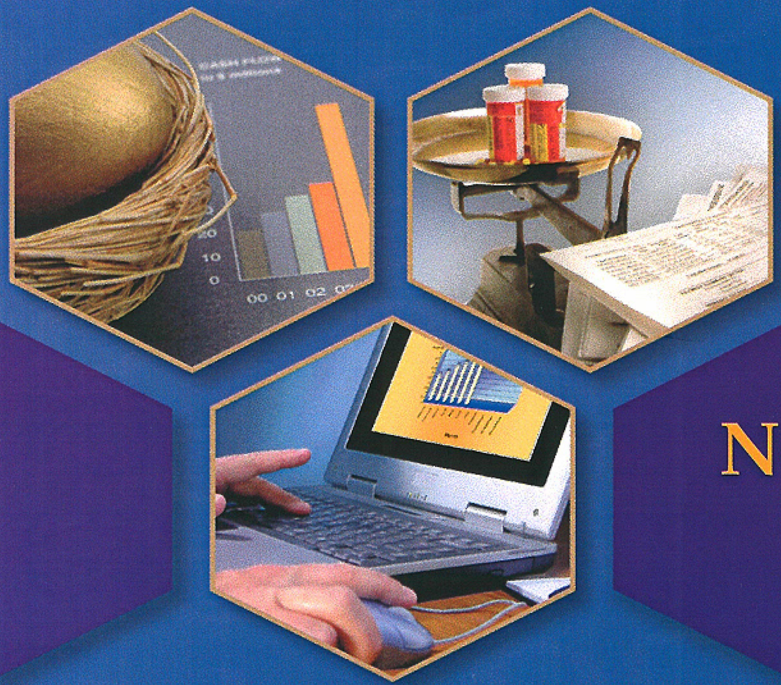

NORTH DAKOTA TEACHERS' FUND FOR RETIREMENT

ACTUARIAL VALUATION AS OF JULY 1, 2007

Presented by Chris Conradi, November 2007

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
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APPENDIX B

Actuarial Valuation

- Prepared as of July 1, 2007, using member data, financial data, benefit and contribution provisions, actuarial assumptions and methods
- Purposes:
  - Measure the actuarial liabilities
  - Determine adequacy of current statutory contributions
  - Provide other information for reporting
    - GASB #25
    - Financial Report (CAFR)
  - Explain changes in actuarial condition of TFFR
  - Track changes over time
  - Warn about possible future problems and issues

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New Legislation Enacted in 2007

- New benefit tier created
  - Hires on or after July 1, 2008 = Tier 2
  - Rule of 90 (rather than Rule of 85)
  - 5-year vesting (rather than 3-year vesting)
    - Also affects retirement eligibility
  - 5-year average final avg. pay (not 3-year average)
- Employer contribution rate increases from 7.75% to 8.25% effective July 1, 2008
  - Sunsets back to 7.75% when TFFR is 90% funded
- Employer contributions required for retirees who have returned to a TFFR position, effective July 1, 2007

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Membership – Actives and Inactives

- The number of active members increased by 14 from 9,585 to 9,599
  - 0.1% increase
  - Over last 10 years, active membership has decreased an average of 0.5% per year
  - Earlier census projections show school-age population decreasing over next 15-20 years

Membership – Actives and Inactives

- Payroll for active members increased 2.9%, from $390.1 million to $401.3 million
  - Payroll has increased an average of 3.2% per year over the last ten years
- Average pay for active members increased 2.7%, from $ 40,703 to $41,810
- Average age of active members is 44.7, compared to 44.8 last year and to 43.4 ten years ago
- Average years of service is 14.5, compared to 14.6 last year and to 14.0 ten years ago
- There are also 1,439 inactive, vested members, and there are 142 inactive nonvested members

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Membership – Retirees & Beneficiaries

- The number of retirees increased by 184, from 5,893 to 6,077, a 3.1% increase
  - Number includes service retirees, disabled retirees, and beneficiaries receiving benefits
  - Over the last ten years, the number of retirees has grown an average of 3.1% per year
- Average annual retiree benefit is $17,207
- There are 1.6 active members for each retiree
  - Ratio is decreasing, was 2.2 ten years ago

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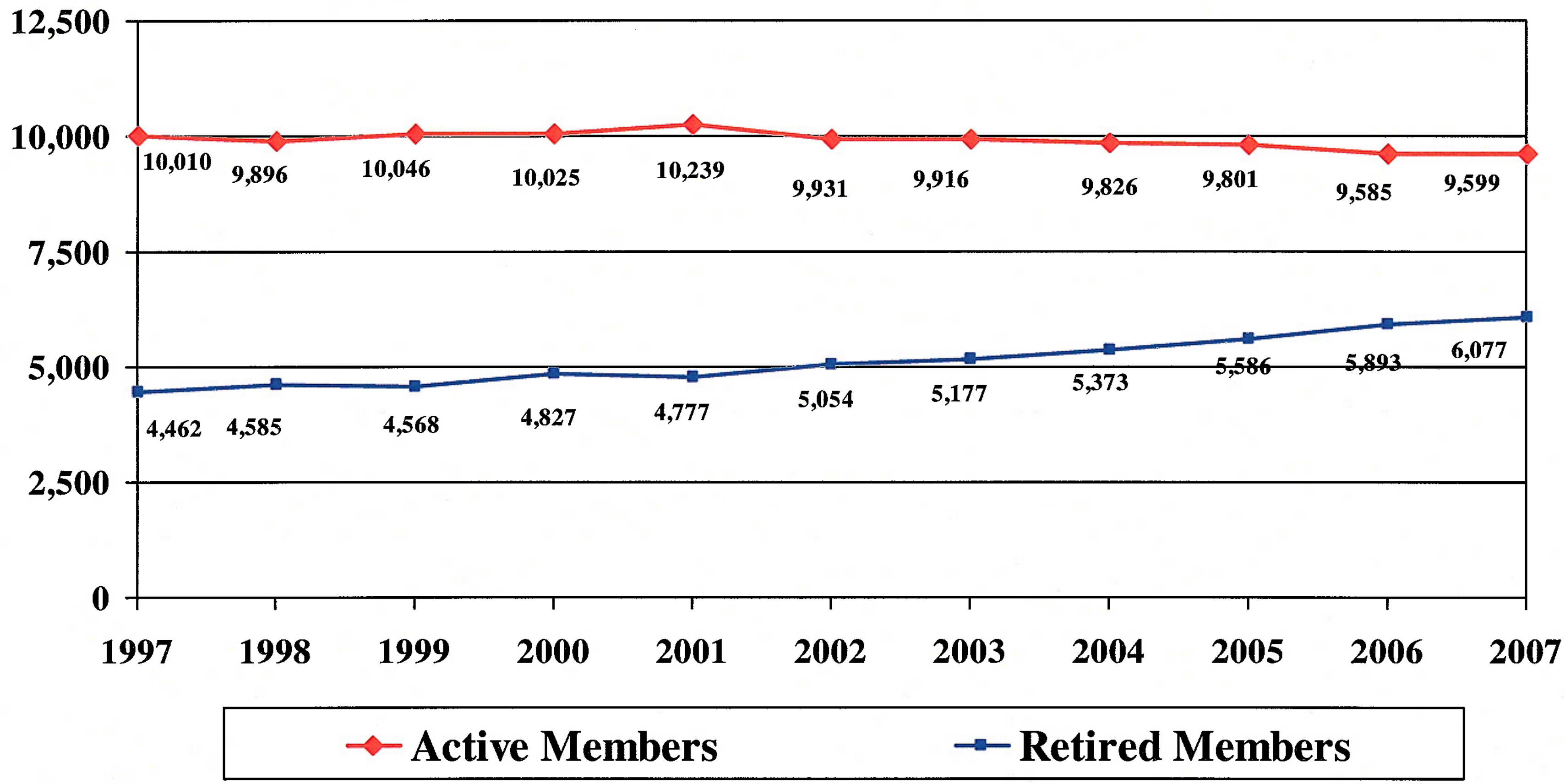
Active Members and Retired Members



