



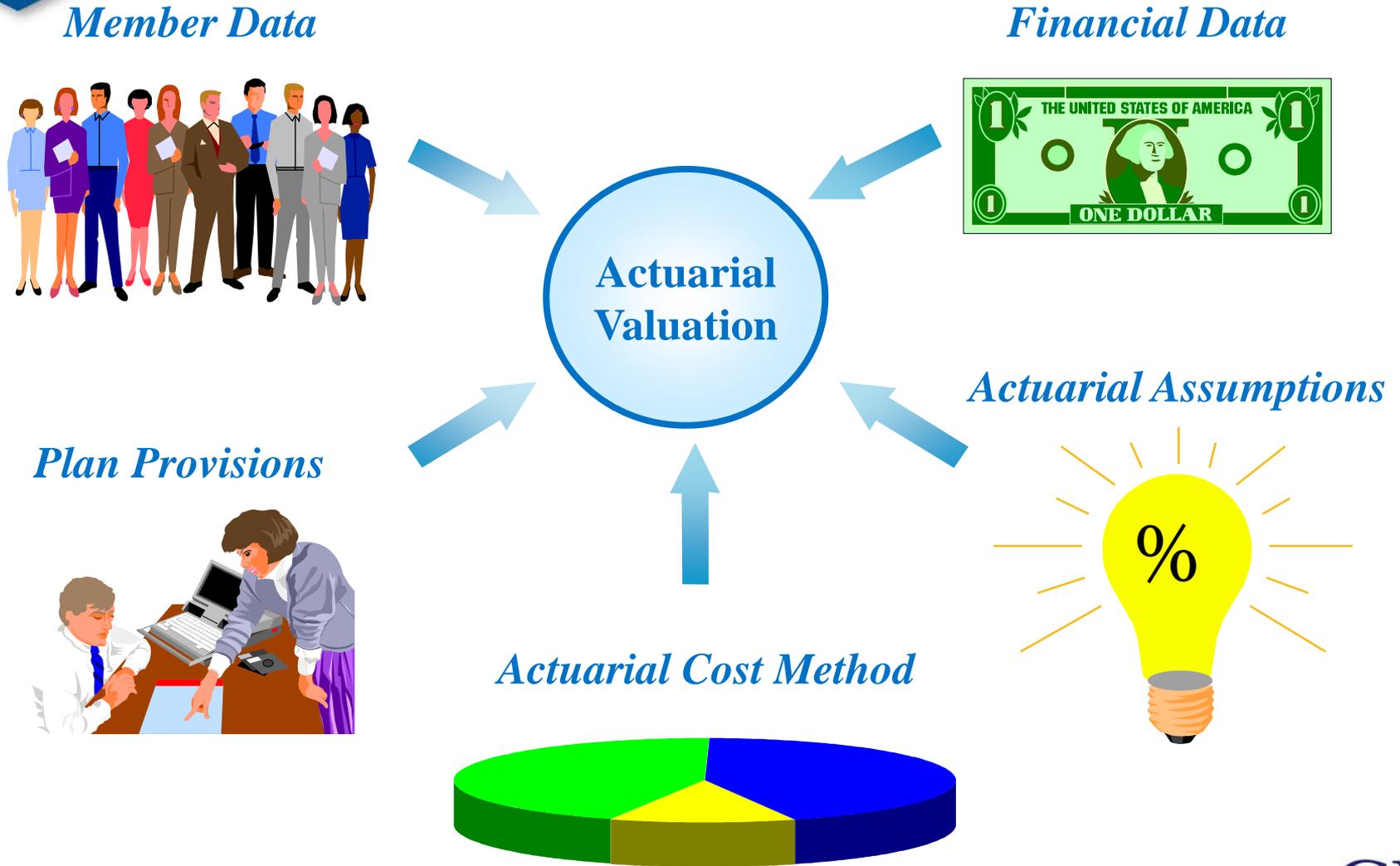
# Michigan State Police Retirement System

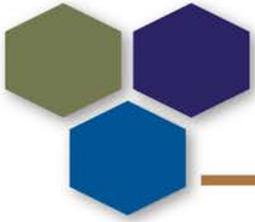
## Pension Actuarial Valuation Results as of September 30, 2011

