



Joel Black Mauldin & Jenkins

Taking Ownership of Your Actuarial Report

Today's Presenter



Joel Black, CPA, is a partner with Mauldin & Jenkins LLC specializing in serving local and state governmental and nonprofit entities throughout the Southeast. Joel currently serves on the AICPA State and Local Government Expert Panel after serving on the Executive Committee of the AICPA's Government Audit Quality Center. He also previously served on an AICPA committee responsible for the Annual Government and Not for Profit Training Program and was recently the chairman of an AICPA sub-taskforce for improving the quality of internal control and compliance testing in Single Audits. He has 24 years of experience providing attestation, consulting and instructional services – serving many major governments in the Southeast. Joel has a B.B.A. in Accounting from Georgia State University.



Learning Objectives

At the end of this session, you should be able to:

- Define what an actuarial valuation is
- Recall how the valuation is developed
- Discuss issues that can arise in preparation of the valuation report



What is an Actuary?

- Selecting the "right" actuary
- Actuarial Reports
 - Actuarial Valuations
 - GASB 68 Reports (Accounting information)



What is an Actuary?

- Actuarial science is the discipline that applies mathematical and statistical methods to assess and quantify financial risk. Actuarial science includes a number of interrelated subjectsincluding probability, mathematics, statistics, finance, economics and computer modeling.
- Actuaries can be divided into <u>two</u> broad categories:
 - Casualty Actuaries (Casualty Actuarial Society-5,000 members)
 - Life, Health or Pension Actuaries (Society of Actuaries-22,000 members)
 - Each of the two societies conducts its own series of examinations and certifications which are at two levels, Associate and Fellow



What is an Actuary?

- Pension and OPEB actuaries will generally need to be either an Associate (ASA) or a Fellow (FSA) of the Society of Actuaries
- In addition to the base designation, they will also need to meet the Actuarial Qualification Standards for the specific task they are engaged
- Actuaries must follow Actuarial Standards of Practice (ASOPs) and the Code of Professional Conduct (CPC) in performing their work



Actuarial Standards of Practice (ASOPs)

- The Actuarial Standards Board (ASB) promulgates ASOPs
- ASOPs are principles based and typically allow for a great deal of flexibility and judgment
- ASOPS fall within several broad categories: General, Health, Pension, Life and Casualty
- ASOPs cover specific topic areas and when revised, revisions are incorporated into the original pronouncement keeping the original pronouncement number



Major ASOPs Affecting Pension & OPEB Valuations

- ASOP 4- Measuring Pension Obligations and Determining Pension Plan Costs or Contributions -Addresses actuarial cost methods for pensions and provides guidance for coordinating and integrating all of the elements of an actuarial valuation of a plan.
- ASOP 6- Measuring Retiree Group Benefit Obligations and Determining Retiree Group Benefit Program Periodic Costs or Contributions Same as, and consistent with, ASOP 4 where appropriate but includes OPEB/healthcare specific topics including Medicare Integration, dependents, contingent participants, premiums, stop loss coverage, etc.



Major ASOPs Affecting Pension & OPEB Valuations

- ASOP 23- Data Quality -- Defines (and requires) a review of data as the examination of obvious characteristics to determine if the data appears reasonable and consistent for the assigned task
- ASOP 27- Selection of Economic Assumptions for Measuring Pension Obligations - Provides guidance in selecting economic assumptions - primarily investment return
- ASOP 35- Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations - Provides guidance in selecting demographic assumptions including retirement, termination, mortality and mortality improvement





Selecting The "Right" Actuary

- Has appropriate credentials/affiliations
 - Member of either an Associate (ASA) or a Fellow (FSA) of the Society of Actuaries
- Has experience in the type of plan you are requesting a valuation
 - Just because an actuary is experienced with government pension plans does not mean they have the requisite experience to perform a valuation of an OPEB/Healthcare plan
- Is familiar with new GASB standards







Actuarial Reports

Funding vs. Accounting

New GASB Standards have separated funding from accounting



Funding

As a "funding friendly" standard GASB 27/45 (old standards):

