Building Brighter Futures for Public Employees

North Carolina Retirement Systems

Teachers' and State Employees' Retirement System
Principal Results of Actuarial Valuation as of December 31, 2012

October 17, 2013
Board of Trustees Meeting

Larry Langer and Mike Ribble

Purpose of the Annual Actuarial Valuation

- Each year, the actuary determines the amount of contributions to be made to the Retirement System during each member's career that, when combined with investment return, will be sufficient to pay for retiree benefits.

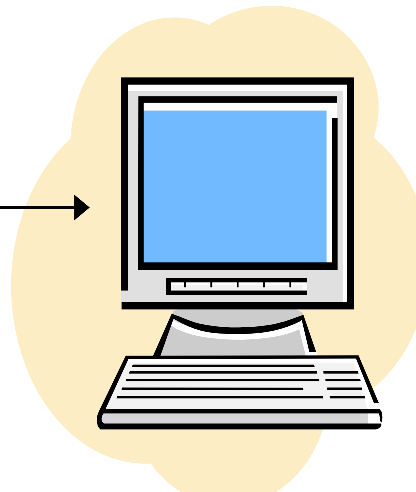
- This contribution is determined through the annual actuarial valuation, which is summarized in the annual actuarial valuation report.

- In addition, the annual actuarial valuation is performed to:
  - Determine progress on funding the Retirement Systems
  - Explore why the results of the current valuation differ from the results of the valuation of the previous year
  - Satisfy regulatory and accounting requirements

The Valuation Process

INPUT

- Member Data
- Asset Data
- Benefit Provisions
- Actuarial Assumptions
- Funding Methodology



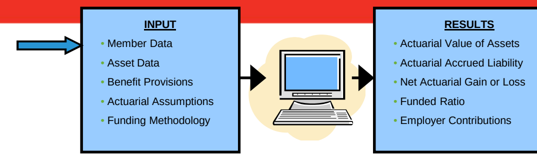
RESULTS

- Actuarial Value of Assets
- Actuarial Accrued Liability
- Net Actuarial Gain or Loss
- Funded Ratio
- Employer Contributions

Events During Year Ending December 31, 2012 Which Impacted the December 31, 2012 Actuarial Valuation Results

- Results of this valuation deviated from last year's valuation due to several causes:
  - Market value returns of 11.8% compared to 7.25% assumed
  - Slight decrease in payroll compared to 3% assumed increase
- Overall, when compared to the December 31, 2011 baseline projections, the above events resulted in:
  - Slightly higher funded status as of December 31, 2012
    - 94.2% in the valuation compared to 92.6% in the baseline projection
  - Lower employer required contribution rate for fiscal year ending June 30, 2015
    - 8.76% in the valuation compared to 9.72% in the baseline projection
  - Lower projected benefit amounts being accrued by active members

Member Data



GROUP	NUMBER As of 12/31/12	NUMBER As of 12/31/11
Retired members and survivors of deceased members currently receiving benefits	179,908	171,786
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	117,489	110,686
Active members*	319,999	317,906
Total	617,396	600,378

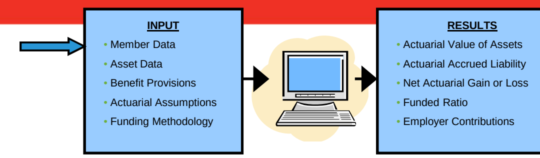
* Includes current recipients of Disability Income Plan benefits

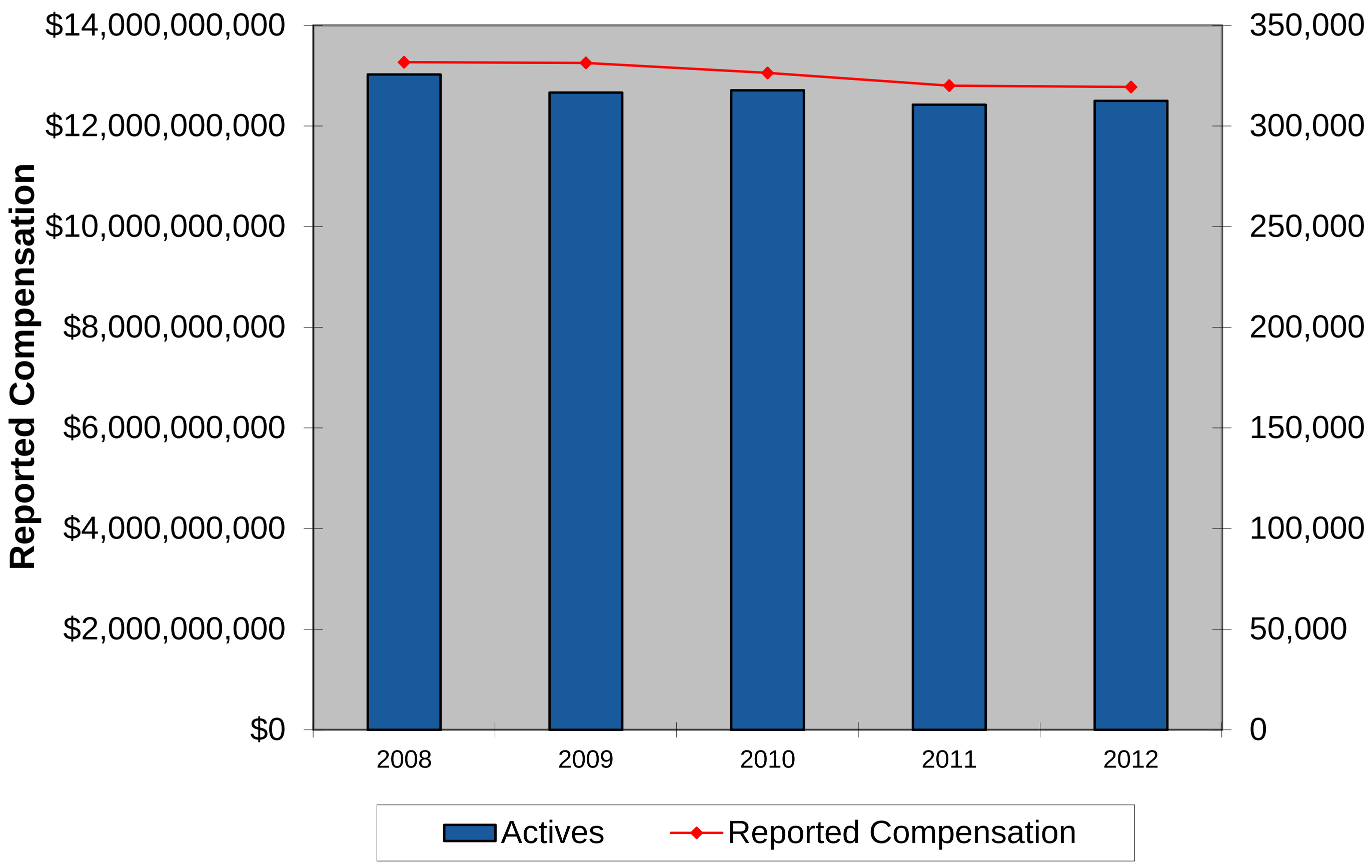
The increase in retiree population is consistent with expectations.

