



NORTH DAKOTA TEACHERS' FUND FOR RETIREMENT

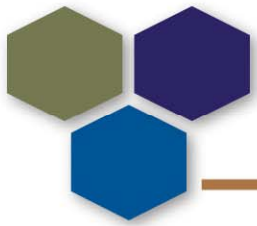
ACTUARIAL VALUATION
AS OF JULY 1, 2009

Presented by Chris Conradi

GRS

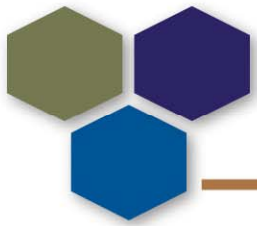
Gabriel Roeder Smith & Company
Consultants & Actuaries
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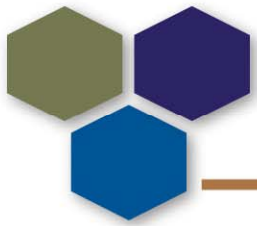
Actuarial Valuation

- ◆ Prepared as of July 1, 2009, 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



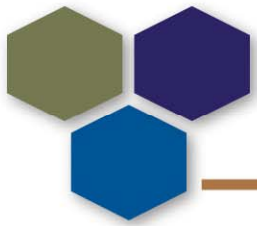
New Legislation Enacted in 2009

- ◆ Supplemental retiree benefit payment approved
 - ▶ One-time supplemental payment paid December 2009
 - ▶ Payment of \$20 times years of service plus \$15 times years retired
 - ▶ Limited to greater of 10% of annual annuity or \$750
 - ▶ Eligible if retired before January 1, 2009 and still in payment on the distribution date
- ◆ Employer contribution rate increases from 8.25% to 8.75% effective July 1, 2010
 - ▶ Sunsets back to 7.75% when TFFR is 90% funded



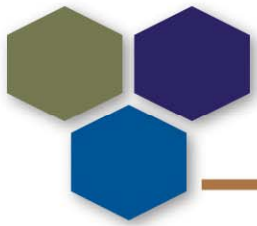
Membership – Actives and Inactives

- ◆ The number of active members increased by 146 from 9,561 to 9,707
 - ▶ 1.5% increase
 - ▶ Over last 10 years, active membership has decreased an average of 0.3% per year
 - ▶ Earlier census projections show school-age population decreasing over next 15-20 years
 - ▶ Assumption: 0.5%/year average decrease



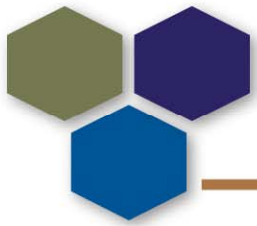
Membership – Actives and Inactives

- ◆ Payroll for active members increased 5.3%, from \$417.7 million to \$440.0 million
 - ▶ Payroll has increased an average of 3.4% per year over the last ten years
- ◆ Average pay for active members increased 3.8%, from \$ 43,684 to \$45,327
- ◆ However, increase in average salary can be misleading
 - ▶ Higher paid teachers who retire are replaced by new teachers
 - ▶ 5.8% average increase for continuing members



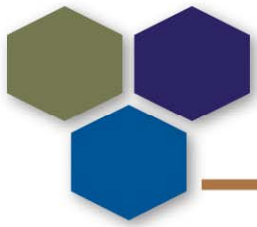
Membership – Actives and Inactives

- ◆ Average age of active members is 44.5, compared to 44.6 last year and to 44.0 ten years ago
- ◆ Average years of service for active members is 14.3, compared to 14.4 last year and to 14.4 ten years ago
- ◆ Evidence of baby boomer retirements
- ◆ There are also 1,490 inactive, vested members, and there are 292 inactive nonvested members

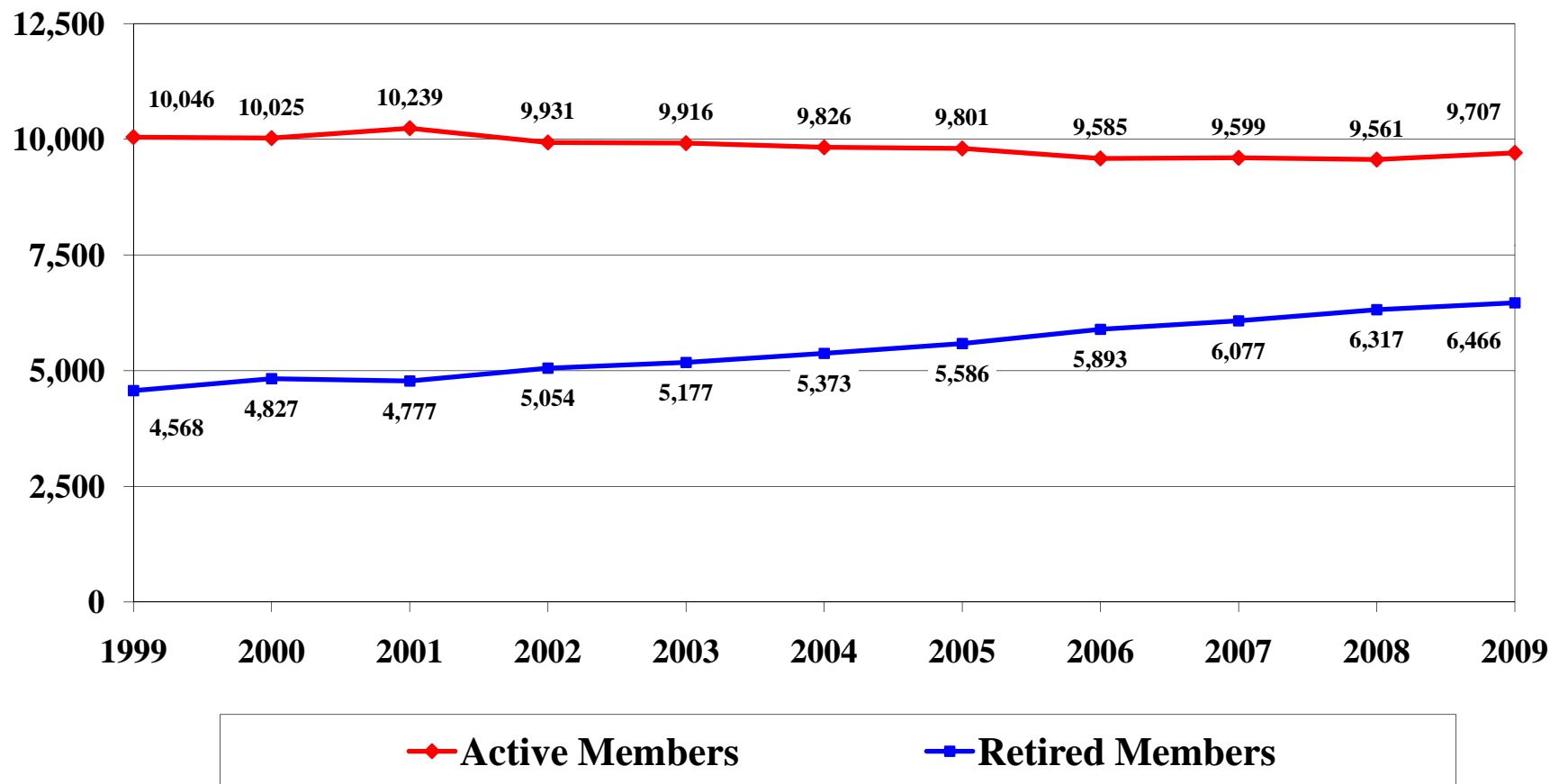


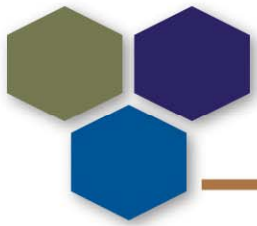
Membership – Annuitants

- ◆ The number of annuitants increased by 149, from 6,317 to 6,466, a 2.4% increase
 - ▶ Annuitants include service retirees, disabled retirees, and beneficiaries receiving benefits
 - ▶ Over the last 10 years, the increase in the number of annuitants was 3.5% per year
- ◆ Average annual benefit is \$18,162
- ◆ 1.5 active members for each annuitant
 - ▶ Ratio is decreasing, was 2.2 ten years ago