- Allowed a variety of options from Actuarial Standards of Practice for performing the valuation
- Utilizes the same terms as used in the ASOP
- Generated an Annual Required Contribution (ARC)
- These terms will continue to be used for funding purposes
- Results in the actuary preparing an <u>Actuarial</u>
 <u>Valuation Report</u>





Accounting

GASB 67-68/74-75 as accounting standards only:

- Strictly prescribes actuarial methods to be used
- Mandates certain treatments that were not addressed or envisioned by ASOP
 - Single Blended Discount Rate
 - Substantively Automatic COLAs
 - Using Fiduciary Net Position (FNP) (if trust or equivalent) at market value - instead of actuarial value of assets



Accounting

GASB 67-68/74-75 as accounting standards only:

- Gives old actuarial concepts a new name to indicate they were prepared using GASB standards
- Results in the actuary preparing <u>either a separate</u>
 <u>GASB 68 report</u> OR having a <u>separate section</u>
 <u>within the valuation report</u>
 - If a separate section the accounting section really refers to the prior period and the valuation is for a subsequent period



Knowledge Check

Which of the following is (are) true? Select all that apply.

- A. The GASB promulgates Actuarial Standards of Practice
- B. The ASB promulgates Actuarial Standards of Practice
- C. An actuary who specializes in pension plans is ideally the best candidate to perform your OPEB valuation
- D. OPEB valuations have unique assumptions (health care trend rates, participation rates) that require an actuary with requisite experience







Actuarial Valuations

Main Purposes of Valuation Report

- Recommend rates of contribution
- Provide summary of participant data as of snapshot valuation date
- List all Assumptions and Methods that went into developing contributions and liabilities



Benefit Financing

Basic Retirement Funding Equation



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C = Contributions
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- B = Benefits Paid
- E = Expenses (administration)





Funding Valuation Process

Present Value of Future Benefits (PVFB)





Actuarial Accrued Liability (AAL)





Future Normal Costs (NC)





Assets (AVA, MVA)

Unfunded Accrued Liability (UAL)

Member Portion

Employer Portion





Present Value

- Future Benefits The total amounts expected/calculated to be paid to retirees in the future
- Present Value The present value of an amount of money payable in the future is the amount of money that, if we had it today, would accumulate to the amount that will be payable considering:
 - Investment Return
 - Probability that money will be paid



Present Value

Example 1: You owe \$1,000 to a financial institution payable one year from now. You estimate you can invest money for a 7% return. What is the present value of the debt?





Present Value

Example 2: You owe \$1,000 to a person payable one year from now. The person is 70 years old and has no heirs. You estimate you can invest money for a 7% return. You estimate that the chance the person is still alive one year from now is 98%. What is the present value of the debt?



Observation: If the person dies, you will have money left over. If the person lives, you won't have enough money to pay the debt.





Funding Valuation Process

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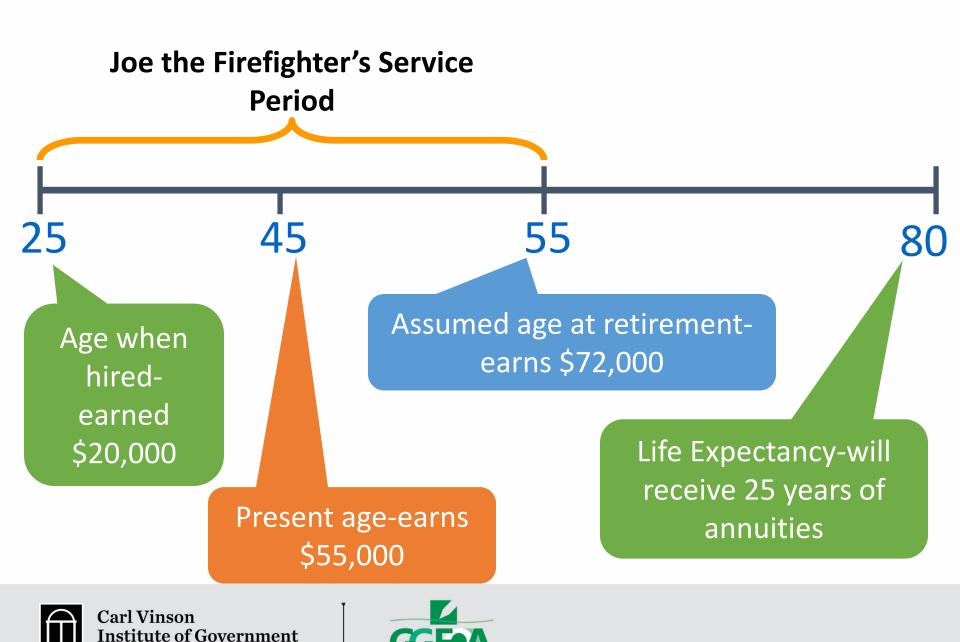
Unfunded Accrued Liability (UAL)