The increase in active population means more benefits accruing, but also more contributions supporting the System.

Refer to Tables on pages 3 and 4 of the actuarial valuation report for more information on the member data submitted for the valuation.

Active Members and Payroll

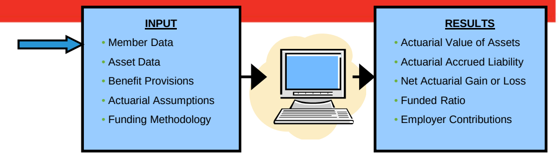


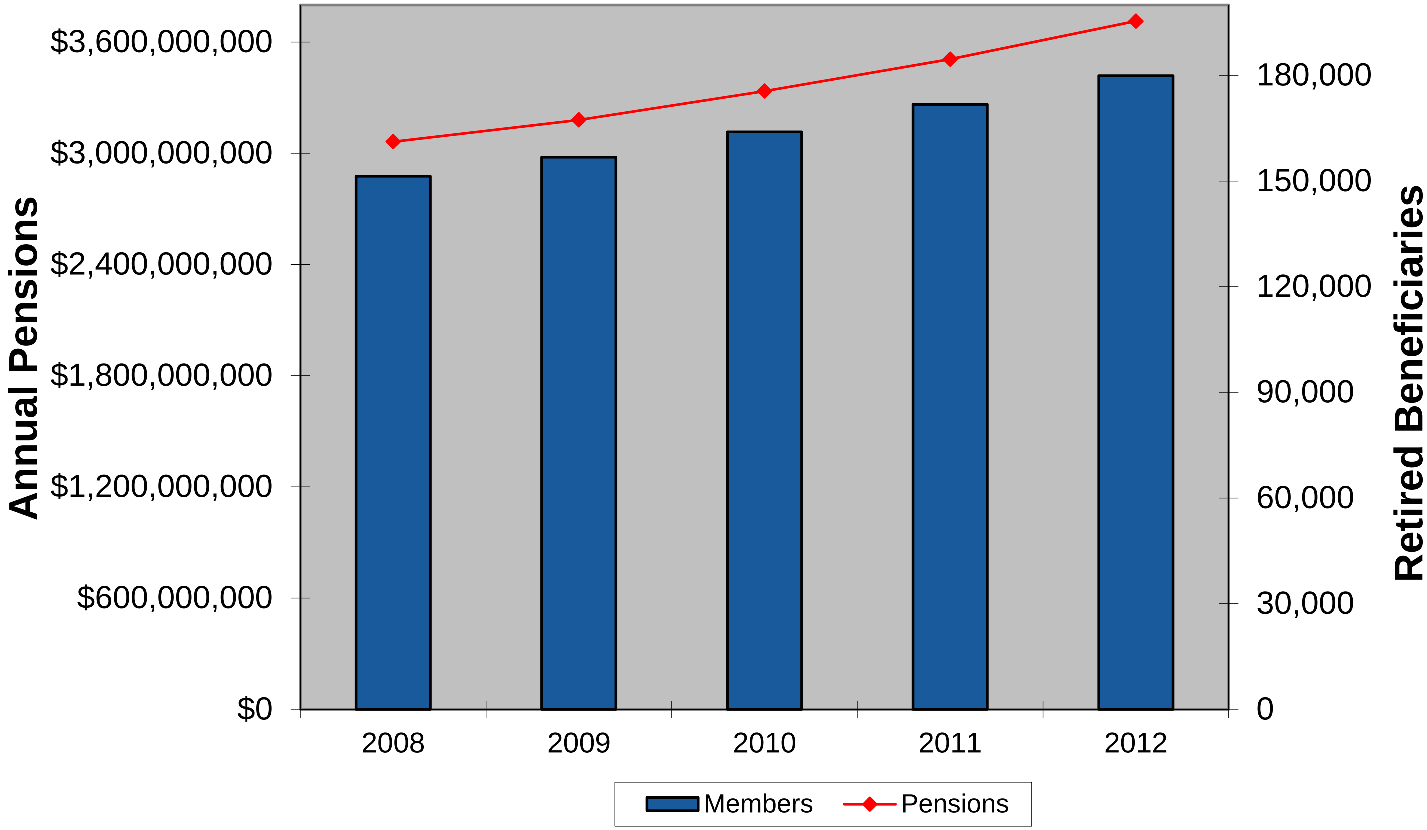


Slightly decreasing compensation over the past few years results in lower normal cost than expected. The valuation anticipates payroll will increase in the future.

Refer to page 1 of the actuarial valuation report for a side-by-side comparison from the past two valuations.

Retired Members and Survivors of Deceased Members

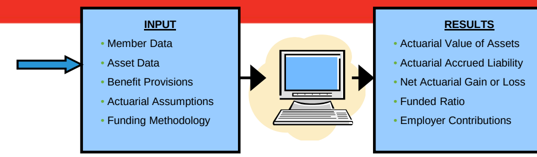




Steady increase in amount of benefits paid out of fund, increasing as expected based on plan assumptions.

Refer to page 1 of the actuarial valuation report for a side-by-side comparison from the past two valuations.

Asset Data

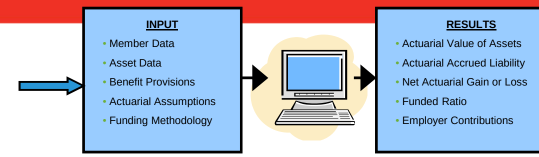


Transactions	December 31, 2012	December 31, 2011
Additions		
Contributions	1,897,179,772	1,669,391,367
Net Investment Income	6,206,397,536	1,162,727,294
Total	8,103,577,308	2,832,118,661
Deductions		
Benefits Payments	3,725,310,777	3,538,048,036
Net Increase / (Decrease)	4,378,266,531	(705,929,375)
Net Assets Held in Trust for Pension Benefits		
Beginning of Year	53,402,204,951	54,108,134,326
End of Year	57,780,471,482	53,402,204,951
Estimated net investment return	11.82%	2.19%

Returns were more than the 7.25% assumed rate of return, resulting in lower contributions and higher funded ratio than anticipated as of December 31, 2012 based on the baseline projections presented at the January 2013 board meeting.

Refer to Schedule A on page 13 of the actuarial valuation report, for more information on the plan assets submitted for the valuation.

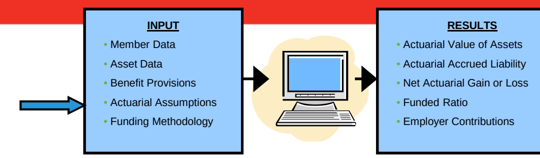
Benefit Provisions



- Benefit provisions are described in North Carolina General Statutes, Chapter 135.
- There were no significant changes from the prior year’s valuation.

Refer to Schedule D of the actuarial valuation report, beginning on page 22, for a summary of the benefit provisions submitted for the valuation.

