



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

Iowa Public Employees Retirement System 2017-2021 Experience Study

Presented By: Cavanaugh Macdonald Consulting

June 16, 2022



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.

IPERS Experience Study



- Performed every four years for IPERS
 - Last study covered fiscal years 2014 through 2017
 - Current study covers fiscal years 2018 through 2021

- Monitor all actuarial assumptions and methods used in the valuation process

- Economic assumptions were discussed in March, but will be reviewed

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

Demographic

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

Who Selects Them?

Economic

- Board
- Actuary
- Other Advisors

Demographic

- Mostly Actuary
- Board Approves



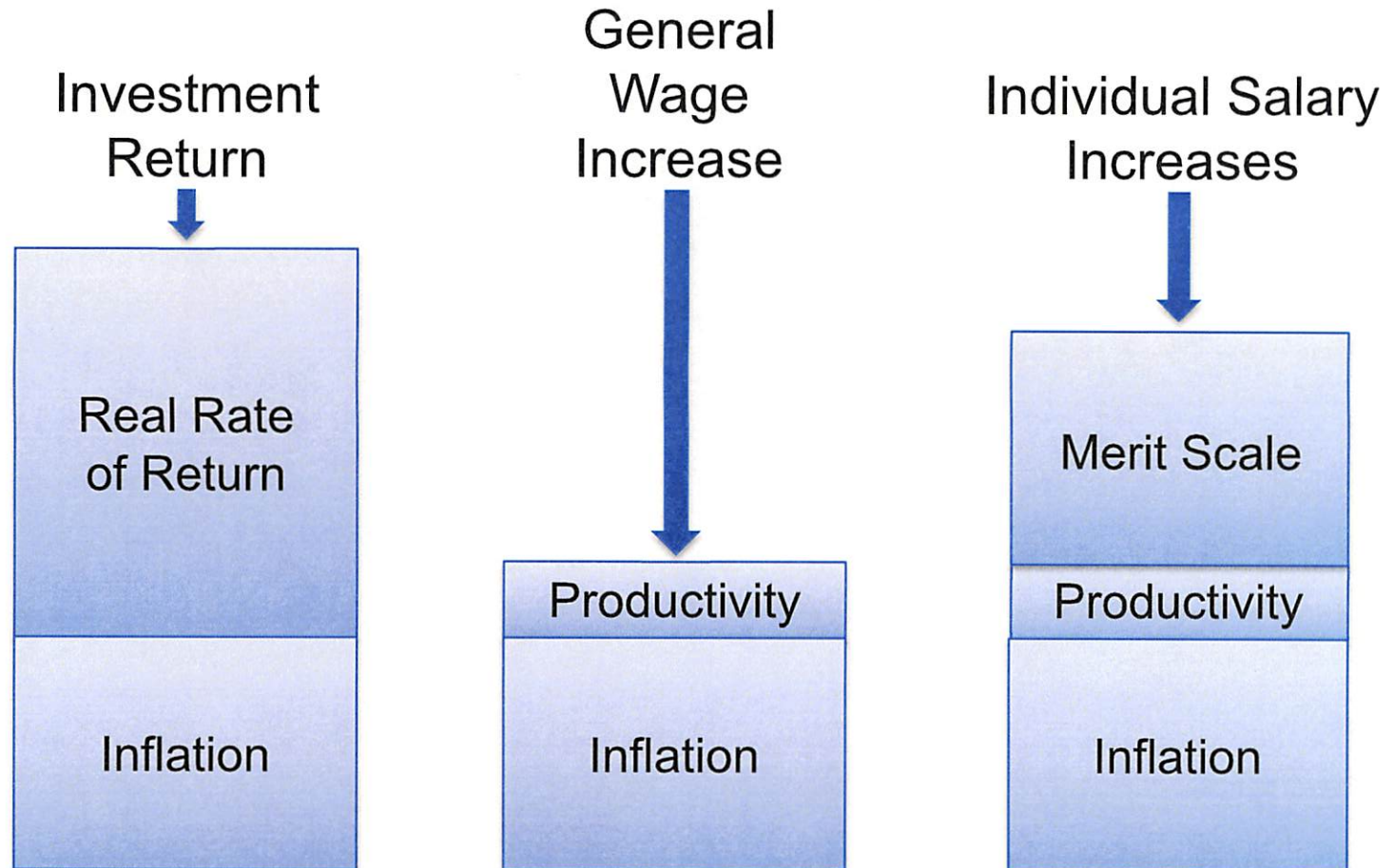
Economic Assumptions

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, generally measured by the Consumer Price Index (CPI)
- Current assumption is 2.60% (reduced from 3.00% in the 2017 study)
- While recent inflation has been much higher, it is not yet clear if this is a temporary issue or a change to the last 30+ years
- **We recommend retaining the 2.60% inflation assumption**

Interest on Member Accounts



- Law sets interest rate at 1% above 1-year CD rates
- Analyzed last fifteen years of actual interest credited compared to inflation
 - Average was 0.78% above inflation, excluding 2021 (with inflation spike)
- **Recommend keeping current assumption of 3.50% since inflation assumption is not changing**

General Wage Growth Assumption



- This assumption reflects the broad wage increases that arise from increased productivity, etc.
- **Recommend retaining 3.25%** with components shown below:

	<u>Current</u>	<u>Proposed</u>
Price Inflation	2.60%	2.60%
Productivity	<u>0.65%</u>	<u>0.65%</u>
General Wage Growth	3.25%	3.25%

