SPECIAL MEETING OF THE ANNUITY AND PENSION BOARD
EMPLOYES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE
789 N. WATER ST. (Employes' Retirement System)
WEDNESDAY, AUGUST 24, 2022 – 9:00 A.M.

Special Notice: Due to the COVID-19 pandemic, the meeting will be held remotely via video conference. Instructions on how to observe the meeting will be available on ERS's website (www.cmers.com) prior to the meeting.

Please note and observe the following remote attendance etiquette to ensure a smooth and productive meeting:
• In order to cut down on background noise, participants in the meeting should put their phones on mute when they are not participating.
• At the start of the meeting, the Chairman will announce the names of the members of the Board present on the call, as well as anyone else who will be participating.
• Please request to be recognized by the Chairman if you would like to speak.
• Those participating on the call should identify themselves whenever they speak, and should ensure that the other participants on the call can hear them clearly.

SPECIAL MEETING

I. New Business.

A. Presentation by Patrice Beckham and Larry Langer of Cavanaugh Macdonald Consulting Regarding the Five-Year Experience Study.

Please be advised that the Annuity and Pension Board may vote to convene in closed session on the following item (B.), as provided in Section 19.85 (1)(c), for considering employment, promotion, compensation or performance evaluation data of any public employe over which the governmental body has jurisdiction or exercises responsibility. The Board may then vote to reconvene in open session following the closed session.

B. ERS Executive Staff Compensation.

MEETING REMINDERS

INVESTMENT COMMITTEE MEETING
THURSDAY, SEPTEMBER 8, 2022 – 9:00 A.M.
789 N. WATER ST.

ADMINISTRATION & OPERATIONS COMMITTEE MEETING
WEDNESDAY, SEPTEMBER 21, 2021 – 9:00 A.M.
789 N. WATER ST.

REGULAR MEETING OF THE ANNUITY AND PENSION BOARD
WEDNESDAY, SEPTEMBER 28, 2021 – 9:00 A.M.
789 N. WATER ST.

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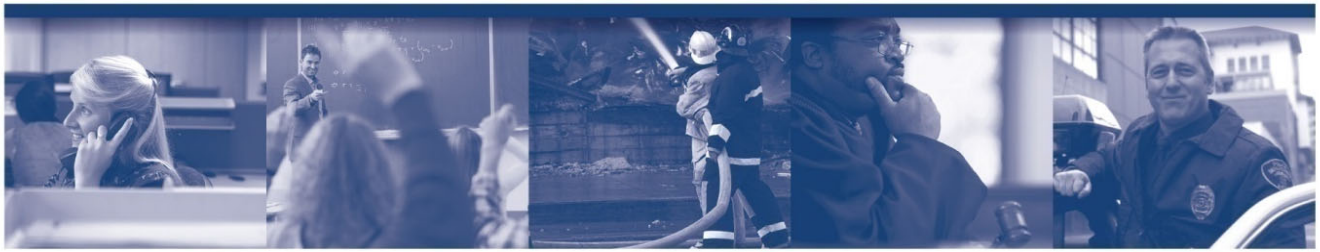
City of Milwaukee Employe's Retirement System
Board Presentation

Experience Study Results: Economic Assumptions

Presented By: Cavanaugh Macdonald Consulting

August 24, 2022



www.CavMacConsulting.com

Background

- Assumptions do not affect the true cost of the plan - the actual benefit payments paid from the trust
- Assumptions have a significant impact on the calculation of liabilities and actuarial contribution rates
  - Actuaries use assumptions to estimate the timing, duration and amount of future benefit payments that depend on unknown contingent events
  - Assumptions impact the allocation of costs so usually set neither overly conservative or aggressive
- Assumptions are just that – assumptions. If actual experience differs from the assumption over time, contribution timing will differ also.

CMERS Experience Study

- Performed every five years for CMERS
  - Last study covered calendar years 2012 through 2016
  - Investment return assumption reviewed when CMC assumed actuarial duties (early 2019)
  - Current study covers calendar years 2017 through 2021
- Monitor all actuarial assumptions and methods used in the valuation process
- Schedule:
  - August – discuss economic assumptions.
  - September – discuss demographic assumptions.
  - October – discuss stable contribution policy.
  - ***No Board action until all results have been presented.***
  - January 1, 2023 valuation – based on new assumptions

Purpose of Experience Study

- Provides basis for analyzing existing assumptions and developing recommended changes

- Actuary's role is to 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

Selection of Assumptions

What Are They?

Economic

- Price Inflation
- Investment Return
- Wage Growth
- COLA
- Interest Crediting Rate on EE Contr
- Payroll Growth/UAAL payment increase

Demographic

- Retirement Rates
- Promotional/Step Pay Increases
- Disability
- Turnover
- Mortality

Who Selects Them?

Economic

- Board
- Actuary
- Other Advisors

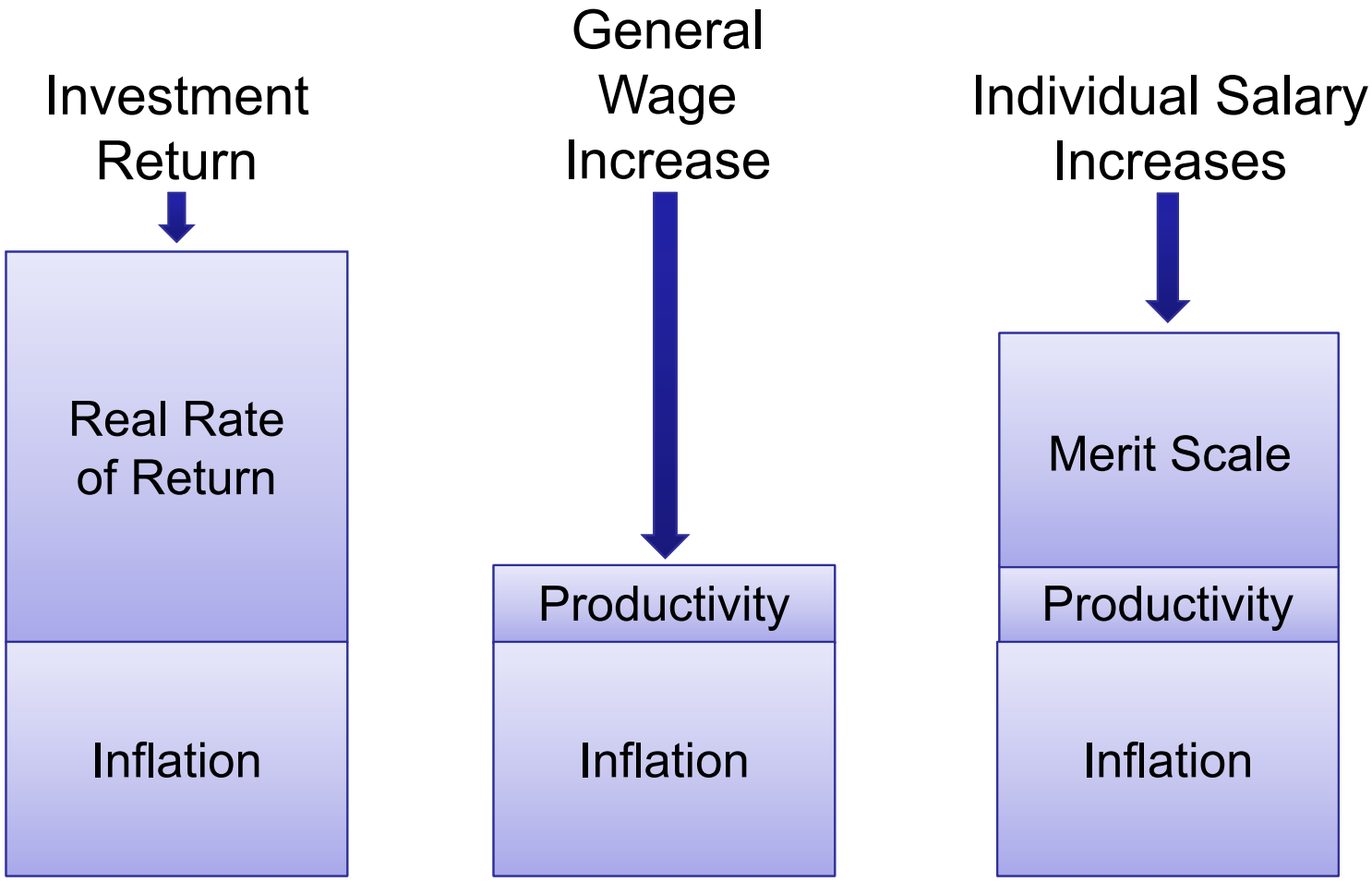
Demographic

- Mostly Actuary
- Board Approves

Actuarial Standard of Practice Number 27

- Provides guidance to actuaries in the selection of economic assumptions for valuing pension benefits
- Recommendation is for a “reasonable assumption”
  - Appropriate for purpose of measurement
  - Reflects actuary’s professional judgment
  - Consider relevant historical and current economic data
  - Reflects actuary’s estimate of future experience, estimates inherent in market data, or combination
  - No significant bias (not significantly optimistic or pessimistic)
  - Can include some conservatism for adverse deviation
- Advises actuaries not to assign too much credibility to recent experience