Member Portion

Employer Portion

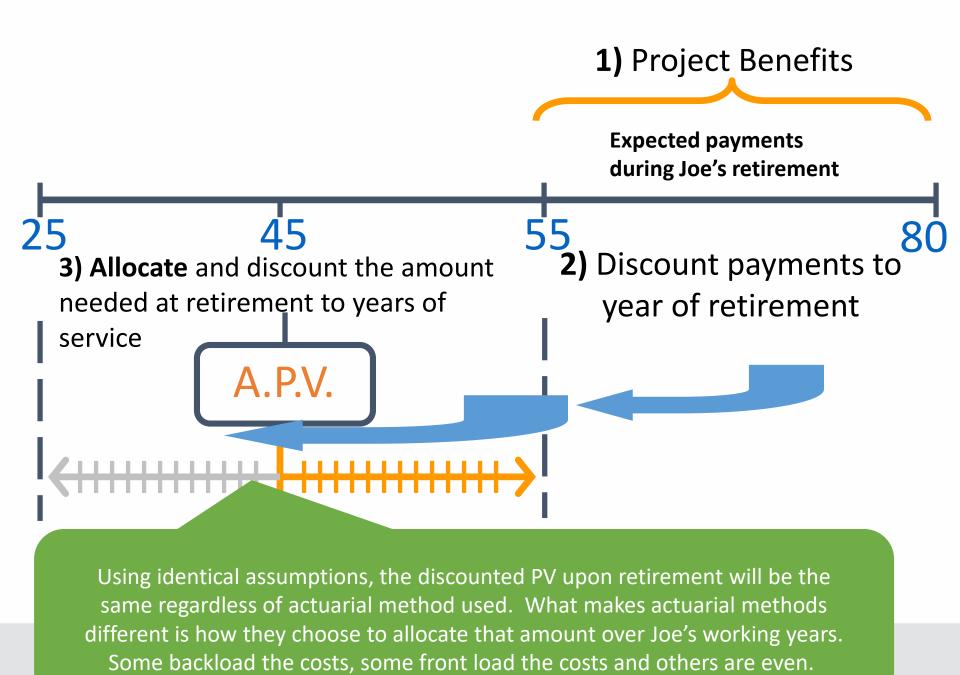


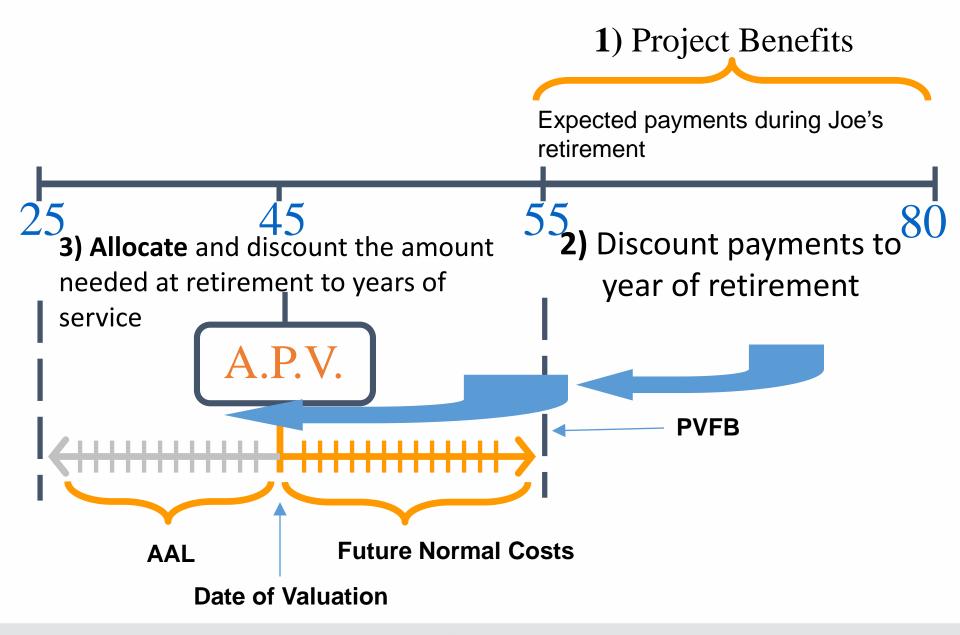




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Normal Cost

Contribution For	Description
Future Normal Costs	Value of all future expected benefit accruals
Normal Cost Rate	Value of this next year's expected benefit accruals as a percent of payroll
Total Normal Cost Rate	12.00%



Actuarial Accrued Liability

- The portion of the present value of pension plan benefits not provided for by future normal costs
- Represents the amount already "earned" by the employee



Attribution of PVFB to Periods

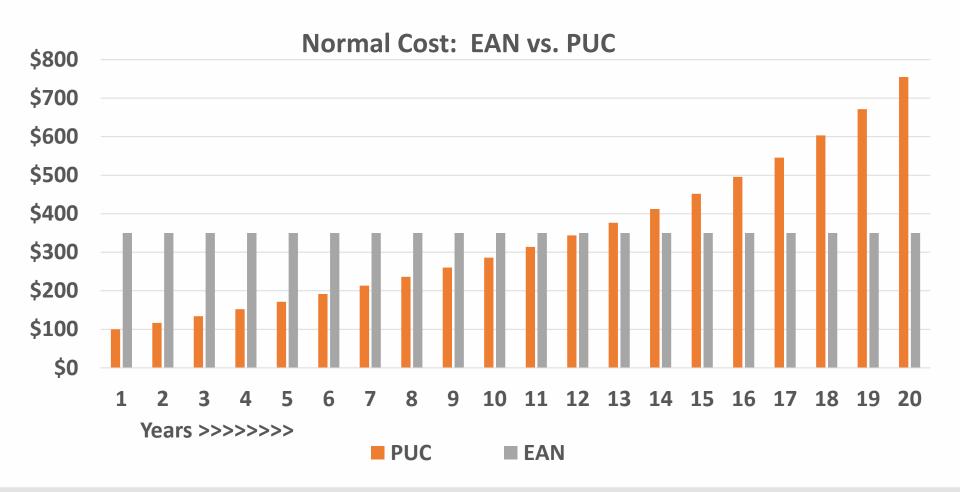
Attribution Done by the Actuarial Cost Methods

- Several Actuarial Cost Methods often used by actuaries
 - This defines the pattern over which benefits are accrued over active service
 - Each cost method defines the Normal Cost in a different way
- Entry Age Normal (EAN) and Projected Unit Credit (PUC) are common examples of Actuarial Cost Methods
 - <u>EAN is required</u> under new GASB Standards <u>for accounting</u>
 - For <u>funding purposes</u> <u>you can choose</u> your method
 - EAN is a "front loaded" cost method; whereas, PUC is "back loaded"





Actuarial Cost Methods







Knowledge Check

Which of the following is (are)true? Select all that apply.

- A. The PVFB is calculated as of the actuarial valuation date.
- B. The PVFB is made up of two components, the AAL and the PVFNC.
- C. The AAL is the portion of PVFB attributed to future service.
- D. Normal Cost is the portion of PVFB that represents current year's benefit accruals.