Actuarial Assumptions

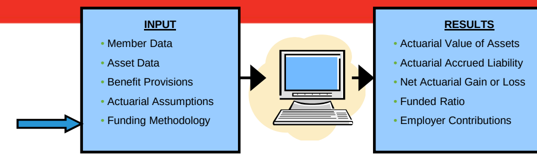


- Demographic (future events that relate to people)
  - Retirement
  - Termination
  - Disability
  - Death
- Economic (future events that relate to money)
  - Interest rate - 7.25% per year
  - Salary increase (individual, varies by service)
  - Real return – 4.25%
  - Payroll growth – 3.00%

The latest assumptions were adopted for use with the December 31, 2009 actuarial valuation, based on the experience study prepared as of December 31, 2009 and adopted by the Board of Trustees on October 21, 2010. Our next experience study will be prepared as of December 31, 2014 and presented to the Board in October 2015.

Refer to Schedule C of the actuarial valuation report, beginning on page 15, for more information on the actuarial assumptions used for the valuation.

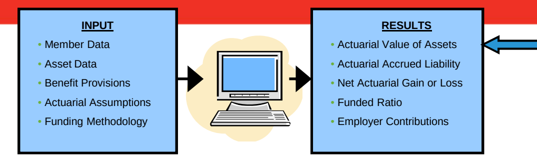
Funding Methodology



- The Funding Methodology is the payment plan for the Retirement System and is composed of the three following components:
  - Actuarial Cost Methods allocate costs to the actuarial accrued liability for past service and normal cost for current service
    - Board has adopted Entry Age Normal as its actuarial cost method
    - Develops normal costs that stays level as a % of payroll
  - Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns
    - 20% of market value plus 80% of expected actuarial value
    - Asset corridor: not greater than 120% of market value and not less than 80% of market value
  - Amortization Methods determine the payment schedule for unfunded actuarial accrued liability
    - Payment level: the payment is determined as a level dollar amount, similar to a mortgage payment
    - Payment period: a 12-year closed amortization period was adopted for FYE 2012. A new amortization base is created each year based on the prior year’s experience

Schedule C of the actuarial valuation report, beginning on page 15, provides more information on the funding methodology. Schedule B on page 14 shows the amortization schedule for the unfunded actuarial accrued liability.

