Actuarial Assumptions

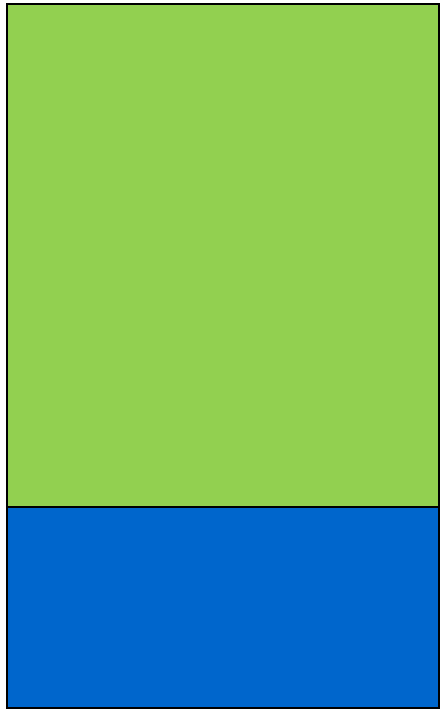
Chad Little, ASA, EA

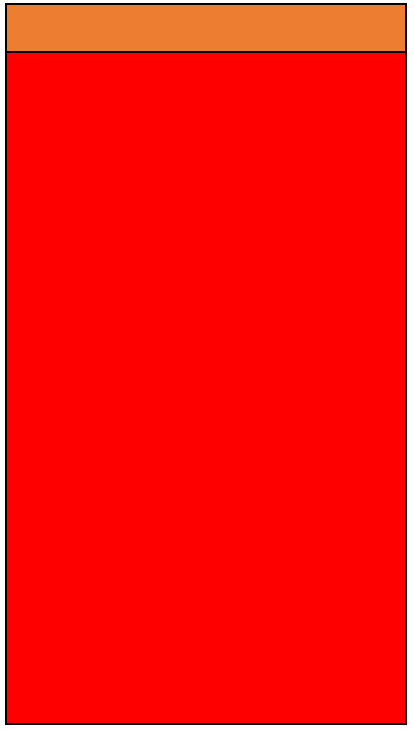
Ultimate Balance Equation

Money In = **Money Out**

