

# Oklahoma State Pension Commission Retirement System Summary of Actuarial Reports

February, 2003

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#### System Characteristics and Assumptions

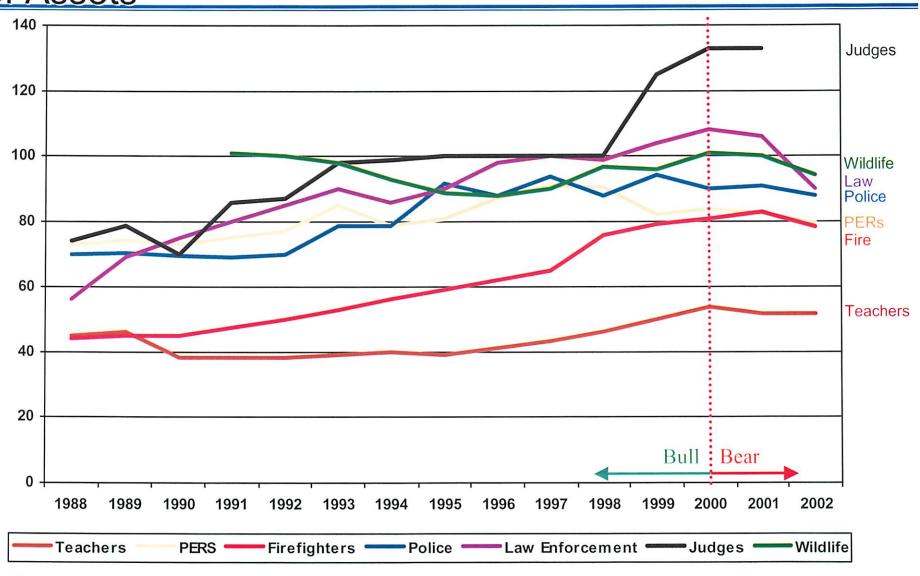
- Based on July 1, 2002 Actuarial Valuation Reports from Actuaries<sup>1</sup> and System Financial Statements
  - Retirement System comprised of the seven plans (Teachers, PERS, Police, Firefighters, Law Enforcement, Judges, Wildlife)
  - All plans employ similar funding method Entry Age Normal
    - Entry age normal is a conservative funding schedule
  - All plans employ similar asset valuation method (smoothed value)
    - Smoothing asset values allows Trustees to focus the investment program on the long term
  - Investment return assumptions range from 7.5% to 8.0%
  - Public Fund assumed investment return median is 8.3%<sup>2</sup>
    - · Therefore, Oklahoma Systems are more conservative than average public fund
    - Major downward revisions with Corporate Plans, but not Public Funds
  - All plans have in place long term schedules (15 years and longer) to fully fund all programs.
- Let's not lose focus of the long term nature of what we're doing

<sup>1.</sup> Buck Consultants, William M. Mercer and Gabriel, Roeder, Smith & Company. Note that information for Judges Retirement System not available as of February 2003

<sup>2.</sup> Greenwich Associates survey based on preliminary data collected in August 2002

# Funded Status History – Based on Actuarial Value of Assets





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



#### **Funded Status**

#### Funded Status - Actuarial Value of Assets

Valuation Date	7/01/1998	7/01/1999	7/01/2000	7/01/2001	7/01/2002
Teachers	46%	50%	54%	51%	51%
PERS	91%	82%	84%	83%	80%
Firefighters	76%	79%	81%	83%	78%
Police	89%	94%	90%	91%	88%
Law Enforcement	99%	104%	108%	106%	90%
Judges	100%	125%	133%	133%	NA
Wildlife	97%	96%	101%	100%	94%

#### Funded Status - Market Value of Assets

Valuation Date	7/01/1999	7/01/2000	7/01/2001	7/01/2002
Teachers	57%	59%	49%	44%
PERS	93%	85%	78%	68%
Firefighters	84%	87%	76%	65%
Police	106%	97%	86%	74%
Law Enforcement	116%	114%	104%	81%
Judges	142%	146%	128%	NA
Wildlife	104%	113%	94%	79%



## Actuarial Accrued Liability and Assets(1999-2002)

* Dollars in Millions					
As of Valuation Date (7/1)					
	Actuarial	Actuarial		Market	
	Accrued	Value of	Funded	Value of	Funded
	Liability (AAL)	Assets (AVA)	Ratio	Assets (MV)	Ratio
2002 Total	\$23,019.1	\$15,063.6	65%	\$12,835.2	56%
Teachers	12,275.9	6,311.0	51%		44%
PERS	6,639.7	5,299.7	80%		68%
Firefighters	1,858.1	1,457.2	78%	1,214.3	65%
Police	1,554.3	1,370.0	88%	1,156.6	74%
Law Enforcement	632.4	570.3	90%	514.7	81%
Judges	NA	NA	NA	NA	N/
Wildlife	58.7	55.4	94%	46.1	79%
2001 Total	\$21,660.5	\$14,603.6	67%	\$13,861.1	64%
Teachers	11,591.0	5,959.0	51%	5,732.0	49%
PERS	6,190.2	5,110.2	83%	4,815.3	78%
Firefighters	1,734.9	1,438.5	83%	1,318.1	76%
Police	1,443.4	1,319.0	91%	1,238.8	86%
Law Enforcement	508.4	538.3	106%	528.5	104%
Judges	139.1	184.9	133%	178.0	128%
Wildlife	53.5	53.7	100%	50.4	94%
2000 Total	\$19,357.5	\$13,450.5	69%		74%
Teachers	10,009.0	5,373.0	54%	5,890.0	59%
PERS	5,694.7	4,785.6	84%	4,815.3	85%
Firefighters	1,665.3	1,355.7	81%	1,443.4	87%
Police	1,354.5	1,222.1	90%	1,319.3	97%
Law Enforcement	457.4	495.1	108%	521.3	114%
Judges	128.0	169.7	133%	186.9	146%
Wildlife	48.6	49.3	101%	54.9	113%
1999 Total	\$17,950.9	\$11,934.0	66%	\$13,462.6	75%
Teachers	9,458.6	4,708.0	50%	5,387.0	57%
PERS	5,179.8	4,261.6	82%	4,831.2	93%
Firefighters	1,563.0	1,235.8	79%	1,312.3	84%
Police	1,160.0	1,094.4	94%	1,224.1	106%
Law Enforcement	425.9	442.6	104%	493.2	116%
Judges	119.1	148.8	125%	168.6	142%
Wildlife	44.5	42.8	96%	46.2	104%

