LEOFF Plan 2 Retirement Board Actuarial Audit

July 23, 2014 Board Meeting

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Purpose & Scope

- **Purpose**: Review OSA's work and confirm that the results of the valuation and the most recent experience study are reasonable.
- **Scope:**
  - Full independent replication of June 30, 2013 Actuarial Valuation
  - Full independent review of Experience Study

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Bottom Line

- What you need to know
  - OSA's actuarial work is reasonable and appropriate
    - Good match on liabilities and contribution rates
    - Package of assumptions is reasonable
  - Recommendations
    - No changes needed to 2013 valuation
    - Recommendations for changes in methodology for future valuations and experience studies

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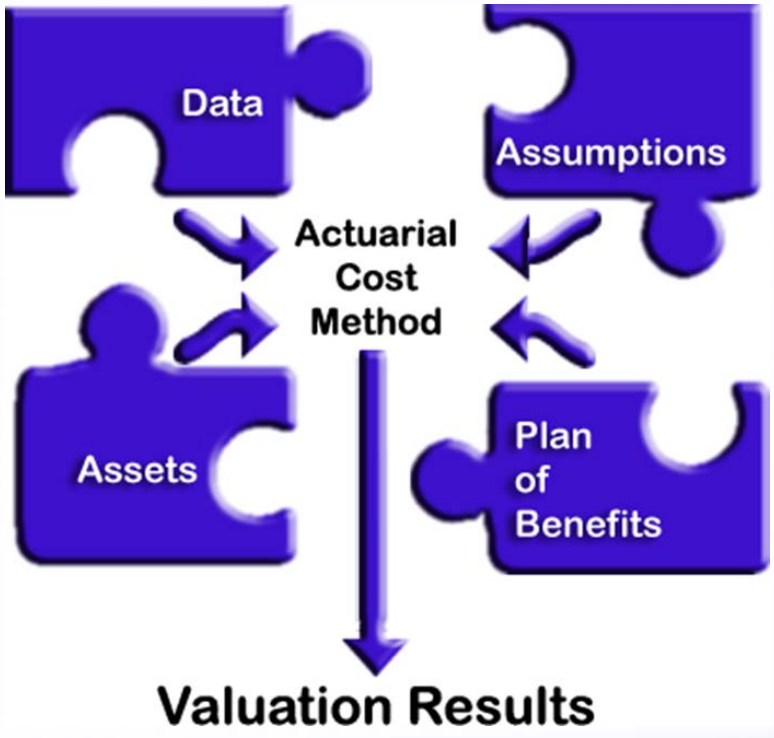
Actuarial Valuation

We will review the process starting with results and going backwards.



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Actuarial Liabilities

- Parallel valuation results - Good match by benefit type and group

(in $Millions)	LEOFF 2 Results		
	OSA	Milliman	O / M Ratio
Present Value All Future Benefits			
Retirement	$7,636.7	$7,616.2	100.3%
Termination	230.9	229.6	100.6%
Death	232.9	243.0	95.8%
Disability	350.9	346.1	101.4%
Total Actives	**$8,451.4**	**$8,434.9**	**100.2%**
Terminated Vested	$143.8	$141.2	101.8%
Terminated Not Vested	9.8	9.8	100.0%
Total Inactive, not in Payment	**$153.6**	**$151.0**	**101.7%**
Retired	$1,484.7	$1,489.2	99.7%
Disabled	123.1	120.7	102.0%
Survivor	68.8	67.7	101.6%
LOP Liability	32.2	32.2	100.0%
Total Annuitants	**$1,708.8**	**$1,709.8**	**99.9%**
Total Members	**$10,313.8**	**$10,295.7**	**100.2%**
Projected Unit Credit Accrued Liability			
Total Members	**$6,859.3**	**$6,841.6**	**100.3%**

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% of Pay Contribution Rates

- Parallel valuation results
  - Aggregate Normal Cost close
    - If used, members, employers and the State split the amount shown below
  - Entry Age Normal Cost Rate (EANC) close
    - Current contribution rates based on 100% of EANC split 50/30/20

