



Los Angeles Fire and Police Pensions

SELF-TEST: Actuary 101 Training

1. In the funding equation “ $C + I = B + E$ ” what do each those four terms stand for?
2. What are the two components of the employer contribution rate?
3. What are the two types of actuarial assumptions?
4. Name two of the four main demographic assumptions (hint: “rates of decrement”).
5. Name two of the three main economic assumptions.
6. What are the three main elements of an actuarial funding policy?
7. What is the actuarial cost method currently used by LAFPP?
8. Describe the current asset smoothing method used by LAFPP.
9. What UAAL amortization period does LAFPP use for future gains and losses? For assumption changes?
10. True or false: Sometimes a plan should adjust its asset allocation in order to continue to justify their assumed rate of investment return.

BONUS: What does “UAAL” stand for?

Los Angeles Fire & Police Pension

Actuary 101 Training

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Actuarial Methods and Concepts

- Overview of Actuarial Valuation
- Actuarial Assumptions
 - Demographic
 - Economic
- Funding Policy
 - Policy objectives
 - Review of funding policy components
 - Actuarial Cost Method
 - Asset Smoothing Method
 - Amortization Policy

Actuarial Valuation Results

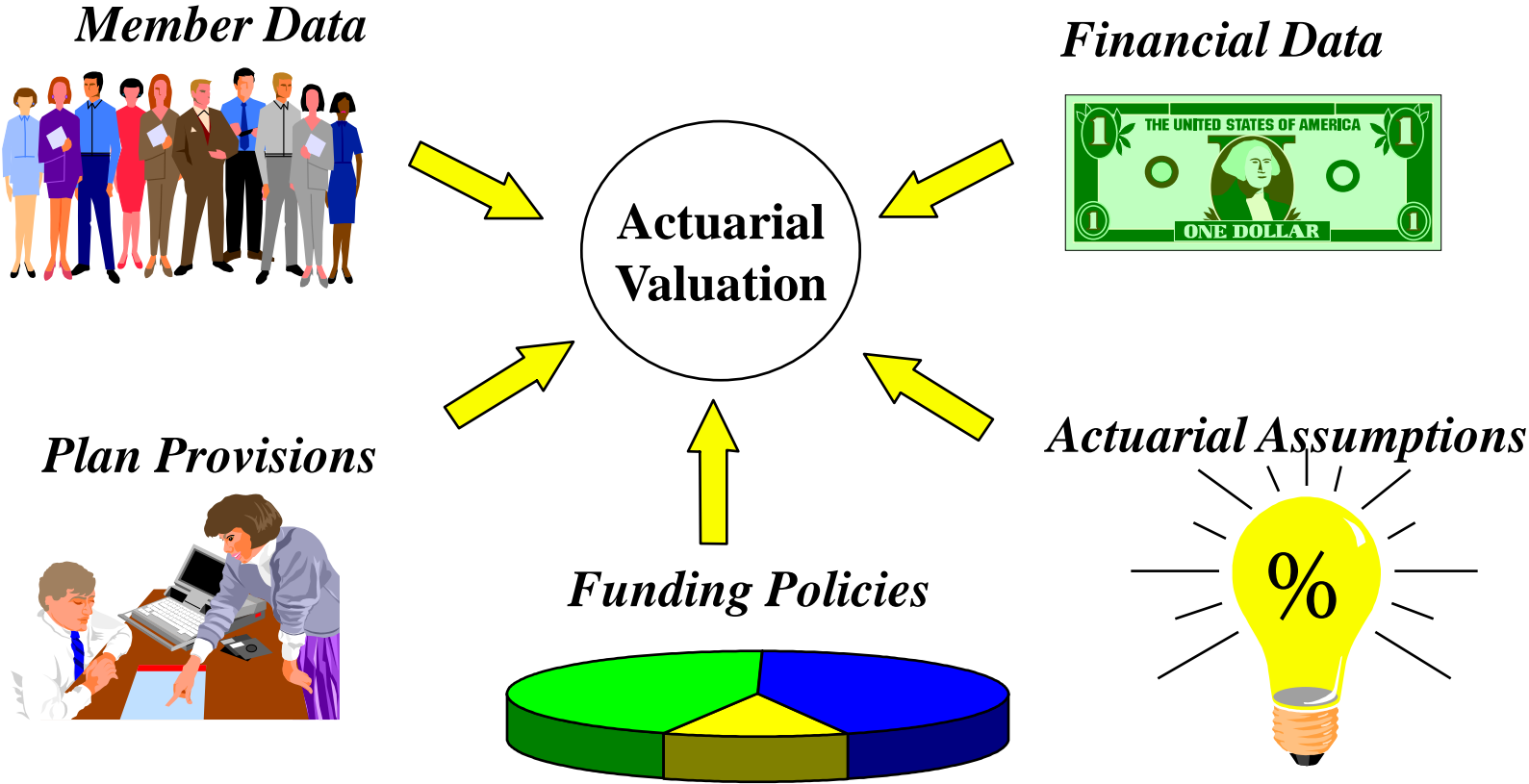
➤ Recommended Contribution Rates

- Cost components
 - Normal Cost - cost of current year of service
 - UAAL amortization – payment towards the unfunded liability
 - Multiple “employers” (City, Harbor)
 - Multiple benefit formulas (tiers)
-
- UAAL = Unfunded Actuarial Accrued Liability

Actuarial Valuation Results

- Funding Progress of the System
 - Funded status: liabilities minus assets
 - UAAL or Surplus
 - Funded ratio: assets divided by liabilities
 - Various measures
 - Often misunderstood!

