Investments & Pensions Oversight Committee
Overview of Actuarial Processes

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Actuarial Funding Definitions

Present Value of Benefits

- Value of benefits expected to be paid to all current participants (active and retired)
  - Includes past service and expected future service

Actuarial Accrued Liability

- Value of benefits expected to be paid to participants based upon past service
  - Includes all benefits for members in pay status
  - Includes the portion of active members' benefits allocated to service performed up to the valuation

Actuarial Funding Definitions

Normal Cost

- Present value of active members' benefits allocated to the upcoming year of service
- Sometimes called service cost – the additional cost resulting from an additional year of service

Present Value of Future Normal Costs

- Value of all future annual normal costs
- Value of expected future benefit accruals

PERA
INVESTED IN TOMORROW.

Actuarial Funding Definitions

Actuarial Cost Method

- A method used to allocate the Present Value of Benefits between past service (Actuarial Accrued Liability) and future service (Present Value of Future Normal Costs)
- Currently PERA uses the Entry Age Normal cost method
- All cost methods maintain the following relationship:

Present Value of Future Normal Cost + Actuarial Accrued Liability = Present Value of Benefits

Actuarial Funding Definitions

Actuarial Value of Assets	• Dampens the effect that market value fluctuations on funding results. PERA "smooths" the recognition of market gains and losses over 4 years.
Funded Ratio	• The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability • Commonly used to monitor the progress toward funding objectives
Unfunded Actuarial Accrued Liability (UAAL)	• The difference between the Actuarial Accrued Liability and the Actuarial Value of Assets • Liability allocated to past service in excess of assets • Also reflects the cumulative effect of experience gains and losses
Funding Period	• The number of years required to fully amortize the Unfunded Actuarial Accrued Liability

Actuarial Funding Basics

- **Actuarial Accrued Liability is the accumulated value of past Normal Costs**

- **Normal Cost Contribution** is shared between Member and Employer
  - Provided all assumptions are met, the Normal Cost contributions accumulate and equal the accrued liability in each future year
  - If actual experience differs from assumptions, the gain or loss decreases or increases the unfunded liability

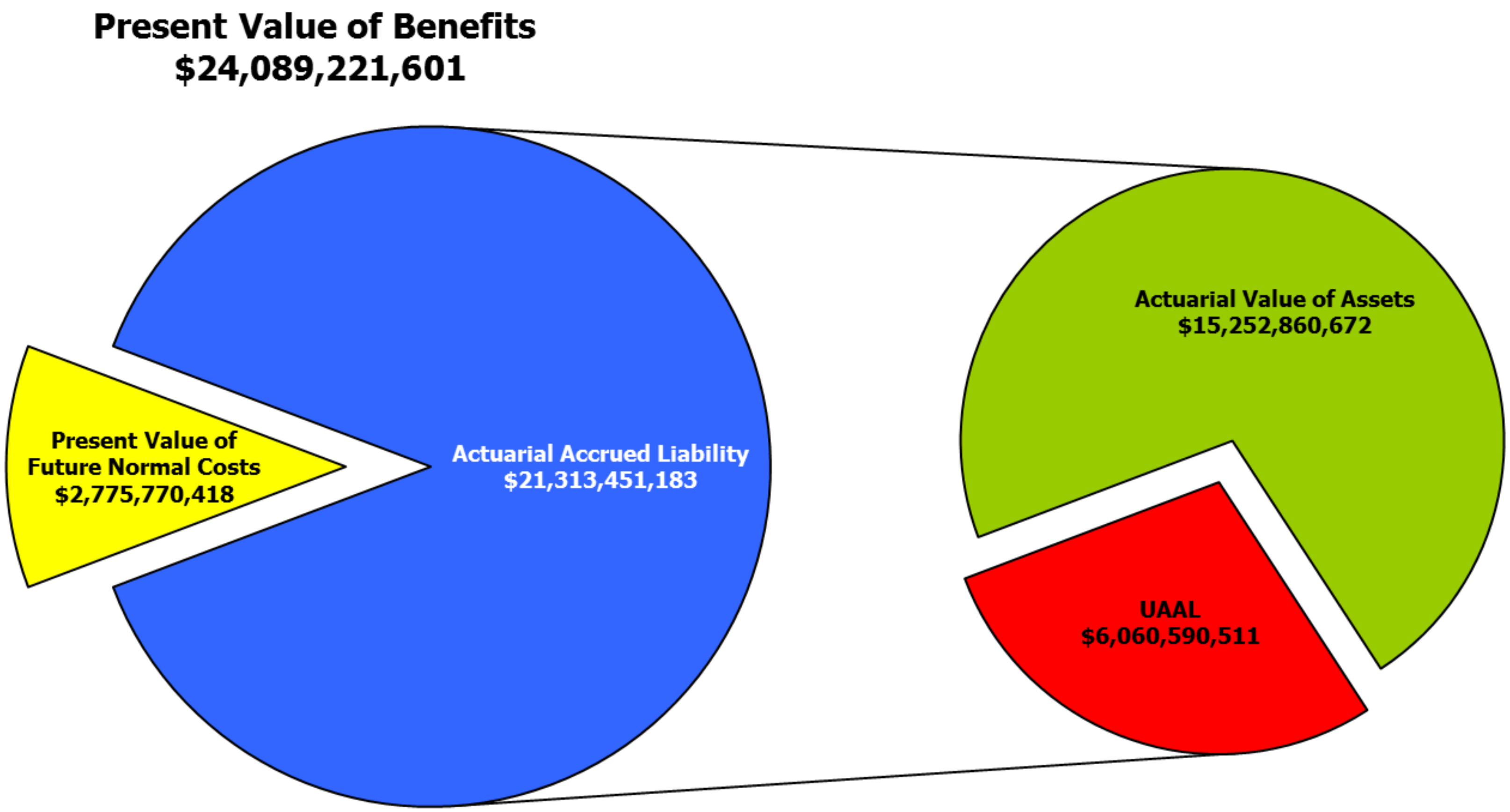
- **Unfunded Liability** spreads the impact of gains and losses on required funding through use of an amortization method

