

Asset Liability Management Second Reading PERF Actuarial Assumptions

Finance and Administration Committee

November 18, 2025

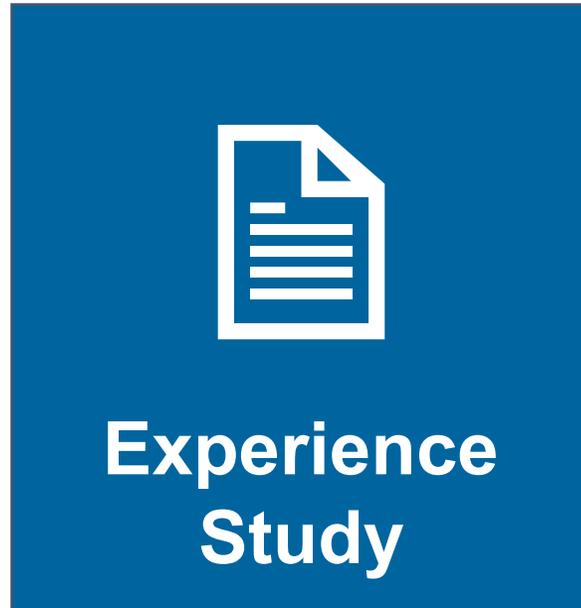
Today's Presentation

- Experience Study Review
- Recommendations
- Overall Cost Impacts
- PEPRA Impacts
- Next Steps
- Appendix

Experience Study Review

- Used to determine the liabilities of the system:
 - Funded status
 - Required employer and member contributions
- Used to create actuarial equivalent factors for benefits and service credit purchases
- Last study was performed in 2021
- Performed every 4 years

Actuarial Assumptions



Economic Assumptions

- Long-term Investment Return
- Discount Rate
- Inflation



Non-Economic Assumptions

- Pay Increases
- Longevity
- Retirement
- Termination
- Disability
- Others

The discount rate assumption is discussed in Investment Committee

Recommendations

Recommended Demographic Assumptions

Demographic Assumptions	Recommended Changes
Retirement Rates	
Service Retirement	Some retirement rates increasing while others are decreasing
Industrial Disability Retirement (IDR)	IDR rates declining for Sheriffs, minimal changes for others
Non-Industrial Disability Retirement	Minimal changes; disability rates were consolidated into 3 sets
Mortality Rates	
Post-retirement Mortality – Male	Slight reduction in the projected mortality rates
Post-retirement Mortality – Female	Slight reduction in the base and projected mortality rates
Pre-retirement Mortality – Male	Slight reduction in the projected mortality rates
Pre-retirement Mortality – Female	Slight reduction in the base and projected mortality rates

Recommended Demographic Assumptions

Demographic Assumptions	Recommended Changes
Termination Rates	
Termination with Refund	Minimal changes
Termination without Refund	Minimal changes for some, no change for others
Salary Scale (excluding inflation)	Moderate to higher merit increases for most plans Moderate decreases for State Industrial and Schools
% Married and Spouse Age Difference	No change

Recommended Economic Assumptions

Economic Assumptions	Recommended Changes
Discount Rate	No change
Price Inflation	Increase from 2.3% to 2.5%
Wage Growth Assumption	Increase from 2.8% to 3.0%
Amortization Payment Growth Rate (for older UAL bases)	Unchanged from 2.8%

Peer Review

- Under a Letter of Engagement
 - Gallagher and Company performed a comprehensive review
 - Scope included economic (excluding discount rate) and demographic assumptions

Findings

- The proposed assumptions are reasonable, appropriate, and developed in accordance with generally accepted actuarial principles
 - Gallagher suggested some areas in which adjustments could be considered

Overall Cost Impacts

Impact of Proposed Assumptions on Contribution Rates - Public Agencies

	Min	Max	Median
Classic Formulas			
2% @ 60 Miscellaneous	0.1%	0.9%	0.3%
2% @ 55 Miscellaneous	0.1%	3.8%	0.7%
2.5% @ 55 Miscellaneous	0.0%	3.0%	0.3%
2.7% @ 55 Miscellaneous	-0.1%	3.0%	0.3%
3% @ 60 Miscellaneous	0.2%	3.1%	0.3%
2% @ 50 Safety	3.0%	3.1%	3.1%
3% @ 55 Safety	-0.6%	2.2%	1.8%
3% @ 50 Safety	-1.1%	7.5%	1.6%
PEPRA Formulas			
2% @ 62 Miscellaneous	-0.5%	2.7%	0.1%
2.7% @ 57 Safety	-2.0%	6.0%	1.3%