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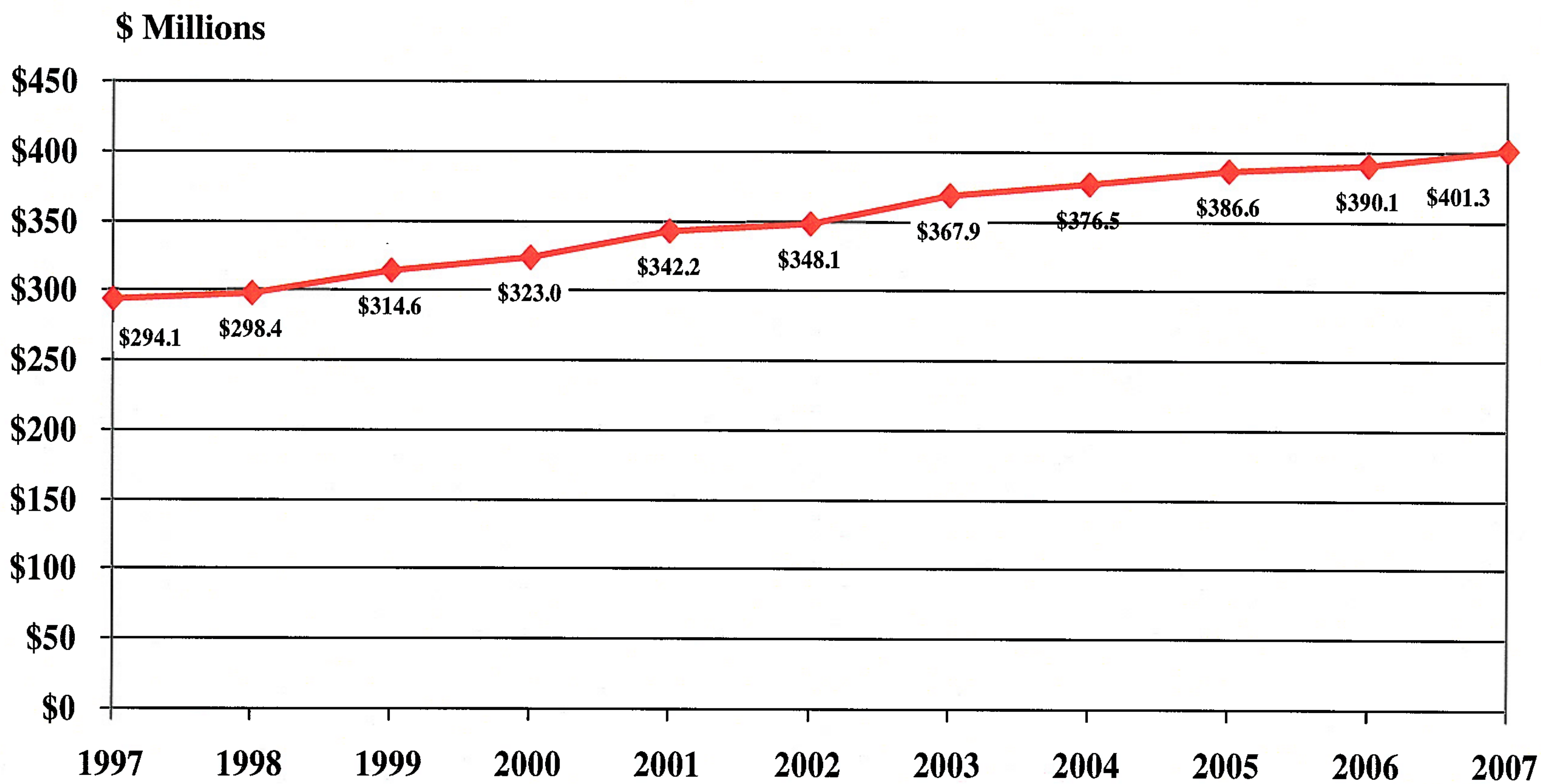
Active Payroll