Valuation Input



All you need to know

$$\mathbf{C + I = B + E}$$

Contributions + Investment Income
equals
Benefit Payments + Expenses

- Actuarial valuation determines the current or “measured” cost, not the ultimate cost
- Assumptions and funding methods affect only the timing of costs (unless earnings or benefits are affected!)

Valuation Input - Assumptions

- Two types of actuarial assumptions
 - Demographic
 - Economic

- Demographic Assumptions
 - Rates of “Decrement”
 - Termination, Mortality, Disability, Retirement
 - Other demographic assumptions
 - Percent married, Reciprocity
 - OPEB assumptions
 - Health care trend, election percentages

 - OPEB = Other Post-Employment Benefits

Valuation Input - Assumptions

➤ Economic Assumptions

- Price Inflation (CPI)
 - COLA, Investment Return and Salary Increases
- Investment Return
 - Components include inflation, real return, expenses
- Salary Increases
 - “Across the board” increases
 - » Includes price inflation plus real wage growth
 - Merit and promotion – based on LAFPP experience
- All assumptions reviewed every three years
 - Next “Experience analysis” as of June 30, 2013

Economic Assumptions for 6/30/2010

- Price Inflation (CPI)
 - Decreased from 3.75% to 3.50%
- Investment Return (nominal)
 - Decreased from 8.00% to 7.75%
- Salary Increases
 - Decreased price inflation from 3.75% to 3.50%
 - Increased “real wage growth” from 0.50% to 0.75%
 - Merit: changed from age based to service based
 - Net result: maintained at 4.25% plus merit increases

Investment Return and Wage Increases

	<u>Adopted 2006</u>		<u>Adopted 2010</u>	
	<u>Return</u>	<u>Pay</u>	<u>Return</u>	<u>Pay</u>
Price Inflation	3.75%	3.75%	3.50%	3.50%
Real Wages	n/a	0.50%	n/a	0.75%
Merit *	n/a	1.75%	n/a	1.00%
Net Real Return	4.25%	n/a	4.25%	n/a
Total	8.00%	6.00%	7.75%	5.25%

* 2006: Average of age based rates

2010: Service based rate for long service (over 10 years)

Expected Earnings Assumption

- Recent trend is towards lower long-term earnings based discount rates
 - General consensus in the investment world that future returns will be lower
 - “New Normal”
 - Debt levels, price/earnings ratios
 - Fixed income yields
- Impact of a lower earnings assumption
 - Higher current contribution rates, higher UAALs
 - Reduced risk of future employer contribution increases
 - One sure thing about a lower earnings assumption
 - Every good year will be a little more good
 - Every bad year will be a little less bad

Asset Allocation and Earnings Assumption

- Investment return assumption is based on the asset allocation
 - Asset allocation results from a balance of risk and return, reflecting a plan's tolerance for risk
- Asset allocation is NOT based on the earnings assumption!
 - Earnings assumption is NOT a target, benchmark, hurdle or goal that the allocation seeks to achieve
 - Do not set asset allocation to “chase” your current earnings assumption
- Also, watch out for stochastic simulations
 - Assumptions based on assumptions



DISCUSSION

Valuation Input – Funding Policy

- Three Funding Policy Components
- Actuarial cost method allocates present value of member's future benefits to years of service
 - Defines Normal Cost and Actuarial Accrued Liability (AAL)
- Asset smoothing method manages short term market volatility while tracking Market Value of Assets
 - Defines the Unfunded Actuarial Accrued Liability (UAAL)
- Amortization method sets contributions to systematically pay off the UAAL
 - Length of time and structure of payments

General Funding Policy Objectives

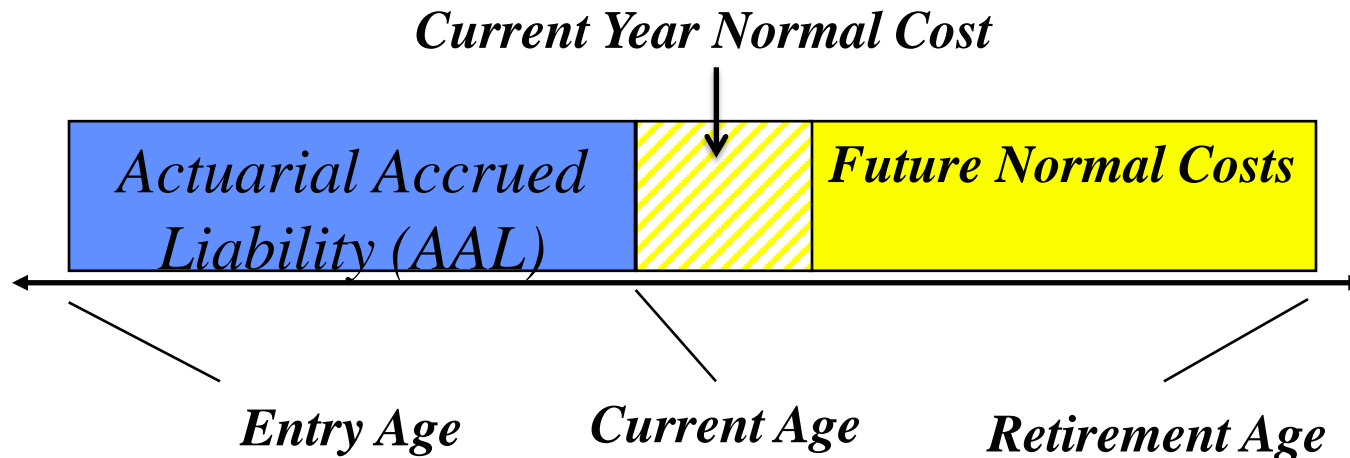
1. Actuarially determined employer contribution
 - Future contributions plus current assets sufficient to fund all benefits for current members
2. Intergenerational equity
 - Reasonable allocation of funding to years of service
3. Contributions as a stable percentage of payroll
 - Reasonable management of employer contribution volatility
4. Accountability and transparency
 - Clear in intent and effect
 - Allow assessment of whether, how and when sponsor will meet funding requirements

