NORTH DAKOTA
RETIREMENT AND
INVESTMENT OFFICE
Teachers' Fund for Retirement
State Investment Board

NORTH DAKOTA TEACHERS' FUND FOR RETIREMENT

NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM

Actuarial Valuations as of July 1, 2011 - Overview of Actuarial Valuation Process

January 12, 2012

Kim Nicholl, FSA, MAAA, FCA, EA

#5239580_2

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Purposes of the Actuarial Valuation

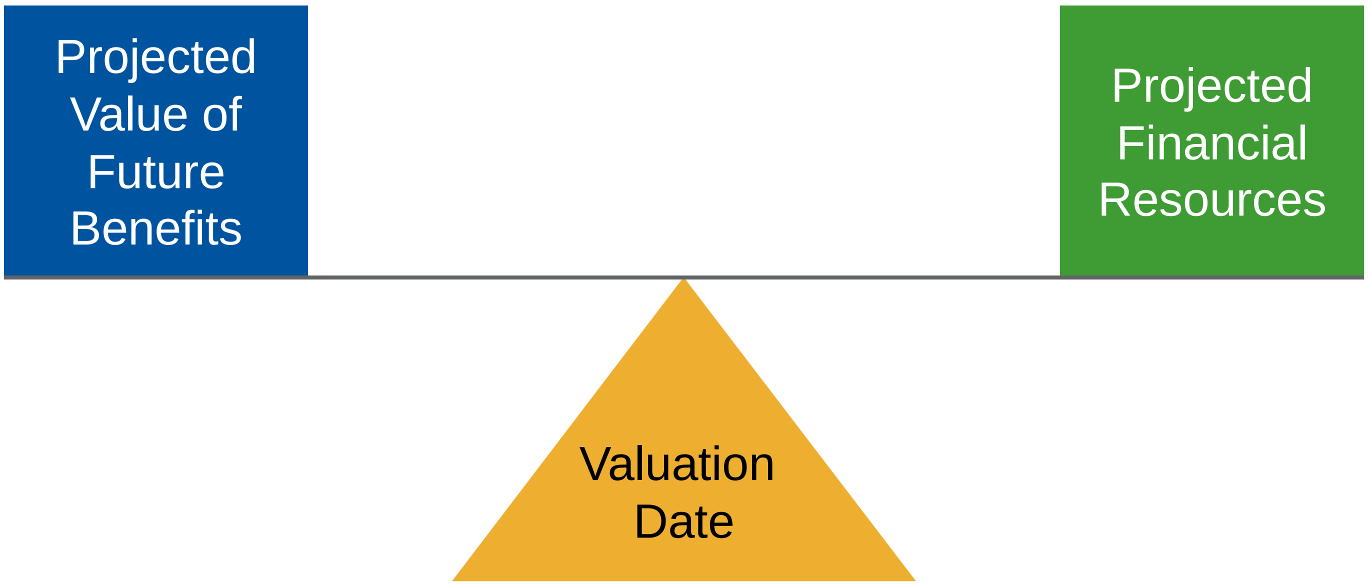
- Report the Fund's assets
- Estimate the Fund's liabilities
- Determine the Annual Required Contribution for fiscal year 2012
- Provide information for annual financial statements
- Identify emerging trends

How is an Actuarial Valuation Performed?

The actuaries will:

- Gather data as of the valuation date
  - Participant data
  - Financial data
- Project a benefit for each member, for each possible benefit
- Apply assumptions:
  - Economic (investment return, inflation, salary raises)
  - People or demographic (death, disability, retirement, turnover)
- Apply assumptions to benefits to determine a total liability and assign liabilities to service
- Apply the funding policy to determine the Annual Required Contribution
  - Based on actuarial cost method and asset valuation method

Actuarial Balance



Over the life of a pension system,

Benefits + Expenses = Contributions + Investment Return

Contributions = Benefits + Expenses - Investment Return

Actuarial Assumptions

Two types:

Demographic	Economic
• Retirement • Disability • Death in active service • Withdrawal • Death after retirement	• Inflation • Interest rate (return on assets) • Salary increases • Payroll growth

Actuaries make assumptions as to when and why a member will leave active service, and estimate the amount and duration of the pension benefits paid.

Economic Assumptions

- **Interest Rate**
  - Expected long term rate of return on investments
- **Salary Increase Rates**
  - Annual increase in salary for each active member of the Fund
  - Can be based on age, service, or both
- **Payroll Growth**
  - Annual increase in the total payroll of the Fund

Actuarial Methods

- **Asset valuation method (actuarial value of assets)**
  - Smoothing of investment gains or losses over some time period, usually five years
- **Cost method**
  - Allocation of liability between past service and future service
- **Amortization method**
  - Period over which the unfunded actuarial accrued liability is expected to be amortized
  - Period can be open (i.e., resets each year) or closed (i.e., is reduced by one year each year)
  - Can be based on level percentage of payroll (typical for public sector plan) or level dollar
  - Governmental Accounting Standards Board (GASB) requires 30-year maximum period to determine the Annual Required Contribution
    - Revisions to GASB expected to be issued in 2012

Entry Age Normal Cost Method

Allocates Cost Between Past and Future service

- **Normal Cost:** Cost of annual benefit accrual as a level percent of salary
- **Actuarial Accrued Liability:** Represents accumulated value of past normal costs (or difference between total cost and future normal costs)
- **Unfunded Actuarial Accrued Liability:** Actuarial accrued liability minus actuarial value of assets
- **Annual Required Contribution:**
  - Normal cost plus
  - Amortization payment of unfunded accrued liability over the amortization period as a percent of payroll

Actuarial Accrued Liability and Normal Cost

The **actuarial accrued liability** is the portion of the total liability that is allocated to members' past years of service

➢ Retirees and beneficiaries:

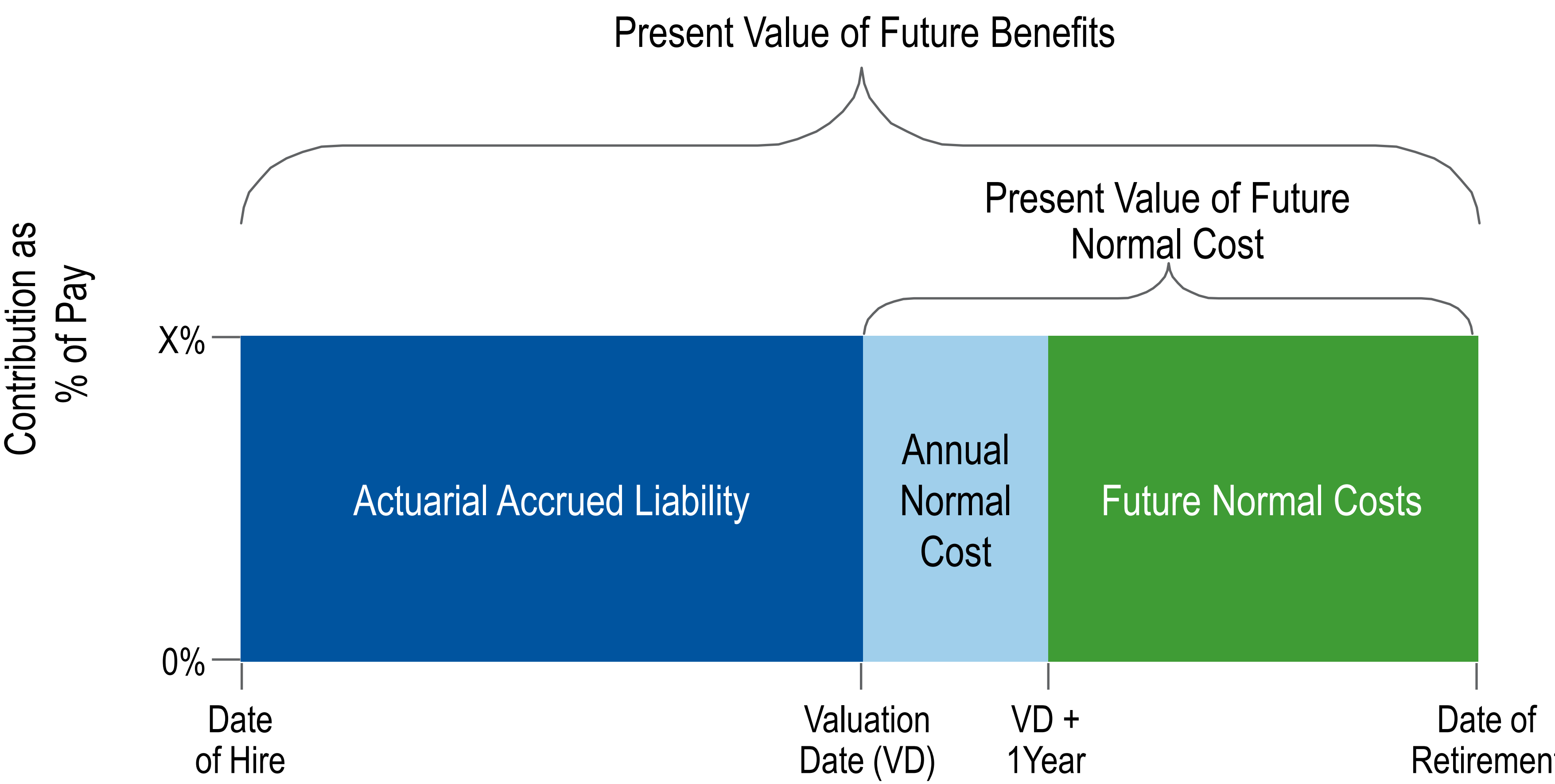
- All years of service are in the past, so the **actuarial accrued liability** is equal to the total liability

➢ Active members:

- The **actuarial accrued liability** represents the portion of the total liability that is attributable to the years of service that the members have already worked
- The **normal cost** represents the anticipated growth in the accrued liability in the coming year

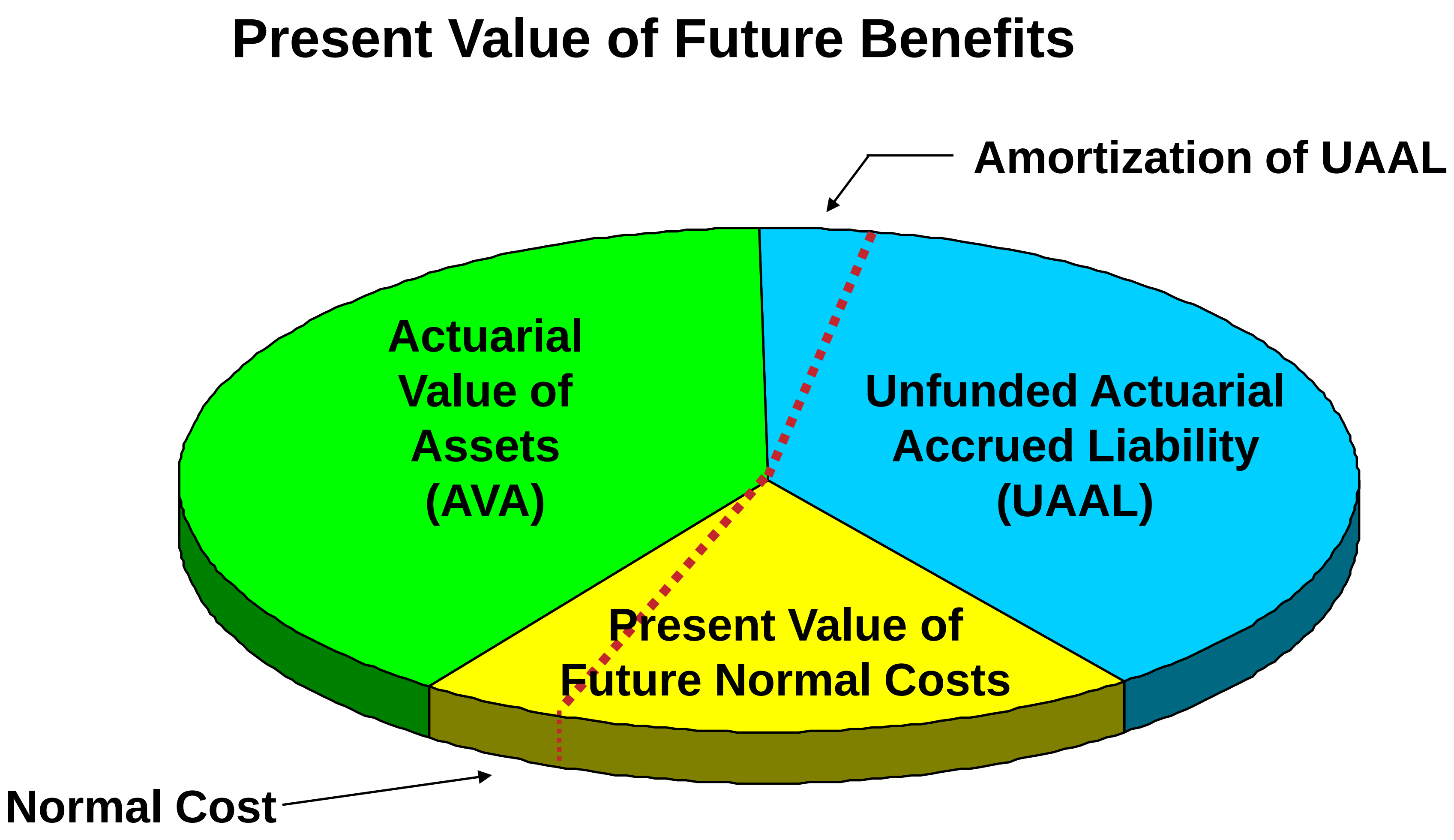
The actuarial accrued liability is compared to the assets as a measure of funding progress.

Funding Process



Actuarial Accrued Liability - Assets = Unfunded Actuarial Accrued Liability

Annual Required Contribution



Questions?