#### Smooth out the cycle of returns

Defer recognition of losses.....

....in the same manner we defer recognition of gains

Source: 1999 and earlier: R.V. Kuhns & Associates,



#### **Funded Status**

#### **Liability Situation - Public Funds**

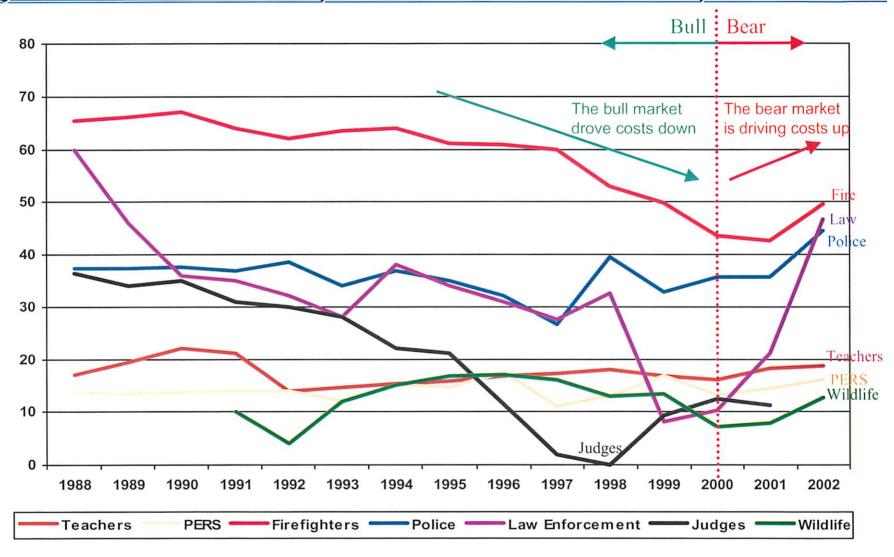
Public Funds (341)

Percent of Public Funds

	Public	runas		
	Total	Under	Over	No Answer/
	Funds	Funded	Funded	Uncertain
Public Funds	(341)	27%	31%	42%
State	(110)	27%	26%	46%
Municipal	(223)	27%	33%	40%
Over \$5 billion	(73)	27%	30%	42%
\$1,001-5,000 million	(83)	25%	35%	40%
\$251-1,000 million	(106)	26%	29%	44%
\$100-250 million	(75)	28%	29%	43%

# GASB 25 Annual Employer Cost as % of Payroll – All Sources (Local, State & Federal)





Source: 1999 and earlier: R.V. Kuhns & Associates,



#### Contributions – Employer (Local, State & Federal)

#### Required Employer Contribution (assuming GASB 25 funding requirements)

Plan Year Beginning	7/1/1995	7/1/1996	7/1/1997	7/1/1998	7/1/1999	7/1/2000	7/1/2001	7/1/2002
Teachers	\$434.7	\$446.5	\$446.2	\$456.9	\$455.3	\$451.5	\$556.2	\$585.1
PERS	131.3	110.9	96	107.2	161.8	169.6	188	224.8
Firefighters	58.3	59.7	56.1	57	57	62	63.1	76.5
Police	30.9	26.5	22.4	39.8	34.7	53	54.9	71.7
Law Enforcement	7.8	6.6	6.1	8.7	6.3	4.1	10.7	23.0
Judges	2.5	1.2	0	0	0.4	1.1	1	NA
Wildlife	1.4	1.5	1.5	1.1	1.2	0.8	0.9	1.5
Total	\$666.9	\$652.9	\$628.3	\$670.7	\$716.7	\$742.1	\$873.9	\$982.6
Exp. EE Contrib	NA	NA	NA	NA	\$259.6	\$270.8	\$291.2	\$307.8