Funding Valuation Process

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Member Portion

Employer Portion





Asset Valuation Methods

- Market Value of Assets (MVA)
- Smoothed Market Actuarial Value of Assets (AVA)
- Can choose method for funding
 - Typically use the smoothed market

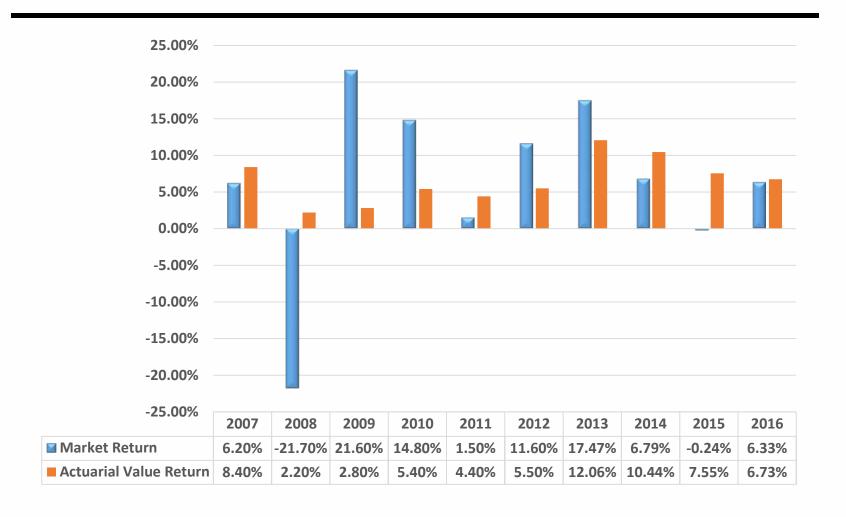


Smoothing Methods

- Recognize some portion of market return each year
- Can be straight line or weighted
- Most commonly used is straight line, 5-year smoothing
- Can be with or without corridor, i.e., actuarial value cannot be less than x% or more than x% of market value
- Most common corridor is 80%-120% of market value



Example of Rates of Return (MVA vs. AVA)







Funding Valuation Process

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Assets (AVA, MVA)

Unfunded Accrued Liability (UAL)

Member Portion

Employer Portion





Unfunded Accrued Liability Contribution Rate

Contribution For	Description
Unfunded Accrued Liability (UAL)	Actuarial Accrued Liability – Actuarial Value of Assets

"Unfunded Accrued Liabilities" are a natural part of retirement system funding - comparable to a mortgage on a home. A plan which is 100% funded is required to contribute only the normal cost.

Funding Ratio (or Funded Status) of the Plan is the ratio of Actuarial Value of Assets divided by the Actuarial Accrued Liability. If the Plan has a 100% Funding Ratio, there is no Unfunded Accrued Liability.





Unfunded Accrued Liability Amortization

- Level \$
- Level % of payroll
- Closed period
- Open or rolling period



Closed vs. Open Periods

- Closed period means a one year drop in the amortization period each year until you reach zero
- Open period means the amortization period fluctuates up or down, or stays the same from year to year
- Open period with <u>level % amortization</u> can result in never paying off the UAL, although it does decline as a percent of payroll



Funding Valuation Process

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Member Portion

Employer Portion





Annual Recommend/Determined Contributions

Contribution For	Employer Rate
Total Normal Cost Rate	12.00%
Employee Rate (Portion)	(8.00%)
Employer Normal Cost Rate	4.00%
Plus:	
Unfunded Accrued Liability Rate (amortized over 30 year period)	<u>6.00%</u>
Equals:	
Annual Recommended/Determined Contribution Rate for Employer	10.00%





Example Summary

Valuation date Fiscal year-beginning date	January 1, 2015 July 1, 2015	January 1, 2014 July 1, 2014
Contributions for fiscal year beginning:		
Recommended	\$413,590	\$409,359
Recommended as a percent of expected payroll	8.07%	7.88%
Funding elements as of the valuation date:		
Mid-year normal cost, including administrative expenses	\$398,439	\$394,363
Market value of assets	15,405,516	14,134,719
Actuarial value of assets	16,008,543	15,240,642
Actuarial accrued liability	15,593,459	15,183,605
Unfunded/(Surplus) actuarial accrued liability	-415,084	-57,037
Funded ratio	102.66%	100.38%
Funded Status as of valuation date:		
Present value of accrued plan benefits on funding assumptions	\$14,085,583	\$13,625,062
Funded percentage relative to market value	109.37%	103.74%
Present value of accrued plan benefits on a plan termination basis	\$30,743,296	\$27,457,528
Funded percentage relative to market value	50.11%	51.48%
Demographic data as of valuation date:		
Number of retired participants and beneficiaries	83	81
Number of vested former participants	93	90
Number of active employees	143	151
Number of active elected officials	3	5
Total valuation payroll	\$5,042,455	\$5,104,710
Average valuation payroll	35,262	33,806