Actuarial Value of Assets



1.	Actuarial Value of Assets as of December 31, 2011	$ 58,125,010,880
2.	2012 Net Cash Flow	
	a. Contributions	1,897,179,772
	b. Disbursements	3,725,310,777
	c. Net Cash Flow: (a) - (b)	(1,828,131,005)
3.	Expected Investment Return: [(1) x .0725] + [(2)c x .03625]	4,147,793,540
4.	Expected Actuarial Value of Assets as of December 31, 2012: (1) + (2)c + (3)	60,444,673,415
5.	Market Value of Assets as of December 31, 2012	57,780,471,482
6.	Excess of Market Value over Expected Actuarial Value of Assets: (5) - (4)	(2,664,201,933)
7.	20% Adjustment towards Market Value: (6) x .20	(532,840,387)
8.	Preliminary Actuarial Value of Assets as of December 31, 2012: (4) + (7)	59,911,833,028
9.	Final Actuarial Value of Assets as of December 31, 2012 [(8) not less than 80% of (5) and not greater than 120% of (5)]	59,911,833,028
10.	Rate of investment return on actuarial value	6.32%
11.	Rate of investment return on market value	11.82%

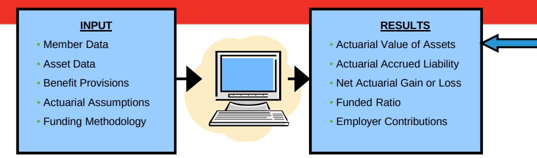
Historical returns

YE 12/31	AVA	MVA
2006	8.94%	11.41%
2007	8.87%	8.38%
2008	2.89%	(19.50%)
2009	4.74%	14.84%
2010	5.89%	11.47%
2011	5.15%	2.19%
2012	6.32%	11.82%
average	6.09%	5.16%
range	6.05%	34.34%

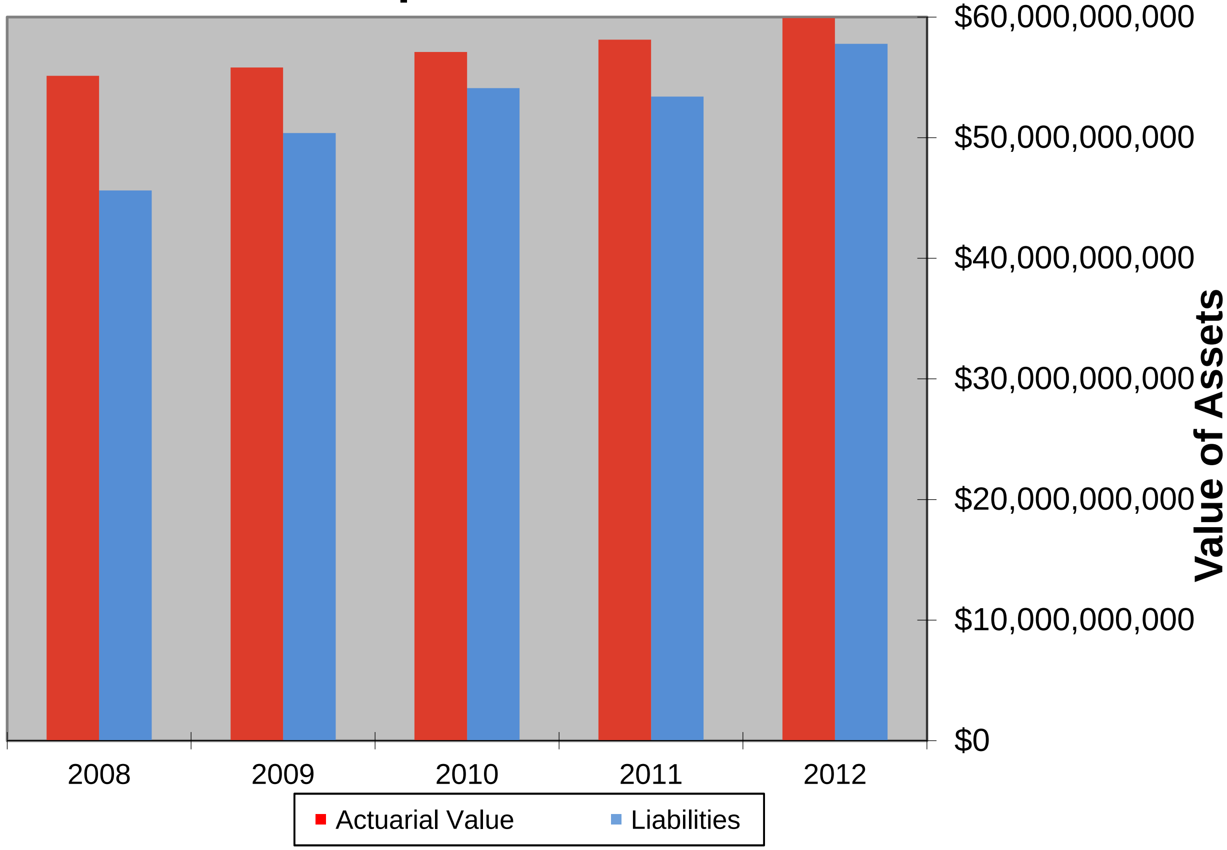
The actuarial value of assets smooths investment gains/losses, resulting in less volatility in the employer contribution. However, low returns in 2008 and 2011 result in $0.5 billion asset loss recognition this year.