Payroll Growth Assumption



- Payroll growth assumption is used solely to determine the amortization payment on Unfunded Actuarial Liability
 - Unfunded Actuarial Liability is amortized as a level percent of payroll
 - Depends upon membership growth and general wage growth

- Current assumption of 3.25% based on stable population and the general wage growth assumption

- **Recommend retaining the 3.25% assumption**

Investment Return Assumption



- Building block approach
 - Rate of price inflation (previously addressed)
 - 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: 7.00% (2.6% inflation + 4.4% net real return)

Summary of Findings: Investment Return Assumption



- Current assumption: 7.00% nominal return
- Based on Wilshire's 30-year expected return distribution (with 2.60% inflation):
 - *50th percentile return: 6.91%*
 - *45th percentile return: 6.63%*
- **New Wilshire quarterly update increases 30-year expectation by about 0.30%**
- The Board's risk perspective and appetite are considerations – there is not a single right answer.
- **We recommend Board select in the range of 6.75% to 7.00%**

Administrative Expenses



- Two approaches
 - Implicit: expenses are netted out of investment return, so theoretically the investment return assumption is lower
 - Explicit: included directly in the annual contribution rate
- IPERS has historically used the implicit approach (about 0.05% of assets in recent years)
- Actual expenses have been approximately 0.16% of payroll
- Our preference is for the explicit assumptions, but either approach is acceptable

Summary of Recommended Economic Assumptions



Assumption	Current	Recommended
Price inflation	2.60%	2.60%
Interest on Member Accounts	3.50%	3.50%
General wage growth	3.25%	3.25%
Payroll growth	3.25%	3.25%
Investment Return	7.00%	TBD
Administrative Expenses	Implicit	Explicit