Another Example Summary

Valuation Date	Ja	nuary 1, 2017	Ja	nuary 1, 2016
Active Members:				
a. Number		1.425		1.551
b. Covered compensation	\$	95.658.479	\$	92.832.221
	•	22,222,		5-,55-,
Retired Members, Disableds and Beneficiaries:				
a. Number		2,200		2,073
b. Total Annual Benefits	\$	65,197,774	\$	61,174,918
Number of Terminated Vested Members		833		855
Assets:				
a. Market Value	\$	925,851,000	\$	899,516,000
b. Actuarial Value	\$	966,170,000	\$	933,994,000
Actuarial Accrued Liability	\$	1,220,296,657	\$	1,168,107,340
Unfunded actuarial accrued liability (UAAL)	\$	254,126,657	\$	234,113,340
Amortization Period		16 years		17 years
Fiscal Year Ending	Dec	ember 31, 2018	Dec	ember 31, 2017
Total Actuarially Determined Contribution (ADC)				
a. Normal Cost	\$	17.140.448	\$	17.319.291
b. UAAL Amortization Payment		25,141,355		22,410,378
c. Administrative Expenses		818,000		638,000
d. Interest Adjustment		4,532,674		4,245,344
e. Total ADC	\$	47,632,477	\$	44,613,013
Total ADC				
a. Required County Contribution	\$	41,102,477	\$	37,944,702
b. Expected Employee Contribution		6,530,000		6,668,311
c. Total ADC	\$	47,632,477	\$	44,613,013





Selection of Assumptions

What Are They?

Economic

- Investment Return
- Inflation
- Salary Increases
- Promotional/Step Pay Increases
- Payroll Growth Rate
- Population Growth Rate (Usually, a constant population size is assumed)
- Health care trend rates

Demographic

- Retirement Rates
- Disability
- Turnover
- Mortality and Mortality improvement

Who Selects Them?

Economic

- Board
- Actuary
- Other Advisors

Demographic

- Mostly Actuary
- Board Approves





Select Assumptions

- All assumptions are important, but a few often drive the results
- Possible important assumptions:
 - Investment Rate of Return/Discount Rate
 - Are you earning this over the long-term with your investment mix/policy
 - If rate is too high for the current and future economy, then resources will not be available to pay the liability



Select Assumptions

Possible important assumptions (cont.):

- Mortality Rate/Tables
 - Is the table updated and reflective of how long people are living (generally speaking, people are living longer than they used to)
 - If rate is too low (i.e. people end up living longer than assumption predicts) for the current environment, then you will have to pay out more than expected



Select Assumptions

Possible important assumptions (cont.):

- Health Care Trend Rate (OPEB)
 - These costs have been increasing dramatically.
 Most agree this can't continue forever, thus assumption is usually gradually decreased
 - If rate is too low (i.e. costs in future increase more than expected), then you will have to pay out more than expected



Changes in Major Assumptions – Effect on Liabilities and Contributions

<u>Assumption</u>	<u>Action</u>	<u>Usual Effect</u>
Rate of Investment Return	Increase	Decrease
Wage Inflation	Increase	Increase
Population Growth	Increase	Decrease
Retirement	Retire Younger	Increase
Turnover	More Quits	Decrease
Mortality	Live Longer	Increase
Health Care Costs	Increase	Increase



Reviewing Assumptions

- Experience Investigations
 - Compares actual plan experience with actuarial assumptions used in the valuation
 - Performed every 3-5 years
- Follow experience
- Watch trends (e.g. Improving Mortality)
- Factor in special events (e.g. re-employment legislation)