- **Statutory Rates** ignores needed changes to the UAAL amortization cost unless legislated

Levels of Actuarial Analysis

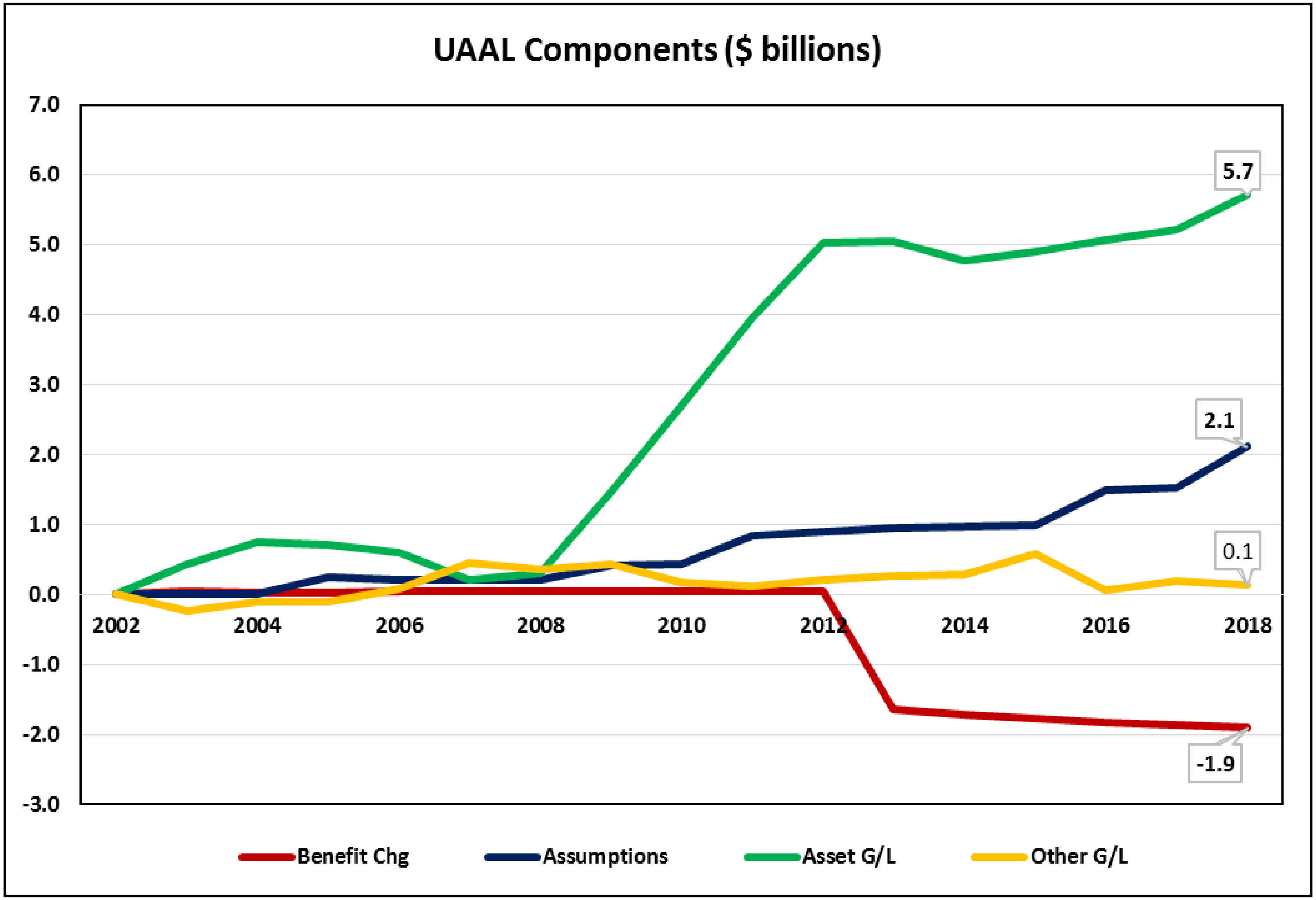
- **Actuarial Valuation**
  - Measures projected benefits of current plan members and current assets
    - All actuarial assumptions are exactly met
- **Actuarial Open-Group Deterministic Projection**
  - Assumes current members leaving active status are replace with new members
    - All actuarial assumptions are exactly met
- **Actuarial Open-Group Stochastic Projection**
  - Also called Asset Liability Model (ALM)
  - Open-group but runs 500 random streams of future investment returns from likely distribution of returns
    - Provides sensitivity of projected results to investment volatility

June 30, 2018 PERA
Actuarial Valuation Results



2018 Funded Ratio = Assets/Accrued Liability or 71.6%

Components of Unfunded Actuarial Accrued Liability 2002-2018



Components of Unfunded Actuarial June 30, 2018