Five Year Experience Study for Iowa Peace Officers' Retirement, Accident & Disability System

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September 17, 2012

Discussion Topics

- Purpose of the Experience Study

- Review of the Methodology

- Findings/Recommendations

- Financial Impact of Changes

Actuaries

- ## What we do
  - Advise on how to fund benefits before they become payable

- ## What we don't do
  - Impact whether or not a promised benefit is payable (true cost)

Actuarial Valuation

- Requires use of assumptions to estimate future obligations (liabilities)

- Best estimates of future experience

- Annual valuations adjust for actual experience

Purpose of an Experience Study

- Review current actuarial methods

- Compare assumptions to what actually happened

- What have we learned from the past that changes our view of the future?

- NOT: What happens in the past will happen in the future

Actuarial Assumptions

- Not one "right" answer

- Range of reasonable assumptions

- Economic and Demographic

- "Art" or "Science"

- "Actuarial Risk"

Experience Study

- Study period 2006 through 2011

- Some additional data considered for certain assumptions

- Subjective judgment/actuarial opinion

Actuarial Methods

- ## No change to funding method
  - Current method: Entry Age Normal
  - Most common in public sector

- ## No change to asset valuation method
  - Could change from 4 to 5 year smoothing period

- ## No change to methodology for amortization of unfunded actuarial liability

Economic Assumptions

- Governed by ASOP No. 27

- Develop best estimate range and then select assumption

- Each consistent with other economic assumptions

- Recognize subjective nature

Economic Assumptions

- Price Inflation

- Investment Return

- General Wage Growth

Inflation Assumption

- Component of all economic assumptions
- Current assumption 3.5%
- Review of historical CPI

2001-2011	2.4%
1991-2011	2.6%
1981-2011	3.1%
1971-2011	4.4%
1961-2011	4.1%
1951-2011	3.7%

Inflation Assumption

- Economic forecasts are for lower inflation (2.25-2.50%) but are shorter timeframe than actuarial valuations

- Social Security projections use 1.8% to 3.8% for cost projections

- Trend in public plans has been to a lower inflation assumption

- Reasonable range: 2.5% - 3.75%

- Recommended: 3.00%

Investment Return

- Critical assumption

- Dependent on:
  - asset allocation
  - long term real ROR for each asset class
  - inflation rate
  - expenses

Rate of Investment Return

- Forward looking:
  - Based on capital market assumptions and analysis by Buck Consulting (Treasurer's advisor)
    - Expected return over 30 years: 8.81% with 3.16% inflation (real return of 5.65%)
    - Deduct 5 BP for administrative expenses
    - Resulting return is 8.76%

- Based on 3.00% inflation
  - Lower inflation in short term may cause lower returns

Recommendation

- Current assumption: 8%
- Buck's analysis indicates more than 50% chance of 8% return over next 30 years
- Lower inflation means the real rate of return (nominal return – inflation) increased from 4.5% to 5.0%
- Recommend no change as long as Board is comfortable with 8%

