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Milwaukee County Employees Retirement System

5 Year Experience Review (2001 – 2005)

May 16, 2007

buckconsultants an ACS company

Agenda

- Overview
- Analysis of assumptions
  - Salary
  - Termination
  - Retirement
  - Backdrop utilization
  - Disability
  - Mortality
  - Investment return
  - Other
- Impact on contribution
- Recommended tables/assumptions

Overview

Actuarial assumptions are a key component of the annual actuarial valuation, the objectives of which are to:

- Determine the Employer Contribution
  - Benefits should be funded over members' working lifetime
- Check on Progress and Security of Promised Benefits
  - Compare assets to accrued liability
  - Unfunded accrued liability
  - Funded status
- Measure Net Actuarial Gain or (Loss)
  - Comparison of actual experience to expected

Overview

Actuarial assumptions are used to project member benefits

- Member Benefits
  - Current service
  - Projected service
  - Projected salary
- When and Why Members Terminate Employment
  - Retirement
  - Disability
  - Death in active service
  - Termination
- When Benefits Begin and End
  - Retirement
  - Disability
  - Death after retirement

Assumption Setting

Actuarial Assumptions

- Demographic
  - service retirement
  - disability
  - termination
  - death in active service
  - death after retirement
    - service retirement
    - disability retirement
- Economic
  - rate of return
  - annual pay increase
  - aggregate payroll growth

Assumption Setting

Setting Demographic Assumptions

- Based on 5-year review of actual experience
  (Last review performed in 2003)
- Experience review completed for period of January 1, 2001 through December 31, 2005
  - This experience review was accelerated because assumptions needed to be modified
- Compare past experience (“actual”) with assumptions (“expected”)
- Determine trend
- Make judgment about future

Demographic Assumptions

- When and why members leave active service
  - Important because when and why a member leaves active service determines the benefit amount
- Mortality assumption is important because it determines how long benefits will be paid

Service Retirement
General Employees who are Backdrop-Eligible

Age	Number of Retirements Actual	Number of Retirements Expected	Ratio of Actual to Expected	Actual Rate of Retirement
45-49	49	0	---	22 %
50-54	375	114	3.277	23
55	126	86	1.458	22
56	109	73	1.492	22
57	100	59	1.701	26
58	75	50	1.515	23
59	78	43	1.831	27
60	89	83	1.075	21
61	81	65	1.242	25
62	83	53	1.572	31
63	55	37	1.471	29
64	39	36	1.083	27
65	38	34	1.121	34
66	20	24	0.833	25
67	16	17	0.952	29
68	16	13	1.270	38
69	9	7	1.364	41
over 70	24	61	0.393	39
TOTAL	1,382	854	1.618	

Average Retirement Age: 57.3

Service Retirement
General Employees who are Backdrop-Eligible

Age	Exposures 2001-2005	Rates of Retirement: Current Assumption	Actual Experience 1998-2002	Actual Experience 2001-2005	Proposed Assumption
45-49	221	- %	N/A %	22.2 %	19.8 %
50-54	1,635	7	13.1	22.9	19.8
55	576	15	16.2	21.9	19.8
56	487	15	15.9	22.4	19.8
57	392	15	14.6	25.5	23.0
58	330	15	13.1	22.7	20.4
59	284	15	19.7	27.5	24.8
60	414	20	14.1	21.5	19.4
61	326	20	18.5	24.9	22.5
62	264	20	21.6	31.4	28.4
63	187	20	22.0	29.4	26.6
64	144	25	22.2	27.1	24.3
65	113	30	27.2	33.6	30.4
66	80	30	33.3	25.0	22.5
67	56	30	19.4	28.6	25.7
68	42	30	28.6	38.1	34.2
69	22	30	21.1	40.9	36.0
70+	61	100	N/A	39.3	100.0

Recommendation: **Adjust rates to reflect approximately 90% of 2001-2005 experience**