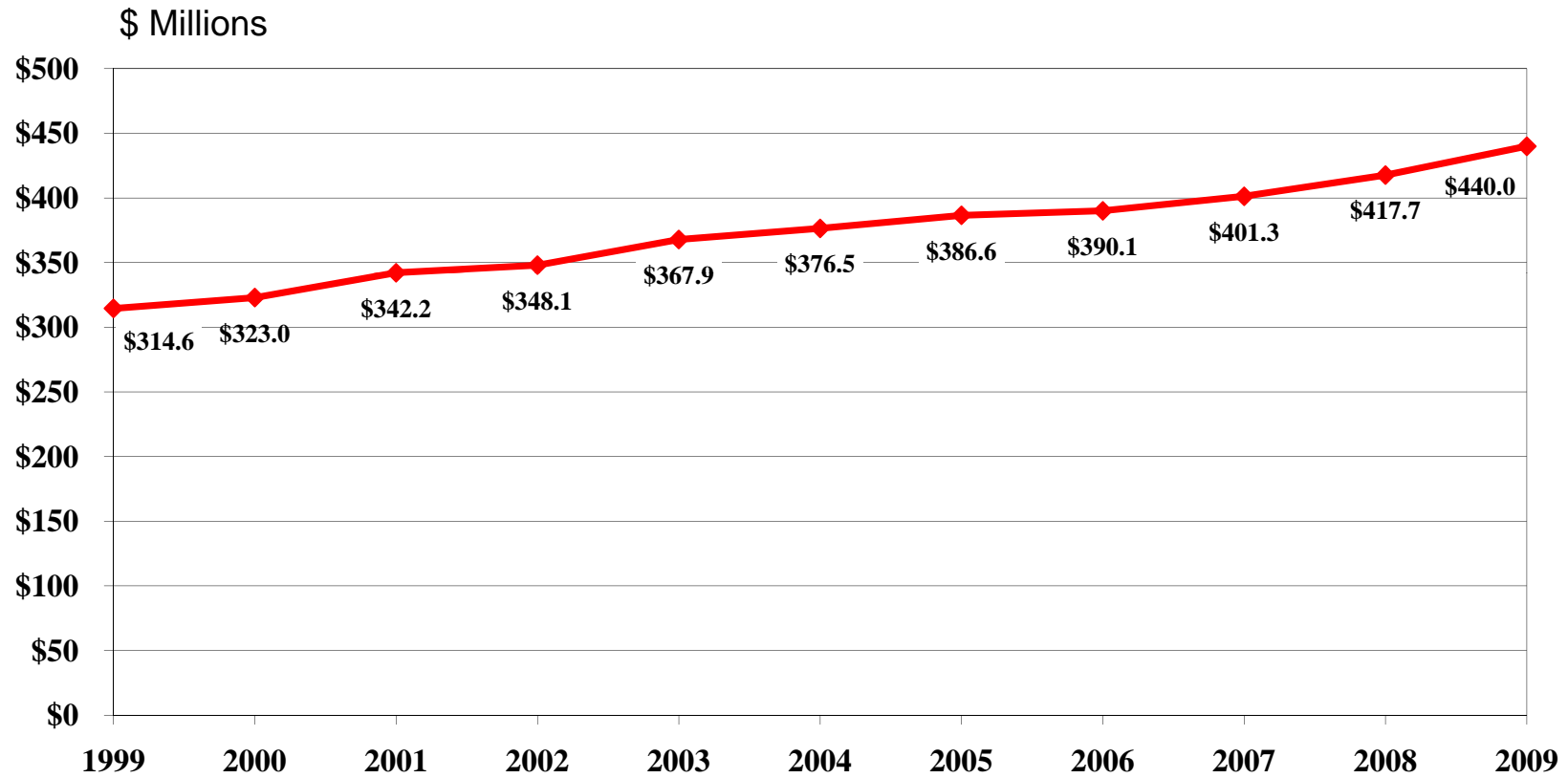


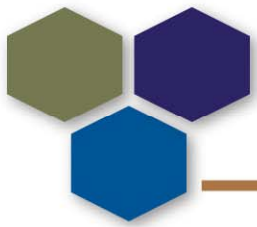
Active Members and Retired Members



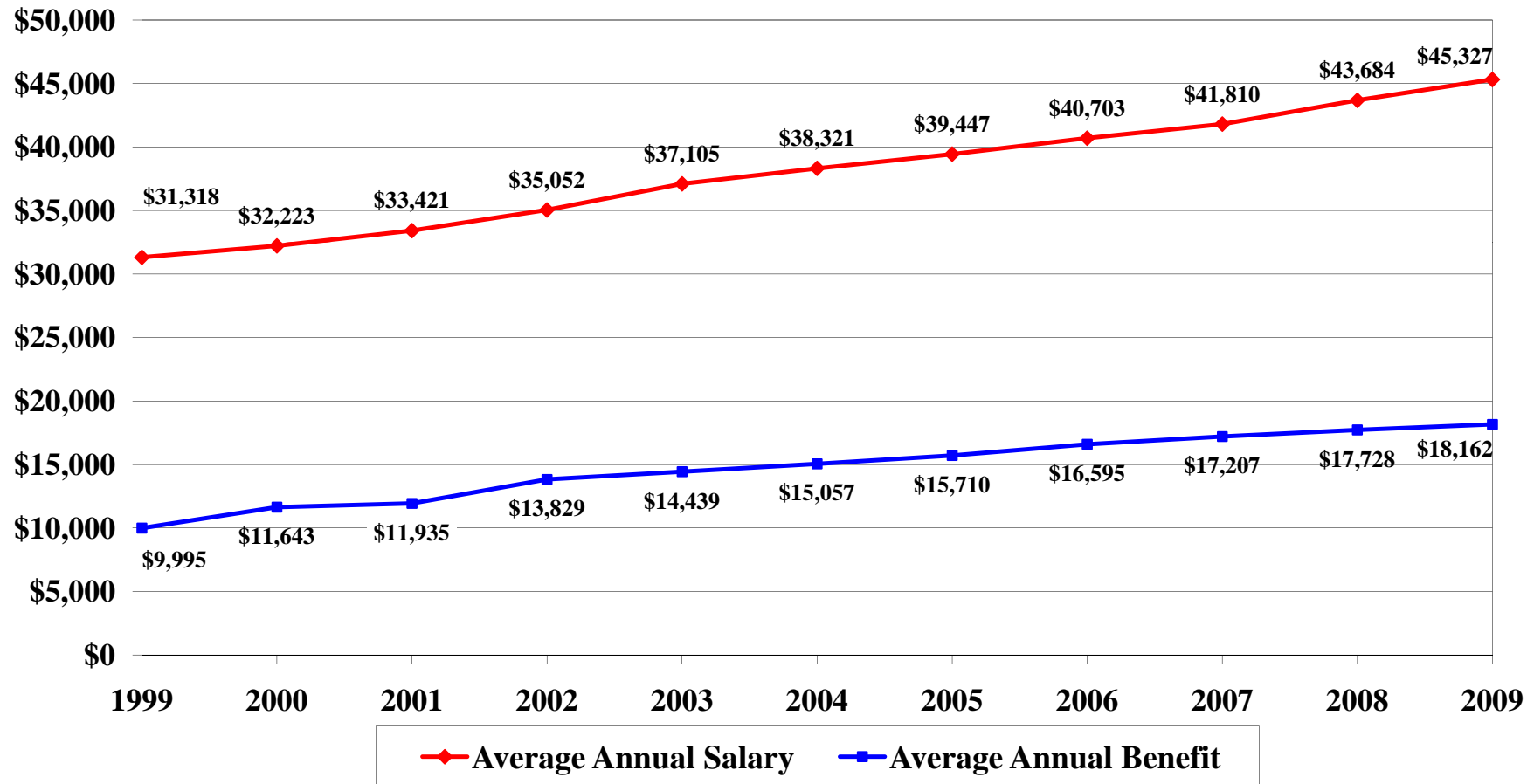


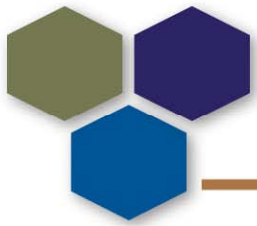
Active Payroll





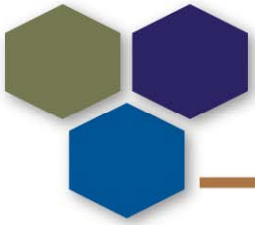
Average Salary and Average Benefit



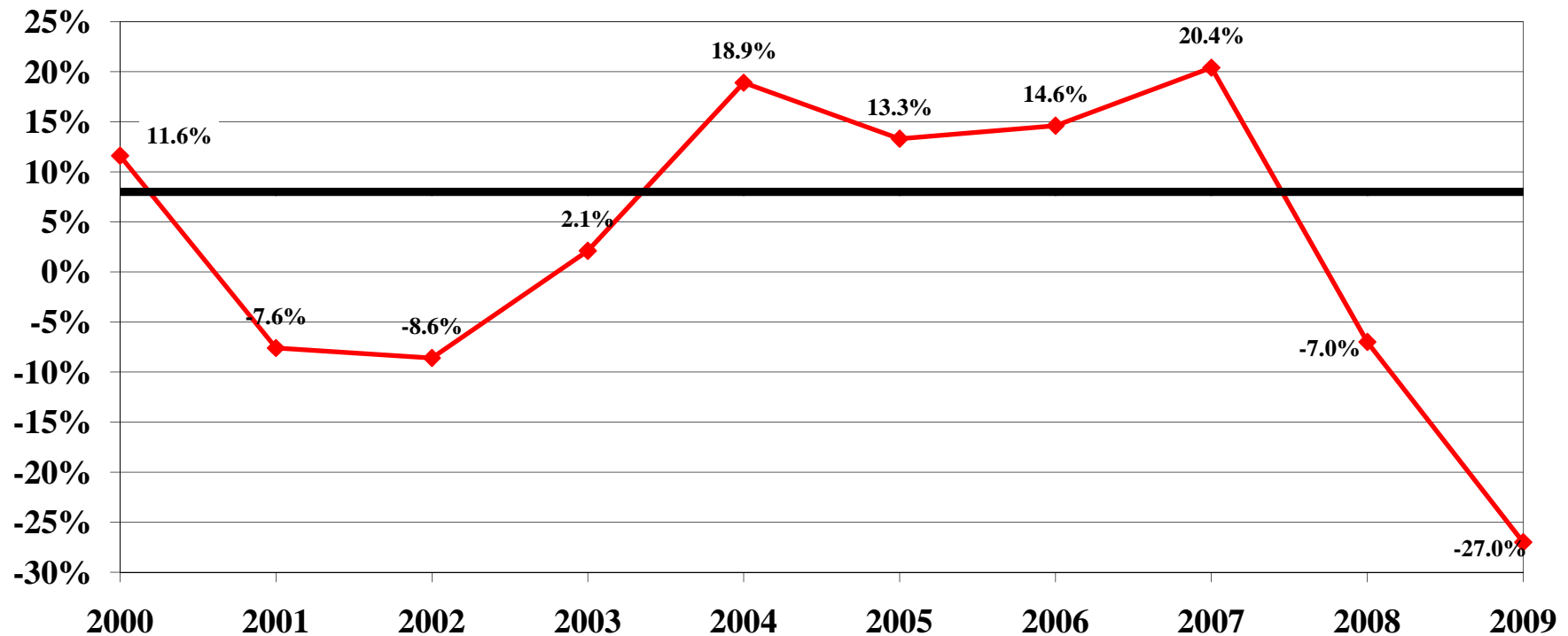


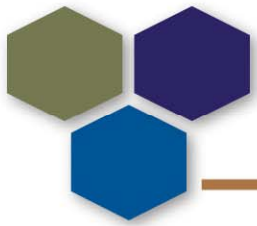
Assets

- ◆ Return on market of -27.0% in FY 2009
 - ▶ Net of investment and administrative expenses
 - ▶ Worst market return in TFFR's history, as far as we can tell
 - ▶ A return this bad is expected to occur just once a century, based on most capital market assumption sets
 - ▶ Made worse because it follows a -7.0% return for FY 2008