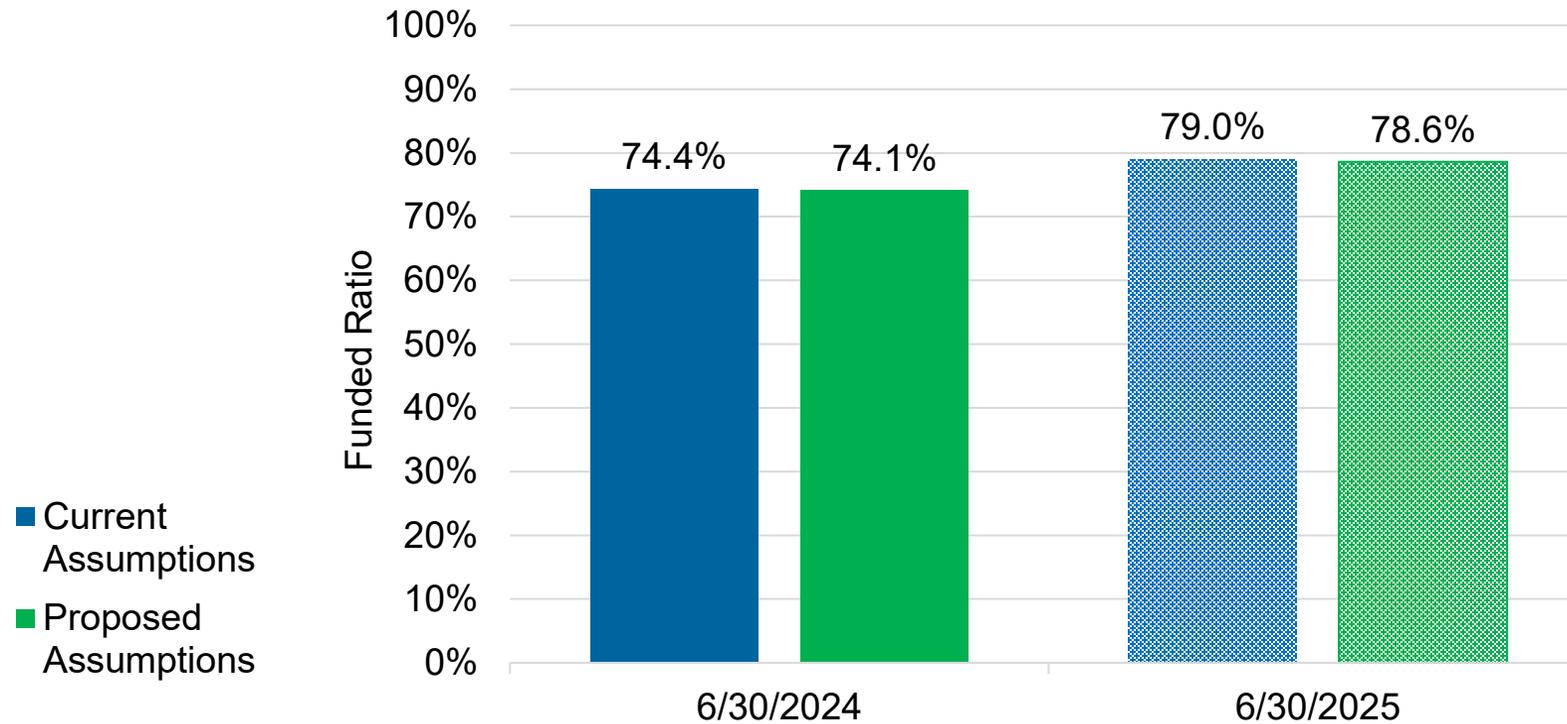
Note: Inflation and resulting salary scales had the largest impact driving the changes

Impact of Proposed Assumptions on Contribution Rates - State

	NC Change	UAL Change	Total Change
State and Schools			
Miscellaneous First Tier Plan	0.9%	0.7%	1.6%
Industrial Plan	0.2%	0.3%	0.5%
Safety Plan	0.5%	0.7%	1.2%
Peace Officers & Firefighters Plan	1.3%	0.6%	1.9%
California Highway Patrol Plan	1.0%	0.8%	1.8%
Schools Miscellaneous Plan	0.5%	0.1%	0.6%

Impact on the System Funded Ratio

Estimated Impact of Assumption Change to Funded Ratio



PEPRA Impacts

Affected PEPRA Member Contribution Rates

	Miscellaneous Plans		Safety Plans	
	Plan Count	Active Member Count	Plan Count	Active Member Count
Not Affected	1,413	155,404	227	10,620
Increase	9	1,738	551	16,431
Decrease	0	0	4	86

