State of Alaska Retirement Systems
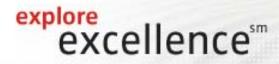
Presentation to the
Alaska Retirement Management Board

2005 Actuarial Experience
Analysis Results

explore
excellence[sm]

buckconsultants
an ACS company A C S

Agenda

- Purpose

- About Actuarial Assumptions

- Economic Assumptions

- Decremental Assumptions

- Other Demographic Assumptions

- Postemployment Healthcare Assumptions

- Impact of Proposed Changes on Plan Costs

- Questions

- Appendix

buckconsultants
an ACS company

Purpose

- To compare actual plan experience with actuarial assumptions used in the valuation

- Changes in assumptions are recommended if:
    - Sufficient data is available which shows a material difference between expected and actual experience
    - Future experience is likely to be different given recent trends

- Provide a better measurement of a pension plan's actuarial position

buckconsultants
an ACS company

About Actuarial Assumptions

- Used to forecast future events that impact amount and value of future benefit payments

- Should be a realistic "best guess" based on:
  - Past history
  - Future expectations

- Appropriately conservative given the Board's fiduciary responsibility

- Should be explicit - each assumption individually reasonable

- Setting of assumptions is a blend of art and science

buckconsultants
an ACS company A C S

Assumption Types

- Economic

- Decremental

- Other Demographic

- Postemployment Healthcare

buckconsultants
an ACS company

Frequency

- PERS and TRS last performed an experience analysis of assumptions in October 2000

- Based on statute, the Alaska Retirement Management Board policy is to perform this analysis at least every four years

- Most systems perform this type of analysis every 3-6 years

Economic Assumptions

Economic Adjustments

- Inflation should be consistently applied to:
  - Investment return
  - Salary increases
  - COLA's

- Real returns should reflect asset mix
  - The majority of the return is the result of asset allocation

- Assumptions should
  - Reflect benefit payment period (i.e., long-term over 40-50 years)
  - Consider recent trends
  - Consider future expectations

buckconsultants
an ACS company

Understanding Economic Assumptions

Investment Return Rate
- Inflation Rate
= Real Rate of Return

Investment Return Rate determines how much money we think we'll have.

Inflation Rate tells us what we think it will buy.

Real Return is the reason to pre-fund benefit payments.

buckconsultants
an ACS company

Inflation Experience
(1957 - 2006)

Ten-Year Period Ending	Actual Annual Rate
01/01/1966	1.78%
01/01/1976	5.80%
01/01/1986	6.77%
01/01/1996	3.62%
01/01/2006	2.60%
50-Year Mean	4.11%
Assumed Rate	3.50%

No change recommended.

buckconsultants
an ACS company

Development of Investment Return Assumption

- Building Block Method used

Asset Class	Real Rate of Return	Current Policy (Resolution 2006-11)	
		Allocation %	Real Return
Cash & Short-Term	1.00%	0%	0.00%
Fixed Income			
Domestic	2.50%	20%	0.50%
High Yield	3.25%	2%	0.07%
International	2.00%	2%	0.04%
Equity			
U.S. Large Cap	5.75%	30%	1.73%
U.S. Small Cap	6.75%	6%	0.41%
International	6.25%	14%	0.88%
Private Equity	8.00%	7%	0.56%
Emerging Markets	7.00%	2%	0.14%
Other (Limited Partnership)	7.00%	3%	0.21%
Real Estate	4.25%	10%	0.43%
Absolute	4.50%	4%	0.18%
Total		**100.0%**	**5.15%**
Inflation			3.50%
Gross Return			8.65%
Administrative Expenses			(0.06)%
Conservatism			(0.34)%
Assumed Rate of Return			**8.25%**

No change recommended.

buckconsultants
an ACS company

Summary of Economic Assumptions

	TRS*	PERS Others*	PERS Peace Officer/ Firefighter	New Assumptions
		Current Assumptions		
Investment Return	8.25%	8.25%	8.25%	8.25%
Inflation	3.50%	3.50%	3.50%	3.50%
Real Rate of Return	4.75%	4.75%	4.75%	4.75%
Interest on Contributions	4.50%	4.50%	4.50%	4.50%
Salary Increases				
- Inflation	3.50%	3.50%	3.50%	3.50%
- Productivity	0.50%	0.50%	1.00%	0.50%
- Economic Portion	4.00%	4.00%	4.50%	4.00%