(in $Millions)	LEOFF 2 Results OSA	Milliman	O / M Ratio
Potential Contribution Calculations			
a. Present Value All Future Benefits	$10,313.8	$10,295.7	100.2%
b. Actuarial Value of Assets	-7,862.3	-7,862.4	100.0%
c. Present Value Future Contributions	$2,451.5	$2,433.3	100.7%
d. Present Value of Future Salaries	$17,562.8	$17,473.4	100.5%
e. Aggregate Normal Cost = c / d	13.96%	13.93%	100.2%
Entry Age Normal Cost Rate	17.70%	17.71%	99.9%
50% (Potential Employee)	8.85%	8.86%	99.9%
30% (Potential Employer)	5.31%	5.31%	99.9%
20% (Potential State)	3.54%	3.54%	99.9%

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New Recommendations

- Entry age is being calculated using current age minus truncated service (service rounded down).
  - Milliman believes it would be better to round to the nearest year of service instead of truncating (rounding down).
  - This would cause a small, perhaps 2 - 3% decrease in the EANC.
  - No cause for concern. Small impact and conservative.
  - Milliman recommends changing method next year.
- Other changes concerning the methodology used to set assumptions
  - Do not cause material impacts
  - Detailed in audit report

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Recommendations from Prior Audit

- OSA chose to disclose funded ratios with Projected Unit Credit method for one more year.
  - Will change with implementation of GASB 67/68 which requires use of Entry Age method
- Comment related to WSIB asset balances not quite matching DRS balances continues to apply.
- Some changes regarding the valuation of OPEB not made; however, we do not consider these material to the overall valuation of the system benefits
- All other material recommendations implemented

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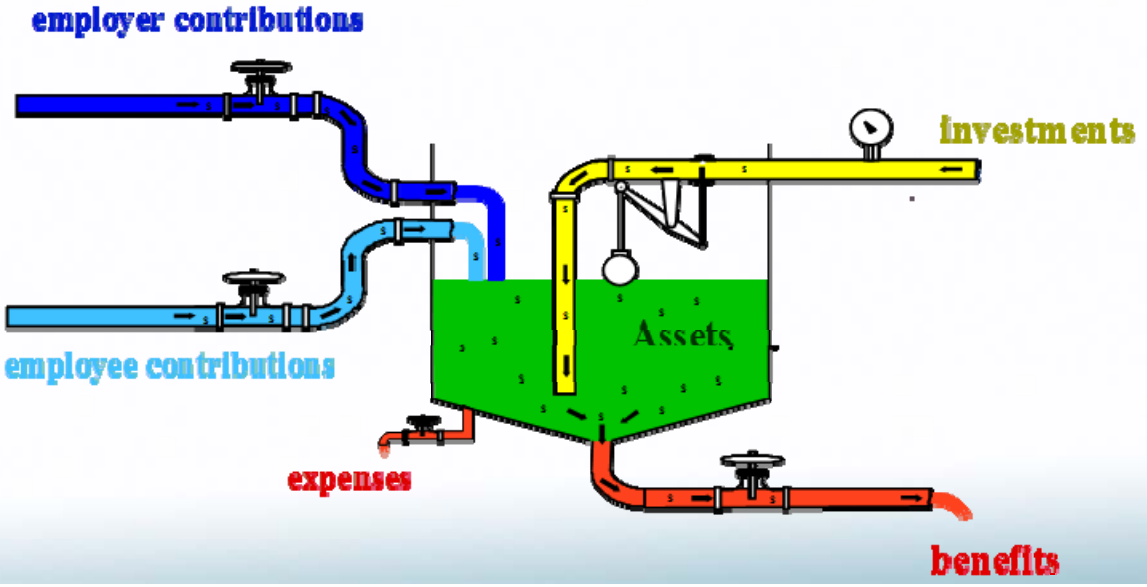
Aggregate Cost Method

- **<u>Aggregate Normal Cost</u>** equals the level % of projected pay to fund the difference between the present value of projected benefits and the actuarial value of assets.
  - All projected contributions go in one bucket, and are
  - spread evenly over the projected value of future salaries.
- Gains and losses cause the normal cost to go up and down.



