Results of the Experience Study for:

- Washtenaw County Employees' Retirement System
- Washtenaw County Voluntary Employees' Beneficiary Association

Presented June 25, 2013 and updated for Board Decisions

Larry Langer
Dan Levin

Agenda

- Experience Review Process

- Assumptions

  – Demographic

  – Economic

- Funding Policy – Actuarial Cost Methods

- Transition

- Financial impact of proposed changes

- Next Steps

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Universal Retirement Funding Equation

Contributions + Investment Income = Benefits Paid + Expenses

Over the short term, contributions are determined by the actuarial valuation based upon estimated investment return, benefits and expenses using assumptions and methods recommended by the actuary and adopted by the Board. Over the long term, contributions are adjusted to reflect actual investment return, benefits and expenses.

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Actuarial Valuation Process

INPUT	ACTUARIAL PROJECTION MODEL	OUTPUT
• Membership Data • Benefit Provisions • Asset Data • Actuarial Assumptions • Funding Methodology		• Unfunded Accrued Liability • Funded Status • Employer Contribution

The actuarial assumptions and funding methodology are two of the inputs to the actuarial valuation process. They are typically reviewed as part of an experience study. This experience study is being conducted to determine the assumptions and methods that are the basis of the January 1, 2013 actuarial valuation.

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Actuarial Assumptions

- Demographic
  - Withdrawal
  - Disability Retirement
  - Service Retirement
  - Mortality
  - Percent Married
  - J&S Selection

- Economic
  - Inflation
  - Investment Return
  - Salary Increase
  - Payroll Growth

Assumptions are generally split into two broad categories – demographic assumptions and economic assumptions. Demographic assumptions are assumptions related to people, while economic assumptions relate to money.

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Assumption Setting

Setting Demographic Assumptions

- Based on this Experience Study

- Experience Review Completed for period ending December 31, 2012

- Compare Past Experience ("Actual") with Assumptions ("Expected")

- Determine Trend

- Make Judgment about Future

- Implement for January 1, 2013 Actuarial Valuation

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Rates of Retirement

Observation:
The experience summary shows that more actives retired than expected. Generally members retiring earlier results in higher costs.

Recommendation:
Increase the current retirement rates to more closely match that observed over the experience study period.

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Rates Of Separation For Members With Less Than Five Years Of Service

Observation:
The experience summary shows that fewer actives with less than five years of service terminated than expected. Generally, fewer members terminating results in higher costs.

Recommendation:
Decrease the current termination rates to more closely match that observed over the experience study period.

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Rates Of Separation For Members With More Than Five Years Of Service

Chart legend:
- Actual
- Expected under Current Assumptions
- Expected under Proposed Assumptions

X-axis categories: <30, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60+

Y-axis: 0 to 80

Observation: The experience summary shows that more actives with more than five years of service terminated than expected. Generally, more members terminating results in lower costs.

Recommendation: Increase the current termination rates to more closely match that observed over the experience study period.

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Mortality

- In general, the rates of mortality observed in America decline over time; each generation lives longer than preceding generations

- In accordance with this trend, an actuarial valuation should anticipate future rates of mortality

- Actuarial professional standards of practice recommend projecting these mortality improvements into the future
  - Term is "generational mortality"
  - Think of it as a mechanism for automatically implementing mortality improvements instead of waiting for the next experience review
  - Theoretically will not have to update mortality (as much) in future experience reviews

- Recommend updating the table from the 1994 GAM table with females set back one year to the RP2000 Blue Collar table, base year 2000, fully generational based on scale AA

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OPEB Specific Assumptions

- Percent of J&S annuitants electing coverage
  - Reduce males from 80% to 70%; maintain females at 40%

- Covered Spouse
  - 70% of future males and 50% of future females have covered spouse

- Aging ERF
  - Use Petetril curve

  Note that per capita claims and medical trend rates are determined each annual valuation.