Next Steps

Next Steps

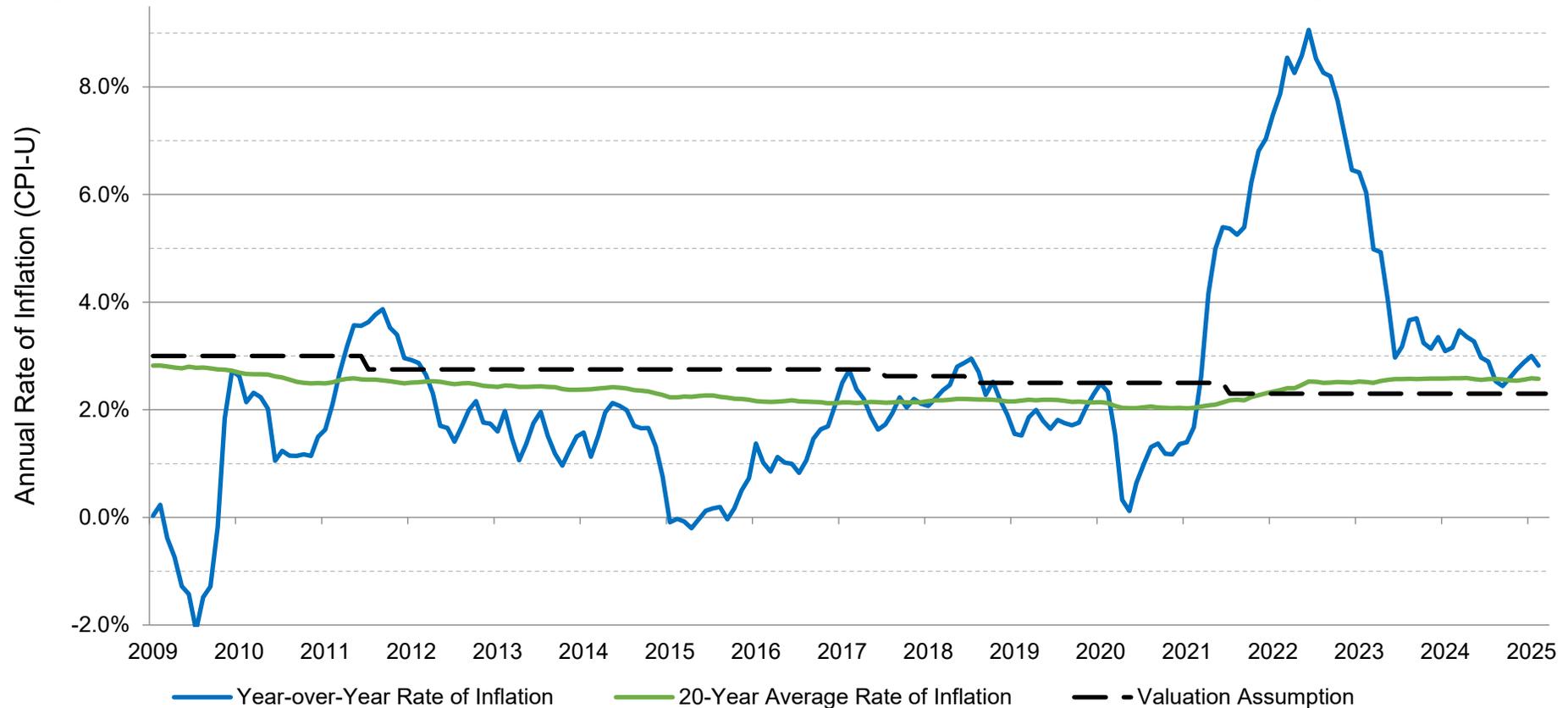
- Approve Demographic and Economic Assumptions (other than the discount rate)
- With your Adoption of our recommendations
 - The new Actuarial Assumptions will be used in the June 30, 2025 actuarial valuations
 - State and Schools contribution rates first impacted in FY 2026-2027
 - Public Agency contribution rates first impacted in FY 2027-2028
 - All retirements effective on or after November 20, 2025 will use the new assumptions

Questions?