#### **Actual Employer Contribution**

				The same of the sa				
Plan Year Beginning	7/1/1995	7/1/1996	7/1/1997	7/1/1998	7/1/1999	7/1/2000	7/1/2001	7/1/2002
Teachers	\$177.4	\$276.8	\$263.7	\$244.4	\$275.9	\$328.2	\$364.9	TBD
PERS	135.4	135.4	143.7	149.2	125.9	131.1	139.6	TBD
Firefighters	52.0	55.9	58.3	59.0	61.6	65.7	68.8	TBD
Police	31.2	33.0	35.4	36.2	37.7	40.0	42.2	TBD
Law Enforcement	16.0	17.0	18.0	18.0	19.6	19.4	20.4	TBD
Judges	4.5	4.9	0.0	0.0	2.9	1.9		TBD
Wildlife	1.4	1.4	1.5	1.2	1.2	0.8	0.9	TBD
Total	\$417.8	\$524.5	\$520.7	\$508.0	\$524.8	\$587.1	\$636.8	TBD
EE Contrib	NA	NA	NA	NA	\$268.6	\$293.1	\$305.5	TBD

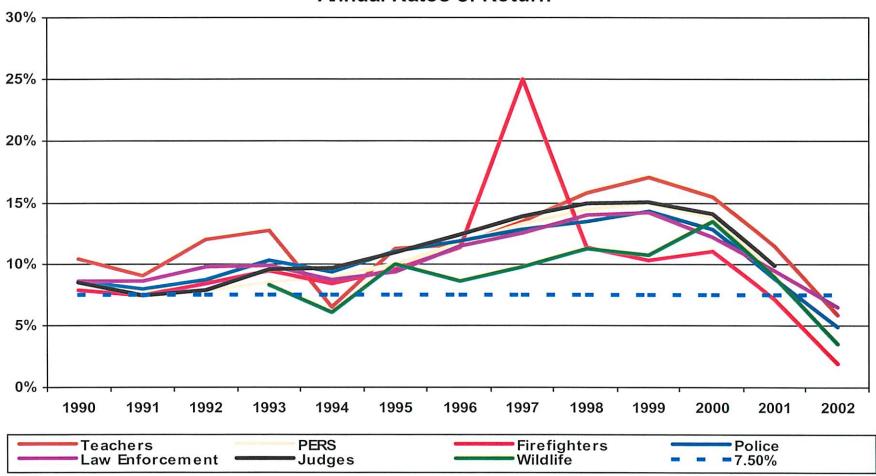
NA = Not Available

Source: 1999 and earlier: R.V. Kuhns & Associates,



#### Investment Return - Actuarial Value

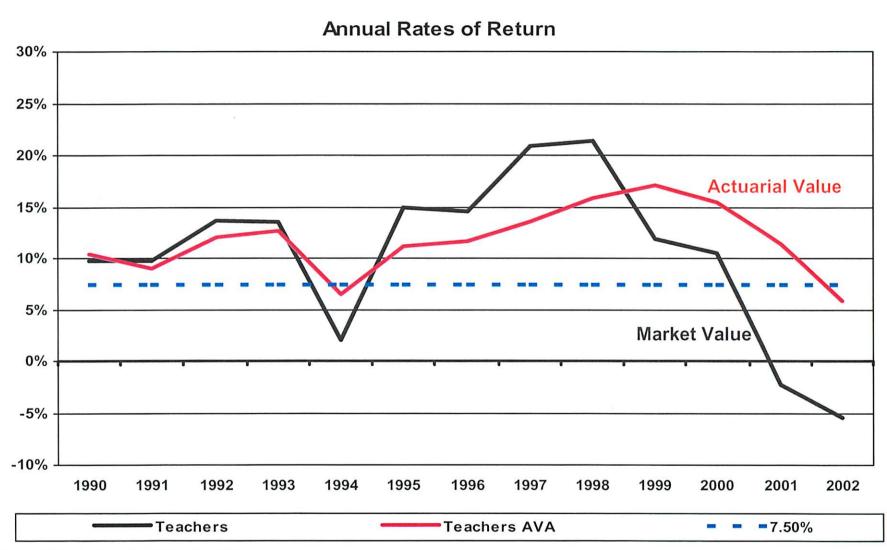




Source: 1999 and earlier: R.V. Kuhns & Associates,



#### Investment Return – Market Value Volatility



Source: 1999 and earlier: R.V. Kuhns & Associates,

## Retirement System Investment Return Assumptions

- Based on July 1, 2002 Actuarial Valuation Reports from Actuaries<sup>1</sup>
- The assumed investment return assumption ranges from 7.5% to 8.0%
- Public Fund assumed investment return median is 8.3%<sup>2</sup>
- Distribution of investment return assumptions for surveyed public funds below (August, 2002)<sup>2</sup>

, ,		Hadan	7.0	7.5	0.0	0.0	0.2	9.8-	0	Answer/
	Mean	Under 7.0%	7.0- 7.4%	7.5- 7.9%	8.0- 8.5%	8.6- 9.1%	9.2- 9.7%		Over 10.5%	Uncertain
Public Funds	8.3%	1%	3%	10%	53%	7%	4%	2%	1%	18%
State	8.3%	2%	5%	8%	41%	8%	3%	3%	1%	30%
Municipal	8.3%	1%	3%	11%	61%	5%	5%	2%	1%	12%
Over \$5 billion	8.3%	0%	1%	8%	49%	8%	5%	0%	1%	26%
\$1,001-5,000 million	8.2%	1%	4%	10%	55%	7%	5%	0%	0%	18%
\$251-1,000 million	8.3%	1%	5%	10%	52%	6%	5%	4%	1%	17%
\$100-250 million	8.2%	4%	3%	11%	55%	7%	3%	4%	1%	13%