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Commentary On Other Demographic Assumptions

- For Sheriffs, Buck determined that the active demographic assumptions used were not unreasonable; we recommend that they not be changed

- Similarly, we recommend that disability assumptions remain unchanged

- Loads on liabilities for effect of comp time banks are unchanged

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Setting Economic Assumptions

- Review Past Experience

- Review General Practice

- Make Judgment About Future

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Economic Assumptions

Current Assumptions

- Investment Rate of Return
- Inflation
- Real Rate of Return
- Individual Salary Increases

7.75% ERS
7.50% VEBA

3.0%   per annum

4.75% ERS
4.50% VEBA

11.9% to 4.8%

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Salary Increases

Observation: Salary increases were uniformly lower than expected over the review period. Generally, lower salary increases results in lower costs.

Recommendation:
Decrease the current rates of salary increases to more closely match that observed over the experience study period.

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Inflation

- Forecasts of inflation:

    - The 2012 OASDI Trustees Report projects that over the long-term (75 years), inflation will average between 1.8% and 3.8%

- Based on Buck's projection of inflation using a forward looking model, the median projected inflation over 30 years is 3.04%

- Based on the available data, we recommend an inflation assumption at 3.00%

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Investment Return

- On the next slide we have estimated returns over future periods of 1, 5, 10, 20 and 30 year periods based on the portfolio allocations of the ERS and the VEBA based on a forward looking model

- Standards of practice allow for the use of investment return assumption that falls within the 25th and 75th percentile of projected returns

- Use of an investment return assumption greater than the 50th percentile has less than a 50/50 chance of being achieved

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Investment Return

Expected Annualized Compound Returns over Period					
ERS	1 year	5 year	10 year	20 year	30 year
25th percentile	-0.46%	2.51%	4.19%	5.05%	5.44%
40th percentile	2.89%	4.62%	5.73%	6.19%	6.57%
50th percentile	5.04%	5.96%	6.83%	7.31%	7.62%
60th percentile	7.18%	6.55%	7.08%	7.59%	7.86%
75th percentile	9.97%	8.24%	8.27%	8.53%	8.77%
VEBA	1 year	5 year	10 year	20 year	30 year
25th percentile	-0.54%	2.88%	4.51%	5.39%	5.81%
40th percentile	3.39%	5.17%	6.27%	6.75%	7.05%
50th percentile	5.68%	6.30%	7.03%	7.50%	7.77%
60th percentile	8.57%	7.42%	7.81%	8.24%	8.43%
75th percentile	11.55%	9.40%	9.18%	9.32%	9.46%

The current ERS assumption of 7.75% is projected to have **_less_** than a 50% likelihood of occurring over the next 30 years.

The current VEBA assumption of 7.50% is projected to have **_more_** than a 50% likelihood of occurring over the next 30 years.

Amount shown are net of expenses.

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Investment Return

- Considerations
  - Over a 30 year period, the current assumption 7.50%. 25% investment return is projected to be achieved just over 50% of the time
  - Over the next 10 years, the current assumptions are projected to be achieved much less that 50% of the time; tolerance for that outcome should be considered
  - The return for ERS should be lowered by at least 25 bp; a lower return may be considered for the VEBA

- Recommendation
  - Lower the ERS return; consider lowering the VEBA return for more conservatism

- Alternative assumption packages are shown:
  - Current
  - 7.25%
  - 7.00%
  - Graded assumption of 6.00% grading to 7.75%

- Alternative investment return assumptions can be considered
  - Return assumptions lower than 7.00%
  - Graded assumptions with longer phase-in and or lower ultimate rate
    - For example, 5.00% grading up 25 bp each year to an ultimate of 7.50%

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Funding Policy – Actuarial Cost Methods

- Actuarial Cost Method
    - Methodology for systematically allocating costs over a career
    - Currently use entry age normal, which is appropriate for open plans
    - Given the plans are closed to new entrants, recommendation is to switch to aggregate; this treatment is similar to what is being used for Sheriffs

- Asset Valuation Method
    - Current method is biased in that it may not fairly track market over time
    - Recommendation is to reflect assumed investment return immediately instead of just realized returns to eliminate bias