**GRS**

**Gabriel Roeder Smith & Company**  
Consultants & Actuaries  
[www.gabrielroeder.com](http://www.gabrielroeder.com)

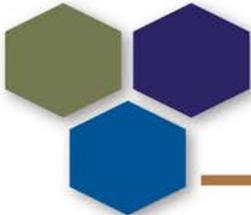
# Actuarial Valuation Process





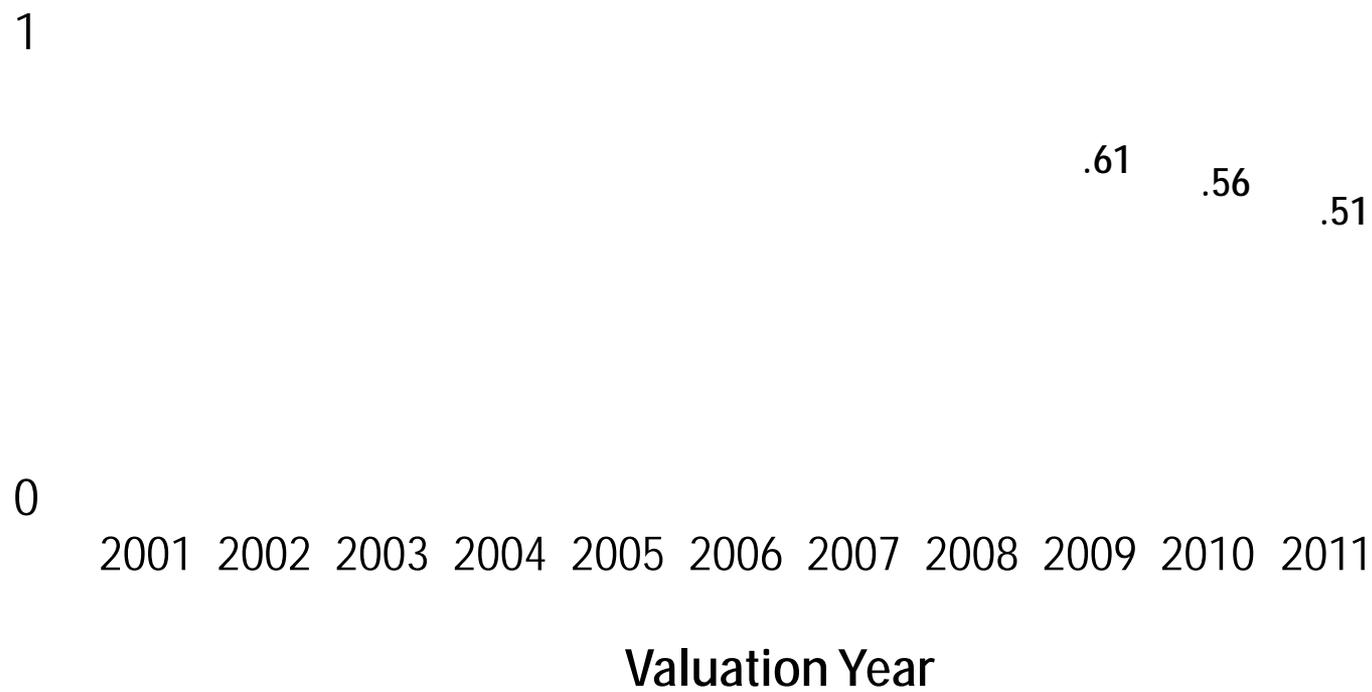
# Membership Data

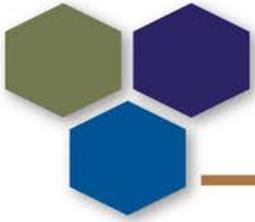




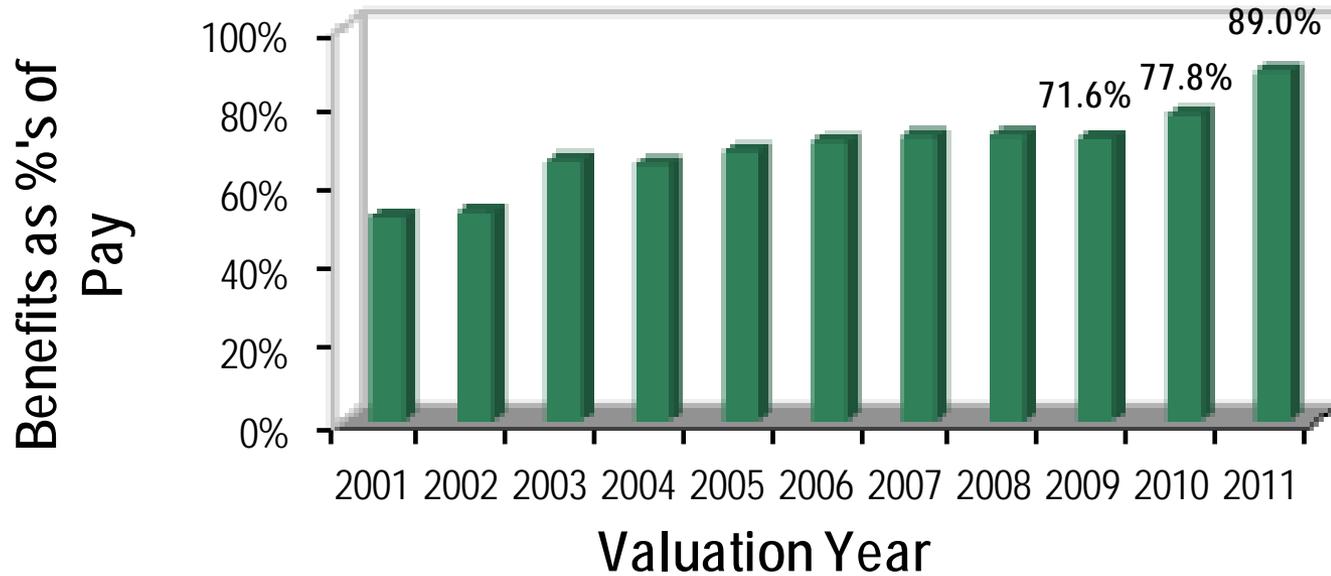
# Ratio of Active Members to Pension Benefit Recipients