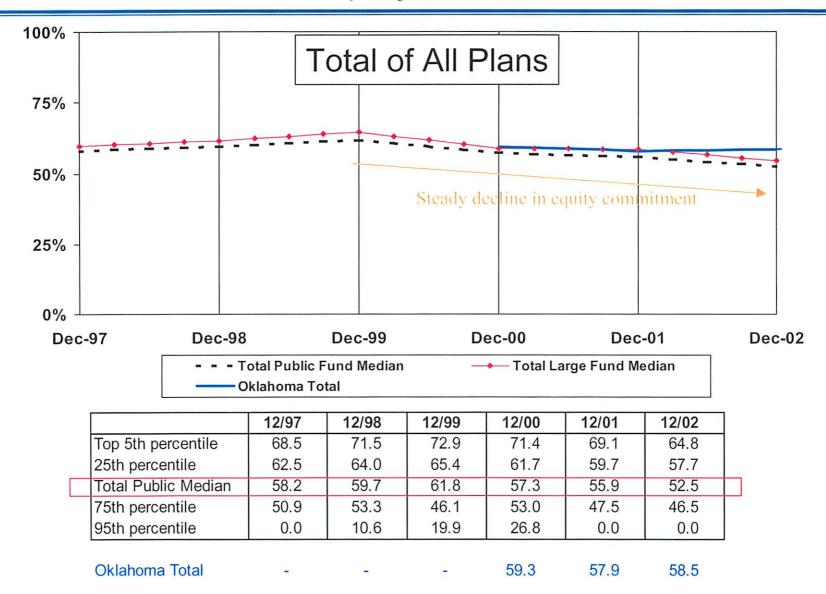
<sup>7.5% 8.0%</sup> 

No

<sup>1.</sup> Buck Consultants and William M. Mercer and Gabriel, Roeder, Smith & Company

<sup>2.</sup> Greenwich Associates survey based on preliminary data collected in August 2002







## Number of Managers Used

#### Mean Number of Investment Managers Used by Funds

Total Funds (1495) (1484) (1374) (1445)

						Pres	ent Distr	ibution o	of Manager	
	Presently N		2000	2004	4.5	C 40	44.45	46.20	0	No Ans./
	1998	1999	2000	2001	1-5	6-10	11-15	16-30	Over 30	Unc.
Corporate Funds	10.4	11.5	11.8	12.8	27%	26%	15%	14%	5%	6%
Over \$5 billion	32.1	36.9	32.5	27.3	4%	6%	20%	35%	18%	9%
\$1,001-5,000 million	14.6	15.5	14.2	17.5	7%	23%	24%	30%	7%	2%
\$501-1,000 million	9.7	9.8	9.0	11.6	23%	33%	23%	6%	3%	8%
\$251-500 million	7.1	6.4	6.6	7.4	37%	37%	7%	5%	1%	9%
\$100-250 million	5.4	5.1	5.1	7.6	48%	25%	6%	3%	2%	6%
Public Funds	12.7	15.0	14.9	17.9	16%	27%	18%	16%	12%	6%
State	17.7	21.2	21.3	24.7	14%	21%	12%	17%	22%	8%
Municipal	10.6	12.5	12.3	14.9	18%	31%	20%	14%	8%	5%
Over \$5 billion	27.0	35.7	30.2	34.1	5%	8%	11%	26%	36%	8%
\$1,001-5,000 million	17.6	18.0	17.9	20.6	4%	18%	24%	34%	12%	4%
\$251-1,000 million	8.4	8.8	9.5	11.1	18%	43%	27%	3%	3%	4%
\$100-250 million	6.3	6.7	6.9	9.5	40%	32%	5%	4%	3%	11%
Endowments	14.4	14.8	15.7	16.3	16%	23%	25%	22%	8%	3%
Over \$1 billion	29.3	32.9	33.7	24.4	9%	21%	16%	17%	17%	9%
\$251-1,000 million	13.2	14.0	13.8	15.5	12%	24%	27%	24%	6%	4%
\$100-250 million	8.0	8.0	8.6	12.9	23%	20%	26%	18%	2%	5%
Total Funds	11.7	13.0	13.3	14.7	22%	26%	18%	16%	7%	6%

Note: Means exclude "None."



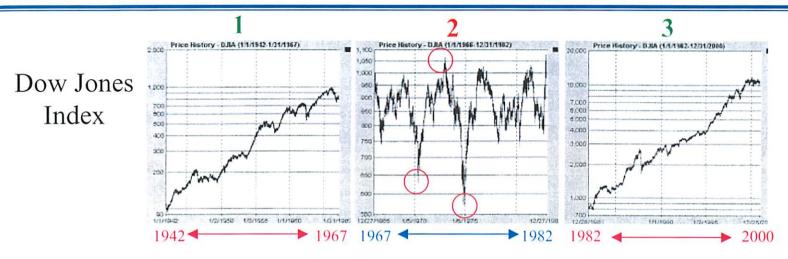
## Strategies Used

#### **Demand for Different Types of Investments**

Public Funds (314) (342) (344) (320) (341)