General Funding Policy Objectives

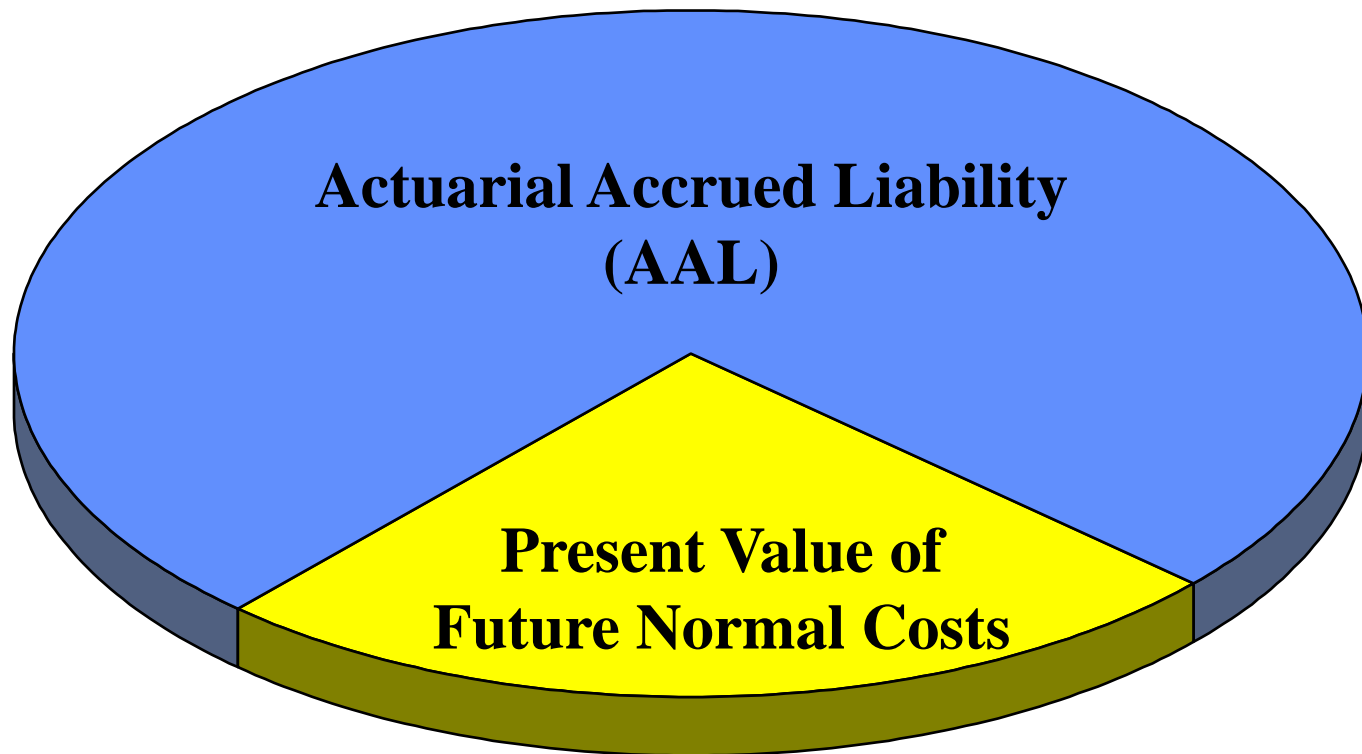
- Policy objectives 2 and 3 reflect two aspects of the general policy objective of “interperiod equity”
- Objective 2 promotes “demographic matching”
 - ***Intergenerational*** interperiod equity
- Objective 3 promotes “volatility management”
 - ***Period-to-period*** interperiod equity
- These two aspects of interperiod equity tend to move funding policy in opposite directions
 - Policy objectives 2 and 3 combined seek to balance intergenerational and period-to-period IPE
 - Demographic matching vs. volatility management

Actuarial Cost Method

- The **Normal Cost** is the portion of the long term cost allocated to a year of service.
 - Only active members have a current **Normal Cost**
- The **Actuarial Accrued Liability (AAL)** measures the Normal Costs from past years.
 - For retired members, the **actuarial accrued liability** is the entire present value of future benefits



Present Value of Future Benefits



Asset Smoothing Methods

➤ Asset smoothing used to measure Actuarial Value of Assets (AVA)

- Reflect market value of assets
- Smooth out short-term fluctuations in market values