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Aggregate Cost Method

- Does not calculate liability independent of the assets, however OSA uses Projected Unit Credit to accomplish that.
- All projected future contributions spread over projected salaries
  - Good for agency risk
  - Excellent for demographic matching
- Conference of Consulting Actuaries Draft White Paper classifies Aggregate as “Acceptable” if supplemental calculations disclose the Entry Age: Normal Cost, Liability and Amortization Period. If not, then “Acceptable with conditions.”

Entry Age Normal Cost (EANC)

- Based on the “Entry Age” Cost Method
- **<u>Entry Age Normal Cost</u>** is the level % of pay that will fund a member’s benefit if paid over his or her entire career.
  - Equals **expected** annual cost
  - Very stable
- Expected cost assumes all actuarial assumptions come true.

Experience different than expected will develop a positive or negative Unfunded Actuarial Accrued Liability which for most Systems using the Entry Age cost method causes their contributions to be different than the Normal Cost.

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LEOFF Plan 2 Funding Policy

- Currently paying fixed rates equal to 100% of the Entry Age Normal Cost
- Temporary funding policy through June 30, 2017
- Considerations
  - Increases short term rate stability (and possibly long term)
  - Provides some margin for adverse experience
  - Avoids contributions less than expected long term cost of benefits
  - Requires consistent monitoring to maintain proper funding since contributions do not automatically adjust to:
    - Experience different than assumed
    - Assumption changes

Membership Data

- Reviewed data supplied by DRS
  - Reviewed for reasonableness
  - Confirmed that all necessary information was included
- Reviewed data used in OSA's valuation
  - Performed independent data editing
    - Edits made for outliers and salary adjustments made for members with less than one year of service.
    - Compared to preliminary participant data summary posted on OSA's website.
  - Conclusion
    - Data used by OSA in valuation looks very good.

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Membership Data *(Continued)*

LEOFF 2	OSA	Milliman	Ratio OSA/Milliman
Active Members			
Total Number	16,687	16,687	100.0%
Total Salaries (millions)	$ 1,597	$ 1,597	100.0%
Average Age	43.5	43.5	100.0%
Average Service	14.6	14.6	100.0%
Average Projected Compensation	$ 95,694	$ 95,708	100.0%
Retirees and Survivors			
Total Number	2,782	2,782	100.0%
Average Monthly Pension	$ 3,151	$ 3,151	100.0%
Number of New Service Retirees	402	403	99.8%
Avg Monthly Pension for New Svc Retirees	$ 4,091	$ 4,082	100.2%
Terminated Members			
Total Number Vested	698	698	100.0%
Total Number Non-Vested	1,565	1,565	100.0%

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Actuarial Value of Assets

- Smoothing method
  - Layered recognition of gains and losses
    - length of recognition based on deviation from expectation (maximum of eight years)
    - Corridor of 30% more or less than market value of assets
  - Data provided by WSIB and DRS
    - Totals and breakdown by Plan taken from DRS data
    - Monthly cash flows taken from WSIB data.
    - End of Year total market values do not perfectly match between the two sources but are close.
- Independent calculation by Milliman based on sources of data
  - Both Milliman and OSA calculated $7.862B for LEOFF Plan 2
- Asset method and calculations are reasonable

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Experience Study

- Importance of reasonable assumptions
- Assumption types
  - Demographic assumptions
    - Set based largely on LEOFF recent experience
  - Economic Assumptions
    - Set based on global forecasts
    - Not studied this year. Comments are last in this presentation.

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Mortality

- Two parts
  - Base table: What is the probability today of living another year?
  - Improvement scale: People are living longer. How much longer?
- Base table
  - Milliman has reviewed OSA's work and had multiple discussions.
  - OSA found members with larger benefits are living longer. Along with excluding non-retired lives, no significant changes to results, but benefit weighted method will be incorporated into future studies.
- Improvement scale
  - OSA is recommending Scale BB.
  - Milliman believes this is reasonable.
  - Society of Actuaries February 2014, MP-2014 Report states:
    - Scale BB was developed using 1950 – 2007 Social Security data.
    - Scale BB was tested to be consistent with two large public plans.