Backdrop Election
Overview of 2001 – 2006 experience

	Calendar Year						
	2001	2002	2003	2004	2005	2006	Total
Total number of retirements	179	289	217	687	132	135	1,639
In backdrop eligible group							
Eligible for backdrop at retirement	129	241	159	607	88	87	1,311
Less than 1 year from first eligibility	44	31	29	60	23	30	217
Not in backdrop eligible group	6	17	29	20	21	18	111
Total eligible for backdrop at retirement	129	241	159	607	88	87	1,311
Number electing backdrop	65	183	104	480	56	60	948
Percentage electing backdrop	50%	76%	65%	79%	64%	69%	**72%**
Total number of backdrop years elected	269.6	817.2	426.1	2,294.8	254.7	229.0	4,291.3
Average length of backdrop (years)	4.1	4.5	4.1	4.8	4.5	3.8	**4.5**
Total "available" backdrop years	510.5	1,533.3	766.7	2,775.3	346.4	295.7	6,227.9
Avg fraction of eligible years elected	53%	53%	56%	83%	74%	77%	**69%**

Backdrop Election: Backdrop Fraction

Backdrop fraction: Number of backdrop years elected, as a percentage of maximum backdrop period available.

	Calendar Year					
	2001	2002	2003	2004	2005	2006
Backdrop fraction						
95% to 100%	3	5	6	287	20	26
85% to 95%	1	2	1	36	8	12
75% to 85%	0	1	1	45	8	4
65% to 75%	24	67	43	24	6	4
55% to 65%	8	35	11	24	3	6
45% to 55%	11	31	17	17	3	3
35% to 45%	10	25	17	14	3	2
25% to 35%	5	10	4	14	2	2
15% to 25%	3	3	3	14	2	1
0% to 15%	0	4	1	5	1	0

Recommendation: **75% of eligible retirees are assumed to elect a backdrop; and 75% of those electing will choose the maximum available backdrop period; and 25% will choose half the maximum available backdrop period.**

Backdrop Election: Backdrop Fraction

Comparison of backdrop fraction for all backdrop retirees to backdrop fraction for retirees with backdrop lump sums of $100,000 or more

Average Fraction of Available Years Elected	Distribution of Fraction for All Elections	Distribution of Fraction for Lump Sums > $100,000
95% to 100%	37%	40%
85% to 95%	6%	9%
75% to 85%	6%	9%
65% to 75%	18%	15%
55% to 65%	9%	10%
45% to 55%	9%	9%
35% to 45%	7%	6%
25% to 35%	4%	2%
15% to 25%	3%	1%
0% to 15%	1%	0%

Backdrop Election
Active members in backdrop-eligible group at January 1, 2006

Eligible to retire at January 1, 2006

	Maximum Number of Backdrop Years if Retire Immediately						
Current Age	0 *	1-2	3-4	5-6	7-8	9+	Total
Under 55	87	64	35	5	-	-	191
55-60	74	117	77	38	20	8	334
Over 60	45	59	58	43	23	26	254
Total	206	240	170	86	43	34	779

* This group became eligible to retire after January 1, 2005, and cannot retire with backdrop benefits until they have been eligible to retire for at least one year.

Not eligible to retire at January 1, 2006

	Age First Eligible for Retirement				
Current Age	<53	53-54	55-57	58+	Total
Under 40	823	194	122	-	1,139
40-50	680	273	439	133	1,525
Over 50	49	143	316	408	916
Total	1,552	610	877	541	3,580

Service Retirement
Backdrop-Ineligible General Employees and Elected Officials

Currently, the number of general employees NOT eligible for the backdrop is relatively small

- Going forward, a larger percentage of general employees will not be eligible for the backdrop
- Valuation will require retirement assumption for these people
  - Recommend using current retirement rates for this membership segment
  - Future studies will eventually contain enough exposure such that rates can be developed from experience

Exposure for elected officials is small (40 over five years)

- Eight actual retirements compared to six expected
- Recommend using same retirement rates as for backdrop eligible general employees.

