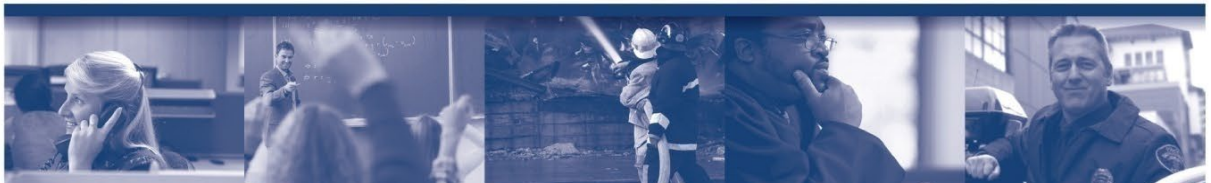
Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Iowa Peace Officers Retirement System
Discussion of Economic Assumptions

Presented By: Cavanaugh Macdonald Consulting

Date: April 18, 2022



Experience Study Timeline

- April meeting
  - Education about the purpose and process of experience studies
  - Discussion and presentation of relevant data for economic assumptions
  - Discuss actuarial methods (actuarial cost method, asset smoothing method, amortization of the unfunded actuarial liability)
  - Preliminary recommendations and feedback from Board. Identification of any additional information desired for next meeting
- June meeting
  - Follow up discussion on economic assumptions, if needed
  - Discuss findings on demographic assumptions and any recommendations for change
- July meeting
  - Board action to adopt assumptions for the 2022 valuation

Background on Assumptions

- Future benefit payments represent the liability of the system and ultimate funding target
  - Benefit payments are dependent on number of contingent events that are unknown
  - Actuaries use assumptions to determine information about future benefit payments including when, how much, and how long
  - Assumptions impact the allocation of costs over time so usually are neither intended to be overly conservative or aggressive
- Assumptions are just that – assumptions.
  - If actual experience differs from the assumption over time, the costs will differ also.
  - This variance is captured each year in the valuation process and the contribution rates are adjusted accordingly.

Purpose of Experience Study

- Provides the basis for analyzing existing assumptions and developing any recommended changes
- Actuary's role is to perform the analysis and make recommendations for each assumption
- As fiduciaries, the Board is responsible for the selection of actuarial assumptions
  - Board can adopt all, none, or some of actuary's recommendations
  - Assumptions do not affect the true cost of the System which is the actual benefits paid from the trust

Experience Studies

- Compare actual experience during study period with expected results based on current assumptions, particularly for demographic assumptions.

- Past experience provides strong guidance for some assumptions (like mortality) and weak guidance for others (like investment return)

- Both science and art
  - Objective (science): number crunching of actual and expected numbers of members and rates of occurrence
  - Subjective (art): interpreting the information and deciding on appropriate changes

Experience Studies

- Generally performed every five years, but can be sooner at the discretion of the Board
  - Last study period covered July 1, 2011 to June 30, 2016
  - Economic assumptions reviewed in early 2020
  - This study period covers July 1, 2016 to June 30, 2021
- Evaluate all actuarial assumptions and actuarial methods used in the valuation process
- New assumptions will be implemented in the June 30, 2022 actuarial valuation

Selection of Assumptions

What Are They?

Economic

- Price Inflation
- Investment Return
- Escalator/COLA
- General Wage Increase
- Individual Salary Increases
- Covered Payroll Growth

Demographic

- Retirement Rates
- Disability
- Termination of employment
- Mortality

Who Selects Them?

Economic

- Board
- Actuary
- Investment Consultant
- Other Advisors

Demographic

- Board Approves
- Mostly Actuary since data driven

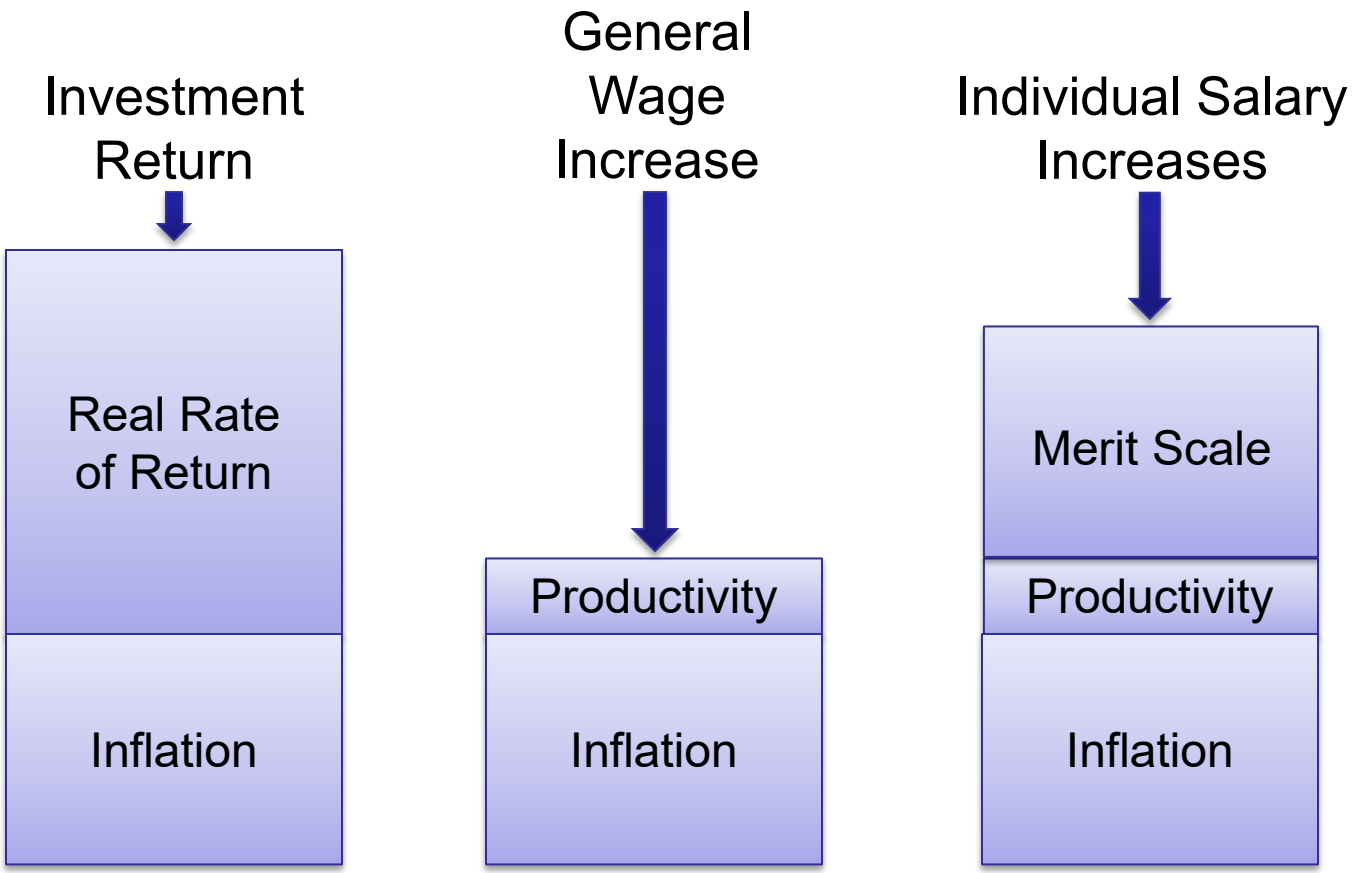
Actuarial Standards of Practice (ASOP)

