

Oklahoma State Pension Commission Retirement System Summary of Actuarial Reports

February 2007

Christopher Levell, ASA, CFA
Partner



"Advancing Your Investments"

NEW ENGLAND PENSION CONSULTANTS

One Main Street, Cambridge, Massachusetts 02142
TEL: (617) 374-1300; FAX: (617) 374-1313
www.nepc.com



System Characteristics and Assumptions

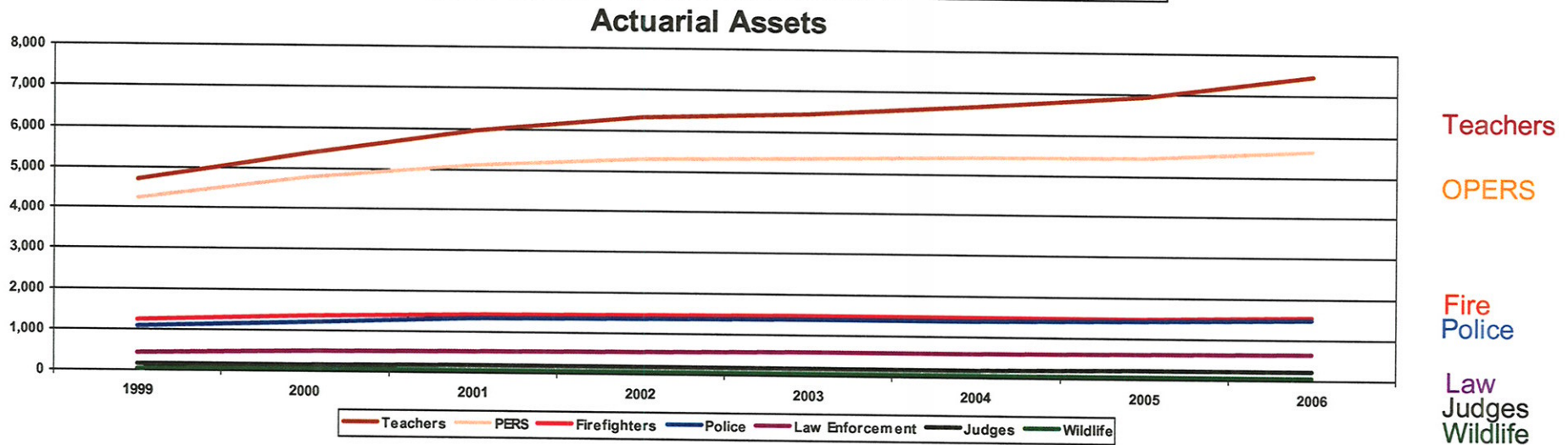
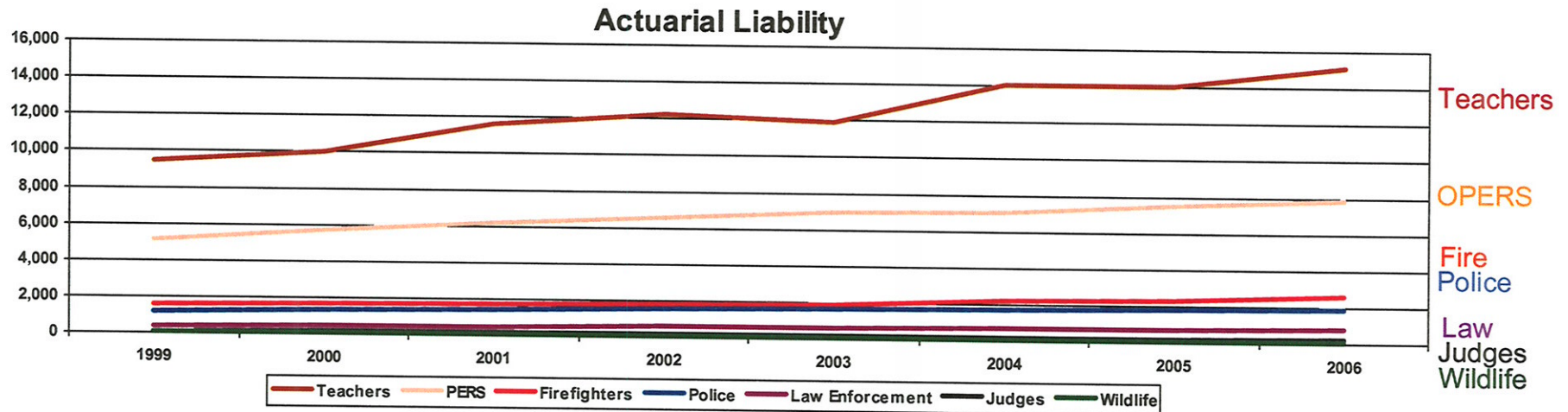
- Retirement System comprises seven plans (Teachers, OPERS, Firefighters, Police, Law Enforcement, Judges, and Wildlife)
- Based on July 1, 2006 Actuarial Valuation Reports from Actuaries¹ and System Financial Statements
 - All plans employ similar funding method – Entry Age Normal
 - Entry age normal is a conservative funding schedule
 - All plans employ similar asset valuation method (smoothed value)
 - Investment return assumptions range from 7.25% to 8.0%
 - Public Fund assumed investment return median is 8.1%²
 - All plans have in place long term schedules (15 years and longer) to fully fund

1. Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company.

2. Greenwich Associates survey, 2006



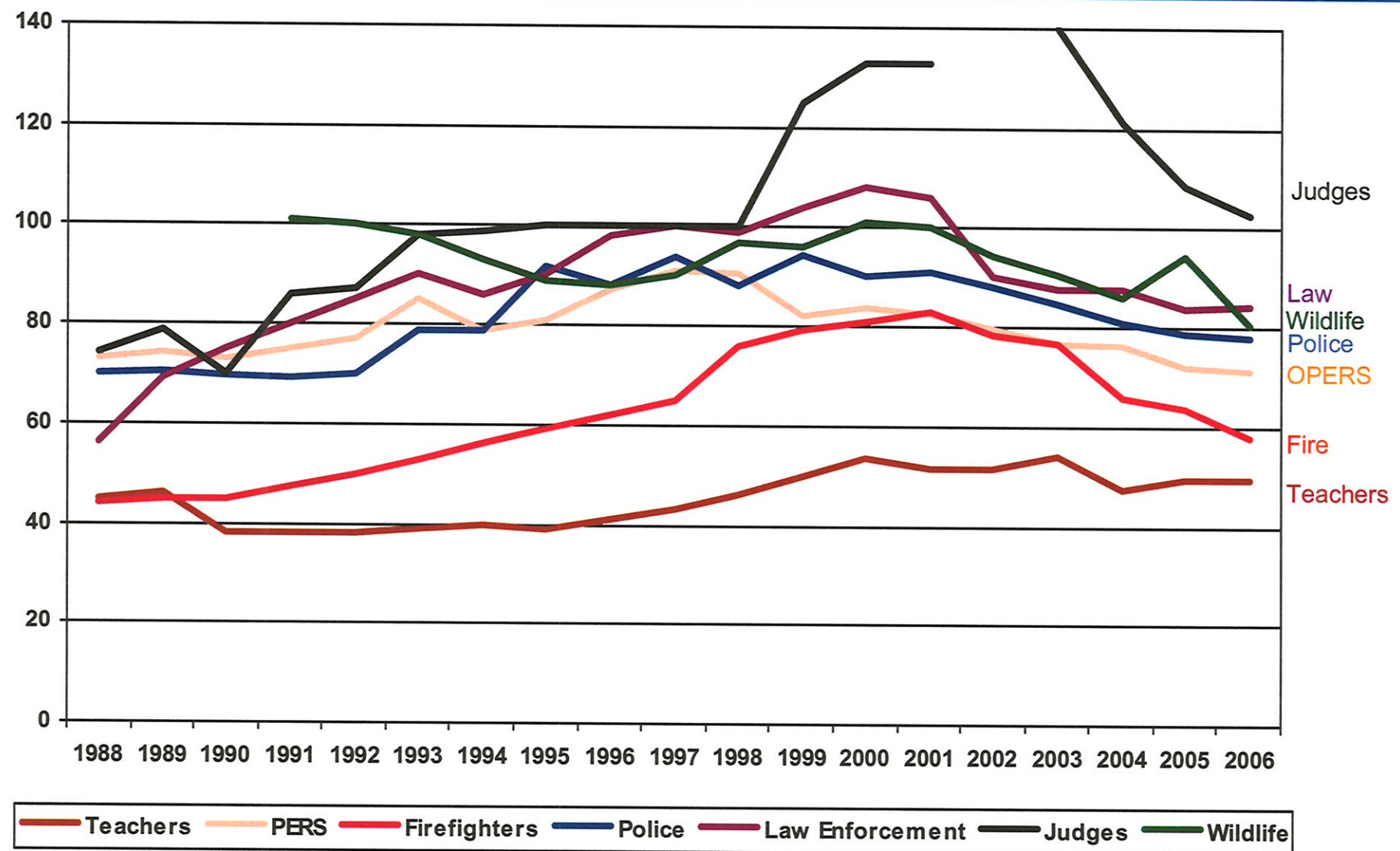
Liability and Asset History - Actuarial



Source: 1999 and earlier: R.V. Kuhns & Associates,