Returns on Market Value of Assets

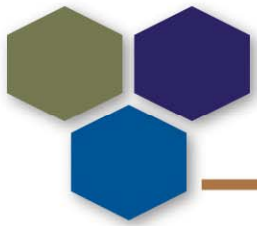




Assets

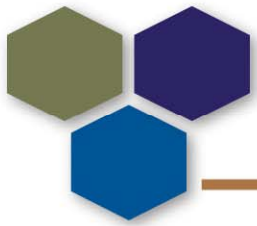
◆ Last 10 years

- ▶ 5 out of last 10 years returns were greater than 8.00% (all greater than 11%)
- ▶ 5 out of last 10 years returns were less than 8.00% (all less than 3%, four of these negative)



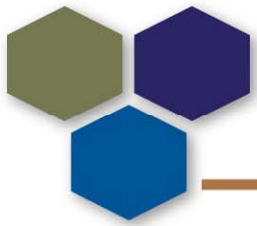
Assets

- ◆ Fund assumes assets will earn 8.00% per year net of expenses
 - ▶ So shortfall is really -35.0%
 - -27.0% - 8.0%
 - Like someone stole over one-third of the assets
- ◆ Average return for last ten years was 2.0%
- ◆ 20-year average return was 6.6%
 - ▶ Below assumed 8.0% investment return assumption



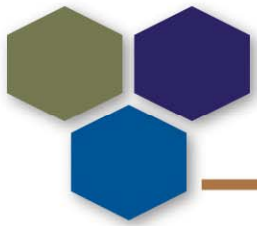
Assets

- ◆ In dollar terms, shortfall of \$632 million
 - ▶ Projected 6-30-2009 market with
 - 8.0% return in FY 2009: \$1.942 billion
 - Actual with -27.0% return: \$1.310 billion



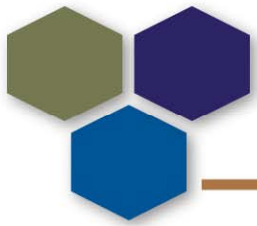
Assets

- ◆ Fair market value decreased from \$ 1,846 million (June 30, 2008) to \$1,310 million (June 30, 2009), or \$536 million
- ◆ Contributions in FY 2009
 - ▶ Member contributions at 7.75% = \$36.9 million, including service purchases
 - ▶ Employer contributions at 8.25% = \$37.5 million
- ◆ Total contributions of \$74.4 million, compared to \$70.6 million in FY 2008
 - ▶ Employer rate in FY 2008 was 7.75%
- ◆ Employer contribution rate is 8.25% for FY 2010, and will increase to 8.75% for FY 2011



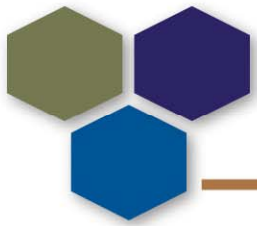
Assets

- ◆ Total distributions—benefit payments, refunds and administrative expenses—totaled \$118.0 million
- ◆ Therefore, net external cash flow (contributions less benefits and refunds) was -\$43.7 million, or -3.3% of market value of assets at end of year
 - ▶ Has not been a problem in the past, but projections show this increasing in future
 - ▶ Might require adjustments to asset allocation to meet benefit payments
 - More fixed income or cash
 - Producing lower expected returns



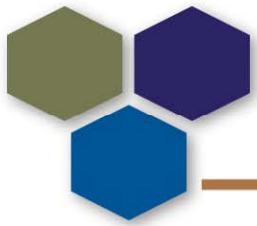
Assets

- ◆ 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 2008 difference, 60% of FY 2007 difference and 80% of FY 2006 difference
- ◆ Actuarial value is now \$1,900 million, vs. \$ 1,909 million last year

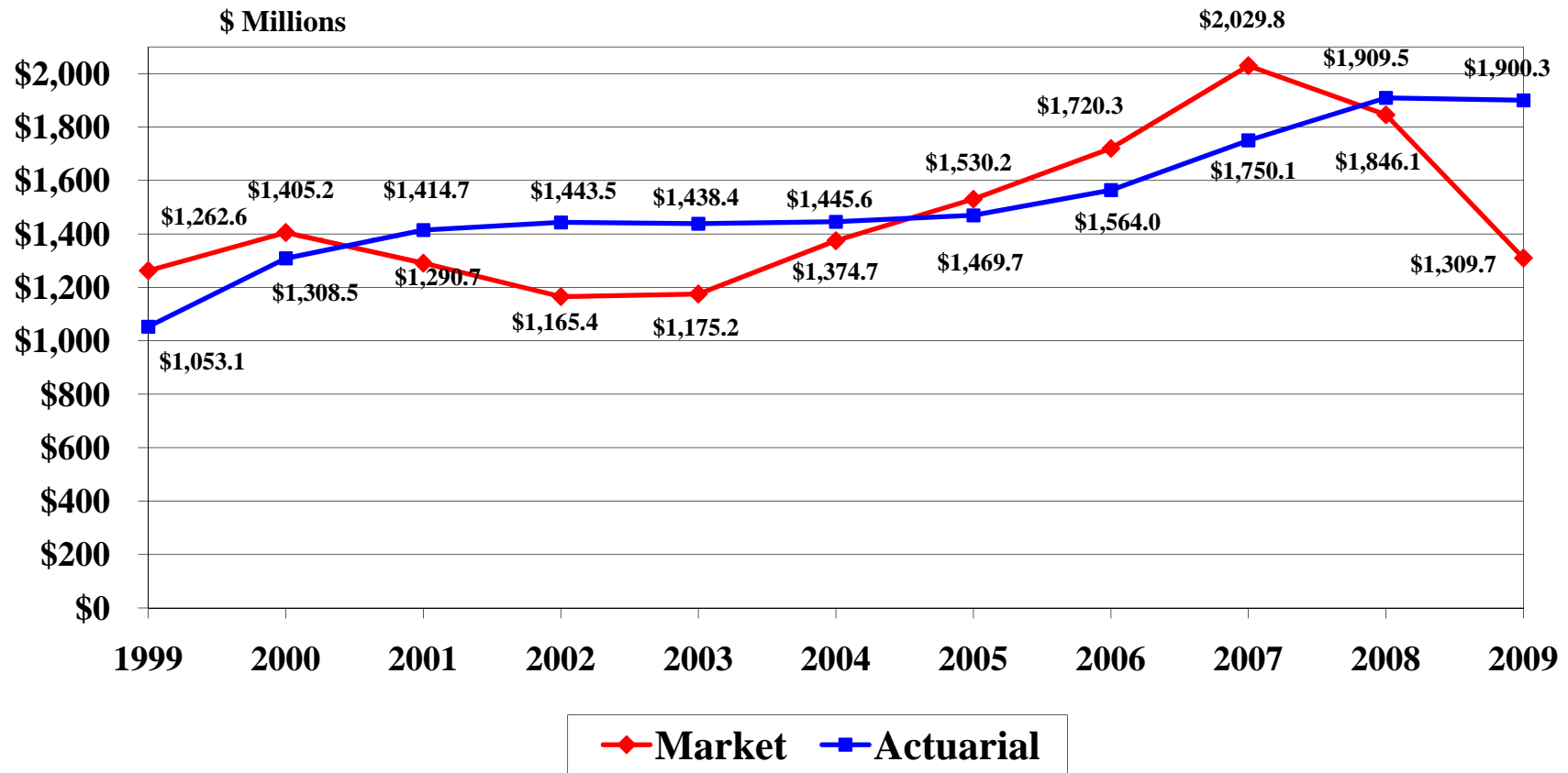


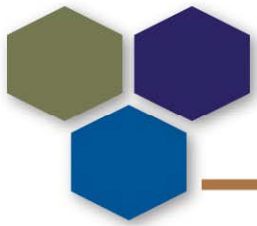
Assets

- ◆ Actuarial return was 1.7% in FY 2009, compared to -27.0% on market value basis
- ◆ Actuarial value is 145% of fair market value
 - ▶ Was 103% last year
- ◆ \$590.6 million in deferred losses, not yet recognized

