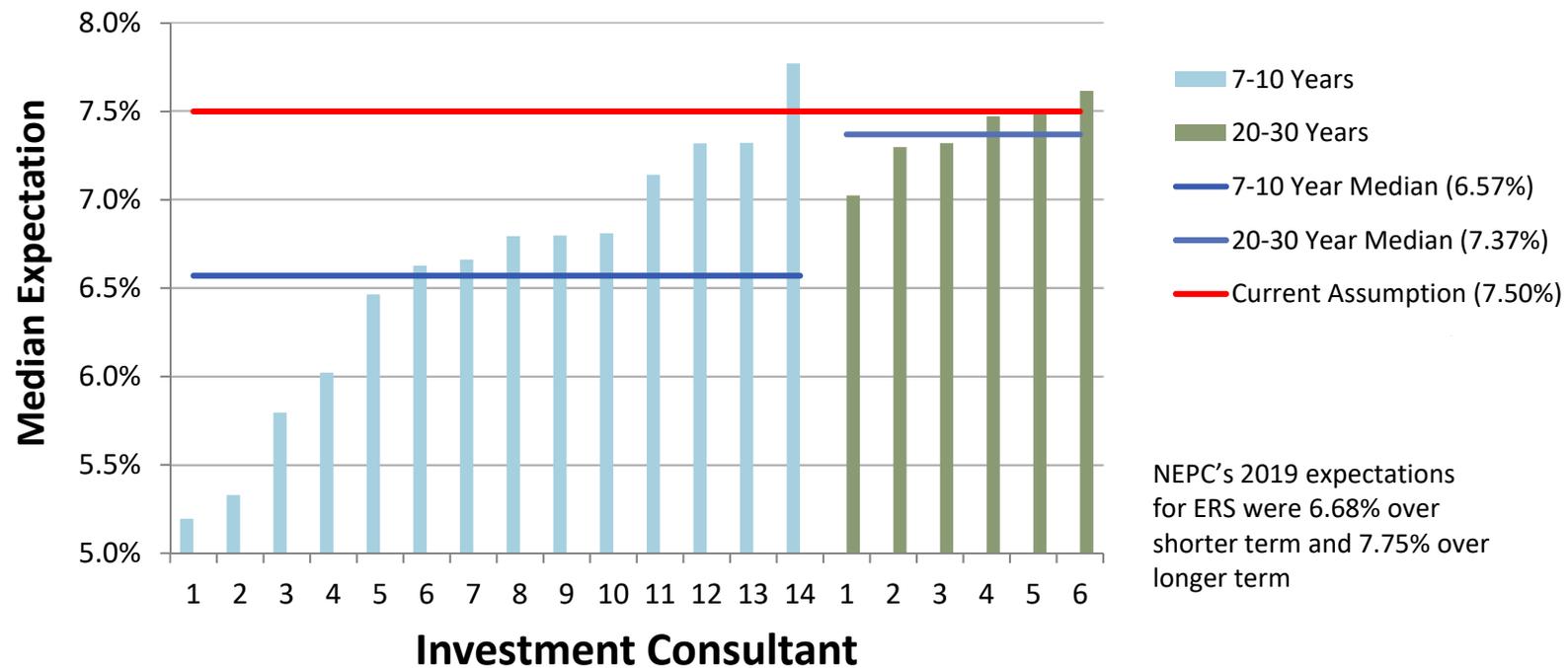
# GRS Survey of Investment Consultants

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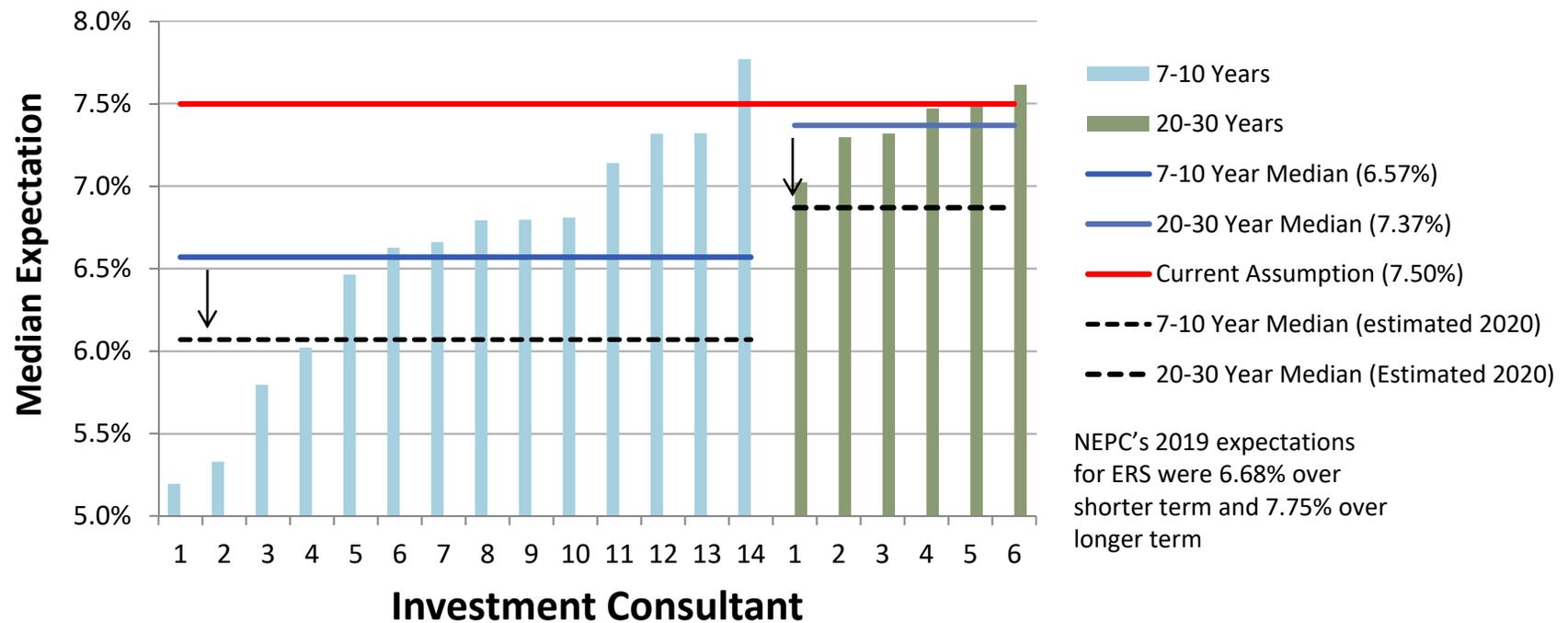
- We analyzed the current asset allocation
- Projected real returns were developed using ERS Long-Term Target Asset Allocation and 2019 capital market return assumptions
  - 2019 GRS Survey of 14 investment consulting firms
    - Generally 10-20 year time horizons
  - Includes ERS Investment Consultant, NEPC
- This process typically has a “mapping bias”, meaning asset classes always don’t map one-to-one, and the industry average will typically underestimate the expected returns when compared to the individual System’s consultant



# GRS Survey: Distribution of Forward-Looking Returns Expectations



# GRS Survey: Distribution of Forward-Looking Returns Expectations



# Range of Expected Returns

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	2019	2020	Comment
NEPC – Short Term	6.68%	6.06%	<i>5-7 years in 2019, 10 years in 2020</i>
NEPC – Longer Term	7.75%	7.14%	<i>30 years</i>
GRS Survey Results – Short Term	6.57%	<i>Not yet available</i>	<i>Generally, 7 to 10 year horizon</i>
GRS Survey Results – Longer Term	7.37%	<i>Not yet available</i>	<i>Generally, 20 to 30 year horizon</i>

- Midpoint of NEPC’s expectations are 7.22% in 2019 and 6.60% in 2020. To consider the volatility in these estimates, average of the midpoints from the two years would be 6.91%.
- General industry trend is 2020 market expectations are roughly 50-70 basis points less than 2019 expectations



# Preliminary Finding

- Reasonable investment return assumption appears to be 7.00%, or less

- Per NEPC's expectations for ERS based on 2020 return projections:

	Expected Return	Probability of achieving 7.5%	Probability of achieving 7.0%
10 Year Period	6.06%	35%	40%
30 Year Period	7.14%	44%	53%

- If the Board is uncomfortable with much lower probability achieving assumption over the shorter term, should consider something lower than 7.00%
- Given the funding strategy used by the Legislature to finance ERS, if the Board feels the likelihood of having to eventually decrease from 7.00% in a future experience study is high, should consider something lower than 7.00% now

