Actuarial 101

May 16, 2011

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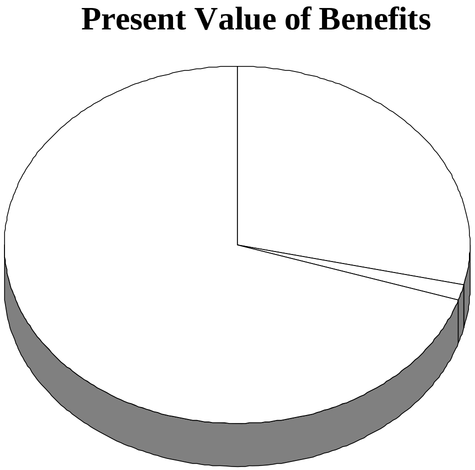
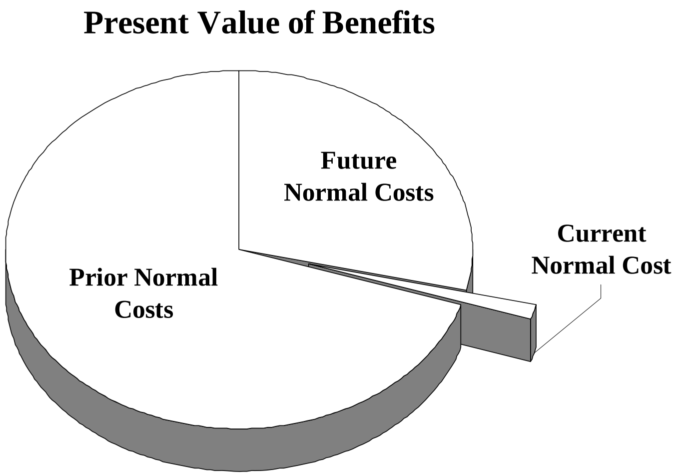
Agenda – Actuarial 101

Definitions



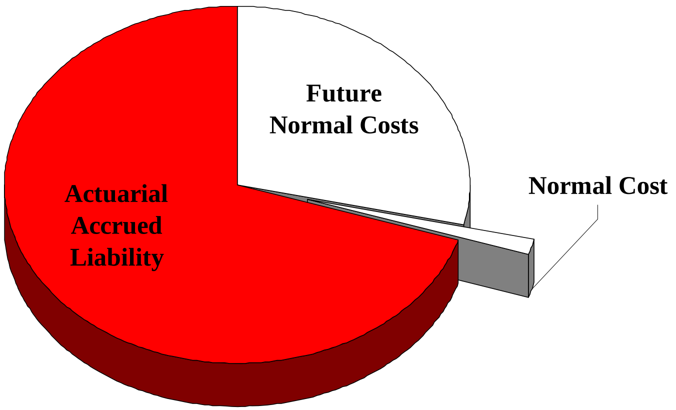
- **PVPB - Present Value of all Projected Benefits:**
  - Discounted value (at valuation date – e.g. 6/30/10), of all future expected benefit payments based on various (actuarial) assumptions
  - Portion of benefits not paid by investment earnings