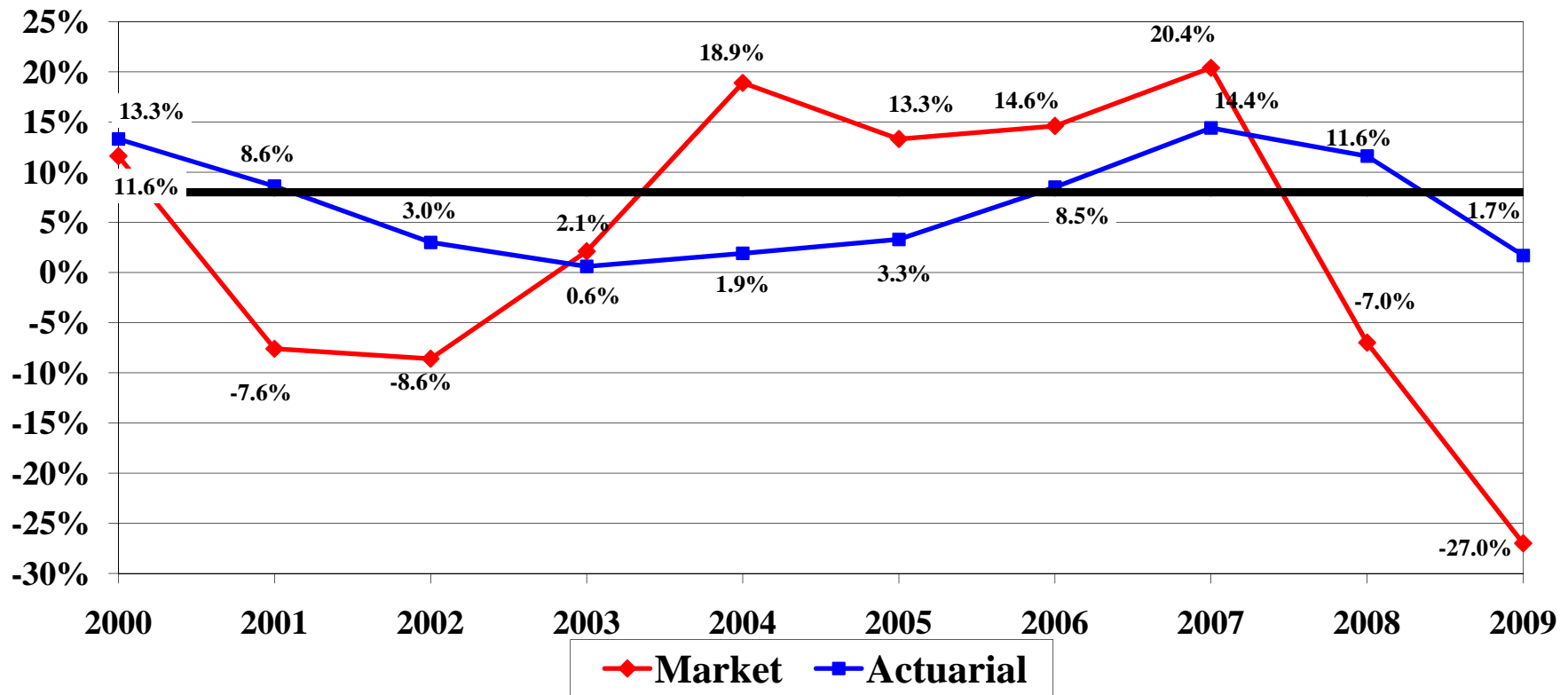


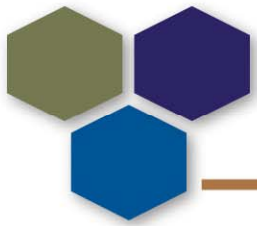
Market and Actuarial Values of Assets



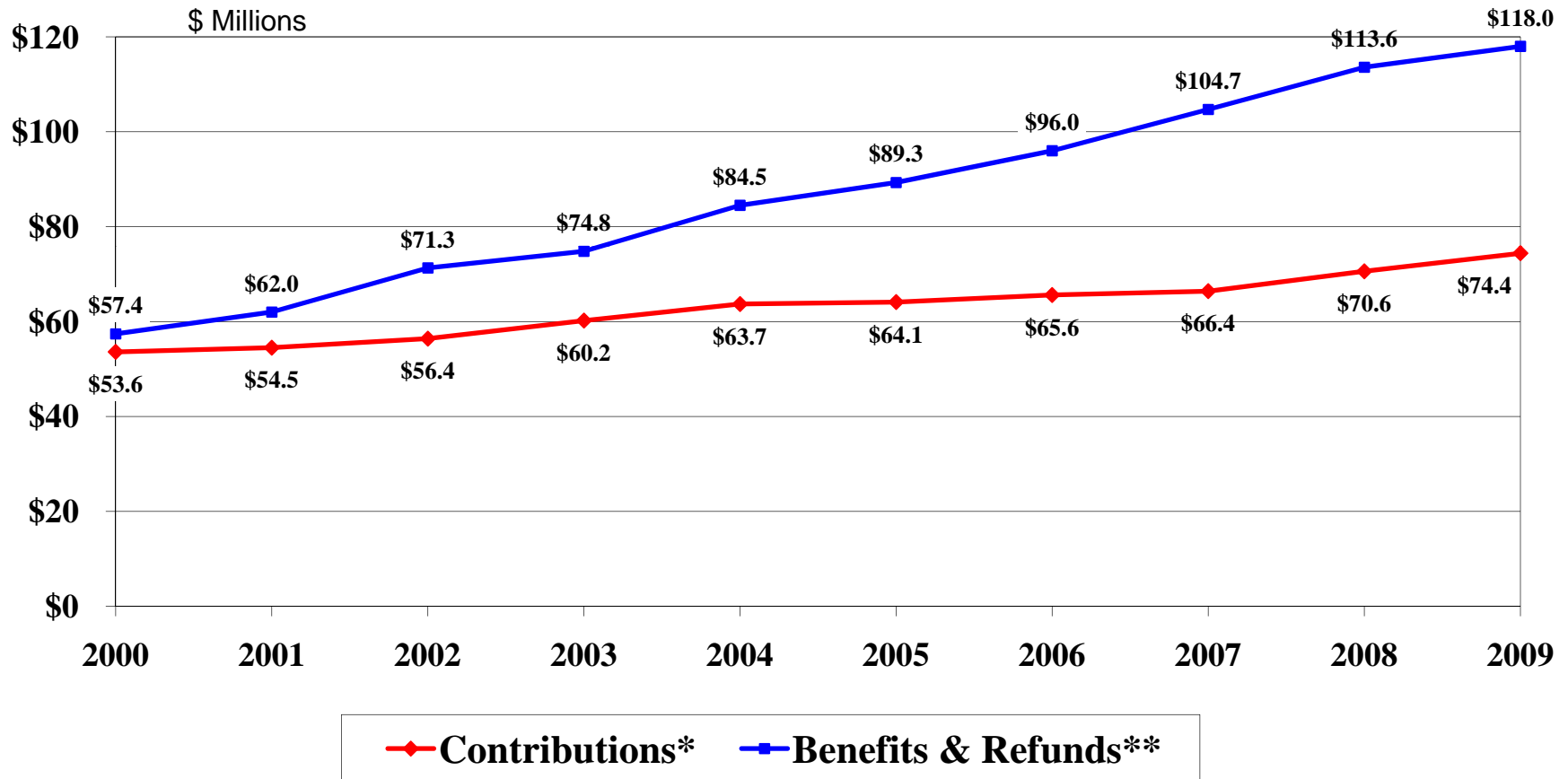


Returns on Actuarial and Market Value of Assets



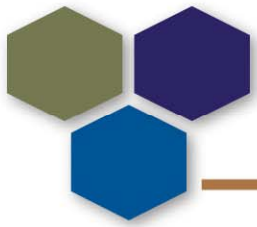


Contributions vs. Benefits and Refunds

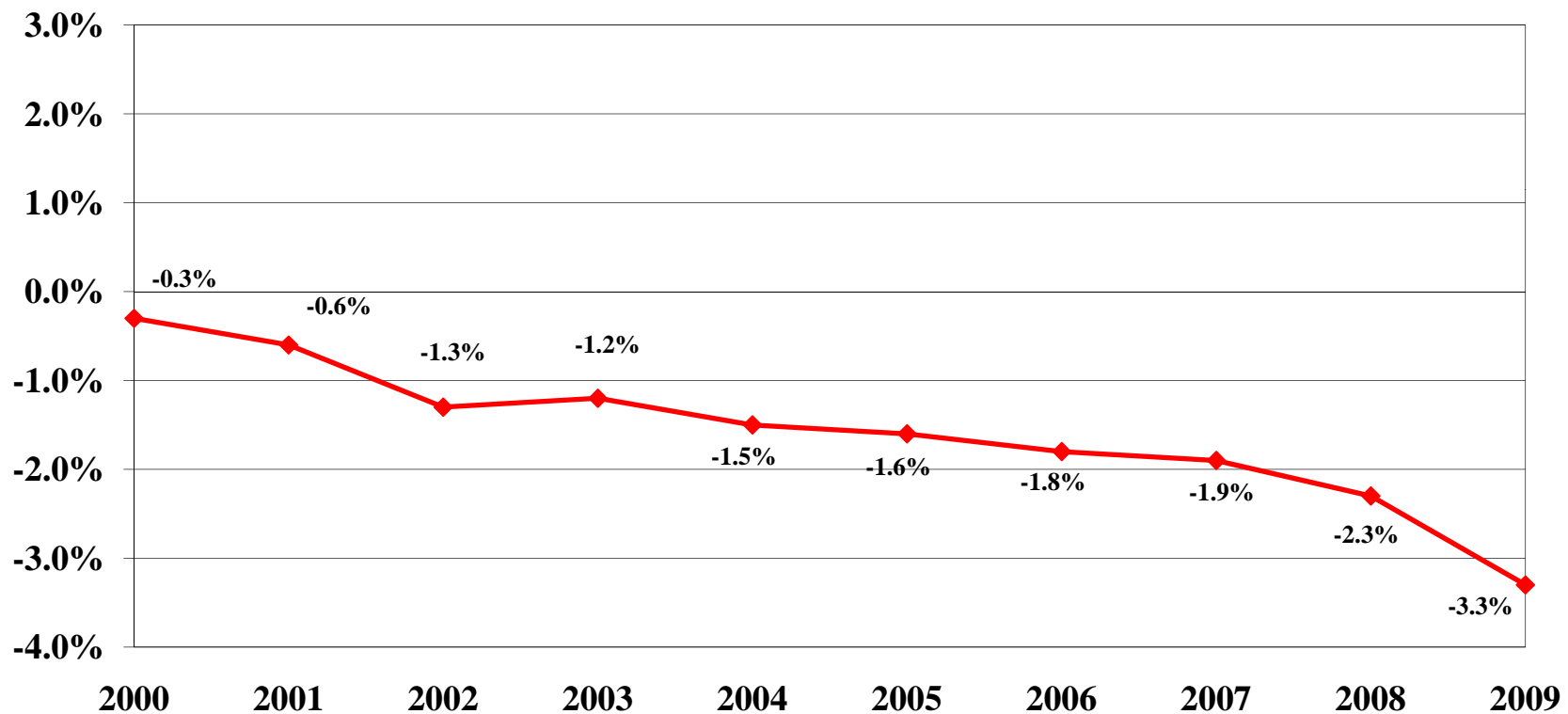


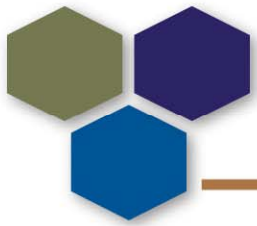
* Includes member and employer contributions, and service purchases

