MACRS
Fall 2025

Actuarial Valuation/ Pension Funding Basics

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FALL MACRS

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Introduction

- Background
- Valuation Basics
  - Valuation Process
  - Data
  - Assumptions
  - Gains/Losses
- Funding Schedules and Full Funding

What Is An Actuarial Valuation?

- "Snapshot" at that date
- Estimated future cash flows
- Present value terms
- Actuarial assumptions
- How good are the assumptions?
  - Gains and losses
- Updates valuation results with updated data
  - Gives us our next best estimate

Purpose of an Actuarial Valuation

- Determine the annual amount of contributions needed to adequately fund plan benefits
- Measure plan's funding progress

What Is Actuarial Funding?

- Advanced funding
- Costs should be paid during working lifetime of employee
  - Taxpayers receiving benefits of employee's service
  - Not put off for future generations
- Pay current (normal) cost plus "past service" cost
- Level dollar vs. increasing

How Often Must a Valuation Be Performed?

- At least every two years
  - Avoid unpleasant surprises
- Interim valuation in off year
- Private sector requires annual
- PERAC with help of private actuaries

Actuarial Valuation Cycle

- Preliminary review
- Data preparation
- Asset preparation
- Valuation specifications
- Valuation run and summary
- Final report and presentation

Data

- Key Fields
  - Date of Birth (age)
  - Gender
  - Pay
  - Job Group
  - Total Service
  - Date of Hire
  - Contributions
  - Status
  - Beneficiary Information
  - Benefit Amount
  - Payment Form (Retirement Option)
- Check for reasonableness, missing values, internal consistency
- Reconcile with prior year's figures

Assets

- Information provided in Annual Statement
- Reconcile with prior years' amounts
- Calculate actuarial value of assets
- Calculate return on investments
- Calculate gains/losses

Actuarial Value of Assets

- Smooths out volatility inherent in market value
- Smooths gains/losses
  - Over a period of no more than 5 years
- Must stay within a corridor around the market value
  - PERAC corridor is 10% - 15%
  - Could use up to 20%

Valuation Specifications

- Plan Provisions (Chapter 32)
  - COLA Base (and other local options)
- Final Assumptions
  - Actuary recommends but Board responsible for final selection
- Amortization Basis of UAL
  - Actuary recommends but Board responsible for final selection

What Are the Basic Actuarial Assumptions?

Membership Characteristics	Economic Characteristics
▪ Longevity	▪ Investment return
▪ Termination	▪ Salary increases
▪ Disability	▪ Inflation
▪ Retirement	▪ COLA increases

Investment Return and Salary Increase Assumption

Investment Return Salary Increase	7.5% Current	7.0% Current	7.0% *	7.25% *
Actives	2,800	3,000	2,900	2,790
Retirees	3,200	3,300	3,300	3,250
Total Actuarial Liability	6,000	6,300	6,200	6,040
Assets	4,000	4,000	4,000	4,000
Unfunded Liability	2,000	2,300	2,200	2,040
Funded Ratio	66.7%	63.5%	64.5%	66.2%

* Current reduced by 1% at all ages

Actuarial Gains and Losses

- A measure of the plan's actual position against the expected position if all assumptions had been exactly realized
  - Gain – experience that is more favorable (eg., lower salary increases than expected)
    - Gains result in a lower UAL
  - Loss – experience that is less favorable (eg., less deaths than assumed)
    - Losses result in a higher UAL

Valuation Terms

- Present Value of Benefits
  - Value as of today of all benefits expected to be paid
- Normal Cost
  - Current Year Cost
- Actuarial Accrued Liability
  - Attributable to past service
  - An accumulation of all past years' normal costs with interest
- Unfunded Actuarial Accrued Liability
  - Total Actuarial Accrued Liability less plan assets

Present Value

- Invested assets will generate investment income
- Possibility the member/beneficiary will not be around to receive the payment
- Amount of money needed today to grow with interest and survivorship to be able to make a payment or payments in the future