	Now Use				v	Vill Start Using				
Type of Investment	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
Domestic equities - total	97%	93%	95%	93%	94%	12%	12%	15%	12%	10%
Active core equity	55%	48%	49%	44%	40%	1%	2%	*	1%	*
Value stocks - total	89%	87%	89%	85%	87%	7%	6%	5%	4%	6%
- Large cap	84%	84%	84%	81%	80%	2%	1%	1%	1%	1%
- Mid cap					39%					4%
- Small cap	50%	55%	63%	61%	63%	7%	6%	5%	3%	2%
Growth stocks - total	81%	82%	88%	85%	86%	7%	6%	6%	4%	5%
- Large cap	74%	76%	82%	82%	78%	2%	2%	1%	1%	1%
- Mid cap					42%					2%
- Small cap	54%	55%	60%	59%	60%	6%	5%	5%	4%	3%
Small cap stocks - total	68%	70%	75%	71%	74%	9%	8%	8%	6%	4%
Passive/index domestic equities	48%	47%	52%	56%	57%	3%	3%	3%	2%	1%
Enhanced index			17%	23%	22%			5%	3%	2%
International equities - total	68%	65%	76%	76%	79%	12%	8%	7%	8%	4%
Active or passive bonds - total	94%	91%	92%	89%	90%	9%	6%	4%	5%	4%
- Global	14%	15%	17%	18%	18%	2%	1%	3%	1%	0%
- Domestic	93%	94%	90%	85%	86%	*	0%	*	*	0%
- International	33%	62%	33%	28%	17%	8%	6%	2%	2%	1%
- High yield				25%	29%				3%	3%
Balanced funds	13%	16%	12%	11%	11%	1%	1%	1%	0%	0%
Equity real estate	50%	47%	45%	43%	41%	11%	10%	2%	1%	2%
Private equity		16%	24%	24%	30%	4%	4%	1%	5%	4%
Hedge funds		2%		3%	5%				2%	3%
Fund-of-fund managers					11%					4%

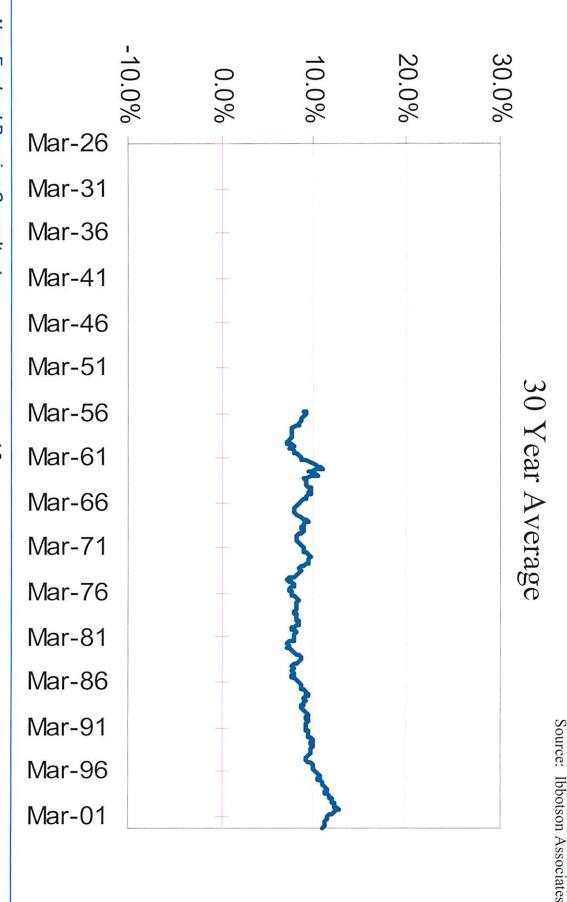




- Both bond and stock markets have long spells of going nowhere, with fierce rallies and declines throughout the dry spell (180 degree reversals)
- Volatility hurts buy-and-hold strategies: over-weight equities at market tops and under-weight equities at market bottoms
- Sometimes discipline is not essential (Charts #1 and #3), sometimes it's the key ingredient to long-term success (Chart #2)
- Discipline now more than ever
- Sharpen your rebalancing plans and execute
- Think outside the box