Economic Assumptions
Building Block Method



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

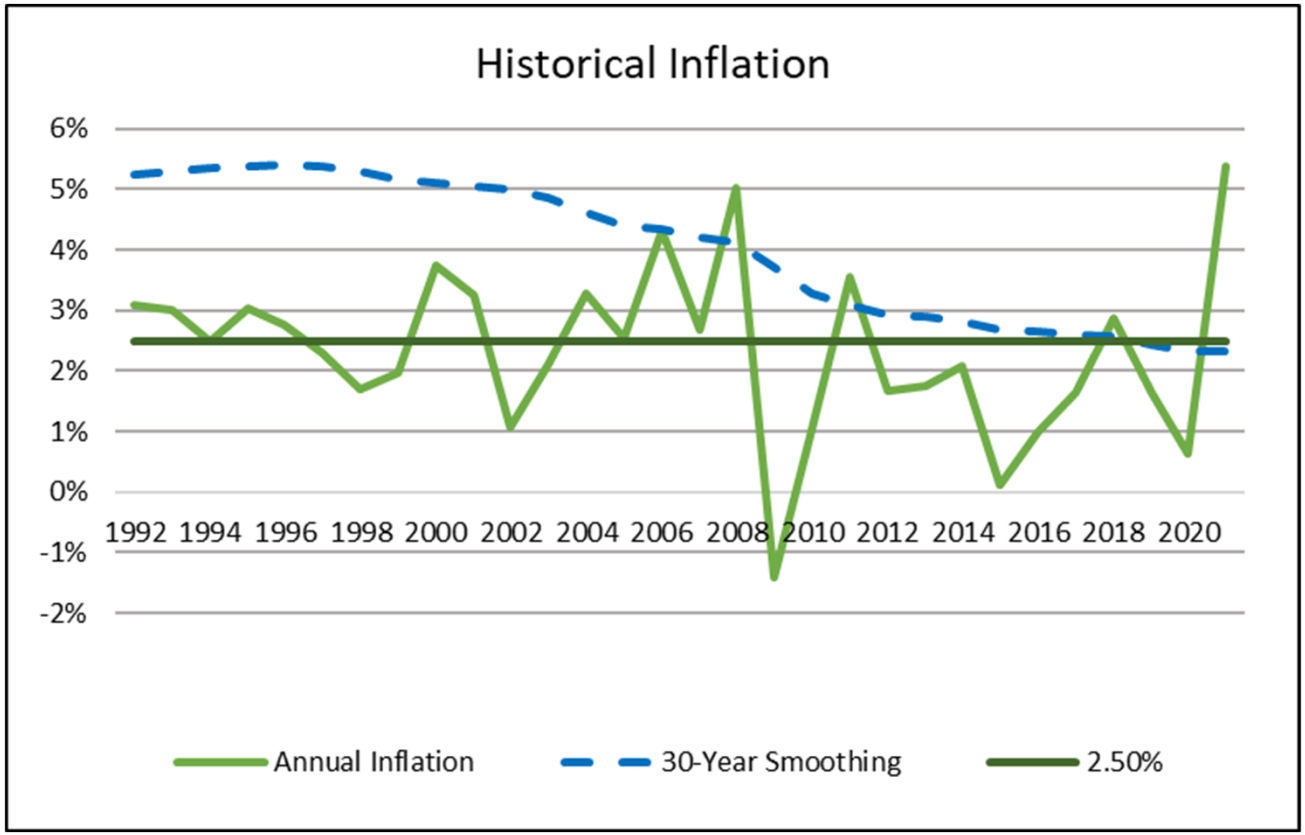
Inflation Assumption

- Price inflation represents annual increase in cost of living, typically measured by CPI
- Current assumption is 2.50%
- Indirectly impacts the valuation as a component of other economic assumptions
  - Investment return
  - General wage growth (which becomes part of individual salary increase assumption)
  - Payroll growth for amortization of unfunded actuarial liability
  - COLAs for certain retirees

Inflation Assumption

- Considerations for setting the assumption
  - Historical inflation
  - Future expectations
    - Financial Markets
    - CMERS' investment consultant (Callan)
    - Other investment professionals
    - Economists and other financial professionals
    - Social Security projections
  - Other systems (largely used to identify broad trends)

Historical Price 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

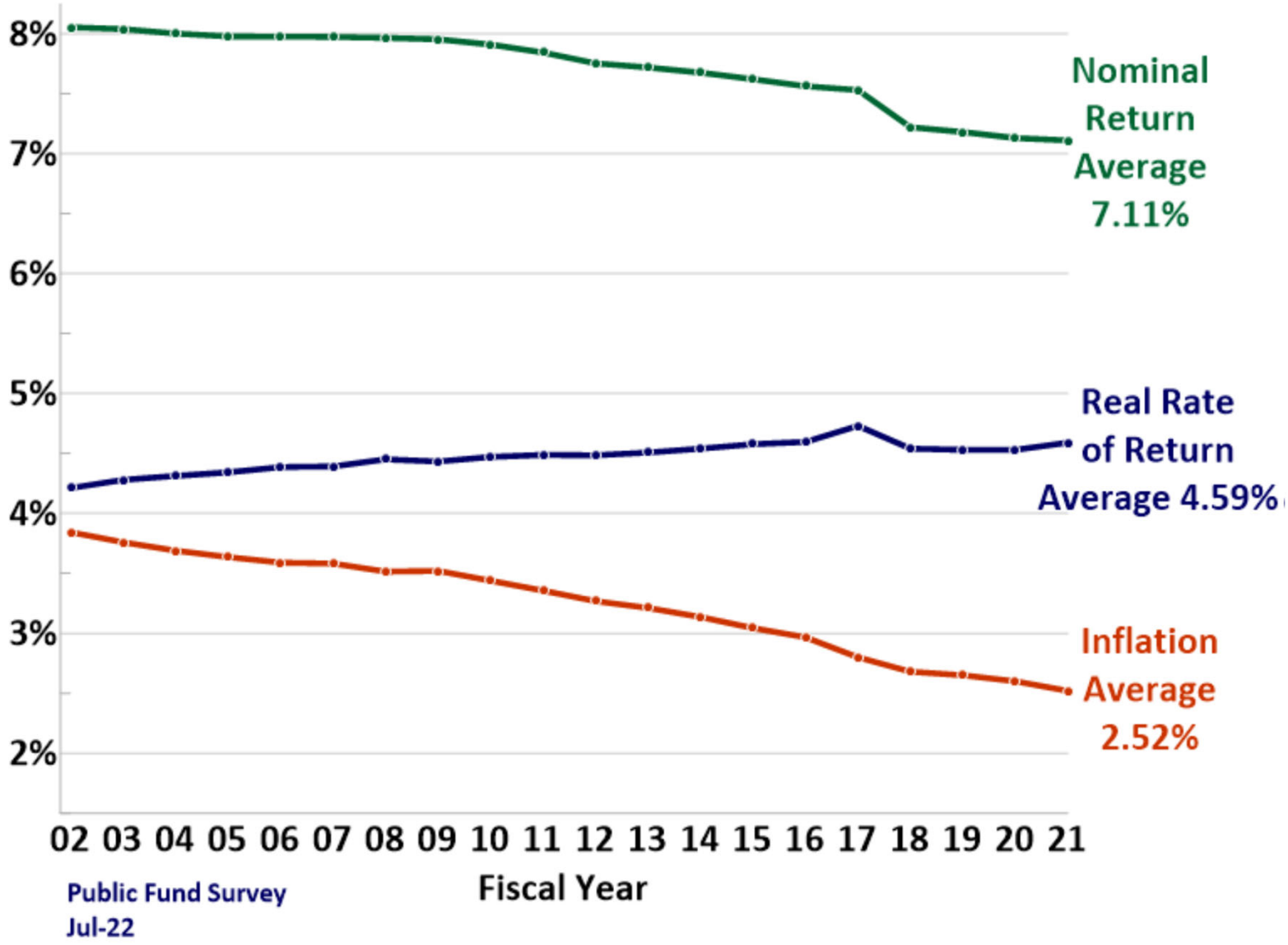
- Financial markets: “breakeven rate of inflation” is difference between yields on fixed coupon Treasury bonds and inflation-protected Treasuries (TIPS)
  - December 2021: difference on 30-year bonds was 2.34%
  - July 2022: 30-year was 2.29%, 5-year was 2.73%
- Philadelphia FED Q2 2022 Survey of Professional Forecasters: 2.80% over next 10 years

Future Inflation Expectations

- Investment professionals
  - Callan 30 year (*Q1 2022*): 2.25%
  - Callan 30 year (*Preliminary 2023*): 2.37%
  - Horizon Survey (*Aug 2021*): 2.14% to 2.23%

- Social Security projections (*June 2022*)
  - Best estimate: 2.40%
  - Range: 1.80% to 3.00%

Peer Group Comparison
Inflation Assumptions

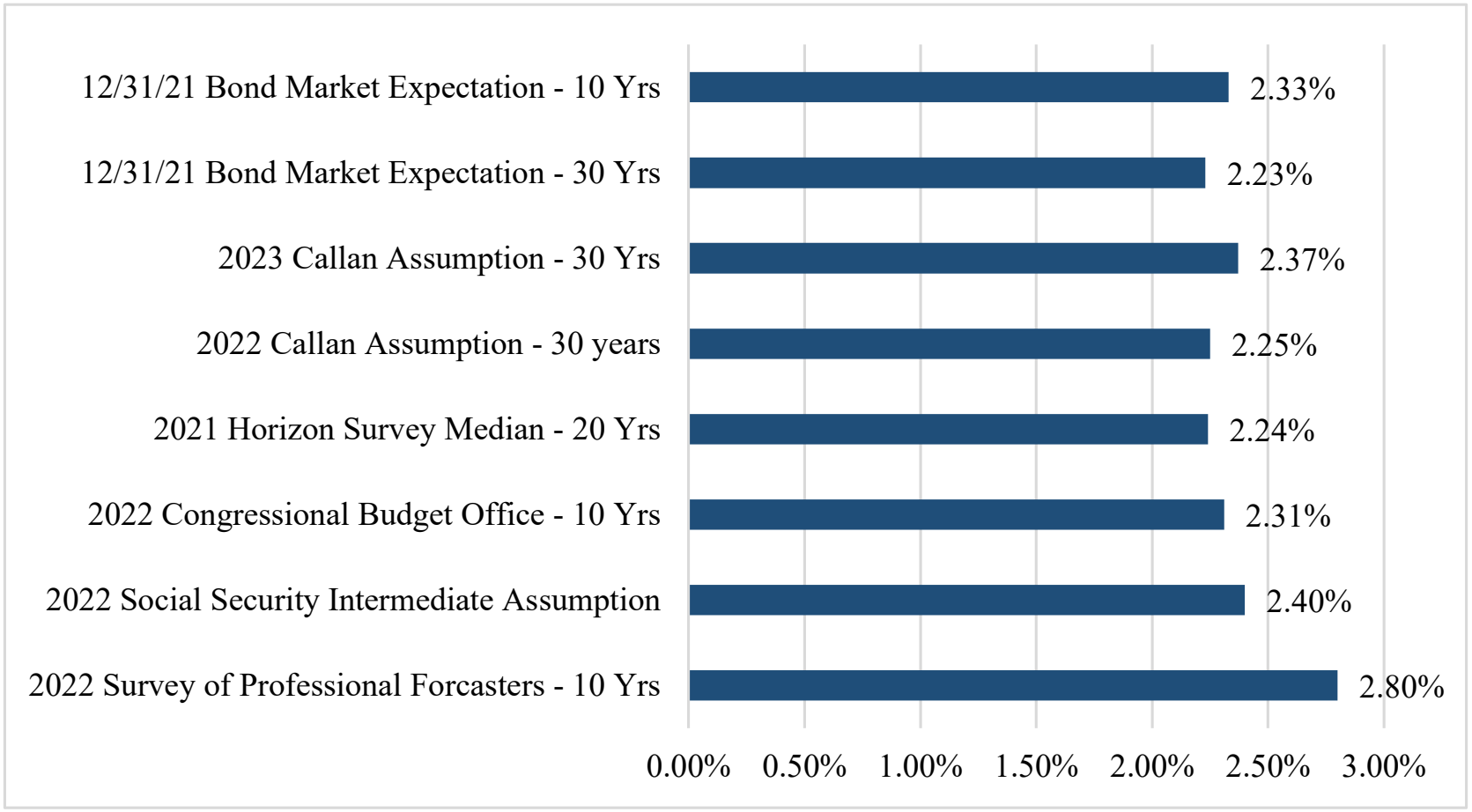


Source: NASRA Issue Brief

Recent Inflation Issues

- Inflation has been very high recently
  - 8.5% for the 12-month period ending July 2022
- 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
  - We will be revisiting all assumptions in five years when the next experience study is performed
- Keep long term focus and don’t overreact to recent experience

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.