- Issued by the Actuarial Standards Board
- Credentialed actuaries must follow ASOPs
- Not prescriptive in nature, but instead provides guidance to actuaries in the selection of assumptions used in valuing pension benefits
- Economic assumptions (ASOP 27)
- Demographic assumptions (ASOP 35)

Review of Actuarial Standard of Practice Number 27

- Recommendation is for a *"reasonable assumption"*
  - Appropriate for the purpose of the measurement
  - Reflects actuary's professional judgment
  - Takes into account historical and current economic data that is relevant
  - Reflects actuary's estimate of future experience, observation of estimates inherent in market data, or combination
  - No significant bias (not significantly optimistic or pessimistic)
  - Permissible to include some conservatism for adverse deviation
- Advises actuaries not to assign too much credibility to recent experience (keep long-term perspective).

Economic Assumptions
Building Block Method



Note: inflation assumption and productivity must be consistent in all assumptions.

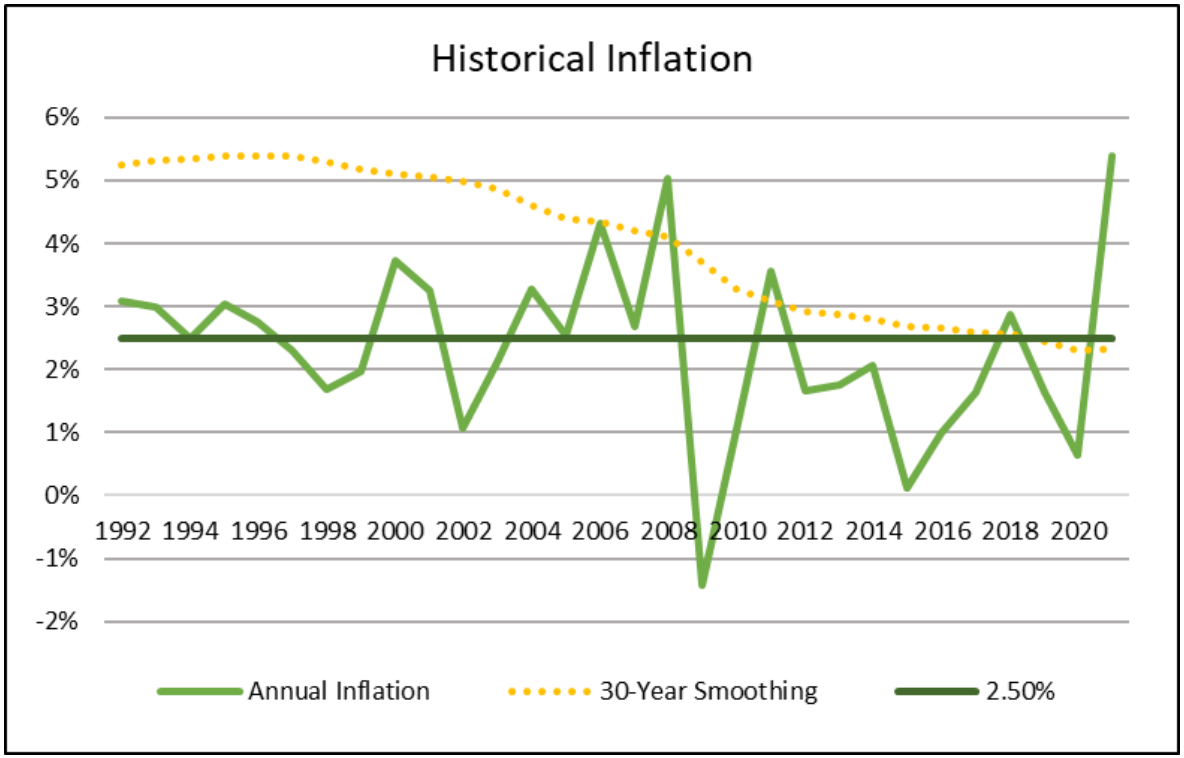
Inflation Assumption

- Price inflation represents annual increase in cost of living, generally measured by the Consumer Price Index (CPI)
- Current assumption is 2.50% (reduced from 2.75% in last study)
- Impacts the valuation as a component of other economic assumptions
  - Investment return
  - General wage increase/individual salary increase/post-retirement escalator
  - Covered payroll growth

Inflation Assumption

- Considerations for setting the assumption
  - Historical inflation
  - Future expectations
    - Financial Markets
    - POR's investment consultant (NEPC)
    - Other investment professionals
    - Other economist and professionals
    - Social Security projections
  - Other systems (largely to identify broad trends)

Historical Inflation
(measured from 12/31/21)



Period	Inflation		Period	Inflation
60 Years	3.79%		30 Years	2.37%
50 Years	3.90%		20 Years	2.31%
40 Years	2.76%		10 Years	2.14%

Future Inflation Expectations

- Financial markets: “breakeven rate of inflation” is difference between yields on fixed coupon Treasury bonds and inflation-protected Treasuries (TIPS)
  - December 2021: difference on 30-year bonds was 2.34%
  - March 2022: 30-year was 2.60%, 5-year was 3.60%
- Philadelphia FED Q1 2022 Survey of Professional Forecasters: 2.50% over next 10 years
- Congressional Budget Office: 2.39% over next 10 years (published July 2021)