Actuarial Methodology - Key Takeaways

- Hire the "right" actuary
- Actuarial valuations start with the plan documents
 - Complete and unambiguous plan documents are vital
 - Important the actuary has the most recent document and/or understands the substantive plan in place
- Projection of the timing and amount of future liability payments rely heavily on assumptions
 - While numerous assumptions are used, there are usually a few that are the main drivers in the valuation
 - Review these assumptions for reasonableness



Actuarial Methodology - Key Takeaways

Census data are the building blocks of an accurate actuarial valuation

- Incomplete or inaccurate census data jeopardizes the integrity of the entire valuation
 - Census data includes:
 - Number of participants
 - Dates of birth
 - Dates of hire
 - Gender
 - Salary
 - Others important to the plans (marital status, plan selection)





Knowledge Check

Which of the following is/are true? Select all that apply.

- A. Actuarial assumptions for pension plans can be broken down into two categories: economic and Demographic
- B. A higher rate of return on plan assets translates to a lower liability and cost
- C. OPEB plans have some assumptions that are unique such as health care trend rates
- D. Lower mortality translates to a higher liability and cost









GASB 68 Reports

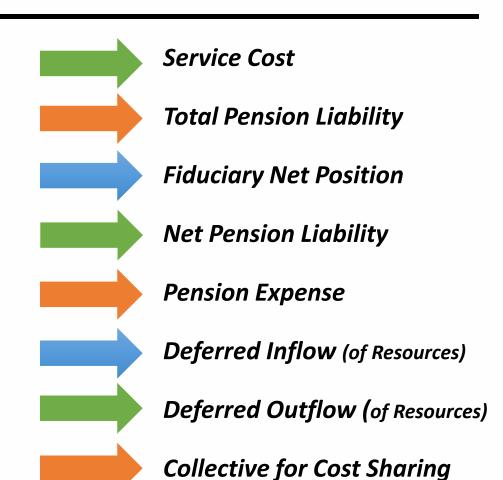
GASB 68 (and soon to be 75) Reports

- Comes after the Actuarial Valuation Report
 - Should be <u>updated</u> from the Valuation Date to the Measurement Date
- If it is a section of the Valuation Report then it is usually related to the prior period and the Valuation is for the subsequent period



Actuarial Concept To GASB 68 Term

- Normal Cost
- Accrued Actuarial Liability
- Plan Assets
- Unfunded AAL
- Pension Expense
- None
- None
- None







Funding Valuation Process

Present Value of Future Benefits (PVFB)





Total Pension Liability (TPL)





Future Normal Costs (NC)





Assets (MVA)

Net Pension Liability (NPL)

Member Portion

Employer Portion





Key Possible Differences from Valuation to GASB 68 Report

- Actuarial Cost Methodology (attribution)
 - Entry Age Normal (required by GASB 68) vs. other cost methodologies allowed (valuation)
- Market Value of Assets (required by GASB 68) vs.
 Actuarial (smoothed) Value of Assets (valuation)
- Date (measurement date for GASB 68 vs. valuation date)



Typical Updating Procedures

Yes - Item is Updated

- Restate asset values to measurement date (N/A for non-trusted plans)
- Record investment return for the year (N/A for nontrusted plans)
- Roll forward the liability for current year service cost
- Roll forward the liability for current year interest
- Roll forward the liability for payments and refunds



Typical Updating Procedures

No – Item is not updated

- Update census data
- Record actuarial gains and losses on liabilities
- Restate present value for AA muni rate as of the new measurement date
- Perform new cash flow projections for single blended discount rate

*If, in the actuary's judgment, the change in the municipal rate is significant, they may choose to restate PV as part of a roll-forward





Typical Updating Procedures

No, - item is not updated, but could force new valuation

- Impact of plan changes
- Large investment losses that could impact cross-over point for single blended discount rate
- Other events affecting single blended discount rate such as contribution holiday
- Significant assumption changes
- Significant movement in AA municipal index



Knowledge Check

Which of the following statements is (are) true? Select all that apply.

- A. The MVA is value at which assets could be traded on the market
- B. The AVA is the value of assets used for the actuarial valuation
- C. GASBS 68 requires the MVA vs. Actuarial (smoothed) value of assets (valuation)
- D. There is no specific requirement under GASBS 68 for valuing assets.