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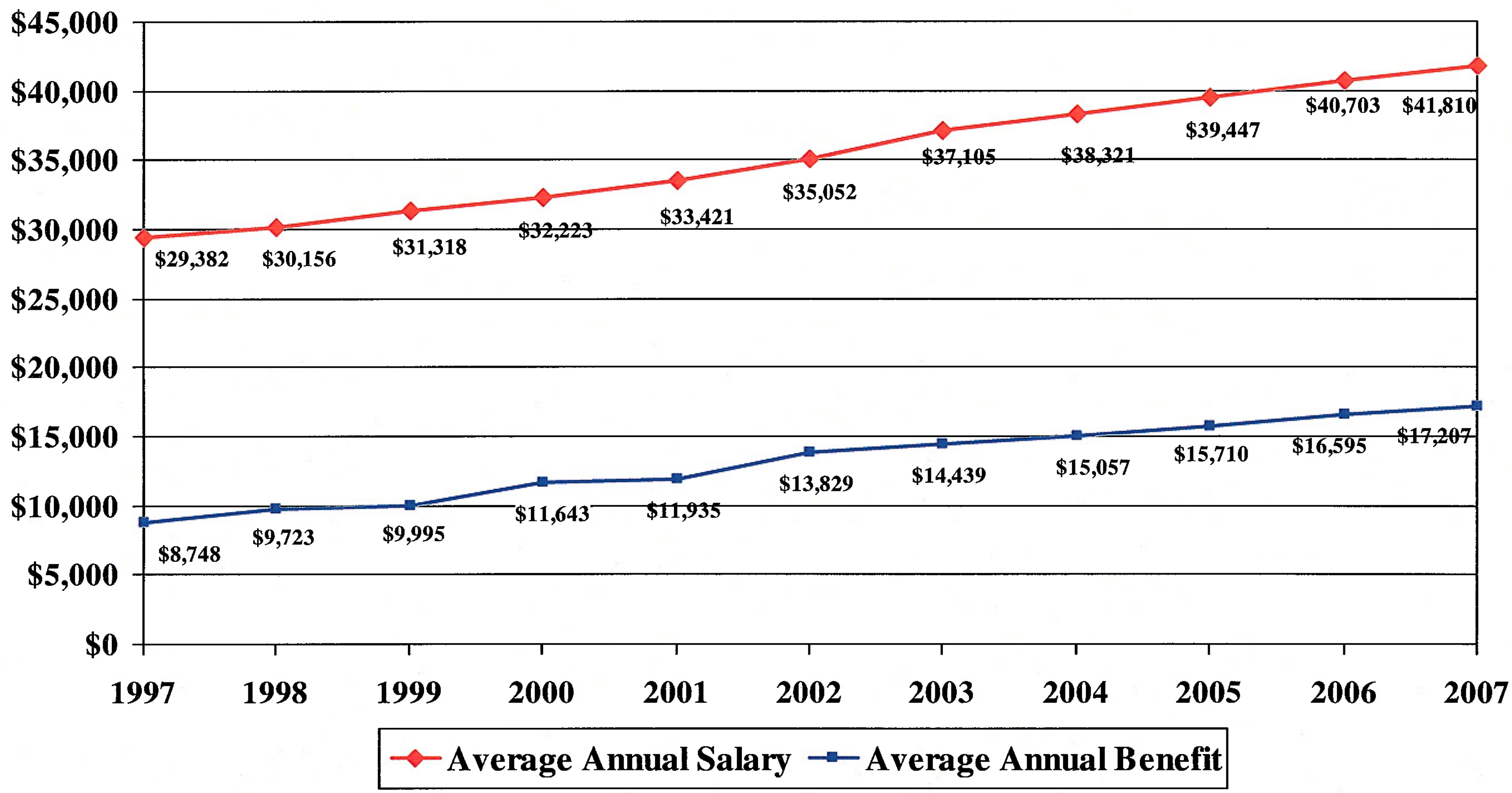
Average Salary and Average Benefit



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Assets

- Fair market value increased from $1,720 million (June 30, 2006) to $2,030 million (June 30, 2007)
- Contributions in FY 2007
  - Member contributions = $34.5 million, including service purchases
    - 7.75%
  - Employer contributions = $31.9 million
    - 7.75%
- Total contributions of $66.4 million, compared to $65.6 million in FY 2006
- Employer contribution rate remains 7.75% for FY 2008, then will increase to 8.25% for FY 2009

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Assets

- Total distributions—benefit payments, refunds and administrative expenses—totaled $104.7 million
- Therefore, net external cash flow (contributions less benefits and refunds) was -$38.3 million, or -1.9% of market value of assets at end of year
  - Not a problem

Assets

- Return on market of approximately 20.4% in FY 2007
  - It was 14.6% in FY 2006
  - Average return for last ten years was 8.5%
    - Above assumed 8.0% investment return assumption
  - 15-year average return was 9.8%

Assets

- "Huge" bull market followed by even more devastating three-year period, and now four strong recovery years
  - 7 years with returns greater than 8.00% (>11%)
  - 3 years with returns less than 8.00% (<3%)
  - Best year (2007) return of 20.4%, or 12.4% over 8.0%
  - Worst year (2002) return of -8.6%, or 16.6% below 8.0% assumption

Assets

- All actuarial calculations are based on actuarial value of assets, not market value
- Actuarial value reflects 20% of the difference between last year's expected return on market and the actual return
  - 40% of FY 2006 difference, 60% of FY 2005 difference and 80% of FY 2004 difference
- Actuarial value is now $1,750 million, vs. $ 1,564 million last year

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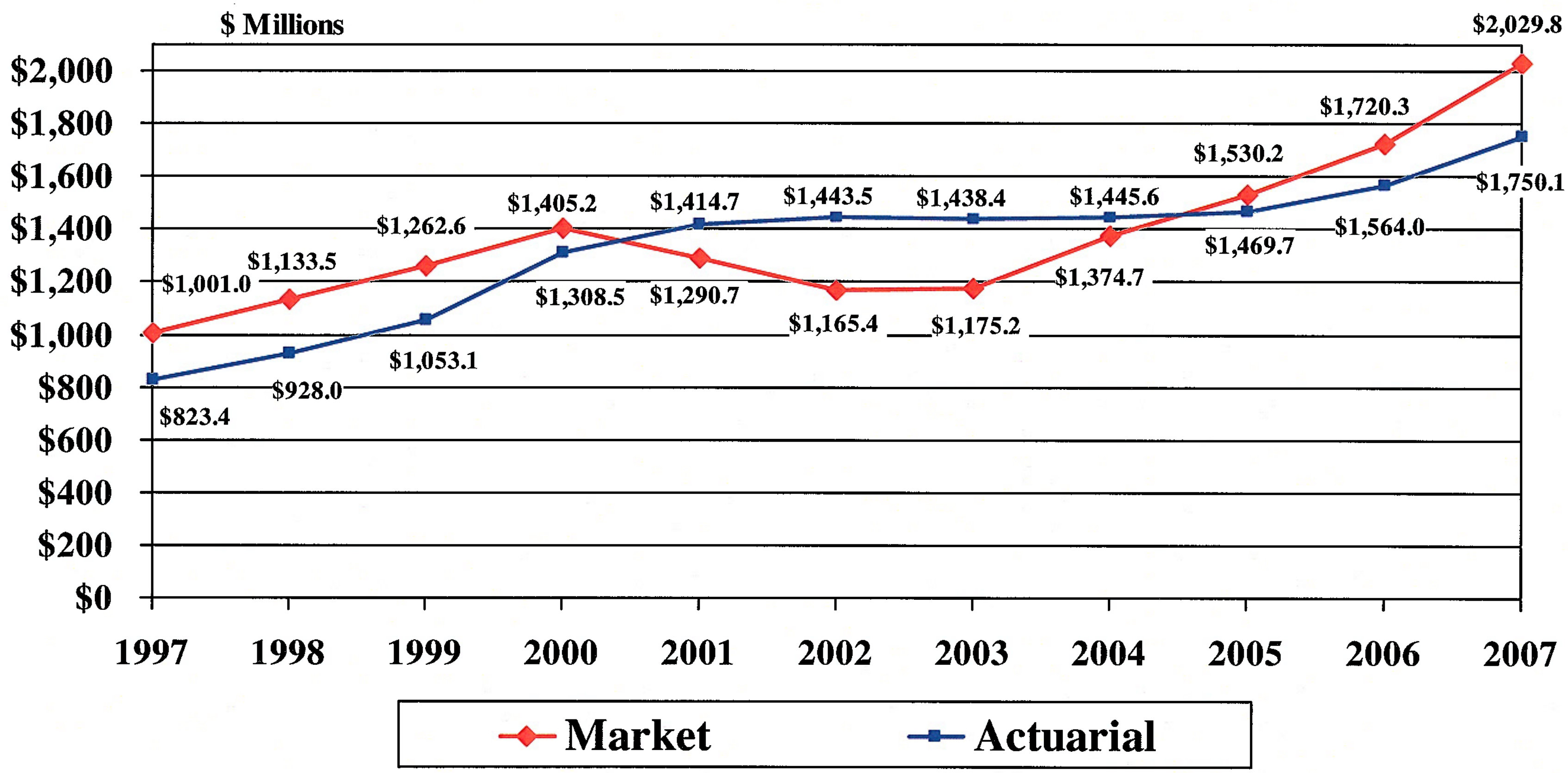
Assets