No changes recommended.

buckconsultants
an ACS company A C S
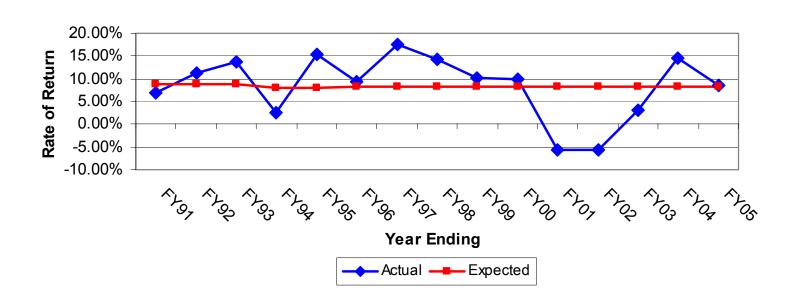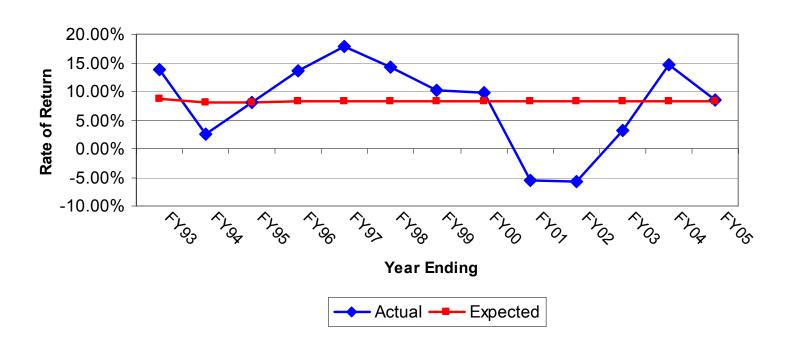
Historical Summary of Investment Returns

TRS
Historical Summary of Investment Returns

Historical Summary of Investment Returns (cont'd)

PERS
Historical Summary of Investment Returns

buckconsultants
an ACS company

Decremental Assumptions

Decremental Adjustments

- Used to quantify the amount of expected future benefit payments

- Generally should follow experience with some conservatism (i.e. margin)

- Consider previous experience analysis results

- Watch trends (e.g., improving mortality)

- There is no one right set of assumptions

- Factor in special events during investigation period (e.g., early retirement window, change in benefit eligibility, negotiated salary increases)

- Actuarial mathematics is a science, but its application in the real world is an art!

buckconsultants
an ACS company

Summary of Assumption Recommendations

Preretirement Healthy Mortality

	Current	Proposed
TRS	Healthy mortality based on the sex distinct 1994 GAM Table, 1994 Base Year <u>Male</u> <u>Female</u> Actual number: 20 25 Expected number: 33 38	Male mortality rates decreased by 40% Female mortality rates decreased by 45%
PERS Others	Healthy mortality based on the sex distinct 1994 GAM Table, 1994 Base Year <u>Male</u> <u>Female</u> Actual number: 65 47 Expected number: 148 102	Male mortality rates decreased by 58% Female mortality rates decreased by 58%
PERS Peace Officer/ Firefighter	Healthy mortality based on the sex distinct 1994 GAM Table, 1994 Base Year <u>Male</u> <u>Female</u> Actual number: 4 1 Expected number: 17 2	No changes

See Experience Analysis Report:

   - Graphs on pages 6-11
   - Tables on pages 59-60, 65-66, and 73-74

buckconsultants
an ACS company A C S

Summary of Assumption Recommendations

Postretirement Healthy Mortality

	Current	**Proposed**
TRS	Healthy mortality based on the sex distinct 1994 GAM Table, 1994 Base Year <u>Male</u> <u>Female</u> Actual number: 201 276 Expected number: 264 268	Male mortality rates setback 3 years Female mortality rates setback 1 year
PERS Others	Healthy mortality based on the sex distinct 1994 GAM Table, 1994 Base Year <u>Male</u> <u>Female</u> Actual number: 707 648 Expected number: 683 558	No changes
PERS Peace Officer/ Firefighter	Healthy mortality based on the sex distinct 1994 GAM Table, 1994 Base Year <u>Male</u> <u>Female</u> Actual number: 68 14 Expected number: 74 8	No changes

We recommend no changes to postretirement disability mortality.