Refer to Schedule A on page 13 of the actuarial valuation report.

Assets



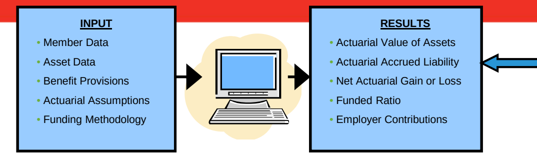
Actuarial Value Compared to Market Value

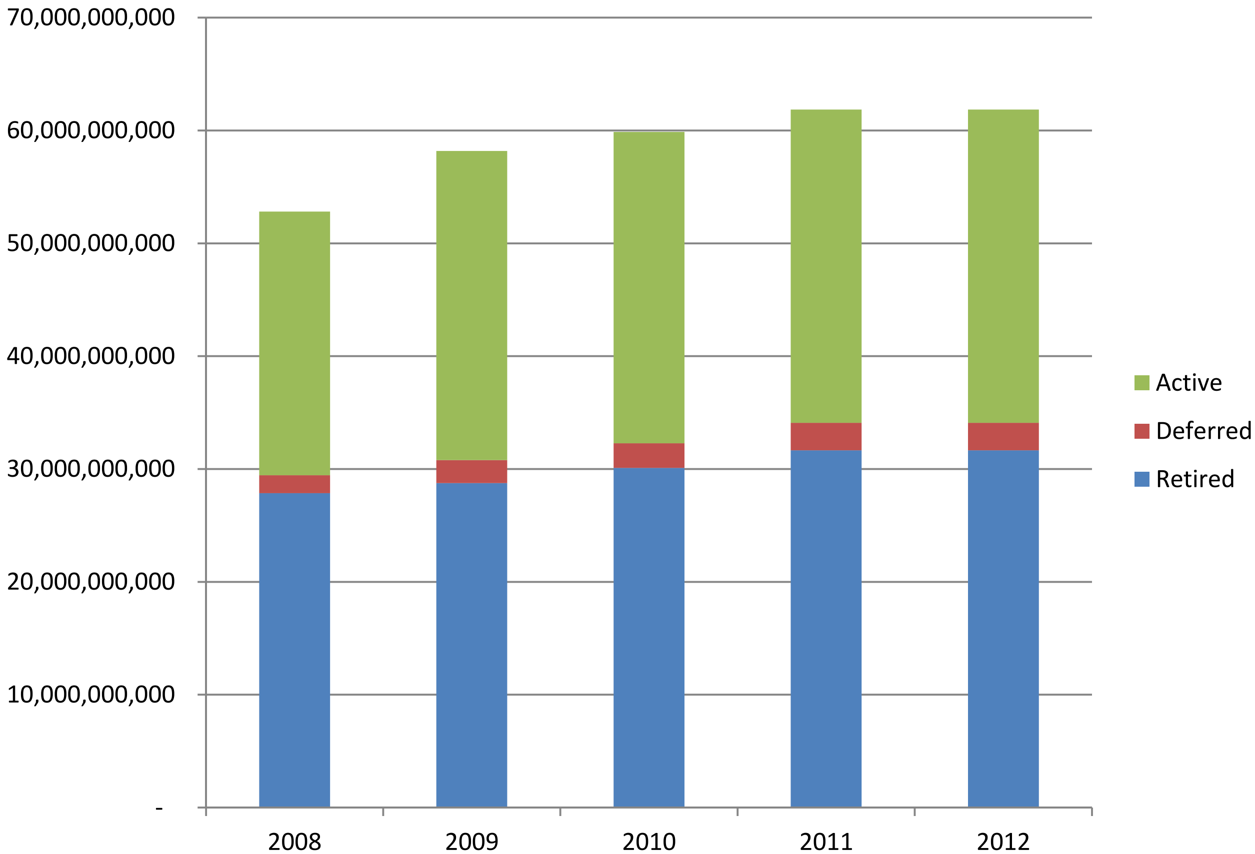


The actuarial value of assets compared to the market value was much less volatile over the last five years. Use of the actuarial value is standard for the purpose of dampening contribution volatility.

Refer to page 13 of the actuarial valuation report.