# Corporate Bonds Total Returns – 60% Stocks and 40% Long Term

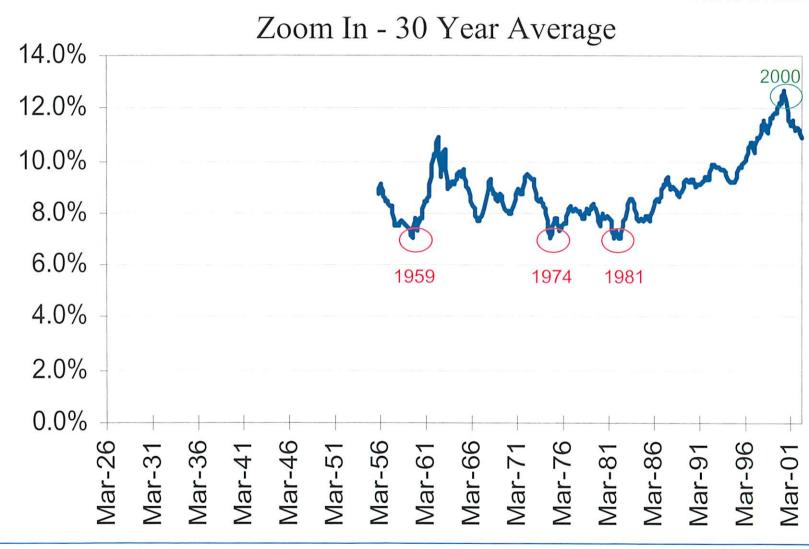




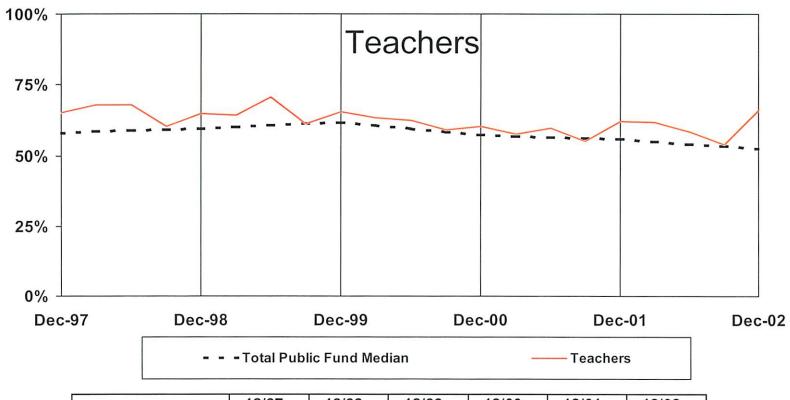
# Total Returns – 60% Stocks and 40% Long Term Corporate Bonds



Source: Ibbotson Associates



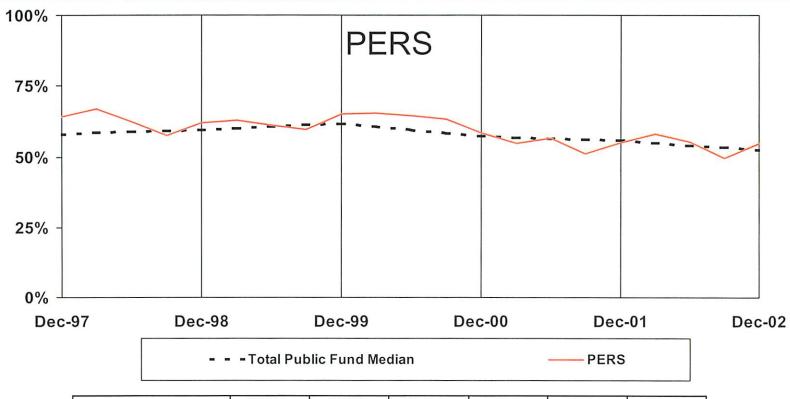




	12/97	12/98	12/99	12/00	12/01	12/02
Top 5th percentile	68.5	71.5	72.9	71.4	69.1	64.8
25th percentile	62.5	64.0	65.4	61.7	59.7	57.7
Total Public Median	58.2	59.7	61.8	57.3	55.9	52.5
75th percentile	50.9	53.3	46.1	53.0	47.5	46.5
95th percentile	0.0	10.6	19.9	26.8	0.0	0.0

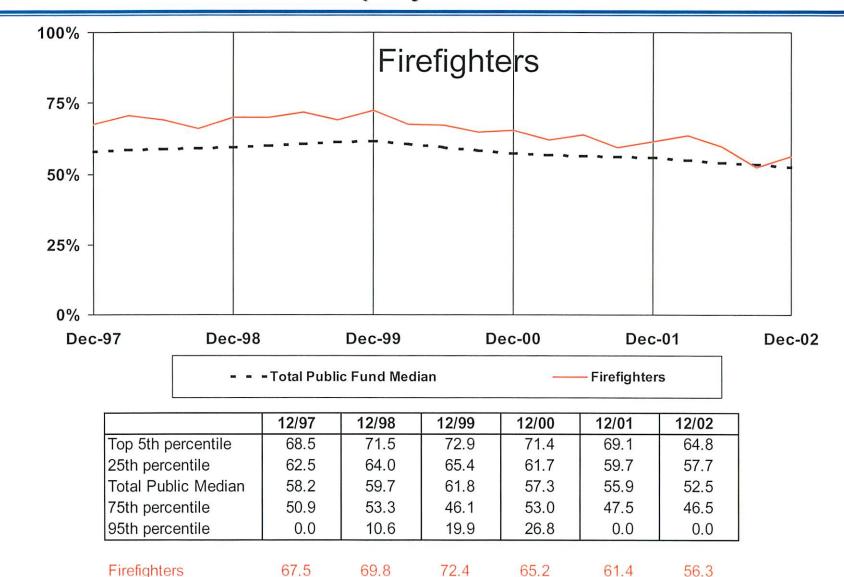
Teachers 65.0 64.6 65.3 60.2 62.0 66.0



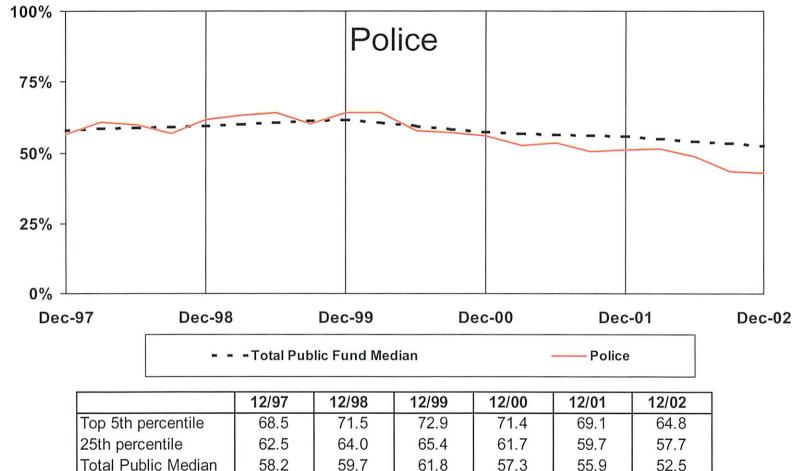


	12/97	12/98	12/99	12/00	12/01	12/02
Top 5th percentile	68.5	71.5	72.9	71.4	69.1	64.8
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Total Public Median	58.2	59.7	61.8	57.3	55.9	52.5
75th percentile	50.9	53.3	46.1	53.0	47.5	46.5
95th percentile	0.0	10.6	19.9	26.8	0.0	0.0
						·
PERS	64.2	62.0	64.9	58.3	54.9	54.8





