# Agenda – Actuarial 101

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Definitions

PVPB - Present Value of all Projected Benefits:

- Discounted value (at valuation date – e.g. 6/30/10), of all future expected benefit payments based on various (actuarial) assumptions
- Portion of benefits not paid by investment earnings
Definitions

- **PVPB Allocated to each year of service**
  - Allocation based on Actuarial Cost Method

- **Current Normal Cost (NC):**
  - Portion of PVB allocated to (or “earned” during) current year
  - Value of employee and employer current service benefit
 Definitions

- Actuarial Accrued Liability (AAL):
  - PVPB – Present Value of Current and Future Normal Costs
  - Accumulated Normal Costs from Entry Age to Current Age
  - Portion of PVB allocated or “earned” at measurement [value of past service benefit]
Employee Age Timeline

Service Period

- Age when hired
- Current age
- Age at retirement
- Life Expectancy
1) Project Benefits

$40,000 $$$$ $45,000

2) Discount

3) Actuarial cost method

PVPB

AAL

Normal Costs
Definitions

- **PVPB - Present Value of all Projected Benefits:**
  - Discounted value (at valuation date – e.g. 6/30/10), of all future expected benefit payments based on various (actuarial) assumptions
  - Portion of benefits not paid by investment earnings
Definitions

- **Target**: Have money in the bank to cover Actuarial Liability (past service)

- **Unfunded Liability**
  - Money short of target at valuation date

- **Excess Assets / Surplus**:
  - Money over and above target at valuation date
  - Doesn’t mean you’re done contributing
Definitions

- **Market Value of Assets** – Value of assets based on what they could be sold for on valuation date

- **Actuarial Value of Assets**
  - Smoothed market value
  - Mitigates market value volatility

- **Funded Ratio:**
  - Ratio of Assets to AAL
  - Look at on Market and Actuarial basis
Definitions

- **Contribution =**
  - Normal Cost
  - + Unfunded Liability Amortization
  
or
  - - Excess Asset Amortization
Discount Rate

- Based on Long-Term expected returns of current and future assets

- PVPB, AAL, etc. are meant to be (current value of) the portion of benefits not provided by future investment return net of expenses

- Set discount rate too **low** charges:
  - Too much to **current** taxpayers and
  - Not enough to **future** taxpayers

- Set discount rate too **high** charges
  - Not enough to **current** taxpayers and
  - Too much to **future** taxpayers
## Discount Rate

#### Building Block Approach

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<tr>
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<th>MCERA</th>
<th>CalPERS</th>
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<tbody>
<tr>
<td>Inflation</td>
<td>3.50%</td>
<td>3.00%</td>
</tr>
<tr>
<td>Real Rate of Return</td>
<td>4.25%</td>
<td>4.75%</td>
</tr>
<tr>
<td>Discount Rate</td>
<td>7.75%</td>
<td>7.75%</td>
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Amortization Period

- MCERA amortization period 17 years

- CalPERS:
  - Gains/Losses 30 years
  - Method/Assumption/Plan Changes 20 years
  - Average period:
    - Miscellaneous ≈22+ yrs
    - Safety ≈28+ yrs