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Future Mortality Improvement *(additional detail)*

- No one knows how rapidly mortality will improve
- There are many reasonable assumptions
- Further research shows
  - Compared to Milliman's calculations with Social Security Data Scale BB is generally:
    - lower than 1999 – 2009 improvement, and
    - higher than 1990 – 2000 improvement.
  - Scale BB is lower than CalPERS experience from 1997 - 2011
- Other Public Retirement Systems
  - Have generally not gone past Scale AA yet
  - Generational Mortality Projection
    - Half Scale AA generationally: Washington
    - Full Scale AA generationally: Oregon, Idaho, Seattle, Tacoma, Utah
    - Full Scale BB generationally: Wyoming
  - Differing Static Mortality Projections
    - CalPERS, CalSTRS, Montana PERS, Montana TRS, Colorado

(Private Plans generally use IRS mandated static projections for both IRS and accounting purposes.)

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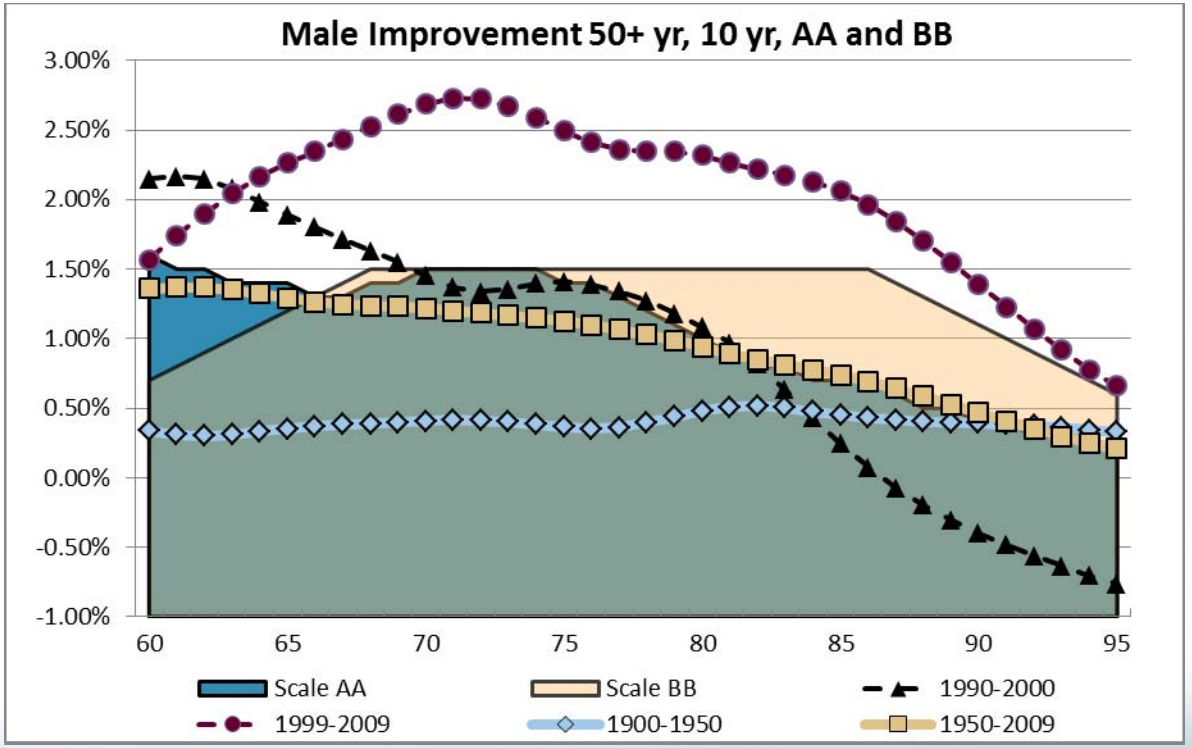
Male Comparison: Scales AA & BB to SSA Data*