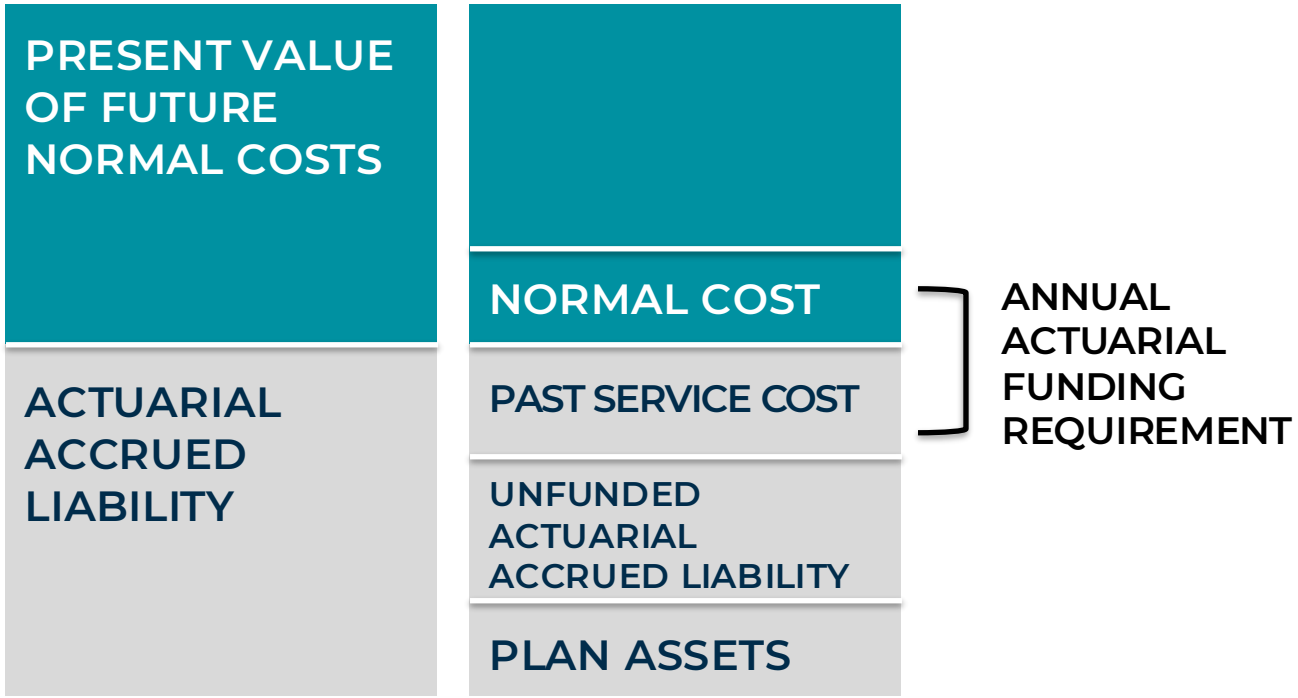
Present Value Examples

- Interest Only
  - How much do you need today to pay $1,000 one year from now if assets earn 5%?
    - **$1,000 ÷ 1.05 = $952**
- Interest and Survivorship
  - How much do you need today to pay $1,000 to a 65-year-old retiree one year from now if he is still alive? Assume the probability the 65-year-old survives one year is 99%, and assets earn 5%.
    - **$1,000 ÷ 1.05 x .99 = $943**

UAL vs. Funded Ratio

- Different views of funding with same components
  - Actuarial Accrued Liability and Assets
- UAL = Liability - Assets
  - Dollar Amount
- Funded Ratio = Assets/Liability
  - Percentage Basis

Present Value of Future Benefits



- **Unfunded Actuarial Accrued Liability** = Actuarial Accrued Liability minus Plan Assets
- **Past Service Cost** = Amortization of Unfunded Actuarial Accrued Liability

Determination of Liabilities for Actuarial Valuation

- Total Normal Cost for the system is the sum of Normal Cost for each individual participant.
- Total Actuarial Accrued Liability for the system is the sum of the Actuarial Liability for each individual.