➤ Smoothed assets (AVA) used to determine Unfunded Actuarial Accrued Liability

Actuarial Accrued Liability

- Actuarial Value of Assets

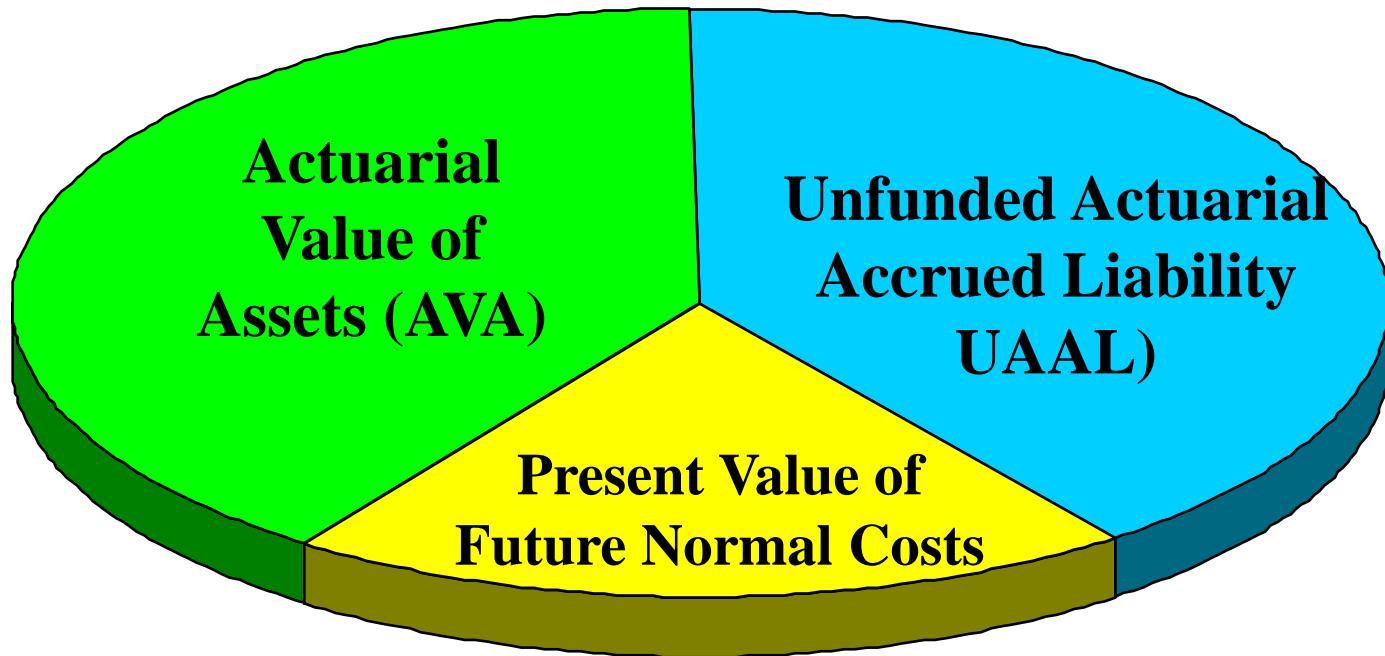
= Unfunded Actuarial Accrued Liability

- Reduces volatility in the UAAL
- Produces smoother pattern of contributions to fund the UAAL

Actuarial Value of Assets and the UAAL

**Present Value of
Future Benefits**

- Actuarial Accrued Liability
- Actuarial Value of Assets
- = Unfunded Actuarial Accrued Liability