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NORTH DAKOTA RETIREMENT AND INVESTMENT OFFICE

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NORTH DAKOTA TEACHERS' FUND FOR RETIREMENT

Actuarial Valuation as of July 1, 2011

Discussion of Valuation Results and Projections

January 12, 2012

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Discussion Topics

Segal

- Summary of Valuation Highlights
- Membership and Demographics
- Valuation Results and Projections

Summary of Valuation Highlights

- Valuation reflects plan changes in House Bill 1134 (HB 1134)
  - Certain current Tier 1 members are considered Grandfathered Tier 1
    - If as of June 30, 2013:
      - Member is vested (at least 3 years of service) and at least age 55, OR
      - The sum of the member's age and service is at least 65
    - Normal retirement eligibility is Rule of 85
  - All other current Tier 1 members are considered Non-grandfathered Tier 1
    - Normal retirement eligibility for Non-grandfathered Tier 1 and all Tier 2 members is Rule of 90 with a minimum age of 60
      - Eligibility for Non-grandfathered Tier 1 members was Rule of 85 with no minimum age
      - Eligibility for Tier 2 members was Rule of 90 with no minimum age
    - Early retirement benefit reduced by 8% from normal retirement eligibility
  - Disability retirement eligibility after 5 years of service (instead of 1 year)
    - Benefit is based on actual service instead of 20 year minimum
  - Re-employed retirees are required to pay member contributions

Summary of Valuation Highlights *continued*

- HB 1134 increases contribution rates by 4% for both members and employers over the next 2 biennia
  - Member rate increases from 7.75% in FY12 to 9.75% for FY13 and FY14 and to 11.75% for FY15 and thereafter
  - Employer rate increases from 8.75% in FY12 to 10.75% for FY13 and FY14 and to 12.75% for FY15 and thereafter
  - Increases would revert to 7.75% for both members and employers once the funded ratio reaches 90% (measured using the actuarial value of assets)
- Market value of assets returned 23.5% for year ending 6/30/11 (Segal calculation)
  - Gradual recognition of deferred losses resulted in 1.4% return on actuarial assets
  - Unrecognized investment losses represent about 6% of market assets
- Net impact on funded ratio was a decrease from 69.8% (as of 7/1/2010) to 66.3% (as of 7/1/2011)
  - Recognition of HB 1134 alone (benefit/eligibility changes) resulted in an increase of 0.6%

Summary of Valuation Highlights *continued*

- Net impact on GASB 25 Annual Required Contribution (ARC) was an increase from 12.79% of payroll (FY11) to 13.16% of payroll (FY12)
  - Based on the employer contribution rate for fiscal 2012 of 8.75%, there is a contribution deficiency of 4.41% of payroll
    - Contribution rate increases from HB 1134 will address this deficiency

Membership

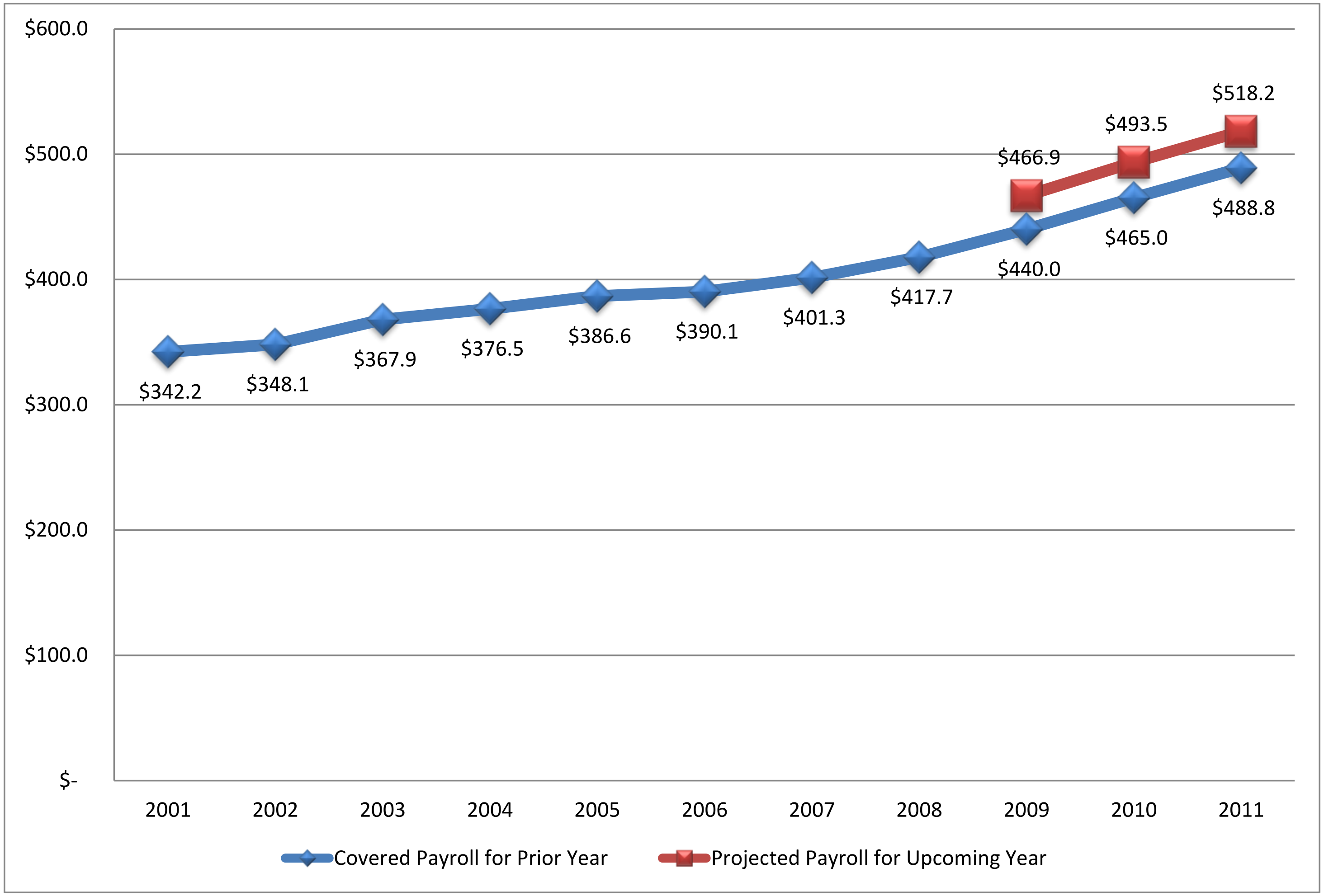
	2011	2010	Change
Active:			
• Number	10,004	9,907	+0.9%
• Payroll	$488.8 mil	$465.0 mil	5.1%
• Average Age	43.9 years	44.2 years	- 0.3 years
• Average Service	13.8 years	14.0 years	- 0.2 years
Retirees and Beneficiaries			
• Number	6,933	6,672	+3.9%
• Total Annual Benefits	$ 133.6 mil	$ 125.2 mil	+6.7%
• Average Monthly Benefit	$1,606	$1,564	+2.7%

Active and Retired Membership

Since 2001, number of retirees and beneficiaries has increased 3.8% per year on average.

Active Payroll

$ Millions



Since 2001, active payroll has increased, on average, 3.6% per year.

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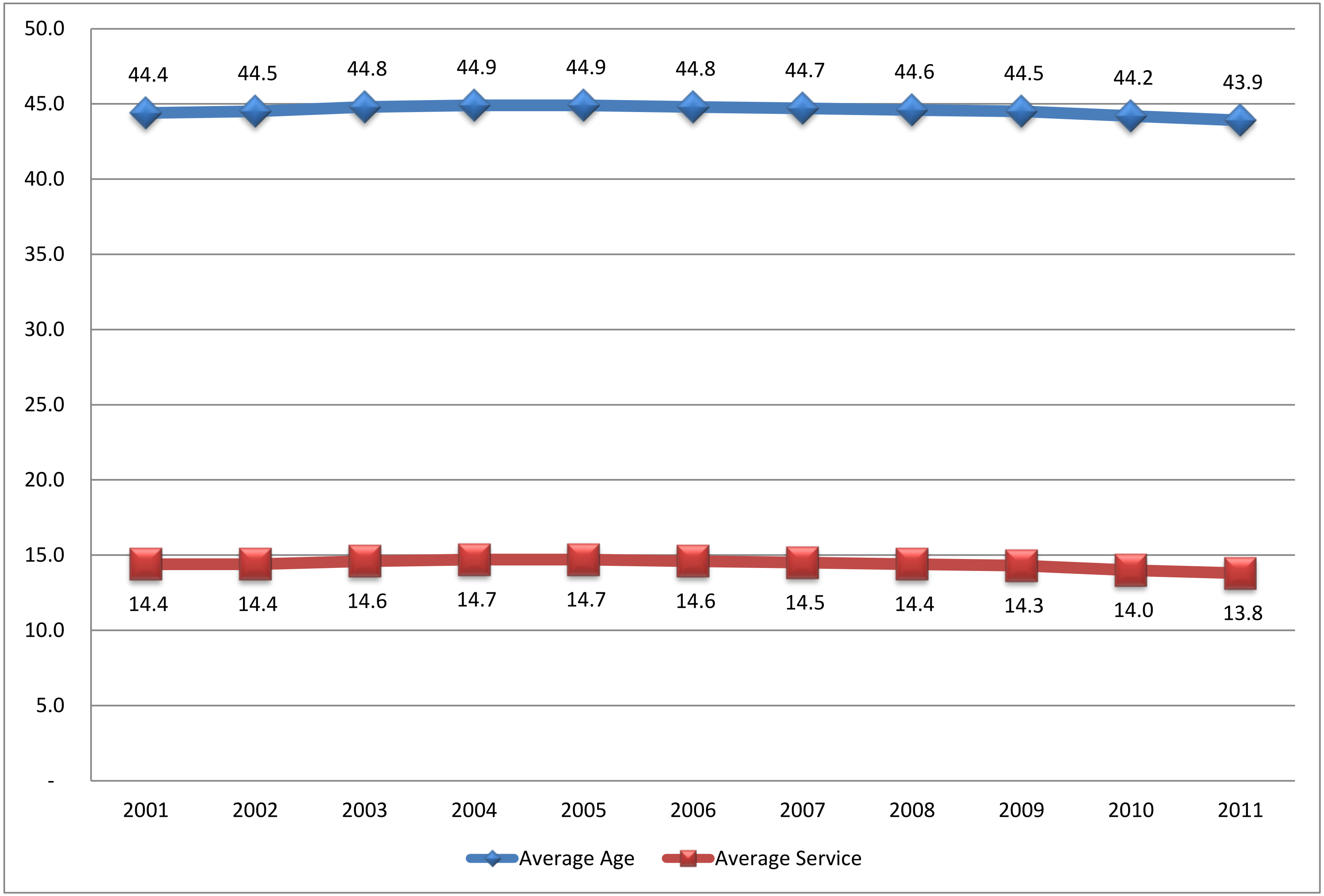
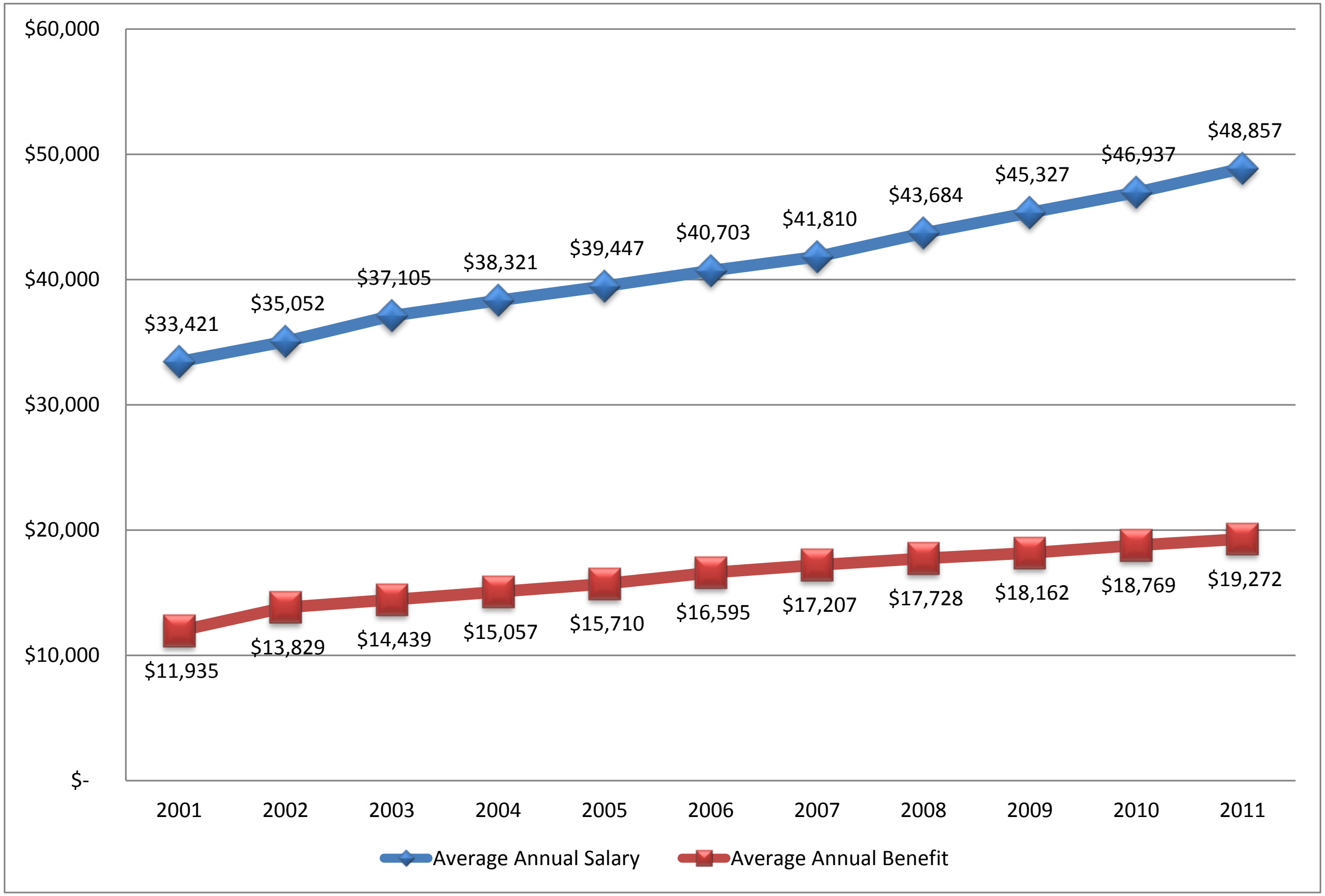
Average Age and Service of Active Members



Average Salary and Average Benefit



Since 2001, average salary has increased, on average, 3.9% per year. Average annual benefit has increased by 4.9% per year.

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Assets

- The market value of assets increased from $1.438 billion (as of June 30, 2010) to $1.726 billion (as of June 30, 2011)
  - Segal determined the investment return was 23.5%, net of investment and administrative expenses*
- The actuarial value of assets – which smoothes investment gains and losses over five years – decreased from $1.842 billion (as of June 30, 2010) to $1.823 billion (as of June 30, 2011)
  - Investment return of 1.4%, net of investment and administrative expenses
  - Actuarial value is 105.6% of market
  - There is a total of $96 million of deferred investment losses that will be recognized in future years
- The average annual return on market assets over the past 10 years is 5.1%*
  - 20-year average is 7.7%
- The average annual return on actuarial assets over the past 10 years is 4.5%
  - 20-year average is 7.3%

* The investment returns calculated by Segal are based on a very simplified approach using annual income and end of year data. The investment consultant's calculations are more accurate and are based on daily time-weighted cash flows.