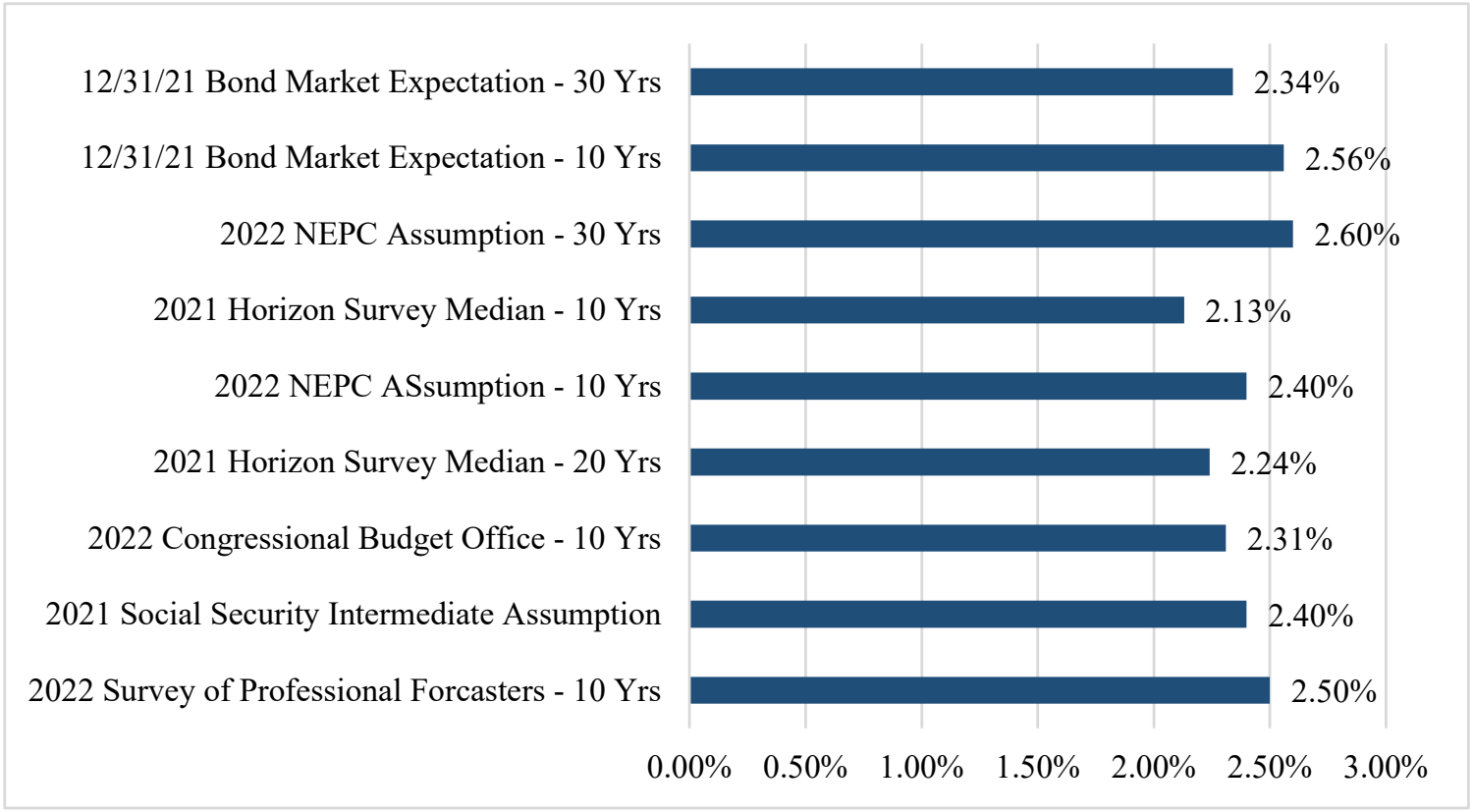
Future Inflation Expectations

- Investment professionals
  - **NEPC (*January 2022*)**
    - 10-year outlook: 2.4%
    - 30-year outlook: 2.6%
  - Horizon Survey (*August 2021*)
    - Short term median: 2.13%
    - Long term median: 2.24%
- Social Security projections (*June 2021*)
  - Best estimate: 2.40%
  - Range: 1.80% to 3.00%

Recent Inflation Trends

- Inflation has been much higher recently
  - Starting early 2021
  - Last 12 months have been 7.9%, last 3 months have been 8.4%
- Long-term considerations
  - The Federal Reserve is still targeting lower inflation
  - Bond market pricing indicates traders anticipate a return to lower inflation within a few years
  - Assumptions are regularly reviewed at least every 5 years so there is no urgency in making decisions
- Prefer to proceed cautiously
  - In last study, we reduced part of the way to what was then the current expectations
  - Prudent result since current inflation expectations have risen