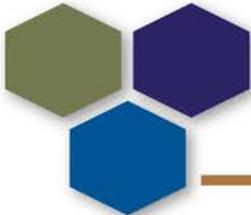
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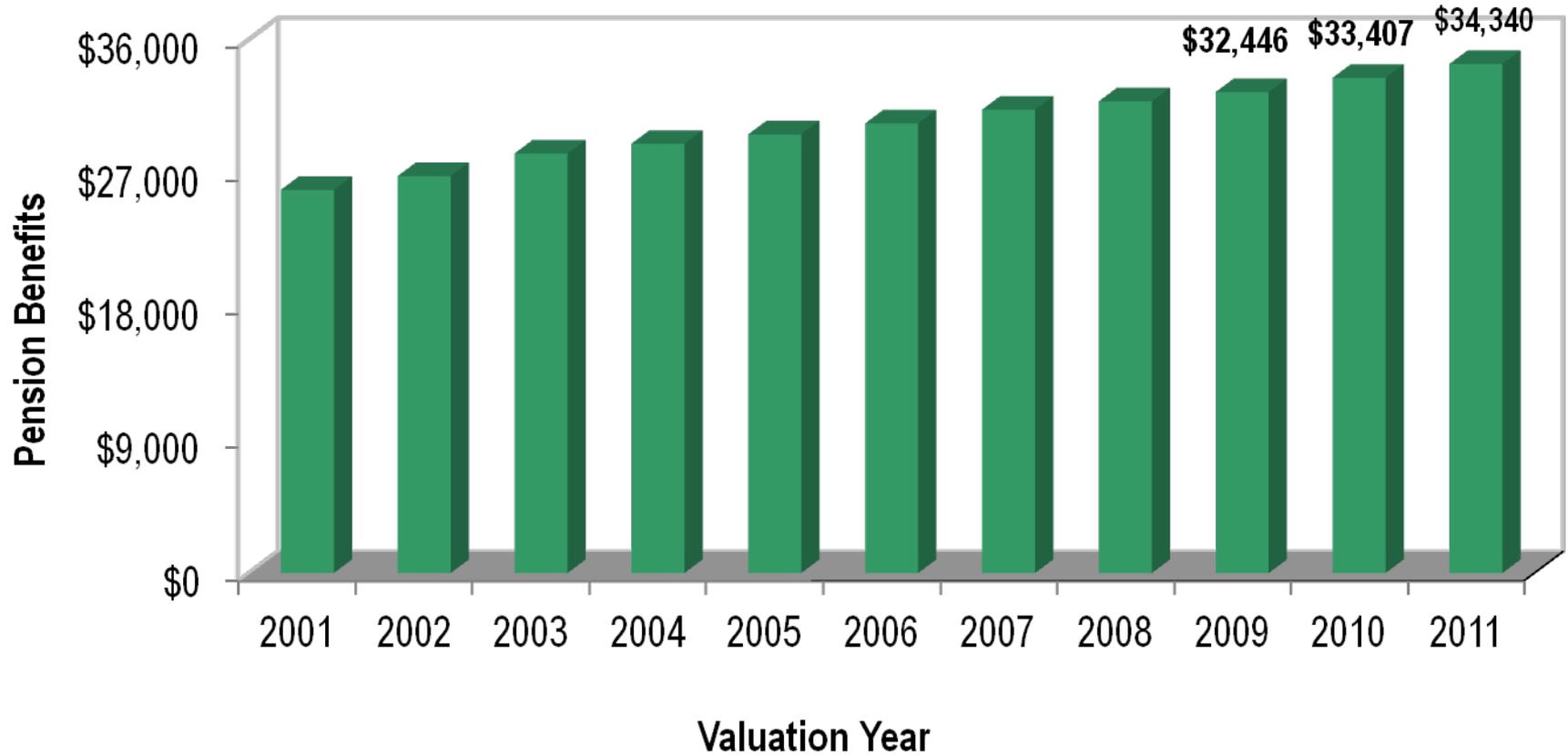


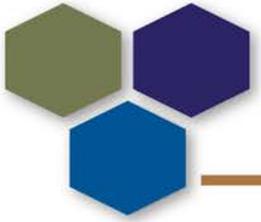
# Pension Benefits Expressed as %'s of Active Member Pay





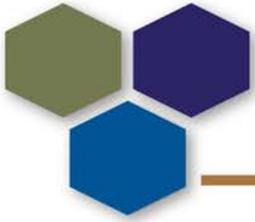
# Average Annual Pensions





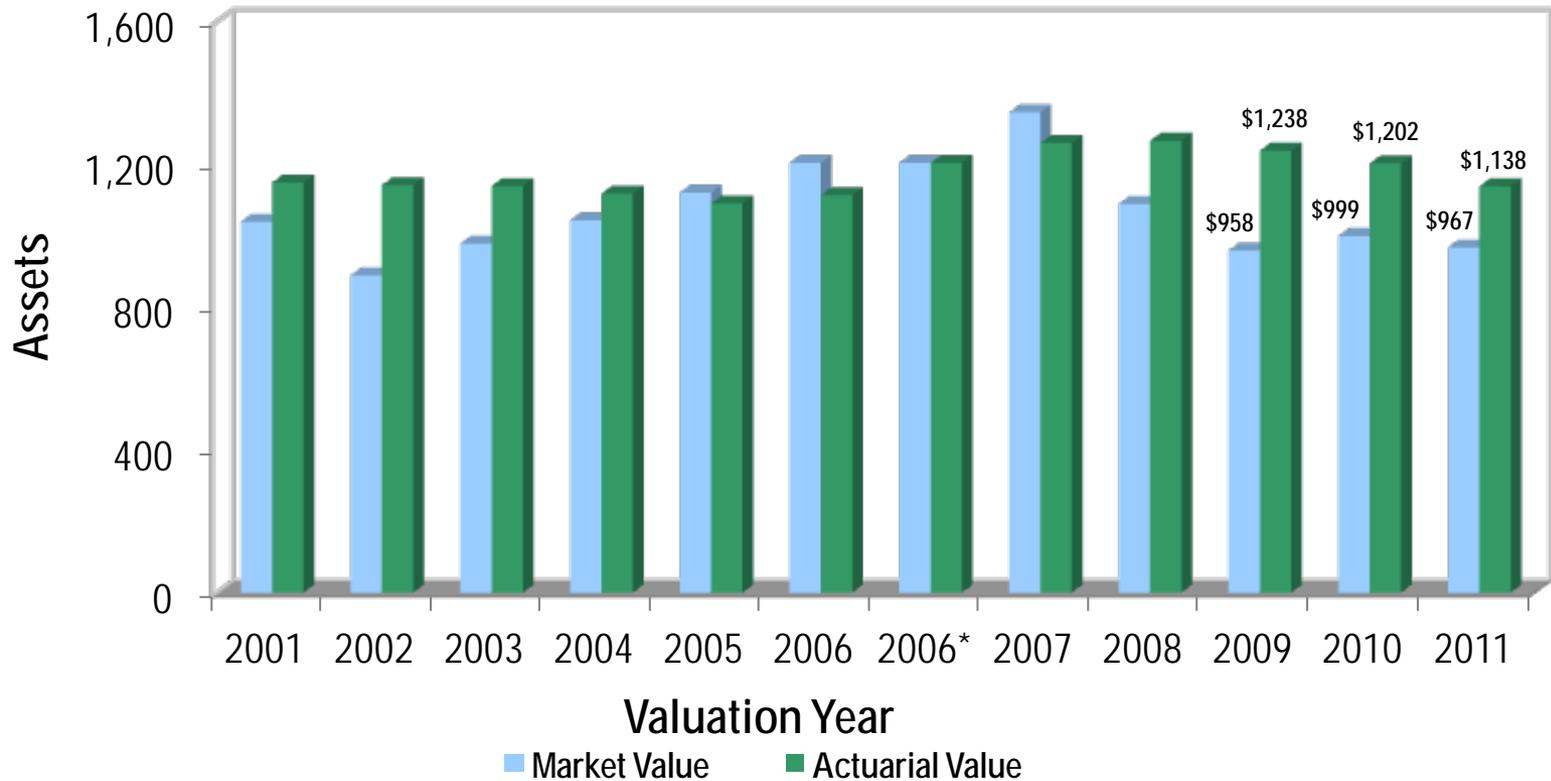
# Pension Benefit Payments by Fiscal Year (Amounts in Millions)