** Includes administrative expenses



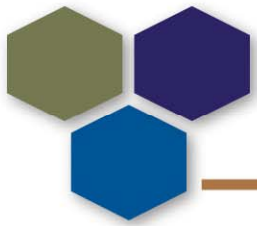
External Cash Flow As Percentage of Market Value





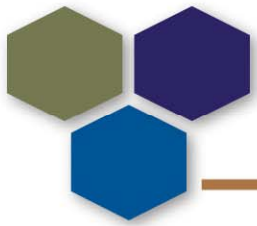
Actuarial Results

- ◆ Liability figures reflect effect of 2009 legislation
- ◆ Unfunded actuarial accrued liability (UAAL) increased from \$ 421.2 million to \$545.6 million
- ◆ Funded ratio (actuarial assets divided by actuarial accrued liability) decreased from 81.9% to 77.7%
 - ▶ Funded ratio using market value is 53.5%, down from 79.2 %
- ◆ UAAL is 124.0% of covered payroll, compared to 100.8% last year



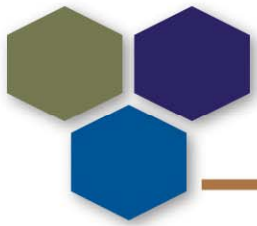
Actuarial Results

- ◆ Negative margin (shortfall) declined from -0.99% to -2.53%
 - ▶ 8.25% statutory – 10.78% GASB ARC (benchmark)
- ◆ 8.25% statutory rate composed of:
 - ▶ 2.51% employer normal cost
 - ▶ 5.74% paid toward funding of UAAL
- ◆ Funding period based on 8.25% employer rate is infinite
 - ▶ 5.74% amortization payment insufficient
 - ▶ Would be infinite even if we used the 8.75% rate

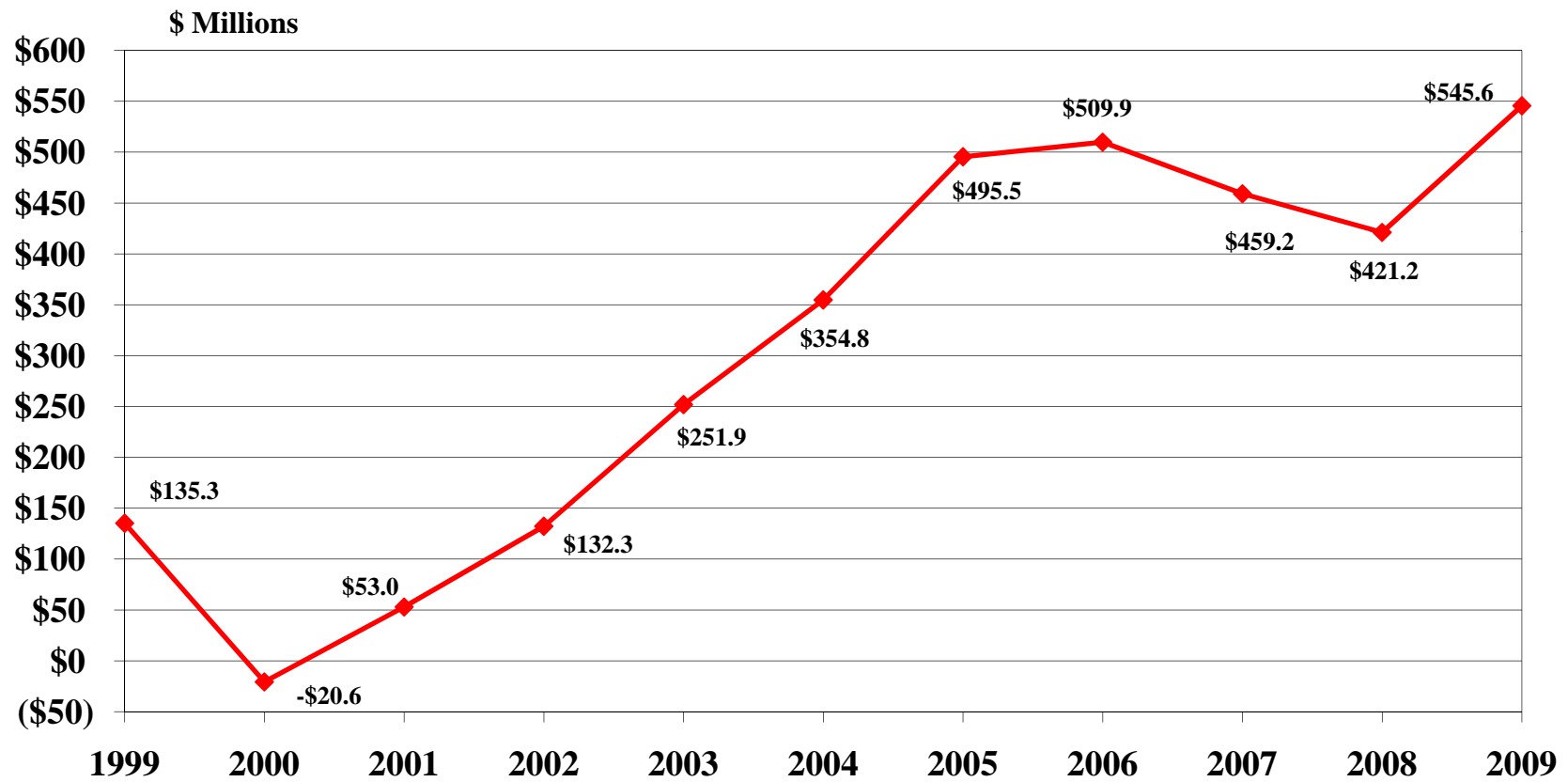


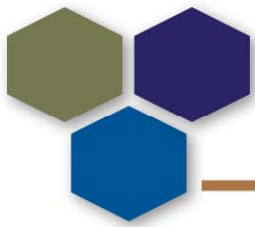
Actuarial Results

- ◆ Contribution for FY 2009 was 89.3% of GASB Annual Required Contribution (ARC)
 - ▶ $8.25\% \div 9.24\%$
- ◆ Contribution for FY 2010 will be 76.5% of ARC
 - ▶ $8.25\% \div 10.78\%$
- ◆ These are reported in TFFR's CAFR (Comprehensive Annual Financial Report)



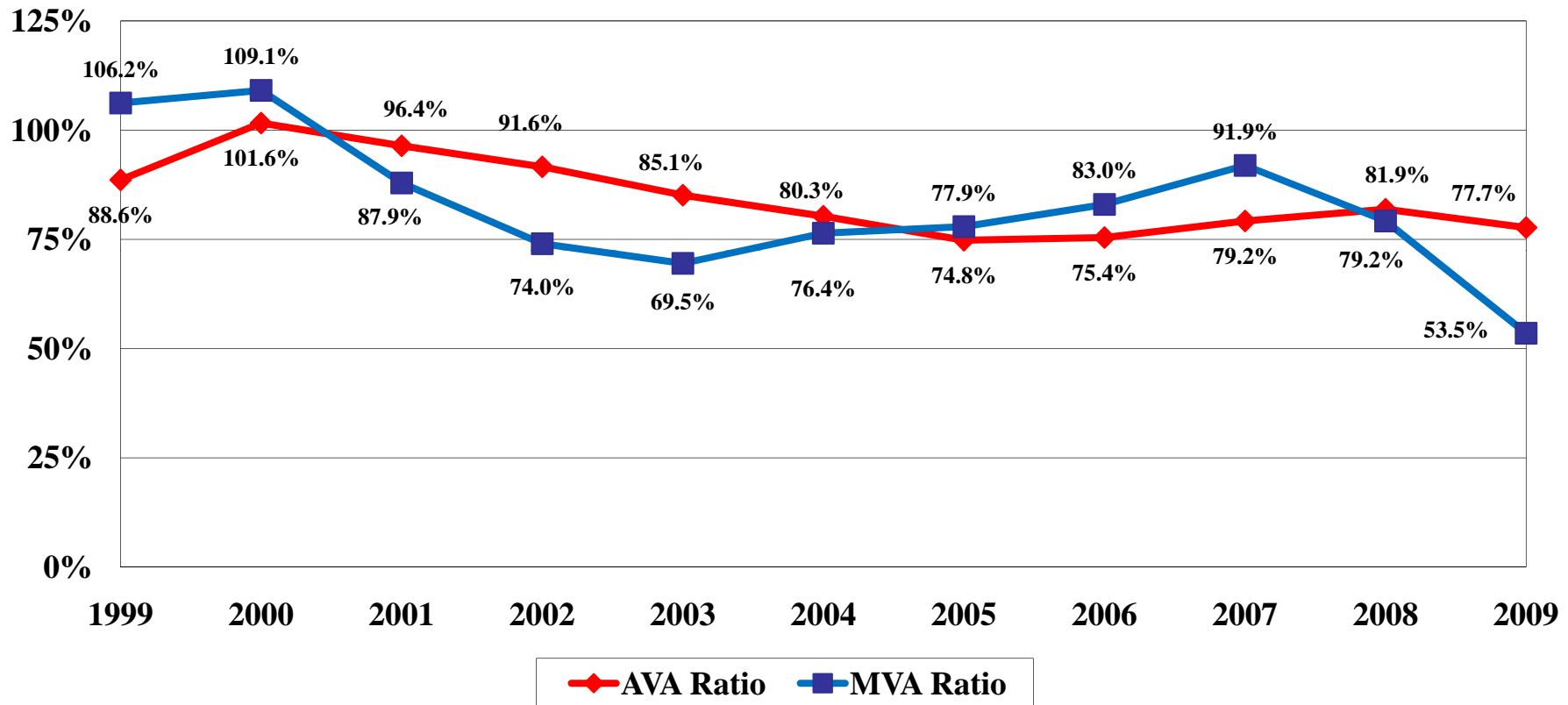
UAAL





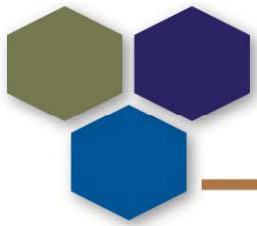
Funded Ratios

(Assets ÷ Actuarial Accrued Liabilities)