Inv

Conts





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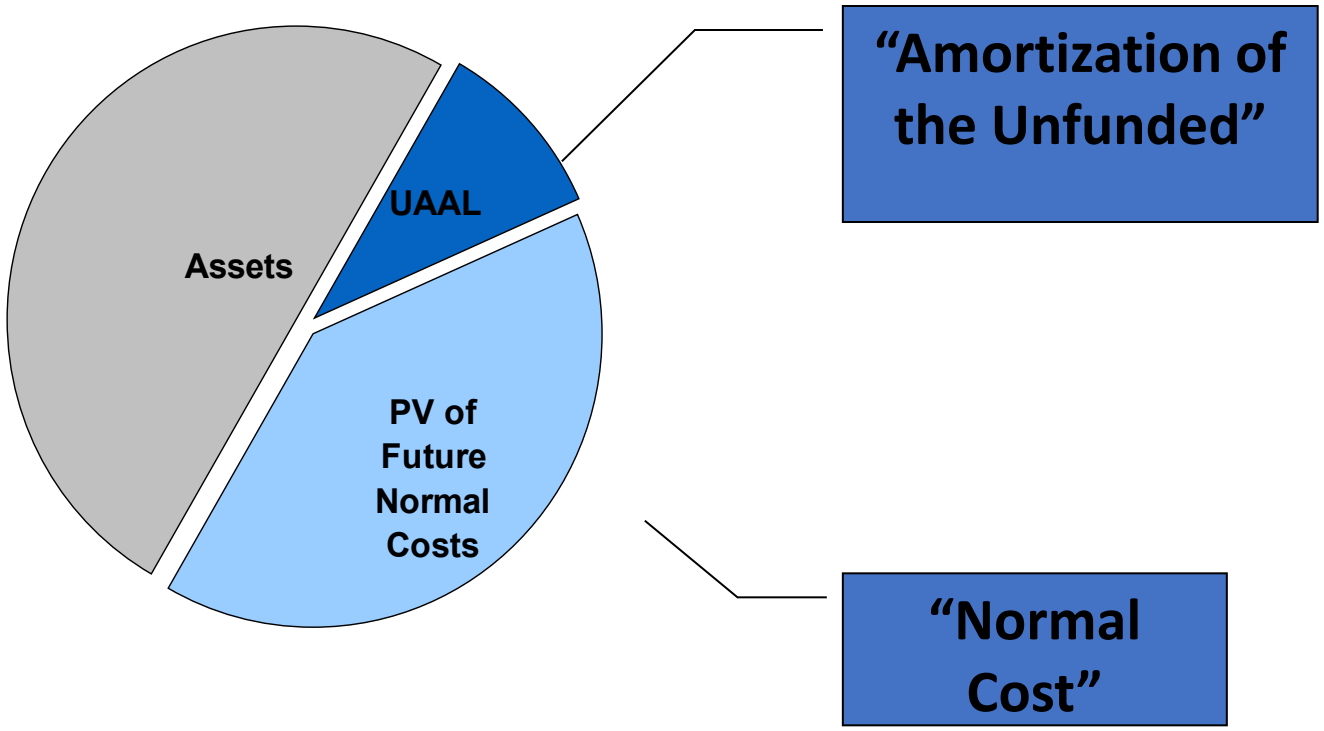
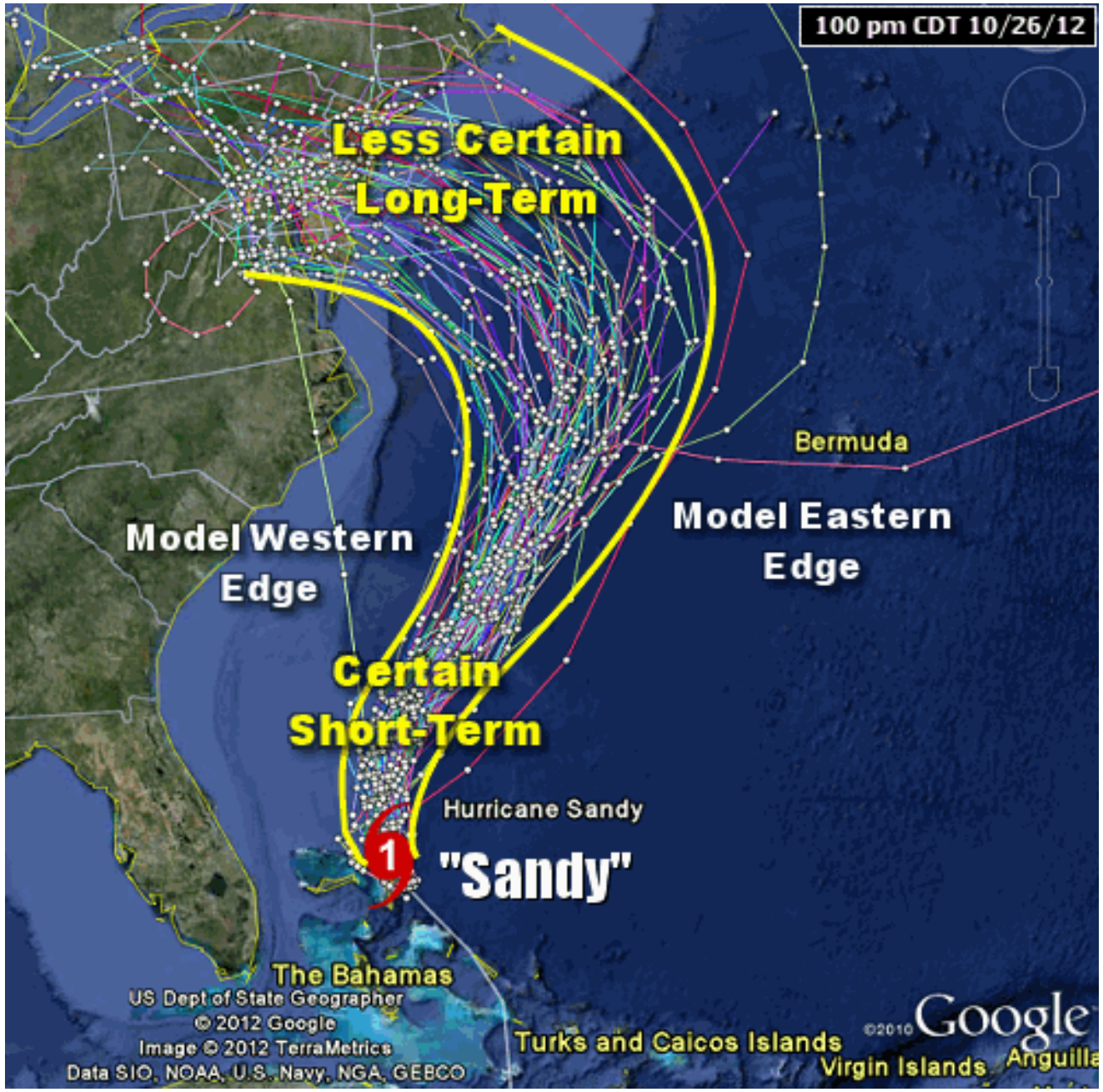
Components of Cost