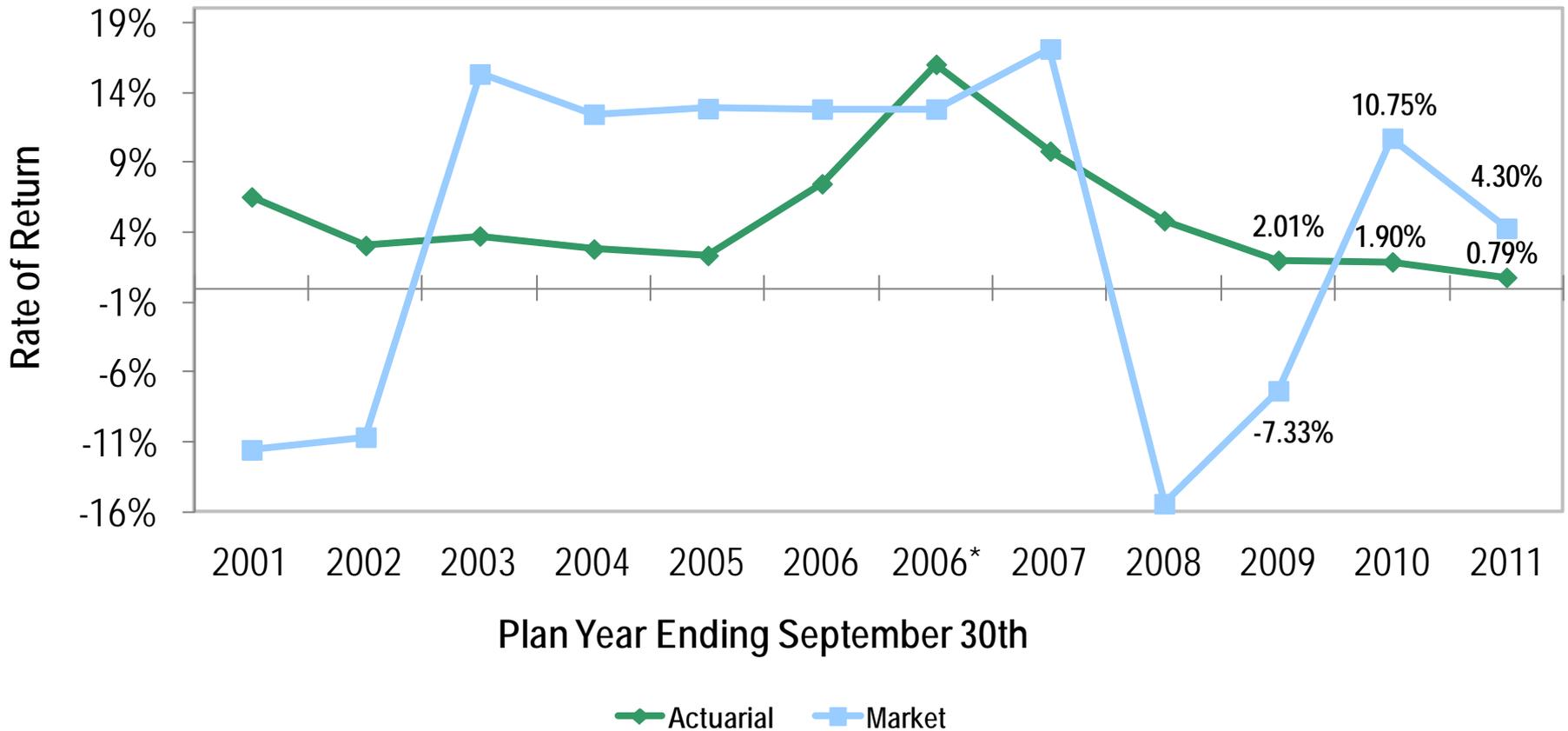
# Growth of Pension Assets

(Amounts in Millions)

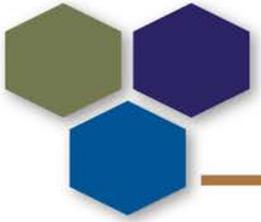


\* After adjusting to market value.