Market Value of Assets ($ in millions)

Fiscal Year Ending June 30, 2011	
Beginning of Year	$1,438
Contributions:	
• Employer	45
• Member	39
• Service Purchases	1
• Total	85
Benefits and Refunds	(130)
Investment Income (net)	333
End of Year	$1,726
Rate of Return	23.5%

Actuarial Value of Assets ($ in millions)

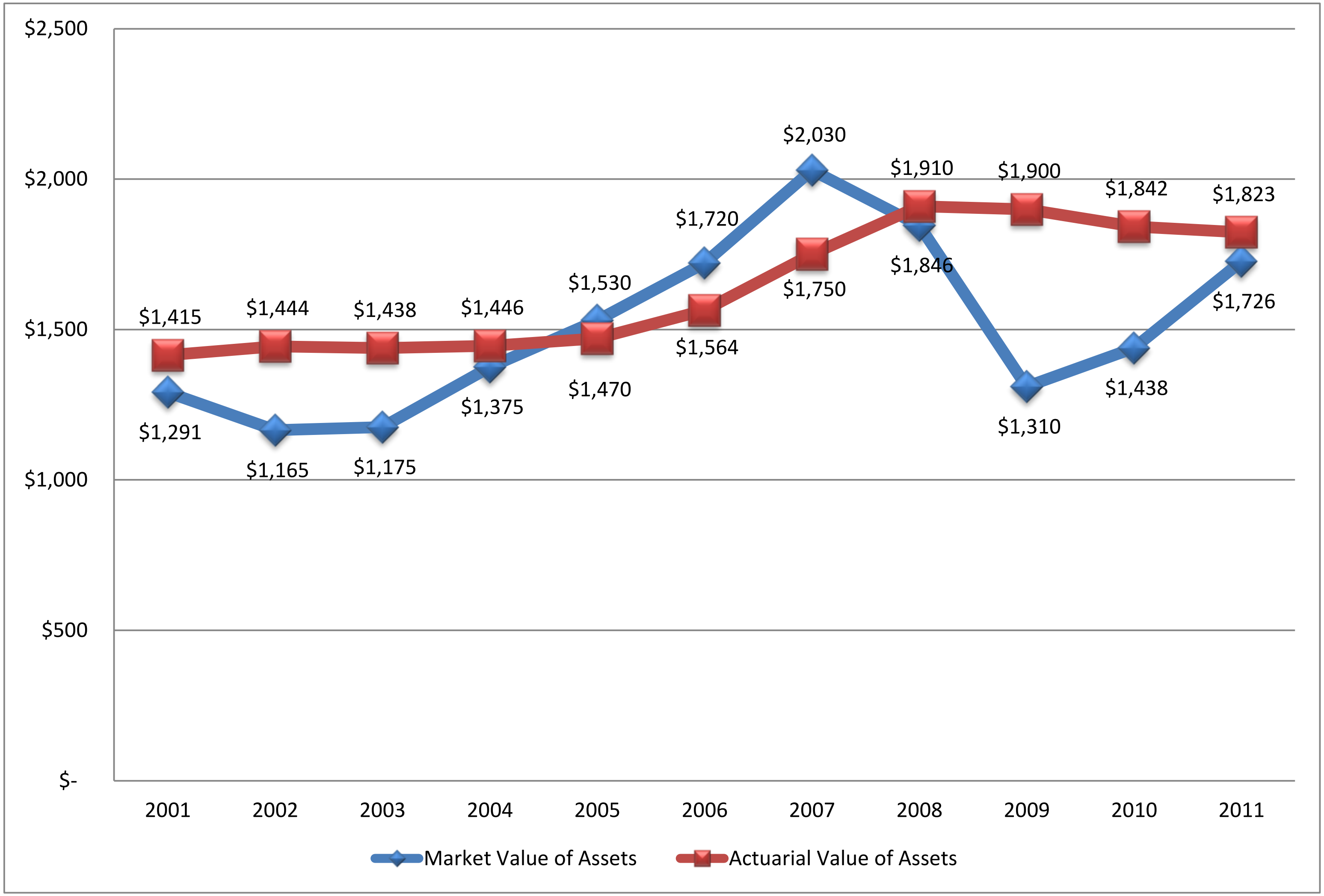
1. Market Value of Assets as of June 30, 2010	$1,438
2. Contributions and Benefits for FYE June 30, 2011	(45)
3. Expected Return	113
4. Expected Market Value of Assets (1) + (2) + (3)	$1,506
5. Actual Market Value of Assets on June 30, 2011	**1,726**
6. Excess/(Shortfall) for FYE June 30, 2011 (5) – (4)	220
Excess/(Shortfall) Returns:	

Year	Initial Amount	Deferral %	Unrecognized Amount
2011	$220	80%	$176
2010	74	60%	45
2009	(640)	40%	(256)
2008	(303)	20%	(61)
2007	210	0%	0
7. Total			**($96)**

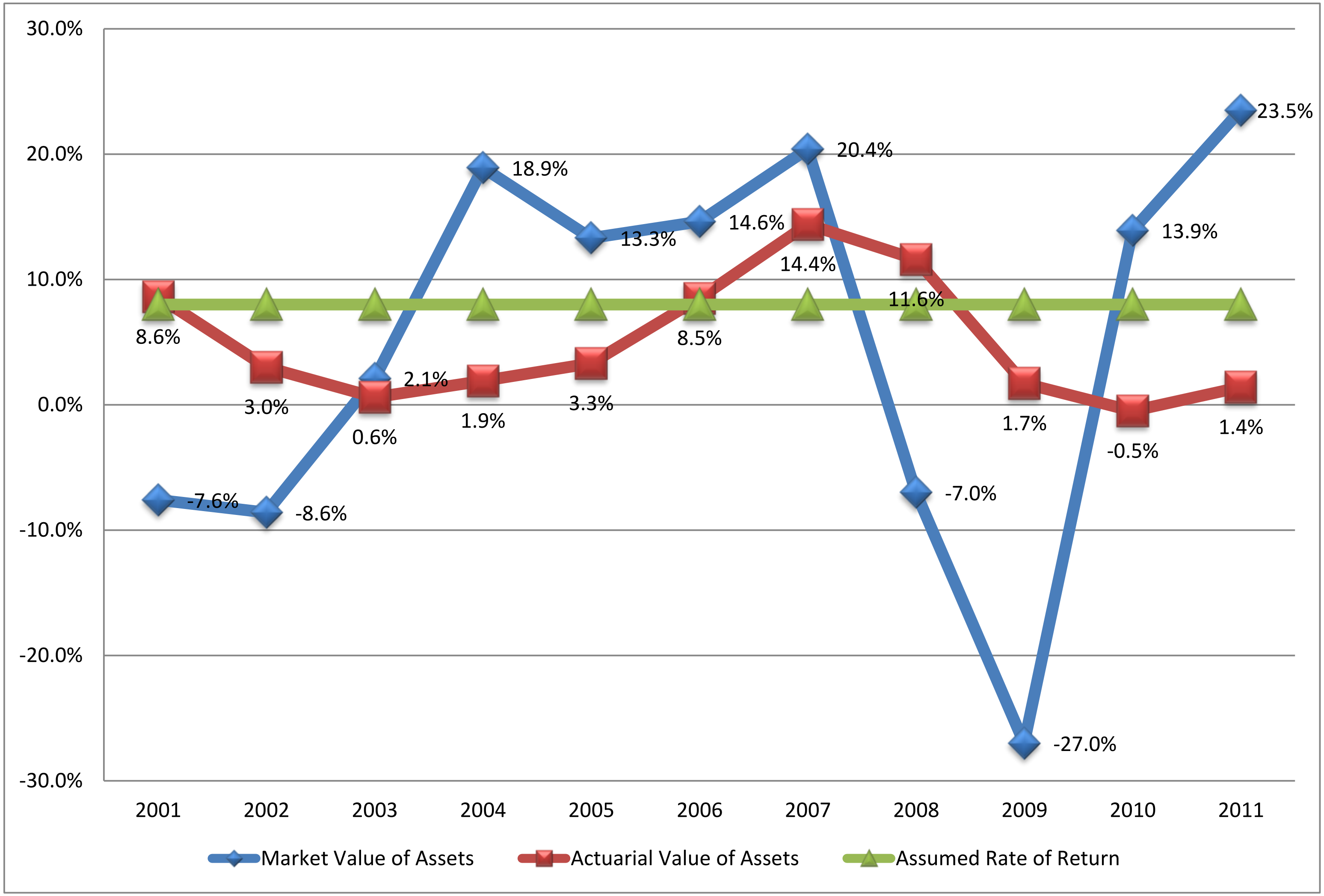
8. Actuarial Value of Assets as of June 30, 2011 (5) - (7)	**$1,823**
9. Actuarial Value of Assets as a % of Market Value of Assets	106%

Market and Actuarial Values of Assets

$ Millions

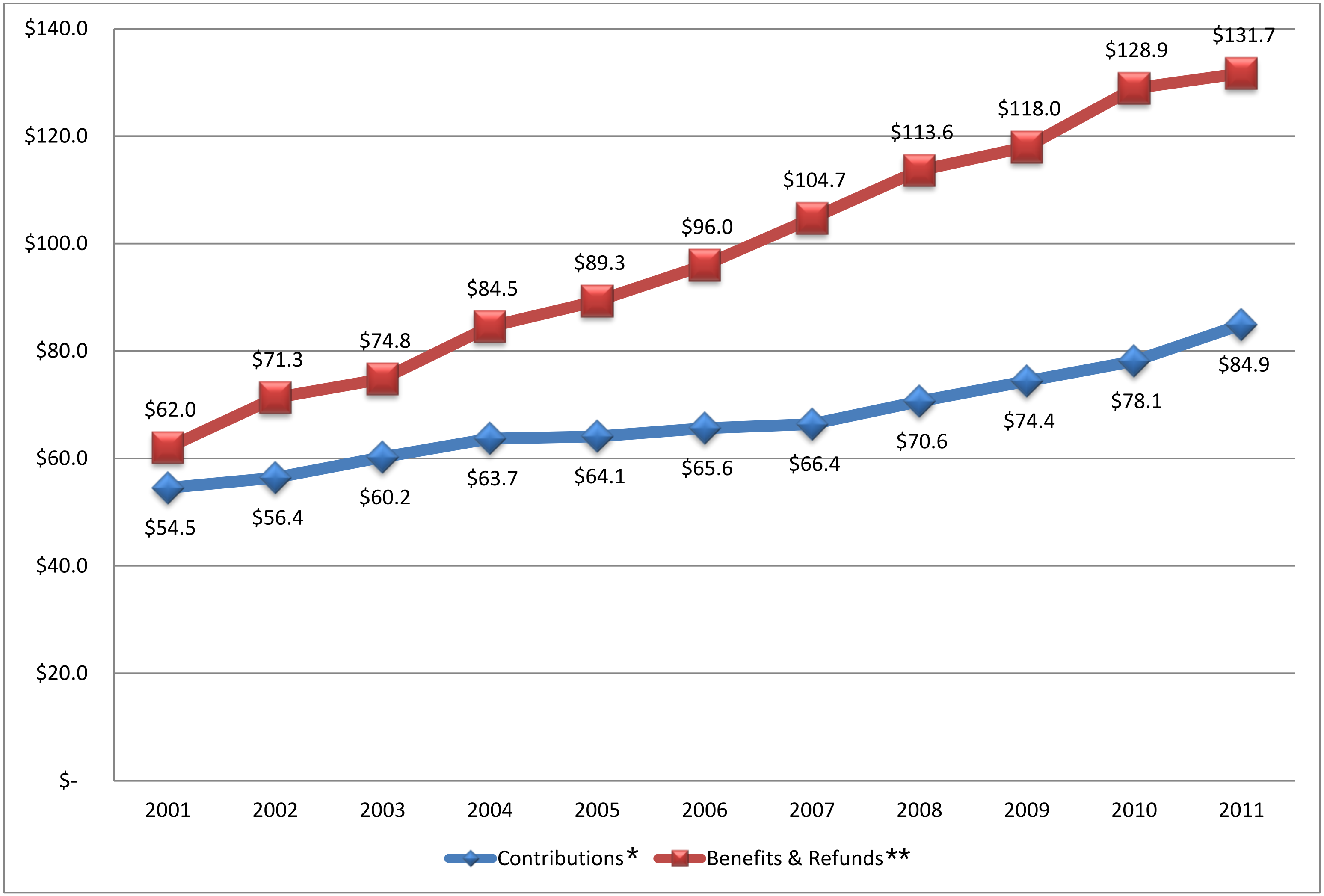


Asset Returns



Contributions vs. Benefits and Refunds

$ Millions



* Includes member and employer contributions, and service purchases

** Includes administrative expenses

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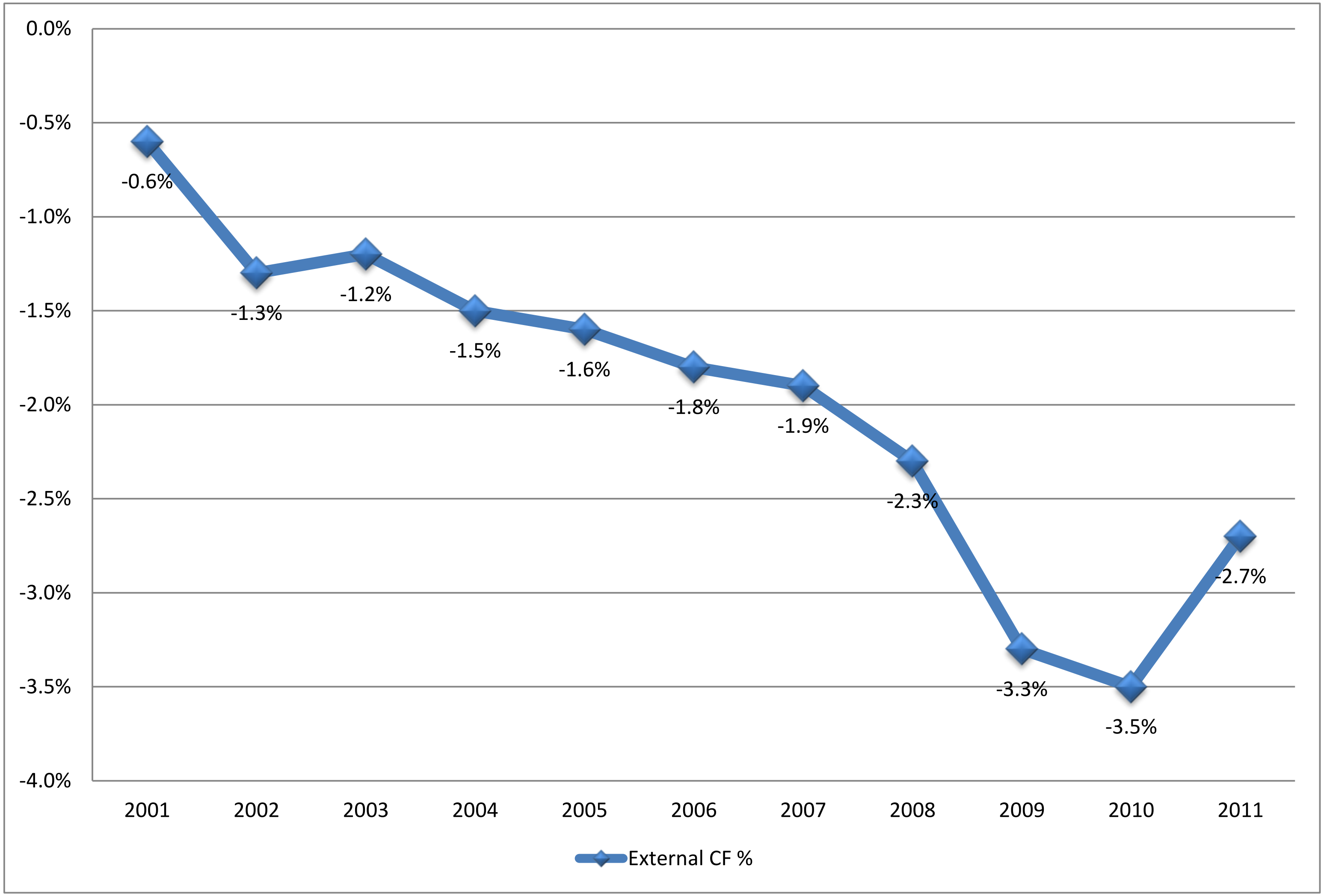
External Cash Flow as a % of Market Value



Valuation Results ($ in millions)

	July 1, 2011	July 1, 2010
Actuarial Accrued Liability:		
• Active Members	$1,352	$1,328
• Inactive Members	66	63
• Retirees and Beneficiaries	1,332	1,246
Total	**$2,750**	**$2,637**
Actuarial Assets	1,823	1,842
Unfunded Accrued Liability	$ 927	$ 795
Funded Ratio	66.3%	69.8%