Definitions



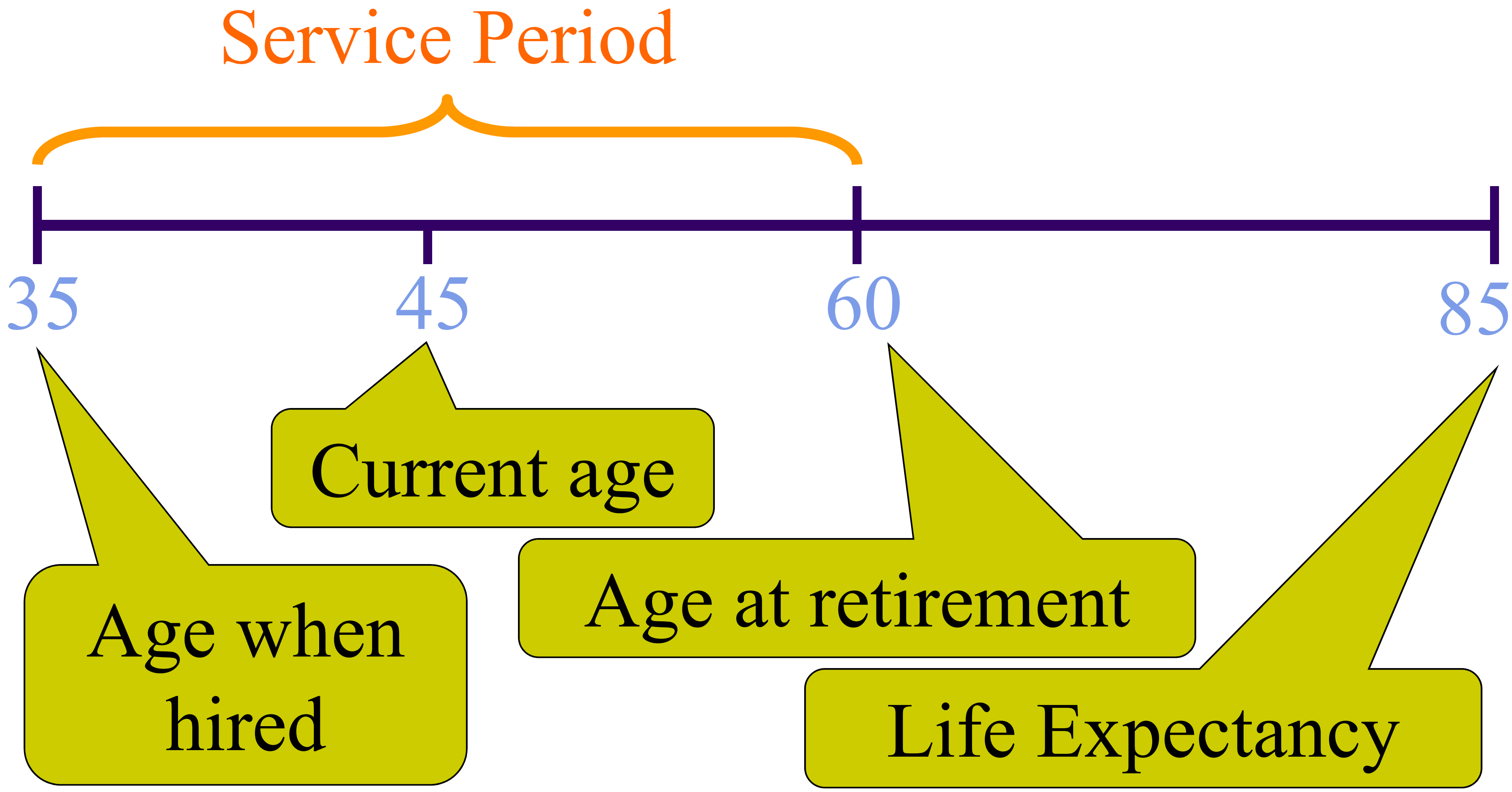
- **PVPB Allocated to each year of service**
  - Allocation based on Actuarial Cost Method
- **Current Normal Cost (NC):**
  - Portion of PVB allocated to (or "earned" during) current year
  - Value of employee and employer current service benefit