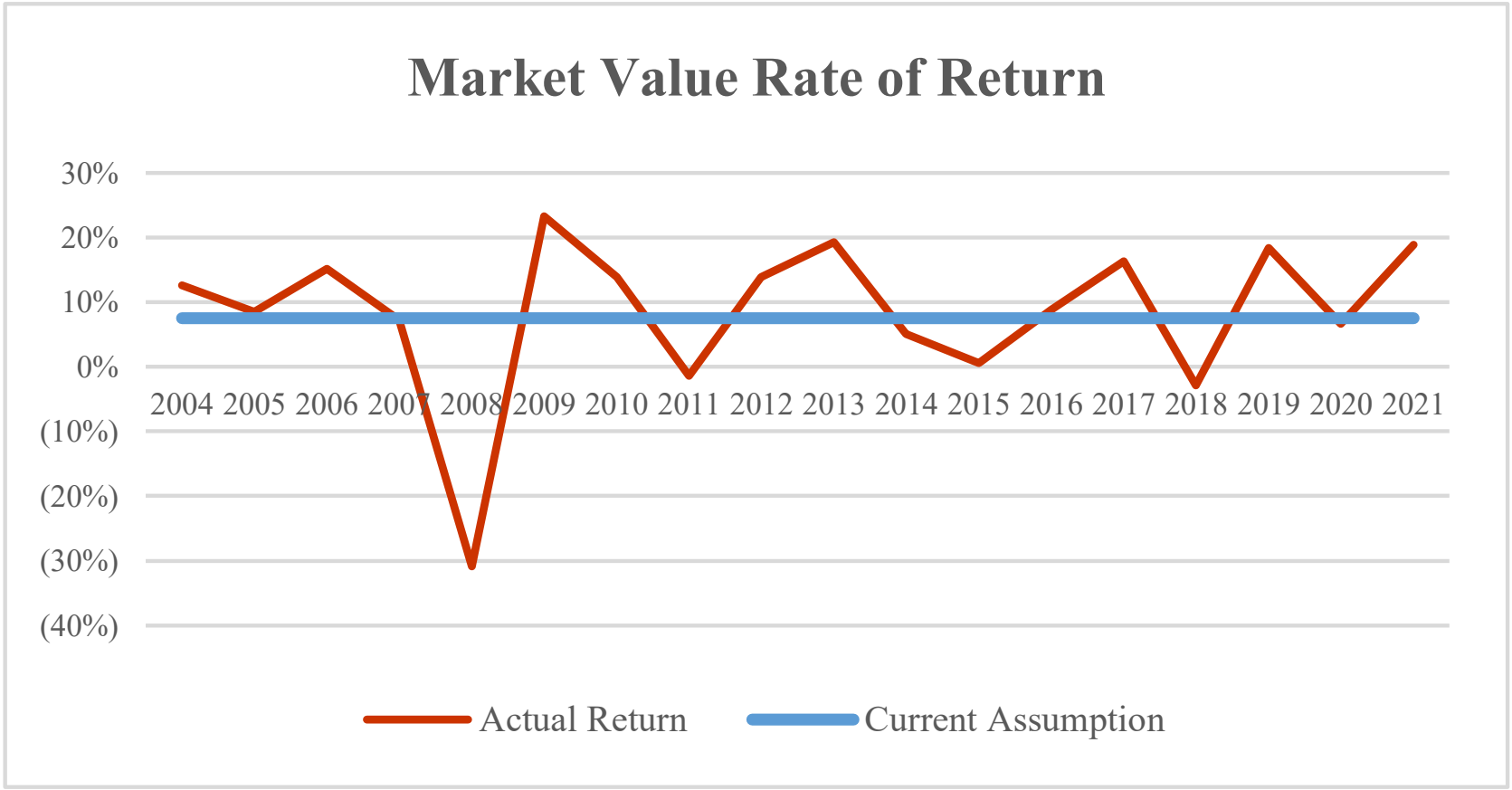
Investment Return Assumption

- Asset allocation is determined first and that 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

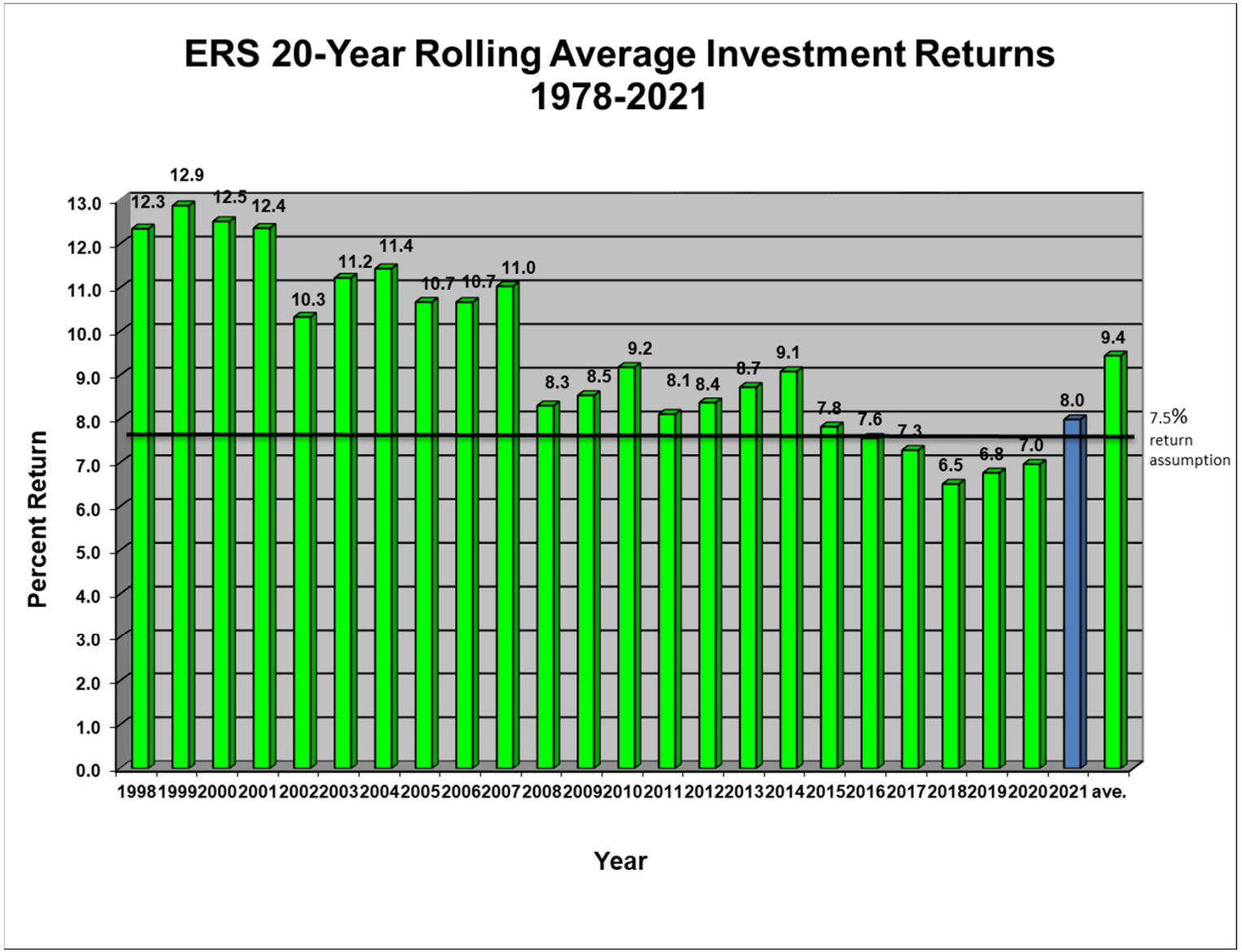
- Building block approach
  - Rate of price inflation (previously discussed)
  - Real rate of return
  - Sum is expected investment return
- Asset allocation is the key factor in setting this assumption
  - Portfolios that are more aggressive can generally expect higher returns along with potentially greater volatility
- Most powerful assumption in valuation
  - Small changes can have large impact on liabilities and contribution rates
  - Current assumption: 7.50% (2.50% inflation plus 5.00% real rate of return).