# Actuarial & Market Net Rates of Return

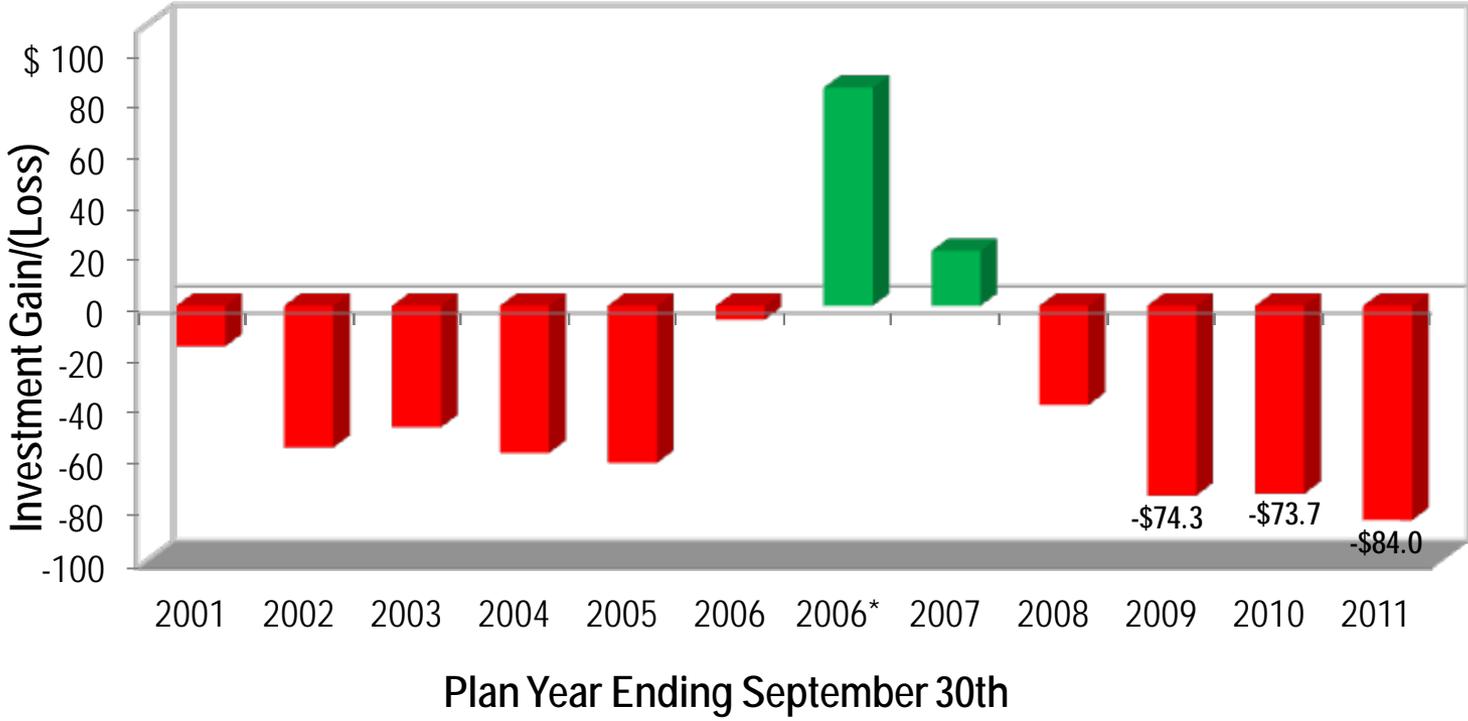


\* After adjusting to market value.

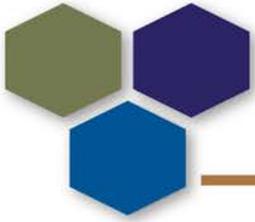


# Investment Gain/(Loss)

(Amounts in Millions)

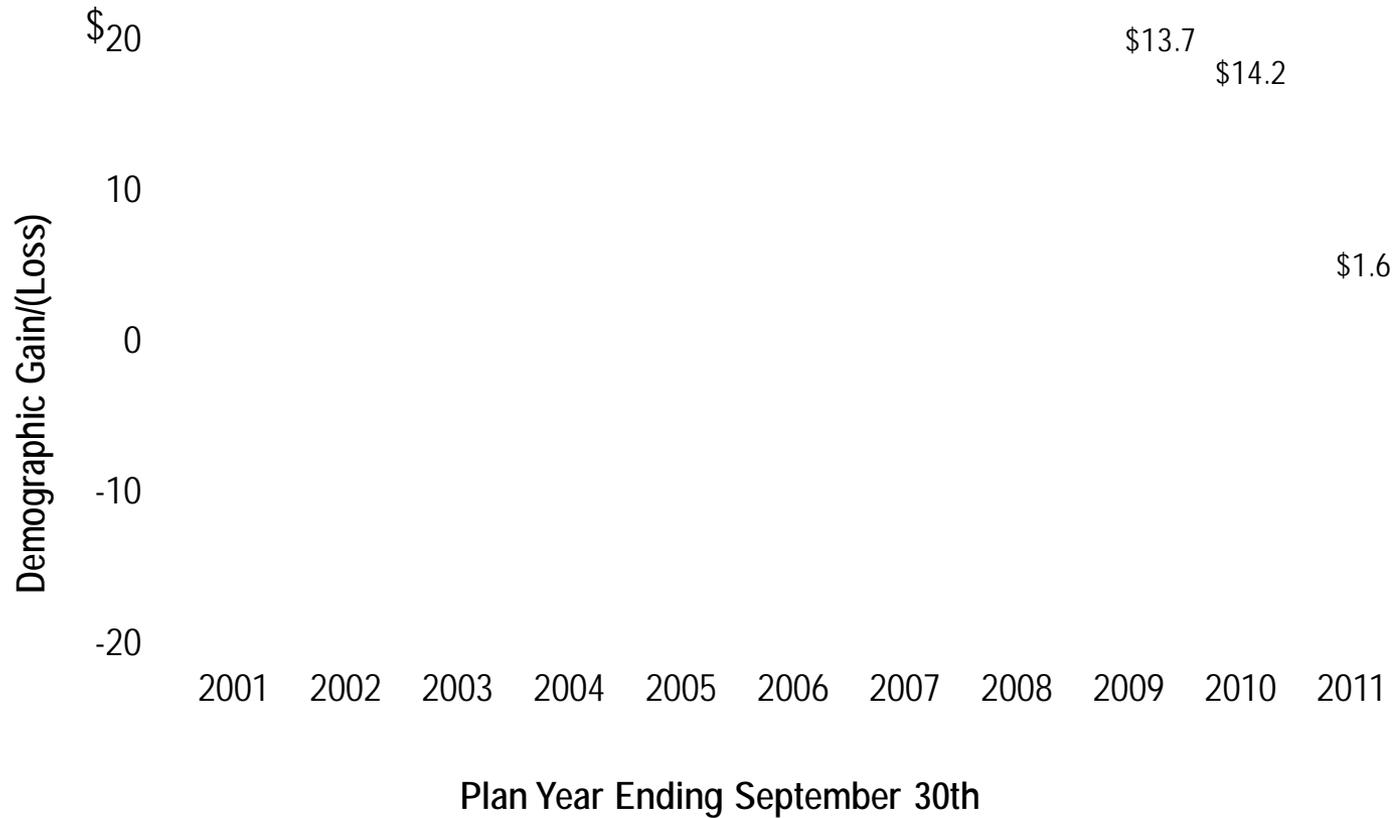


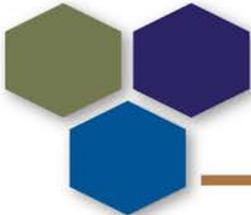
\* After adjusting to market value.