Annual Required Contribution

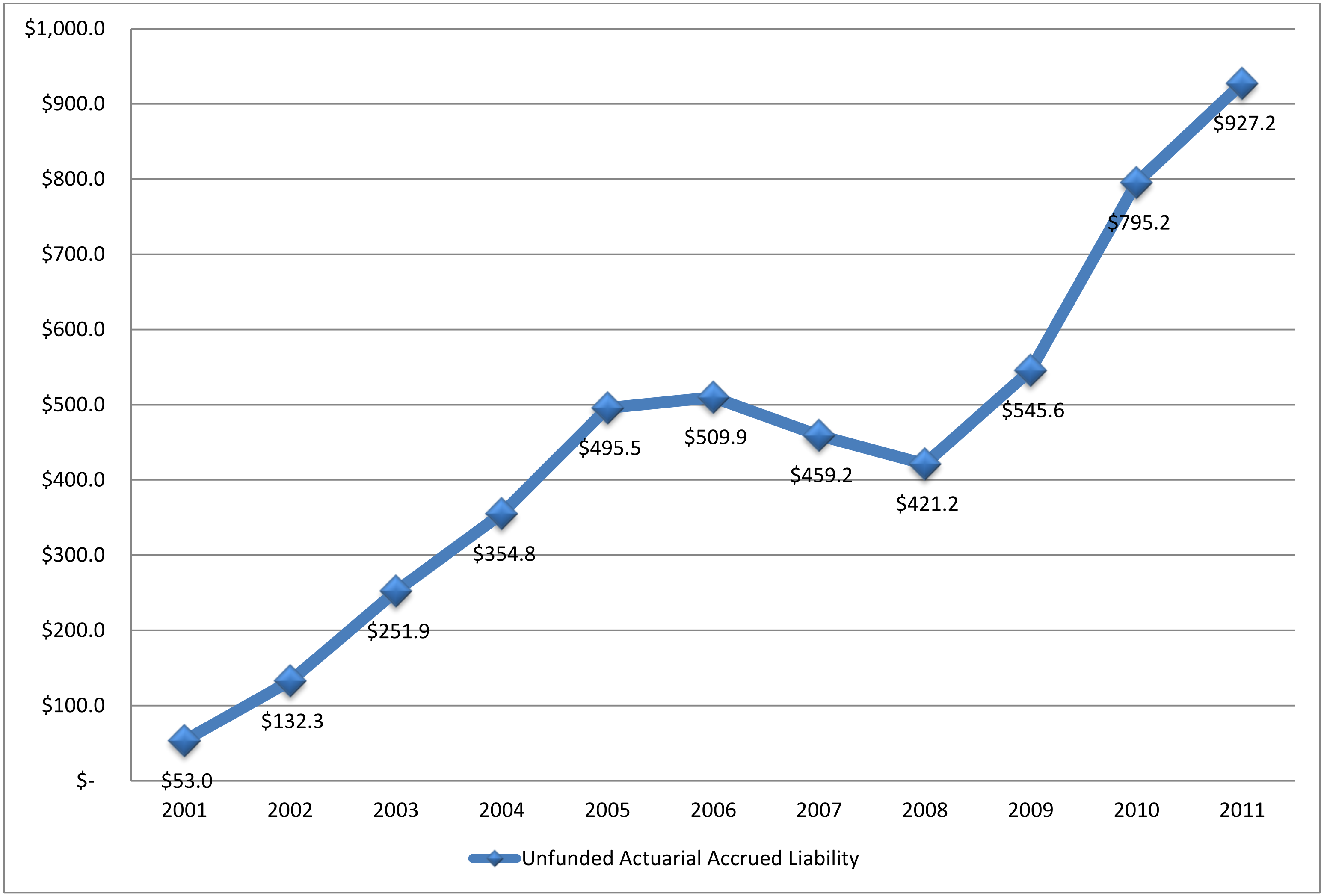
	July 1, 2011	July 1, 2010
Normal Cost Rate	9.80%	10.57%
Member Rate	7.75%	7.75%
Employer Normal Cost Rate	2.05%	2.82%
Adjusted for Timing	2.12%	2.82%
Amortization of UAAL	11.04%	9.97%
Annual Required Contribution	13.16%	12.79%
Employer Rate	8.75%	8.75%
Contribution Sufficiency/(Deficiency)	(4.41%)	(4.04%)

Valuation Results - Comments

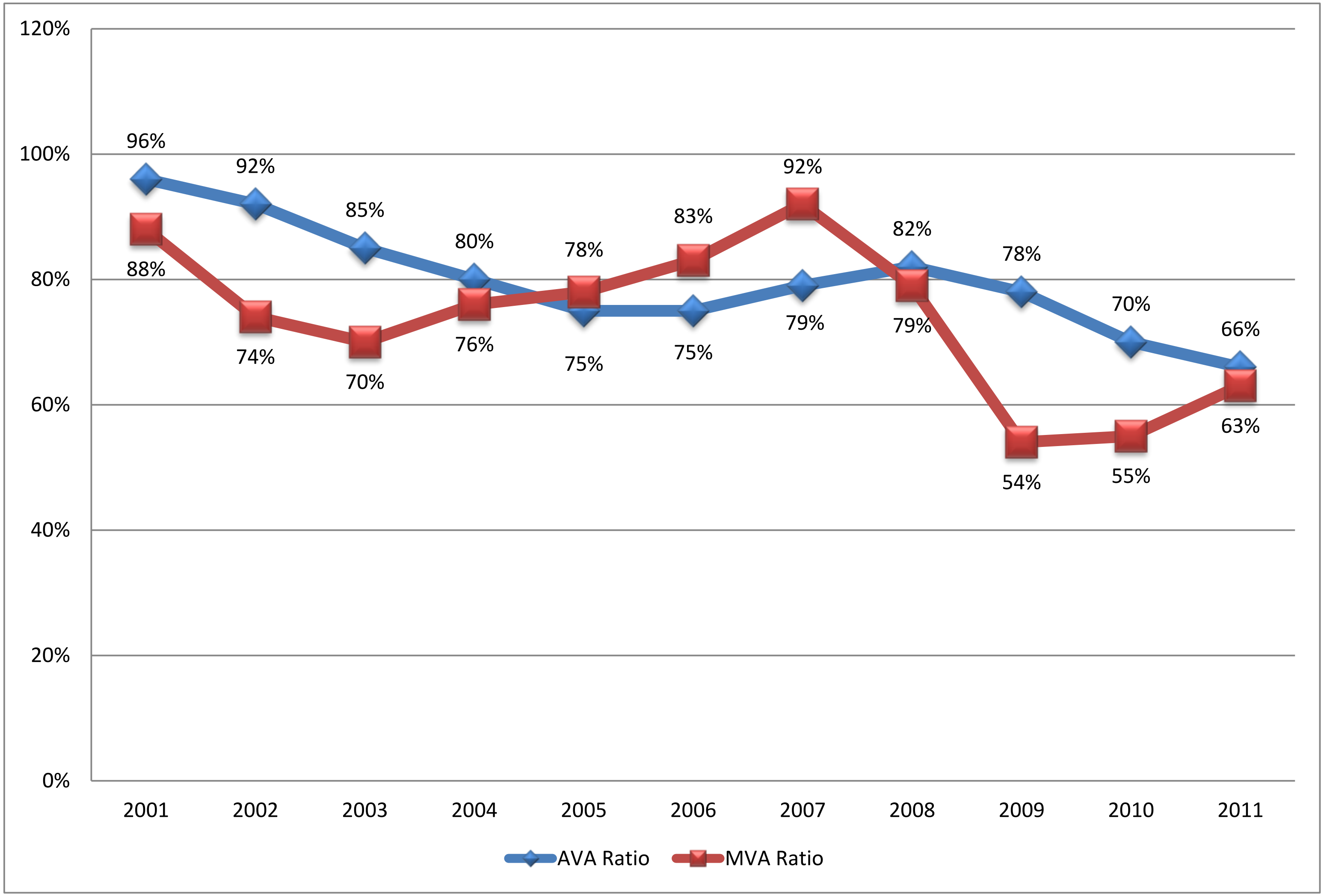
- The actuarial accrued liability increased from $2.637 billion (as of June 30, 2010) to $2.750 billion (as of June 30, 2011)
  - This includes a decrease of $24 million due to reflecting the retirement eligibility changes in HB 1134
- The unfunded actuarial accrued liability (UAAL) increased from $795 million to $927 million
  - UAAL is 190% of projected active payroll
- The funded ratio on an AVA basis decreased from 70% to 66%
  - On a market value basis, the funded ratio increased from 55% to 63%
- The Annual Required Contribution (ARC) increased from 12.79% of payroll to 13.16% of payroll
  - Compared to 8.75% employer contribution, results in a contribution shortfall of 4.41%
  - The funding period based on the 8.75% statutory rate is infinite
  - Reflecting the full 8% increase in total contribution rate would result in a funding period of 18 years

Unfunded Actuarial Accrued Liability

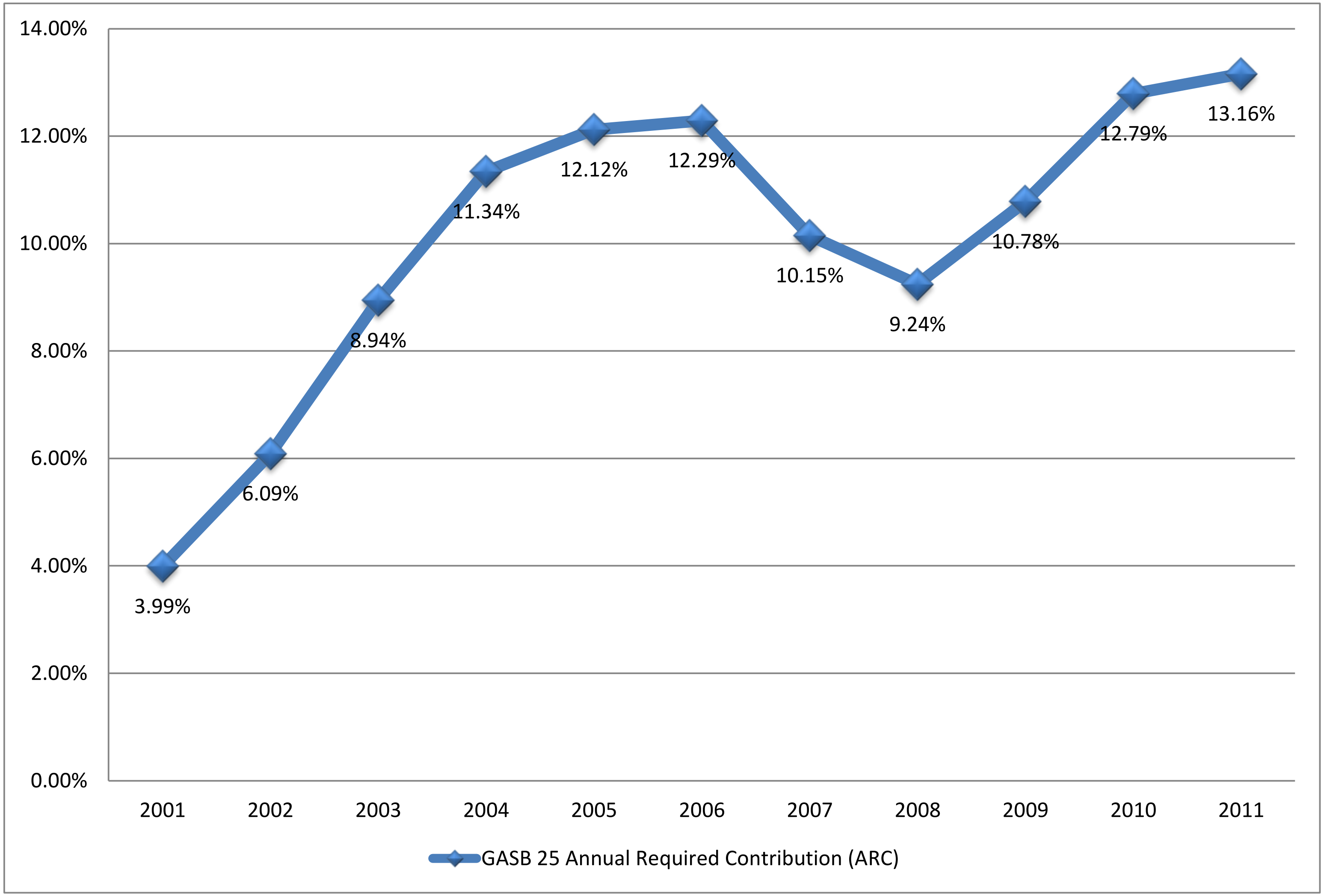
$ Millions



Funded Ratios



GASB 25 Annual Required Contribution (ARC)



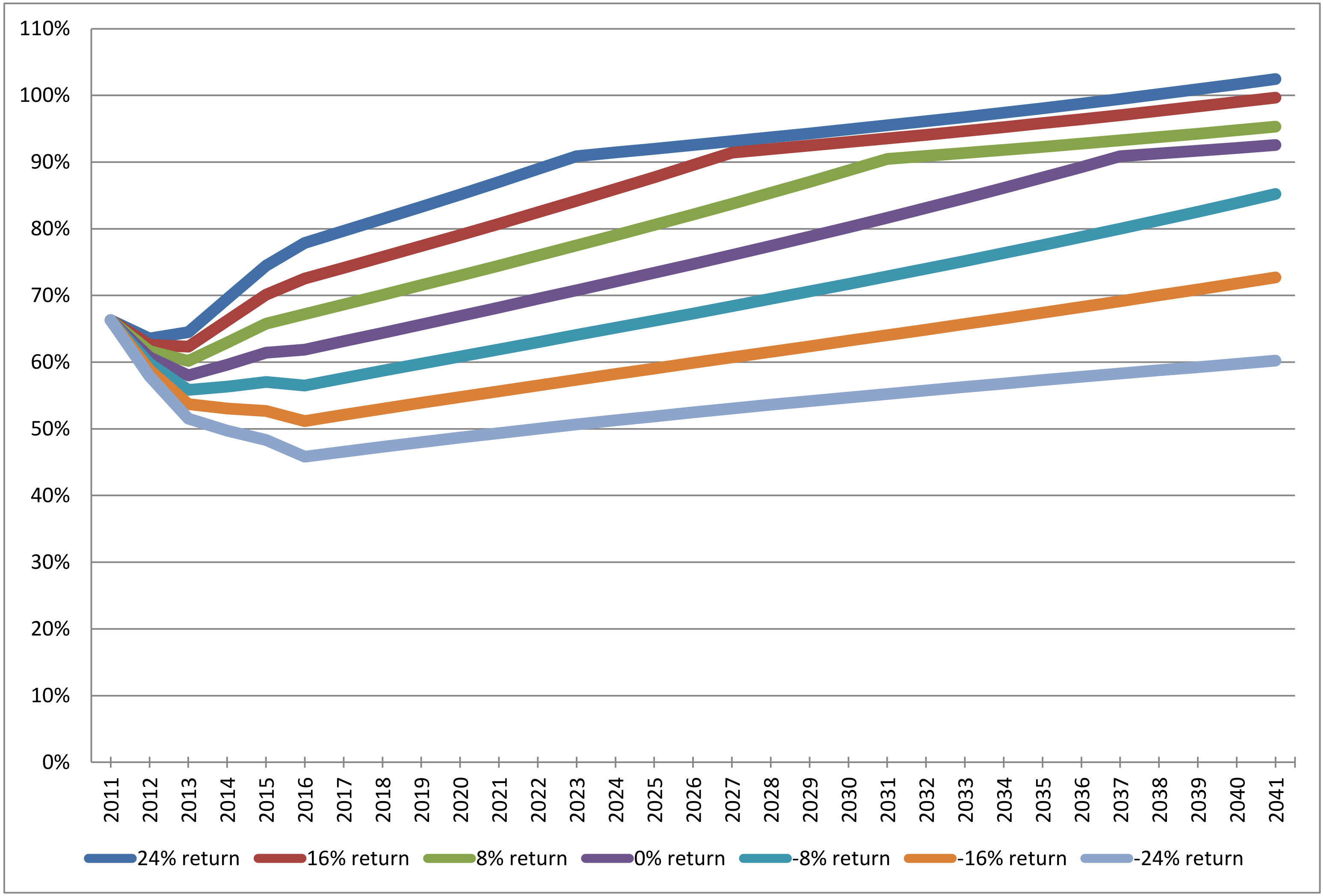
Since 2005, the calculation of the ARC is based on 30-year level percentage of payroll amortization.