CMERS Historical Fiscal Year Returns

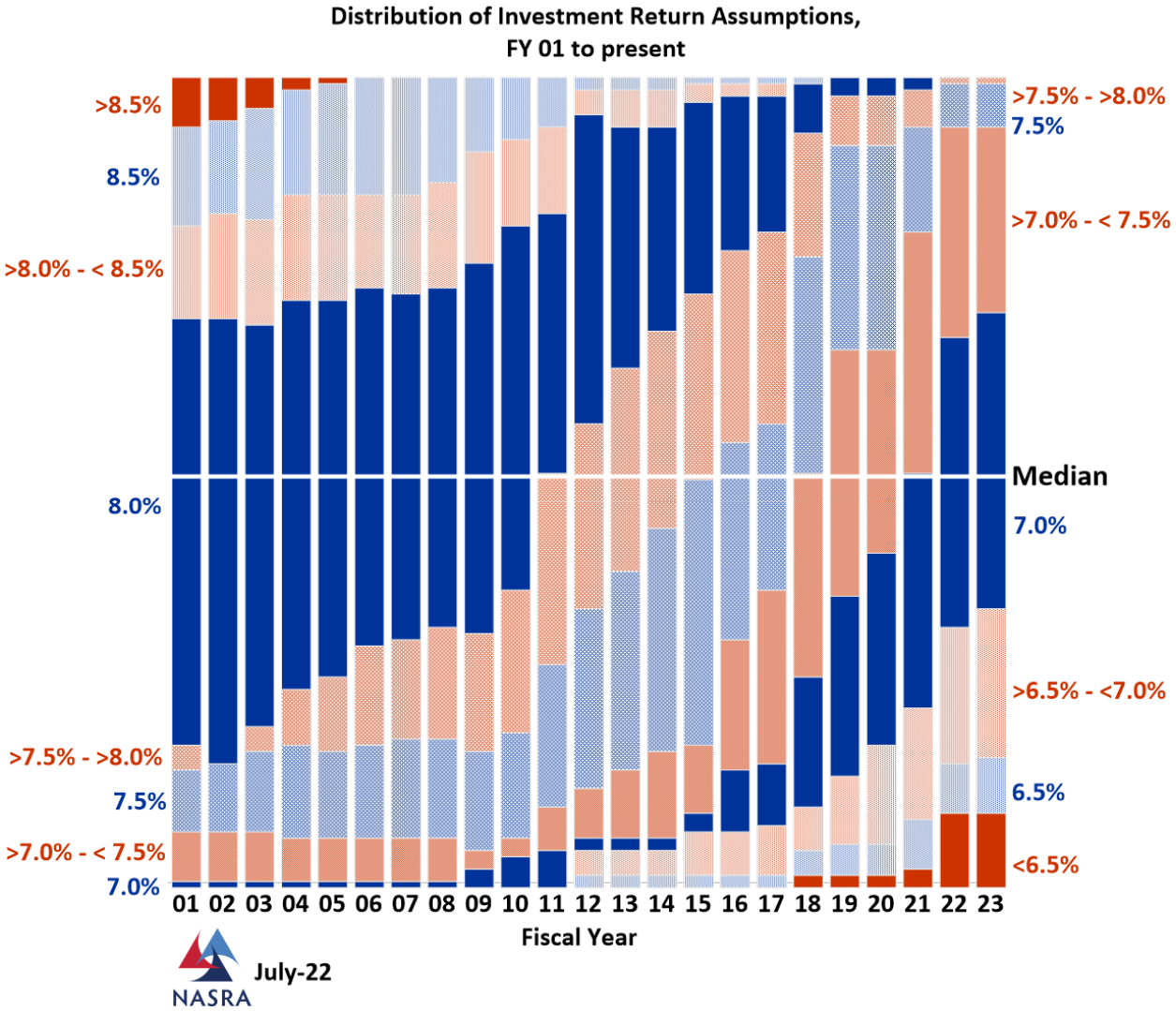


Compound returns
Last 5 years: 11.16% Last 10 years: 10.08% Last 20 years: 7.49%

CMERS Historical Fiscal Year Returns



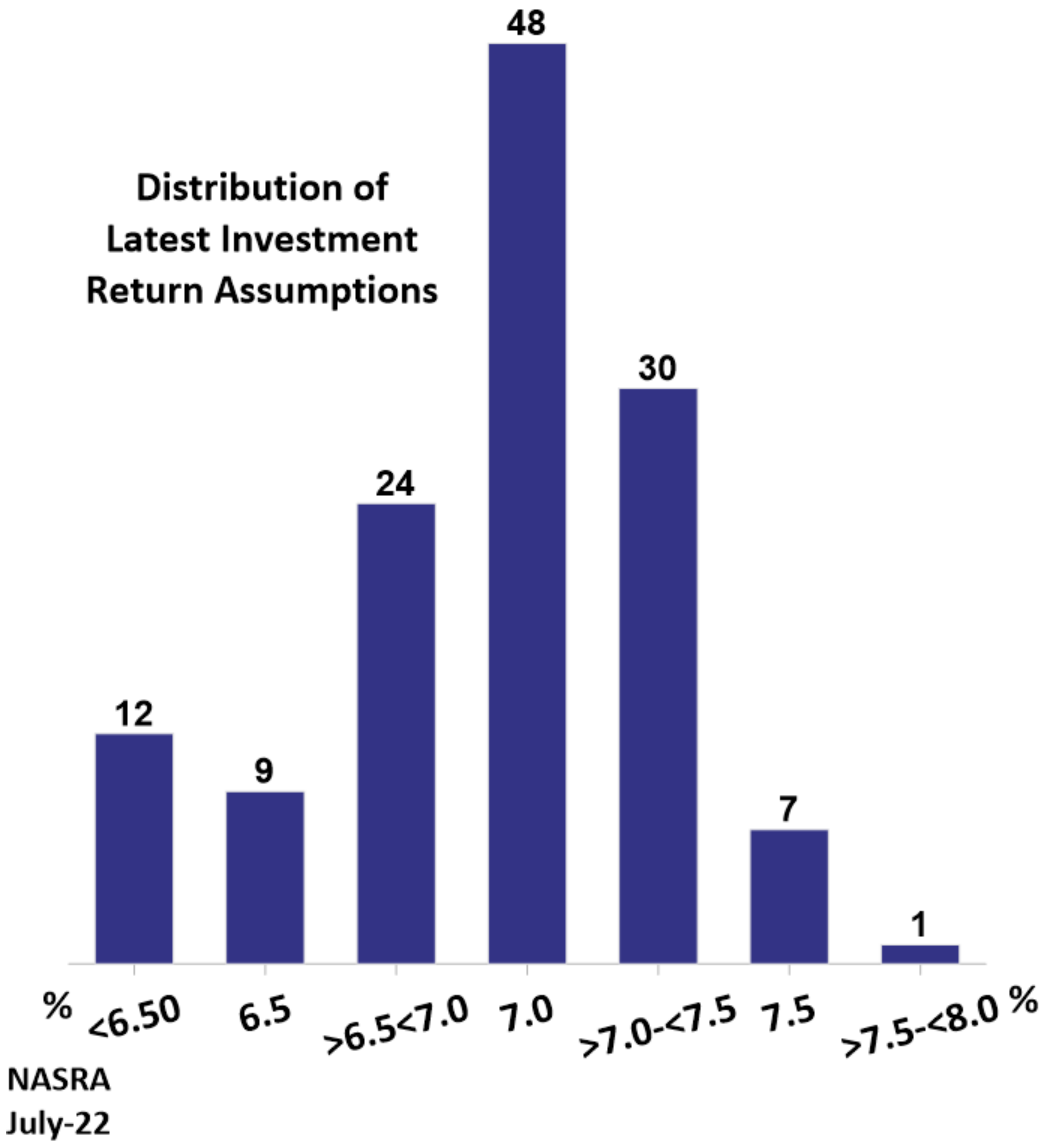
Peer Group Comparison



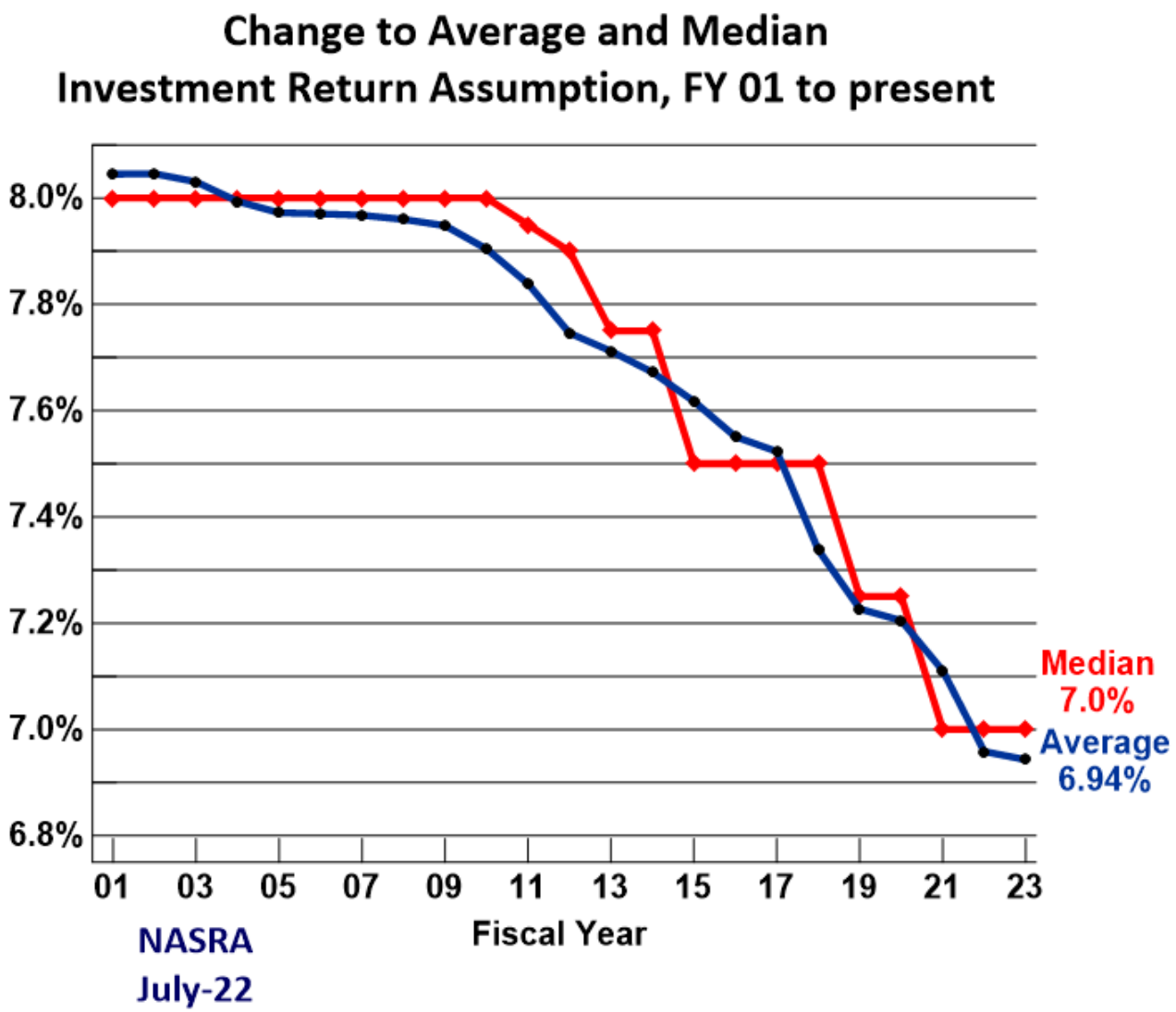
Lower market expectations have resulted in a significant change to lower investment return assumptions since 2001. The trend has continued since CMERS lowered the assumption to 7.5% in 2019.

Note: Investment mixes may differ significantly between funds.