Actuarial Methods

Actuarial Cost Method



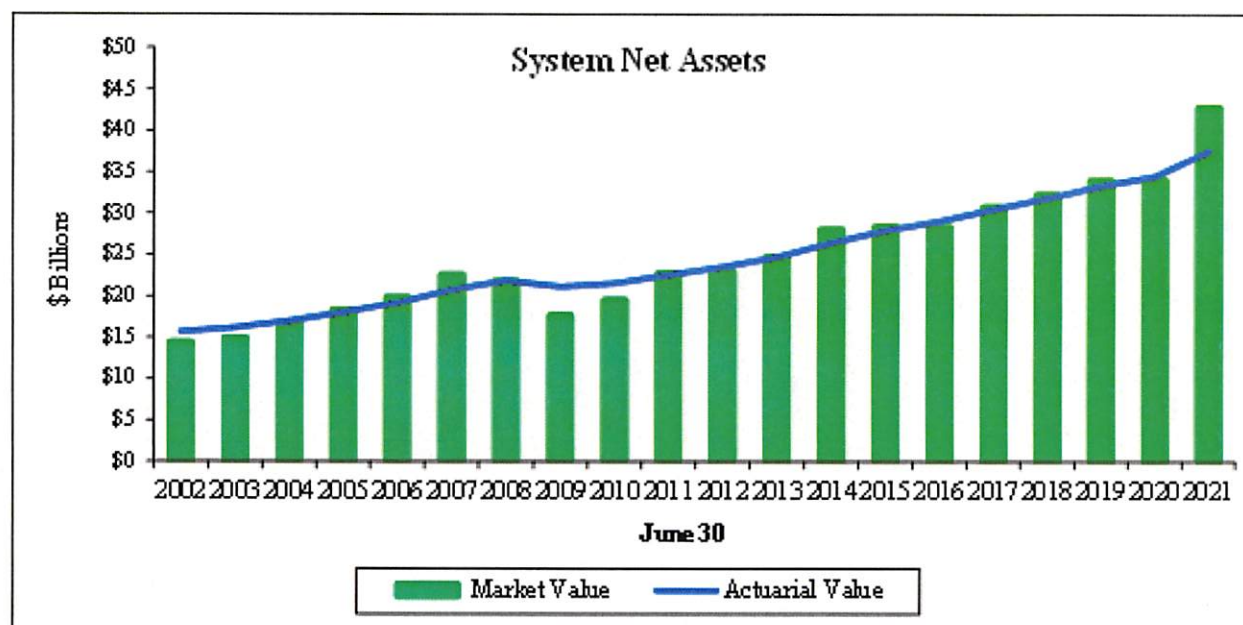
- Current Method is Entry Age Normal (EAN)
 - Most commonly used cost method by public plans
 - EAN develops a normal cost rate that is stable, as a level percent of payroll
 - Required cost method for GASB 67/68 calculations

- **Recommendation: No Change**

Asset Smoothing Method



- Current Method is 75% Expected Value + 25% Actual Market Value (corridor of 80% - 120% of market value)
- Expected value = actuarial value of assets last year projected forward using assumed rate of return and actual contributions/benefit payments



Asset Smoothing Method



- Current Method effectively smoothes market volatility as evidenced in graph on prior slide
- Quickly moves back toward actual market value when significant variations occur in actual returns, both positive and negative, over a relatively short period
- Meets actuarial standards of practice with the current corridor
- **Recommend retaining current method**

Amortization Method



- **Unfunded Actuarial Liability (UAL)**
 - Actuarial Liabilities minus Actuarial Assets
 - UAL exists due to benefit improvements that have not been fully paid for, experience that is less favorable than expected, assumption changes and contributions if less than full actuarial rate
- Amortization policy determines the length of time and structure of the contributions required to systematically fund the UAL
- **Current Method**
 - Layered Amortization Bases
 - Amortization Period: UAL at 6/30/14 amortized over closed 30 Years (23 years remaining as of 6/30/21 valuation). New pieces of UAL amortized over 20 years.
 - Payment Methodology: Level Percent of Payroll

Amortization Payment Methodology



- **Current Method: Level Percent of Payroll**
 - Consistent with development of normal cost under Entry Age Normal (level percent of pay)
 - Consistent with financing mechanism (system is funded with contributions as a percent of payroll)
 - Equitable allocation of costs across generations of members and taxpayers
- Legacy UAL base will soon reach the point where there is no negative amortization
- New pieces of UAL, amortized over 20 years, do not have negative amortization
- **Recommendation: No Change**

Favorable Experience Dividend (FED) Assumption



- Current statutes provides for FED transfers when the plan is fully funded. Experience gains are transferred to the FED Reserve and cannot be transferred back.
- Supplemental Accounts for Active Members (SAAM) is a related provision that redirects a portion of contributions to member accounts when 100% funded
- These provisions were designed at a time when contributions rates were set in statute and did not adjust with funding needs

FED/SAAM Assumption



- Until recently, the expectation of being fully funded was so far in the future that this provision could be ignored in the valuation.
- With continued funding progress and the FY 2021 investment return, full funding could be reached within next 10 years. We believe we must now reflect the expectation of future FED and SAAM allocations/benefit payments in the valuation results.