2000 and later: Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company



Funded Status History – Actuarial

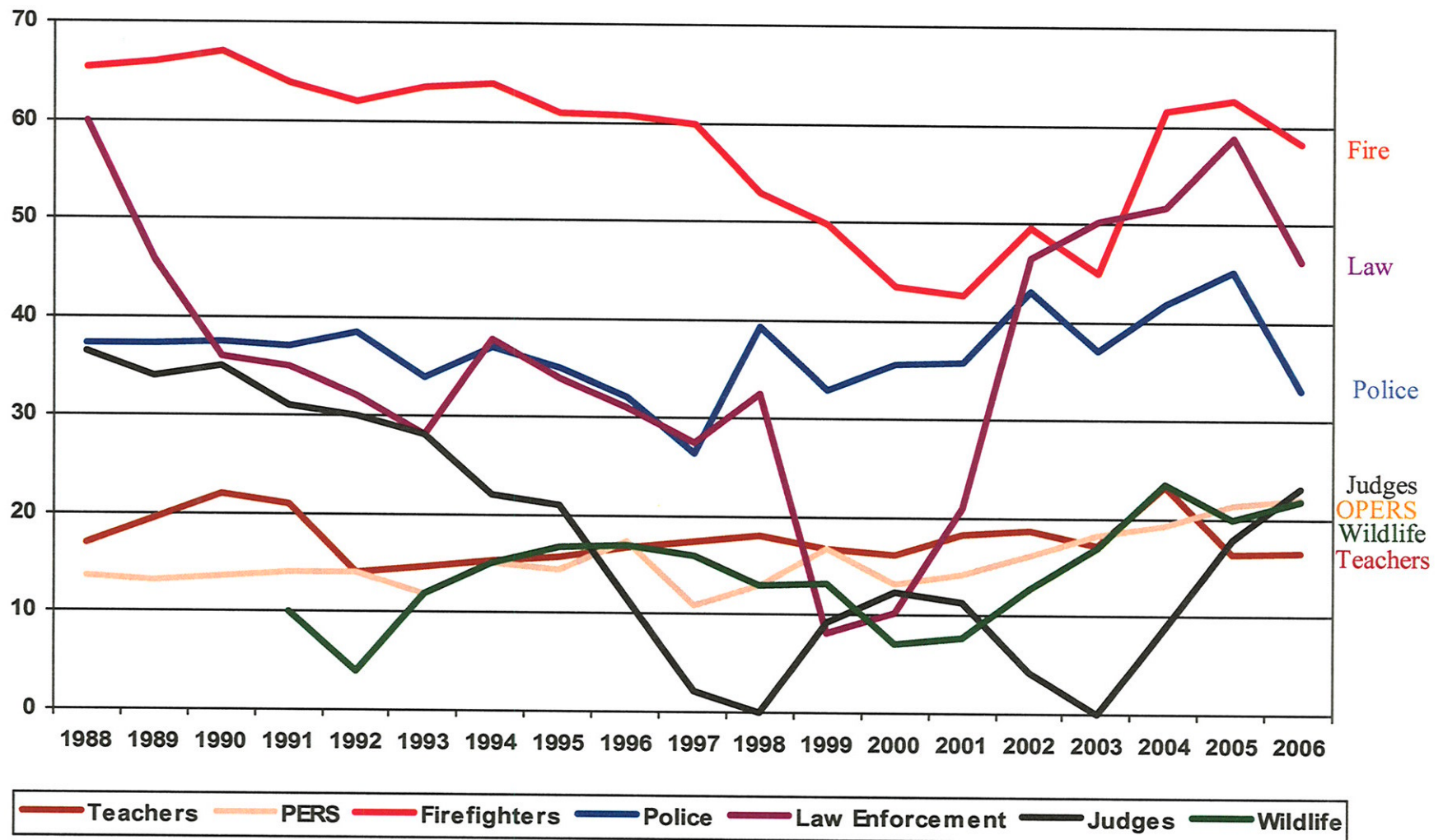


Source: 1999 and earlier: R.V. Kuhns & Associates,
2000 and later: Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company