Selected Metrics of Expected Rates of Inflation



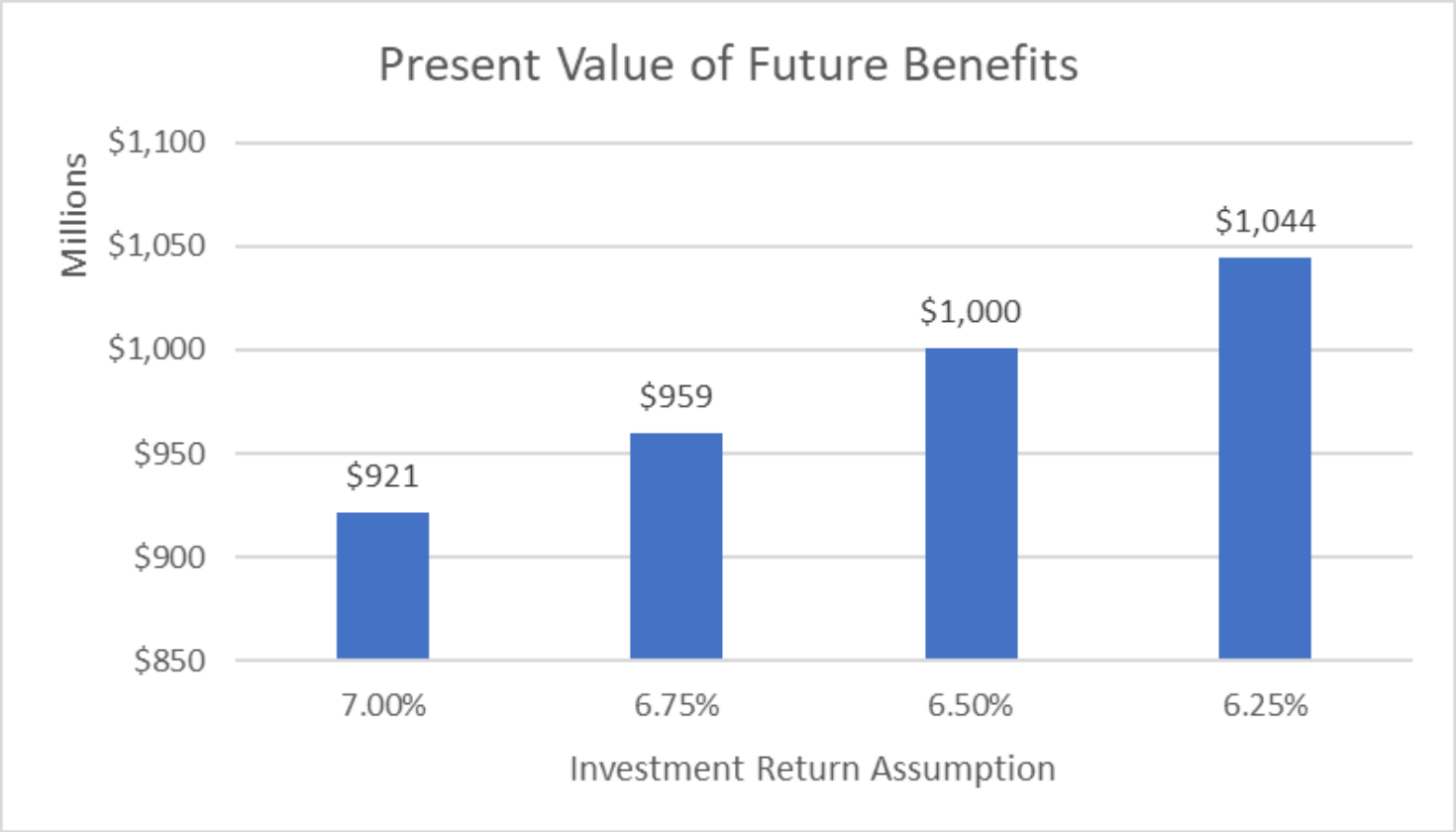
The current inflation assumption of 2.50% is in the range of current expectations. We recommend no change to the inflation assumption.

Investment Return Assumption

- Use the “building block” approach
  - Rate of price inflation (previously discussed)
  - Real rate of return
  - Sum is expected nominal investment return assumption
- Current nominal return assumption: 7.00%
  - 2.50% inflation + 4.50% real return
- Most powerful assumption in valuation
  - Small changes can have large impact on liabilities and contribution rates
  - Heavily impacted by asset allocation

Impact of Investment Return Assumption on Plan Liabilities

- The lower the investment return assumption, the higher the liability (Present Value of Future Benefits)



Considerations in Setting Investment Return Assumption

- Historical analysis (limited value)
- Forward-looking analysis of expected return
  - Using NEPC's current capital market assumptions
  - Consider other investment consultants' assumptions (2021 Horizon Survey)
- Unique system funding dynamics like negative cash flows and fixed contribution rate funding policy
- Board's risk perspective/risk tolerance
- Peer group comparison (informational for general trends only)

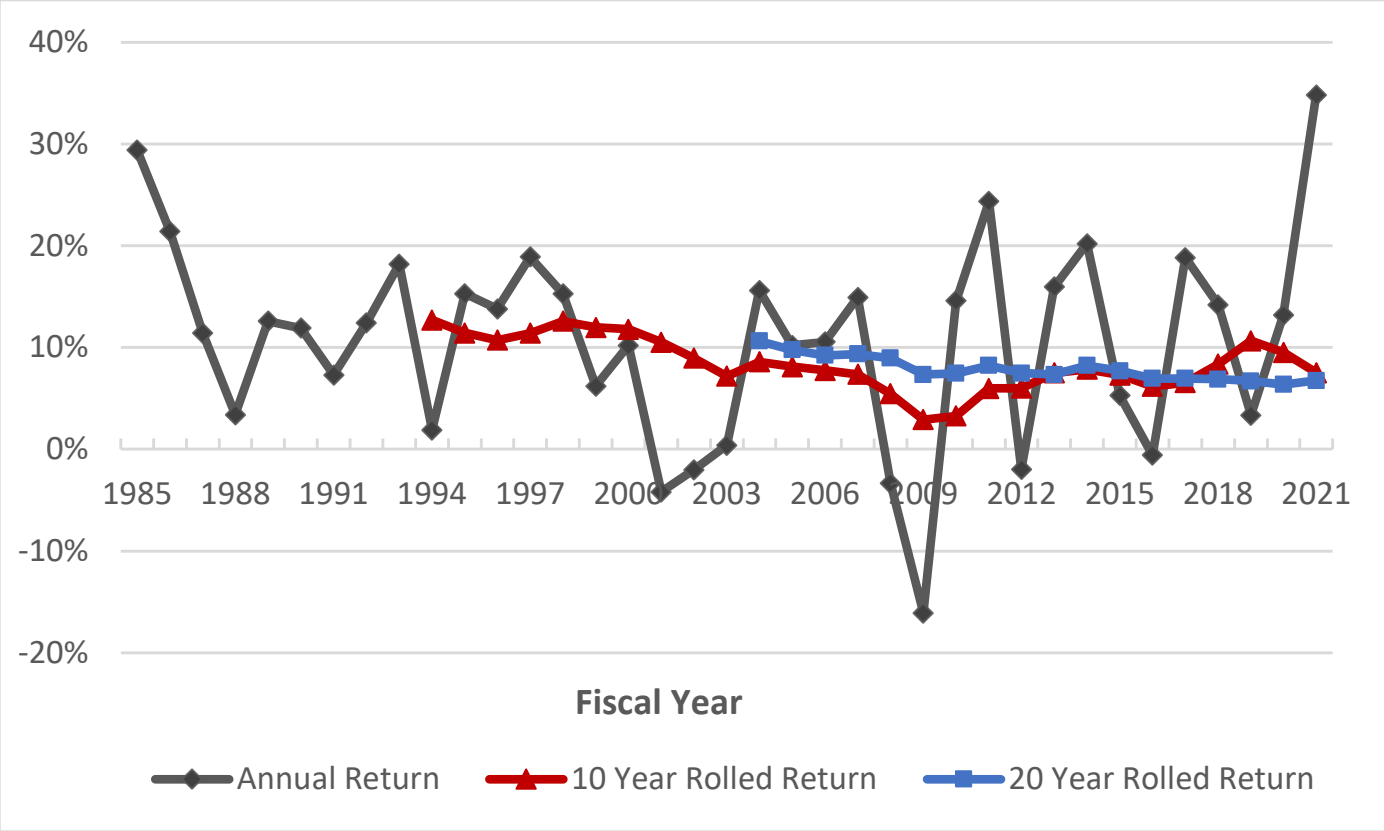
Investment Return Assumption

- Asset allocation is determined first and leads to the development of the investment return assumption, not vice versa
  - Level of risk is determined by the Investment Policy including the objectives, duties, policies and procedures related to plan investments
- Asset allocation is the key factor in setting this assumption
  - Portfolios that take risk are expected to be rewarded with higher returns, along with potentially greater volatility