Valuing the FED and SAAM



- We modeled a range of investment return outcomes over the next 30 years and reflected how the transfers to the FED and SAAM would be made
 - Based on 2021 valuation and current assumptions
 - Based on current policies
 - Based on stable demographic considerations

- We estimate that reflecting the FED/SAAM will increase liabilities approximately 8 - 12% and require an initial contribution increase of 1.0 - 1.5% of pay

Valuing the FED and SAAM



- We propose waiting until the 2023 valuation to reflect the FED and SAAM in the valuation
 - Allows for consideration of funding policy changes to better coordinate with the FED/SAAM triggers
 - Allows for legislative adjustments if appropriate



Demographic Assumptions

Demographic Assumptions



- Studies what happened to individual members
 - Mortality
 - Retirement
 - Disability
 - Termination of employment
 - Probability of electing a deferred vested benefit
 - Merit salary scale

Demographic Assumptions



- Key evaluation tool is Actual/Expected Ratio (A/E ratio)
- Generally consider changes:
 - Actual/Expected ratio is not close to 100%
 - Pattern of actual rates is different than assumption
 - Recent trends and future expectations
- When appropriate, we considered experience in the prior study period
- Experience studied separately for School, State and Other groups for Regular membership
- Aggregated Special Service groups when practical to improve credibility of results

Methodology



- Traditional approach: Actual compared to expected using member counts
- Liability-weighted approach: Actual compared to expected, based on liability in the system
- Both types of analysis performed, but liability-weighted results typically assigned more credibility
- Goal is a better estimate of System liability

Example



<u>Count</u>	<u>Salary</u>	<u>Service</u>	<u>Liability Weighted</u>
8	\$20,000	5	800,000
2	80,000	20	3,200,000
<hr/>			<hr/>
10			4,000,000

Probability of Event: 10%

Actual occurrence: 1 person with \$80,000 salary and 20 YOS

Example



	<u>Count Basis</u>	<u>Liability Weighted</u>
Exposure	10	4,000,000
Expected Decrement	1	400,000
Actual Decrement	1	1,600,000
Actual/Expected Ratio	100%	400%

Mortality



- Most significant demographic assumption
- Covid-19 was present during the last 12-18 months
 - No clear impact – typical of Midwest public plans
 - To the extent the disease is becoming endemic, there could be some changes in the next study that would reduce costs
- Assumptions for
 - Retirees (healthy)
 - Disabled retirees
 - Beneficiaries
 - Active members