See Experience Analysis Report:

- Graphs on pages 6-11
- Tables on page 59-60, 67-68 and 75-76

buckconsultants
an ACS company A C S

Summary of Assumption Recommendations

Select Withdrawal

	Current			Proposed
TRS	Select rates in first 8 years graded down from 10% to 5% Actual number: Male 714, Female 1,468 Expected number: Male 408, Female 955			Increased male rates by 50% Increased female rates by 35%
PERS Others	Select rates in first 5 years graded down with different scales pre / post age 35 Actual number: Male 3,279, Female 5,390 Expected number: Male 3,178, Female 4,614			No changes to male rates Increased both pre / post age 35 female rates by 5%
PERS Peace Officer/Firefighter	Select rates in first 5 years graded down from 12% to 6% Actual number: Male 238, Female 48 Expected number: Male 226, Female 41			Decreased male rates by 5% Increased female rates by 5%

See Experience Analysis Report:

- Graphs on pages 17-22
- Tables on pages 61, 69 and 77

buckconsultants
an ACS company A C S

Summary of Assumption Recommendations

Ultimate Withdrawal

	Current			Proposed
TRS	Approximately 4% after first 8 years of service Actual number: Expected number:	**Male** 204 144	**Female** 359 287	Increased male rates by 25% Increased female rates by 10%
PERS Others	Age based rates after first 5 years of service Actual number: Expected number:	**Male** 1,517 1,262	**Female** 2,391 1,717	Increased male rates by 10% Increased female rates by 25%
PERS Peace Officer/Firefighter	Approximately 3% after first 5 years of service Actual number: Expected number:	**Male** 208 116	**Female** 82 23	Increased male rates by 60% Increased female rates by 100%

See Experience Analysis Report:

  - Graphs on pages 17-22
  - Tables on pages 61, 69 and 77

buckconsultants
an ACS company

Summary of Assumption Recommendations

Disability

	Current			Proposed
TRS	Graduated rates combined for males and females Male Female Actual number: 13 20 Expected number: 12 24			No change for male rates Decreased rates for females by 10%
PERS Others	Graduated rates combined for males and females Male Female Actual number: 66 70 Expected number: 51 63			Increased rates for males by 15% Increased rates for females by 5%
PERS Peace Officer/Firefighter	Graduated rates combined for males and females Male Female Actual number: 21 1 Expected number: 20 4			No changes for all members

See Experience Analysis Report:

- Graphs on pages 31-33
- Tables on pages 63, 72 and 79

buckconsultants
an ACS company

Summary of Assumption Recommendations

Retirement

	Current	**Proposed**
TRS	Various rates, ages 50 to 66.	Separate rates for employees eligible for reduced versus unreduced retirement. Generally, rates increased for reduced and unreduced retirement with unreduced retirement rates higher than those for reduced retirement. Different rates for males and females.

	Male	Female
Actual Reduced:	84	207
Expected Reduced:	42	96
Actual Unreduced:	480	774
Expected Unreduced:	238	371

See Experience Analysis Report:

- Graphs on pages 24-25
- Table on page 78

buckconsultants
an ACS company

Summary of Assumption Recommendations

Retirement Cont'd

`	Current	Proposed
PERS Others	Various rates, ages 50 to 68. <u>Male</u> <u>Female</u> Actual Reduced: 472 616 Expected Reduced: 403 450 Actual Unreduced: 1,258 1,299 Expected Unreduced: 656 763	Separate rates for employees eligible for reduced versus unreduced retirement. Generally, rates increased for reduced and unreduced retirement with unreduced retirement rates higher than those for reduced retirement. Different rates for males and females.