Actuarial Accrued Liability

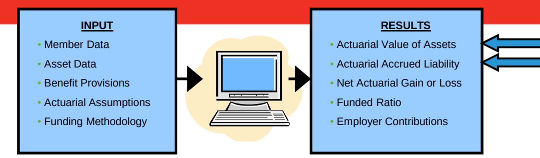


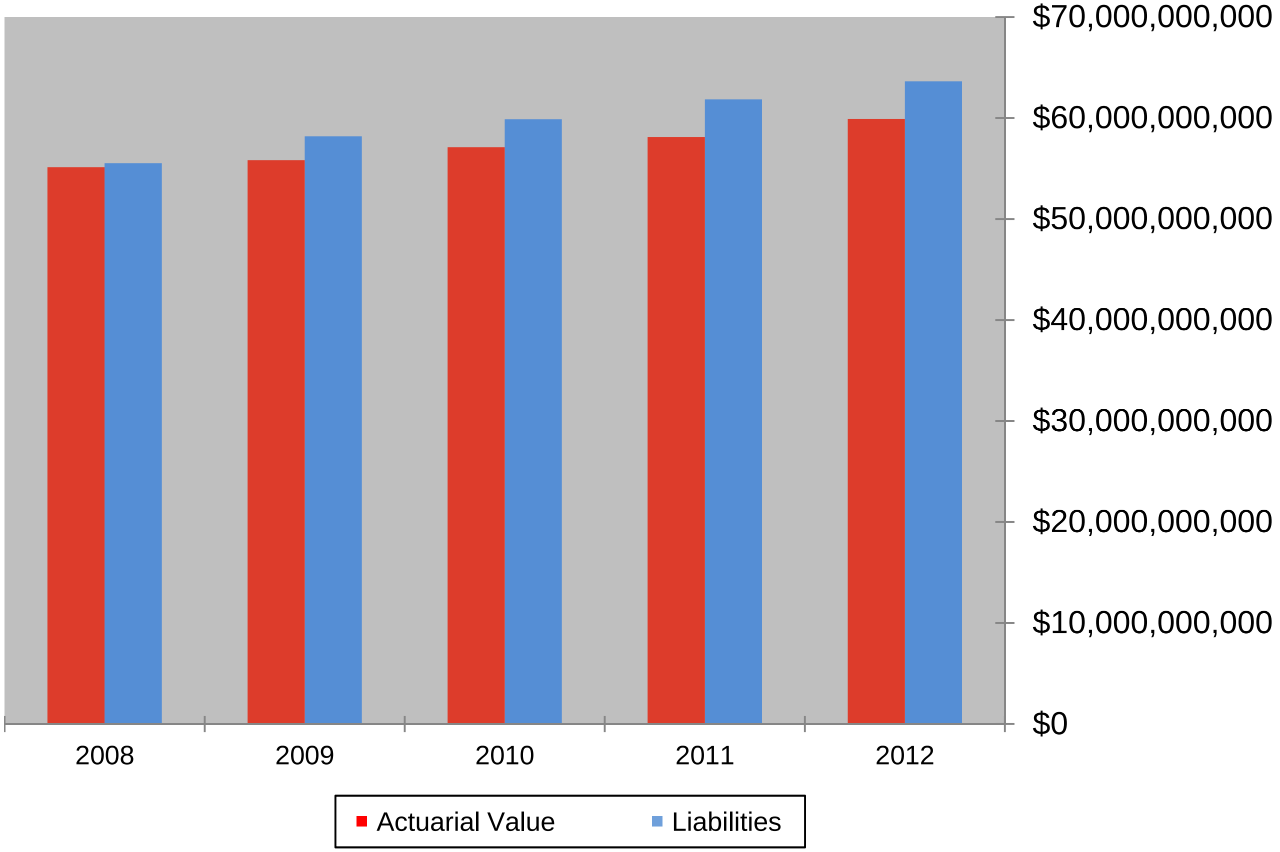


The actuarial accrued liability increased from $61.8 billion to $63.6 billion during the past year. In an open plan such as this, liabilities are expected to grow from one year to the next as more benefits accrue and the membership approaches retirement.

Refer to Section VII, Schedule of Funding Progress, on page 10 of the actuarial valuation report for more information.

Accrued Liabilities and Actuarial Value of Assets

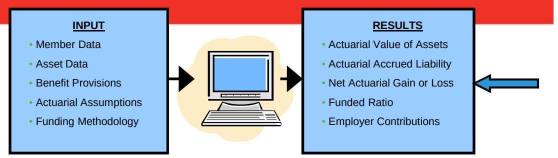




The ratio of assets to liabilities shows the health of the plan on an accrued basis.

Refer Section VII, Schedule of Funding Progress, on page 10 of the actuarial valuation report for more information.

Net Actuarial Gain or Loss



Reconciliation of Change in Unfunded Actuarial Accrued Liability Since the Prior Valuation`
(in Millions)

Unfunded accrued liability as of 12/31/11	$ 3,722
Normal cost during 2012	1,506
Reduction due to actual contributions during 2012	(1,897)
Interest on unfunded accrued liability, normal cost and contributions	310
Asset (gain)/loss	533
Accrued liability (gain)/loss	(456)
Impact of legislative changes	0
Unfunded accrued liability as of 12/31/12	$ 3,718

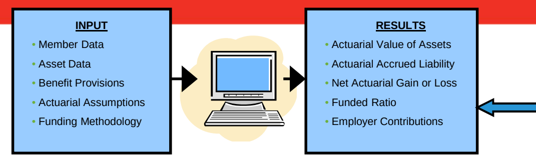
The accrued liability gain of $456 million means that the unfunded actuarial accrued liability was $456 million lower than we would have expected based on the assumptions.

The primary source of the accrued liability gain was lower reported compensation than assumed based on the prior valuation.