Wage Growth Assumption

- Two types of salary assumption
  - General wage level
  - Merit scale

- Historically wage growth > price inflation

- Difference is productivity or real wage increase
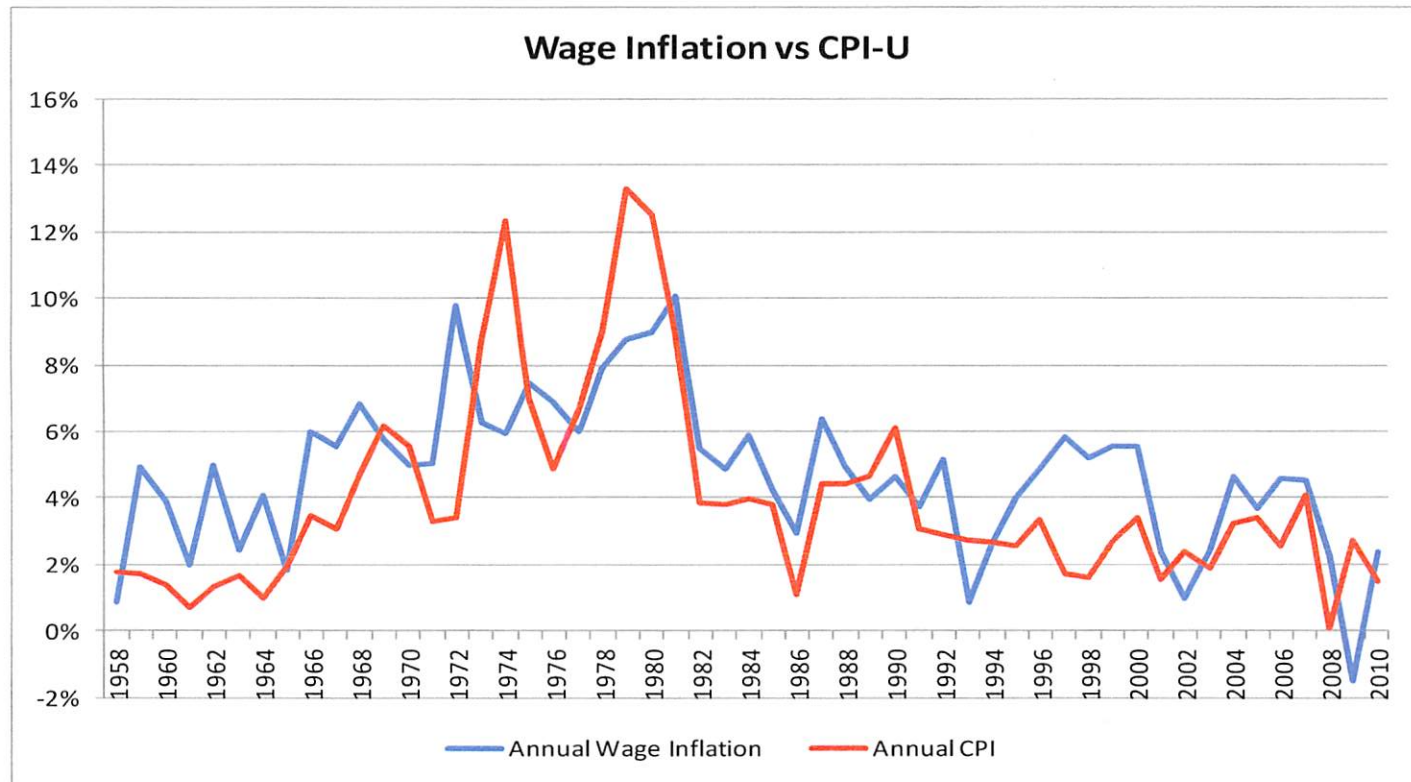
Real Wage Growth

- Historical Data

Period	Wage Growth	CPI	Real Wages
2000 – 2010	4.1%	2.4%	1.6%
1990 – 2010	3.9%	2.7%	0.9%
1980 – 2010	4.7%	4.1%	0.4%
1970 – 2010	5.2%	8.4%	0.6%
1960 - 2010	4.9%	4.1%	0.8%

- Social Security projections used range of 0.6% to1.6%

Historical Wage and Price Inflation

Wage Inflation vs CPI-U

Wage Growth Assumption

- Current Assumption: 4.0% (3.5% price inflation + 0.50% productivity)

- Recommended Range: 3.50% - 4.25%

- Specific Recommendation: 3.75%
    - Inflation: 3.00%
    - Productivity: 0.75%

Demographic Assumptions

- Studies what happened to individual members each year of study

  - Mortality
  - Termination of employment
  - Retirement
  - Disability

- Also governed by actuarial standards of practice

Calculation Methodology

Step 1: Tabulate actual decrements
         (# members changing status)

Step 2: Calculate number expected to
         change status

Step 3: Actual/Expected Ratio
         (Item 1/Item 2) x 100

Sample of Methodology

Exposure: 100

Expected Decrement: 100 x .10 = 10

Actual Decrement: 8

A/E Ratio = 8/10 = 80%

Demographic Assumptions

- **Don't expect perfect match**
  - Assumptions are long term
  - Experience unfolds short term

- **Consider changes**
  - A/E Ratio not close to 100
  - Pattern of actual rates different

- **Challenges**
  - Size of group/credibility
  - Impact of economic conditions during study period

- **Current: RP-2000 Annuitants**

- **Results for Healthy Males:**
  Actual: 48
  Expected: 53
  A/E Ratio: 91%

- **No change recommended**
  - Small size of group results in some volatility in results
  - A/E ratio near 100%: no adjustment needed