Distribution of Current Investment Return Assumptions



Change in Average and Median Investment Return Assumptions



Investment Return Assumption

- Forward looking analysis using capital market assumptions
- We are not investment experts, so we rely on CMERS' investment consultant, Callan
  - Use Callan's capital market assumptions to model expected range of returns (same results as Callan)
  - Callan has both short term (10 year) and long term (30 year) assumptions
  - Verify reasonableness of Callan's assumption by comparing to Horizon Actuarial Survey (35 investment consultants)
  - Focus on real rate of return for our analysis

Investment Return Assumption

Expected returns, based on Callan's assumption and CMERS' asset allocation at the time. Expected return = 50th percentile result

	2019 Assumptions		2022 Assumptions		2023 Assumptions	
	Callan (10-Year)	Callan (30-Year)	Callan (10-Year)	Callan (30-Year)	Callan (10-Year)	Callan (30-Year)
Nominal Return	6.67%	7.39%	5.90%	6.97%	6.80%	7.41%
Inflation	2.25%	2.25%	2.25%	2.25%	2.50%	2.37%
Real Return	4.42%	5.14%	3.65%	4.72%	4.30%	5.04%

Considerations for Expected Return

- Actuarial standards require that we use our best estimate, i.e., "reasonable assumption"
- Callan's expectations vary significantly from Q12022 to preliminary 2023. Which is appropriate?
  - If we use 2023 assumptions, we model lower return in 2022.
  - If we use 1/1/22 valuation results, we use 2022 assumptions.
- Callan's returns are "passive", no consideration of return from active management or expenses
- Significant negative cash flows (benefit payments exceed contributions) so lower returns in short term have implications
- If assumption is not changed, we would expect actuarial losses on investment experience over the next ten years.

Recommended Investment Return Assumption

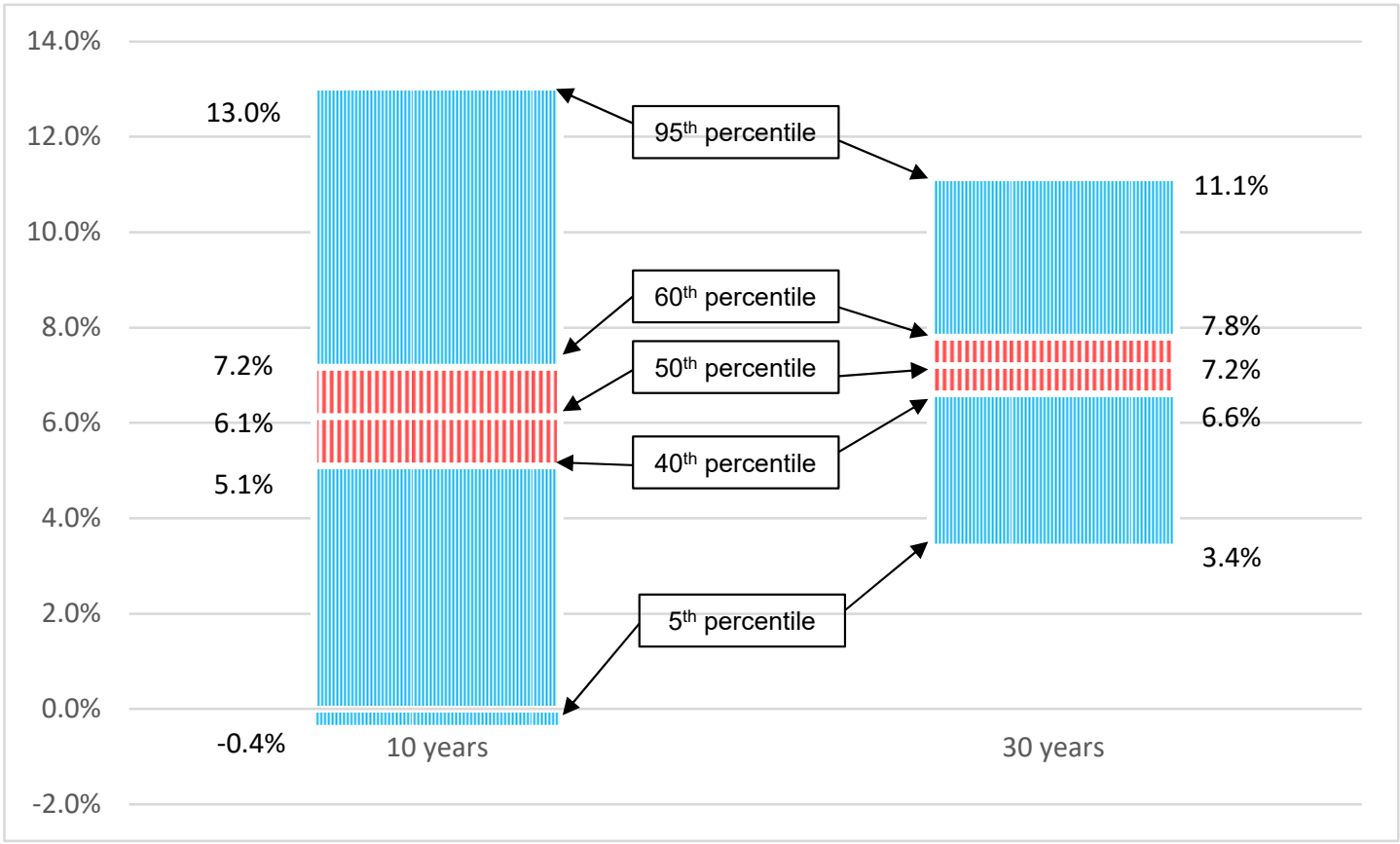
We believe it is prudent to start to reflect lower expected returns to increase the likelihood of meeting/exceeding the assumed return over time.

Assumption	Current	Recommended
Price inflation	2.50%	2.50%
Real return	5.00%	4.90%
Investment return	7.50%	7.40%

Effective with the January 1, 2023 valuation.

Considerations for Expected Return

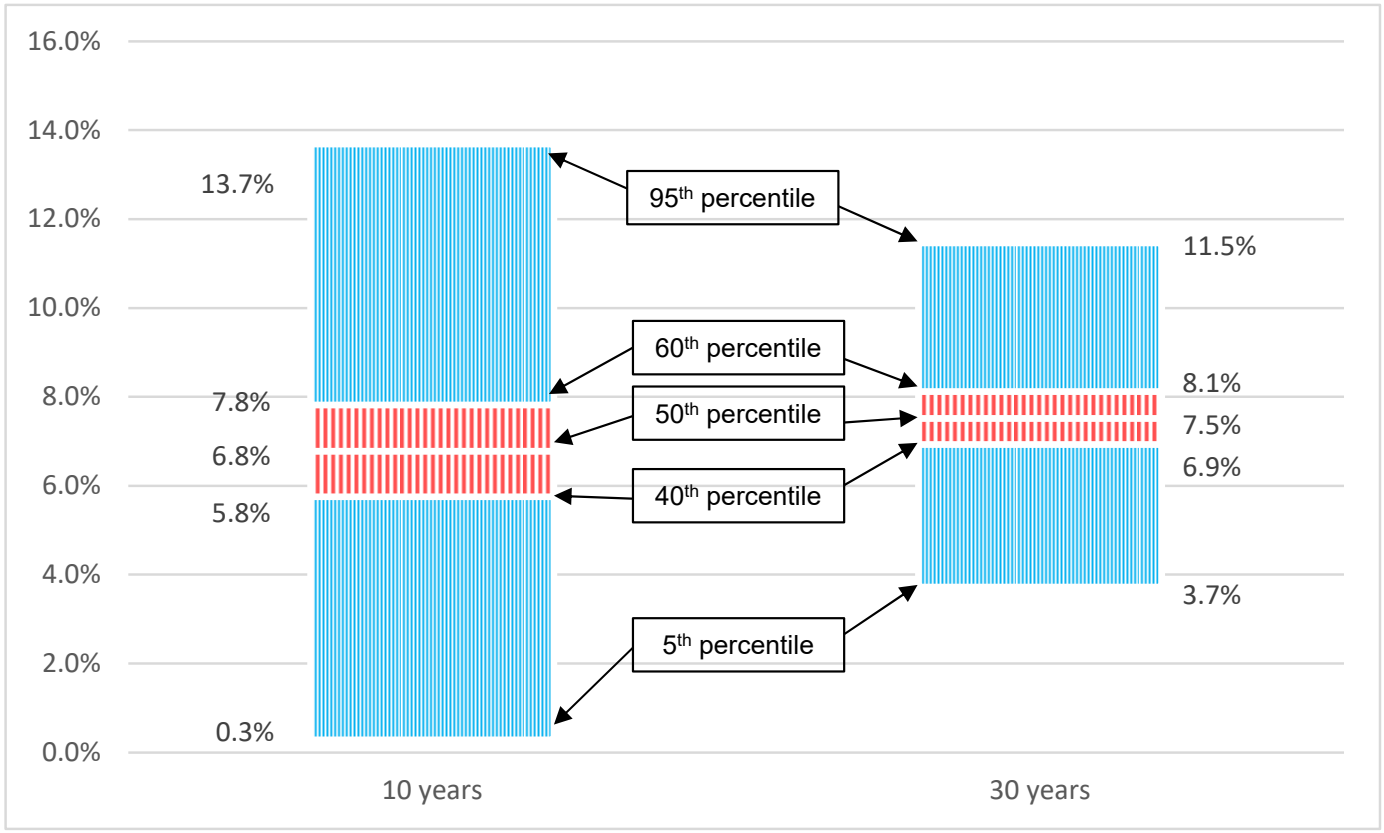
(Using Callan's Q1 2022 Expectations)



The expected outcome is the 50th percentile. There is a 50% chance that the return will be below 6.1% over 10 years and 7.2% over 30 years. Similarly, there is a 60% chance that returns will be less than 7.8% over 30 years.