Prior to 2005, the ARC calculation was based on a 20-year amortization period.

Projections

- Projections of estimated funded ratios for 30 years
  - Based on FY12 investment return scenarios ranging from -24% to +24%
  - Assumed Fund earns 8% per year in FY13 and each year thereafter
  - All other experience is assumed to emerge as expected
- Includes contribution rate increases from HB 1134
  - Member rate increases from 7.75% in FY12 to 9.75% for FY13 and FY14 and to 11.75% for FY15 and thereafter
  - Employer rate increases from 8.75% in FY12 to 10.75% for FY13 and FY14 and to 12.75% for FY15 and thereafter
  - Increases "sunset" back to 7.75% once the funded ratio reaches 90% (based on actuarial assets)

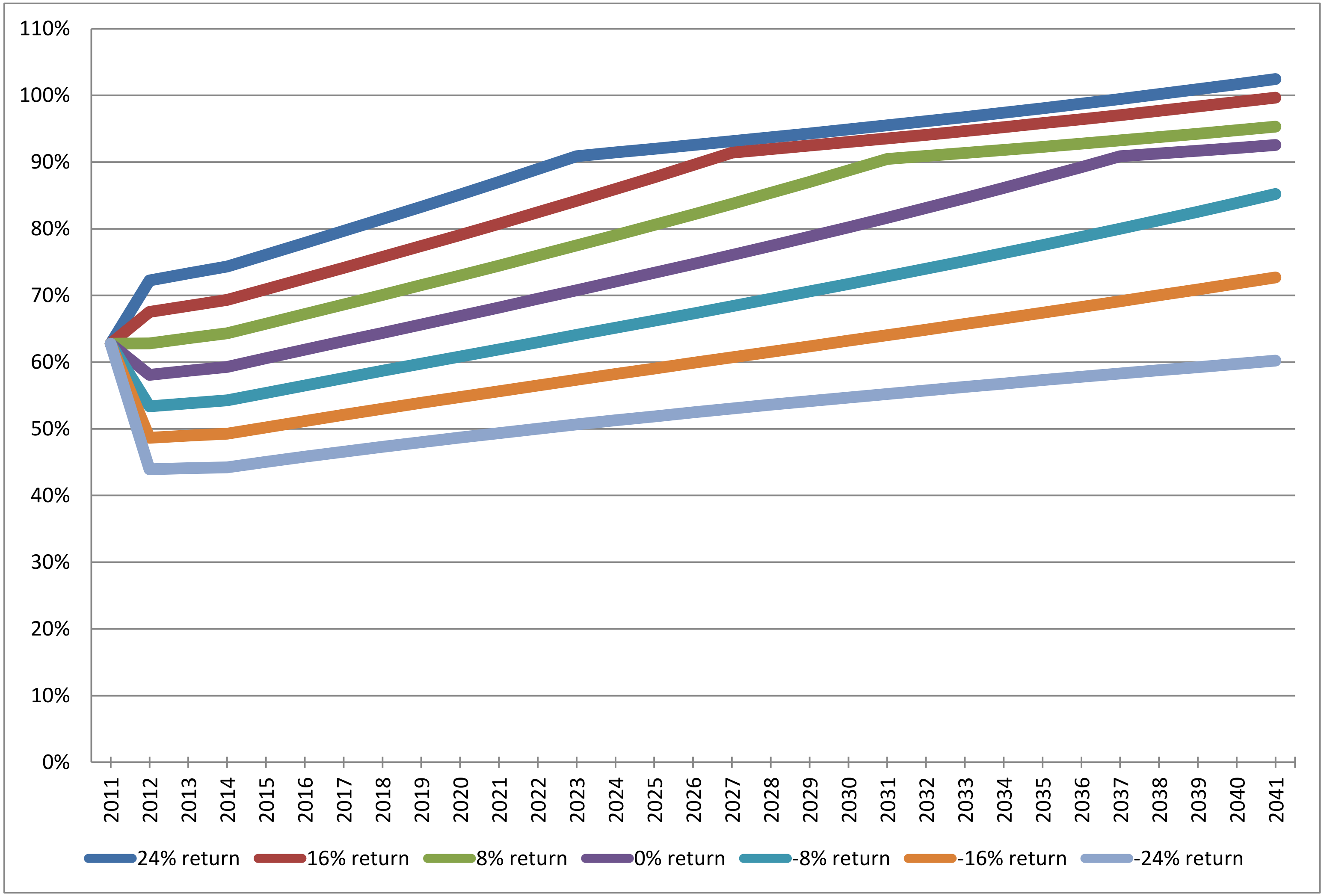
Projected Funded Ratios (AVA Basis)



Projected Funded Ratios (AVA Basis)

Valuation Year	24% for FY2012	16% for FY2012	8% for FY2012	0% for FY2012	-8% for FY2012	-16% for FY2012	-24% for FY2012
2011	66%	66%	66%	66%	66%	66%	66%
2012	64%	63%	62%	61%	60%	59%	58%
2013	64%	62%	60%	58%	56%	54%	52%
2014	70%	66%	63%	60%	56%	53%	50%
2015	74%	70%	66%	61%	57%	53%	48%
2016	78%	73%	67%	62%	57%	51%	46%
2021	87%	81%	74%	68%	62%	56%	49%
2026	93%	90%	82%	75%	67%	60%	52%
2031	95%	94%	90%	82%	73%	64%	55%
2036	99%	96%	93%	89%	79%	68%	58%
2041	102%	100%	95%	93%	85%	73%	60%

Projected Funded Ratios (MVA Basis)



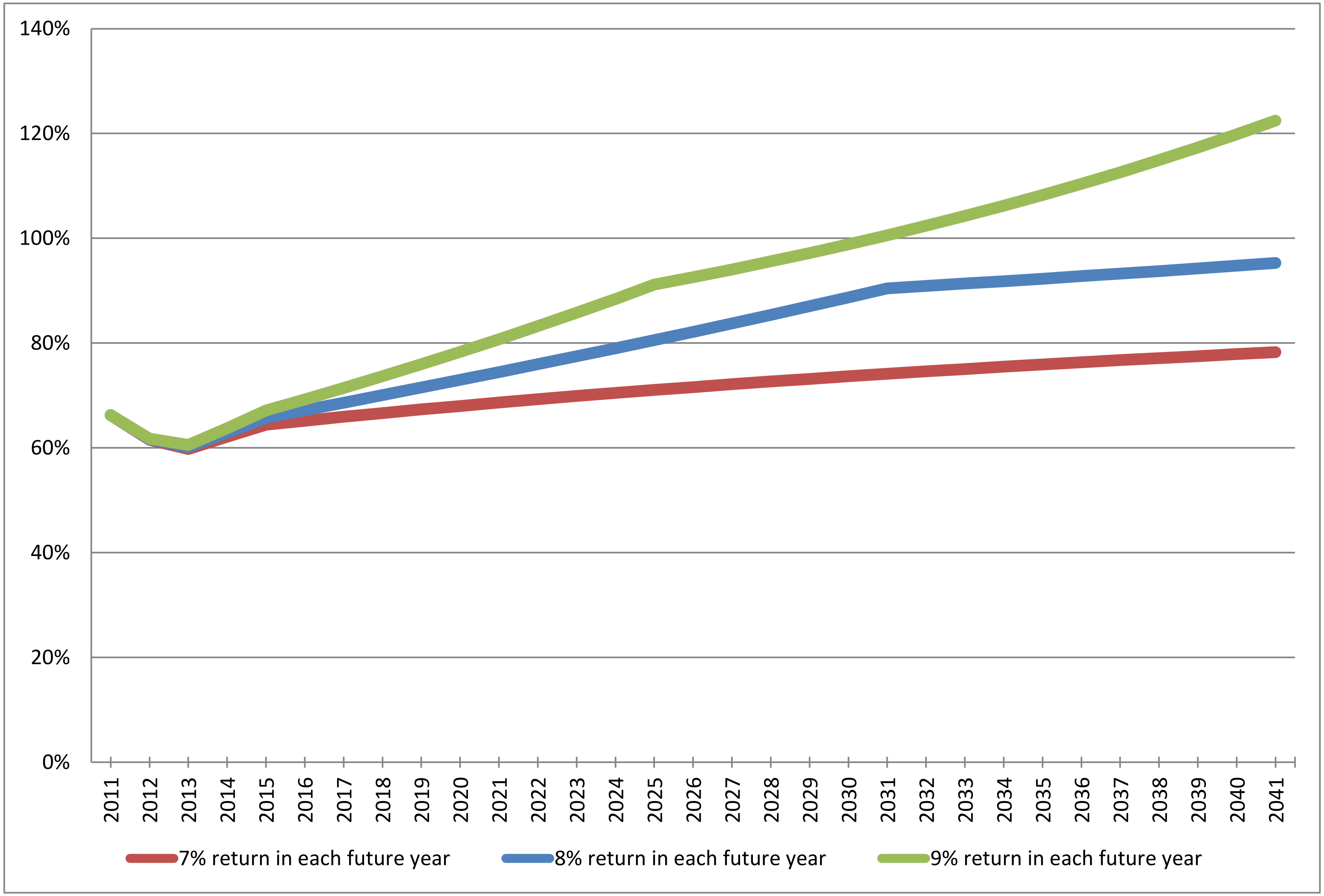
Projected Funded Ratios (MVA Basis)

Valuation Year	24% for FY2012	16% for FY2012	8% for FY2012	0% for FY2012	-8% for FY2012	-16% for FY2012	-24% for FY2012
2011	63%	63%	63%	63%	63%	63%	63%
2012	72%	68%	63%	58%	53%	49%	44%
2013	73%	68%	64%	59%	54%	49%	44%
2014	74%	69%	64%	59%	54%	49%	44%
2015	76%	71%	66%	61%	55%	50%	45%
2016	78%	73%	67%	62%	57%	51%	46%
2021	87%	81%	74%	68%	62%	56%	49%
2026	93%	90%	82%	75%	67%	60%	52%
2031	95%	94%	90%	82%	73%	64%	55%
2036	99%	96%	93%	89%	79%	68%	58%
2041	102%	100%	95%	93%	85%	73%	60%

Projected Margin (AVA Basis)

Valuation Year	24% for FY2012	16% for FY2012	8% for FY2012	0% for FY2012	-8% for FY2012	-16% for FY2012	-24% for FY2012
2011	-4.41%	-4.41%	-4.41%	-4.41%	-4.41%	-4.41%	-4.41%
2012	-1.41%	-1.72%	-2.04%	-2.35%	-2.67%	-2.98%	-3.29%
2013	-1.27%	-2.00%	-2.73%	-3.46%	-4.19%	-4.91%	-5.64%
2014	4.36%	3.23%	2.10%	0.97%	-0.16%	-1.28%	-2.41%
2015	5.93%	4.41%	2.90%	1.39%	-0.12%	-1.63%	-3.14%
2016	7.00%	5.13%	3.25%	1.37%	-0.51%	-2.38%	-4.26%
2021	9.92%	7.57%	5.22%	2.87%	0.52%	-1.83%	-4.18%
2026	2.67%	10.64%	7.69%	4.75%	1.80%	-1.14%	-4.08%
2031	3.74%	2.92%	1.63%	7.10%	3.41%	-0.27%	-3.96%
2036	5.08%	4.05%	2.44%	10.04%	5.43%	0.81%	-3.81%
2041	6.76%	5.47%	3.45%	2.18%	7.95%	2.17%	-3.61%

Projected Funded Ratios (AVA Basis)
Actual Returns +1% or -1% of Assumed



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Actuarial Valuations as of July 1, 2011

Discussion of Valuation Results and Projections

January 12, 2012

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Discussion Topics

Segal

- Summary of Valuation Highlights
- Membership and Demographics
- Valuation Results and Projections

Summary of Valuation Highlights

- Significant drop in assets in 2008-2009, still being smoothed into the actuarial value of assets, while significant appreciation in 2010-2011 only 20% recognized.
- Market value return on assets of 21.09% (PERS Fund) was greater than the assumed rate
- Changes to actuarially determined contribution rates and funded ratios were dampened by asset smoothing methods, but the asset losses of 2008-2009 still had a significant effect
- Changes to assumptions approved by the Board for the HPRS as recommended in the Experience Study Analysis resulted in an increase in costs
- Enrollment of SB 2108 will increase statutory contribution rates effective January 2012 and again in January 2013

Summary of Valuation Highlights

- Market value of combined assets for PERS and HPRS was $1.811 billion vs. $1.519 billion last year
- Combined actuarial value of assets for PERS and HPRS was $1.700 billion vs. $1.671 billion last year
- Total actuarial value of assets is 93.9% of market value of assets
- Unrecognized appreciation will be recognized in subsequent valuations

Summary of Valuation Highlights

	Changes in Statutory Contribution Rates Due to Senate Bill 2108	
	Member	**Employer**
Main System Full-Time Employees	4.00	4.12
Effective January 2012	5.00	5.12
Effective January 2013	6.00	6.12
Main System Part-Time Employees	8.12	0.00
Effective January 2012	10.12	0.00
Effective January 2013	12.12	0.00
Judges	5.00	14.52
Effective January 2012	6.00	15.52
Effective January 2013	7.00	16.52
Highway Patrol	10.30	16.70
Effective January 2012	11.30	17.70
Effective January 2013	12.30	18.70
Law Enforcement (without Prior Service)	4.00	N/A
Effective January 2012	4.50	
Effective January 2013	5.00	
	Member Rate for Employees of Political Subdivisions	**Member Rate for Employees of the BCI**
Law Enforcement (with Prior Service)	4.00	4.00
Effective January 2012	4.50	5.00
Effective January 2013	5.00	6.00

Summary of Valuation Highlights

- Some employer rates are determined by the Board of Retirement rather than set in statute
- On July 28, 2011 the Board voted to increase some employer contribution rates to match the scheduled increases in the statutory member rates
- These increases were not reflected in the July 1, 2011 valuation, but are reflected in the projections at the end of this presentation

	Changes in Contribution Rates Determined by the Board of Retirement
	Employer
Law Enforcement without Prior Service	6.43
Effective January 2012	6.93
Effective January 2013	7.43
Law Enforcement with Prior Service (Employees of Political Subdivisions)	8.31
Effective January 2012	8.81
Effective January 2013	9.31
Law Enforcement with Prior Service (Employees of the BCI)	8.31
Effective January 2012	9.31
Effective January 2013	10.31

Summary of Valuation Highlights

- Recommended contribution as a percent of payroll

	2011-2012	2010-2011	Statutory/ Approved 2011-2012	Ultimate Statutory/ Approved Effective 2013
Main	11.36%	10.76%	4.12%-5.12%	6.12%
Judges	15.96%	14.10%	14.52%-15.52%	16.52%
National Guard	7.08%	7.00%	6.50%	6.50%
Law Enforcement (with Prior Service)	10.96%	10.80%	8.31%	8.31%
Law Enforcement (without Prior Service)	7.56%	7.53%	6.43%	6.43%
Highway Patrol	27.13%	22.54%	16.70%-17.70%	18.70%
Retiree Health	0.88%	0.89%	1.14%	1.14%
Job Service	0.00%	0.00%	0.00%	0.00%