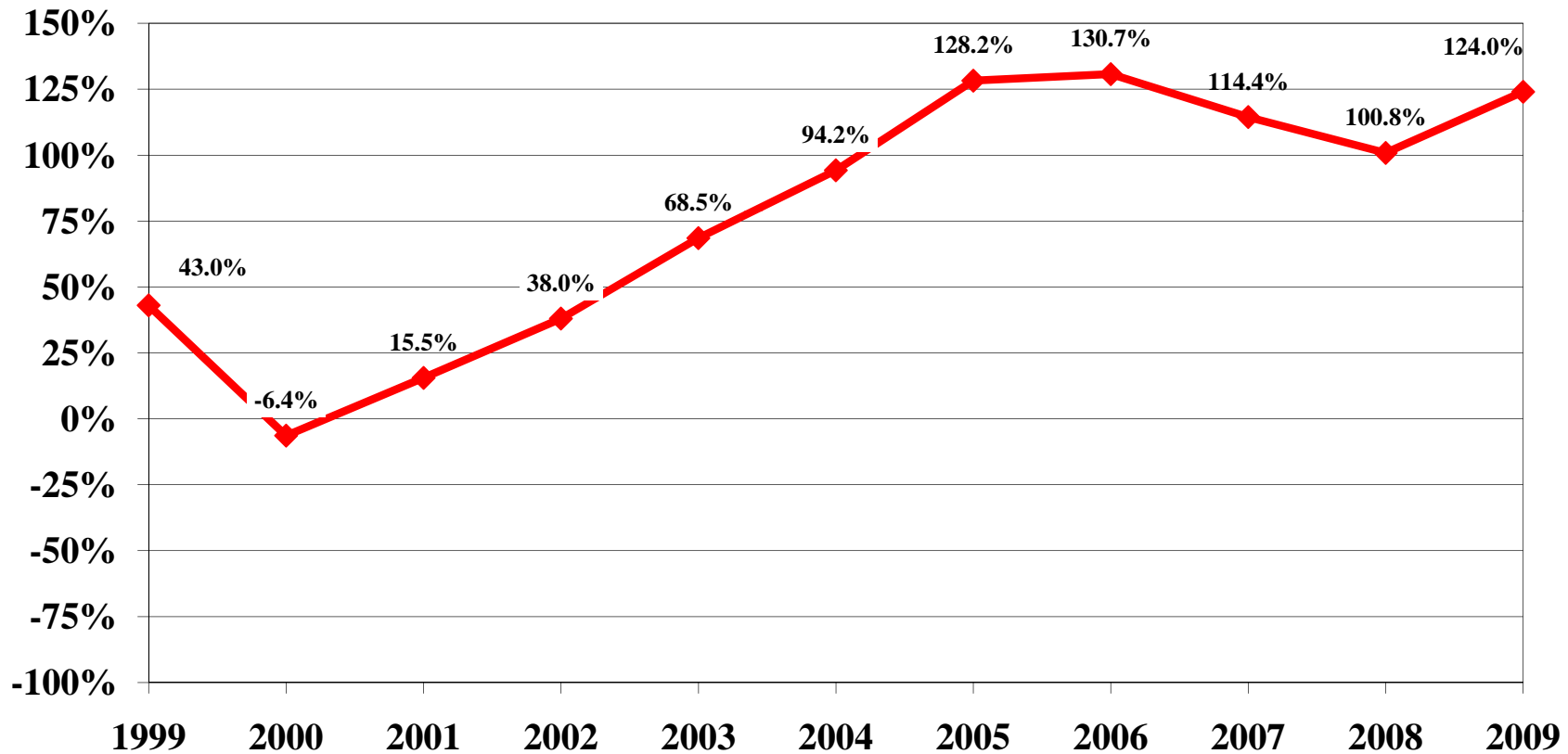


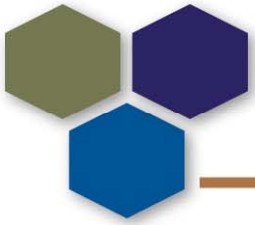
Benefit increases reflected in 2001

Assumption changes reflected in 2000 and 2005

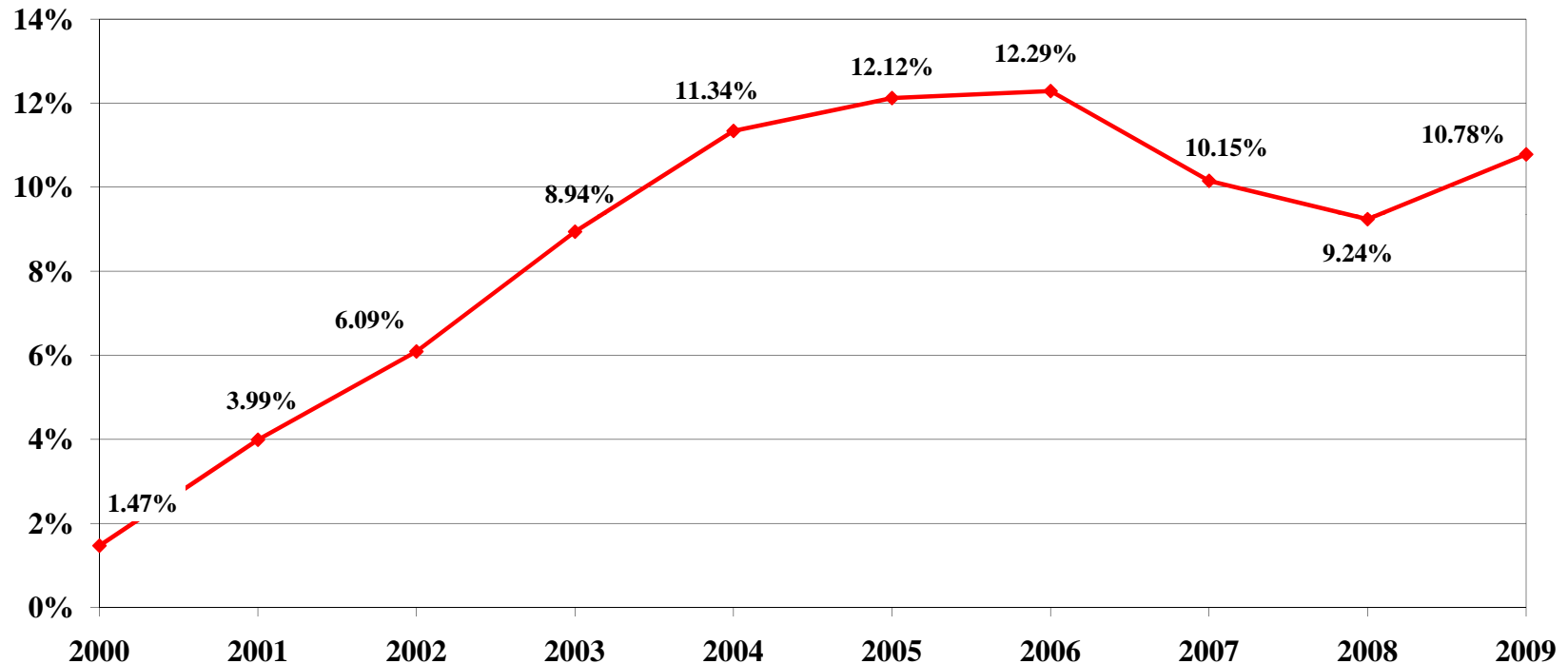


UAAL as Percentage of Payroll

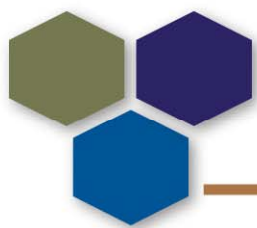




GASB 25 Annual Required Contribution (ARC)

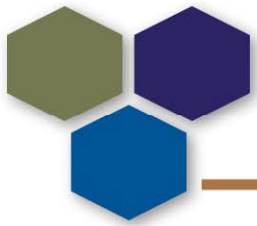


Calculation of ARC now based on 30-year level-percentage-of-payroll amortization of UAAL; before 2005, ARC reflected 20-year level-dollar amortization of UAAL



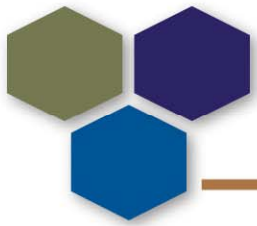
Change in UAAL for the Year (In \$ Millions)

| | 2008/09 | 2007/08 |
|----------------------------------|----------------|----------------|
| 1. UAAL at beginning of year | \$421.2 | \$459.2 |
| 2. Amortization payments | 3.5 | 8.7 |
| 3. Asset experience | 118.3 | (62.4) |
| 4. Liability experience | (1.8) | 15.7 |
| 5. Assumption and method changes | -- | -- |
| 6. Legislative changes | 4.4 | -- |
| 7. UAAL at end of year | \$545.6 | \$421.2 |