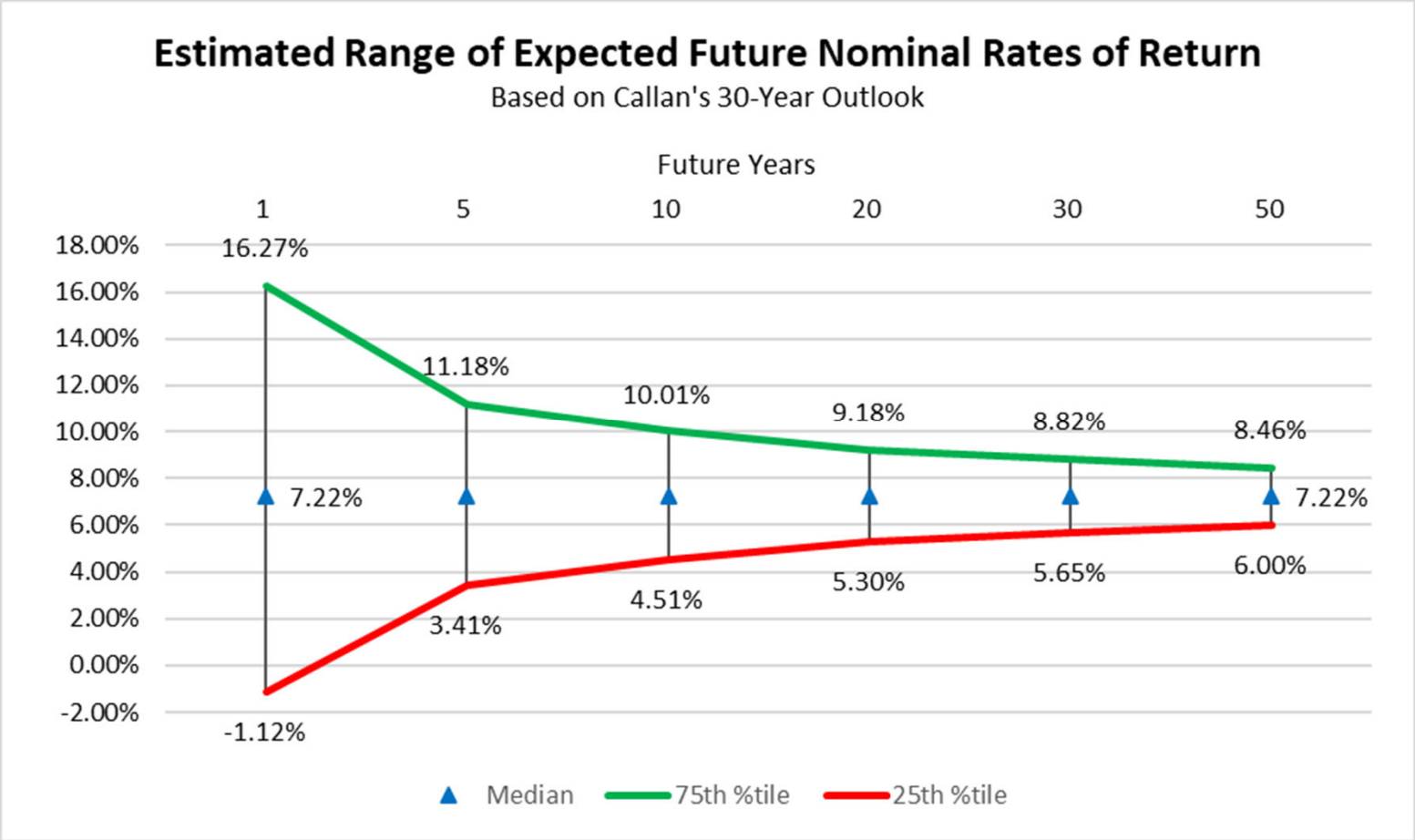
Considerations for Expected Return

(Using Callan's Preliminary 2023 Expectations)



The expected outcome is the 50th percentile. There is a 50% chance that the return will be below 6.8% over 10 years and 7.5% over 30 years. Similarly, there is a 60% chance that returns will be less than 8.1% over 30 years.

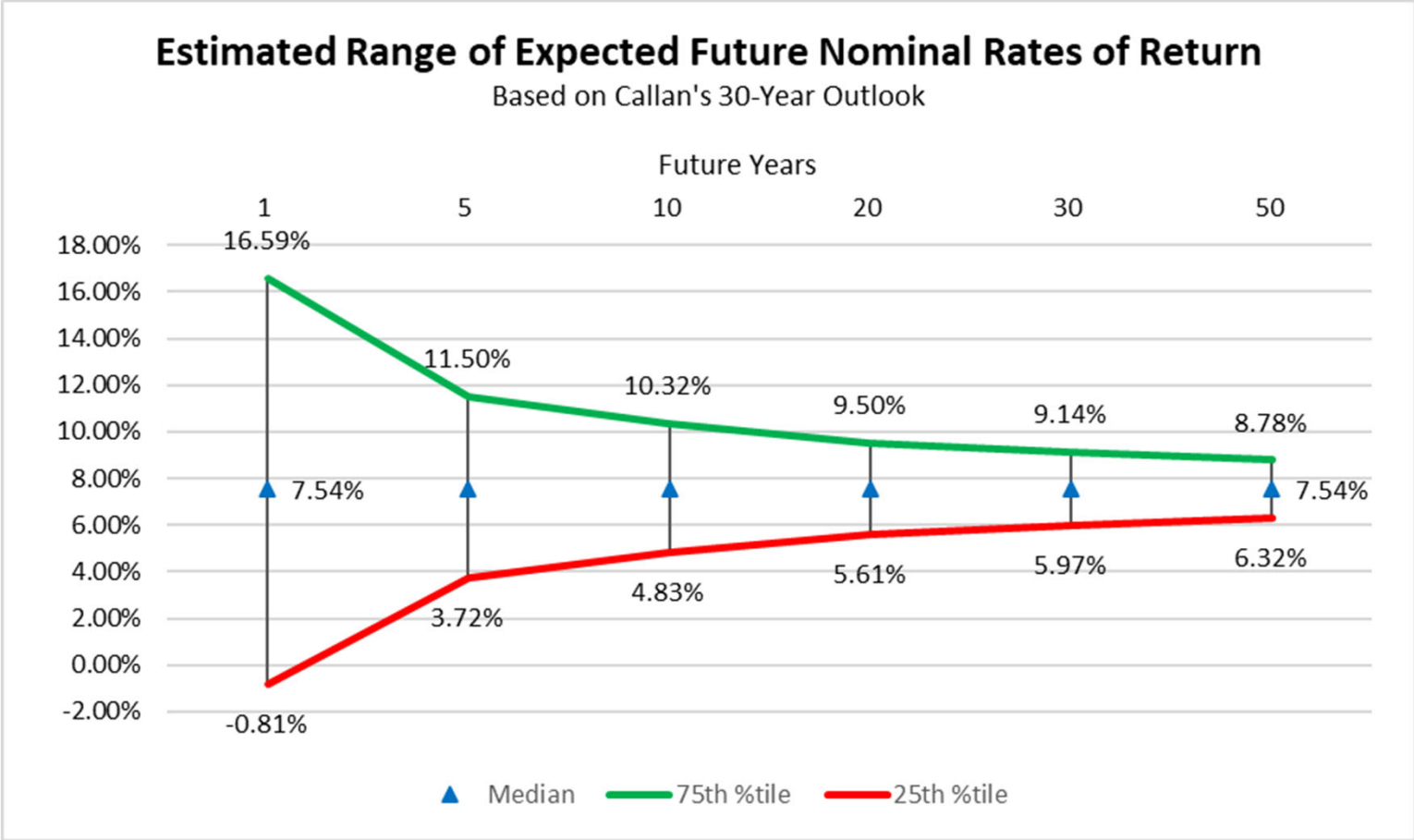
Distribution of Expected Future Nominal Returns
(Using Callan's Q1 2022 Expectations)



The range of potential outcomes is very wide, particularly over shorter periods of time. After 30 years, there is a 50% chance the effective return will be less than 7.22% and a 25% chance it will be below 6.00%.

Distribution of Expected Future Nominal Returns

(Using Callan's Preliminary 2023 Expectations)



The range of potential outcomes is very wide, particularly over shorter periods of time. After 30 years, there is a 50% chance the effective return will be less than 7.54% and a 25% chance it will be below 6.32%.

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
  - Capital market assumptions, developed by investment consulting firms, are intended for a different purpose, i.e., asset allocation
  - Capital market assumptions change frequently (sometimes more than once per year) based on current market conditions
  - Currently, short-term market expectations are materially lower than long term expectations
- May not be appropriate to set the investment return assumption by simply using investment consultant's expected return. More analysis is needed.

Summary of Findings: Investment Return Assumption

- Current assumption: 7.50% nominal return
- Based on Callan's preliminary 2023 30-year expected real return distribution and 2.50% inflation:
  - *50th percentile return: 7.54%*
  - *45th percentile return: 7.18%*
- Does not reflect the impact of active management.
- The Board's risk perspective and appetite are also considerations – there is not a single "right answer".
- Assumption must be reasonable under actuarial standards and involve the actuary's professional judgement.

Considerations in Setting Investment Return Assumption

- Historical analysis (limited value)
- Forward-looking analysis of expected return
  - Using Callan's current capital market assumptions
  - Consider other investment consultants' assumptions
- Funding dynamics like negative cash flows and impact of the contribution rate funding policy
- Board's risk perspective/risk tolerance
- Peer group comparison (useful for general trends only)

Cost Impact of Changes

- The investment return assumption is the most significant assumption in the valuation process. There is no other change in set of economic assumptions.

- Lowering investment return assumption results in higher normal cost and actuarial liability (and therefore, unfunded actuarial liability)

UAL Payment Increase

- UAL payment increase assumption is used solely to determine the amortization payment on the Unfunded Actuarial Liability

