ACTUARIAL VALUATION BASICS AND FUNDING STRATEGIES

Public Employee Retirement Administration Commission
SEPTEMBER 2016
What Is An Actuarial Valuation?

- “Snapshot” at that date
- Estimated future cash flows
- Present value terms
- Actuarial assumptions
- How good are the assumptions?
  - Gains and losses
- “True-up” prior valuation
Actuarial Valuation Cycle

- Preliminary review
- Data preparation
- Asset preparation
- Valuation specifications
- Valuation run and summary
- Final report and presentation
How Often Should A Valuation Be Performed?

- At least every two years
  - Avoid unpleasant surprises
- Interim valuation in off year
- Private sector requires annual
- PERAC with help of private actuaries
What Is Actuarial Funding?

- Advanced funding
- Costs should be paid during working lifetime of employee
  - taxpayers receiving benefits of employee’s service
  - not put off for future generations
- Pay current (normal) cost plus “past service” cost
- Level dollar vs. increasing
What Are the Basic Actuarial Assumptions?

<table>
<thead>
<tr>
<th>Membership Characteristics</th>
<th>Economic Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Longevity</td>
<td>▪ Investment return</td>
</tr>
<tr>
<td>▪ Termination</td>
<td>▪ Salary increases</td>
</tr>
<tr>
<td>▪ Disability</td>
<td>▪ Inflation</td>
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<tr>
<td>▪ Retirement</td>
<td>▪ COLA increases</td>
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</tbody>
</table>
What Are Actuarial Liabilities?

- Present value of future benefits
- Present value of future normal costs
- Normal cost
- Actuarial accrued liability
- Unfunded actuarial accrued liability
Present Value of Future Benefits

Unfunded Actuarial Accrued Liability = Actuarial Accrued Liability minus Plan Assets
Past Service Cost = Amortization of Unfunded Actuarial Accrued Liability
Determination of Liabilities for Actuarial Valuation

- Total Normal Cost for the system is the sum of Normal Cost for each individual participant.

- Total Actuarial Accrued Liability for the system is the sum of the Actuarial Liability for each individual.
UAL vs. Funded Ratio

- Different views of funding with same components
  - Actuarial Accrued Liability and Assets

- UAL = Liability - Assets
  - Dollar Amount

- Funded Ratio = Assets/Liability
  - Percentage Basis
What Exactly Is 100% Funding?

- Normal cost still applies
  - Benefits accruing in current year.

- 100% is a moving target
  - Different valuation systems produce different results.
  - What is the benchmark? The 80% myth.

- Funding status can change
  - Gain/Loss
  - Assumptions
  - Plan Amendments
Conservative Actuarial Approaches

- Adopt more conservative assumptions
  - Investment return
  - Salary scale
  - Longevity

- Actuarial value of assets
  - 95 systems (9 use market value, 1 fresh start 1/16)
  - Reduce volatility

- More aggressive funding schedule
  - FY35 goal - more flexibility
Conservative Actuarial Approaches (continued)

- Increase in total appropriation
  - Ramp-up / Phase-in
  - 77 use this approach
    - 60 for entire length of schedule
    - 17 use phase-in schedule (usually 2-5 years)

- Expenses
  - Administrative
  - Investment

- Net 3(8)(c) liability
  - Most local systems net outflow
  - Include in schedule as add on to normal cost
    - Alternatively increase actuarial liability
Investment Return Assumptions

2003
- < 7.5%: 3 (
- 7.5% - 7.9%: 30
- 8%: 20
- 8.1% - 8.25%: 52

2012
- < 7.5%: 15
- 7.5% - 7.9%: 24
- 8%: 66

Current
- < 7.5%: 6 (8%: 16
- 7.5% - 7.9%: 8
- 8%: 74
### Investment Return and Salary Increase Assumption