Appendix

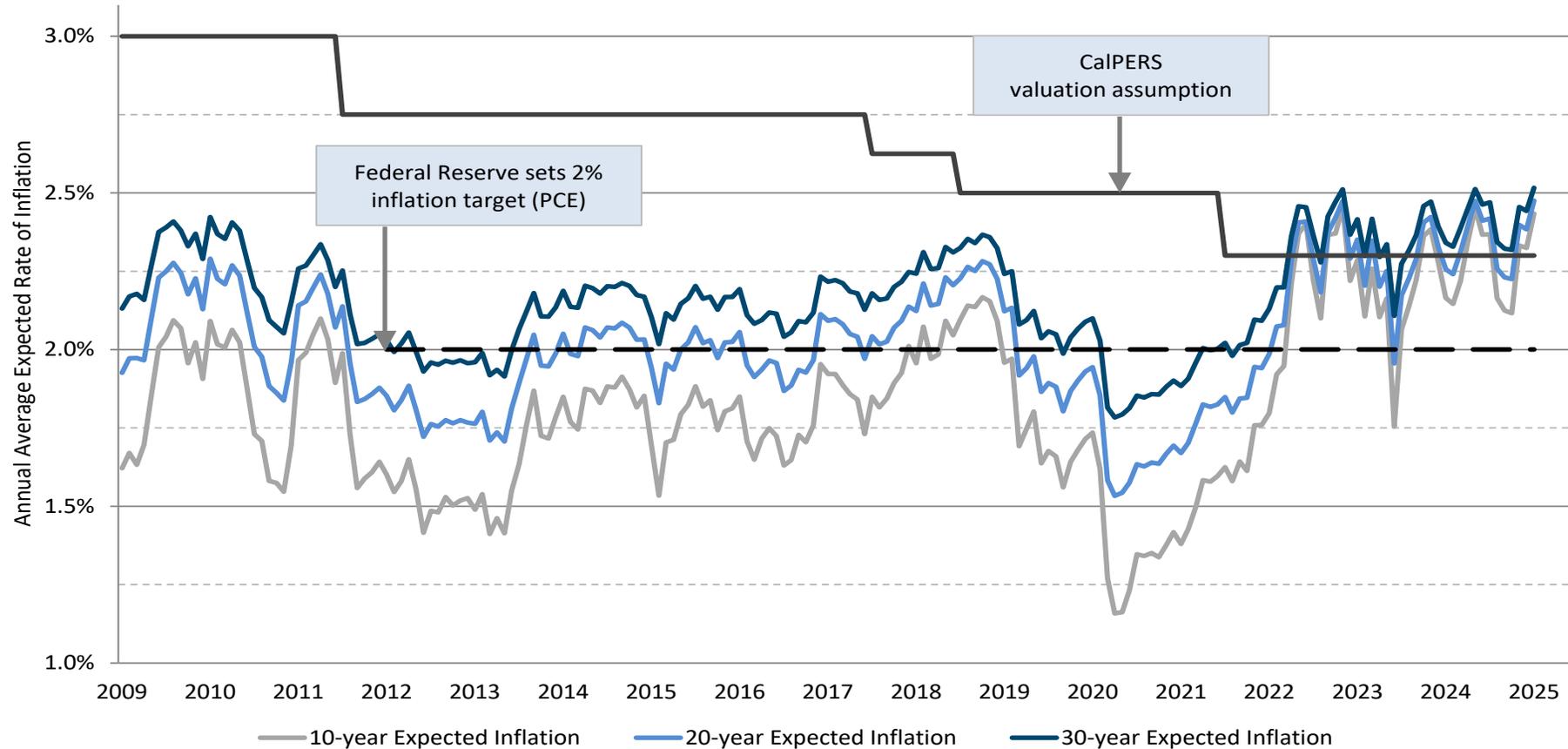
Inflation

History of Inflation Since 2009 (CPI-U)



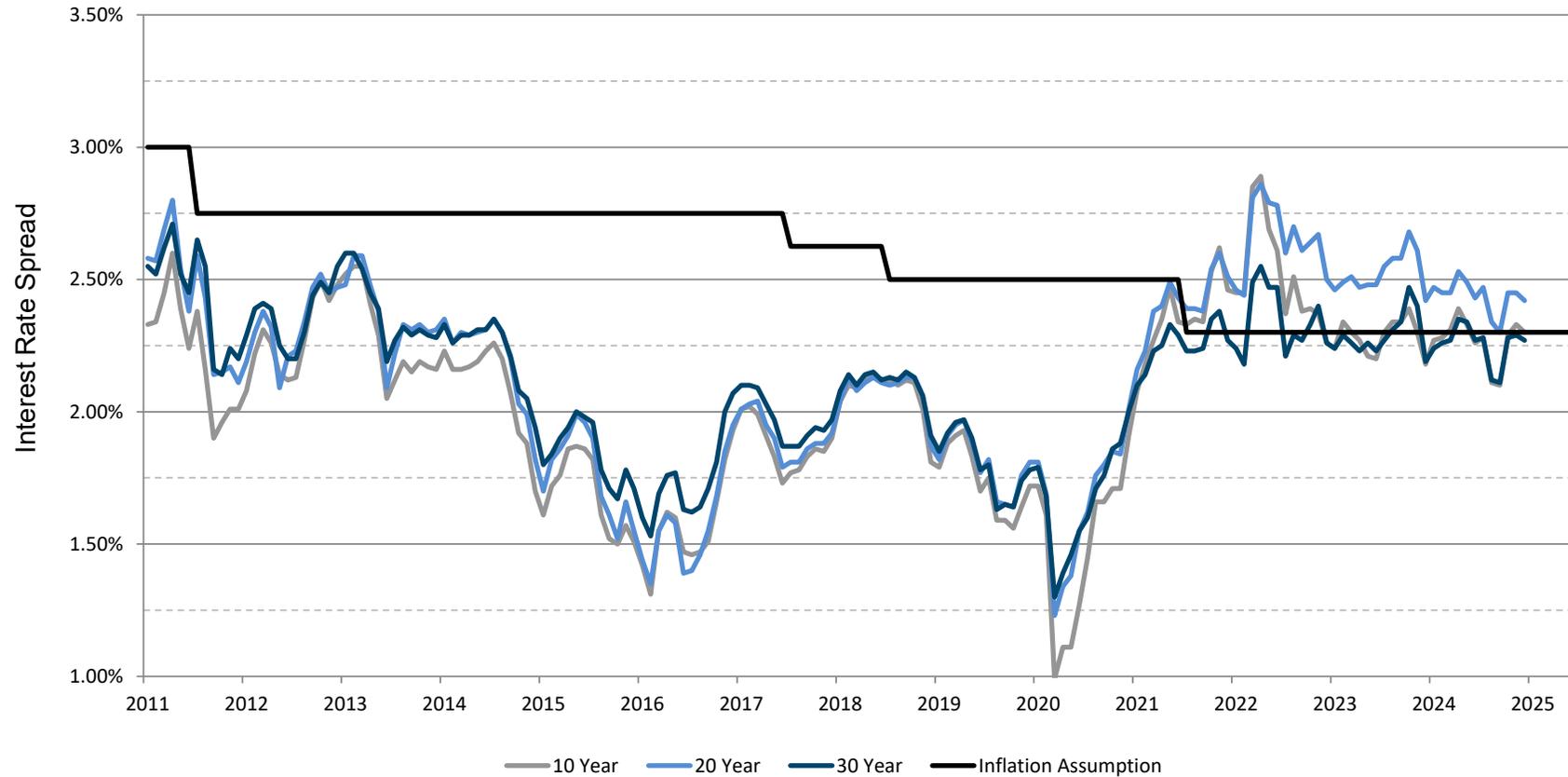
Cleveland Federal Reserve Inflation Model