# Demographic Gain/(Loss)

(Amounts in Millions)





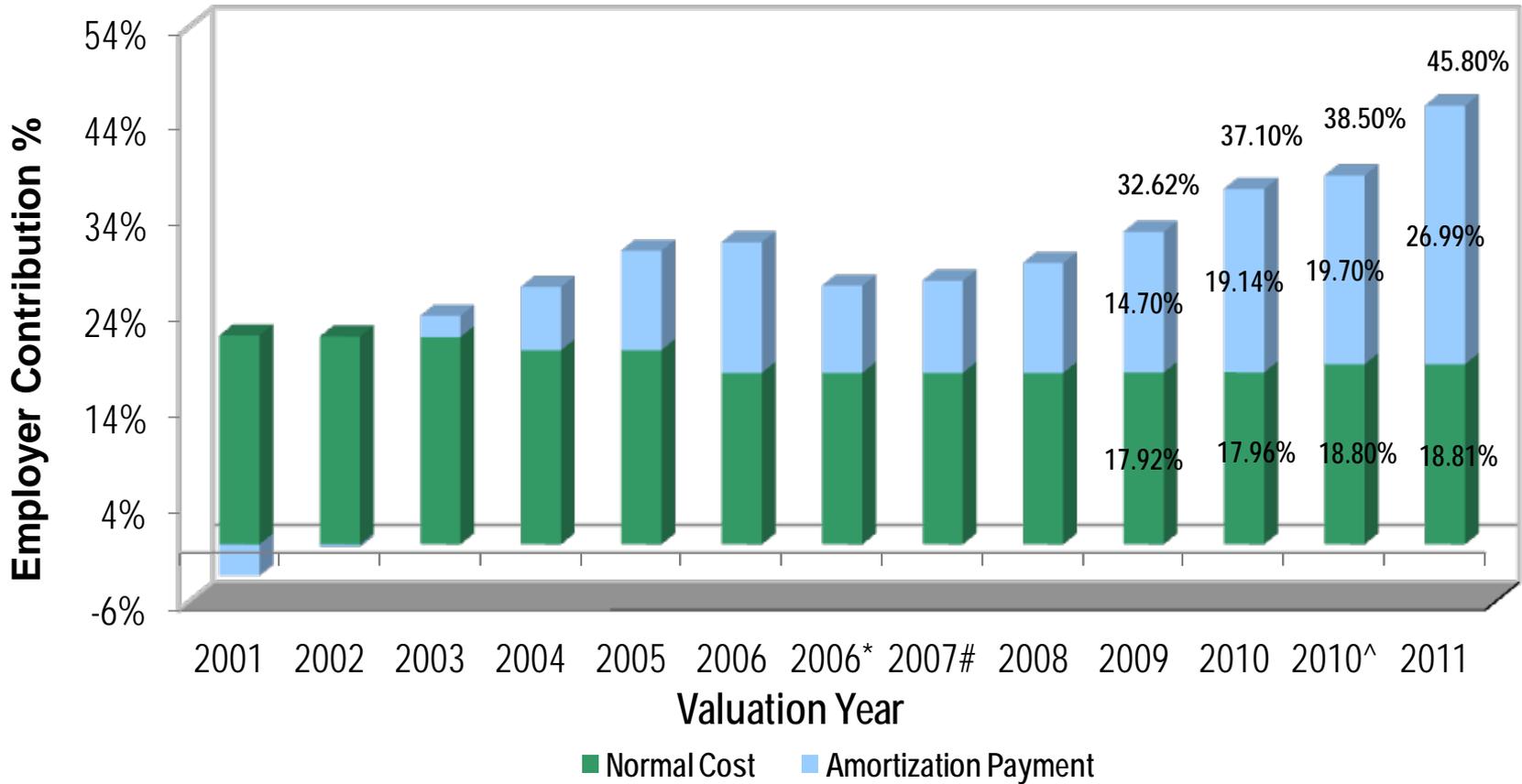
# Gain/(Loss) by Type of Activity

(Amounts in Millions)

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<b>Plan Year</b>						
<b>Ending 9/30</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>	<b>2008</b>	<b>2007</b>	<b>2006</b>
New Entrants	(0.89)	(0.18)	(0.83)	(0.16)	0.00	(0.31)
Retiree Deaths	(5.38)	0.56	(1.68)	(3.98)	(3.98)	4.00
Investments	(84.04)	(73.67)	(74.30)	(38.88)	21.47	(5.38)
Pay Increases	11.74	11.17	13.08	3.74	(4.87)	15.19
Withdrawal	0.37	0.90	0.43	2.44	0.41	0.18
Retirements	(2.64)	(1.80)	2.17	1.15	(2.12)	1.68
Other	(1.58)	3.55	0.52	0.20	(2.44)	(7.92)
<b>Total</b>	<b>(82.42)</b>	<b>(59.47)</b>	<b>(60.61)</b>	<b>(35.49)</b>	<b>8.47</b>	<b>7.44</b>

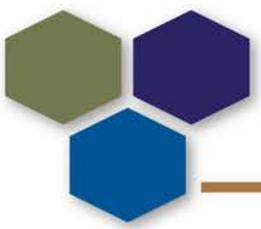
# Historical Employer Contribution %'s Valuation as of September 30