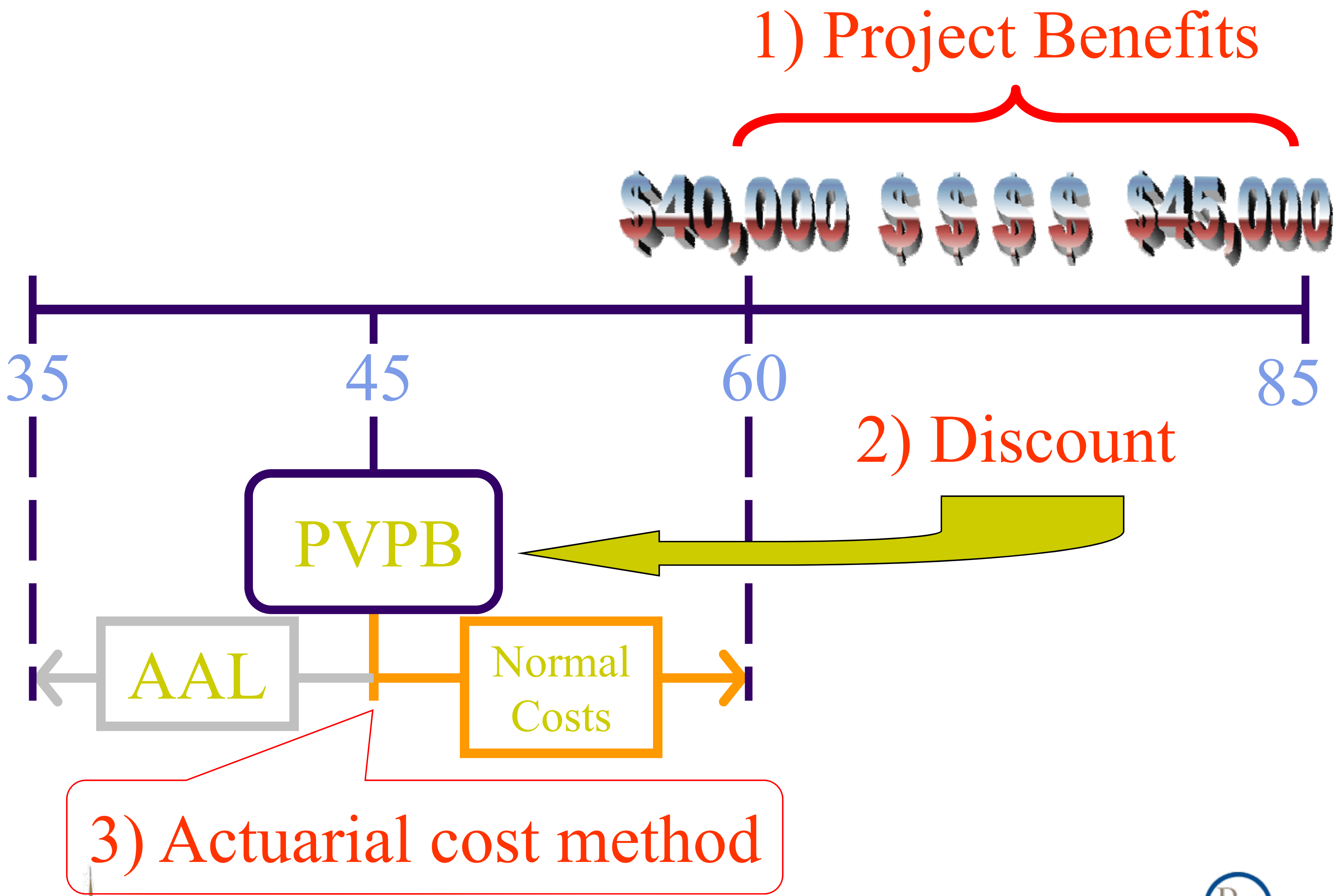
Definitions



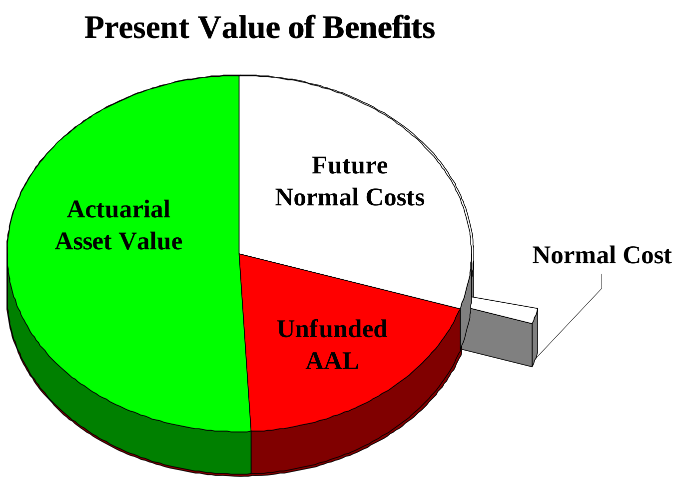
- **Actuarial Accrued Liability (AAL):**
  - PVPB – Present Value of Current and Future Normal Costs
  - Accumulated Normal Costs from Entry Age to Current Age
  - Portion of PVB allocated or "earned" at measurement [value of past service benefit]

Employee Age Timeline




1) Project Benefits
$40,000 $ $ $ $ $45,000
35
45
60
85
2) Discount
PVPB
AAL
Normal Costs
3) Actuarial cost method

Definitions



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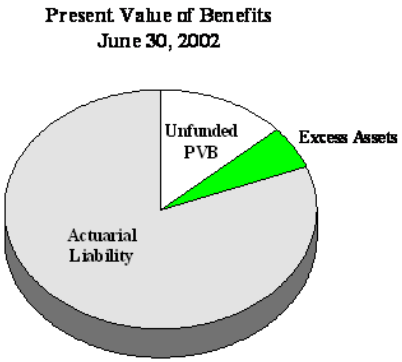
Definitions

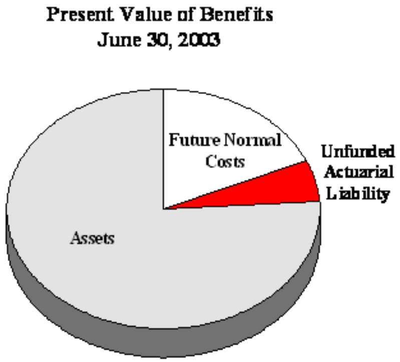
- **Target-** Have money in the bank to cover Actuarial Liability (past service)
- **Unfunded Liability**
  - Money short of target at valuation date
- **Excess Assets / Surplus:**
  - Money over and above target at valuation date
  - Doesn’t mean you’re done contributing

Definitions

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

	MCERA	CalPERS
Inflation	3.50%	3.00%
Real Rate of Return	4.25%	4.75%
Discount Rate	7.75%	7.75%

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