- Funded Ratio (AVA)

	July 1, 2011	July 1, 2010
PERS	70.5%	73.4%
HPRS	73.7%	79.8%
Retiree Health	49.6%	47.4%
Job Service	108.7%	103.5%

Active Membership - PERS

	Number of Actives	Average Age	Average Service	Total Payroll	Average Payroll
Main	20,359 (---)	47.3 (+0.1)	10.6 (+0.1)	$785m (+5%)	$38,577 (+5%)
Judges	49 (+4%)	57.1 (-1.0)	16.5 (-0.5)	$6.20m (+9%)	$126,474 (+5%)
National Guard	30 (---)	36.3 (+1.2)	5.7 (+0.9)	$1.32m (+5%)	$44,119 (+5%)
Law Enforcement (with Prior Service)	196 (+5%)	40.0 (-0.7)	8.3 (-0.5)	$8.83m (-16%)	$45,029 (-20%)
Law Enforcement (without Prior Service)	61 (+91%)	37.7 (+1.3)	2.5 (-0.4)	$2.43m (+114%)	$39,911 (+12%)
Total	20,695 (---)	47.2 (---)	10.6 (+0.2)	$804m (+5%)	$38,858 (+4%)

Inactive Membership - PERS

	Number of Pensions in Force	Average Age	Total Monthly Benefits	Average Monthly Benefits
Main	6,990	72.2	$6,604,538	$945
Judges	25	72.7	$98,528	$3,941
National Guard	8	65.9	$9,716	$1,215
Law Enforcement (with Prior Service)	32	60.7	$52,781	$1,649
Law Enforcement (w/o Prior Service)	0	N/A	N/A	N/A
Total	7,055	72.2	$6,765,564	$959

Financial Information - PERS

- Market value of assets increased from $1.474 billion to $1.758 billion
- Actuarial value of assets increased from $1.622 billion to $1.650 billion
- Ratio of actuarial value to market value is 93.9% (a $108 million deferred gain)
- Approximate returns:
  - Market Value: 21.1% (ten-year average: 5.6%)
  - Actuarial Value: 3.3% (ten-year average: 5.1%)
- Benefits and administrative expenses: $91,038,075 in 2010-2011
- Contributions: $66,555,091 in 2010-2011

Actuarial Value of Assets (PERS and HPRS)

Market Value of assets as of June 30, 2011		$1,810,762,019
	Original Market Appreciation/ (Depreciation)	**Unrecognized Amount**
Year ended June 30, 2011	$288,857,273	$231,085,818
Year ended June 30, 2010	$153,004,660	91,802,796
Year ended June 30, 2009	(463,523,678)	(185,409,471)
Year ended June 30, 2008	(133,303,450)	(26,660,690)
Year ended June 30, 2007	285,031,438	0
Total unrecognized return		$110,818,453
Actuarial value of assets		$1,699,943,566
Actuarial value as a percentage of market value		93.9%

Actuarial Value of Assets is allocated over all of the groups based upon this calculation

Conclusions: Unrecognized appreciation remains and will be reflected in future valuations, unless offset by future depreciation.

Valuation Results - Main

	July 1, 2011		July 1, 2010	
Actuarial accrued liability	$2,284,199,019		$2,156,560,553	
Actuarial value of assets	1,603,718,656		1,576,794,397	
Unfunded actuarial accrued liability	680,480,363		579,766,156	
Recommended Contribution				
	2011 - 2012		**2010 - 2011**	
	Amount	**% of Payroll**	**Amount**	**% of Payroll**
Normal cost net of contributions	$40,633,350	5.17%	$39,231,499	5.22%
Expenses	1,100,000	0.14%	1,100,000	0.15%
20-Year UAL payment/(credit)	47,490,908	6.05%	40,462,036	5.39%
Actuarial recommended contribution	$89,224,258	11.36%	$80,793,535	10.76%
Projected payroll	$785,388,304		$751,067,149	
Statutory contribution rate		4.12%-5.12%		4.12%
Contribution margin/(deficit)		(6.74%)		(6.64%)

Valuation Results - Judges

	July 1, 2011	July 1, 2010
Actuarial accrued liability	$32,058,268	$29,409,638
Actuarial value of assets	30,387,909	29,587,439
Unfunded actuarial accrued liability	1,670,359	(177,801)

Recommended Contribution

	2011 - 2012		2010 - 2011	
	Amount	**% of Payroll**	**Amount**	**% of Payroll**
Normal cost net of contributions	$859,946	13.88%	$806,888	14.19%
Expenses	7,500	0.12%	7,500	0.13%
20-Year UAAL payment/(credit)	121,329	1.96%	(12,915)	(0.22%)
Actuarial recommended contribution	$988,775	15.96%	$801,473	14.10%
Projected payroll	$6,197,204		$5,685,227	
Statutory contribution rate		14.52%-15.52%		14.52%
Contribution margin/(deficit)		(0.94%)		0.42%

Valuation Results – National Guard

	July 1, 2011	July 1, 2010
Actuarial accrued liability	$2,371,933	$2,277,471
Actuarial value of assets	2,173,633	2,090,625
Unfunded actuarial accrued liability	198,300	186,846

Recommended Contribution

	2011 - 2012		2010 - 2011	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	$76,822	5.80%	$72,099	5.72%
Expenses	3,000	0.23%	3,000	0.24%
20-Year UAAL payment/(credit)	13,839	1.05%	13,040	1.04%
Actuarial recommended contribution	$93,661	7.08%	$88,139	7.00%
Projected payroll	$1,323,562		$1,259,707	
Approved contribution rate		6.50%		6.50%
Contribution margin/(deficit)		(0.58%)		(0.50%)

Valuation Results – Law Enforcement with Prior Main Service

	July 1, 2011	July 1, 2010
Actuarial accrued liability	$20,538,844	$19,671,308
Actuarial value of assets	13,697,546	12,911,814
Unfunded actuarial accrued liability	6,841,298	6,759,494

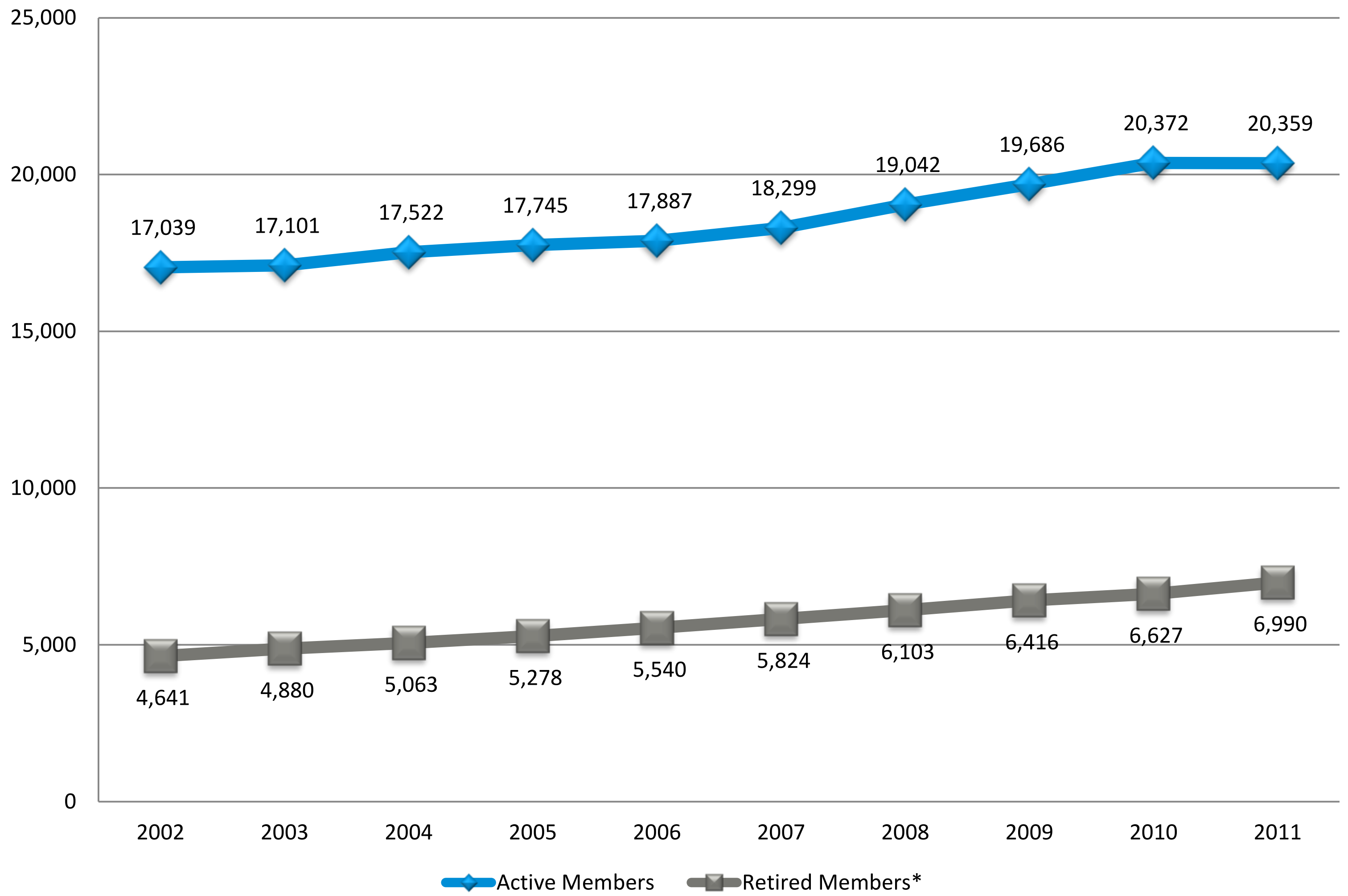
Recommended Contribution

	2011 - 2012		2010 - 2011	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	$487,412	5.52%	$666,678	6.31%
Expenses	2,500	0.03%	2,500	0.02%
20-Year UAAL payment/(credit)	477,456	5.41%	471,747	4.47%
Actuarial recommended contribution	$967,368	10.96%	$1,140,925	10.80%
Projected payroll	$8,825,766		$10,559,725	
Approved contribution rate		8.31%		8.31%
Contribution margin/(deficit)		(2.65%)		(2.49%)

Valuation Results – Law Enforcement without Prior Main Service

	July 1, 2011		July 1, 2010	
Actuarial accrued liability	$665,091		$467,150	
Actuarial value of assets	485,967		338,824	
Unfunded actuarial accrued liability	179,124		128,326	
Recommended Contribution				
	2011 - 2012		**2010 - 2011**	
	Amount	**% of Payroll**	**Amount**	**% of Payroll**
Normal cost net of contributions	$164,014	6.74%	$69,312	6.09%
Expenses	7,500	0.31%	7,500	0.66%
20-Year UAAL payment/(credit)	12,501	0.51%	8,956	0.78%
Actuarial recommended contribution	$184,015	7.56%	$85,768	7.53%
Projected payroll	$2,434,592		$1,138,300	
Approved contribution rate		6.43%		6.43%
Contribution margin/(deficit)		(1.13%)		(1.10%)