100 pm CDT 10/26/12
Less Certain
Long-Term
Bermuda
Model Western
Edge
Model Eastern
Edge
Certain
Short-Term
Hurricane Sandy
"Sandy"
The Bahamas
US Dept of State Geographer
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Adjusting the Model

- Like the Hurricane Model, updates are needed as events occur
- Updates to inputs:
  - Assets
  - Data
  - Plan Changes
  - Assumptions
- Updating assumptions is done through Experience Studies

Experience studies

- Review of current assumptions to determine if any changes are needed – goal to have best estimate assumptions and costs that are stable and predictable.
- Assumption review can run the gamut – and cover all econ. and demographic assumptions.
- Multi – year review
- Supports report sent for state review

Key Assumptions

- Economic
  - Investment Return
  - Salary Scale
  - Inflation
- Demographic
  - Retirement
  - Mortality
  - Disability
  - Turnover

Actuarial Standards of Practice

- Provide guidance to actuaries
- Cover both economic and demographic assumptions

Interest Rate

- Economic Assumptions : Interest rate
- How did we get to the old 8% with a 60/40 mix?
- .6 x 10% + .4 x 5%

JP Morgan 2023 LTCMA (10-15 years)

U.S. Cash	2.4
U.S. Aggregate Bonds	4.6
U.S. Large Cap	7.9
EAFE Equity	8.5
U.S. Core Real Estate	5.7

Horizon 2022 LTCMA (20 years)

US Treasuries (Cash Equivalents)	1.99
US Corporate Bonds - Core	3.49
U.S. Large Cap	7.08
Non-US Equity - Developed	7.14
Real Estate	5.98

Salary Scale

- Inflation, productivity, merit
- Current practice of sponsor
- Historical practice – sponsor, industry, area
- National wage & productivity
- Single rate
- Rate varies by age & service, duration

Demographic Assumptions

- Demographic and other non-economic assumptions
- Turnover
- Retirement
- Mortality
- Disability

- “The actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations.”

Demographic Assumptions

- Overall
- Plan experience
- Plan provisions
- Economic conditions
- Published tables

- Turnover
- Employer specific or job-related factors
- Retirement
- Availability of healthcare

What if we change assumptions?

- Change in Total Liability
- Change in Funded Status
- Change in Required Contribution

Assumed Return Example

- Plan is at 6.25%
- Actuary recommends 6.00%
- The Board requests results at 6.00% and 6.15% to consider
- Note: The assumption should NOT be driven by the impact on the required contribution or liabilities

Present Value of Benefits

	6.25%	6.15%	6.00%
Present Value of Benefits (PVB)	$31,498,747	$31,967,213	$32,691,121
Change in PVB (from 6.25% Result)		$468,466	$1,192,374

Funded Position

	6.25%	6.15%	6.00%
Unfunded Accrued Liability	($421,587)	($63,156)	$487,774
Funded Percentage (FP)	101.49%	100.22%	98.33%
Change in AL (from 6.25% Result)		$358,431	$909,361
Change in FP (from 6.25% Result)		(1.27)%	(3.16)%

Required Contribution

	6.25%	6.15%	6.00%
Employer MRC Payable Monthly in Funding Year	$429,329	$527,906	$678,523
Change in Employer MRC (from 6.25%)		$98,577	$249,194

Asset Smoothing/Cost Methods

- Actuarial Asset Value
  - Dampen Volatility
  - Does not change ultimate cost
  - Typically limited to 120% of Market Value
  - Smoothing period limited to 5 years
- Cost Methods
  - EANC, PUC, Aggregate
  - Does not change ultimate cost

Amortization Periods

- Chapter 112 allows a 30-year amort. period
- The amort. payment is about twice as much under a 10-yr vs. 30-yr amortization period
- Does not change ultimate cost of the program
- The State's actuary has been pressing for short (5-10 year) amort. of losses.
- Payroll growth – Negative Amort.