Published monthly showing expected inflation for 1 to 30 years



Bond Market

Interest rate spread – conventional Treasuries vs TIPS



Review

- Social Security Trustees intermediate assumption 2.4%
- Cleveland federal reserve expected inflation ranges from 2.2% and 2.6%
- Bond Market Interest Rate spread ranges from 2.2% and 2.6%

Recommendation

- Increase inflation assumption from 2.3% to 2.5%

Salary Scale

Average Merit Increases During Study Period

	CHP	Co. PO	PA Fire	Ind.	PA Pol	POFF	Safety	State Misc	PA Misc	Schools	All
2007-2008	7.70%	5.13%	5.97%	4.92%	5.70%	-0.22%	14.19%	5.40%	4.64%	3.97%	4.75%
2008-2009	4.99%	4.93%	4.37%	-7.15%	5.37%	-6.97%	-4.68%	-3.78%	4.36%	1.47%	0.54%
2009-2010	1.79%	3.96%	1.70%	-4.15%	1.84%	-2.15%	-3.53%	-4.58%	1.75%	1.00%	-0.29%
2010-2011	1.95%	3.05%	0.69%	10.00%	1.12%	8.83%	9.21%	7.91%	0.99%	0.26%	2.98%
2011-2012	1.56%	-1.95%	-0.54%	5.33%	0.01%	5.47%	3.98%	2.48%	1.13%	Excluded	1.94%
2012-2013	-0.99%	0.09%	-0.69%	0.44%	0.97%	-0.94%	-1.13%	-0.50%	-0.86%	1.22%	0.01%
2013-2014	6.42%	2.81%	-0.03%	2.56%	0.40%	2.93%	0.15%	2.95%	1.30%	4.91%	2.57%
2014-2015	5.74%	3.64%	1.83%	3.17%	1.85%	1.22%	3.83%	1.27%	2.17%	3.04%	2.13%
2015-2016	0.52%	3.59%	2.59%	2.41%	2.60%	0.70%	1.54%	2.30%	2.87%	4.30%	2.57%
2016-2017	3.40%	2.61%	2.41%	1.43%	2.67%	4.95%	1.28%	2.89%	3.09%	7.94%	4.11%
2017-2018	3.29%	2.77%	2.76%	6.24%	3.10%	3.82%	4.88%	4.59%	3.02%	1.98%	3.12%
2018-2019	5.12%	2.02%	2.83%	4.74%	3.02%	3.29%	2.88%	3.83%	3.13%	2.90%	3.16%
2019-2020	5.25%	1.32%	3.20%	4.23%	3.30%	4.62%	2.44%	3.97%	3.98%	3.53%	3.80%
2020-2021	0.98%	3.63%	2.55%	2.53%	2.46%	-2.17%	1.10%	0.98%	3.33%	1.98%	2.12%
2021-2022	3.33%	2.66%	2.36%	6.30%	2.86%	7.29%	2.35%	5.02%	2.38%	3.96%	3.26%
2022-2023	4.68%	4.92%	5.34%	2.83%	5.12%	2.34%	3.51%	4.04%	4.70%	7.19%	4.57%
2007-2023	3.46%	2.81%	2.32%	2.79%	2.64%	1.99%	2.54%	2.37%	2.61%	3.08%	2.57%