GASB 25 Total Employer Cost as % of Payroll



Source: 1999 and earlier: R.V. Kuhns & Associates,
2000 and later: Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company





Employer Contributions

Required Employer Contribution (assuming GASB 25 funding requirements)

Plan Year Beginning	7/1/1997	7/1/1998	7/1/1999	7/1/2000	7/1/2001	7/1/2002	7/1/2003	7/1/2004	7/1/2005	7/1/2006
Teachers	\$446.2	\$456.9	\$455.3	\$451.5	\$556.2	\$585.1	\$534.8	\$722.1	\$535.2	\$575.7
OPERS	96.0	107.2	161.8	169.6	188.0	232.8	257.0	266.0	239.0	347.1
Firefighters	56.1	57.0	57.0	62.0	63.1	76.5	73.7	106.7	118.3	146.8
Police	22.4	39.8	34.7	53.0	54.9	71.7	63.5	73.8	85.4	95.1
Law Enforcement	6.1	8.7	6.3	4.1	10.7	23.0	25.4	25.3	30.0	32.5
Judges	0.0	0.0	0.4	1.1	1.0	0.0	0.0	2.2	3.1	5.9
Wildlife	1.5	1.1	1.2	0.8	0.9	1.5	2.0	3.0	2.6	2.9
Total	\$628.3	\$670.7	\$716.7	\$742.1	\$873.9	\$990.6	\$956.4	\$1,199.1	\$1,011.0	\$1,206.0