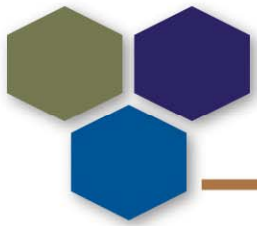
Projections - Assumptions

- ◆ Scenarios based on 7 possible investment returns for FY 2010: from -24% to +24%
- ◆ 8.00% annual return for FY 2011 and later
- ◆ No non-investment actuarial gains or losses
- ◆ 0.5% annual decrease in the number of active members
- ◆ 8.75% employer contribution rate effective in FY 2011 and after
- ◆ No other benefit or contribution changes

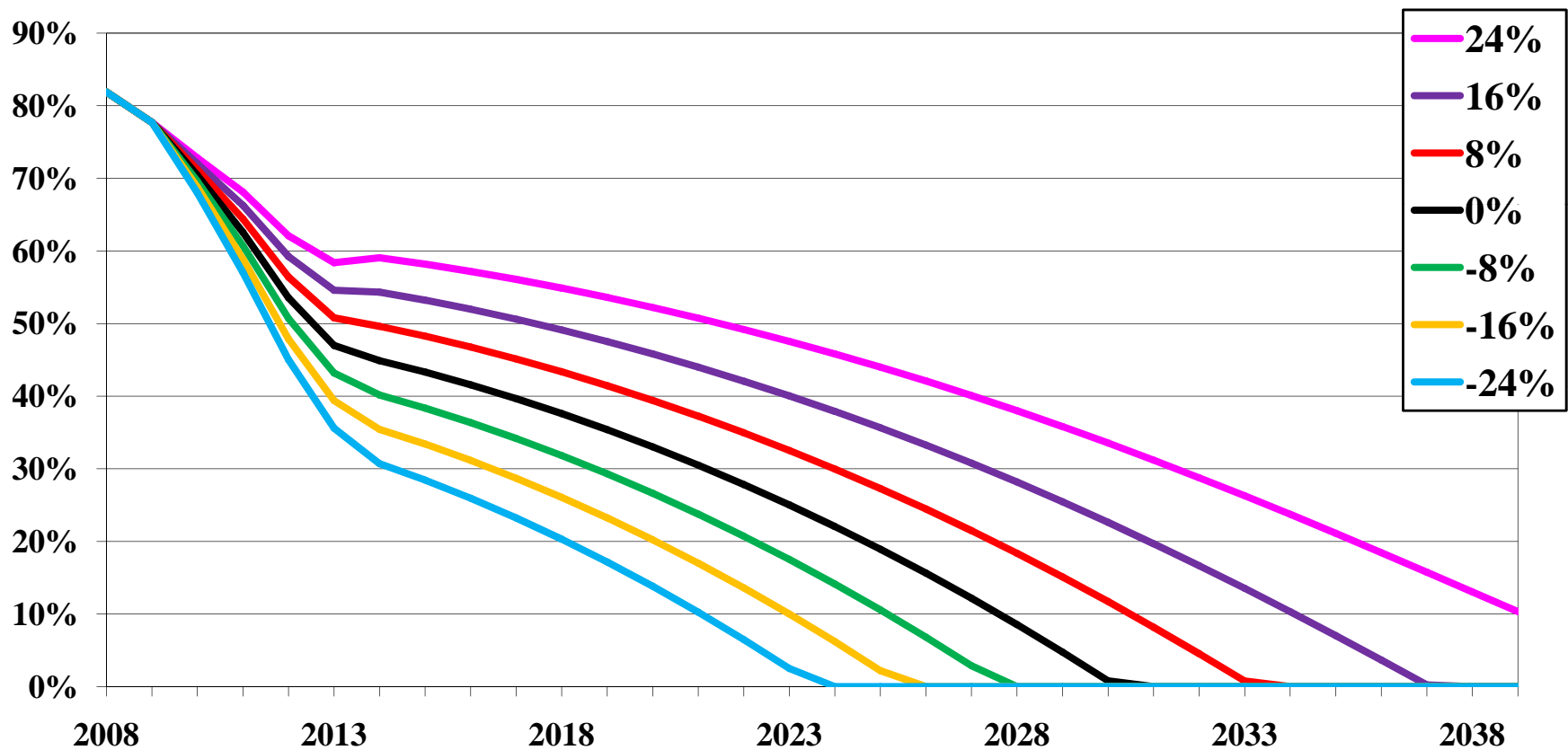


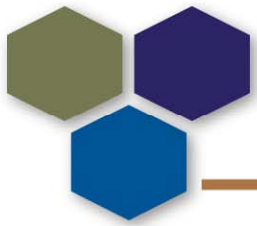
Projection Results

- ◆ TFFR would run out of money in 15-35 years
 - ▶ Only 24% return projection shows trust assets remaining after 30 years
- ◆ 8.75% employer contribution rate never sunsets
- ◆ Margin never becomes positive
- ◆ UAAL continues to grow in the future
- ◆ Funded ratios all reach or are headed to 0%



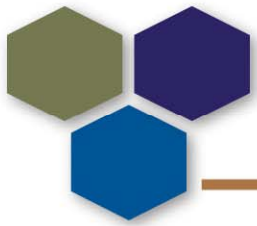
Projected Actuarial (AVA) Funded Ratios



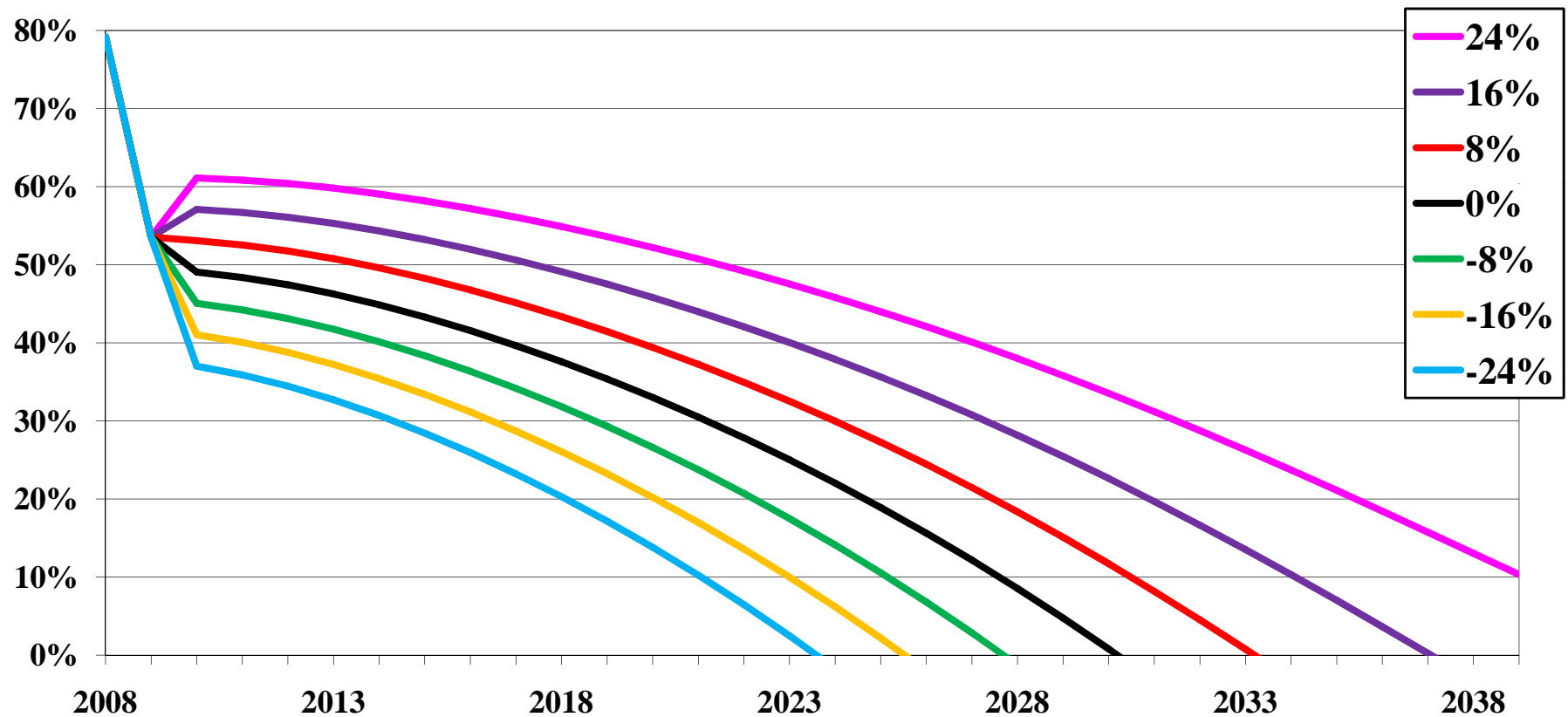


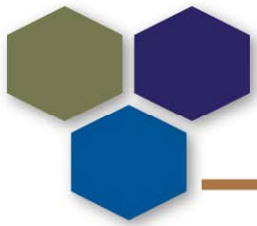
Projected Actuarial (AVA) Funded Ratios

| Valuation Year | 24.00% for FY2010 | 16.00% for FY2010 | 8.00% for FY2010 | 0.00% for FY2010 | -8.00% for FY2010 | -16.00% for FY2010 | -24.00% for FY2010 |
|----------------|-------------------------|-------------------------|------------------------|------------------------|-------------------------|--------------------------|--------------------------|
| 2009 | 78% | 78% | 78% | 78% | 78% | 78% | 78% |
| 2010 | 73% | 72% | 71% | 70% | 70% | 69% | 68% |
| 2011 | 68% | 66% | 64% | 63% | 61% | 59% | 57% |
| 2012 | 62% | 59% | 56% | 54% | 51% | 48% | 45% |
| 2013 | 58% | 55% | 51% | 47% | 43% | 39% | 36% |
| 2014 | 59% | 54% | 50% | 45% | 40% | 35% | 31% |
| 2019 | 54% | 48% | 42% | 35% | 29% | 23% | 17% |
| 2024 | 46% | 38% | 30% | 22% | 14% | 6% | 0% |
| 2029 | 36% | 25% | 15% | 5% | 0% | 0% | 0% |
| 2034 | 24% | 10% | 0% | 0% | 0% | 0% | 0% |
| 2039 | 10% | 0% | 0% | 0% | 0% | 0% | 0% |