Investment Return Assumption

- Considerations in setting the investment return assumption
  - Our perspective is long term (30+ years), but we cannot ignore the short term as it has a material impact on the accumulation of funds over time
  - Fixed contribution rate funding
  - Capital market assumptions, developed by investment consulting firms, are intended for a different purpose, i.e., asset allocation, and change frequently as market conditions change
  - Currently, short-term market expectations are materially lower than long term expectations. Creates some strong headwinds for accumulating assets over time.
- Can't blindly use the investment consultant's expected return. More analysis is needed.

POR Historical Annual Fiscal Year Investment Returns



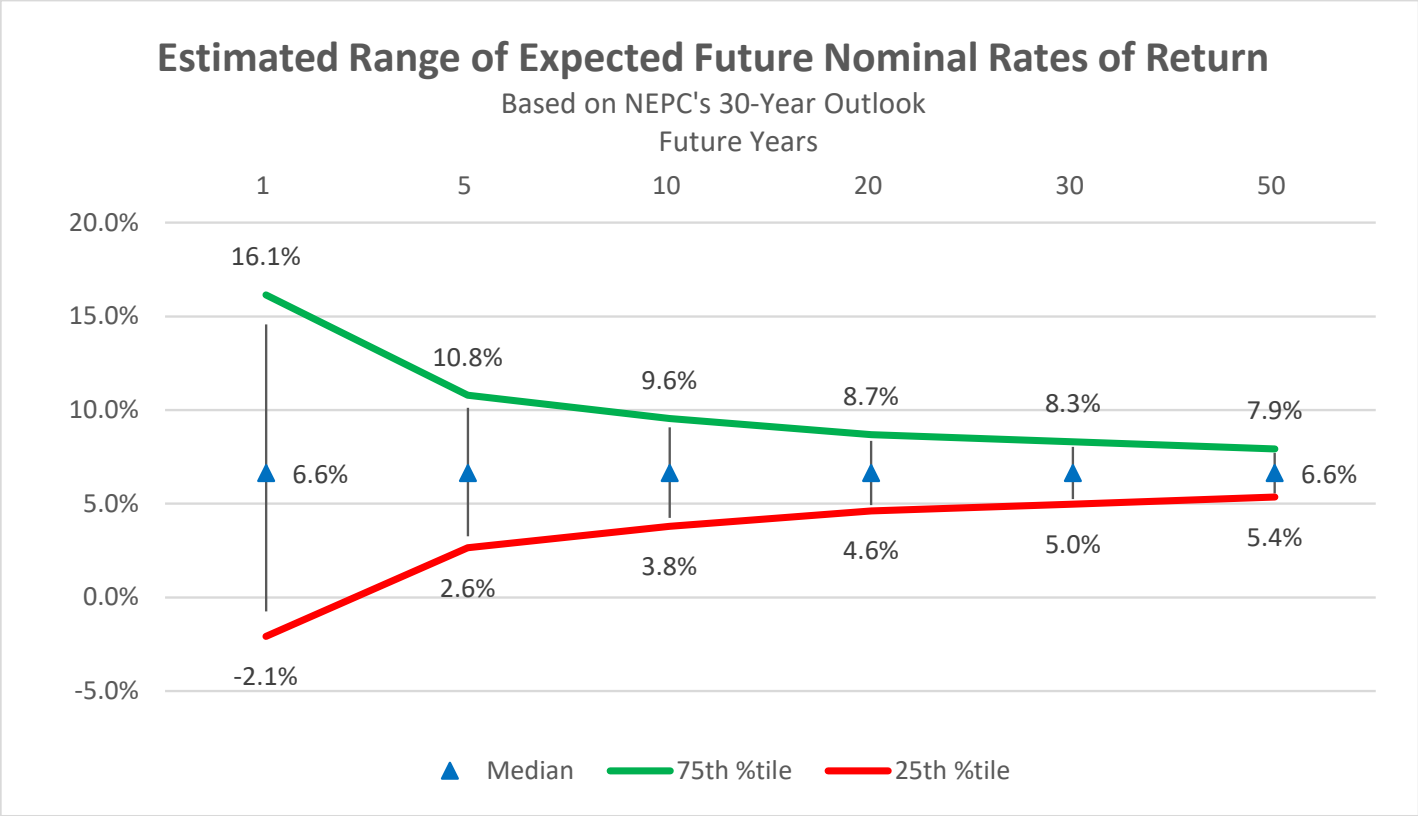
ANNUALIZED RETURNS through 6/30/2021

5-Year Return:	16.11%	20-Year Return:	8.73%
10-Year Return:	11.47%	33-Year Return:	9.55%

Forward Looking Expectations

- The current asset allocation results in an expected return of **5.5% over 10 years and 6.6% over 30 years**, *using NEPC's capital market assumptions*
- The expected return **over 10 years is 6.1% and over 20 years is 6.9%** *using Horizon's median capital market assumptions*
- Note NEPC's CMAs are current (2022 Q1) while Horizon Survey was published August 2021. Differences are to be expected. More credibility is assigned to NEPC's forecast.