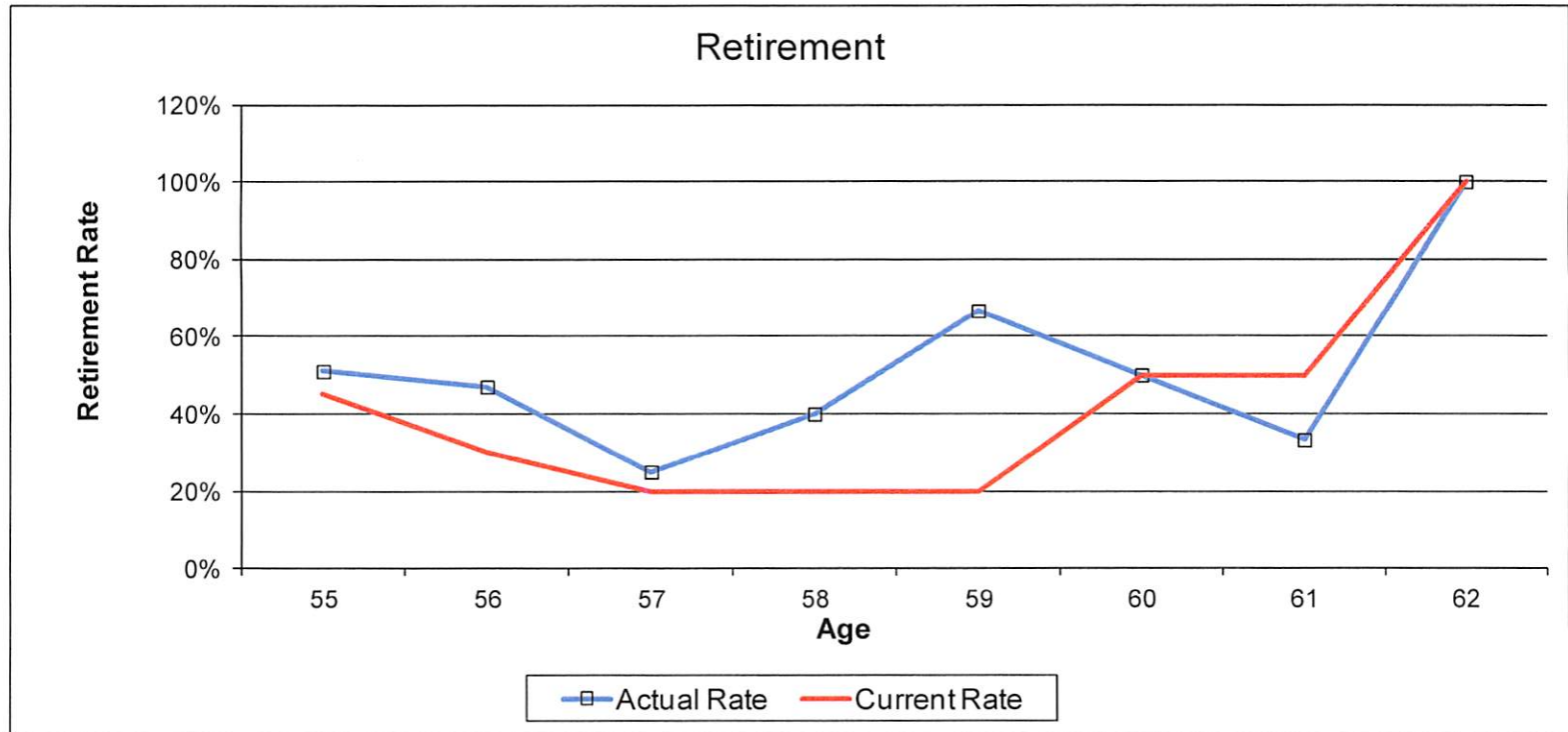- **Updated tables expected to be issued in the next few years**

Other Recommendations

No change:

- Beneficiaries: Same as healthy retiree basis

- Disableds: RP-2000 Table set forward 5 years

- Actives: RP-2000 Employee Table

Retirement Experience

Retirement Rates

- Analyzed experience based on years of service at retirement

- Significant difference for those with 30 or more years of service

  - Lower rates if under 30 years of service
  - Higher rates if 30 or more years of service