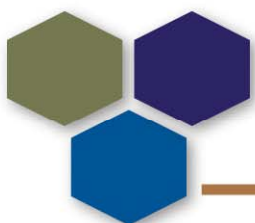
Projected Market (MVA) Funded Ratios





Projected Market (MVA) Funded Ratios

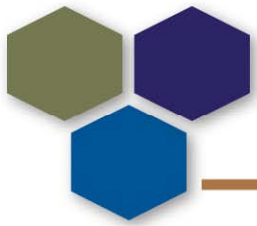
| Valuation Year | 24.00% for FY2010 | 16.00% for FY2010 | 8.00% for FY2010 | 0.00% for FY2010 | -8.00% for FY2010 | -16.00% for FY2010 | -24.00% for FY2010 |
|----------------|-------------------------|-------------------------|------------------------|------------------------|-------------------------|--------------------------|--------------------------|
| 2009 | 54% | 54% | 54% | 54% | 54% | 54% | 54% |
| 2010 | 61% | 57% | 53% | 49% | 45% | 41% | 37% |
| 2011 | 61% | 57% | 53% | 48% | 44% | 40% | 36% |
| 2012 | 60% | 56% | 52% | 47% | 43% | 39% | 34% |
| 2013 | 60% | 55% | 51% | 46% | 42% | 37% | 33% |
| 2014 | 59% | 54% | 50% | 45% | 40% | 35% | 31% |
| 2019 | 54% | 48% | 41% | 35% | 29% | 23% | 17% |
| 2024 | 46% | 38% | 30% | 22% | 14% | 6% | 0% |
| 2029 | 36% | 25% | 15% | 5% | 0% | 0% | 0% |
| 2034 | 24% | 10% | 0% | 0% | 0% | 0% | 0% |
| 2039 | 10% | 0% | 0% | 0% | 0% | 0% | 0% |



Projected Margin

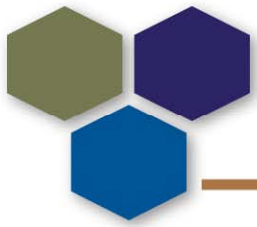
(Compared to 8.25% for 2009 Valuation, 8.75% Afterwards)

| Valuation Year | 24.00% for FY2010 | 16.00% for FY2010 | 8.00% for FY2010 | 0.00% for FY2010 | -8.00% for FY2010 | -16.00% for FY2010 | -24.00% for FY2010 |
|----------------|-------------------------|-------------------------|------------------------|------------------------|-------------------------|--------------------------|--------------------------|
| 2009 | -2.53% | -2.53% | -2.53% | -2.53% | -2.53% | -2.53% | -2.53% |
| 2010 | -4.19% | -4.49% | -4.80% | -5.11% | -5.42% | -5.73% | -6.03% |
| 2011 | -6.28% | -7.01% | -7.73% | -8.46% | -9.19% | -9.91% | -10.64% |
| 2012 | -8.94% | -10.07% | -11.21% | -12.35% | -13.49% | -14.63% | -15.76% |
| 2013 | -10.62% | -12.16% | -13.70% | -15.24% | -16.78% | -18.31% | -19.85% |
| 2014 | -10.46% | -12.38% | -14.31% | -16.24% | -18.17% | -20.10% | -22.02% |
| 2019 | -12.56% | -15.02% | -17.48% | -19.95% | -22.41% | -24.87% | -27.33% |
| 2024 | -14.90% | -17.99% | -21.08% | -24.17% | -27.26% | -30.35% | -32.77% |
| 2029 | -17.75% | -21.62% | -25.49% | -29.36% | -31.14% | -31.14% | -31.14% |
| 2034 | -21.18% | -26.00% | -29.70% | -29.70% | -29.70% | -29.70% | -29.70% |
| 2039 | -25.20% | -28.82% | -28.82% | -28.82% | -28.82% | -28.82% | -28.82% |



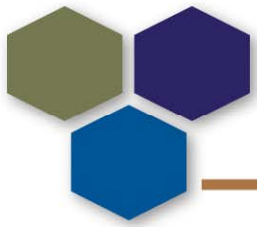
Projected Return Required Each Year after FY 2010 to Achieve Given AVA Funded Ratio in 30 Years

| Return Assumed for FY 2010 | 24.00% | 16.00% | 8.00% | 0.00% | -8.00% | -16.00% | -24.00% |
|-------------------------------|------------------------------|--------|--------|--------|--------|---------|---------|
| Target Funded Ratio | Post-FY 2010 Return Required | | | | | | |
| 70% | 9.58% | 10.13% | 10.75% | 11.45% | 12.24% | 13.16% | 14.24% |
| 80% | 9.78% | 10.33% | 10.94% | 11.62% | 12.41% | 13.32% | 14.39% |
| 90% | 9.97% | 10.51% | 11.12% | 11.80% | 12.57% | 13.47% | 14.53% |
| 100% | 10.16% | 10.69% | 11.29% | 11.96% | 12.73% | 13.61% | 14.66% |



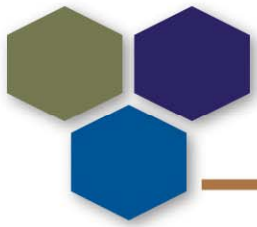
What Happens When/If Assets are Gone?

- ◆ A legal question. Presumably, benefits are still an obligation. Of the employers? Of the State?
 - ▶ Dependent on state law
 - ▶ Courts might require higher funding or direct appropriations to pay each year's benefits
 - ▶ Aaron Webb may address this issue



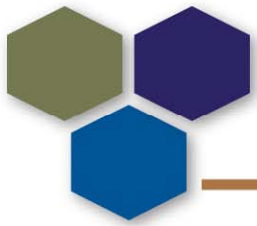
But Won't the Markets Bounce Back?

- ◆ Perhaps. Extreme downturns have usually been followed by significant recoveries.
- ◆ But consider the size recovery needed to get back to 82% funded by 2039:
 - ▶ 58% in FY 2010, followed by a constant 8.00% return thereafter
 - ▶ Or 17.25% for each of the next five years, followed by constant 8.00% return thereafter
 - ▶ Or a 10.75% return for every year from FY 2010 through FY 2039



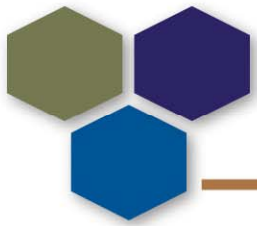
OK, We'll Make Some Changes. How Bad Could It Be?

- ◆ With no recovery and no other changes, to get back to 82% funded in 2039, you would need to increase the employer contribution rate to:
 - ▶ 18.25% at July 1, 2011
- ◆ If you do nothing:
 - ▶ Projected benefits in FY 2035 \approx \$341 million
 - ▶ Employer contribution rate of almost 28% just to pay that year's benefits!



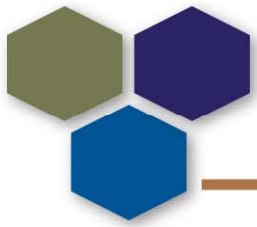
Why us?

- ◆ Markets had this kind of effect on almost all public-sector retirement plans
- ◆ Plans across the country are struggling with what to do
- ◆ Actions available depend on legal environment



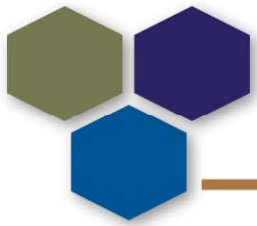
What Are Other Funds Doing?

- ◆ Most are doing (or are talking about doing) some or all of these:
 - ▶ Forming task forces or pension commissions
 - Sometimes covering several systems
 - DC alternatives may get discussed/proposed
 - Not a solution to the current funding problem
 - ▶ Increasing employer contributions
 - Especially in plans that don't have a statutory contribution rate
 - Most legislatures haven't changed statutory rates yet



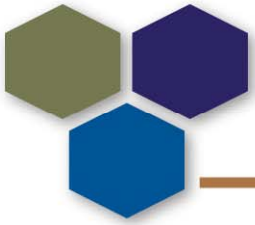
What Are Other Funds Doing?

- ▶ Looking for other revenue sources
- ▶ Cutting the workforce
 - Furloughs, layoffs, outsourcing
 - Driven more by recession than pension costs
 - Affects state employees more than teachers
- ▶ Reducing benefits
 - Lowering multipliers
 - Making Final Average Salary periods longer
 - Going after abuses (especially pay spiking)



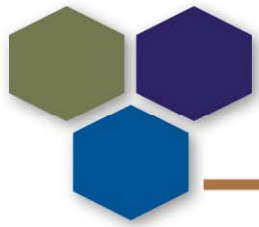
What Are Other Funds Doing?

- ▶ Increasing retirement ages
 - Higher ages
 - Longer service
 - Not letting purchased service count for eligibility
- ▶ Creating new tiers with lower benefits
 - Where cutting benefits for current members is not permitted
- ▶ Few are talking about significant asset allocation changes



What Are Other Funds Doing?

- ▶ Longer amortization periods
 - No relief for TFFR here, since TFFR already uses a 30-year period, the maximum permitted by GASB
- ▶ Changes to asset valuation method
 - Especially removing or widening “corridor” in which actuarial value can fall
 - Or lengthening averaging period
 - No relief for TFFR here either, since TFFR does not use a corridor, and since it already has a five-year smoothing period



Questions?

- ◆ Questions?
- ◆ Discussion?