Ultimate Balance Equation

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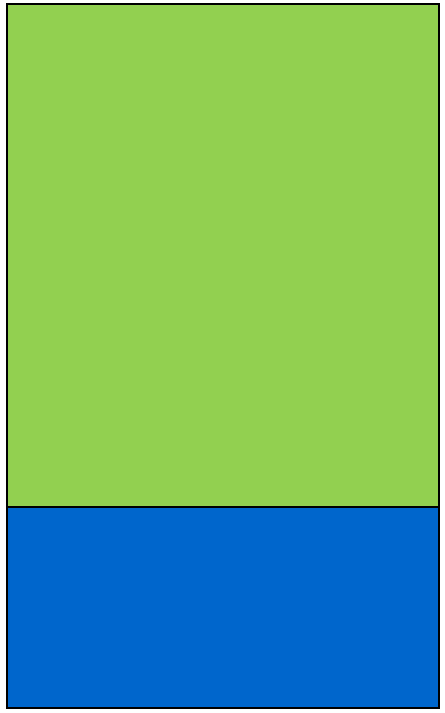

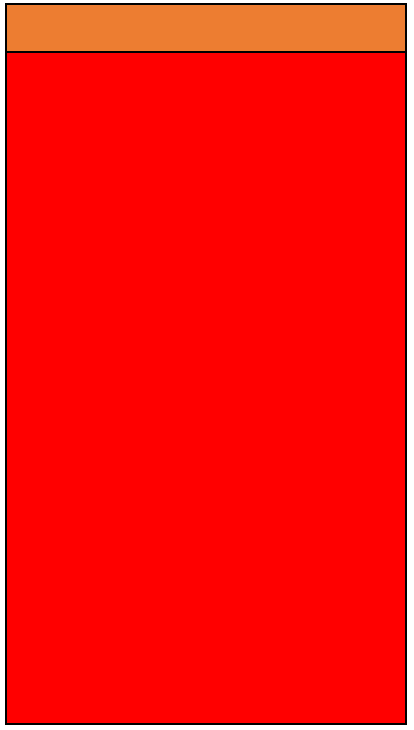

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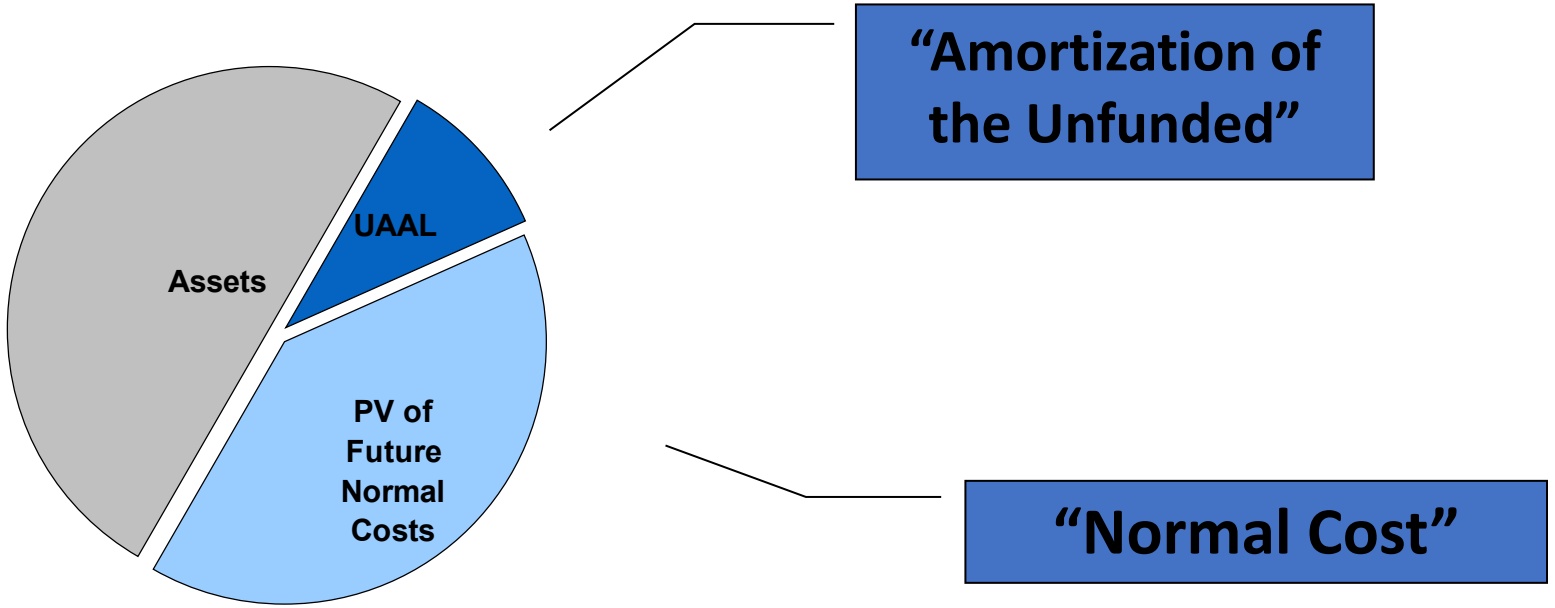
Self-Correction

- All methods are self correcting



Cost or Timing?

- Assumptions do not change the cost, they affect the timing
- Preference is to be more conservative