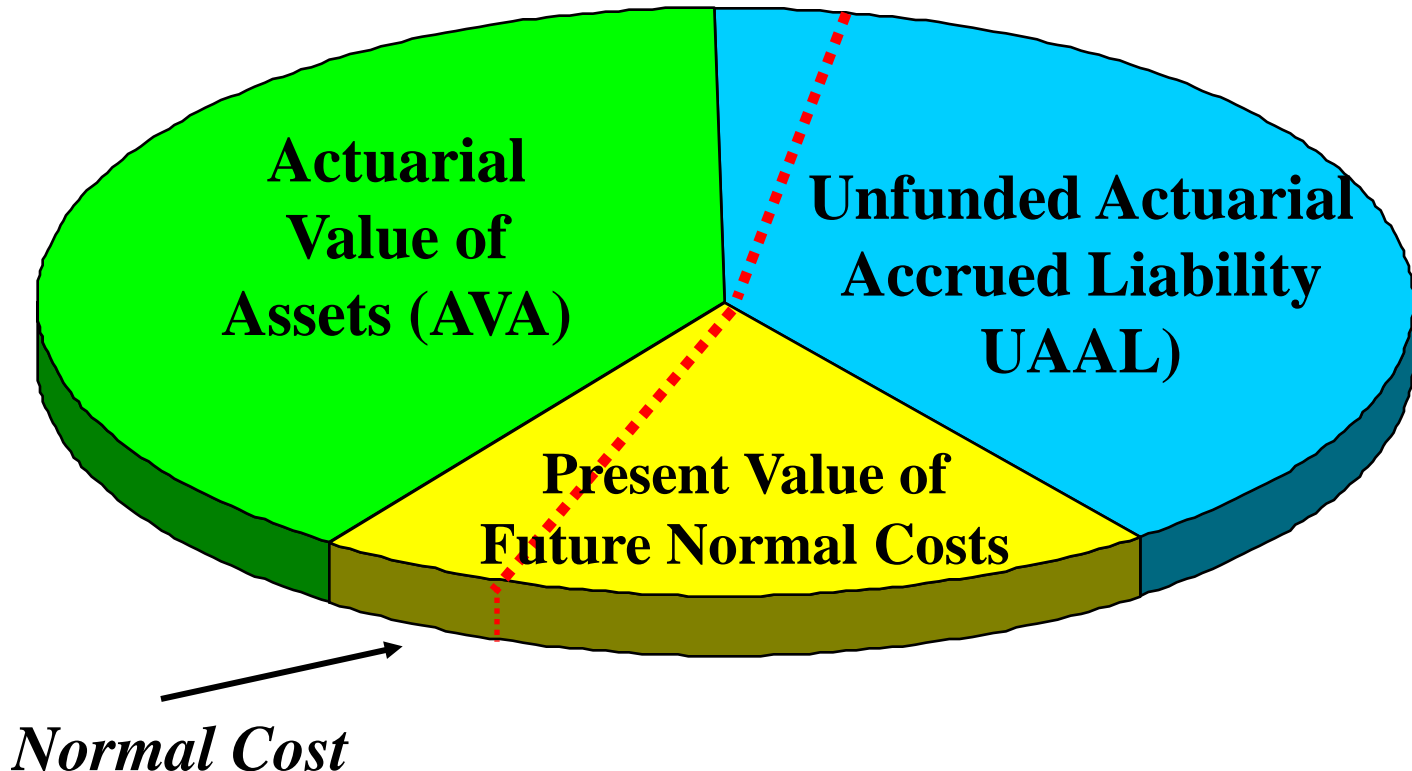
Amortization of UAAL

- More than just selecting an amortization period
- Source of Unfunded Actuarial Accrued Liability (UAAL)
 - Actuarial gains / losses
 - Plan changes
 - Assumption or method changes
- Amortization method
 - Level dollar amount
 - Level percentage of pay
- Amortization payment structure
 - Fixed period (closed) or rolling (open)
 - One UAAL layer or multiple UAAL layers

Funding Policy and Annual Cost

**Present Value of
Future Benefits**

*Amortization of Unfunded
Actuarial Accrued Liability*

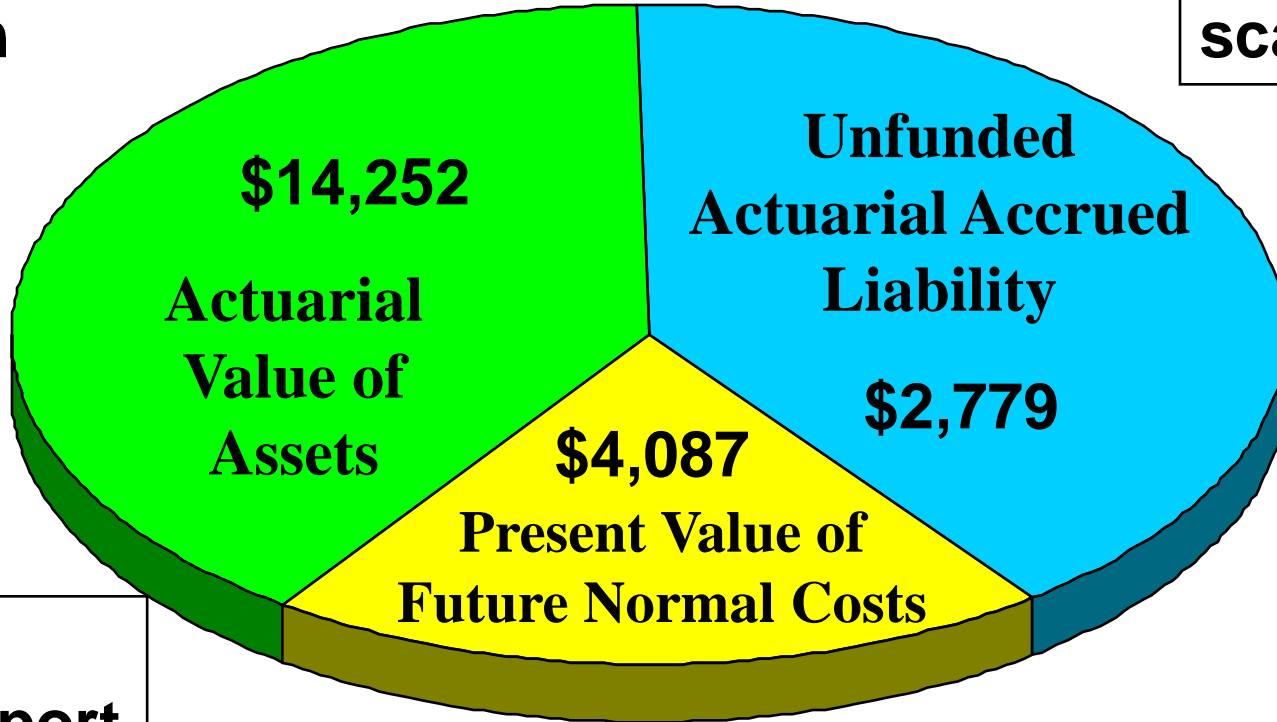


Actuarial Balance Sheet:

Where it comes from: Pension

**\$21,118
Million**

**Not to
scale!**



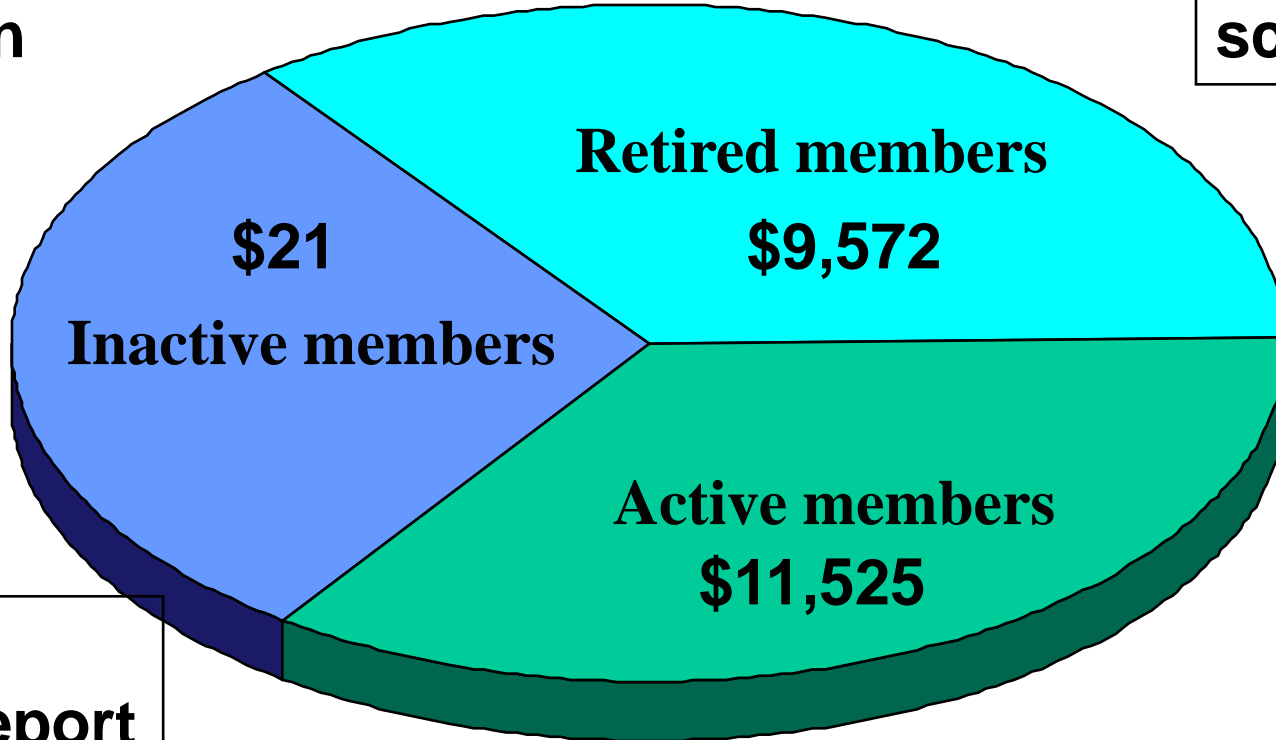
**2012
Val. Report
page 56**

Actuarial Balance Sheet:

Where it goes: Pension

**\$21,118
Million**

**Not to
scale!**



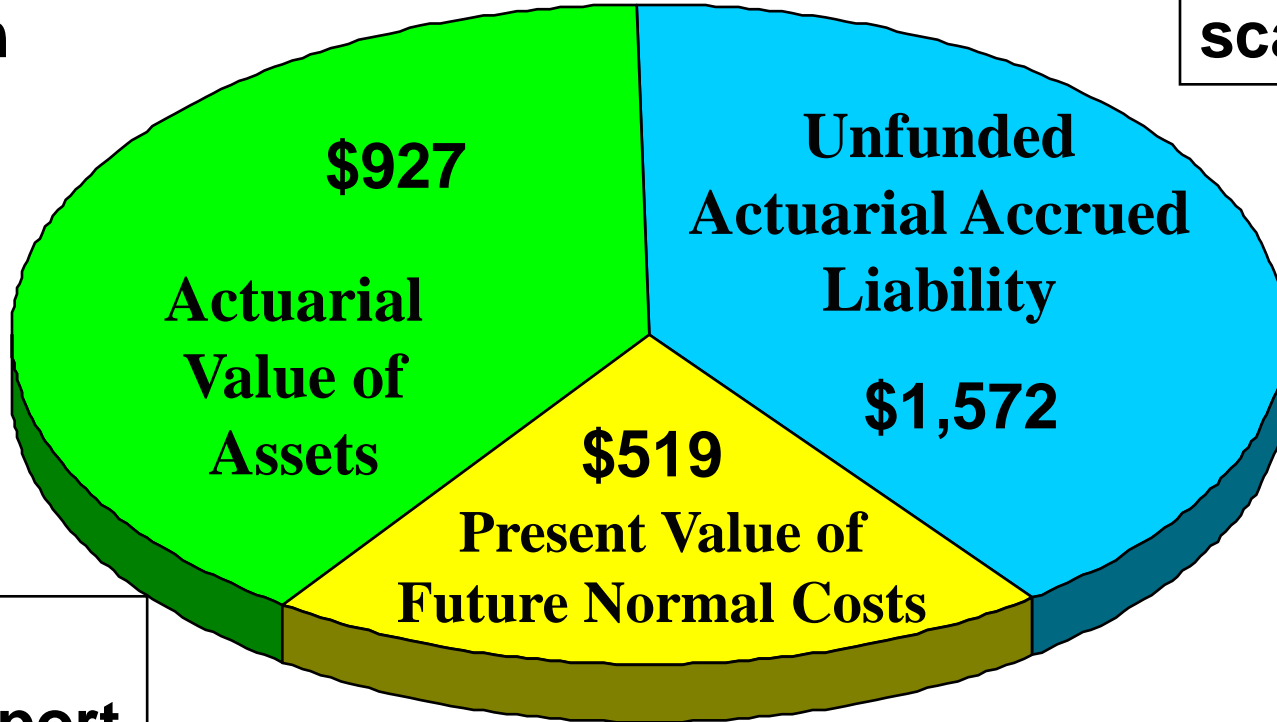
**2012
Val. Report
page 56**

Actuarial Balance Sheet:

Where it comes from: Health

**\$3,018
Million**

**Not to
scale!**



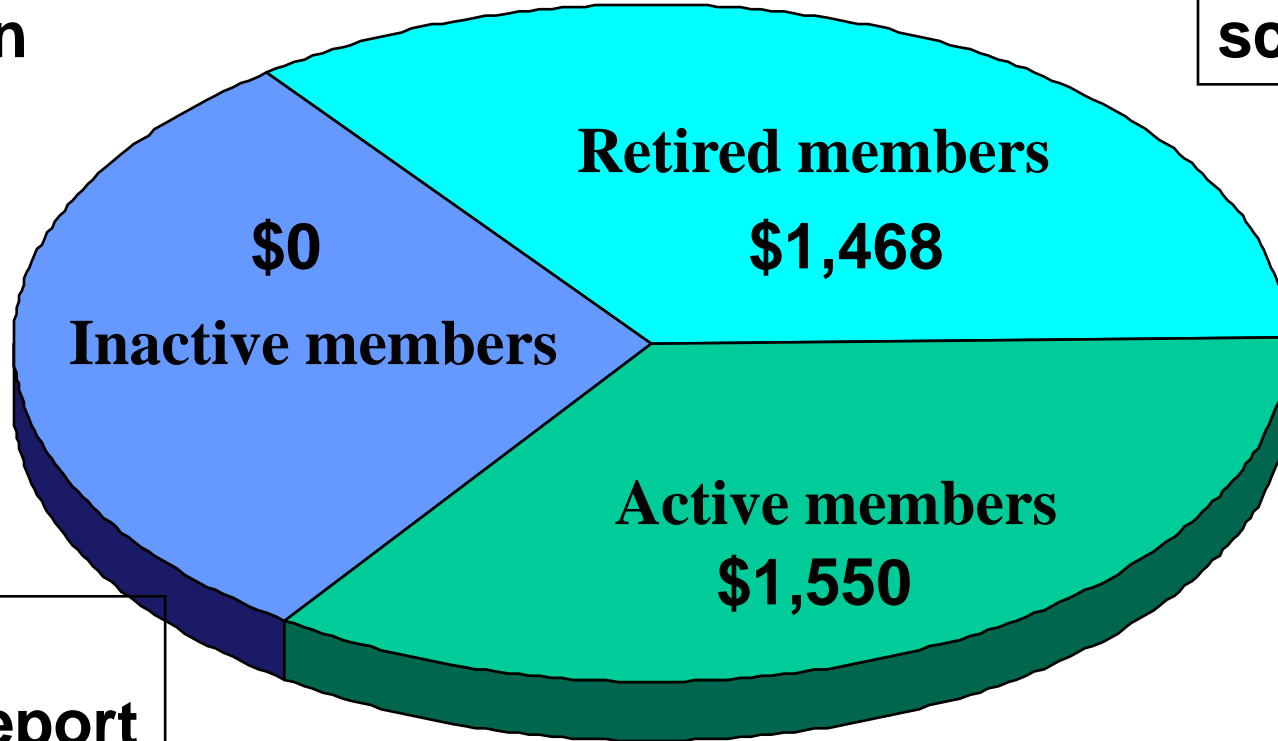
**2012
Val. Report
page 5**

Actuarial Balance Sheet:

Where it goes: Health

**\$3,018
Million**

**Not to
scale!**



**2012
Val. Report
page 5**

Funded Status: various measures

- Funded status = liabilities - assets
 - Assets > liabilities ==> surplus
 - Assets < liabilities ==> unfunded liability
- Funded ratio = assets / liabilities
- Assets
 - Termination: Market value
 - Funding: Actuarial value
- Liabilities
 - Termination value (corporate “current liability”)
 - Funding: Actuarial Accrued Liability

Funded Ratio (or “Funding Ratio”)

- Not used to determine contribution rate
 - Amortization cost based on UAAL (\$)
- For public plans, no “bright line” test
 - For corporate Current Liability, used to be 80% and 90%
 - See Academy of Actuaries recent Issue Brief: “The 80% Pension Funding Standard Myth”
- Useful to track progress
- Not useful as a simple test of Plan’s health
 - Does not measure solvency or benefit security

Significance of Funding Ratio

➤ Which Plan would you rather be in?