- Actuarial return was 14.4% in FY 2007, compared to 20.4% on market value basis
  - 7.8% average return on actuarial value over last ten years
- Actuarial value is 86% of fair market value (was 91% last year)
- $279.6 million in deferred gains, not yet recognized

Market and Actuarial Values of Assets



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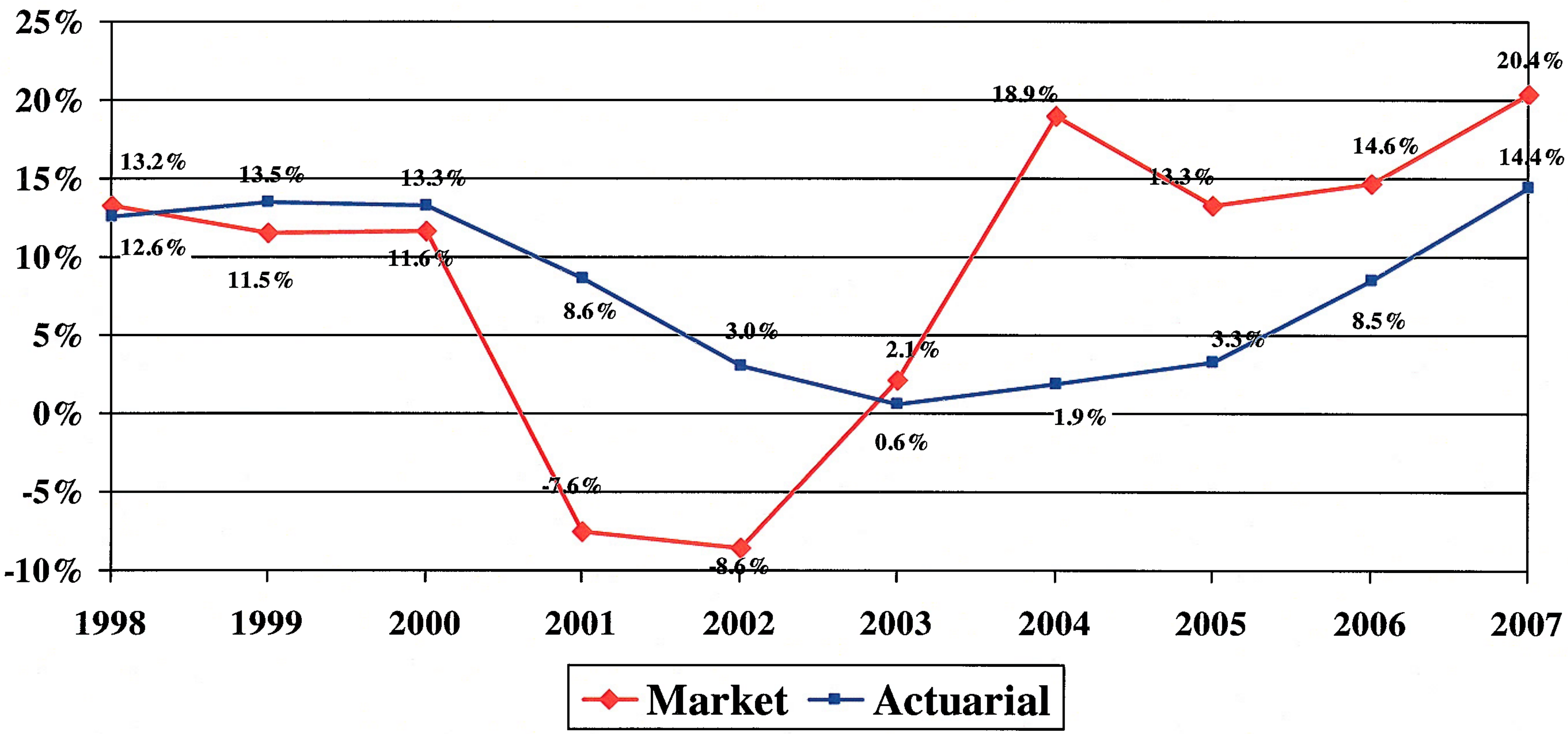
Estimated Returns on Actuarial and Market Value of Assets