- Amortization Method
    - Current period of 27 years is appropriate for open plans
    - Given the closed nature of the plan, goal is to be 100% funded at the point that the plans first have no active participants
    - 10 year period used for Sheriffs is a reasonable proxy

Implementation of all recommendations should be coordinated with POB proceeds

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Actuarial Transition

Summary of Actuarial Valuation Results as of December 31 2011			
	GRS	Buck replication	% change
ERS - General			
Actuarial Accrued Liability (AAL)	238,313,868	237,435,606	-0.37%
Actuarial Value of Assets (AVA)	155,077,722	155,077,722	0.00%
Unfunded Actuarial Accrued Liability (UAAL)	83,236,146	82,357,884	-1.06%
Normal Cost	11.64%	11.85%	1.82%
Employer Contribution	5,876,964	5,884,047	0.12%
ERS - Sheriff			
Present Value of Future Benefit (PVFB)	56,837,206	58,029,178	2.10%
Actuarial Value of Assets (AVA)	38,666,527	38,662,261	-0.01%
Unfunded Present Value of Future Benefit (UPVFB)	18,170,679	19,366,917	6.58%
Normal Cost	n/a	n/a	
Employer Contribution	2,778,683	2,962,301	6.61%
VEBA			
Actuarial Accrued Liability (AAL)	214,054,100	215,365,067	0.61%
Actuarial Value of Assets (AVA)	65,592,609	65,592,609	0.00%
Unfunded Actuarial Accrued Liability (UAAL)	148,461,491	149,772,458	0.88%
Normal Cost	7.47%	7.33%	-1.92%
Employer Contribution	13,603,135	13,372,493	-1.70%

Before we move on to the impact of assumption changes on the primary valuation results, as part of the transition, Buck attempted to replicate the GRS results for the December 31, 2011 actuarial valuation. Generally, we were able to replicate the GRS results within a reasonable tolerance. We did have some issues that we will discuss broader at the valuation presentation.

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Actuarial Impact of Recommended Changes

Summary of Actuarial Valuation Results as of December 31, 2012					
		All recommended changes and discount rate is:			
	Baseline	unchanged	Graded	7.00%	7.25%
ERS - General					
AAL	243,530,503	241,967,881	251,703,408	261,519,689	254,729,287
AVA	150,206,903	150,206,903	150,206,903	150,206,903	150,206,903
UAAL	93,323,600	91,760,978	101,496,505	111,312,786	104,522,384
Normal Cost	12.08%	11.73%	13.07%	13.56%	12.91%
ER Contribution	6,654,161	14,843,268	16,778,667	18,510,245	17,237,148
ERS - Sheriff					
PVFB	56,589,132	56,958,964	59,611,260	60,409,095	59,083,867
AVA	37,287,306	37,287,338	37,287,583	37,287,438	37,287,394
UPVFB	19,301,826	19,671,626	22,323,677	23,121,657	21,796,473
Normal Cost	n/a	n/a	n/a	n/a	n/a
ER Contribution	2,952,788	3,009,359	3,312,905	3,405,275	3,251,095
VEBA					
AAL	214,143,438	219,270,222	221,459,346	233,683,449	226,299,977
AVA	74,814,765	74,349,565	74,404,622	74,407,973	74,378,300
UAAL	139,328,673	144,920,657	147,054,724	159,275,476	151,921,677
Normal Cost	8.47%	8.39%	8.81%	9.46%	8.91%
ER Contribution	14,351,386	29,637,903	30,213,611	32,318,745	30,942,750

Observations:
- The choice of discount rate does impact the results materially
- The employer contribution increases significantly from the baseline due to the shortening of the amortization period due to closing the plans
- The recommended changes have more of an impact on the VEBA
- The impact of bonding the unfunded liability will materially impact these results

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Next Steps

- Discussion and adoption by Board

- Development of administrative factors if appropriate

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Actuarial Impact of Adopted Changes