- Recommend different retirement assumption for more or less than 30 years of service
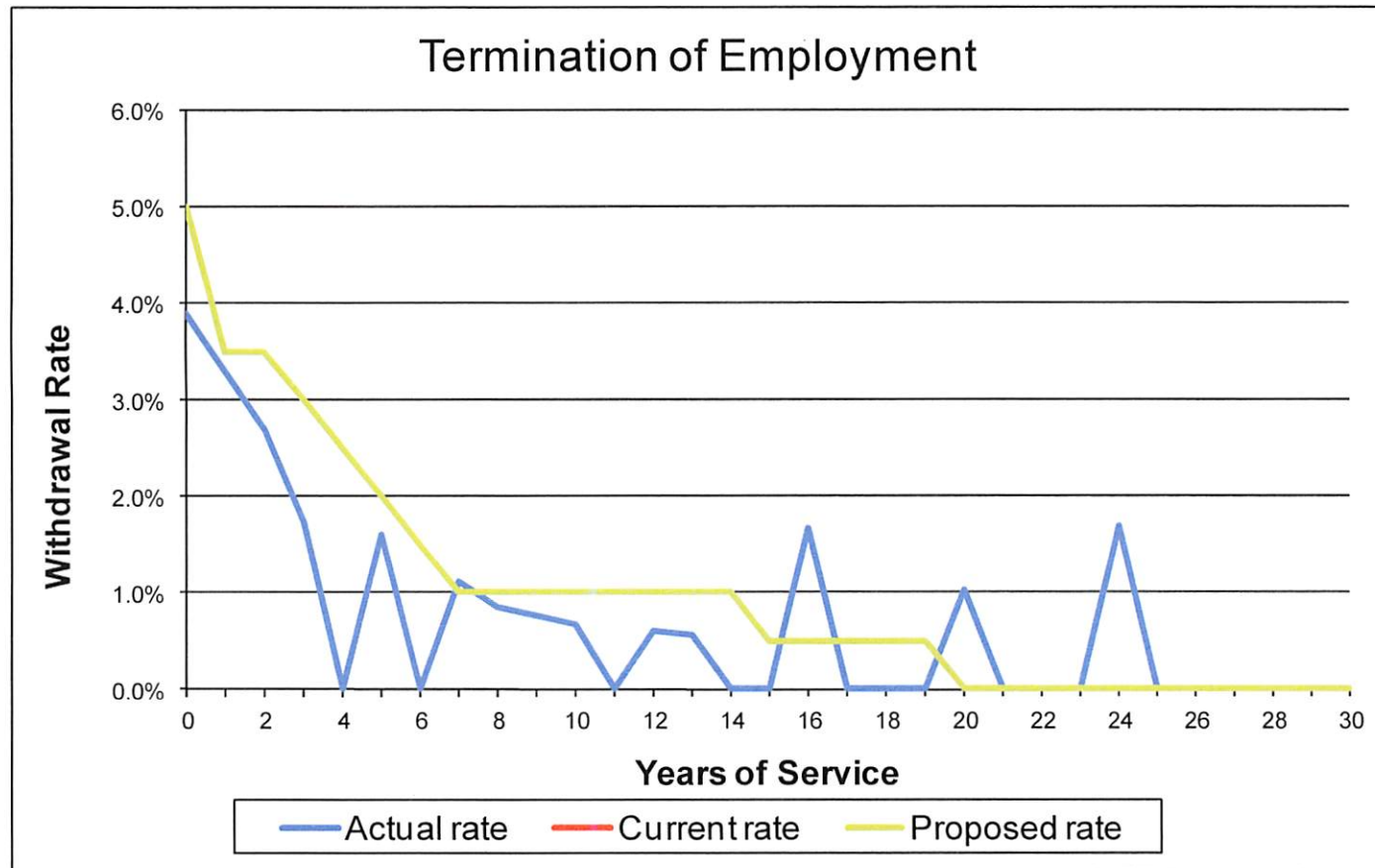
Retirement Assumption