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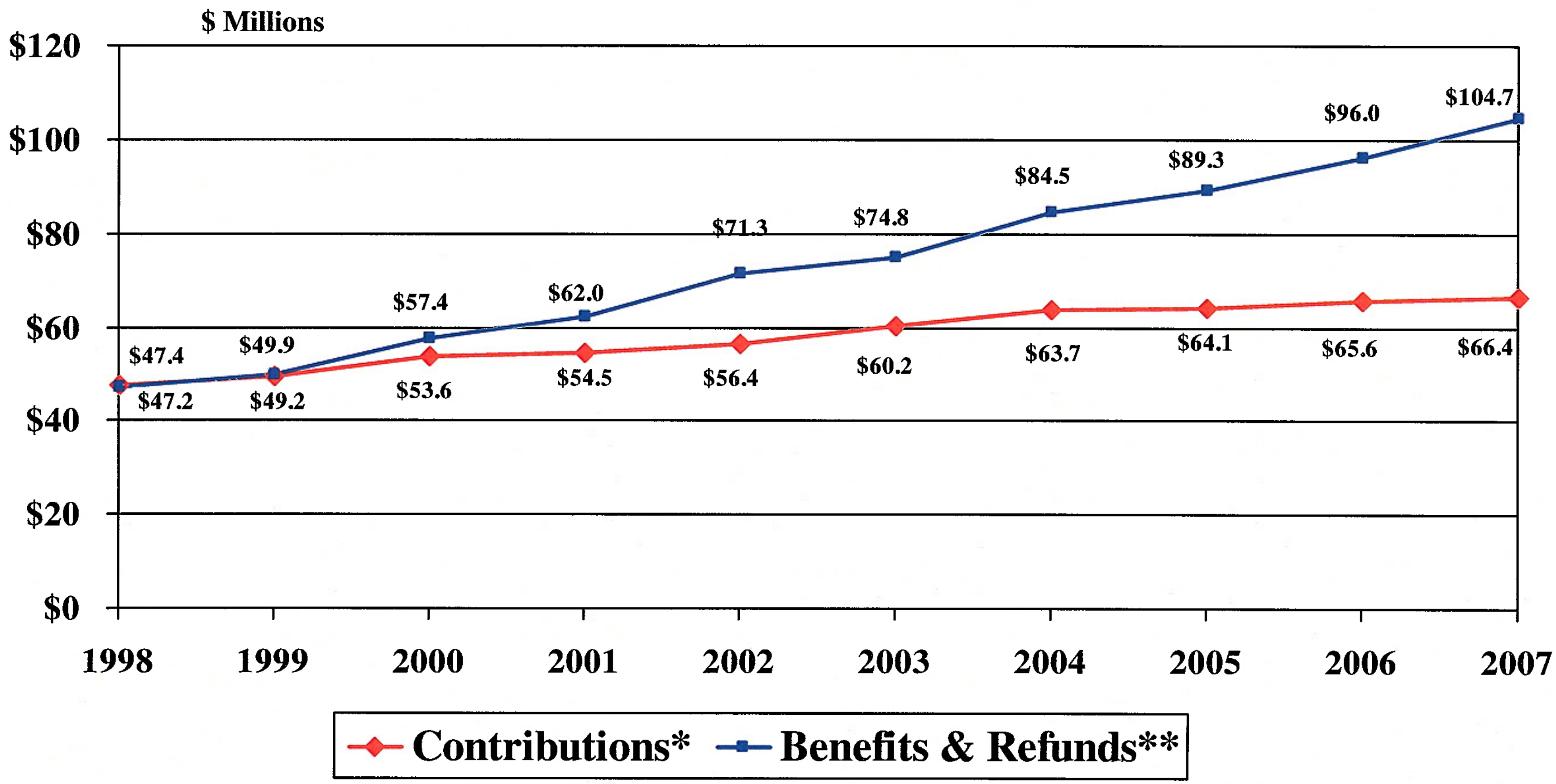
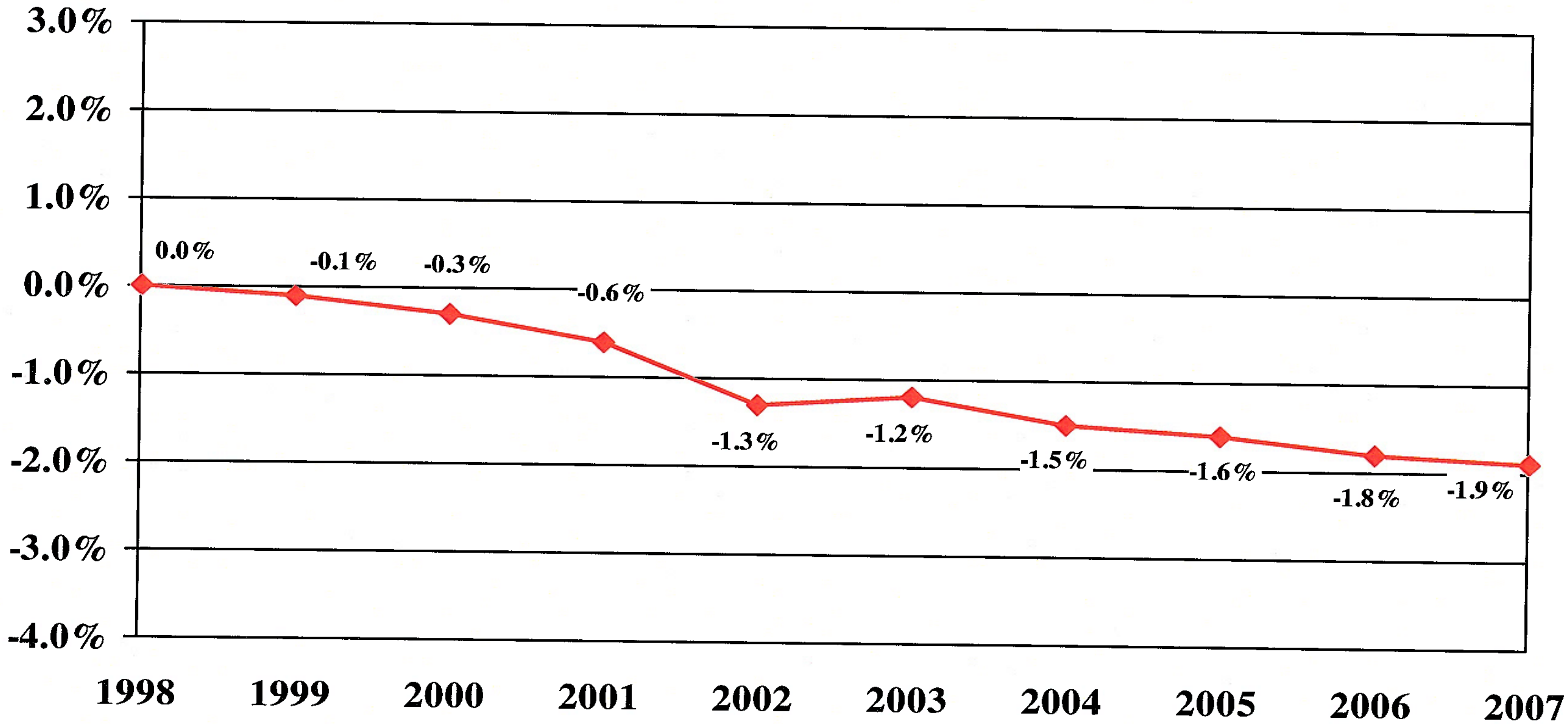
Contributions vs. Benefits and Refunds



* Includes member and employer contributions, and service purchases

** Includes administrative expenses

External Cash Flow As Percentage of Market Value



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Actuarial Results

- Liability figures reflect effect of 2007 legislation, although major provisions are not yet effective
- Unfunded actuarial accrued liability (UAAL) decreased from $ 509.9 million to $459.2 million
- Funded ratio (actuarial assets divided by actuarial accrued liability) increased from 75.4% to 79.2%
  - Funded ratio using market value is 91.9%, up from 83.0 %
- UAAL is 114.4% of covered payroll, compared to 130.7% last year

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Actuarial Results

- Negative margin (shortfall) increased from -4.54% to -2.40%
  - 7.75% statutory – 10.15% GASB ARC (benchmark)
- 7.75% statutory rate composed of:
  - 2.51% employer normal cost
  - 5.24% paid toward funding of UAAL
- Funding period based on 7.75% employer rate remains infinite
  - 5.24% amortization payment not sufficient

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Actuarial Results

- Contribution for FY 2007 was 63.1% of GASB Annual Required Contribution (ARC)
  - 7.75% ÷ 12.29%
- Contribution for FY 2008 will be 76.4% of ARC
  - 7.75% ÷ 10.15%
- These are reported in TFFR's CAFR (Comprehensive Annual Financial Report)