Funding Schedules & Full Funding

Chapter 32, Section 22D

- Amortization of the UAL completed by June 30, 2030
- Amortization of the UAL can increase no more than 4.5% annually
- Total appropriation in one fiscal year cannot be less than 95% of the total appropriation for the prior fiscal year

Chapter 32, Section 22F

- Amortization of the UAL completed by June 30, 2040
- Amortization of the UAL can increase no more than 4.0% annually
  - If schedule cannot be developed within these parameters, can have total appropriation increase by up to 8% per year
- Total appropriation in one fiscal year cannot be less than the total appropriation for the prior fiscal year

Funding Schedule Example

Ladyville Funding Schedule January 1, 2025 Actuarial Valuation					
Total cost increases 5.51% through FY36 with a final amortization payment in FY37					
Fiscal Year	***Normal Cost***	***Amort of UAL***	***Total Cost***	***UAL***	***% increase in Total Cost***
2026	1,121,161	3,812,030	4,933,191	41,857,766	
2027	1,166,007	4,039,003	5,205,010	40,844,615	5.51
2028	1,212,647	4,279,159	5,491,806	39,525,761	5.51
2029	1,261,153	4,533,251	5,794,404	37,866,168	5.51
2030	1,311,599	4,802,077	6,113,676	35,827,569	5.51
2031	1,364,063	5,086,477	6,450,540	33,368,191	5.51
2032	1,418,626	5,387,338	6,805,964	30,442,472	5.51
2033	1,475,371	5,705,602	7,180,973	27,000,739	5.51
2034	1,534,386	6,042,259	7,576,645	22,988,870	5.51
2035	1,595,761	6,398,357	7,994,118	18,347,931	5.51
2036	1,659,591	6,775,003	8,434,594	13,013,774	5.51
2037	1,725,975	7,154,609	8,880,584	6,916,621	5.29
2038	1,795,014		1,795,014	0	-79.79
2039	1,866,815		1,866,815	0	4.00
2040	1,941,488		1,941,488	0	4.00
2041	2,019,148		2,019,148	0	4.00
2042	2,099,914		2,099,914	0	4.00
2043	2,183,911		2,183,911	0	4.00
2044	2,271,267		2,271,267	0	4.00

NOTES:

- Schedule assumes payment made on January 1 of each fiscal year.
- Normal Cost assumed to increase 4.0% each year.
- FY26 appropriation amount maintained from current schedule.

Considerations as Systems Approach/ Become Fully Funded (1)

- Effect on Funding Schedule
  - Appropriation = normal cost + “past service” cost
  - When system is fully funded, “past service” cost = $0
  - Normal cost still applies
    - Cost of benefits that accrue each year

Considerations as Systems Approach/ Become Fully Funded (2)

- Should systems reduce appropriation to normal cost when becoming fully funded?
  - PERAC **recommends** funding to a level greater than 100% before reducing schedule to only normal cost
    - 125% - 130%
      - Varies depending upon current assumptions
      - Builds funding cushion
  - PERAC **recommends** annual valuations
    - Or at least an interim valuation

Considerations as Systems Approach/ Become Fully Funded (3)

- Possible implications if system moves to only normal cost payments when becoming fully funded
  - Funded status changes
    - Assumption changes, plan provision changes, or actuarial losses (primarily investment losses) could increase AAL and/or UAL
  - Budget that was used for pension payments has been moved to other services
  - Difficult to increase the pension budget once reduced

Considerations as Systems Approach/ Become Fully Funded (4)