Washtenaw County WERS and VEBA Summary of Actuarial Valuation Results as of December 31, 2012 Adopted at the Boards' June 25, 2013 Experience Study Meeting				
	WCERS General	WCERS Sheriffs	VEBA All	Total
Item				
a) Actuarial Accrued Liability (AAL)	254,729,287	59,083,867	219,270,222	533,083,376
b) Actuarial Value of Assets (AVA)	150,206,903	37,287,394	72,589,886	260,084,183
c) Unfunded Actuarial Accrued Liability (UAAL): a - b	104,522,384	21,796,473	146,680,336	272,999,193
d) Funded Ratio: b ÷ a	58.97%	63.11%	33.11%	48.79%
e) Market Value of Assets (MVA)*	175,329,894	43,523,931	77,871,202	296,725,027
f) Market based UAAL: a - e	79,399,393	15,559,936	141,399,020	236,358,349
g) Funded Ratio based on Market: e ÷ a	68.83%	73.66%	35.51%	55.66%
h) Employer Contribution				
Employer Normal Cost Rate	2.91%	N/A	8.13%	
Member Contribution Rate	10.00%	N/A	0.26%	
UAAL Contribution Rate	10.78%	N/A	11.26%	
Total Employer Contribution Rate	13.68%	N/A	19.38%	
Total Employer Contribution Dollar	7,751,575	3,251,095	15,041,211	26,043,881
i) Discount rate	7.25%	7.25%	7.50%	
j) Payroll increase assumption	4.00%	0.00%	4.00%	
k) Amortization period for 2014 contribution	27	10	26	
l) Number of years that Amortization Period decreases annually	2	1	2	

The Boards adopted the following changes at the June 25th meeting:
- All recommended assumption changes
- Reduction ERS investment return assumption from 7.75% to 7.25%
- Remove bias in asset valuation method
- Compromise amortization period was adopted for WCERS (general) and VEBA: instead of 10 year period, 27 and 26 year period maintained but will decrease by 2 years each valuation.

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Questions?

Thank you

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Introduction to ALM Analysis
What is Asset Liability Analysis?

- In an Asset Liability Model (ALM), actuarial valuations are projected into the future under different scenarios to identify cash contributions, funding levels and other financial information

- Scenarios reflect variability in:
  - Inflation
  - Treasury yields
  - Corporate bond yields
  - Asset class returns, volatility and correlation
  - Investment strategies

- Results show:
  - likelihood of events
    - o Funding levels below x%
    - o Annual or cumulative contribution above $x
  - range of possible outcomes
    - 5th, 25th, 50th, 75th, 95th percentile results

One Scenario

Many Scenarios

Results Summarized

Lines between regions
95th Percentile
75th Percentile
50th Percentile (Median)
25th Percentile
 5th Percentile

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Interpreting ALM Analysis
Understanding the Results

- 999 random scenarios evaluated (up to 5,000 scenarios can be run)
- 75% percentile means 75% of scenarios produced a result that is less than the threshold
- Good" versus "bad" results depend on the metric being evaluated
  - Contribution results above the 95% percentile are the worst case scenarios
  - Funded status results above the 95% percentile are the best case scenarios
- Smaller bars indicate less volatility
- The scenarios with results in the 50%-75% percentile for 2014 are not the same scenarios with results in the 50%-75% percentile for 2015
- The scenarios with results in the 50%-75% percentile for 2014 when looking at one metric (e.g. contribution results) are not the same scenarios with results in the 50%-75% percentile for 2014 when looking at another metric (e.g. funded status)

Client XYZ - Market Value Funded Ratio

Legend: 5%-25% percentile · 25%-50% percentile · 50%-75% percentile · 75%-95% percentile

Each bar summarizes the range of the outcomes for the financial metric for that year of the projection

- The blue section is the 750-950 highest outcomes
- The yellow section is the 500-750 highest outcomes
- The red section is the 250-500 highest outcomes
- The green section is the 50-250 highest outcomes

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