Service Retirement
Deputy Sheriffs

Age	Number of Retirements		Ratio of Actual to Expected	Actual Rate of Retirement
	Actual	Expected		
45-49	8	0	---	26 %
50-54	42	14	3.088	31
55	4	4	1.026	15
56	10	3	3.030	45
57	6	2	2.500	38
58	5	2	2.564	38
59	1	1	1.111	17
60	2	4	0.533	40
61	3	2	1.333	100
62	0	0	0.000	---
63	1	1	2.000	100
over 63	0	0	0.000	---
TOTAL	82	33	2.495	

Average Retirement Age: **53.6**
Recommendation: **Adjust rates to reflect actual pattern of retirements**

Disability
All Employees

Age	Number of Disabilities		Ratio of Actual to Expected
	Actual	Expected	
< 20	0	0	---
20 - 24	0	0	---
25 - 29	0	1	0.000
30 - 34	0	2	0.000
35 - 39	7	5	1.468
40 - 44	9	9	0.952
45 - 49	12	20	0.599
50 - 54	9	36	0.254
55 - 59	6	36	0.165
60 - 64	0	21	0.000
over 65	0	7	0.000
Total	43	137	0.314

Recommendation: **Decrease rates after age 44 to reflect experience**

Disability
Ordinary vs. Accidental

- Represented employees

	Ordinary	Accidental
Current Assumption	25%	75%
Experience	10%	90%
Recommended Assumption	10%	90%

- Non-represented employees

	Ordinary	Accidental
Current Assumption	95%	5%
Experience	100%	0%
Recommended Assumption	No Change	

Termination
General Employees – Less Than 5 Years of Service

Age	Number of Terminations		Ratio of Actual to Expected
	Actual	Expected	
< 20	0	0	---
20 - 24	92	51	1.803
25 - 29	206	127	1.619
30 - 34	169	124	1.362
35 - 39	130	89	1.467
40 - 44	97	86	1.124
45 - 49	96	67	1.434
50 - 54	75	46	1.648
55 - 59	40	16	2.451
60 - 64	1	0	---
over 65	1	0	---
Total	907	606	1.497

Recommendation: **Increase rates to reflect experience**

Termination
General Employees – 5 or More Years of Service

Age	Number of Terminations		Ratio of Actual to Expected
	Actual	Expected	
< 20	0	0	---
20 - 24	2	1	1.802
25 - 29	20	19	1.061
30 - 34	74	55	1.346
35 - 39	84	104	0.806
40 - 44	125	132	0.947
45 - 49	128	136	0.942
50 - 54	146	75	1.946
55 - 59	47	11	4.108
60 - 64	0	0	---
over 65	0	0	---
Total	626	534	1.173

Recommendation: **Adjust rates to reflect the pattern of experience**

Termination
Elected Officials – First 4 Years of Service

Age	Number of Terminations		Ratio of Actual to Expected
	Actual	Expected	
< 20	0	0	---
20 - 24	0	0	---
25 - 29	1	0	---
30 - 34	0	0	---
35 - 39	1	0	---
40 - 44	0	0	---
45 - 49	0	0	---
50 - 54	1	0	---
55 - 59	0	0	---
60 - 64	0	0	---
over 65	0	0	---
Total	3	0	---

Recommendation: **No change**

Termination
Elected Officials (4+ Years)

Age	Number of Terminations		Ratio of Actual to Expected
	Actual	Expected	
< 20	0	0.00	---
20 - 24	0	0.00	---
25 - 29	0	0.00	---
30 - 34	0	0.00	---
35 - 39	1	0.16	6.250
40 - 44	3	0.20	15.000
45 - 49	3	0.29	10.345
50 - 54	2	0.05	40.000
55 - 59	1	0.00	---
60 - 64	0	0.00	---
over 65	0	0.00	---
Total	10	0.70	14.286

Recommendation: **Current rates average 0.88%**
Increase rates to 2% at all ages

Termination
Deputy Sheriffs

Age	Number of Terminations		Ratio of Actual to Expected
	Actual	Expected	
< 20	0	0	---
20 - 24	10	7	1.531
25 - 29	45	29	1.554
30 - 34	35	33	1.077
35 - 39	18	15	1.187
40 - 44	8	5	1.581
45 - 49	11	4	3.107
50 - 54	7	1	7.216
55 - 59	0	0	---
60 - 64	0	0	---
over 65	0	0	---
Total	134	93	1.445