Average Increase

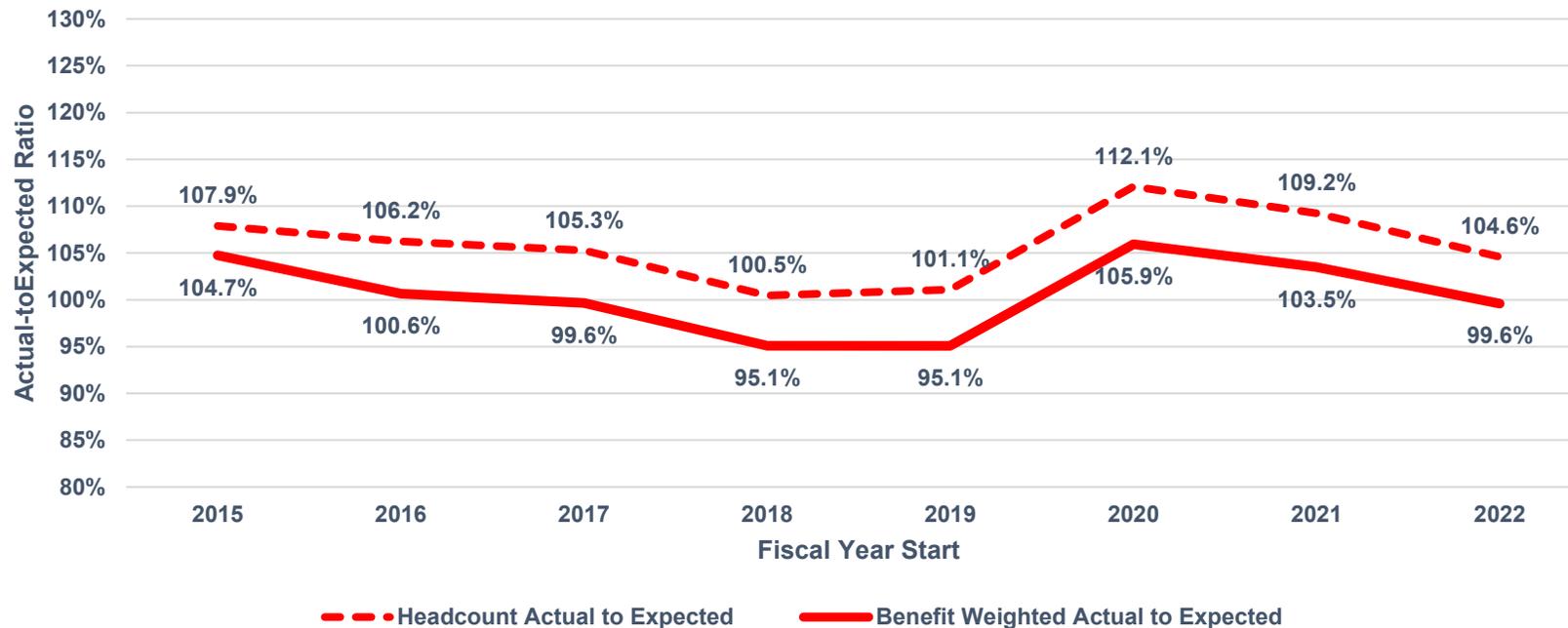
Salary Scale Review

- Results are mixed
 - Higher merit increases for State Misc., State Safety, Public Agency Fire, and State Peace Officer Fire Fighter
 - Moderate increases for Public Agency Misc., Police, CHP, Other Safety
 - Moderate decreases for State Industrial and Schools
- Recommending changes to all 10 sets of assumptions

Mortality

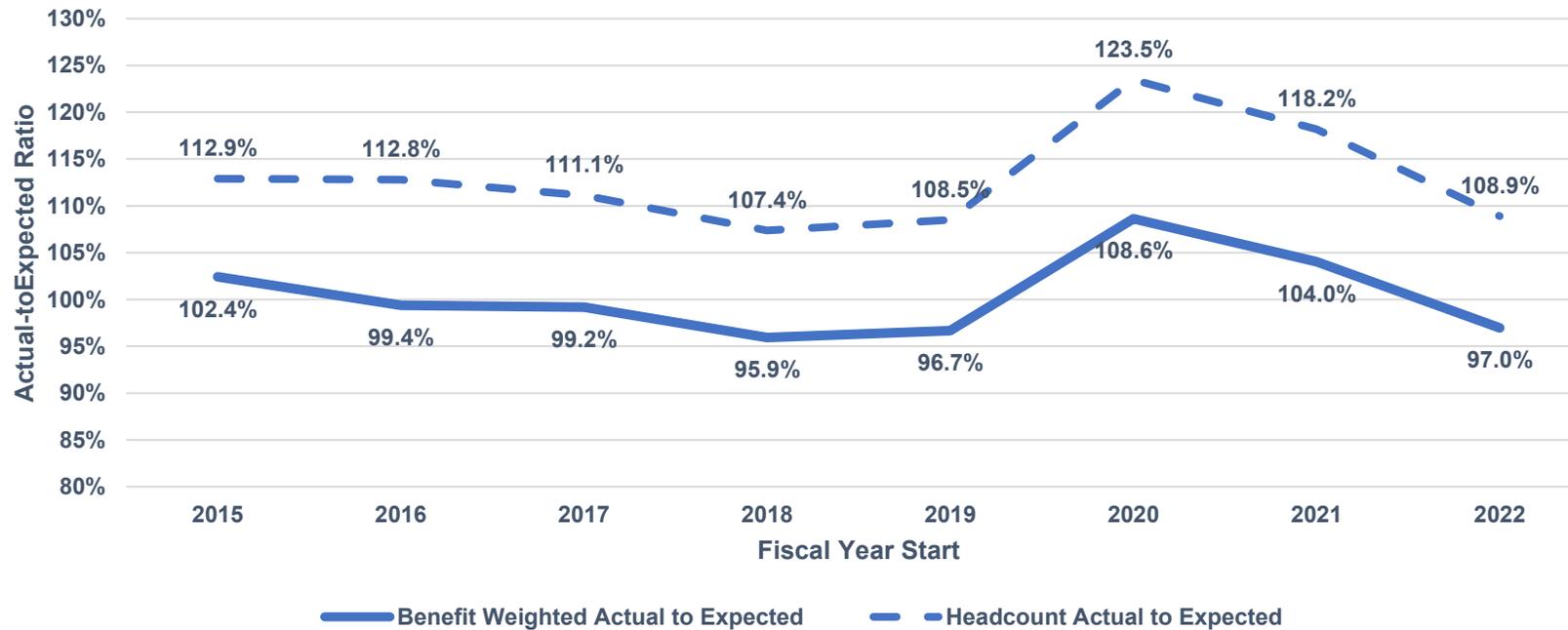
COVID-19 Post-Retirement Mortality Analysis – Actual to Expected