Mortality: Healthy Retirees



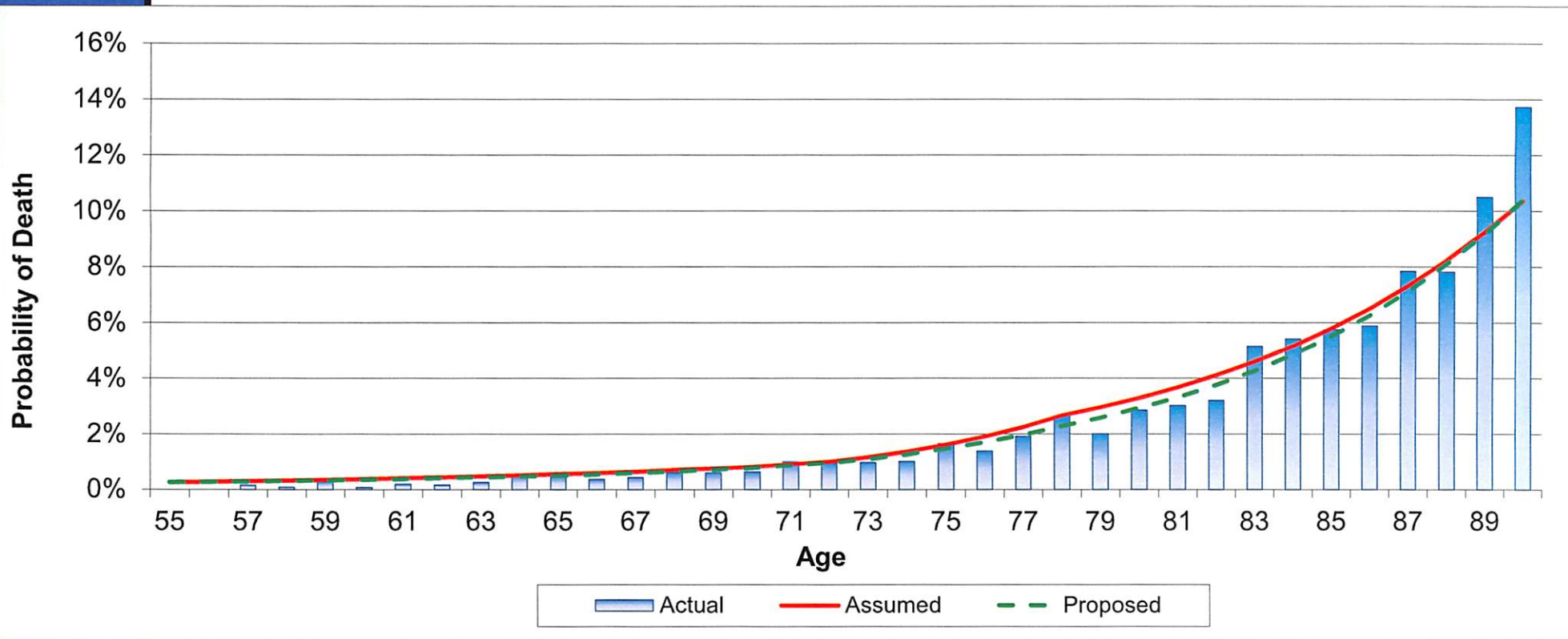
- New mortality table based on public plan data has been issued by Society of Actuaries, along with a new projection scale
 - Projection scales are updated annually, although we recommend changing it only each experience study
- Recommended change:
 - Pub-2010 Mortality Table
 - MP-2021 Mortality Improvement Scale
 - Adjustments to mortality rates as in the past to better fit the actual experience
- Assigning more credibility to weighted analysis this study

Mortality: Healthy Retirees



	A/E Ratios (weighted)	
	Current	Proposed
State		
Male	106%	100%
Female	105%	100%
School		
Male	88%	94%
Female	89%	95%
Other		
Male	94%	97%
Female	93%	97%
Special Services Males	107%	101%

School Female Mortality



Retirement: Regular Membership



- Anticipates retirement directly from active status
- Type of retirement analyzed separately and by group
 - Early (reduced benefit)
 - Normal at either age 65, age 62 and 20 YOS or Rule of 88 (unreduced benefits)
 - Select (First Eligible)
 - Ultimate

Retirement Experience



	<u>A/E Ratio</u>	
	Count	Weighted
State		
Early	56%	68%
Select	101%	110%
Ultimate	95%	102%
Total	85%	98%
School		
Early	36%	55%
Select	73%	92%
Ultimate	65%	97%
Total	56%	87%
Other		
Early	40%	61%
Select	75%	88%
Ultimate	69%	93%
Total	61%	86%
Sheriffs and Deputies	90%	90%
Protection Occupation	77%	111%

Comments - Retirement



- Count and weighted experience are different (other than State and Sheriffs/Deputies), consistent with past experience
- Generally, A/E ratios have continued to decline, consistent with broader trends we are observing toward later retirement
- Recommend moving part of the way toward the observed experience

Proposed Retirement Rates



	<u>A/E Ratio (Weighted)</u>	
	Current	Proposed
State		
Early	68%	76%
Select	110%	103%
Ultimate	102%	104%
Total	98%	100%
School		
Early	55%	67%
Select	92%	94%
Ultimate	97%	97%
Total	87%	91%
Other		
Early	61%	70%
Select	88%	86%
Ultimate	93%	94%
Total	86%	89%
Sheriffs and Deputies	90%	90%
Protection Occupation	111%	111%

Disability



	A/E Ratios	
	Current	Proposed
Regular Members		
Male	38%	53%
Female	38%	46%
Special Service	93%	93%