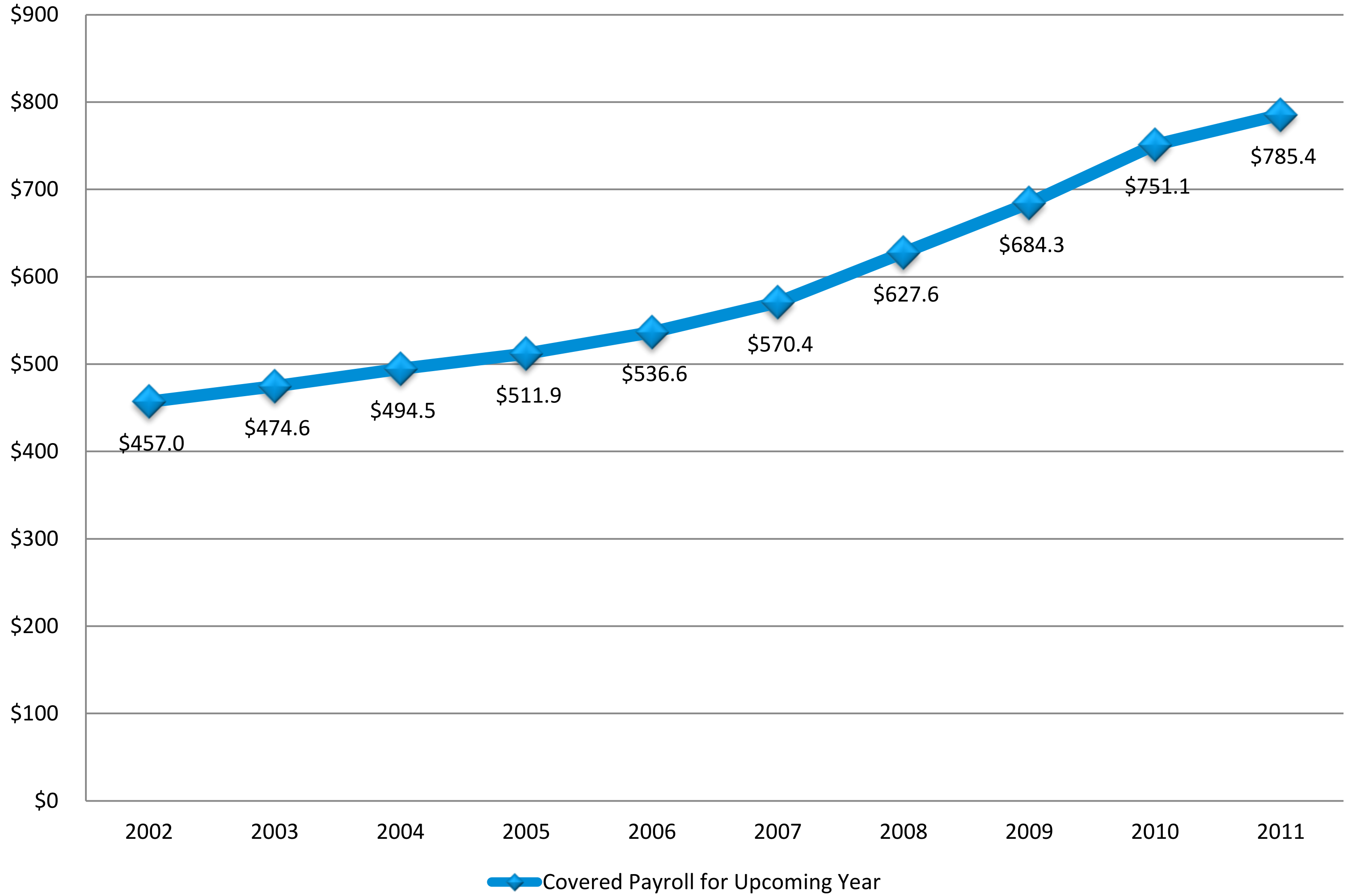
Active and Retired Membership - Main



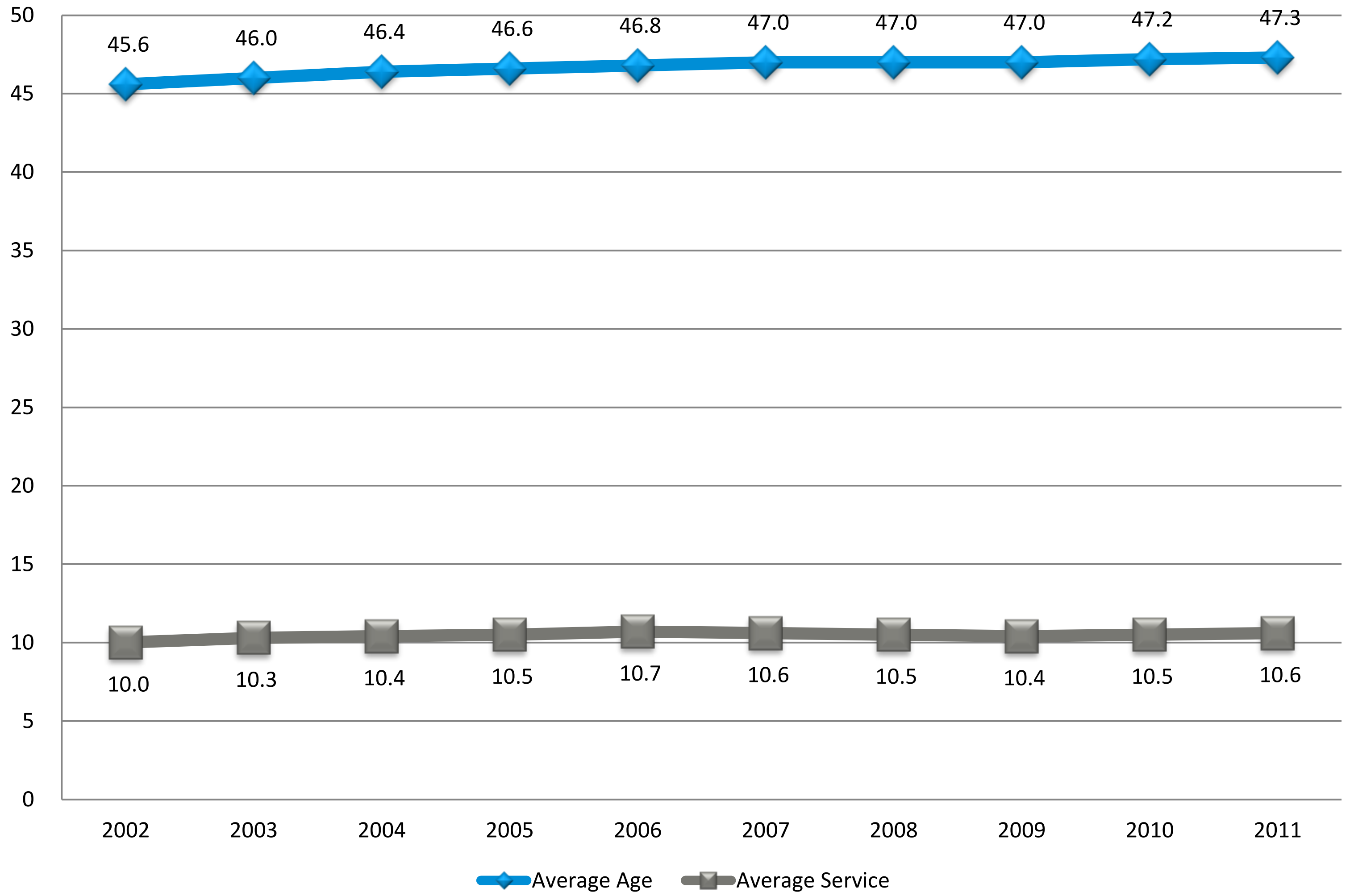
*Retired Members excludes beneficiaries.

Active Payroll - Main

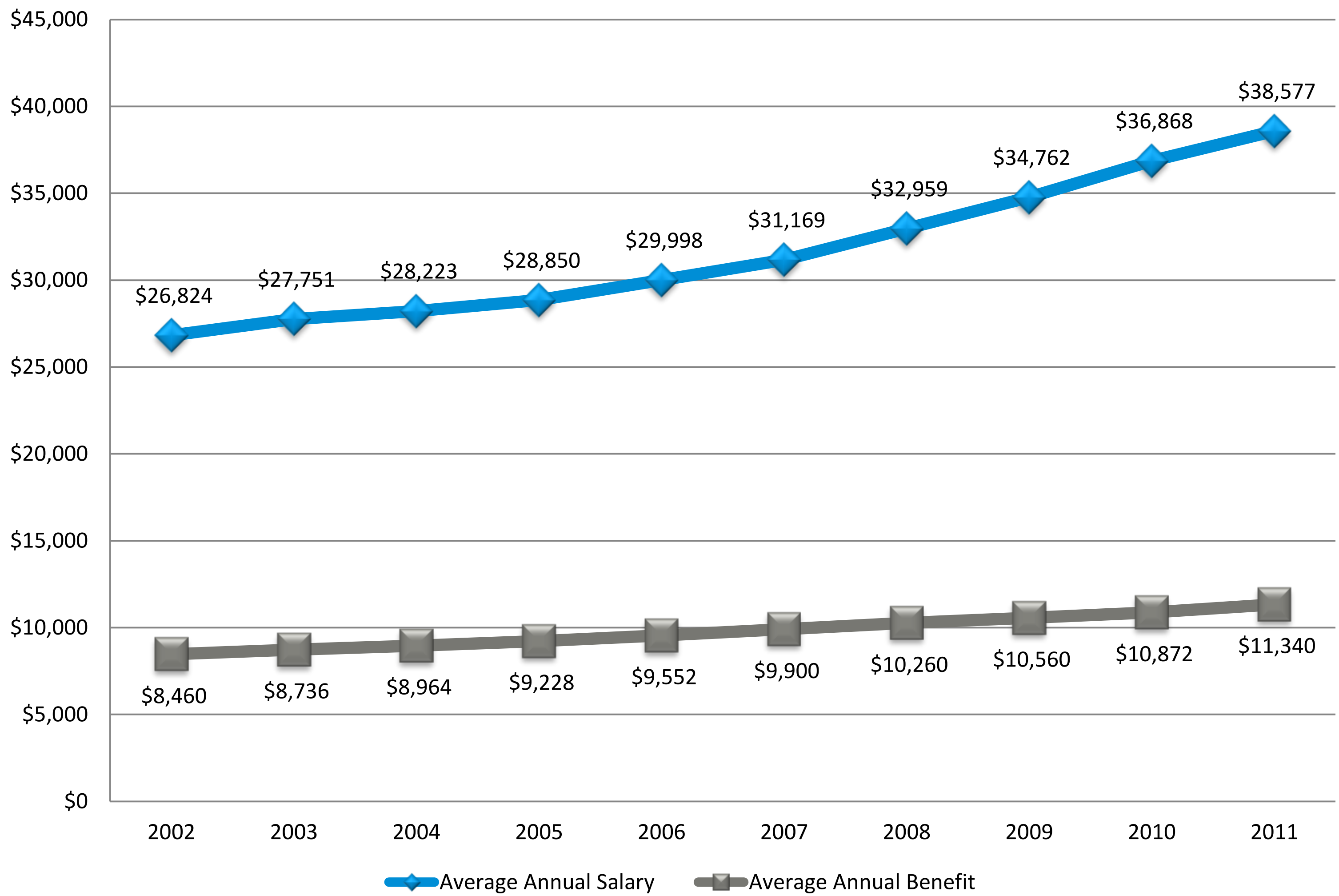
$ Millions



Average Age and Service of Active Members - Main

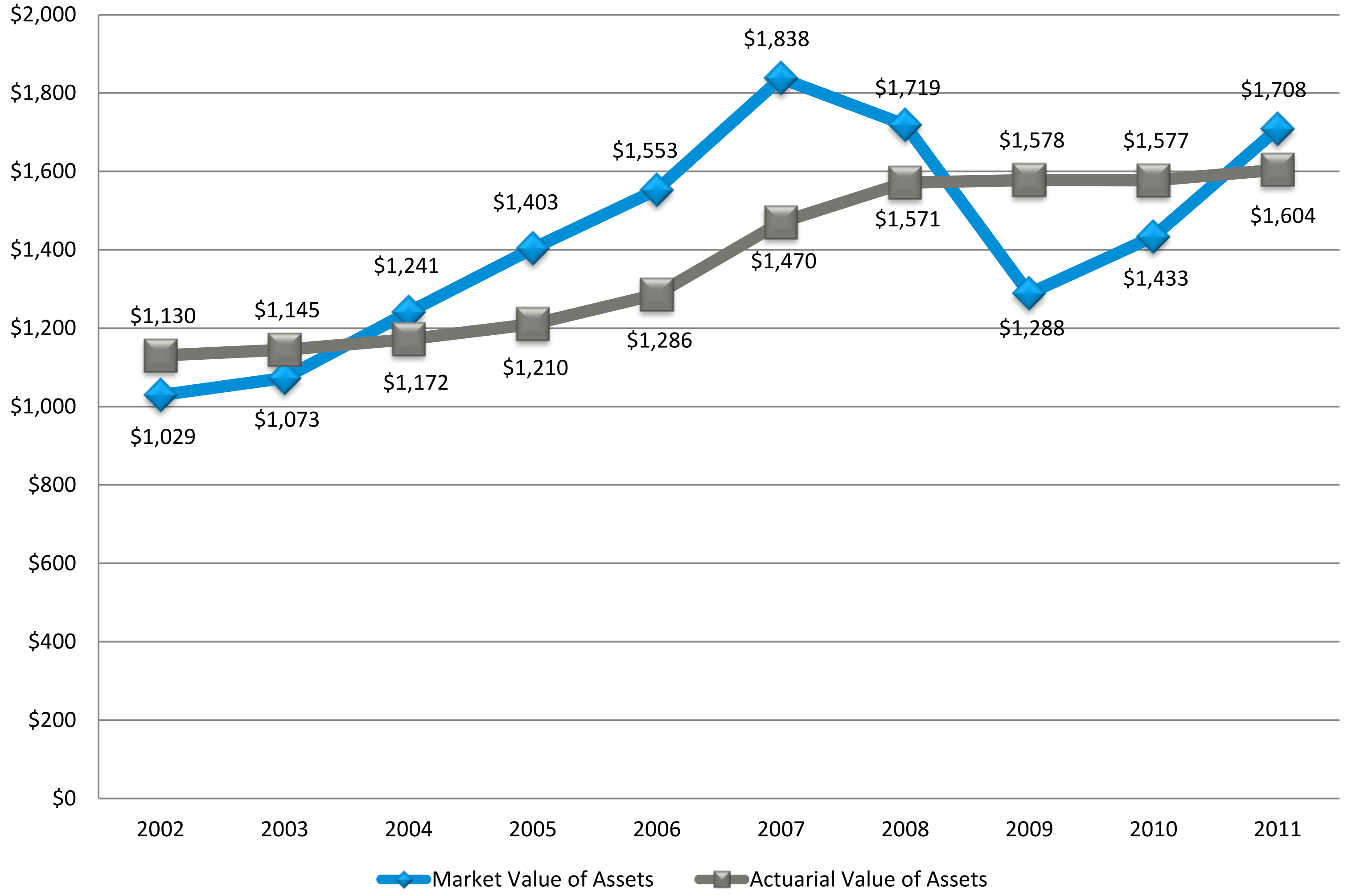


Average Salary and Average Benefit - Main



Market and Actuarial Values of Assets - Main

$ Millions



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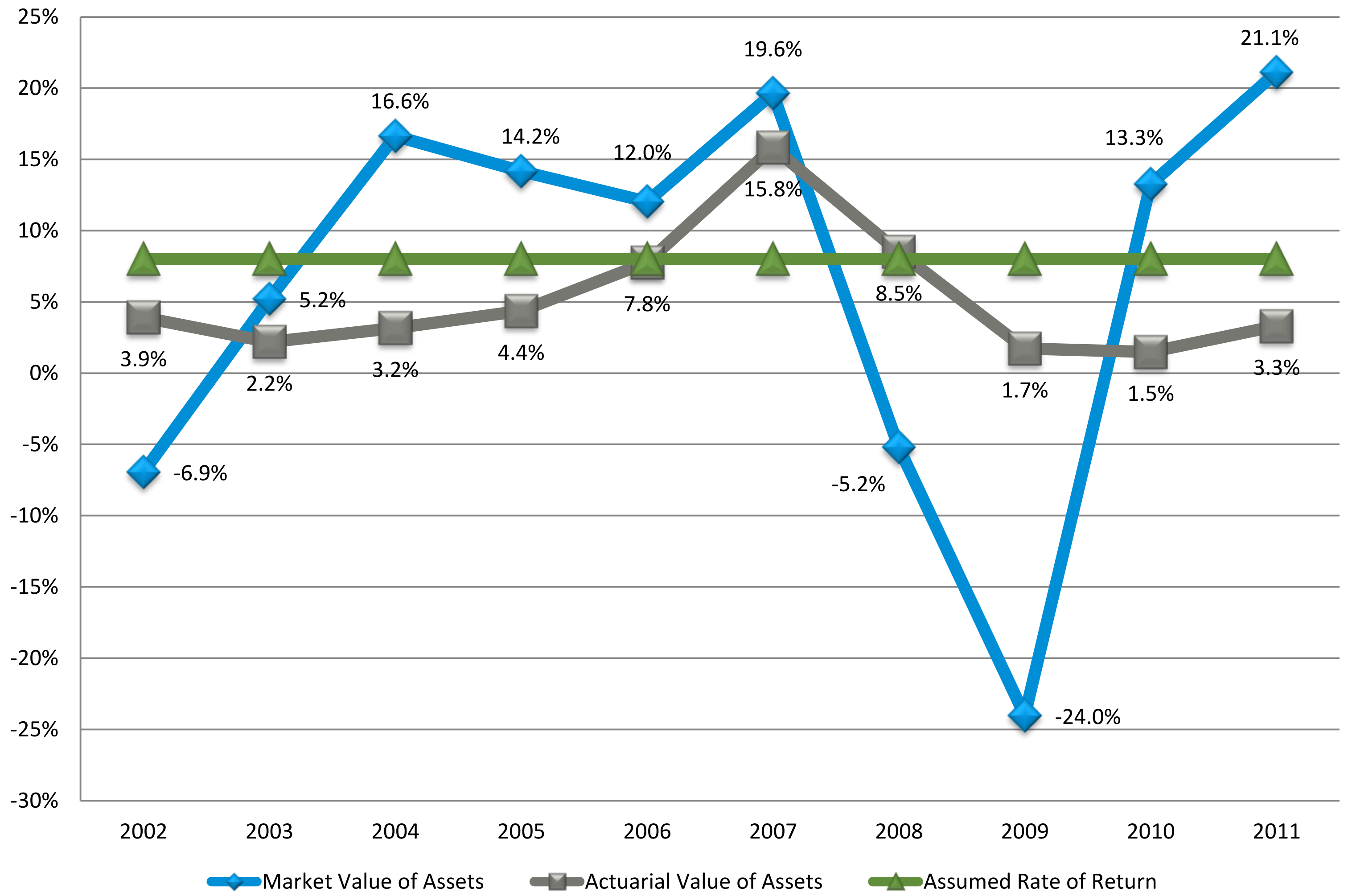
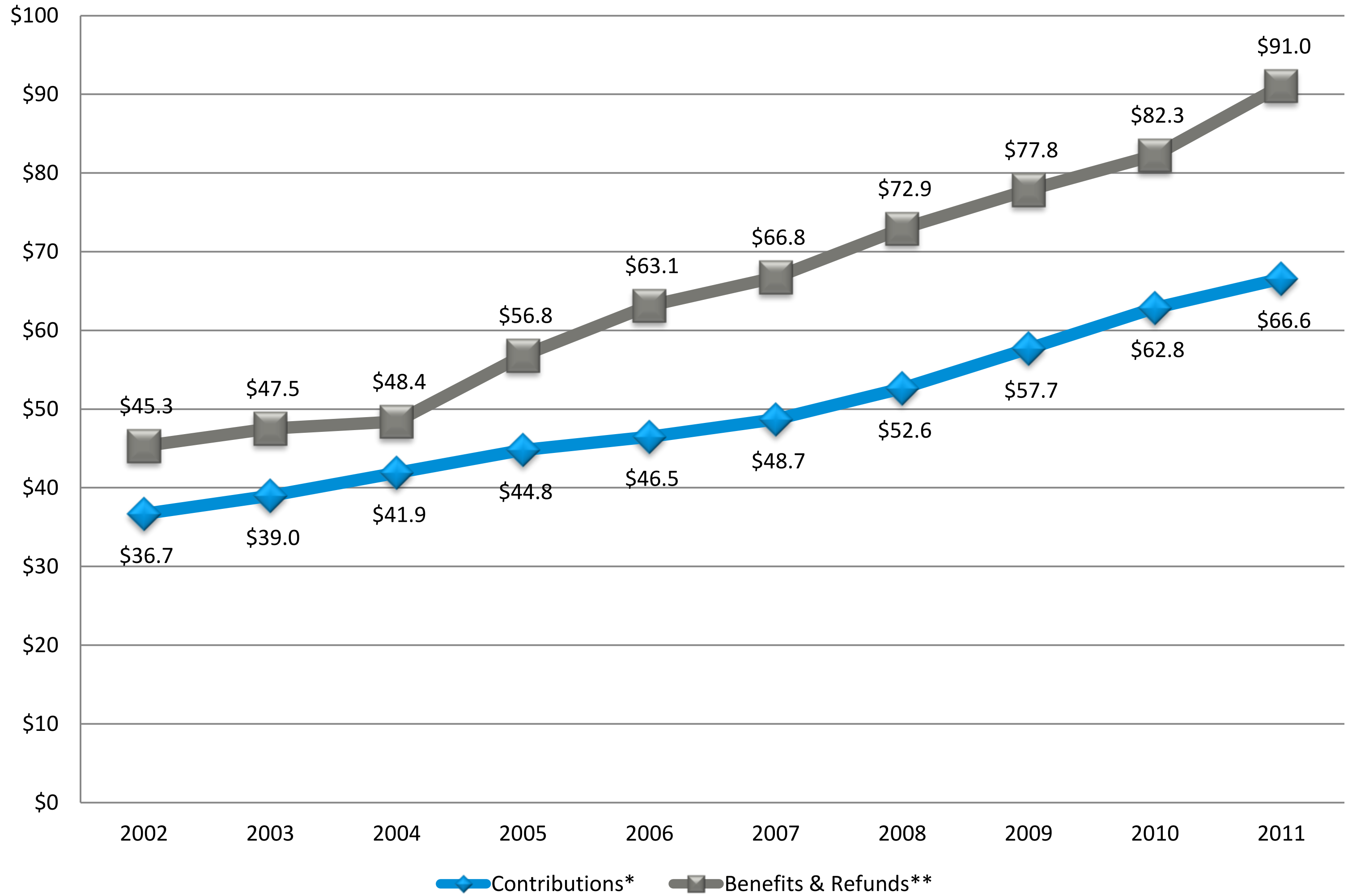
Asset Returns - PERS