Female Service Retirement Mortality Actual To Expected Ratios
(FY 2015-16 to FY 2022-23)

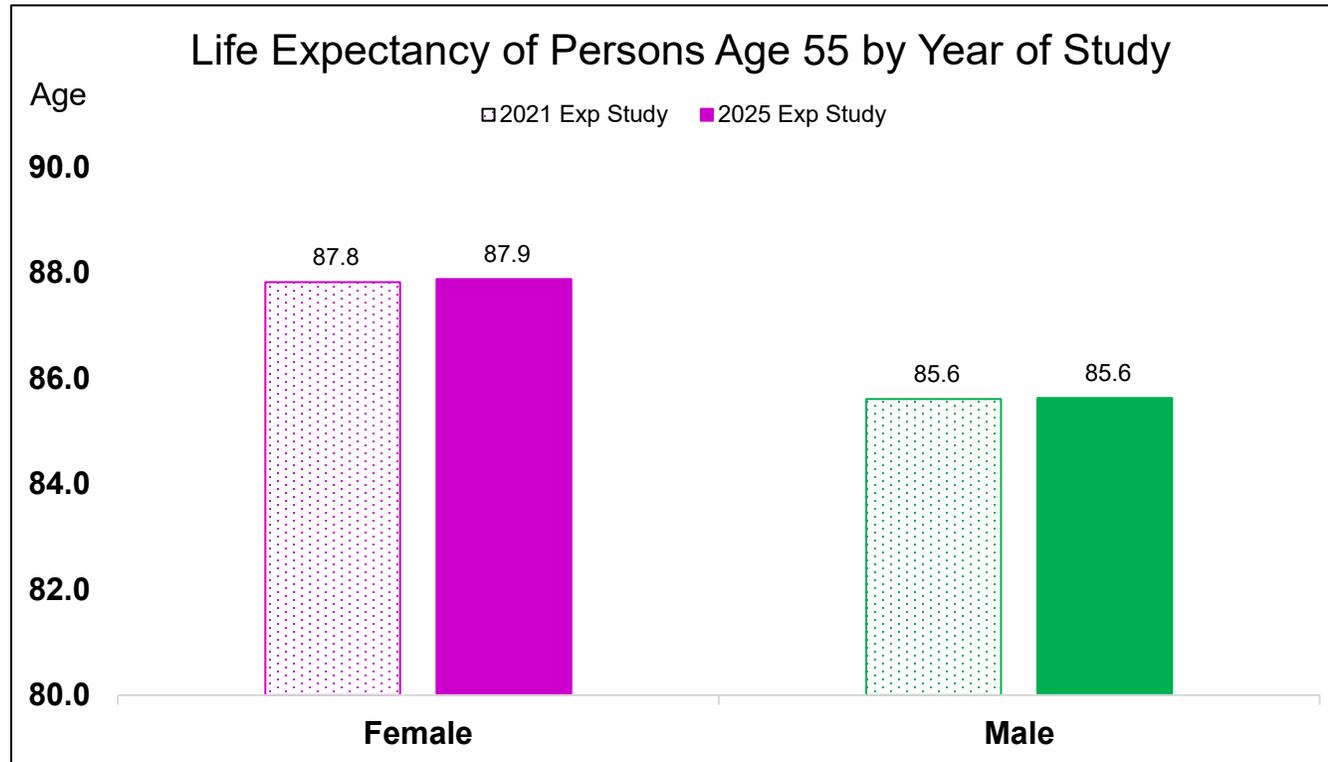


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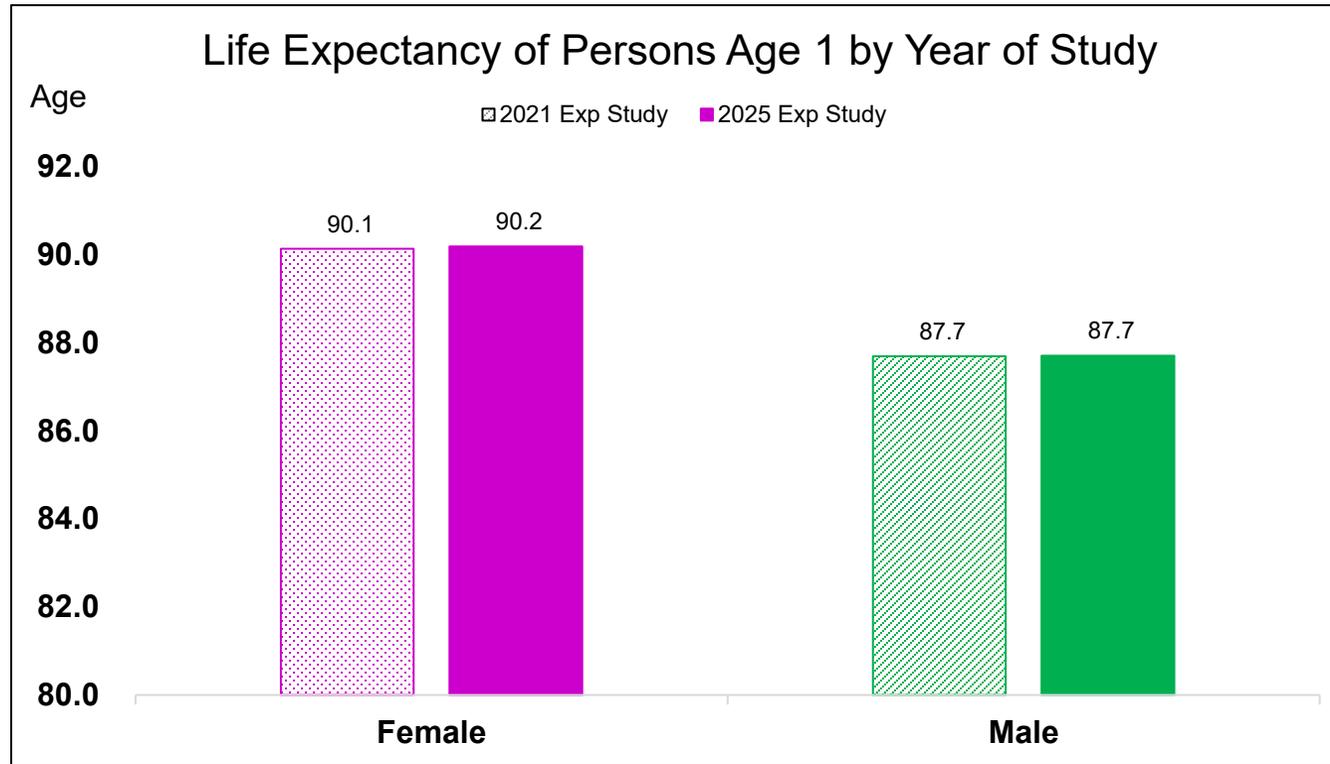


Life Expectancy-Age 55 by Year of Study



Recommendation: Retain base rates from 2021 study and adopt 80% of the MP-2021 mortality improvement scale

Life Expectancy- Age 1 by Year of Study



Recommendation: Retain base rates from 2021 study and adopt 80% of the MP-2021 mortality improvement scale

Mortality Review

- Mortality experience during the years impacted by COVID provided no value in assessing the current base mortality rates or assumptions for future mortality improvement
- Prior to COVID, the CalPERS mortality rates aligned well with actual experience

Recommendation

- No change to male base rates, minor changes to female base rates
- Add normal improvement progression (replace MP2020 with MP2021)

Other Assumptions

Other Assumptions Review

- Retirement
- Disability (Industrial and Non-Industrial)
- Termination (Vesting and Refunding)

Recommendation

- All assumptions were studied, and minimal changes were made
- Recommended changes had minimal impact on contribution rates

Overall Cost Impacts

Impact of Proposed Assumptions - State Miscellaneous and Schools

Category	Service Retirement	Salary Scale	Post-Ret Mortality	IDR	NIDR	Term Vested	Term Refund	Inflation	Impact on Employer Rate
State Misc	-0.1%	0.9%	0.1%	N/A	0.0%	-0.1%	0.0%	0.8%	1.6%