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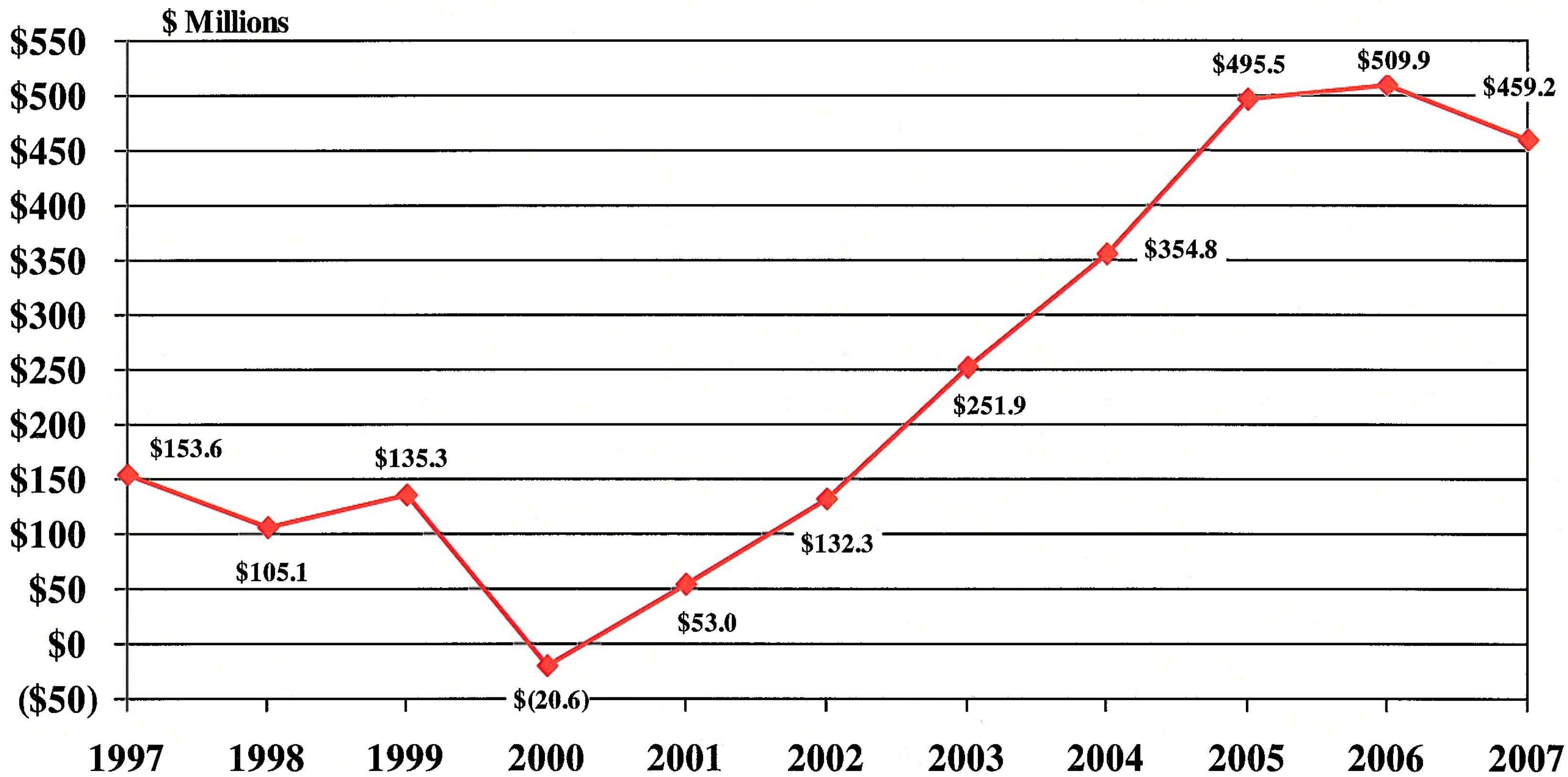
UAAL


$ Millions
$550
$500
$450
$400
$350
$300
$250
$200
$150
$100
$50
$0
($50)
$153.6
$105.1
$135.3
$(20.6)
$53.0
$132.3
$251.9
$354.8
$495.5
$509.9
$459.2
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007

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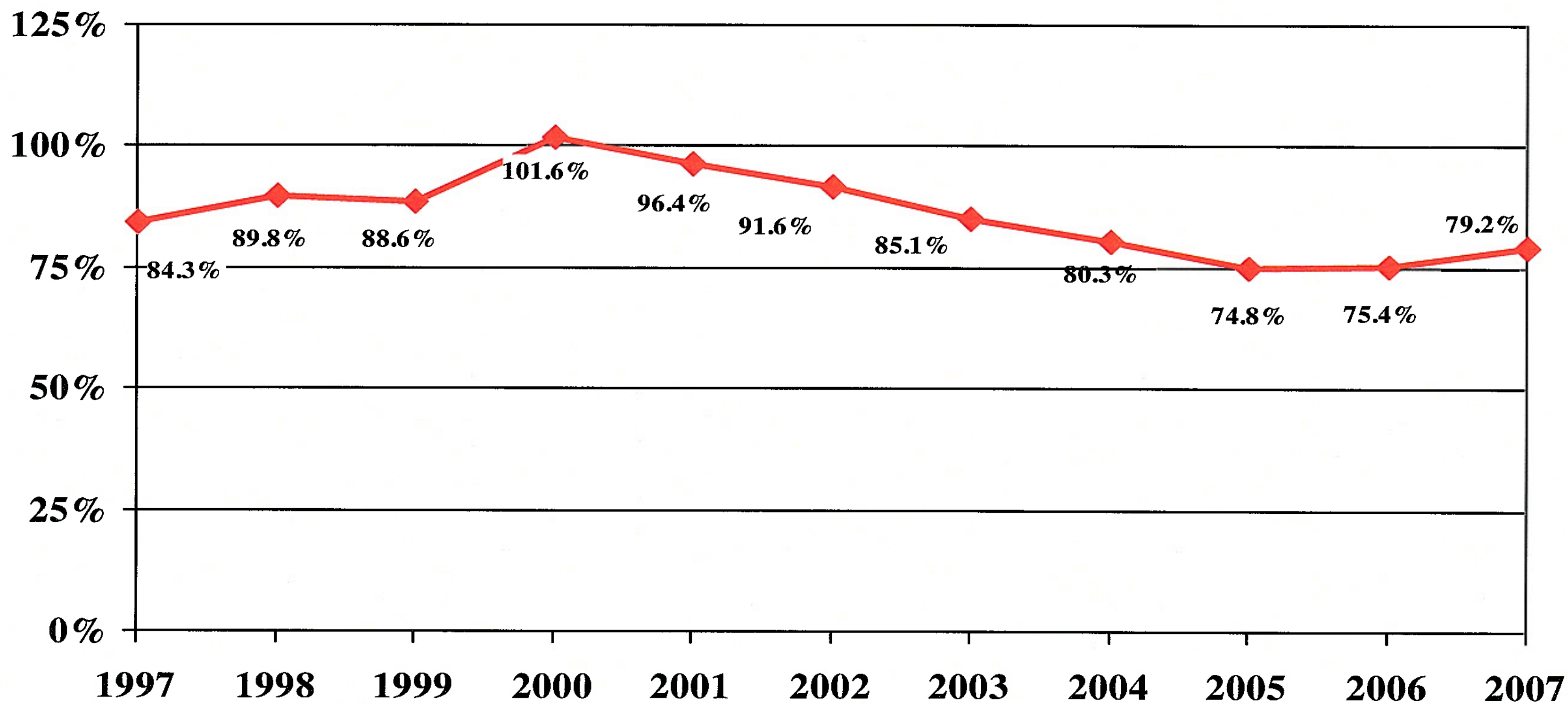
GASB #25 Funded Ratio
(Actuarial Assets ÷ Actuarial Accrued Liabilities)