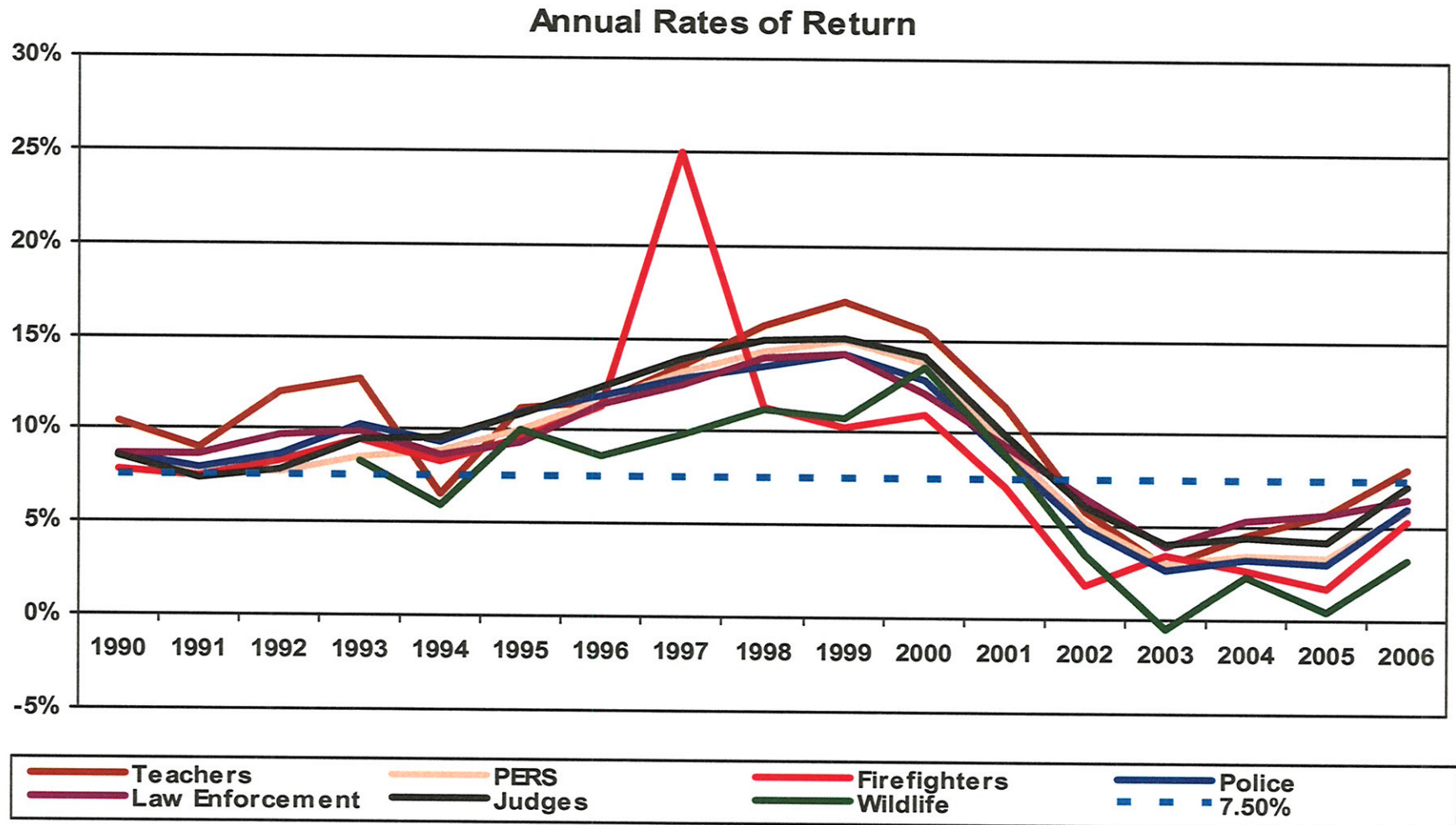
Actual Employer Contribution

Plan Year Beginning	7/1/1997	7/1/1998	7/1/1999	7/1/2000	7/1/2001	7/1/2002	7/1/2003	7/1/2004	7/1/2005	7/1/2006
Teachers	\$263.7	\$244.4	\$275.9	\$328.2	\$364.9	\$362.0	\$375.4	\$405.8	\$443.4	TBD
OPERS	143.7	149.2	125.9	131.1	139.6	137.5	133.5	139.8	171.3	TBD
Firefighters	58.3	59.0	61.6	65.7	68.8	72.6	22.8	82.2	99.2	TBD
Police	35.4	36.2	37.7	40.0	42.2	44.2	23.9	48.7	23.6	TBD
Law Enforcement	18.0	18.0	19.6	19.4	20.4	21.1	13.8	21.8	22.0	TBD
Judges	0.0	0.0	2.9	1.9	-	-	0.5	0.5	0.8	TBD
Wildlife	1.5	1.2	1.2	0.8	0.9	1.2	1.2	2.5	2.5	TBD
Total	\$520.7	\$508.0	\$524.8	\$587.1	\$636.8	\$638.6	\$571.1	\$701.3	\$762.7	TBD

Source: 1999 and earlier: R.V. Kuhns & Associates,
 2000 and later: Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company