Recommendation: **Increase and adjust rates to better reflect experience**

Mortality for Healthy Retirees and Beneficiaries

Age	Number of Deaths		Ratio of Actual to Expected
	Actual	Expected	
55 - 59	32	12	2.678
60 - 64	51	31	1.627
65 - 69	83	64	1.307
70 - 74	142	114	1.242
75 - 79	205	176	1.162
80 - 84	230	214	1.074
85 - 89	184	198	0.928
90 - 94	151	130	1.164
95 - 99	60	45	1.330
over 100	7	5	1.556
Total	1,145	990	1.157

Recommendation: **UP94 Projected to 2010;**
Males set back 1 year; Females set forward 4 years

Death In Active Service

Age	Number of Deaths		Ratio of Actual to Expected
	Actual	Expected	
< 20	0	0	---
20 - 24	0	0	---
25 - 29	0	1	0.000
30 - 34	3	1	2.419
35 - 39	1	2	0.426
40 - 44	4	4	0.922
45 - 49	12	8	1.427
50 - 54	13	13	0.992
55 - 59	12	14	0.876
60 - 64	4	10	0.411
over 65	2	4	0.496
Total	51	58	0.886

Recommendation: **Change to 70% of the mortality table for healthy retirees**

Mortality for Disabled Retirees

Age	Number of Deaths		Ratio of Actual to Expected
	Actual	Expected	
< 40	0	0	---
40 - 44	0	0	---
45 - 49	0	0	---
50 - 54	0	0	---
55 - 59	5	5	0.921
60 - 64	4	6	0.622
65 - 69	6	6	0.958
70 - 74	5	7	0.710
75 - 79	12	7	1.657
80 - 84	9	4	2.093
85 - 89	1	1	0.685
90 - 94	1	0	---
95 - 99	0	0	---
over 100	0	0	---
Total	43	38	1.118

Recommendation: **No change**

Assumption Setting

Setting Economic Assumptions

- Review past experience
- Review general practice
- Make judgment about future

Current Economic Assumptions

Investment Return	
Inflation	3.0%
Real Return	5.0%
Total	8.0%
Salary Increase	
Inflation	3.0%
Productivity and Career Scale	1.5%
Total	4.5%
Payroll Growth	
Inflation	3.0%
Productivity	0.5%
Total	3.5%

Building Block Method

- Each economic assumption has 2 or 3 components (or building blocks)
- Inflation is one component, and is included in:
  - Investment return
  - Salary increase
- Investment return components
  - Inflation
  - Real Return
- Salary increase components
  - Inflation
  - Productivity
  - Career Scale

Selecting Inflation Assumption

- Review appropriate inflation data
  - Consumer Price Indices (CPI)
  - Implicit price deflator
  - Forecasts of inflation
  - Yields on government securities

- Single inflation rate or select and ultimate
  - Generally use single inflation rate for pension valuations
  - Inflation rate for Milwaukee County ERS is 3%

- Current inflation assumption of 3% falls within best-estimate range and is consistent with other public pension systems

Selecting Investment Return

- Review appropriate investment data
  - Current yields to maturity of fixed income securities
  - Forecasts of total returns for each asset class
  - Historical investment data
  - Historical plan performance

- *Building-Block Method* used to construct investment return range

Selecting Investment Return (cont'd)

- Building-Block Method
  - Expected future investment return of each asset class is the combination of the components:
    - Inflation
    - Real return for each asset class
  - Best-estimate ranges determined as:
    - Derive best-estimate range of expected future real returns
    - Determine average, weighted real return based on asset mix
    - Combine with expected inflation range
  - Example:

Asset Class	Weight	Real Return	Weighted Average
Fixed Income	43%	3% to 4%	1.3% to 1.75%
Equities	57%	5% to 7%	2.85% to 4%
Total	100%		4.15% to 5.75%
Inflation			3%
Best-Estimate Range			**7.15% to 8.75%**

Selecting Salary Increase Assumption

- Review available compensation data
  - Current compensation practice + anticipated changes
  - Current compensation distributions by age and/or service
  - Historical compensation increases in industry
  - Historical national wage and productivity increases
- Building-Block Method
  - Expected salary scale range combines best-estimate ranges for:
    - Inflation
    - Productivity growth
    - Merit scale
  - May utilize select and ultimate based on age and/or service