- Number of occurrences is small, so credibility is limited
- Results are similar to the last two studies
- Recommend moving part way toward observed experience recognizing that volatility is not unexpected
- Provides some conservatism for future adverse experience

Termination of Employment Regular Membership



- Count and liability-weighted experience continue to differ, indicating lower-paid employees turn over more
- State rates up this study, reversing a downward trend
- Recommend some adjustments to the assumptions
- Observed A/E ratios:

	Male		Female	
	Count	Weighted	Count	Weighted
State	164%	146%	181%	165%
School	146%	95%	149%	98%
Other	121%	85%	128%	98%

Termination of Employment Regular Membership



➤ Proposed Rates – Weighted A/E Ratios

	Male		Female	
	Current	Proposed	Current	Proposed
State	146%	133%	165%	127%
School	95%	95%	98%	98%
Other	85%	92%	98%	98%

Termination of Employment Special Service Membership



- Last time introduced separate assumptions for Sheriffs/Deputies and Protection Occupations membership groups
- Some adjustments to refine recommended – move methodically
- Sheriffs/deputies – A/E ratio moves from 172% to 149%
- Protection Occupations – A/E ratio moves from 135% to 124%

Election of Deferred Vested Benefit



- Anticipates probability an active member is vested, terminates and elects a deferred vested benefit in future
- Experience consistent with prior study – no change
- A/E ratio (liability-weighted)

	Male		Female	
	Current	Proposed	Current	Proposed
State	94%	94%	94%	94%
School	99%	99%	99%	99%
Other	101%	101%	106%	106%
Special Service	88%	88%	(combined with male)	

Salary Increase



- Two components:
 - Merit (promotion/longevity)
 - General wage increase (inflation plus productivity). Set in last year's economic assumption study
- Current assumption is service based
- Identify general wage increases for each group by studying salary increases for members with more than 25 years of service

Salary Experience



Fiscal Year	State	School	Other	Special Services
2018	3.1%	3.5%	4.0%	3.6%
2019	2.6%	3.2%	4.3%	3.9%
2020	4.3%	4.1%	4.1%	4.3%
2021	4.8%	3.5%	4.6%	5.7%
2018-21	3.7%	3.7%	4.0%	4.4%
Expected	5.7%	5.0%	5.3%	5.4%

Salary Experience



- When expected salary increase assumption is adjusted for wage inflation by group, the fit of the merit scale is reasonable
- Recommend retain assumption

Conclusions/Comments



- Our philosophy is to move incrementally, especially with Covid-19 pandemic and the subsequent changes in the economy and society
- Continue to modify and refine assumptions, as needed in the future
- Regular experience studies provide assurance that changes will be made in a timely manner
- Assumed rate of return needs Board decision
- FED/SAAM issue needs consideration

Optional Form Factors



- At retirement, members can elect the form of their retirement benefit, e.g., single life, joint and survivor, certain and life.
- Optional form factors are used to convert the formula benefit to another form of payment
- Optional form factors are “actuarial equivalent” which is based on an investment return and mortality assumption
- If interest rate assumption is changed, we recommend that the optional form factors be updated when administratively feasible

Estimated Financial Impact*



	Current	Proposed (6.75%)	Proposed (7.00%)
Regular Members			
Actuarial Liability	\$39,778M	\$40,913M	\$39,785M
Normal Cost	10.49%	11.23%	10.59%
Sheriffs and Deputies			
Actuarial Liability	\$817M	\$831M	\$807M
Normal Cost	16.93%	17.78%	16.77%
Protection Occupation			
Actuarial Liability	\$1,950M	\$1,976M	\$1,919M
Normal Cost	15.30%	16.16%	15.29%

*Based on June 30, 2021 Actuarial Valuation. The impact, as a percentage, on the June 30, 2022 actuarial valuation results is expected to be similar, but the dollar amount will be different.

Estimated Actuarial Contribution Rates*



	Current	Proposed (6.75%)	Proposed (7.00%)
Regular Members	14.14%	15.97%	14.42%
Sheriffs and Deputies	16.93%	17.94%	16.93%
Protection Occupation	15.30%	16.32%	15.45%

*Based on June 30, 2021 Actuarial Valuation with explicit administrative expense charge.