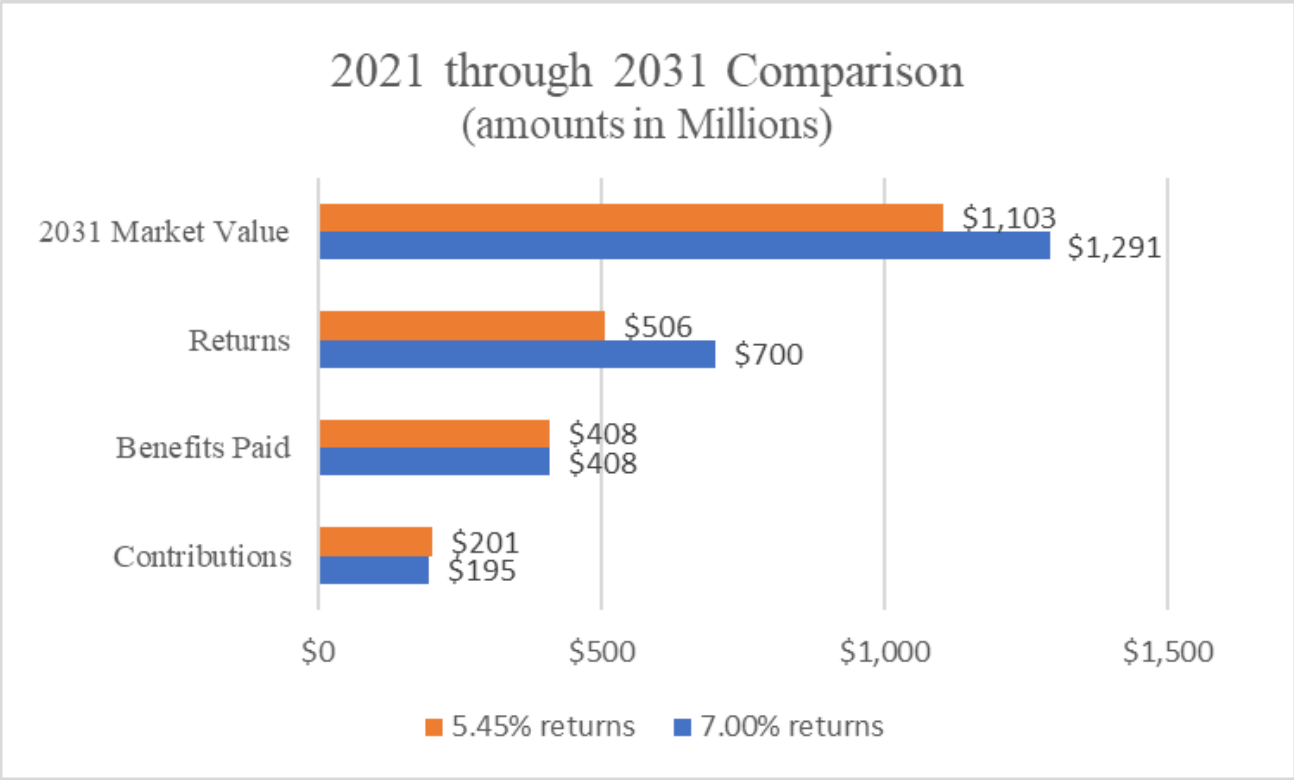
Expected Future Nominal Returns
(using NEPC's Inflation assumption of 2.6%)



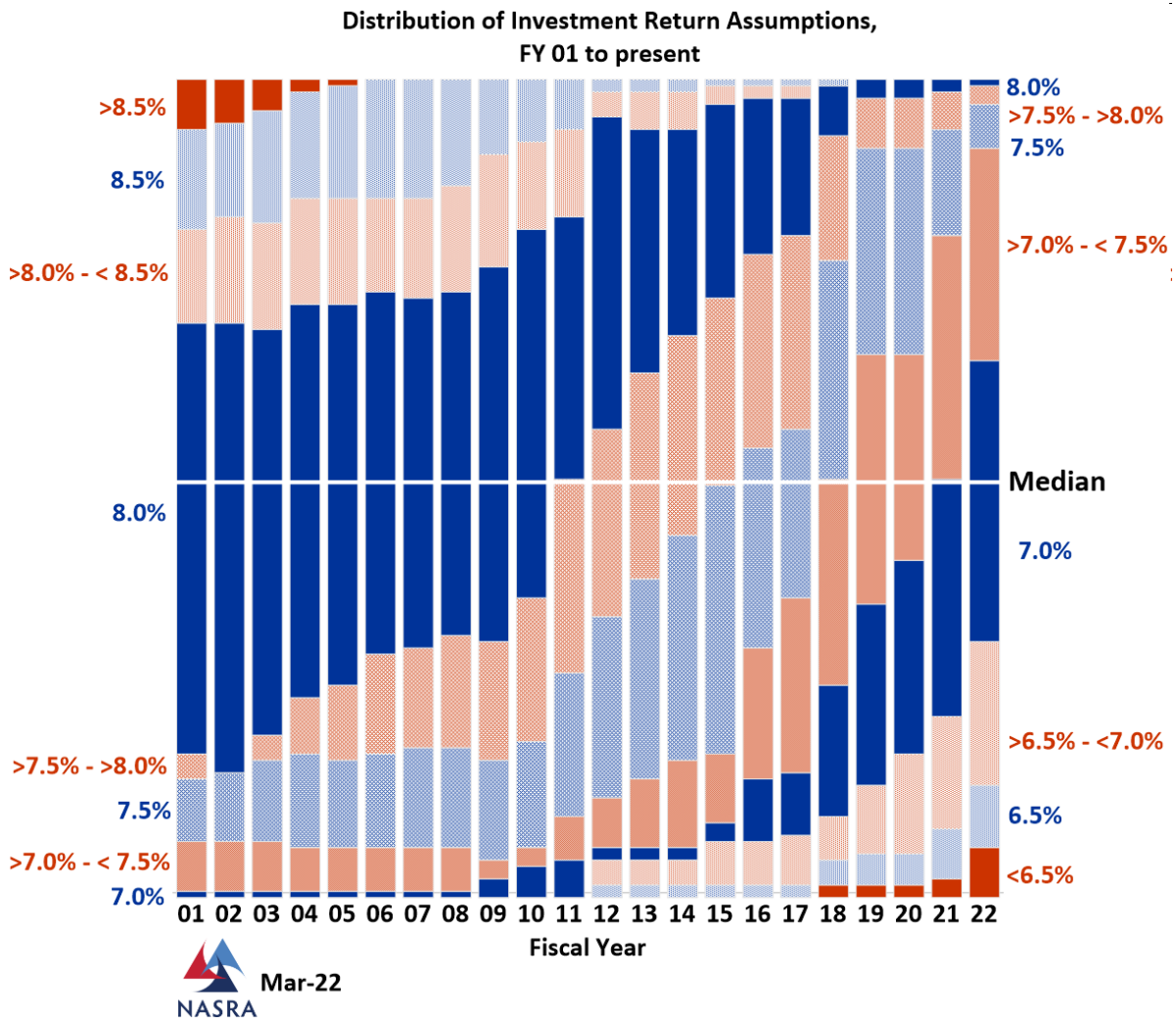
The range of potential outcomes is very wide, particularly over shorter periods of time. Even after 30 years, there is a 50% chance the effective return will be less than 6.6% and a 25% chance it will be below 5.0%.