Valuation Date	1/1/24	1/1/25
Total Normal Cost	8,600	9,000
Employee Contributions	5,000	5,250
Net Employer Normal Cost	3,600	3,750
Actuarial Accrued Liability	350,000	367,500
Actuarial Value of Assets	350,000	315,000
Unfunded Liability	0	52,500
Funded Ratio	100.0%	85.7%

* Assumes 10% asset loss in 2024

Considerations as Systems Approach/ Become Fully Funded (5)

FY25 Appropriation (Normal Cost adjusted to payment date)	**$3,726**
FY26 Appropriation (Normal Cost and amortization of the UAL adjusted to payment date)	**$7,856**

- Assumes appropriation payments are made on July 1
- UAL amortized on 17-year, 4.0% increasing basis
- Investment return assumption assumed to be 7.0%

Proposals as Full Funding Deadline Approaches

- As full funding deadline (2040) approaches, there is less time to fund unfunded actuarial liability
- Legislature can extend the full funding date again
  - Kicking the can down the road for future taxpayers
  - Simple and easy to understand
- Alternative to current funding rules
  - Layered amortization
    - Complicated and not easily understood

Layered Amortization (1)

- Original Unfunded Liability Amortized over fixed period
  - 15 years? 20 years? 25 years?
- New Sources of Unfunded Liability amortized over specified period as they are incurred
  - Changes in Assumptions
  - Changes in Plan Provisions
  - Early Retirement Incentives
  - Actuarial Gains/Losses

Layered Amortization (2)

- Changes in Assumptions
  - 15-20 years
- Changes in Plan Provisions
  - Active Members – 15 years
  - Retired Members – 10 years
- Early Retirement Incentives
  - No longer than 5 years
- Actuarial Gains/Losses
  - 15-20 Years

Layered Amortization (3)

Ladyville Funding Schedule
January 1, 2025 Actuarial Valuation

Fiscal Year	Normal Cost	Amort of Original UAL	Amort of 2023 Assumption Change	Amort of 2023 Actuarial Gain	Amort of 2025 Actuarial Loss	Total Cost	UAL	% increase in Total Cost
2026	1,121,161	5,123,456	256,530	(432,198)	735,999	6,804,948	53,684,992	
2027	1,166,007	5,123,456	256,530	(432,198)	735,999	6,849,794	51,563,587	0.66
2028	1,212,647	5,123,456	256,530	(432,198)	735,999	6,896,434	49,293,683	0.68
2029	1,261,153	5,123,456	256,530	(432,198)	735,999	6,944,940	46,864,886	0.70
2030	1,311,599	5,123,456	256,530	(432,198)	735,999	6,995,386	44,266,073	0.73
2031	1,364,063	5,123,456	256,530	(432,198)	735,999	7,047,850	41,485,343	0.75
2032	1,418,626	5,123,456	256,530	(432,198)	735,999	7,102,413	38,509,962	0.77
2033	1,475,371	5,123,456	256,530	(432,198)	735,999	7,159,158	35,326,304	0.80
2034	1,534,386	5,123,456	256,530	(432,198)	735,999	7,218,173	31,919,790	0.82
2035	1,595,761	5,123,456	256,530	(432,198)	735,999	7,279,548	28,274,821	0.85
2036	1,659,591	5,123,456	256,530	(432,198)	735,999	7,343,378	24,374,703	0.88
2037	1,725,975	5,123,456	256,530	(432,198)	735,999	7,409,762	20,201,578	0.90
2038	1,795,014	5,123,456	256,530	(432,198)	735,999	7,478,801	15,736,333	0.93
2039	1,866,815	5,123,456			735,999	7,726,270	10,958,521	3.31
2040	1,941,488	5,123,456			735,999	7,800,943	5,664,550	0.97
2041	2,019,148					2,019,148	0	-74.12
2042	2,099,914					2,099,914	0	4.00
2043	2,183,911					2,183,911	0	4.00
2044	2,271,267					2,271,267	0	4.00

QUESTIONS?