Retirement - Less Than 30 Years of Service

Retirement - 30 or More Years of Service
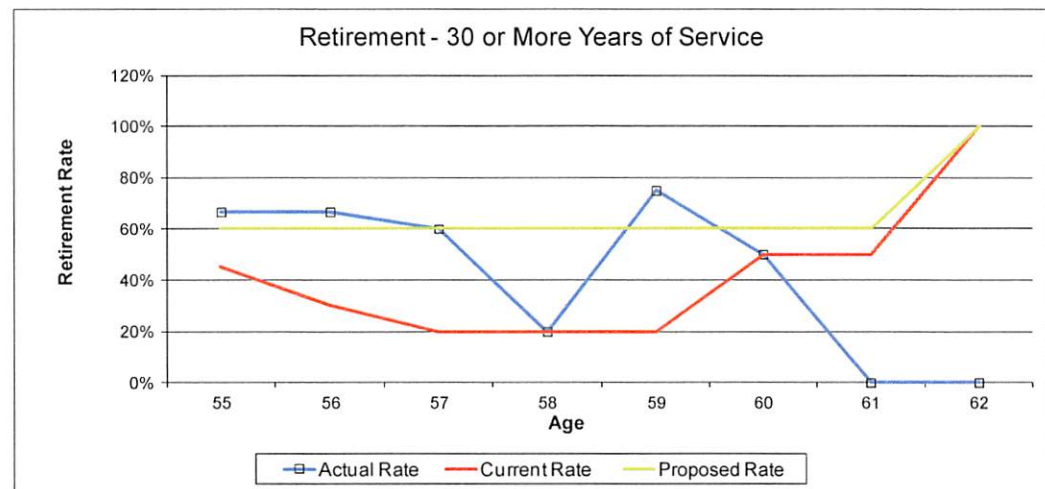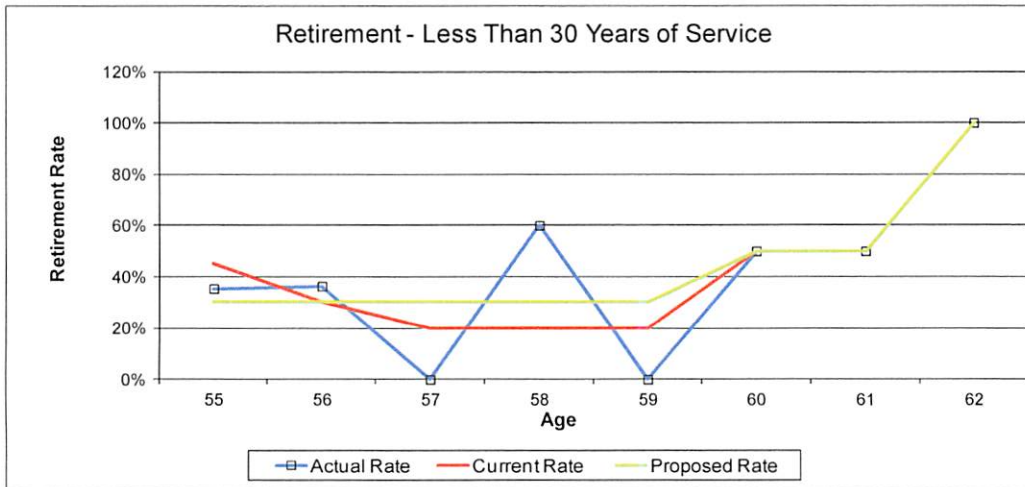
Termination of Employment

- ## Termination rates very low in study period

Study Period	Actual	Expected	A/E Ratio
Current (2006 – 2011)	29	42	69%
Prior (2001 - 2006)	40	36	111%
Total (2001 – 2011)	69	78	88%

Termination of Employment

Termination of Employment

Recommendation for Termination Assumption

- Findings in last two studies have been very different

- No change proposed at this time

- Wait and see what experience unfolds in next study

Disabilities

- Results:

Study Period	Actual	Expected	A/E Ratio
2001 - 2006	14	12	117%
2006 - 2011	3	13	23%
2001 - 2011	17	25	68%

- Small probabilities applied to small number of active members – little credibility