- Over ages 60 to 95, Male Scale BB is:
  - Generally higher than the 59 year average 1950 – 2009.
  - Lower than the most recent 10 year average 1999 – 2009.
  - Higher than the 10 year average from 1990 – 2000.
- Note significant difference between two consecutive 10 year periods



*** Averages calculated by Milliman using Social Security Administration data.**

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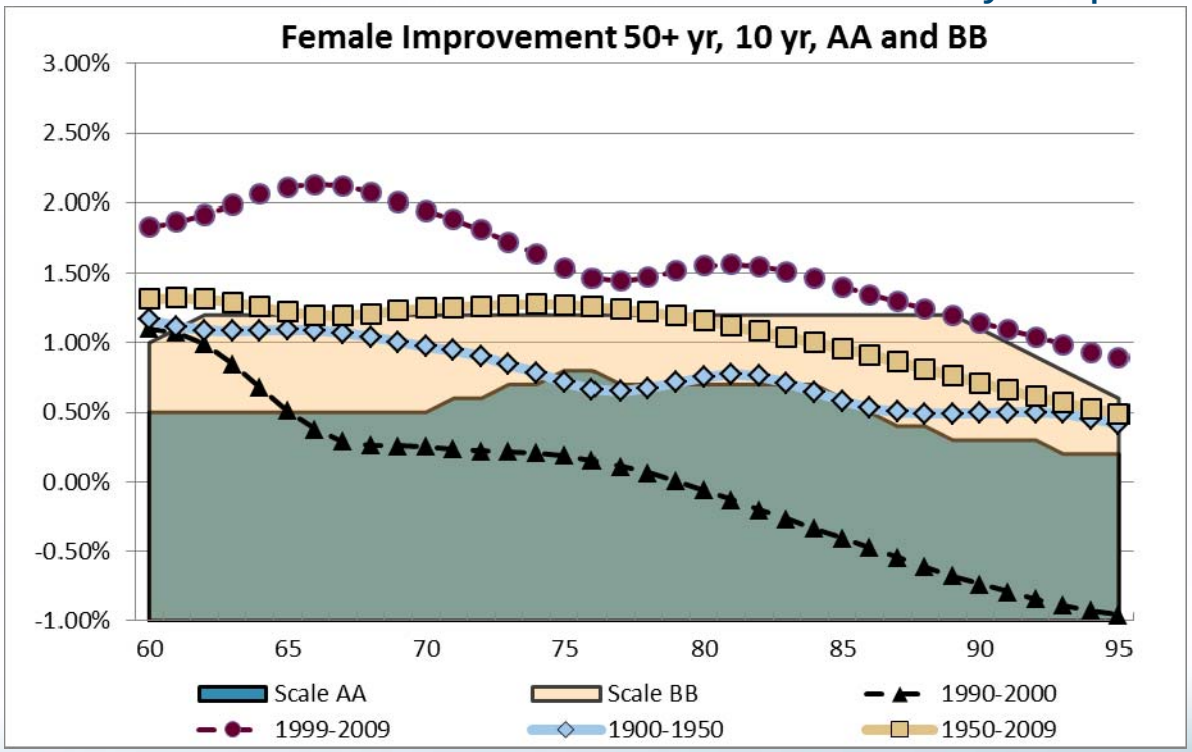
Female Comparison: Scales AA & BB to SSA Data*

- Over ages 60 to 95, Female Scale BB is:
  - Generally close to the 59 year average 1950 – 2009.
  - Lower than the most recent 10 year average 1999 – 2009.
  - Higher than the 10 year average from 1990 – 2000.
- Note significant difference between two consecutive 10 year periods



*** Averages calculated by Milliman using Social Security Administration data.**

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Salary Increases – Merit

- Actuaries use different approaches for developing this assumption.
- Subjectivity involved in determination of component for across-the-board productivity.
- Data from 1984 – 2009 used.
- Recommendations are reasonable.