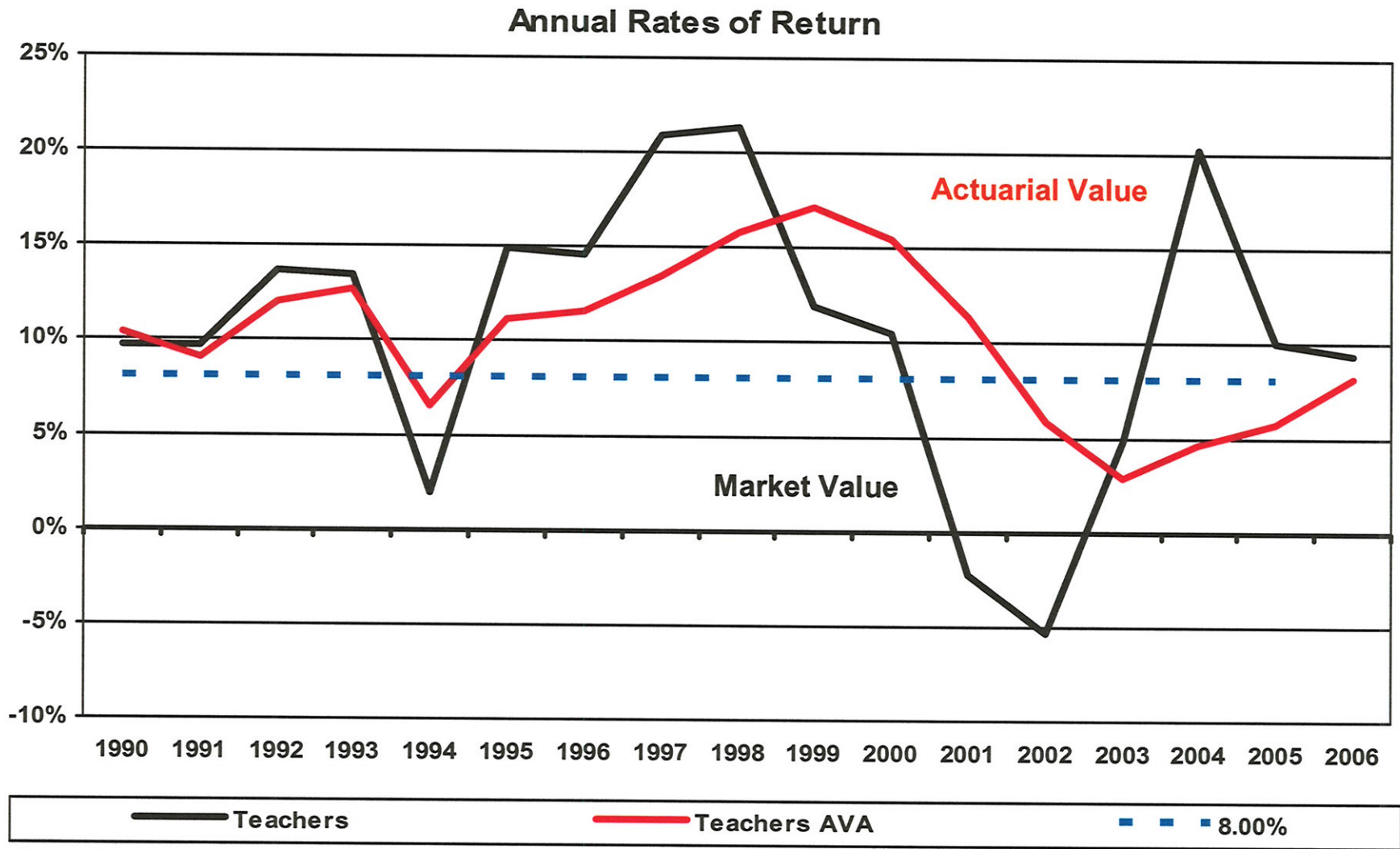
Investment Return – Actuarial Value



Source: 1999 and earlier: R.V. Kuhns & Associates,
2000 and later: Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company



Investment Return – Market Value Volatility



Source: 1999 and earlier: R.V. Kuhns & Associates,
2000 and later: Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company





Retirement System Investment Return Assumptions

- Based on July 1, 2005 Actuarial Valuation Reports from Actuaries¹
- The assumed investment return assumption ranges from 7.25% to 8.0%
- Public Fund assumed investment return median is 8.1%²
- Distribution of investment return assumptions for surveyed funds below²

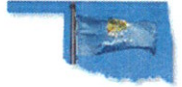
Actuarial Earnings Rate of Return on Plan Assets

Total Corporate and Public Funds (830) (878) (836)