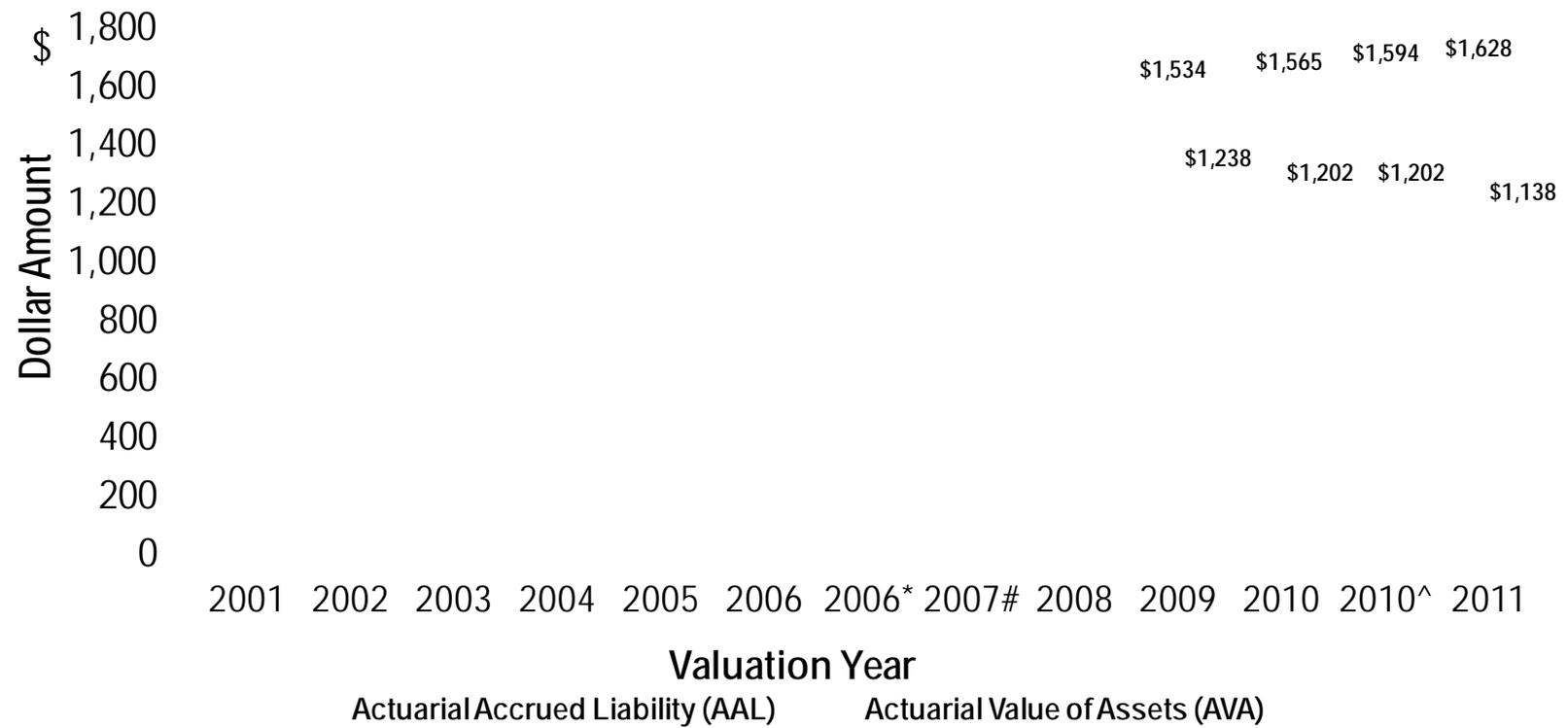
\* After adjusting to market value.

# Revised benefit provisions.

^ Revised actuarial assumptions.