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Service Retirement

- Lower actual rates than previously assumed for LEOFF 2 at nearly all ages.
- OSA recommended partial reflection of differences.
- Data from 1995 to 2012 used.
- Recommendations are reasonable.

Disability Retirement

- Only used more recent data as benefit structure changed in 2005
- Data from 2005 to 2012 used.
- As with retirements, history generally shows lower actual than previously expected for LEOFF 2.
- Recommended generally lower assumptions to better match history.
- Also separated non-duty from duty and considered catastrophic.
- Recommendations are reasonable.

Termination

- Agree with service based approach
- Agree with opinion that only minor changes required for LEOFF 2.
- Data from 1995 to 2010 used.
- Recommendations are reasonable.

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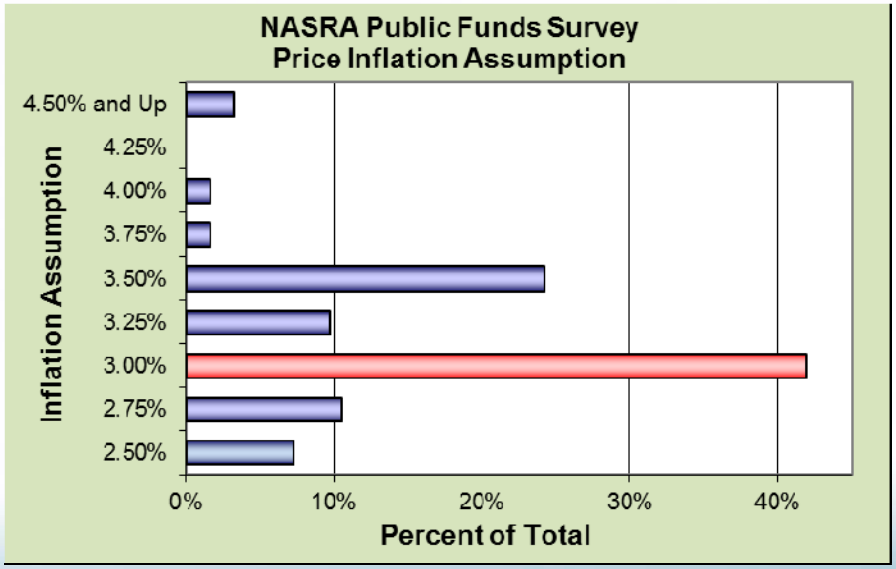
Other Assumptions

- Miscellaneous assumptions impacting LEOFF 2
  - Spouse age difference
  - Percentage taking annuities vs. refund of contributions
  - Percentage of Final Average Salary paid for Total Disability Benefit.
  - Minimum/Maximum/Default salaries and ages used for outliers and those with little service.
- Recommendations are reasonable.

Price Inflation and Wage Growth

- Price inflation assumption (3.00%) is reasonable
  - In line with historical averages.
  - Slightly higher than some forecasts.
  - Most common assumption for public systems.
- General wage growth (3.75%)
  - 0.75% higher than price inflation assumption
  - Reasonable



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Investment Return

- Modeled expected return
  - Net of expenses
  - Used WSIB's target asset allocation and Milliman's capital market assumptions
  - We projected a long-term median return of 7.57% per year
    - Based on 2013 environment – slightly lower expectations now
  - Other capital market assumptions could be used, including WSIB's from which OSA calculated a median 7.40% expectation.
- Revised actuarial standard may affect actuary's future recommendations
- Bottom Line
  - The 7.50% assumption is reasonable