See Experience Analysis Report:

   - Graphs on pages 26-27
   - Table on page 70

buckconsultants
an ACS company

Summary of Assumption Recommendations

Retirement Cont'd

	Current	Proposed
PERS Peace Officer/Firefighter	Various rates, ages 50 to 65.	Separate rates for employees eligible for reduced versus unreduced retirement. Generally, rates increased for reduced and unreduced retirement with unreduced retirement rates higher than those for reduced retirement. Different rates for males and females.

	Male	Female
Actual Reduced:	78	14
Expected Reduced:	51	13
Actual Unreduced:	345	57
Expected Unreduced:	123	19

See Experience Analysis Report:

- Graphs on pages 28-29
- Table on page 62

buckconsultants
an ACS company

Summary of Assumption Recommendations

Salary Scale

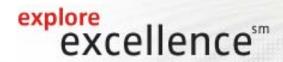|	Current	Proposed
TRS	5.5% for the first 5 years of service and 4% thereafter	6% for the first 6 years of service grading down to 4% between 7 and 15 years and then 4% thereafter
PERS Others	5.5% for the first 10 years of service and 4% thereafter	5-year select period and age based rates grading down from 5% to 4%
PERS Peace Officer/Firefighter	6% for the first 5 years of service and 4.5% thereafter	6.5% for the first 6 years of service and then 4.5% thereafter

See Experience Analysis Report:
- Graphs on pages 44-46
- Tables on pages 64, 71 and 80

Other Demographic Assumptions

Other Demographic Assumptions

		Current		Proposed	
		Male	**Female**	**Male**	**Female**
Percent Married*	TRS	N/A	N/A	85%	75%
	PERS Others	N/A	N/A	80%	70%
	PERS Peace Officer/Firefighter	N/A	N/A	80%	70%
Age Difference	TRS	4 years older	4 years younger	3 years older	3 years younger
	PERS Others	4 years older	4 years younger	3 years older	3 years younger
	PERS Peace Officer/Firefighter	4 years older	4 years younger	3 years older	3 years younger

Marital status currently determined by the actual marriage status on the valuation data

See Experience Analysis Report:
Pages 35-39

buckconsultants
an ACS company A C S

Other Demographic Assumptions (cont'd)

		Current	Proposed
Alaska Residency	TRS	65%	60%
	PERS Others	68%	60%
	PERS Peace Officer/Firefighter	68%	60%
Service Earned During the Year for Part-time Employees	TRS	0.55	0.55
	PERS Others	0.60	0.65
	PERS Peace Officer/Firefighter	0.60	1.00

See Experience Analysis Report:
Pages 35-39

buckconsultants
an ACS company

Other Demographic Assumptions (cont'd)

		Current		Proposed	
		Death	**Disability**	**Death**	**Disability**
Occupational vs. Nonoccupational Death and Disability	TRS	0%	N/A	0%	N/A
	PERS Others	35%	35%	50%	50%
	PERS Peace Officer/Firefighter	85%	85%	75%	75%

See Experience Analysis Report:
Pages 35-39

buckconsultants
an ACS company

Other Demographic Assumptions (cont'd)

- Number of Dependent Children
  - Currently, we assume all married employees have a dependent child forever.
  - We propose that all married employees have 2 dependent children from age 25 through age 45. At 46, no children.

- Number of Unused Sick Days (TRS only)
  - Currently, we assume that a member will receive 4.7 days for each year of service. This effectively increases the liability by 2.73%.
  - Due to a lack of available data, we do not recommend a change to this assumption.
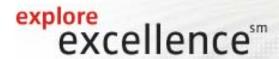
See Experience Analysis Report:
Pages 35-39

buckconsultants
an ACS company

Other Demographic Assumptions (cont'd)

Actuarial Cost Methods

- Current Method – Projected Unit Credit
  - Benefits are funded as they accrue resulting in an increasing normal cost
  - Initial unfunded liability and future gains/losses amortized over a fixed 25 years as a level percentage of payroll

- Proposed Method – Entry Age Normal
  - Normal cost is determined as a level percentage of pay per participant over their entire career, resulting in a more stable normal cost
  - The unfunded liability is adjusted by actuarial gains/losses each year and is amortized over a specified period (such as 25 years) *without an increasing payroll*
  - Most common method used by public systems. 72% of state retirement systems use this method according to two recent reputable surveys