	Base		Mean			Under 7.0%	7.0- 7.4%	7.5- 7.9%	8.0- 8.5%	8.5- 9.1%	9.2- 9.7%	9.8- 10.5%	Over 10.5%	No Answer/ Uncertain
	2004	2005	2003	2004	2005									
Corporate Funds (ex Unions)	(610)	(580)	8.5%	8.3%	8.3%	2%	3%	6%	42%	18%	1%	1%	0%	28%
Over \$5 billion	(78)	(82)	8.6	8.5	8.4	1	5	7	43	27	1	0	0	16
\$1-5 billion	(249)	(237)	8.6	8.3	8.3	2	4	7	38	22	1	1	0	25
\$501 million-\$1 billion	(147)	(145)	8.2	8.4	8.3	1	3	5	41	16	1	1	0	32
\$500 million and under	(136)	(116)	8.4	8.2	8.2	2	1	3	49	9	1	0	0	35
Public Funds	(241)	(225)	8.0%	8.1%	8.1%	1%	4%	19%	48%	6%	1%	3%	1%	16%
State	(87)	(83)	8.0	7.9	8.0	1	5	19	46	6	2	0	1	19
Municipal	(144)	(135)	8.0	8.3	8.2	1	4	19	50	7	1	4	1	13
Over \$5 billion	(73)	(68)	8.0	7.9	7.9	1	3	26	49	4	1	0	0	15
\$1-5 billion	(81)	(76)	8.0	8.1	8.1	1	5	17	49	7	1	3	1	16
\$501 million-\$1 billion	(36)	(35)	8.1	8.3	8.2	0	9	11	51	6	3	3	0	17
\$500 million and under	(51)	(46)	8.0	8.4	8.3	2	2	15	46	9	0	7	2	17
Union Funds	(27)	(31)	7.8%	8.1%	7.9%	0%	0%	30%	26%	6%	0%	0%	0%	20%
Total Funds	(878)	(836)	8.3%	8.3%	8.2%	1%	3%	11%	43%	15%	1%	1%	*%	25%

Note: Means exclude "None."

1. Buck Consultants, Milliman Consultants and Actuaries, and Gabriel, Roeder, Smith & Company
 2. Greenwich Associates survey.



Summary of Major Plan Changes

System	Benefit Provisions	Assumption & Methods	Funding	Legislative
Teachers'	Yes HB 1179 created the EESIP, which allows members with benefits before 7/1/95 limited by salary cap to reduce the cap through extra service or a payment.	None	None	Yes HB 1179 also granted 2% COLA and mandated higher contribution rates.
OPERS	None	None	Yes Contribution rate to 3.5% of compensation	Yes 4% ad-hoc COLA
Firefighters	Yes Increased volunteer benefits	Yes Experience study resulted in changes to mortality, retirement, disability, withdrawal, salary, COLA, and DROP assumptions.	Yes Reduced apportionment of insurance premium tax due to \$35 million allocation	Yes 4% COLA



Summary of Major Plan Changes (continued)

System	Benefit Provisions	Assumption & Methods	Funding	Legislative
Police	None	None	None	Yes 4% COLA
Law Enforcement	None	None	None	Yes 4% COLA Procedural changes for injuries and disabilities
Justices and Judges	None	None	None	Yes 4% COLA
Wildlife	None	None	None	None

Teachers' Retirement System – Submission of Information to State Pension Commission



- During the 2002 legislative session, legislation was adopted that requires the Retirement Board to submit information to the State Pension Commission
- A valuation was to be performed, for informational purposes only, using a prescribed set of assumptions (70 O.S. 2001, Section 17-106.1, Section H)
 - Interest rate of 7.5% (instead of 8.0%)
 - COLA assumption of 2% (instead of 1%)
 - Mortality table (2000 tables instead of 1994 tables)
 - Set amortization period of 30 years (instead of a floating period)
- Required information was provided to the Board by Gabriel, Roeder, Smith & Company
 - AAL = \$17.4 billion (vs. \$15.1 billion)
 - UAAL = \$10.0 billion (vs. \$7.7 billion)
 - Required State contribution = \$750.5 million (vs. contributions received in prior year of \$202.2 million)

OPERS Retirement System – Submission of Information to State Pension Commission



- During the 2002 legislative session, legislation was adopted that requires the Retirement Board to submit information to the State Pension Commission
- A valuation was to be performed, for informational purposes only, using a prescribed set of assumptions (11 O.S. 2001, Section 50-105.4, Section H)
 - Interest rate of 7.5% (same as current valuation)
 - COLA assumption of 2% (same as current valuation)
 - Mortality table (same as current valuation)
 - Set amortization period of 30 years (instead of 40 years)
- Required information was provided to the Board by Milliman Consultants and Actuaries
 - AAL = \$8.1 billion (vs. \$7.9 billion)
 - UAAL = \$2.4 billion (vs. \$2.3 billion)
 - Required State contribution = \$334.0 million (vs. contributions received in prior year of \$171.3 million)

Firefighters Retirement System – Submission of Information to State Pension Commission