State Industrial	-0.1%	-0.2%	0.1%	No Change Made	0.1%	-0.1%	0.0%	0.7%	0.5%
Schools	0.1%	-0.1%	0.1%	N/A	0.0%	-0.2%	-0.1%	0.8%	0.6%

**blue – rates are going up green – rates are going down white – rates are staying the same

Impact of Proposed Assumptions - State Safety

Category	Service Retirement	Salary Scale	Post-Ret Mortality	IDR	NIDR	Term Vested	Term Refund	Inflation	Impact on Employer Rate
State Safety	 -0.3%	 0.7%	 0.1%	No Change Made	 0.0%	No Change Made	 0.0%	 0.7%	 1.2%
State POFF	 -0.5%	 0.9%	 0.1%	 0.1%	 0.0%	No Change Made	 0.1%	 1.2%	 1.9%
State CHP	 0.0%	 0.2%	 0.1%	 0.1%	 0.0%	 0.0%	 0.0%	 1.4%	 1.8%

**blue – rates are going up green – rates are going down white – rates are staying the same

PEPRA Impacts

Impact on PEPRA Normal Costs

	Estimated Change in PEPRA Total Normal Cost %
State Miscellaneous	0.60%
State Industrial	0.10%
State Safety	0.20%
POFF	0.90%
CHP	0.80%
Schools	0.50%
Public Agency Miscellaneous	0.0% - 0.7%
Public Agency Safety	-1.8% - 1.5%

Detailed Changes to PEPRA Contribution Rates

Member Rate Change	RP Count	Active Member Count	RP Count	Active Member Count
-1.00%	-	-	1	6
-0.75%	-	-	3	80
0.00%	1,413	155,404	227	10,620
0.50%	6	704	498	12,131
0.75%	3	1,034	49	4,186
1.00%	-	-	4	114

Before and After PEPRA Employee Rate Changes

	PEPRA Member Contribution Ranges	
	Before	After
Miscellaneous	4.50 - 9.50	4.50 - 9.50
Safety	11.00 - 17.00	10.5 – 18.00
State/Schools	8.00 - 13.75	8.00 - 14.25*

*State and Schools PEPRA employee rates remain unchanged apart from 2.7% @ 57 POFF employees