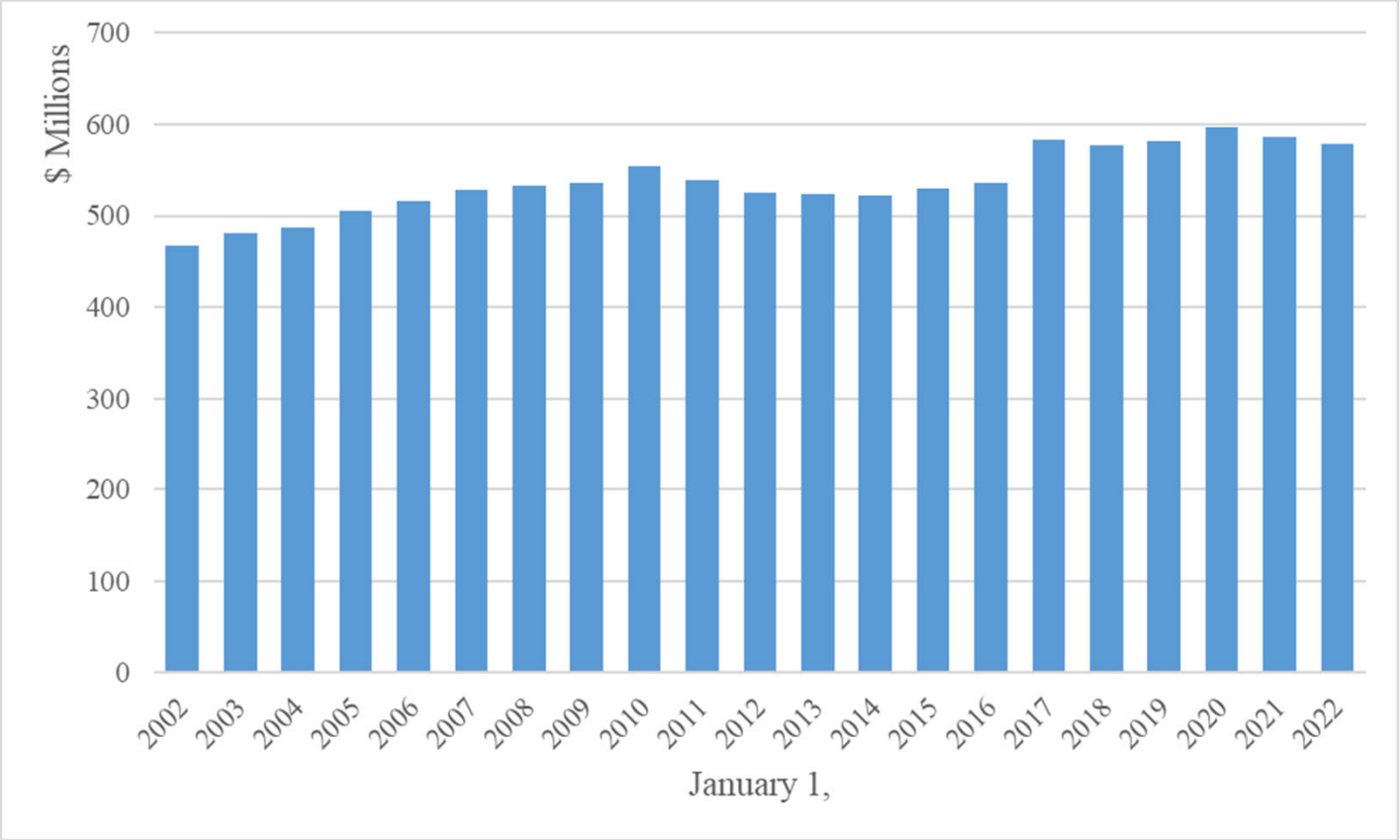
- Current assumption of 2.00% anticipates some decline in active population or lower salary growth than general wage growth assumption

UAL Payment Increase

- Reduction in number of active members in CMERS in the past has resulted in lower growth in covered payroll than expected based on the current assumption.
  - Future trend in size of membership
  - Reflect in assumption or address in modifications to Stable Contribution Policy
- Recommend retaining current UAL payment increase assumption of 2.0%, which results in UAL payments increasing 2.0% per year.

CMERS Total Covered Payroll

- Average increase in total covered payroll was about 1% over the past 10-year and 20-year periods.



Administrative Expenses

- Included directly in the annual actuarial contribution rate
- This explicit reflection of administrative expenses is transparent and the most commonly used approach by other systems
- Recommend this approach be continued.

Summary of Recommended Economic Assumptions

Assumption	Current	Recommended
Price inflation	2.50%	2.50%
Interest on Member Accounts	4.00%	4.00%
General wage growth • General employees • Police/Fire	 2.50% 4.00%	 TBD TBD
Payroll growth for UAAL payment	2.00%	2.00%
Investment Return	7.50%	7.40%
Administrative Expenses	Explicit	Explicit

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City of Milwaukee Employes' Retirement System Funding Policy Discussion

Presented by: Cavanaugh Macdonald Consulting
August 24, 2022

www.CavMacConsulting.com

Actuarial Assumptions vs Funding Policy

- ***Actuarial Assumptions*** are used to project benefits expected to be paid from the retirement system.
  - Guidance to actuaries is provided under:
    - ASOP No. 35 *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*
    - ASOP No. 27 *Selection of Economic Assumptions for Measuring Pension Obligations*
- The ***Funding Policy*** is used to develop the timing of contributions to be made to the retirement system once the projected benefits are developed using actuarial assumptions.
  - Guidance to actuaries is provided under:
    - ASOP No. 4 - *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*
    - ASOP No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations
    - Conference of Consulting Actuaries Public Plans Community - *Actuarial Funding Policies and Practices for Public Pension Plans*

Funding Policy

- The four components of a funding policy are:
  - ***Actuarial Cost Method*** - the technique used to allocate the total present value of future benefits over an employee's working career (normal cost/service cost).
  - ***Asset Smoothing Method*** - the technique used to recognize returns that vary from expected over some period of time so as to reduce the effects of market volatility and stabilize contributions.
  - ***Amortization Policy*** - The length of time and payment amount to determine the payment schedule to eliminate any UAAL.
  - ***Output Smoothing Method*** – methods used to reduce contribution volatility such as a contribution phase-in or corridor

Policy Objectives for Public Pension Plan Funding Policies

- **Sufficiency**
  - The funding target should be the value of benefits accrued to date
- **Intergenerational equity**
  - Taxpayers should pay for workers' pensions while those workers are providing their services – fund for benefits over the worker's career.
- **Stability of contributions**
  - While stable contributions are easy to budget for, stability should not be achieved at the expense of the first two
- **Accountability and transparency**
  - Each component of the funding policy should be clear on the intent and effect
- **Governance**
  - Agency risk associated with individuals influencing costs
  - Need for sustained budget commitment from employer

Preliminary Funding Policy Recommendations

Preliminary Funding Policy Recommendations			
Component	Current	Proposed	Comment
➢ ***Actuarial Cost Method***	Entry Age Normal	no change	Annual costs level as a % of pay over each member's career
➢ ***Actuarial Value of Assets***			
Smoothing period	5-year fixed	no change	Period sufficiently short enough to preclude use of corridor
Corridor	20%	no corridor	Corridor can result in contribution volatility
➢ ***Amortization policy***			
■ Structure	Closed layered	no change	Documents source and treatment of UAAL
■ Unfunded payment increases	2%	no change	Reflects lower revenue growth
■ Period differs by UAAL source:			
- Initial 2019 UAAL	25 years	no change	20 years left as of 1.1.2023
- Gains/Losses	15 years	20 years	Reasonable for well funded plan; provides lower contribution volatility
- Contribution gains/losses	15 years	5 years	Isolate differences and amortize over shorter period
- Assumptions	25 years	no change	Remeasure of liabilities to mitigate future gains/losses merits longer period
- Methods	25 years	no change	Same as assumptions
- Plan Provisions			
- Actives	25 years	15 years	Or match to demographics of affected group
- Early Retire Incentive	25 years	5 years	To mitigate negative cashflow
- Inactives - reduction	25 years	10 years	Or match to demographics of affected group
- Inactives - increase	25 years	1 years	Match to demographics of affected group
- Fresh start	None	25 years	No UAAL bases when 100% funded; establish new UAAL base over 25 years
➢ ***Output smoothing***			See next slide

Preliminary Funding Policy Recommendations

Output Smoothing Preliminary Recommendations			
Component	Current	Proposed	Comment
➢ ***Output smoothing***			
■ Minimum Employer Contributon	ER Normal Cost	ER Normal Cost	Maintain contribution for employer cost of benefits accruing
■ Contribution increase Phase-in	None	5 years	Increase contributions over next 5 years for budgeting flexibility and to position for next reset
■ Stable contribution policy			
- Projected returns	2022 Callan	2023 Callan	Make use of latest information
- Asset measurement date	1.1.2022	1.1.2023	Consistency with projected returns
- Contribution basis	Rate	Dollar	Ensure payment of UAAL

Funding Policy

- The Objectives of the Stable Contribution Policy include:
  - Achieve stable and predictable contribution levels over the period between experience reviews that maintains the actuarial integrity of the ERS.
  - Comply with Actuarial Standards of Practice.
  - Budget annually for the normal cost; this was achieved by eliminating the Full Funding Limit.
  - Make progress on reducing unfunded liability at least as fast as the Prior Contribution Requirement at the median; said another way, the Stable Employer Contribution Policy is at least actuarially equivalent to the Prior Contribution Requirement over the period from 2018 through 2022.
  - Maintain asset coverage greater than or equal to the retired lives liabilities.
  - No changes to member contributions.

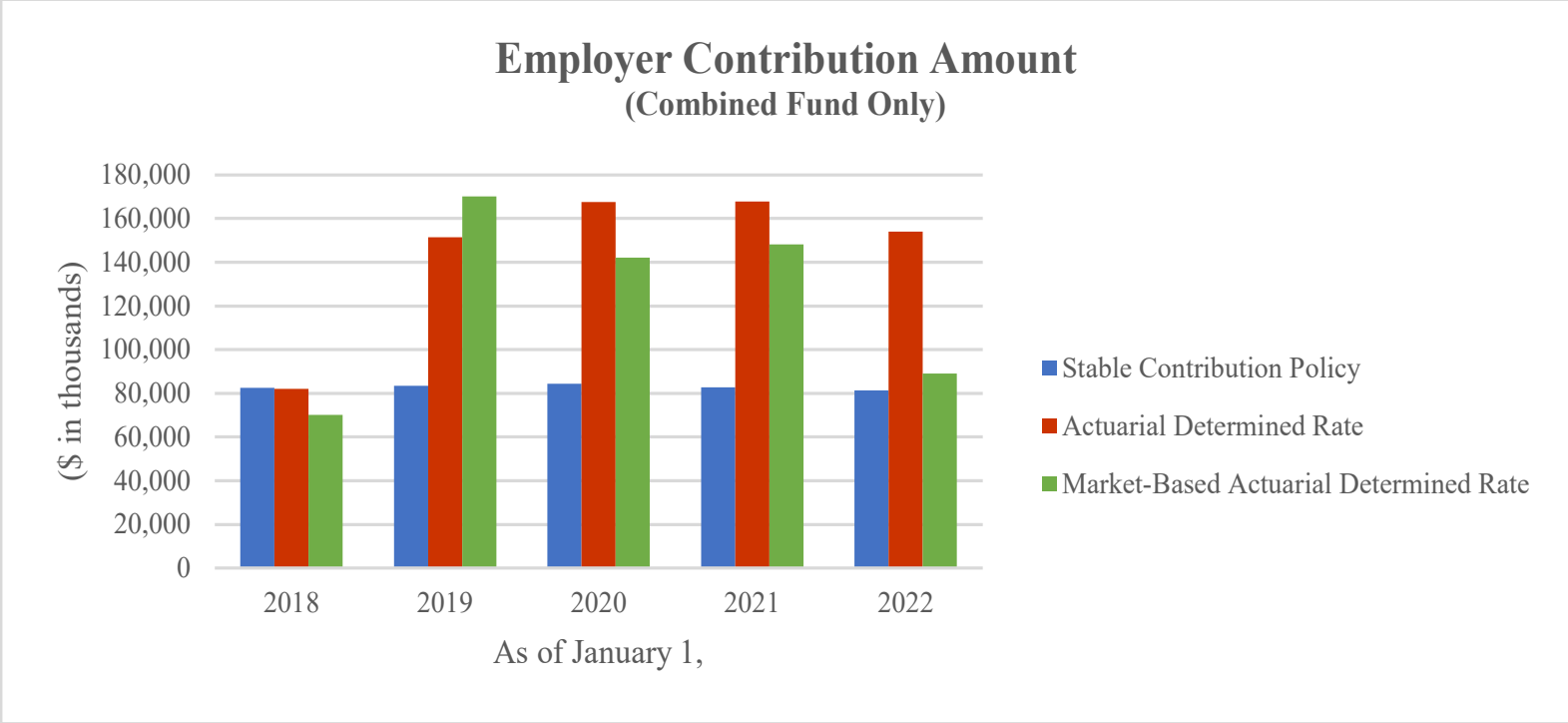
The following reading discusses elements of reasonable funding policies. The Stable Contribution Policy was designed with these elements in mind.
https://www.gfoa.org/materials/core-elements-of-a-funding-policy