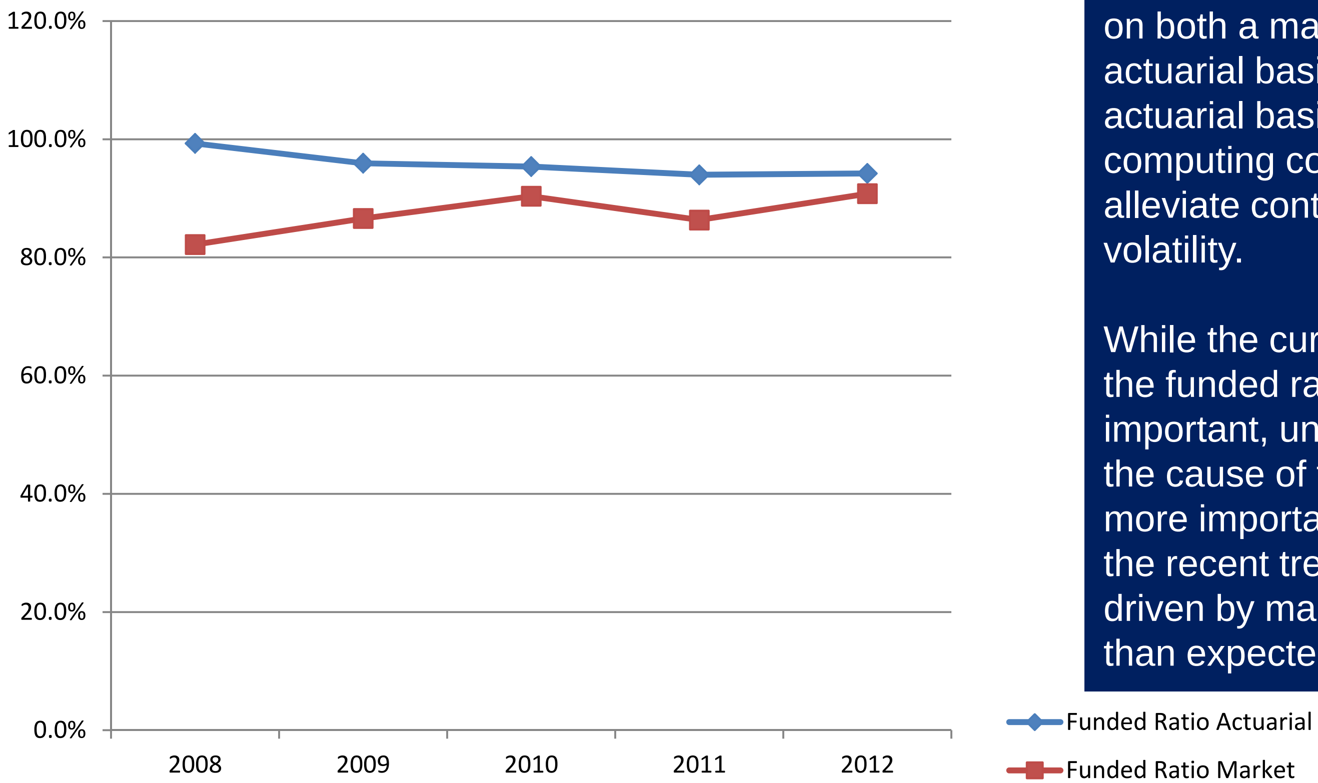
The asset loss of $533 million means that the asset valuation method resulted in a recognition of $533 million of deferred asset losses from 2008 to 2011.

Refer to Section VI on page 9 of the actuarial valuation report for more information on the Actuarial Gain or Loss submitted for the valuation.

Funded Ratio



Actuarial and Market Funded Ratio

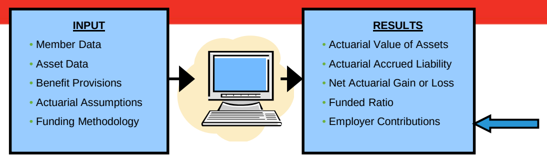


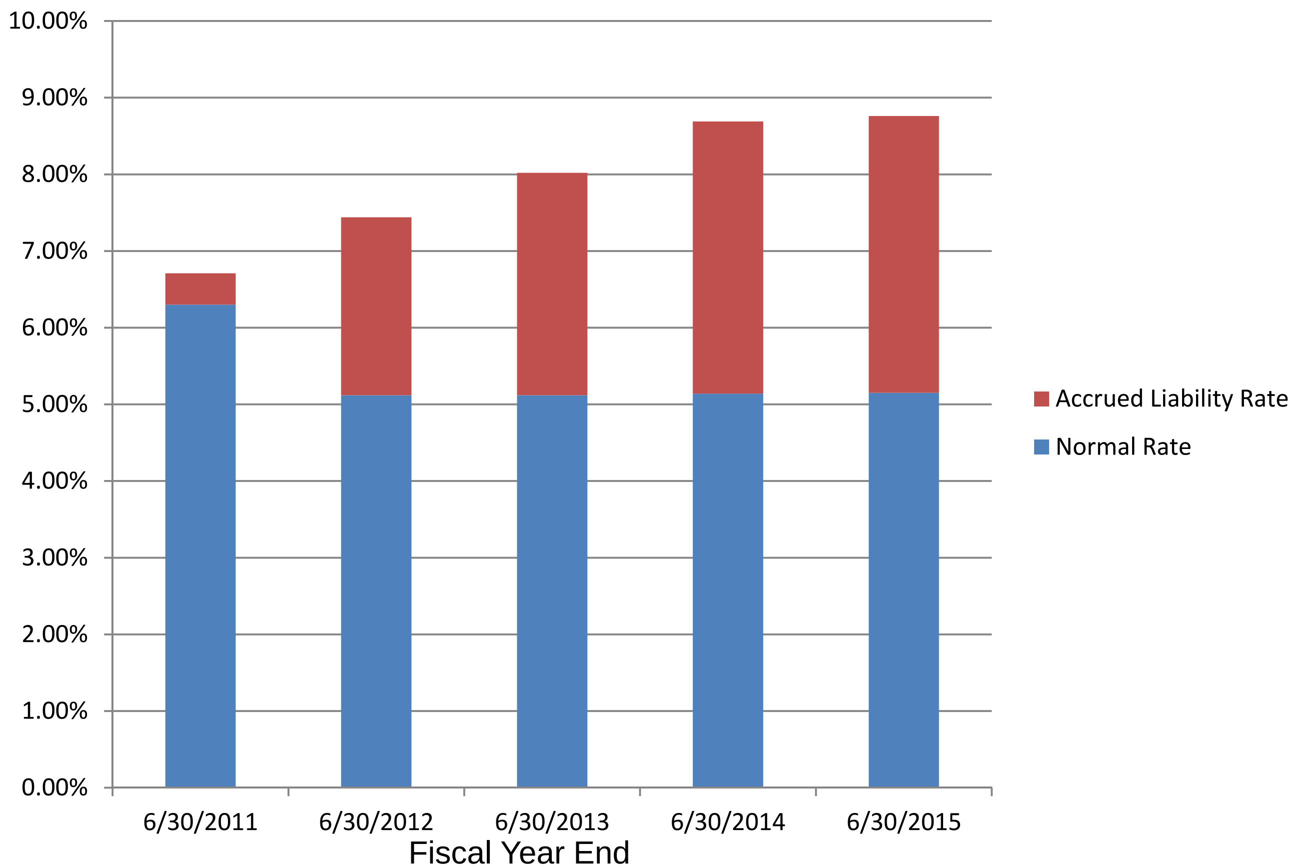
The funded ratio is shown on both a market and actuarial basis. The actuarial basis is used for computing contributions to alleviate contribution volatility.