Investment Return

Plan Year Ended December 31	Return on Actuarial Assets *	Return on Market Assets *
2005	10.6 %	8.4 %
2004	7.7	13.0
2003	5.6	23.5
2002	-3.6	-5.8
2001	-0.9	-0.6
5-Year Average (geometric)	4.1	7.2

* As determined by Buck Consultants

Investment Return

- Investment return assumption is long-term return of fund
  - Net of investment expenses
- Consideration should be given to the following:
  - Investment Policy (asset allocation)
    - Approx 57% equity/43% fixed income at 12/31/2006
  - Capital market expectations
  - Current economic climate
  - Historical performance
- Recent survey data from NASRA and NCTR covering 124 public pension plans shows that 8% is the average and most common assumption

Recommendation: **Continued use of 8% investment return assumption**

Salary Increase
General Employees

Age	Actual Increase	Expected Increase	Proposed Increase
Under 25	10.7 %	6.2 %	10.0 %
25 - 29	7.1	5.7	7.0
30 - 34	4.9	5.3	5.0
35 - 39	4.9	4.9	5.0
40 - 44	4.3	4.6	4.3
45 - 49	3.7	4.4	3.7
50 - 54	3.2	4.0	3.2
55 - 59	3.3	3.9	3.0
60 - 64	2.7	3.8	3.0
over 65	4.8	3.8	3.0
Total	3.9 %	4.4 %	3.9 %

Recommendation: **Increase rates below age 30; decrease rates above age 40**

Salary Increase
Elected Officials

Age	Actual Increase	Expected Increase	Proposed Increase
Under 25	--- %	4.5 %	3.5 %
25 - 29	---	4.5	3.5
30 - 34	---	4.5	3.5
35 - 39	3.3	4.5	3.5
40 - 44	3.2	4.5	3.5
45 - 49	1.1	4.5	3.5
50 - 54	3.8	4.5	3.5
55 - 59	4.5	4.5	3.5
60 - 64	3.1	4.5	3.5
over 65	1.4	4.5	3.5
Total	2.8 %	4.5 %	3.5 %

Recommendation: **Flat assumption, 0.5% above assumed rate of inflation**

Salary Increase
Deputy Sheriffs

Age	Actual Increase	Expected Increase	Proposed Increase
Under 25	9.5 %	6.4 %	9.5 %
25 - 29	9.0	5.7	9.0
30 - 34	8.0	5.3	8.0
35 - 39	7.0	4.9	7.0
40 - 44	4.8	4.6	4.8
45 - 49	4.0	4.3	4.0
50 - 54	2.7	4.0	3.0
55 - 59	3.7	3.9	3.0
60 - 64	---	3.8	3.0
over 65	---	3.8	3.0
Total	6.1 %	4.9 %	6.1 %

Recommendation: **Increase rates below age 40; decrease rates above age 45**

Aggregate Payroll Growth

- Payroll growth assumption represents how the total payroll is expected to increase from one year to the next
- Impacts amortization components that are amortized as a level percent of payroll rather than level dollar
- Reviewed this assumption last year
  - Decreased from 5.5% to 3.5%
- Recommend continued use of 3.5% payroll growth assumption

Fiscal Effect of Assumption Changes
Effect on Actuarial Accrued Liability

Actuarial Accrued Liability at 1/1/2006 ($000) $1,912,010

		($ in thousands)
Economic		
• Investment Return	No Change	$ 0
• Salary Scale	Decrease	(26,700)
Demographic		
• Mortality	Decrease	$ (20,500)
• Termination	Increase	7,400
• Disability	Decrease	(800)
• Retirement/Backdrop	Increase	19,000
Net All Assumptions	Decrease	$ (28,260)

Actuarial Accrued Liability after changes ($000) $1,883,750

Fiscal Effect of Assumption Changes
Effect on Annual Contribution Requirements

2007 Budget Contribution ($000) $59,000

		($ in thousands)
Economic		
• Investment Return	No Change	$ 0
• Salary Scale	Decrease	(3,570)
Demographic		
• Mortality	Decrease	$ (2,000)
• Termination	Decrease	(1,900)
• Disability	Decrease	(950)
• Retirement/Backdrop	Increase	1,280
Net All Assumptions	Decrease	$ (5,700)

2007 Budget Contribution after changes ($000) $53,300