	Current	Consideration @7.00%	Consideration @6.75%
Inflation	2.50%	2.30%	2.30%
Real Return	<u>5.00%</u>	<u>4.70%</u>	<u>4.45%</u>
<b>Nominal Return</b>	<b>7.50%</b>	<b>7.00%</b>	<b>6.75%</b>



# Wage Assumptions

FY 2012-2019 (actual inflation has been 1.57% during this period)

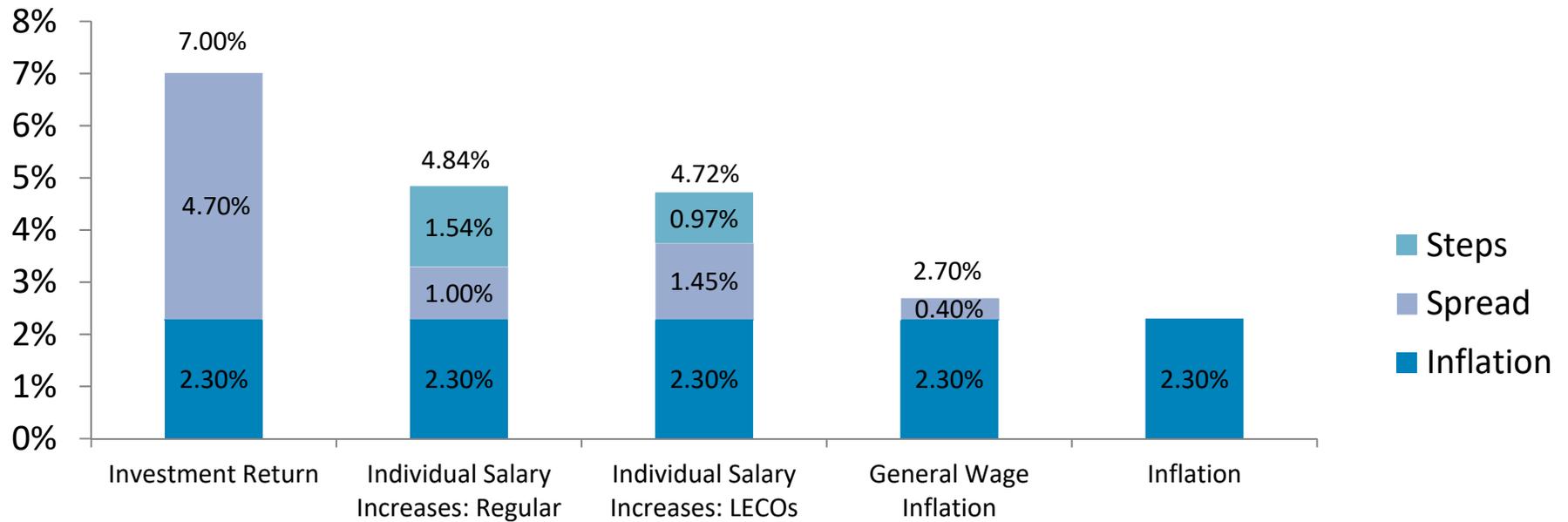
Annualized Assumption	Current Assumed	Actual	Preliminary Recommendation**
Overall Active Membership Growth	0.00%	-0.24%*	0.00%
Overall Payroll Growth (Based on Open Group Projection)	3.06%	2.36%	2.70%
Growth in Average Salary	3.00%	2.12%	2.70%
Year over Year Entrant Level Salary Growth	3.00%	2.90%	2.70%
Non-Step related Salary increases: Regular	3.80%	2.91%	3.30%
Non-Step related Salary increases: LECOs	4.50%	2.82%	3.75%

\* Net of removal of 90 day wait in 2015

\*\* Preliminary recommendation includes an inflation change from 2.50% to 2.30%. Additional change in the recommendation is based on actual experience of ERS.



# Illustrated Package of Economic Assumptions



Assumption Set for ERS reflecting preliminary recommendations



## Discussion and Next Steps

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- The Board will be asked to adopt a new set of assumptions at the May meeting
- The new assumptions will be used in the August 31, 2020 valuations



# Actuary's Qualifications

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- We believe the recommended set of actuarial assumptions should present a more accurate portrayal of ERS'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
- Ryan and Joe meet the Qualification Standards of the American Academy of Actuaries



Questions?