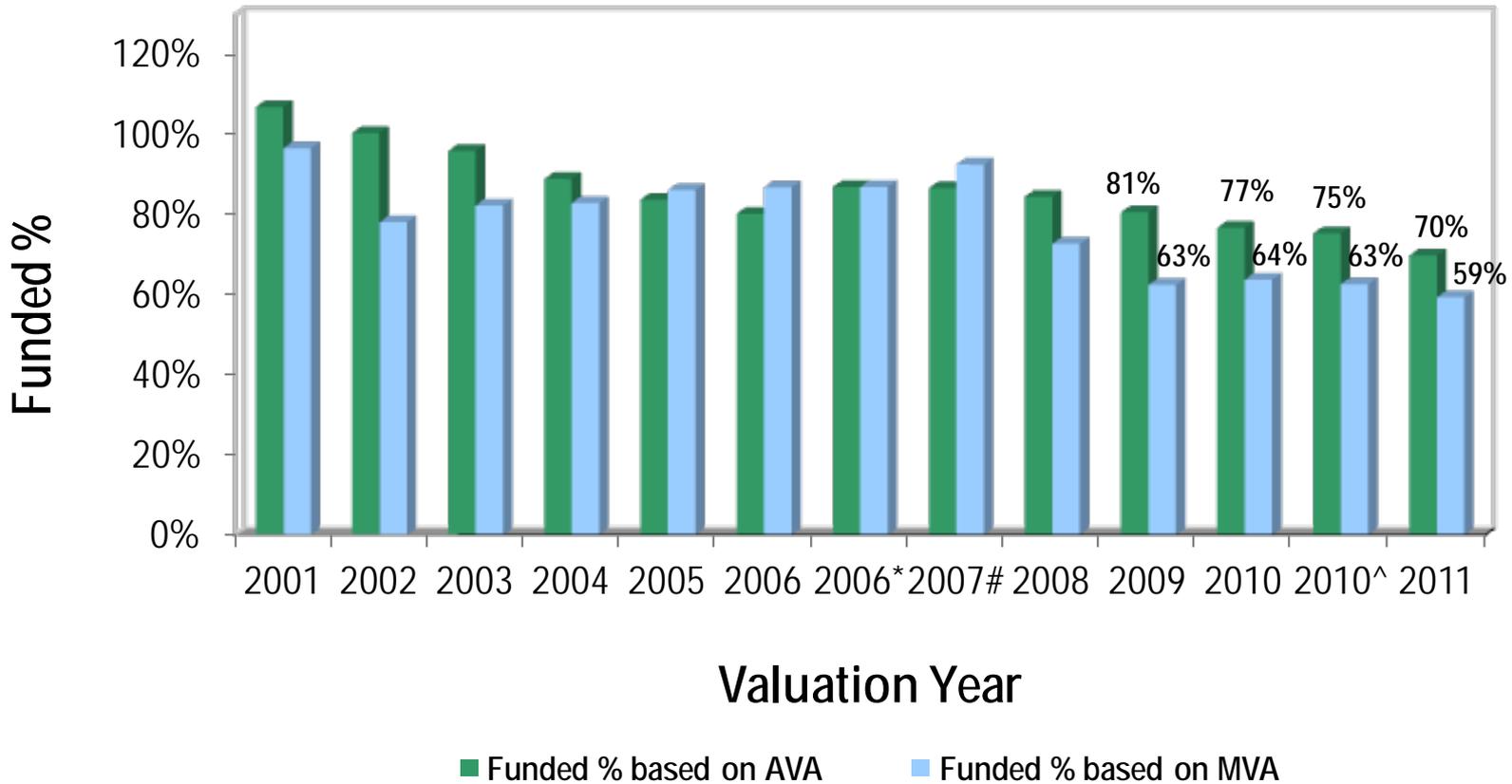


# Actuarial Accrued Liability Compared to Actuarial Value of Assets (in millions)



\* After adjusting to market value.  
 # Revised benefit provisions.  
 ^ Revised actuarial assumptions.

# Retirement System Funded % Based on Actuarial Value and Market Value of Assets

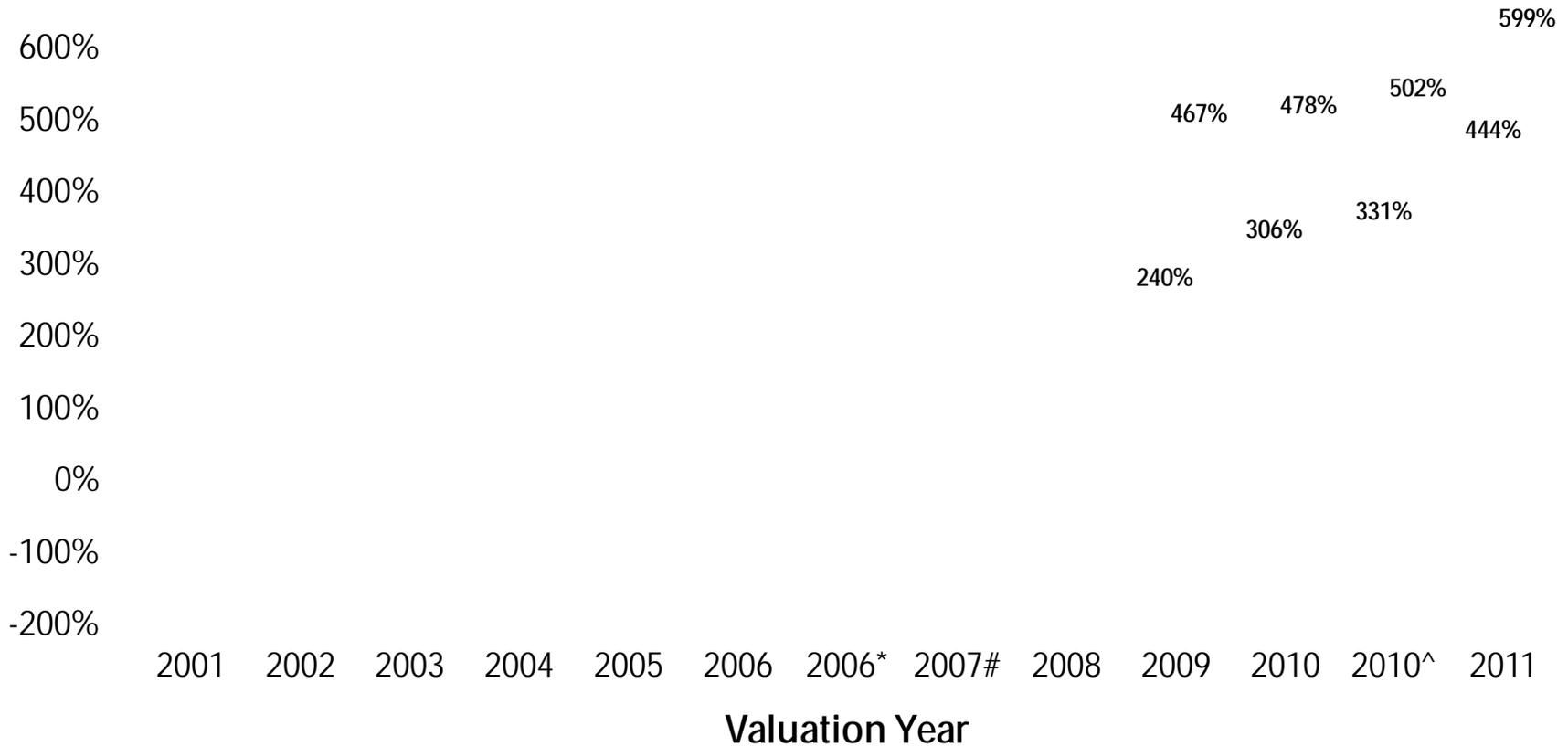


\* After adjusting to market value.

# Revised benefit provisions.

^ Revised actuarial assumptions.

# Unfunded as Percentage of Payroll



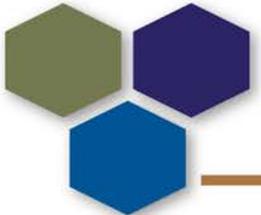
UAAL(AVA) as % of Payroll

UAAL(MVA) as % of Payroll

\* After adjusting to market value.

# Revised benefit provisions.

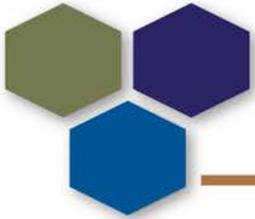
^ Revised actuarial assumptions



# Comments on the Investment Markets

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- ◆ Investment markets have been very volatile.
- ◆ Valuation is based on a 5-year smoothed value of assets.
  - Reduces the volatility of the valuation results.
- ◆ 9/30/11 smoothed value of assets was higher than market value.
  - Meeting the actuarial assumption will require average future market returns over 8%.
- ◆ 9/30/11 valuation results based on market value:
  - Funded percent would be 59.4% (instead of 69.9%).
  - Employer contribution would be 55.69% (instead of 45.80%).



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