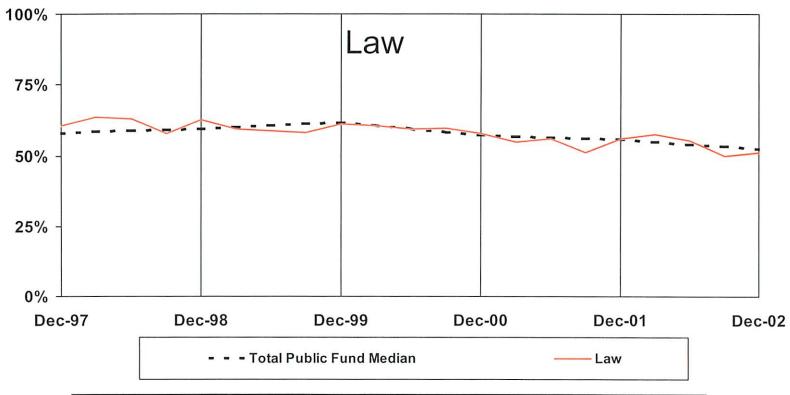




12/97	12/98	12/99	12/00	12/01	12/02
68.5	71.5	72.9	71.4	69.1	64.8
62.5	64.0	65.4	61.7	59.7	57.7
58.2	59.7	61.8	57.3	55.9	52.5
50.9	53.3	46.1	53.0	47.5	46.5
0.0	10.6	19.9	26.8	0.0	0.0
	68.5 62.5 58.2 50.9	68.5 71.5 62.5 64.0 58.2 59.7 50.9 53.3	68.5     71.5     72.9       62.5     64.0     65.4       58.2     59.7     61.8       50.9     53.3     46.1	68.5     71.5     72.9     71.4       62.5     64.0     65.4     61.7       58.2     59.7     61.8     57.3       50.9     53.3     46.1     53.0	68.5     71.5     72.9     71.4     69.1       62.5     64.0     65.4     61.7     59.7       58.2     59.7     61.8     57.3     55.9       50.9     53.3     46.1     53.0     47.5

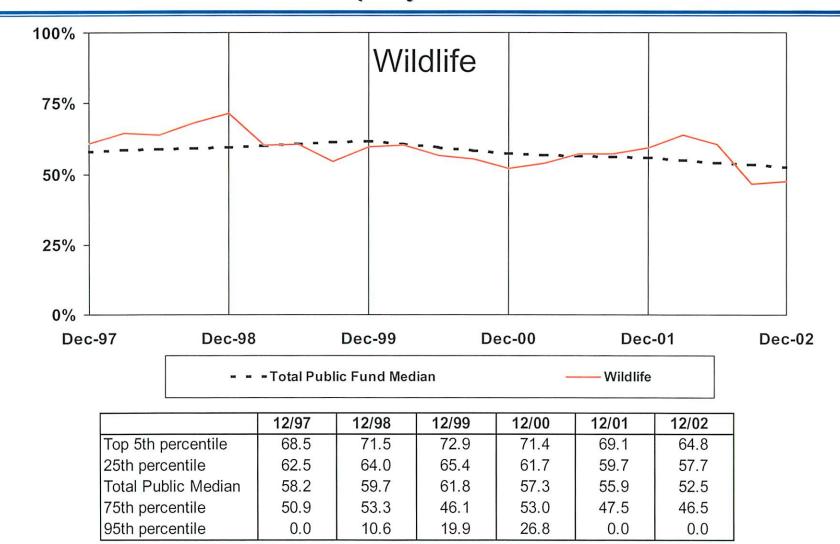
Police 56.6 61.8 64.0 55.8 51.0 42.8





	12/97	12/98	12/99	12/00	12/01	12/02
Top 5th percentile	68.5	71.5	72.9	71.4	69.1	64.8
25th percentile	62.5	64.0	65.4	61.7	59.7	57.7
Total Public Median	58.2	59.7	61.8	57.3	55.9	52.5
75th percentile	50.9	53.3	46.1	53.0	47.5	46.5
95th percentile	0.0	10.6	19.9	26.8	0.0	0.0
Law	60.5	62.6	61.1	57.7	55.9	51.1