Benefit increases reflected in 1997, 1999, and 2001

Assumption changes reflected in 2000 and 2005

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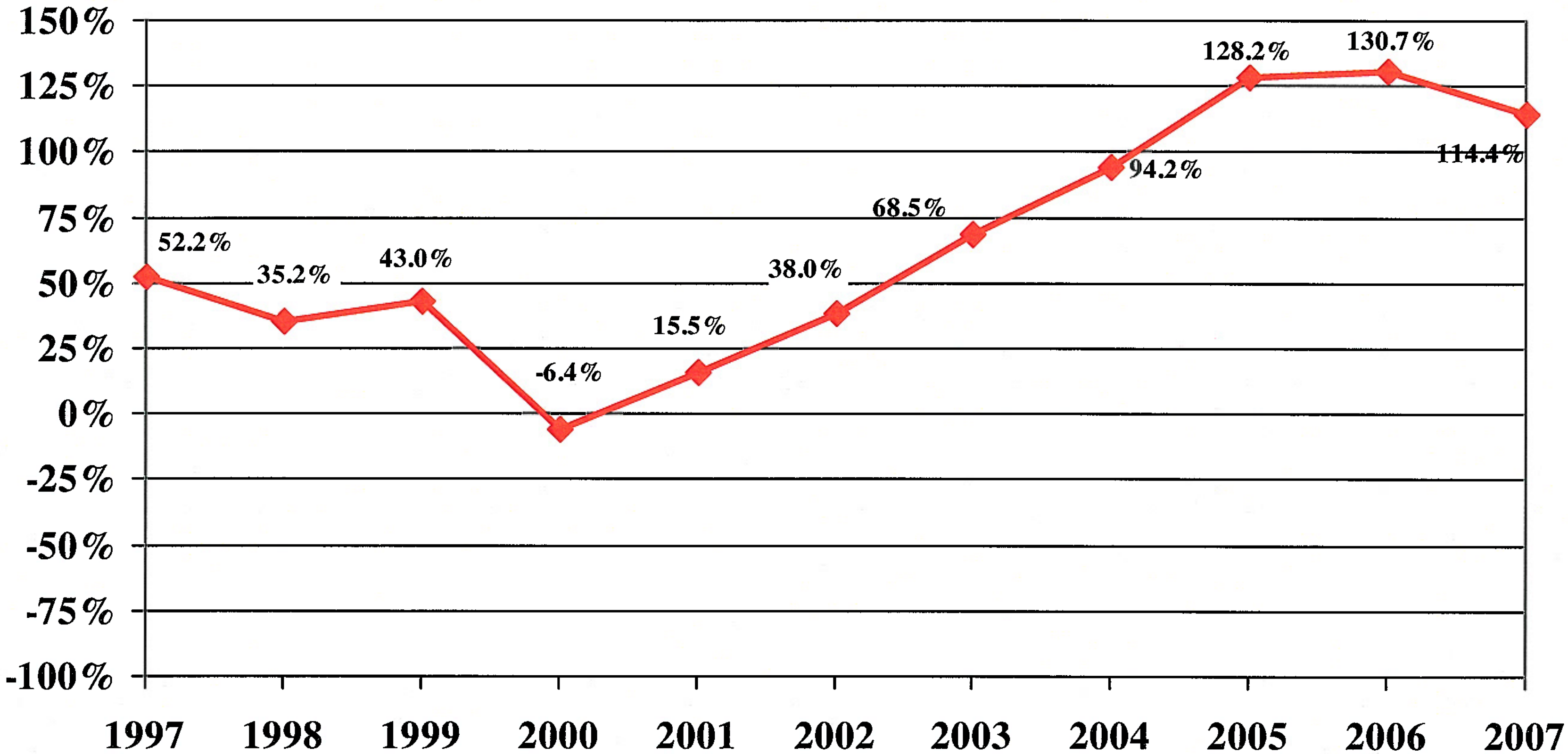
UAAL as Percentage of Payroll



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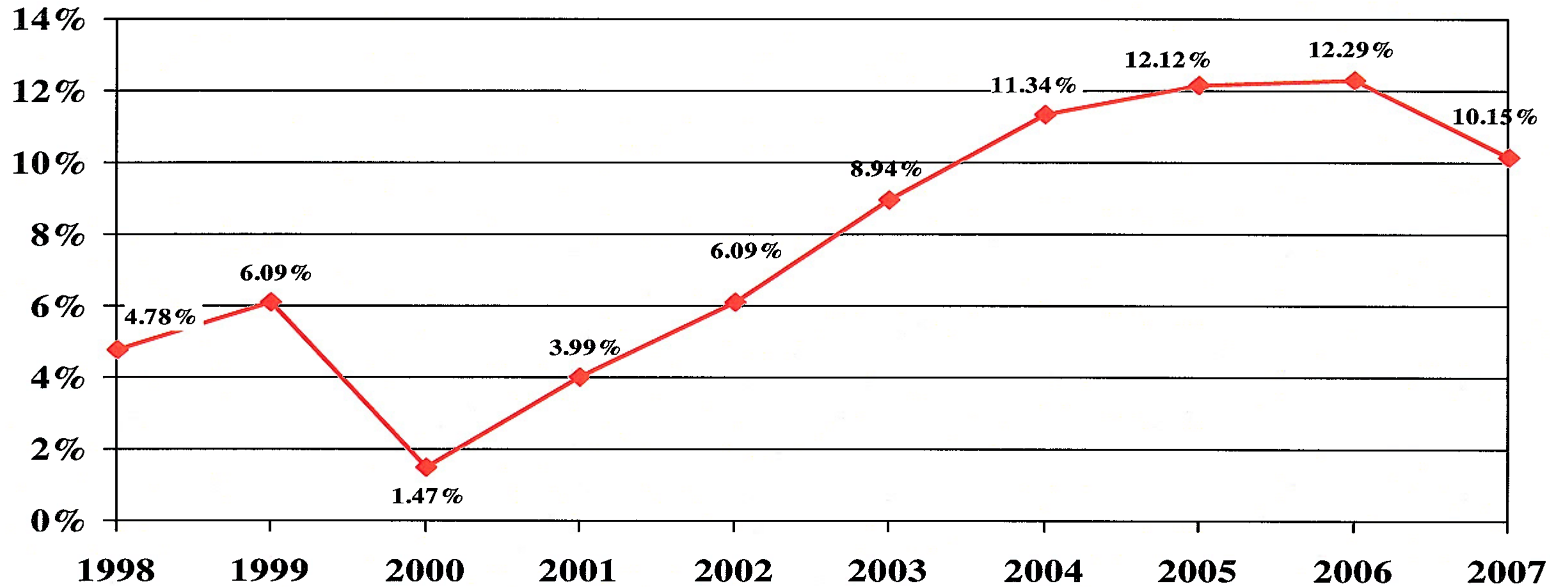
GASB 25 Annual Required Contribution (ARC)