- Entry Age Normal Method is recommended for all plans

buckconsultants
an ACS company

Postemployment Healthcare

explore
excellence^{sm}

buckconsultants
an ACS company
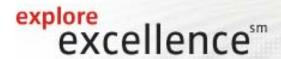
OPEB Healthcare Cost Adjustments

- Used to quantify the amount of expected future benefit payments

- Blend of past experience and expected future costs

- Medical and prescription costs are analyzed separately

- Consider impact of Medicare
  - Costs are different for pre-65 and post-65 populations
  - For medical costs, retirees eligible for Medicare Parts A and B will cost less than retirees eligible for Part B only
  - Medicare Part D impacts the prescription costs for the Post-65 population

- Consider impact of aging (a retiree age 60 will cost more than a retiree age 50)

- Medical inflation (trend) is higher than general inflation

buckconsultants
an ACS company

Healthcare Costs with Respect to Medicare

	Current	Proposed
Medical Pre-65	$8,328	$8,497
Medical Post-65 – Medicare Part B Only	1,507	1,732
Medical Post-65 – Medicare Part A and B	1,507	866
Prescription Drug Pre-65	1,936	2,113
Prescription Drug Impact of Medicare Part D	414	452
Prescription Drug Post-65	1,522	1,661

buckconsultants
an ACS company

Cost Impact of Proposed Changes in Actuarial Assumptions for PERS Total

($ thousands)

	PERS Total		TRS Total	
	Current	**Proposed**	**Current**	**Proposed**
Actuarial Accrued Liability	$ 12,844,841	$ 13,997,716	$ 6,498,556	$ 7,031,639
Actuarial Value of Assets	8,442,919	8,442,919	3,958,939	3,958,939
Unfunded Liability	$ 4,401,922	$ 5,554,797	$ 2,539,617	$ 3,072,700
Funded Ratio	66%	60%	61%	56%
Employer Normal Cost Rate	14.48%	15.13%	12.56%	9.98%
Past Service Cost Rate	18.03%	31.51%	29.70%	49.58%
Employer Contribution Rate	32.51%	46.64%	42.26%	59.56%

buckconsultants
an ACS company

Cost Impact of Proposed Changes in Actuarial Assumptions

($ thousands)

	PERS Others		PERS Peace Officer/Firefighter		PERS Total	
	Current	Proposed	Current	Proposed	Current	Proposed
Actuarial Accrued Liability	$10,959,434	$12,111,209	$ 1,885,407	$ 1,886,507	$12,844,841	$13,997,716
Actuarial Value of Assets*	7,203,640	7,305,046	1,239,279	1,137,873	8,442,919	8,442,919
Unfunded Liability	$ 3,755,794	$ 4,806,163	$ 646,128	$ 748,634	$ 4,401,922	$ 5,554,797
Funded Ratio	66%	60%	66%	60%	66%	60%
Employer Normal Cost Rate	14.58%	15.40%	13.79%	13.07%	14.48%	15.13%
Past Service Cost Rate	17.38%	30.79%	23.01%	37.09%	18.03%	31.51%
Employer Contribution Rate	31.96%	46.19%	36.80%	50.16%	32.51%	46.64%

Assets are allocated based on accrued liability. Therefore, allocated assets changed with the new assumptions.

Cost Impact of Proposed Changes in Actuarial Assumptions

	Employer Contribution Rate			
	Current Assumptions and Methods	**Proposed Assumptions**	**Proposed Assumptions and EAN Funding Method**	**Proposed Assumptions, Method EAN, and Amortization Method**
PERS Peace Officer / Firefighter	36.80%	36.84%	39.46%	50.16%
PERS Others	31.96%	36.23%	37.24%	46.19%
PERS Total	32.51%	36.29%	37.49%	46.64%
TRS	42.26%	46.45%	45.32%	59.56%

buckconsultants
an ACS company A C S

2005 Experience Analysis
Normal Cost Rates by Member Group

	Normal Cost Rate	
Group	Current Assumptions	Proposed Assumptions
TRS	21.25%	18.67%
PERS Others	21.33%	22.15%
PERS Peace Officer/Firefighter	21.29%	20.57%

buckconsultants
an ACS company

Questions?