60.9

22

59.5

52.0

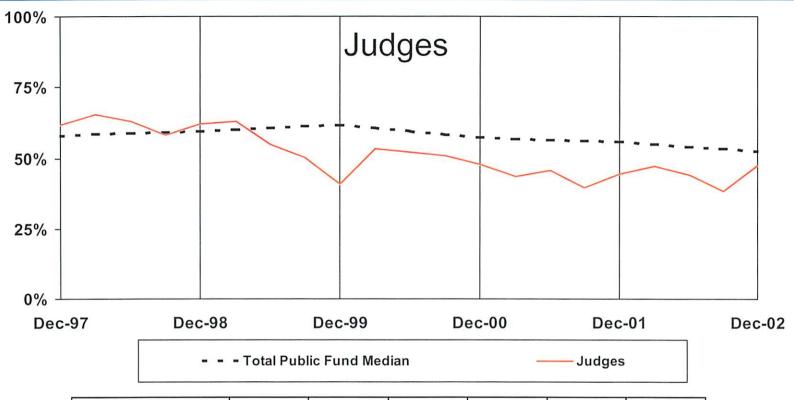
59.2

47.4

71.5

Wildlife





12/97	12/98	12/99	12/00	12/01	12/02
68.5	71.5	72.9	71.4	69.1	64.8
62.5	64.0	65.4	61.7	59.7	57.7
58.2	59.7	61.8	57.3	55.9	52.5
50.9	53.3	46.1	53.0	47.5	46.5
0.0	10.6	19.9	26.8	0.0	0.0
	68.5 62.5 58.2 50.9	68.5 71.5 62.5 64.0 58.2 59.7 50.9 53.3	68.5     71.5     72.9       62.5     64.0     65.4       58.2     59.7     61.8       50.9     53.3     46.1	68.5     71.5     72.9     71.4       62.5     64.0     65.4     61.7       58.2     59.7     61.8     57.3       50.9     53.3     46.1     53.0	68.5     71.5     72.9     71.4     69.1       62.5     64.0     65.4     61.7     59.7       58.2     59.7     61.8     57.3     55.9       50.9     53.3     46.1     53.0     47.5

Judges 61.8 62.0 40.8 47.7

44.3

47.5



## Summary of Major Plan Changes

System	Benefit Changes	Assumption and Method Change	Funding Changes	Other Legislative Changes
Teachers'	Yes	None	Yes	Yes
Teachers	One time COLA (3% or 4%)	THORE	Increase dedicated revenue %	70 O.S. 2001, Sec. 17-106.1, Sec. H
	above 1% expected COLA		FY 2005 through FY 2008	System to report results to State
	above 170 expected CCL7		3.54% up to 5.00%	Pension Commission using
			0.0170 up to 0.0070	prescribed assumptions
OPERS	House Bill 2124	Yes - Experience study	None	Yes
OI LIKO	(Ad hoc COLA for retirees)	Increased salary scale	THORE	11 O.S. 2001, Sec. 51-105.4, Sec. H
	Senate Bill 405	Retirement rates were increased		System to report results to State
	(OMD firefighters)	Disability rates for males lowered		Pension Commission using
	(OND mengricors)	Withdrawal rates increased		prescribed assumptions
	House Bill 2124	None	None	Yes
	(Ad hoc COLA for retirees)			11 O.S. 2001, Sec. 49-100.9, Sec. H
				System to report results to State
				Pension Commission using
				prescribed assumptions
Police	House Bill 2124	None	None	Yes
	(Ad hoc COLA for retirees)			11 O.S. 2001, Sec. 50-105.4, Sec. H
				System to report results to State
				Pension Commission using
				prescribed assumptions
Law	House Bill 2212	None	None	Yes
	(Redefine FAE)	THE	Titolio	11 O.S. 2001, Sec.2-303.1, Sec. H
	House Bill 2311			System to report results to State
	(Health insurance for spouses			Pension Commission using
	and children)			prescribed assumptions
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 1989 and 1994 tables)
  - Set amortization period of 30 years (instead of a "floating" period)
- Required information was provided to the Board as an addendum to the June 30, 2002 Actuarial Valuation Report performed by Gabriel, Roeder, Smith & Company
  - AAL = \$13.8 billion (vs. \$12.3 billion)
  - UAAL = \$7.5 billion (vs. \$6.0 billion)
  - Required State contribution = \$552.7 million (vs. current actual contribution of \$141.1 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 (2000 tables instead of 1983 tables)
  - Set amortization period of 30 years (instead of 40 years)
- Required information was provided to the Board by Mercer (included in the System's Annual Financial Statement)
  - AAL = \$6.8 billion (vs. \$6.6 billion)
  - UAAL = \$1.5 billion (vs. \$1.3 billion)
  - Required State contribution = \$247.8 million (vs. current contribution of \$139.6 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% (instead of 50% of assumed increase in base pay)
  - Mortality table (2000 tables instead of 1983 and 1994 tables)
  - Set amortization period of 30 years (same as current valuation)
- Required information was provided to the Board as an addendum to the June 30, 2002 Actuarial Valuation Report performed by Buck Consultants
  - AAL = \$2.2 billion (vs. \$1.9 billion)
  - UAAL = \$730 million (vs. \$400 million)
  - Required State contribution = \$82.5 million (vs. current actual contribution of \$47.3 million)

# Police 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 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 as an addendum to the June 30, 2002 Actuarial Valuation Report performed by Buck Consultants
  - AAL = \$1.6 billion (vs. \$1.6 billion)
  - UAAL = \$196 million (vs. \$184 million)
  - Required State contribution = \$28 million (vs. current actual contribution of \$20 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% (instead of 3%)
  - Mortality table (same as current valuation)
  - Set amortization period of 30 years (instead of 19 years)
- Required information was provided to the Board as an addendum to the June 30, 2002 Actuarial Valuation Report performed by Buck Consultants
  - AAL = \$587 million (vs. \$632 million)
  - UAAL = \$17 million (vs. \$62 million)
  - Required State contribution = \$10.4 million (vs. current actual contribution of \$14.2 million)