Public Sector Funding Policies
Fixed vs Actuarial Funding

- Fixed contributions – 32% of large plans
  - Funding set in statute
  - Actuary determines if sufficient through projections
  - Fixed contribution policies can be successful if:
    - Contribution levels are sufficient to fund benefits over a reasonable period
    - A mechanism for periodic adjustment is included

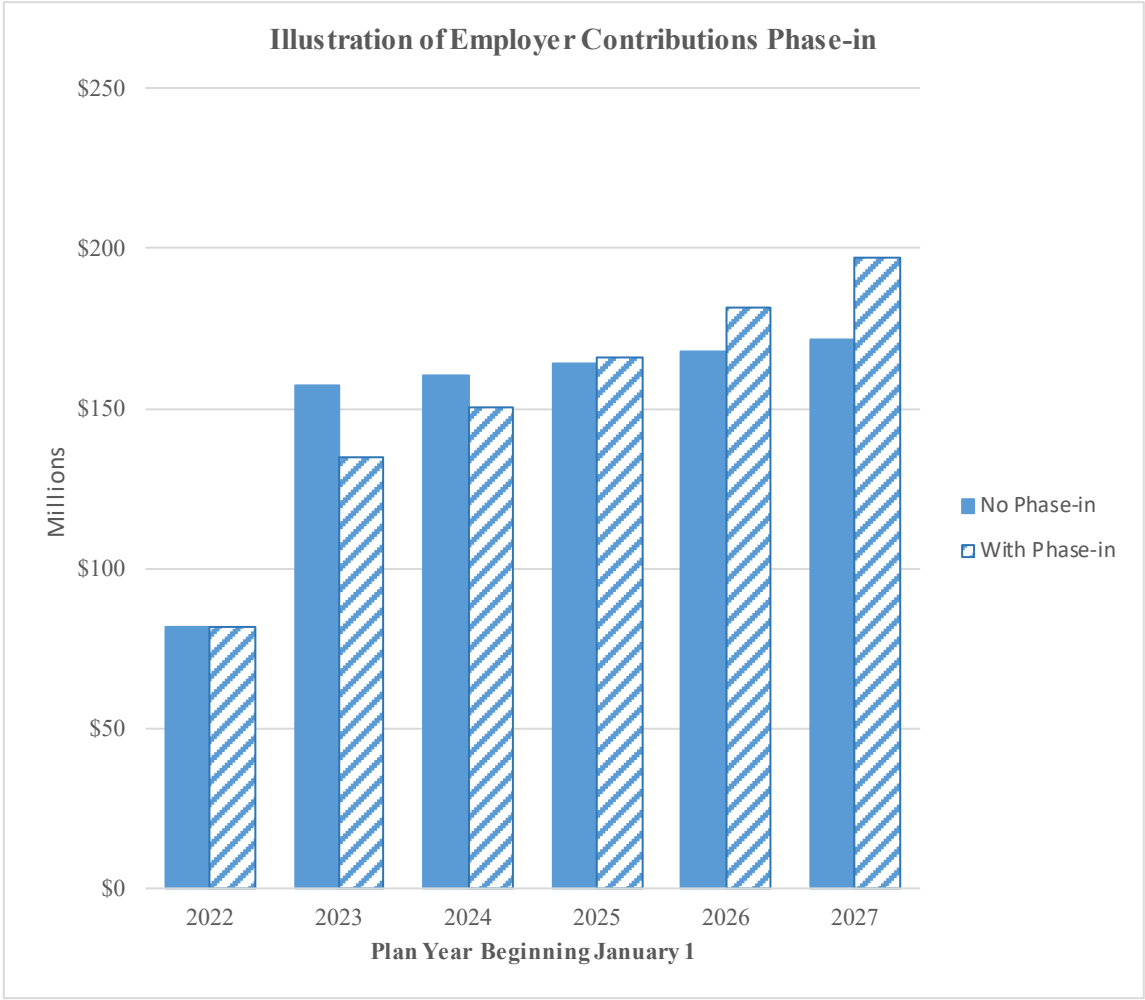
- Actuarial Funding – 68% of large plans
  - Non-ASOP Compliant Actuarial Funding is based on the actuarial valuation process but does not fund to 100% and/or results in long periods of negative amortization
  - ASOP Compliant Actuarial Funding is based on the actuarial valuation process and funds to 100% without long periods of negative amortization

Employer Contributions
(Combined Fund only as of January 1, 2022)



Given the difference between the actuarially determined employer contributions and the stable contribution policy contributions it would be prudent for participating employers to start preparing now for higher contributions when the Stable Contribution Policy is reset for calendar year 2023.

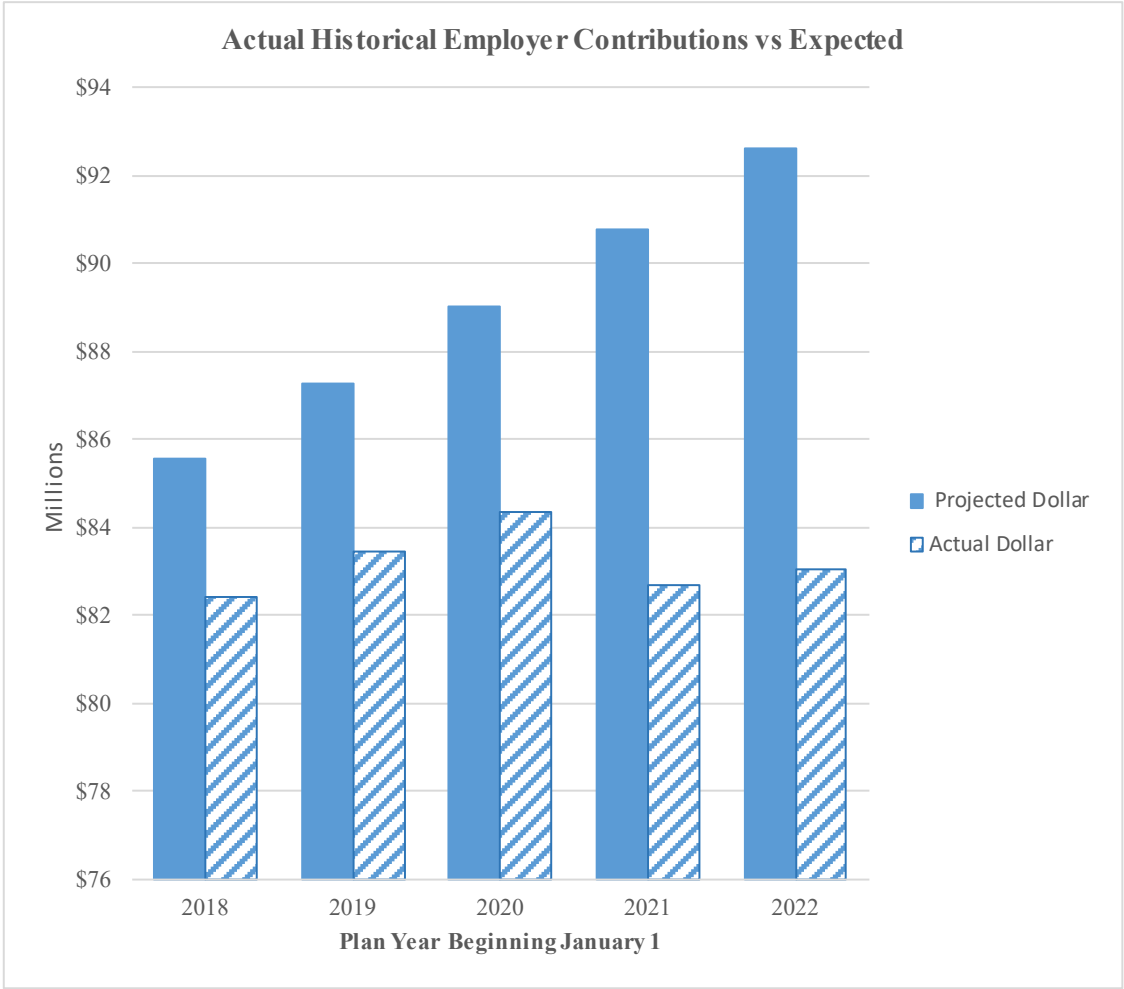
Phase-in Illustration



This illustrates a phase-in of employer contributions. Phase-ins are common in the Public Sector when large employer contribution increases are anticipated. For the Stable Contribution Policy, the additional benefit is that the ERS is better situated at the reset for the 2028 valuation.

Important note – this is an illustration. Final numbers will be based on the set of assumptions adopted by the Board.

Employer Contribution: Dollar vs Rate



Traditionally, the Stable Employer Contribution has been developed as a rate. Based on the 2018 reset, projected contributions for 2022 were over $92 million. Because of flat payroll, actual amounts for 2021 were $82.7 million. This caused some headwinds for funding of the UAAL. We will be considering the use of dollar amounts instead of rates. This will provide employers with a five-year projection of projected dollar amounts. Note that the “actual” dollar amount for 2022 is estimated.

Certification

In order to prepare these results, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. Because of limited scope, Cavanaugh Macdonald performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information. Results prior to January 1, 2019 were provided by the prior consulting actuary.

We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

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