<table>
<thead>
<tr>
<th>Investment Return</th>
<th>8.0% (Current)</th>
<th>7.5% (Current)</th>
<th>7.5% *</th>
<th>7.75% *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actives</td>
<td>2,800</td>
<td>3,000</td>
<td>2,900</td>
<td>2,790</td>
</tr>
<tr>
<td>Retirees</td>
<td>3,200</td>
<td>3,300</td>
<td>3,300</td>
<td>3,250</td>
</tr>
<tr>
<td>Total Actuarial Liability</td>
<td>6,000</td>
<td>6,300</td>
<td>6,200</td>
<td>6,040</td>
</tr>
<tr>
<td>Assets</td>
<td>4,000</td>
<td>4,000</td>
<td>4,000</td>
<td>4,000</td>
</tr>
<tr>
<td>Unfunded Liability</td>
<td>2,000</td>
<td>2,300</td>
<td>2,200</td>
<td>2,040</td>
</tr>
<tr>
<td>Funded Ratio</td>
<td>66.7%</td>
<td>63.5%</td>
<td>64.5%</td>
<td>66.2%</td>
</tr>
</tbody>
</table>

* Current reduced by 1% at all ages
Expenses

- Administrative and investment related expenses
- Administrative expenses included in normal cost
- Most assume return net of investment expenses
- Reflecting a portion of investment expenses
- Alternatively, reduce investment return assumption
Mortality

- Past methodology
  - Update periodically

- 2012 valuations and beyond
  - Static projection— extend projection each year
  - Toward “fully generational”
  - Currently 64 systems have adopted
  - Expect over 80 by end of year
Mortality *(continued)*

- Revised table released in 2014 (RP-2014)
  - Longer life expectancy
  - Projection scale modified
  - Does not match our experience (except teachers)
  - Continue to use RP-2000
Funding Schedule History

- 1989—Full funding by 2028 (40 years)
- 2009—Full funding by 2030
- 2010—Full funding by 2040
  - Proposed long-term funding solution for systems
  - 2008 investment returns were the impetus
  - Discussions on extending 2028 began about 15 years ago
  - Provide relief responsibly
Stay Within 2030 Rules

- Preferred by many systems
- 2008 Impact— 30%-50% increases using same schedule
- Many systems needed to extend beyond 2030
- Originally expected 60-75% of locals to extend
Funding Schedules Adopted

May 2012
- 2030 or Earlier: 62
- 2031 - 2035: 23
- 2036 - 2040: 20

May 2013
- 2030 or Earlier: 49
- 2031 - 2035: 27
- 2036 - 2040: 29

April 2014
- 2030 or Earlier: 40
- 2031 - 2035: 38
- 2036 - 2040: 27

January 2015
- 2030 or Earlier: 43
- 2031 - 2035: 39
- 2036 - 2040: 23

September 2016
- 2030 or Earlier: 39
- 2031 - 2035: 47
- 2036 - 2040: 18

KEY:
- Green: 2030 or Earlier
- Yellow: 2031 - 2035
- Red: 2036 - 2040
Actuarial Funding Policies and Practices for Public Pension Plans

- October, 2014 white paper guidance*
  - Cost Method
  - Asset Smoothing Method
  - Amortization Policy
  - Actuarial Assumptions (outside scope of project)

* Conference of Consulting Actuaries Public Plans Community
Actuarial Funding Policies and Practices for Public Pension Plans (continued)

- Level Cost Allocation Model (LCAM) practices
  - Acceptable
  - Acceptable with conditions
  - Non-recommended
  - Unacceptable
Actuarial Funding Policies and Practices for Public Pension Plans *(continued)*

- **Cost Method** — Entry Age level percent of pay
- **Asset Smoothing** — 5 year smoothing, corridor usually 90%/110%
  - Market value acceptable
- **Amortization Policy** — not an automatic check for many systems
Actuarial Funding Policies and Practices for Public Pension Plans (continued)

- LCAM Amortization Policy - level percent of pay layered approach

<table>
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<tr>
<th>Category</th>
<th>Timeframe</th>
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<tbody>
<tr>
<td>Amendments</td>
<td>10-15 years</td>
</tr>
<tr>
<td>Experience gains/loss</td>
<td>15-20 years</td>
</tr>
<tr>
<td>Assumption changes</td>
<td>15-25 years</td>
</tr>
<tr>
<td>ERIs</td>
<td>5 years</td>
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</tbody>
</table>
Actuarial Funding Policies and Practices for Public Pension Plans (continued)

- Current “average” result — 15-20 years??
  - Approximates FY35 goal
- Non recommended: fixed amortization 26-30 years
- Unacceptable: fixed amortization over 30 years
- But limiting negative amortization important!
  - Level and duration
Negative Amortization in Current Funding Schedules

- Unfunded actuarial liability begins decreasing

*21 Systems estimated, projected Unfunded Actuarial Liability not provided