Report or Section

Usually gives you all of the information you need in the format in which it should go in the financial statements

- Balances (NPL, Deferrals)
- Disclosures
- RSI



Example GASB 68 Info.

A. Changes in the Net Pension Liability

	Total Pension Liability (TPL) (a)	Fiduciary Net Position (FNP) (b)	Net Pension Liability (NPL) (a) - (b)		
Balances at September 30, 2013*	\$16,659,415	\$14,134,719	\$2,524,696		
Changes for the year:					
Service cost	296,403		296,403		
Interest	1,265,285		1,265,285		
Differences between expected and actual experience	141,414	••	141,414		
Contributions - employer		355,014	(355,014)		
Contributions - employee					
Net investment income		1,604,126	(1,604,126)		
Benefit payments, including refunds of employee contributions	(666,319)	(666,319)			
Administrative expense		(22,024)	22,024		
Other	(511,569)		(511.569)		
Net changes	525,214	1,270,797	(745,583)		
alances at September 30, 2014**	\$17,184,629	\$15,405,516	\$1,779,113		

в.	Sensitivity of the Net
	Pension Liability to
	Changes in the Discount
	Rate

1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)	
\$4,150,128	\$1,779,113	(\$182,862)	

^{*} Entry Age Normal liabilities calculated using ages and service amounts as of January 1, 2014 are used to measure TPL as of September 30, 2013. The balances as of September 30, 2013 constitute measurements of the NPL for the fiscal year ending June 30, 2014.





^{**} Entry Age Normal liabilities calculated using ages and service amounts as of January 1, 2015 are used to measure TPL as of September 30, 2014. The balances as of September 30, 2014 constitute measurements of the NPL for the fiscal year ending June 30, 2015.

Example GASB 68 Info.

Pension Expense and Deferred Outflows/Inflows of Resources Related to Pensions

A. Pension expense for the year ended June 30, 2015		
Service cost	\$296,403	
Interest on TPL	1,265,285	
Employee contributions		
Administrative expenses	22,024	
Expected return on assets	(1,082,524)	
Expensed portion of current year period differences between expected		
and actual experience in TPL	35,352	
Expensed portion of current year period assumption changes	(127,893)	
Current year plan changes		
Expensed portion of current year period differences between projected		
and actual investment earnings	(104,322)	
Current year recognition of deferred inflows and outflows established in prior years		
Total expense		\$304,325

B. Deferred outflows/inflows of resources related to pensions

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	106,062	
Changes of assumptions		(383,676)
Net difference between projected and actual earnings on pension plan investments		(417.280)
Total	106,062	(800,956)





Example GASB 68 Info.

C. Projected recognition of deferred outflows/(inflows)

•		Amount Recognized Outstanding			Deferred Outflows/(Inflows) Recognized in Future Years					ars
	Year Established	Outstanding Balance at July 1, 2014	During FYE June 30,		2016	2017	2018	2019	2020	2021 and Thereafter
Fiscal Year Outflows										
Demographic	2015	\$141,414	\$35,352	\$106,062	\$35,354	\$35,354	\$35,354			
Total Outflows		\$141,414	\$35,352	\$106,062	\$35,354	\$35,354	\$35,354			
Fiscal Year Inflows										
Investment	2015	(\$521,602)	(\$104,322)	(\$417,280)	(\$104,320)	(\$104,320)	(\$104,320)	(\$104,320)		
Assumption Change	2015	(511,569)	(127,893)	(383,676)	(127,892)	(127,892)	(127,892)			
Total Inflows		(\$1,033,171)	(\$232,215)	(\$800,956)	(\$232,212)	(\$232,212)	(\$232,212)	(\$104,320)		
Total		(\$891,757)	(\$196,863)	(\$694,894)	(\$196,858)	(\$196,858)	(\$196,858)	(\$104,320)		



Knowledge Check

Which of the following is (are) true? Select all that apply:

- A. The TPL FNP = NPL
- B. Total OPEB Liability = Actuarial Accrued Liability
- C. The NOL = TOL FNP
- D. The NOL = TOL for unfunded plans
- E. Fiduciary Net Position = UAL









Questions?

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