While the current value of the funded ratio is important, understanding the cause of the trend is more important. Much of the recent trend has been driven by markets and lower than expected salaries.

Refer to Section VII on page 10 of the actuarial valuation report for more information on the Funded Ratio and Schedule of Funding Progress.

Employer Required Contribution Rates

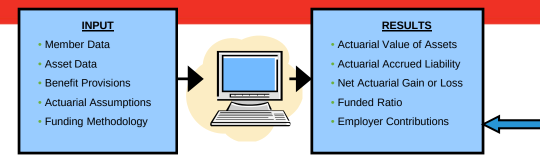




The amortization payment for unfunded actuarial accrued liability stayed somewhat constant as the unfunded actuarial accrued liability barely changed from $3,722 million to $3,718 million.

Refer to page 1 of the actuarial valuation report for comparison of the past two valuations.

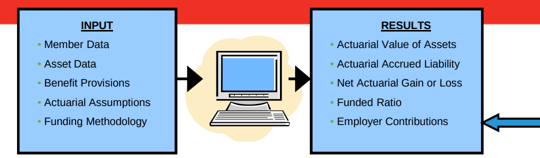
Employer Required Contribution Rates



Valuation Date	Fiscal Year Ending	Normal Rate	Accrued Liability Rate	Total GASB Rate	Prior Fiscal Year Appropriation Rate	Undistributed Gain/(Loss)
12/31/12	6/30/15	5.15%	3.61%	8.76%	8.69%	(0.07)%*
12/31/11	6/30/14	5.14%	3.55%	8.69%	8.33%	(0.36)%
12/31/10	6/30/13	5.12%	2.90%	8.02%	7.44%	(0.58)%
12/31/09	6/30/12	5.12%	2.32%	7.44%	4.93%	(2.51)%
12/31/08	6/30/11	6.30%	0.41%	6.71%	3.57%	(3.14)%

* The current appropriation rate for fiscal year ending 2014 is 8.69%. This rate would result in an undistributed gain/(loss) of (0.07)%. Each 1% COLA is equivalent to 0.37% of payroll and each 0.01% increase in benefit is equal to 0.41% of payroll.

Employer Required Contribution Rates



Reconciliation of Change in Annual Required Contribution

Fiscal Year Ending June 30, 2014 Preliminary ARC (based on 12/31/11 valuation)	8.69%
Impact of Legislative Changes	0.00%
Fiscal Year Ending June 30, 2014 Final ARC	8.69%
Change Due to Demographic (Gain)/Loss	(0.43%)
Change Due to Investment (Gain)/Loss	0.54%
Change Due to Contributions Greater Than ARC	(0.04%)
Fiscal Year Ending June 30, 2015 Preliminary ARC (based on 12/31/12 valuation)	8.76%

Demographic Gain primarily due to salary increases less than assumed

Investment Loss is a recognition of deferred asset losses from 2008 and 2011

Refer to page 2 of the actuarial valuation report.

Key Takeaways

- Market value returns of 11.8%
  - Compared to 7.25% assumed
- Slight decrease in payroll
  - Compared to 3% assumed increase
- Lower ARC than expected
  - 8.76% actual vs. 9.72% in baseline projections
- Higher Funded Ratio than expected
  - 94.2% actual vs. 92.6% in baseline projections
- Overall, the ARC increased from 8.69% (FYE 2014) to 8.76% (FYE 2015)
- Overall, the Funded Ratio increased from 94.0% (12/31/2011) to 94.2% (12/31/2012)

Key Takeaways

- The Retirement System is very well funded compared to peers. This is due to:
  - A history of appropriating and contributing the recommended contribution requirements
  - Assumptions that in aggregate are more conservative than peers
  - A funding policy that aggressively pays down unfunded liability over a 12-year period

Questions?

THANK YOU