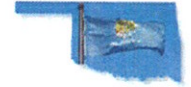
- During the 2002 legislative session, legislation was adopted that requires the Retirement Board to submit information to the State Pension Commission
- A valuation was to be performed, for informational purposes only, using a prescribed set of assumptions (11 O.S. 2001, Section 49-100.9, Section H)
 - Interest rate of 7.5% (same as current valuation)
 - COLA assumption of 2% (same as current valuation)
 - Mortality table (2000 tables instead of 1994 tables)
 - Set amortization period of 30 years (same as current valuation)
- Required information was provided to the Board by Buck Consultants
 - AAL = \$2.6 billion (vs. \$2.7 billion)
 - UAAL = \$1.1 billion (vs. \$1.1 billion)
 - Required State contribution = \$111.4 million (vs. contributions received in prior year of \$57.8 million)

Police – Submission of Information to State Pension Commission



- During the 2002 legislative session, legislation was adopted that requires the Retirement Board to submit information to the State Pension Commission
- A valuation was to be performed, for informational purposes only, using a prescribed set of assumptions (11 O.S. 2001, Section 50-105.4, Section H)
 - Interest rate of 7.5% (same as current valuation)
 - COLA assumption of 2% (same for some retirees, others receive 33% to 50% of assumed increase in base pay)
 - Mortality table (same as current valuation)
 - Set amortization period of 30 years (instead of 20 years)
- Required information was provided to the Board by Buck Consultants
 - AAL = \$1.9 billion (vs. \$1.9 billion)
 - UAAL = \$425 million (vs. \$420 million)
 - Required State contribution = \$50.2 million (vs. contributions received in prior year of \$23.6 million)

Law Enforcement Retirement System – Submission of Information to State Pension Commission



- During the 2002 legislative session, legislation was adopted that requires the Retirement Board to submit information to the State Pension Commission
- A valuation was to be performed, for informational purposes only, using a prescribed set of assumptions (11 O.S. 2001, Section 2-303.1, Section H)
 - Interest rate of 7.5% (same as current valuation)
 - COLA assumption of 2% (same as current valuation)
 - Mortality table (same as current valuation)
 - Set amortization period of 30 years (instead of 20 years)
- Required information was provided to the Board by Buck Consultants
 - AAL = \$717 million (vs. \$772 million)
 - UAAL = \$65 million (vs. \$121 million)
 - Required State contribution = \$15.9 million (vs. contributions received in prior year of \$16.1 million)

Retirement System for Justices and Judges – Submission of Information to State Pension Commission

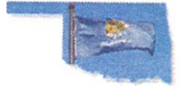


- During the 2002 legislative session, legislation was adopted that requires the Retirement Board to submit information to the State Pension Commission
- A valuation was to be performed, for informational purposes only, using a prescribed set of assumptions (11 O.S. 2001, Section 50-105.4, Section H)
 - Interest rate of 7.5% (higher than 7.25% for valuation)
 - COLA assumption of 2% (same as current valuation)
 - Mortality table (same as current valuation)
 - Set amortization period of 30 years (same as current valuation)
- Required information was provided to the Board by Milliman Consultants and Actuaries
 - AAL = \$204 million (vs. \$205 million)
 - UAAL = -\$6 million (vs. -\$5 million)
 - Required State contribution = \$5.8 million (vs. contributions received in prior year of \$0.8 million)



Evolving Pension Landscape

- Almost all US pension plans have an asset/liability mismatch
 - Plan benefit payments extend much farther than fixed income maturities, and thus have longer duration (interest rate sensitivity)
 - Traditional actuarial methods assume an expected return not based on the level of interest rates, and smooth and amortize gains and losses
- Plan sponsors should understand the mismatch
- Corporate plan asset allocations may change in near-term, based on new rules
- Public plans will take longer to change
 - Eventual rules changes
 - Shift in pension mindset
 - Bond ratings agencies
- New liability-driven investment products aim to protect liabilities without taking a majority of assets



Rules Changes – Corporate Plans

- **Funding: Pension Protection Act**
 - Yield curve discounting to 100% funding target
 - No more expected return
 - Less smoothing and amortization
 - More penalties for underfunded plans
- **Accounting: FASB 158**
 - Net market assets less liabilities (PBO) on balance sheet, in Accumulated Other Comprehensive Income
 - Income statement changes under review
 - International convergence towards UK FRS17 standard
- **UK experience after funding and marked-to-market accounting reforms:**
 - 2/3 of plans frozen or closed to new entrants
 - Broad reduction in equity exposure
 - Increase in liability matching (index-linked and long gilts)