- Recommend leaving current rates in place

Salary Increase

- Two components
  - Merit (promotion/longevity)
  - General wage level

- Recommended general wage growth assumption of 3.75% earlier

- Studied total increase in salary

Merit Scale

- Current assumption is service based

- Reviewed salary increase policies and promotion requirements

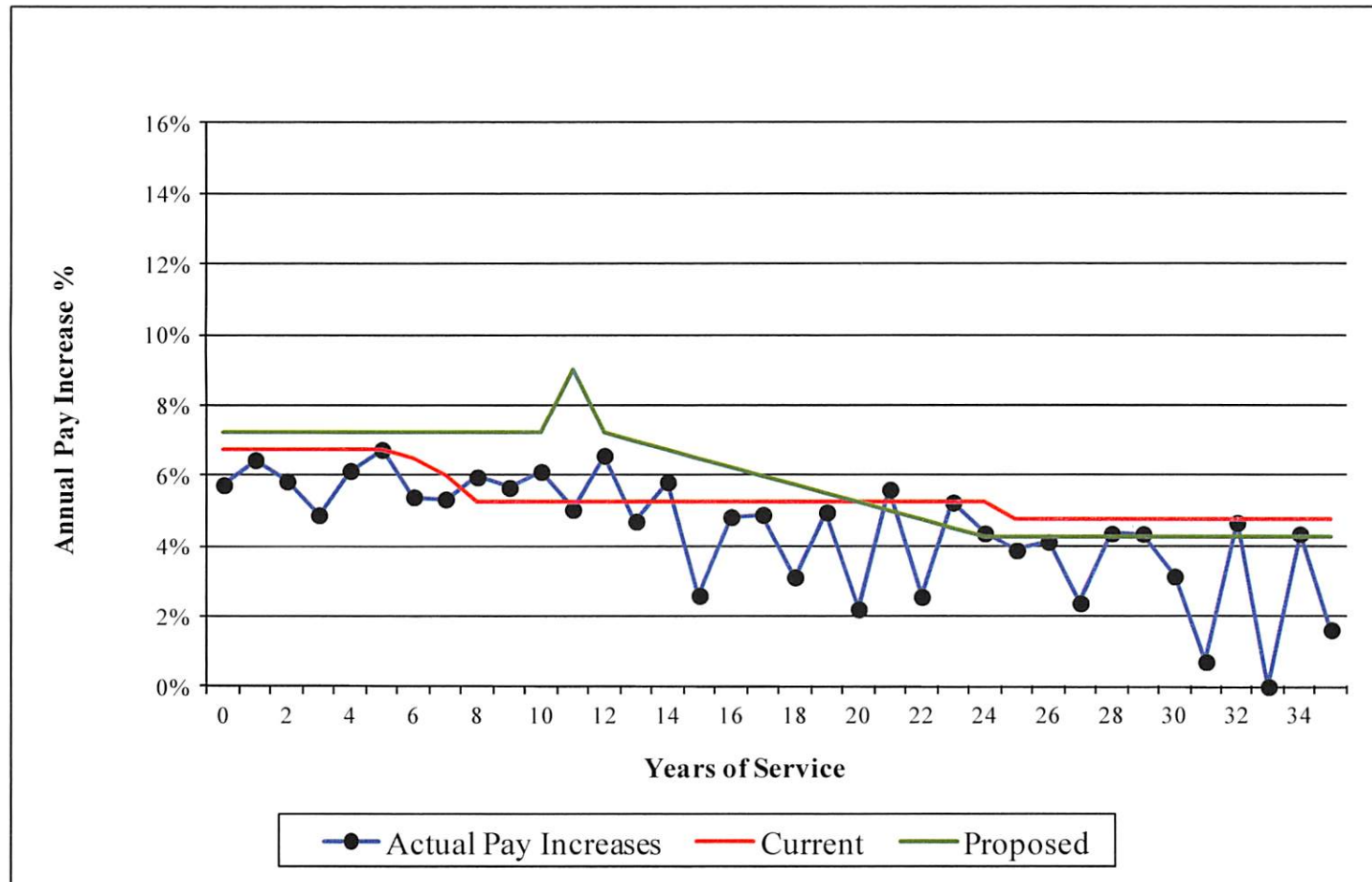- Expect merit scale to generally decline as service increases

Salary Experience

- Actual: 4.92%
- Expected: 5.51%
- Across the board increases for 2006 through 2013 about 2% - same as price inflation
- Increases were below wage inflation for same period which was about 3%
- Impact of economic conditions and budget constraints

Salary Increase Assumption

Summary

- Recommendations
  - Lower inflation to 3.0%
  - Lower wage growth to 3.75% (impacts both
  - salary increase and escalator assumptions)
  - Use two sets of retirement rates based on more
  - or less than 30 years of service
  - Modify merit salary scale to better reflect current
  - practices

Estimated Financial Results (Based on 7/1/11 Valuation)

	Baseline	Retirement	Salary
1. Present Value of Future Benefits	$583,387,717	$592,494,565	$590,267,668
2. Present Value Future Normal Costs	121,792,801	122,053,731	132,656,103
3. Actuarial Accrued Liability (1) – (2)	461,594,916	470,440,834	457,611,565
4. Actuarial Value of Assets	288,851,354	288,851,354	288,851,354
5. Unfunded Actuarial Accrued Liability (UAAL) (3) – (4)	172,743,562	181,589,480	168,760,211
6. Normal Cost Rate	24.62%	25.45%	26.27%
7. UAAL Payment	23.92%	25.15%	23.98%
8. Actuarial Contribution Rate	48.54%	50.60%	50.25%

Note: Actual impact on the July 1, 2012 actuarial valuation may vary from that shown here.