Calculation of ARC now based on 30-year level-percentage-of-payroll amortization of UAAL; before 2005, ARC reflected 20-year level-dollar amortization of UAAL

Change In UAAL for the Year (In $ Millions)

		2006/07	2005/06
1.	UAAL at beginning of year	$509.9	$495.5
2.	Amortization payments	20.3	19.4
3.	Asset experience	(99.2)	(6.7)
4.	Liability experience	(7.8)	1.7
5.	Assumption and method changes	--	--
6.	Legislative changes	36.0	--
7.	UAAL at end of year	$459.2	$509.9

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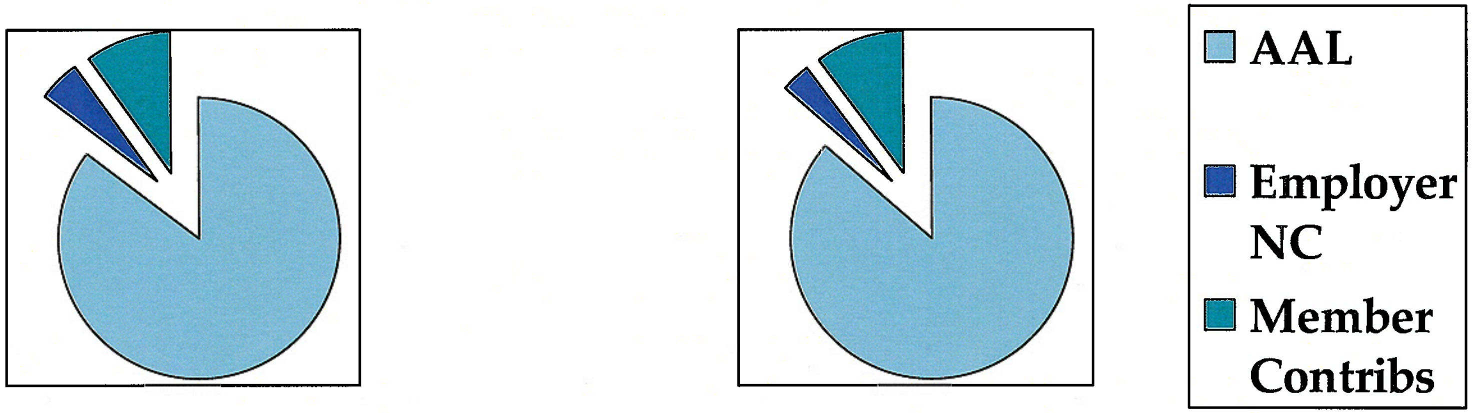
Why an Increase in UAAL due to 2007 Legislation?



- Total liability (present value of future benefits) unchanged for current members
- But present value of future normal cost decreases (now based on Tier 2 provisions), so AAL increases
- Increase will disappear in a few years; over the long term, the UAAL decreases because of the legislation

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Next Year?

- 8.25% employer contribution rate begins
- $280 million in deferred asset gains available to be recognized over next four years, unless needed to offset future investment losses
- Projections show:
  - Increasing funded ratios
  - Decreasing UAAL
  - Decreasing negative margin, turning positive

Projected Funded Ratios and Margin
Assumes 8.00% Annual Market Returns for All Future Years; Assumes 0.5% Decrease in Active Membership

Valuation Year	Funded Ratio (AVA)	Funded Ratio (MVA)	Margin
2007	79%	92%	-2.40%
2008	85%	93%	-0.01%
2009	89%	93%	1.51%
2010	93%	94%	2.79%
2011	95%	95%	3.24%
2012	96%	96%	3.52%
2017	100%	100%	5.13%
2022	105%	105%	7.18%
2027	112%	112%	9.73%
2032	121%	121%	12.87%
2037	133%	133%	16.72%

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Projected Funded Ratios and Margin
Assumes 8.45% Annual Market Returns for All Future Years; Assumes 0.5% Decrease in Active Membership

Valuation Year	Funded Ratio (AVA)	Funded Ratio (MVA)	Margin
2007	79%	92%	-2.40%
2008	85%	93%	0.02%
2009	89%	94%	1.61%
2010	93%	95%	3.00%
2011	96%	97%	3.61%
2012	97%	98%	4.08%
2017	104%	105%	6.90%
2022	113%	114%	10.50%
2027	126%	127%	15.04%
2032	143%	144%	20.68%
2037	164%	165%	27.68%

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Projected Funded Ratios and Margin
Assumes 7.45% Annual Market Returns for All Future Years; Assumes 0.5% Decrease in Active Membership

Valuation Year	Funded Ratio (AVA)	Funded Ratio (MVA)	Margin
2007	79%	92%	-2.40%
2008	85%	92%	-0.05%
2009	89%	92%	1.39%
2010	92%	93%	2.53%
2011	94%	93%	2.80%
2012	94%	93%	2.83%
2017	95%	94%	3.05%
2022	95%	94%	3.36%
2027	96%	95%	3.80%
2032	98%	97%	4.40%
2037	100%	99%	5.17%

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Comparative Information

- Average funded ratio for large public retirement systems = 85.8%
  - TFFR = 79.2% as of July 1, 2007
  - TFFR = 75.4% as of July 1, 2006
  - Based on <u>actuarial</u> value of assets
  - Source: Public Plan Coordinating Council (PPCC) survey released Oct. 2007
  - Survey generally based on 2006 actuarial valuations

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Comparative Information

- Average <u>market</u> funded ratio for large public retirement systems = 88%
  - Based on market value of assets
  - TFFR = 91.9% as of July 1, 2007
  - TFFR = 83.0% as of July 1, 2006
  - Source: Estimate from 2007 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation
  - Estimate based on sample of 2006 actuarial valuations

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Comparative Information

- TFFR's 7.75% employee contribution rate among the highest. Most of those higher are not covered by Social Security
  - Median for those in Soc. Sec. = 5.0%
- TFFR's 7.75% (or 8.25%) employer contribution rate slightly below average
  - Median for those covered by Soc. Sec. = 8.5%
- Source: PPCC Survey

Comparative Information

- Benefits are generally comparable to other statewide teacher plans
  - 2.00% multiplier slightly above average
    - Median for plans covered by Soc. Sec. is 1.85%
  - Rule of 85 is mainstream
  - But about three-fourths of statewide plans provide an automatic COLA to retirees
    - TFFR does not