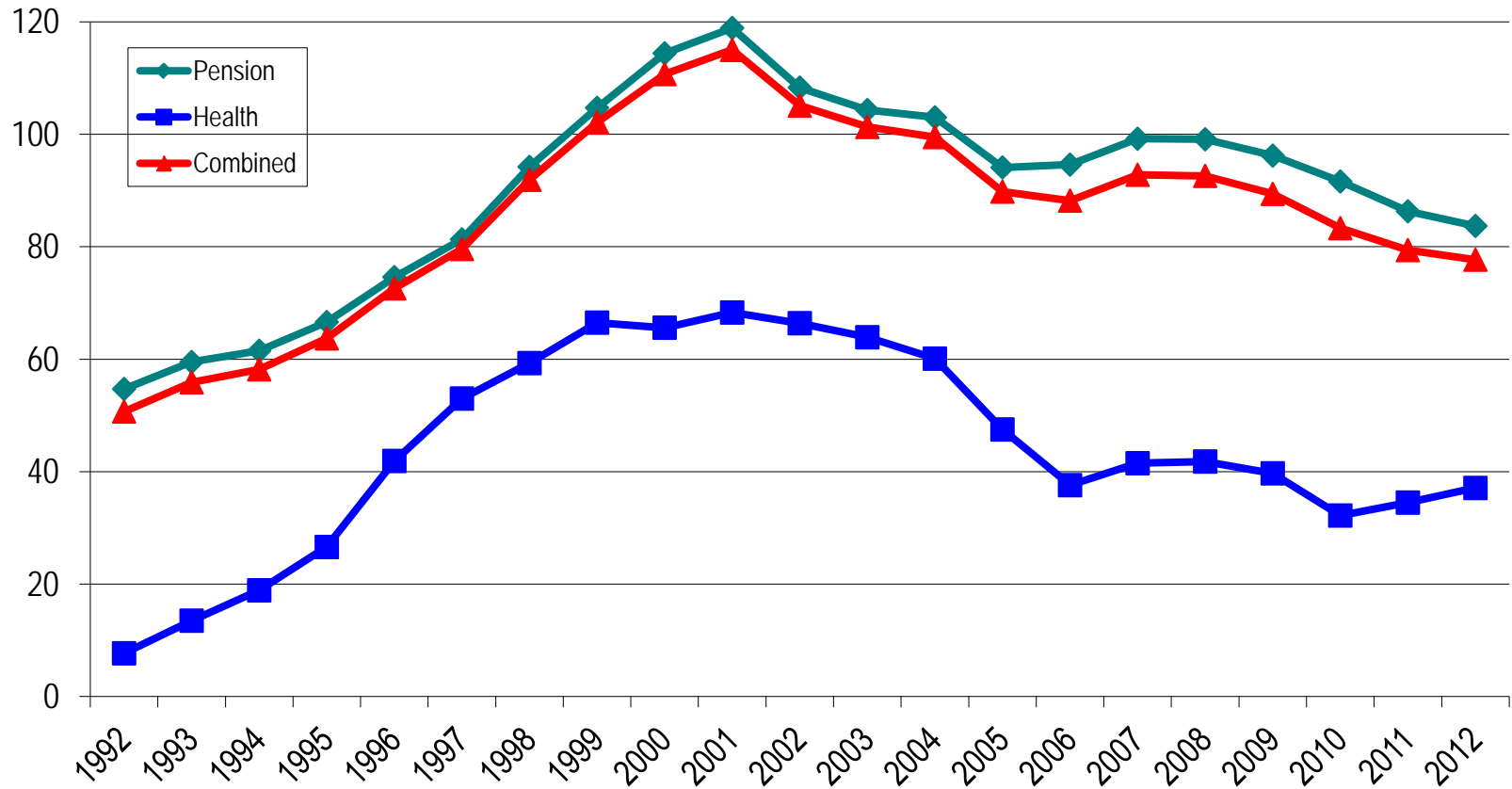
	Funding Ratio	
Valuation Date	Plan A	Plan B
2007	73%	82%

Significance of Funding Ratio

➤ Which Plan would you rather be in?

Valuation Date	Funding Ratio	
	Plan A	Plan B
2007	73%	82%
2006	61%	89%
2005	57%	93%
2004	46%	102%
2003	38%	118%
2002	24%	132%

LAFPP Funding Ratios



Summary of LAFPP Funding Policy

- Actuarial cost method
 - Entry age normal
- Asset smoothing method
 - 7 year smoothing period
 - “40% Market Value Corridor”
 - smoothed value must be between 60% and 140% of market value
- Amortization period
 - Layered amortization with fixed periods
 - Level percentage of payroll
 - Different amortization periods for different sources of UAAL

LAFPP UAAL Amortization Periods

Effective with the June 30, 2012 valuation:

Source of UAAL	Amortization Period
Experience Gain/Loss	20
Assumption Changes	25
Active Plan Changes	15
Inactive Plan Changes	15
Early Retirement Incentives	5
Surplus	30

Always remember:

$$\mathbf{C + I = B + E}$$

Contributions + Investment Income
equals

Benefit Payments + Expenses

- Actuarial valuation determines the current or “measured” cost, not the ultimate cost
- Assumptions and funding methods affect only the timing of costs



DISCUSSION