Impact of Low Returns in Short Term

- If actual returns are 5.45% over the next ten years as NEPC expects, the accumulation of plan assets will be $188 million lower than anticipated by the 7.0% assumption.



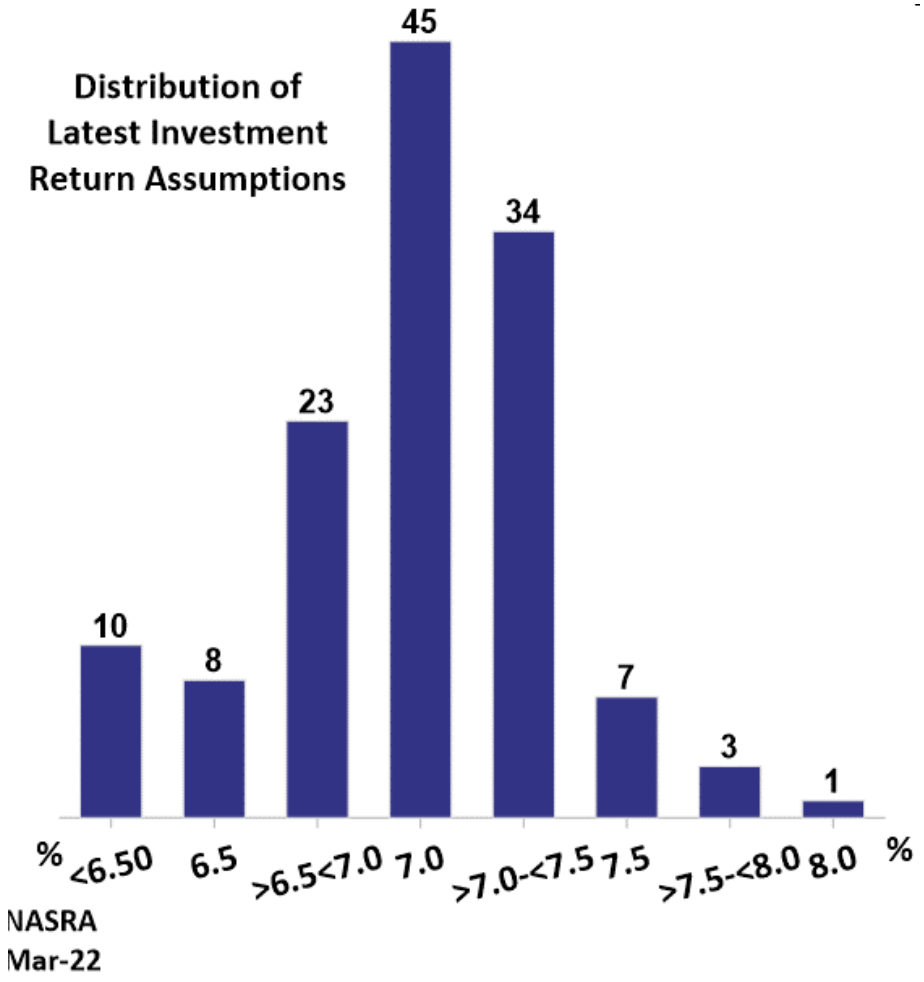
Change in Distribution of Return Assumptions



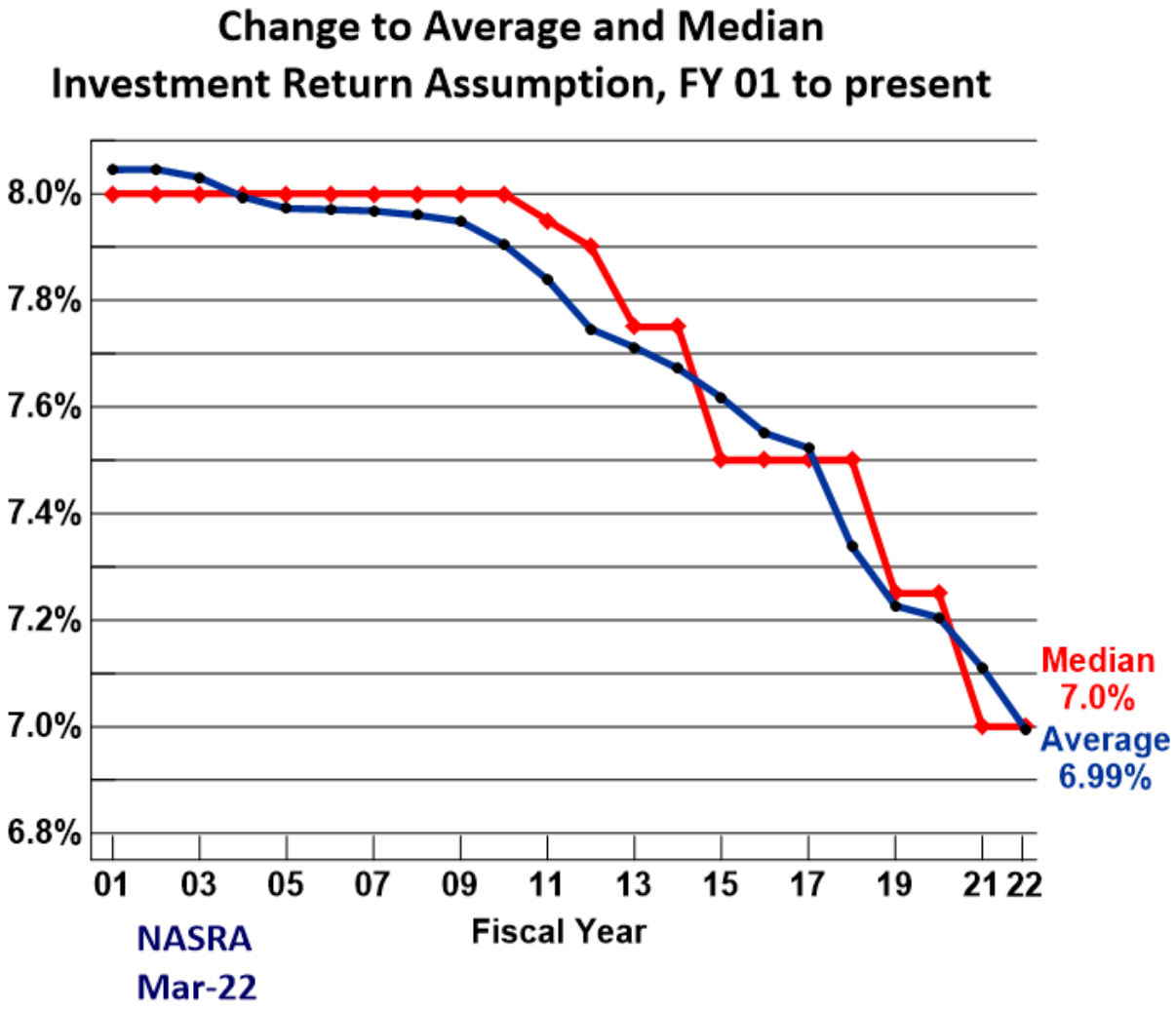
The trend in public plans has been to lower investment return assumptions over the last five to ten years.