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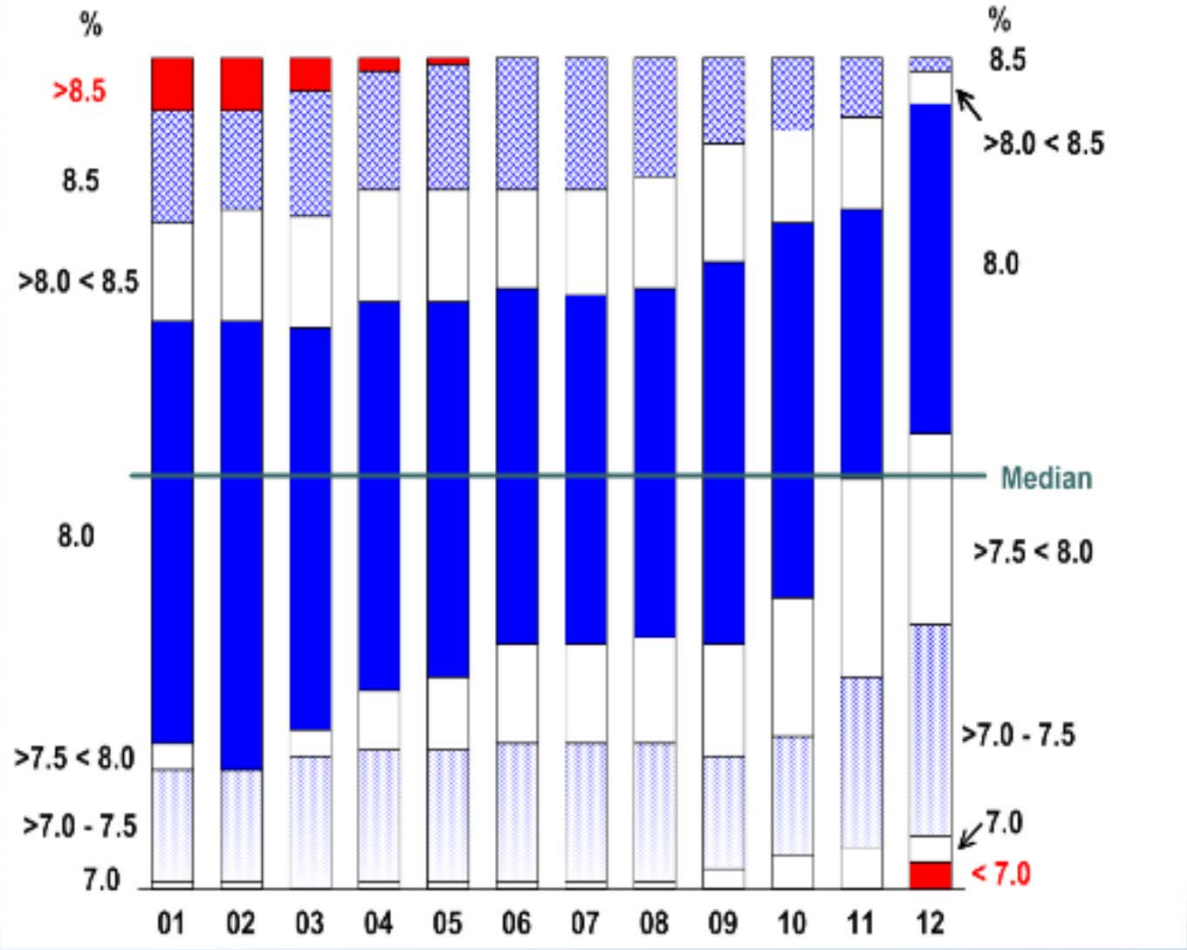
Decreasing Investment Return Assumptions

Median is currently 7.75% based on NASRA's Public Fund Survey*:



*** Results from November, 2013 Public Fund Survey shown above**

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Summary

- Recommendations
  - Modify calculation of entry age in future valuations
  - Implement some method changes pertaining to the setting of assumptions
  - Modifications to the valuation of OPEB benefits for future valuations (not material to the overall valuation of system benefits)

- Conclusion
  - The valuation accurately represents the actuarial condition of the System.
  - The assumptions and methods are reasonable.

Your Questions?

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This presentation is based on the data, methods, assumptions and plan provisions described in our actuarial audit report. The statements of reliance and limitations on the use of this material is reflected in the actuarial audit report and apply to this presentation.

These statements include reliance on data provided, on actuarial certification, and the purpose of the report.

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