Note assumptions vary for multiple reasons including different asset allocations as well as the risk profile of the boards.

Distribution of Current Investment Return Assumptions



Assumptions Used by Other Public Plans



Summary of Findings: Investment Return Assumption

- Current assumption: 7.00% nominal return
- Based on NEPC's 30-year expected return (50th percentile of the distribution) using their inflation assumption of 2.60% is 6.6%.
  - Our recommended inflation assumption is 2.50% which results in a slightly lower investment return assumption
- Some reduction seems prudent. Consider an assumption in the range of 6.25% to 6.75%.

Administrative Expenses

- Administrative expenses are included directly in the actuarial contribution rate
  - Actual expenses from the prior year are used as an estimate for the current year
  - In the last valuation, administrative expenses were 0.59% of covered payroll
  - Recommend retain current methodology.
- Investment return assumption is net of investment expenses, but no adjustment/reduction is necessary for administrative expenses.

General Wage Increase for POR Members

- Compared salary schedules for POR members over last 10 years
  - Effective annual increase was around 2.9%
  - Actual price inflation over same period was about 1.9%
  - Difference indicates real wage growth around 1.0% (current assumption)
- Could be wage pressure in the short term, given current labor shortage. Board feedback would be helpful input in setting this assumption.
- Preliminary recommendation is to retain the current assumption of 3.50%.
  - Price inflation of 2.50% plus real wage growth of 1.00%
  - Note: this assumption is also used in valuing the post-retirement benefit escalator.

Assumption for Post-retirement Escalator

- Escalator is based on salary increase for the rank of the member when they retired
- Current assumption is based on the general wage increase assumption of 3.50%
- Recommend retaining the current assumption if the general wage assumption is retained.

UAL Payment Increase Rate

- Payments on the unfunded actuarial liability (UAL) are assumed to increase each year in the future
  - Need an assumption to develop the future payment schedule for the UAL
  - Does not impact actual contributions!
- A lower payroll growth assumption creates some conservative
  - Results in larger amortization payments in early years
  - Example: 0% payroll growth = level dollar payments
- Current assumption is 2.75% (0.25% higher than price inflation assumption).
  - Some margin for adverse deviation is built into the current assumption.

Actual POR Payroll Growth

- The following table summarizes POR's historical payroll growth and active population change:

Year Ended June 30	Active Count	Covered Payroll ($ Millions)	Average Annual Salary ($)
2001	640	$31,799,907	$49,687
2006	618	36,231,639	58,627
2011	644	43,493,715	67,537
2016	563	44,775,765	79,531
2021	547	49,109,332	89,779

- Average increase in covered payroll was 2.2% and average increase in annual salary was 3.0%.
- The fluctuation in the size of the group is another reason to use some conservatism in setting this assumption.

Payroll Growth Assumption

- Actual POR covered payroll increased an average of 2.2% per year over the period 2001-2021
  - Heavily impacted by the decline in the size of the active membership
  - Increase in average salary, which mitigates the impact of the decline in active members, was 3.0% over this period
  - Size of active membership in the future has an impact of setting this assumption. If future reductions are expected, they should be reflected in this assumption.
- Recommend retaining the current payroll growth assumption of 2.75%.

Recommended Set of Economic Assumptions

Assumption	Current	Recommended
Price inflation	2.50%	2.50%
Productivity	1.00%	1.00%
Wage inflation*	3.50%	3.50%
Post-retirement Escalator	3.50%	3.50%
Payroll growth**	2.75%	2.75%
Investment return	7.00%	6.25% to 6.75%

* Used in developing the individual salary increase assumption and the post-retirement escalator increase assumption.

**Does not impact funding results. Only used to calculate the UAAL amortization payments.

No Change Recommended to Current Actuarial Methods

Actuarial Method	Current	Recommended
Actuarial Cost Method	Entry age normal	No change
Asset Valuation Method	5-year closed smoothing of difference between actual and expected return on market value of assets.	No change
Amortization of Unfunded Actuarial Accrued Liability	Layered amortization with payments determined as a level percent of payroll. New bases over 20 years.	No change

Cost Impact*
($ in Thousands)

July 1, 2021 Actuarial Valuation

	Current Assumption	Using 6.25% Return	Using 6.75% Return
Actuarial Liability	$780,150	$861,329	$805,809
Actuarial Assets	658,081	658,081	658,081
Unfunded Actuarial Liability	$122,069	$203,248	$147,726
Increase in UAL			
Funded Ratio	84.4%	76.4%	81.7%
Employer Contribution:			
Actuarial Contribution	40.47%	57.75%	46.01%
Statutory Contribution	37.00%	37.00%	37.00%
Supplemental State	10.18%	10.18%	10.18%

* Estimated using the July 1, 2021 actuarial valuation. Actual impact on July 1, 2022 valuation will be somewhat different. The $5 million supplemental State contribution stops once the System is 85% funded.

Next Steps

- Considerable amount of data presented today. Time is needed to fully digest everything and evaluate recommendations.
- Is there any additional data or analysis the Board would specifically like to see for the next meeting?
- Proposed schedule
  - June: follow-up on economic assumptions, present recommendations on demographic assumptions and actuarial methods
  - July: review recommendations, additional discussion and Board action