Contributions vs Benefits and Refunds - PERS

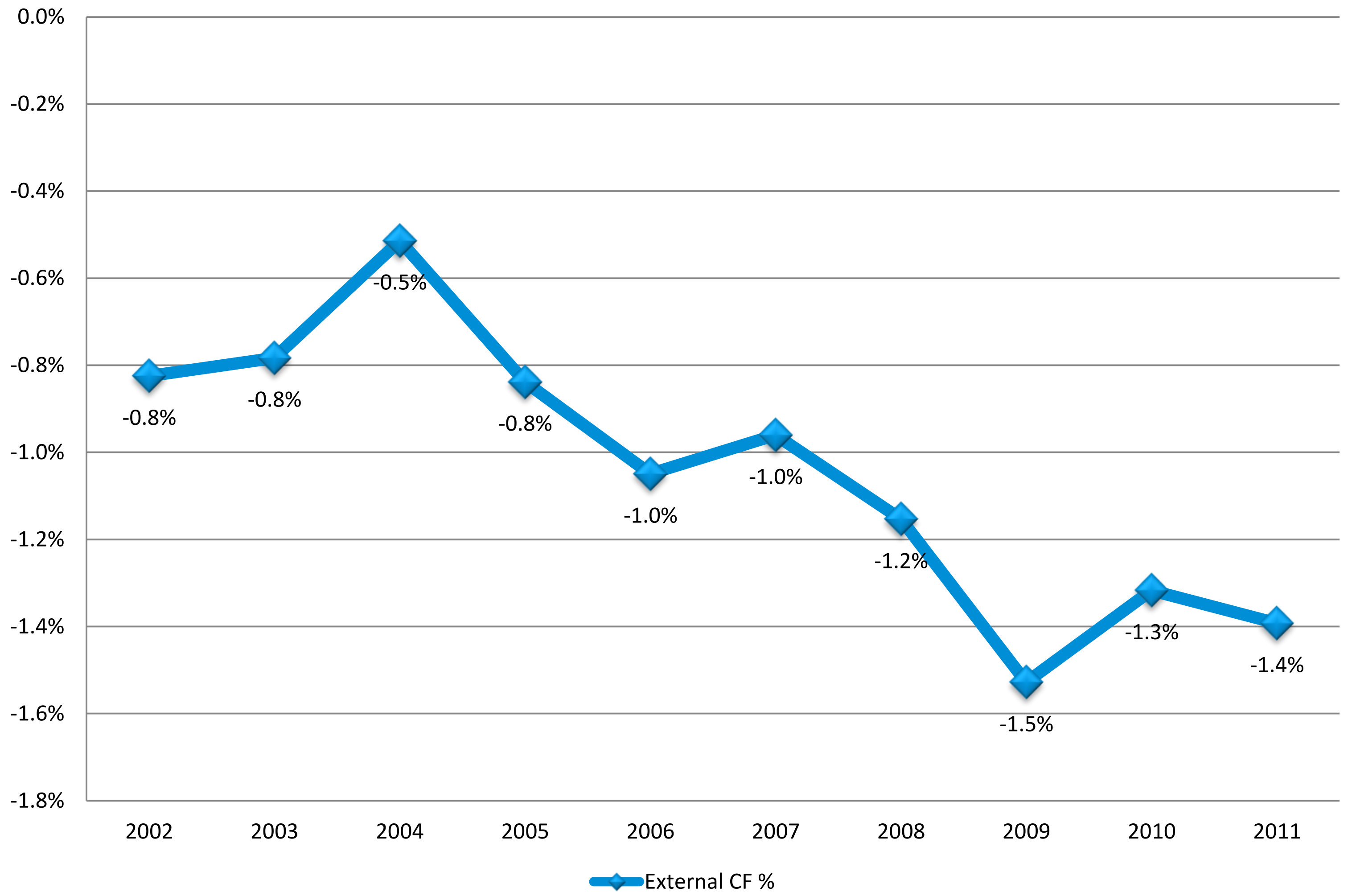
$ Millions



* Includes member and employer contributions, and service purchases

** Includes administrative expenses

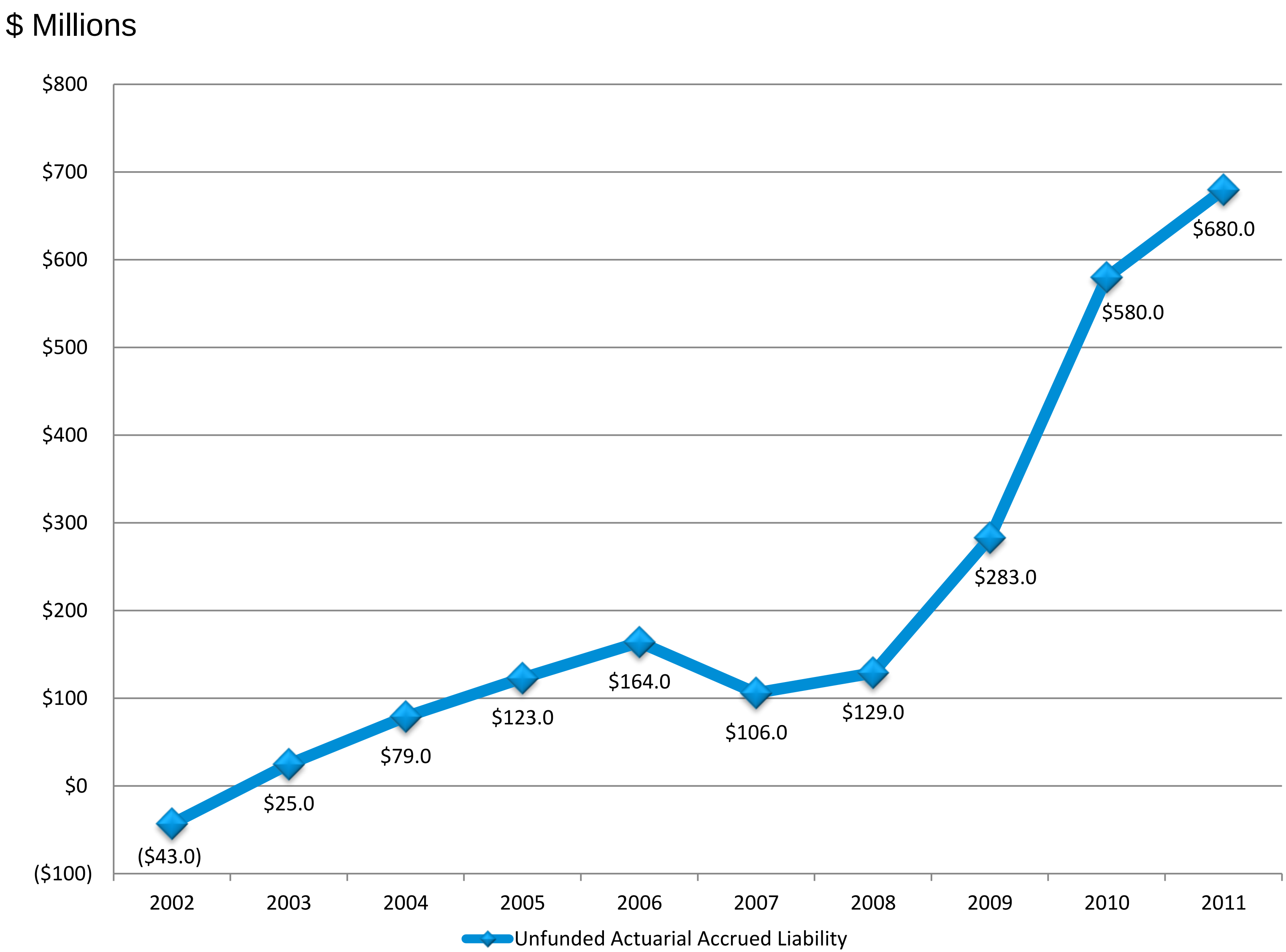
External Cash Flow as a % of Market Value - PERS



Funded Ratio History - Main

Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2002	1,087	1,130	104%
2003	1,170	1,145	98%
2004	1,251	1,172	94%
2005	1,333	1,210	91%
2006	1,450	1,286	89%
2007	1,576	1,470	93%
2008	1,700	1,571	92%
2009	1,861	1,578	85%
2010	2,157	1,577	73%
2011	2,284	1,604	70%

Unfunded Actuarial Accrued Liability - Main



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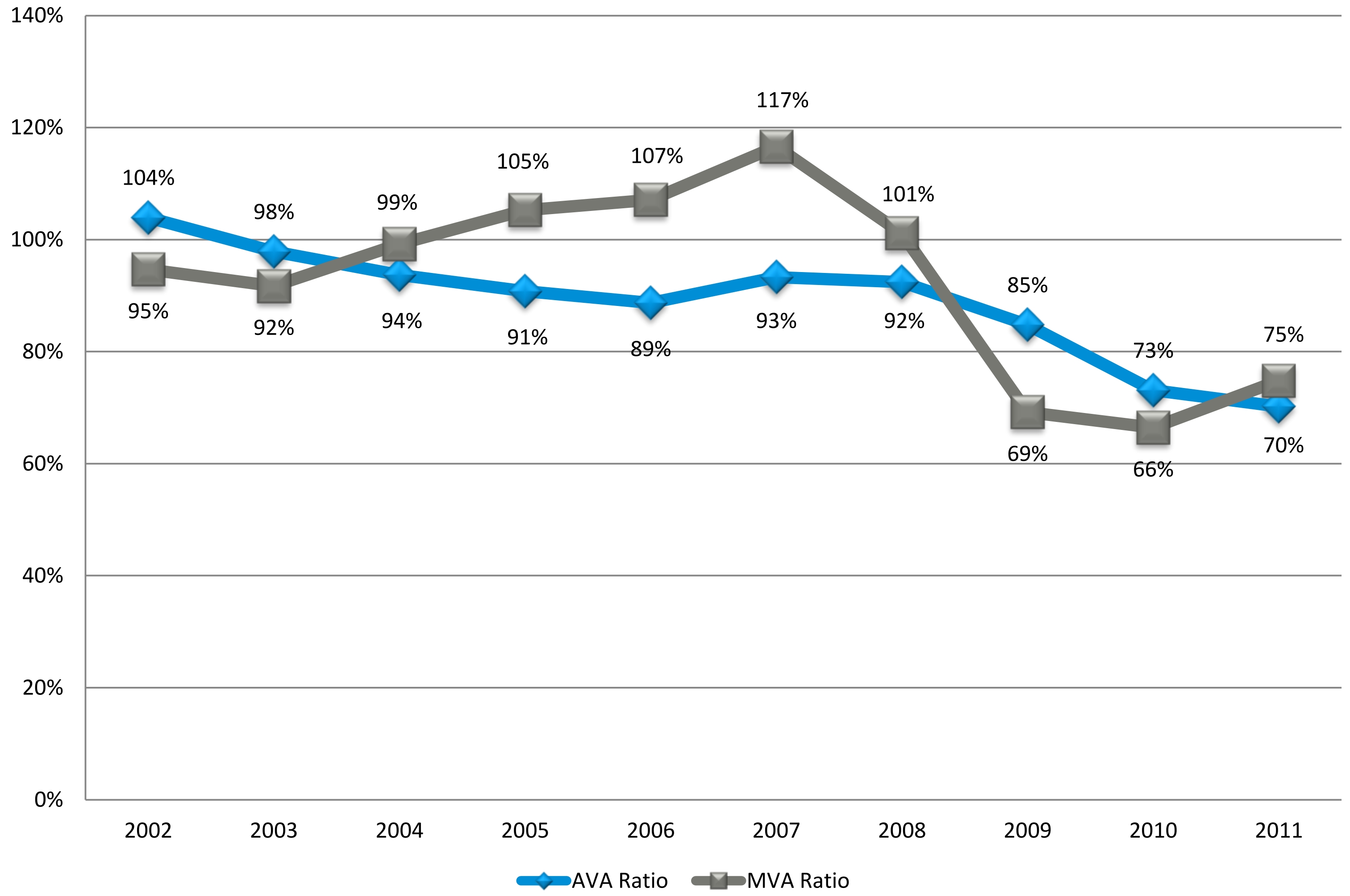
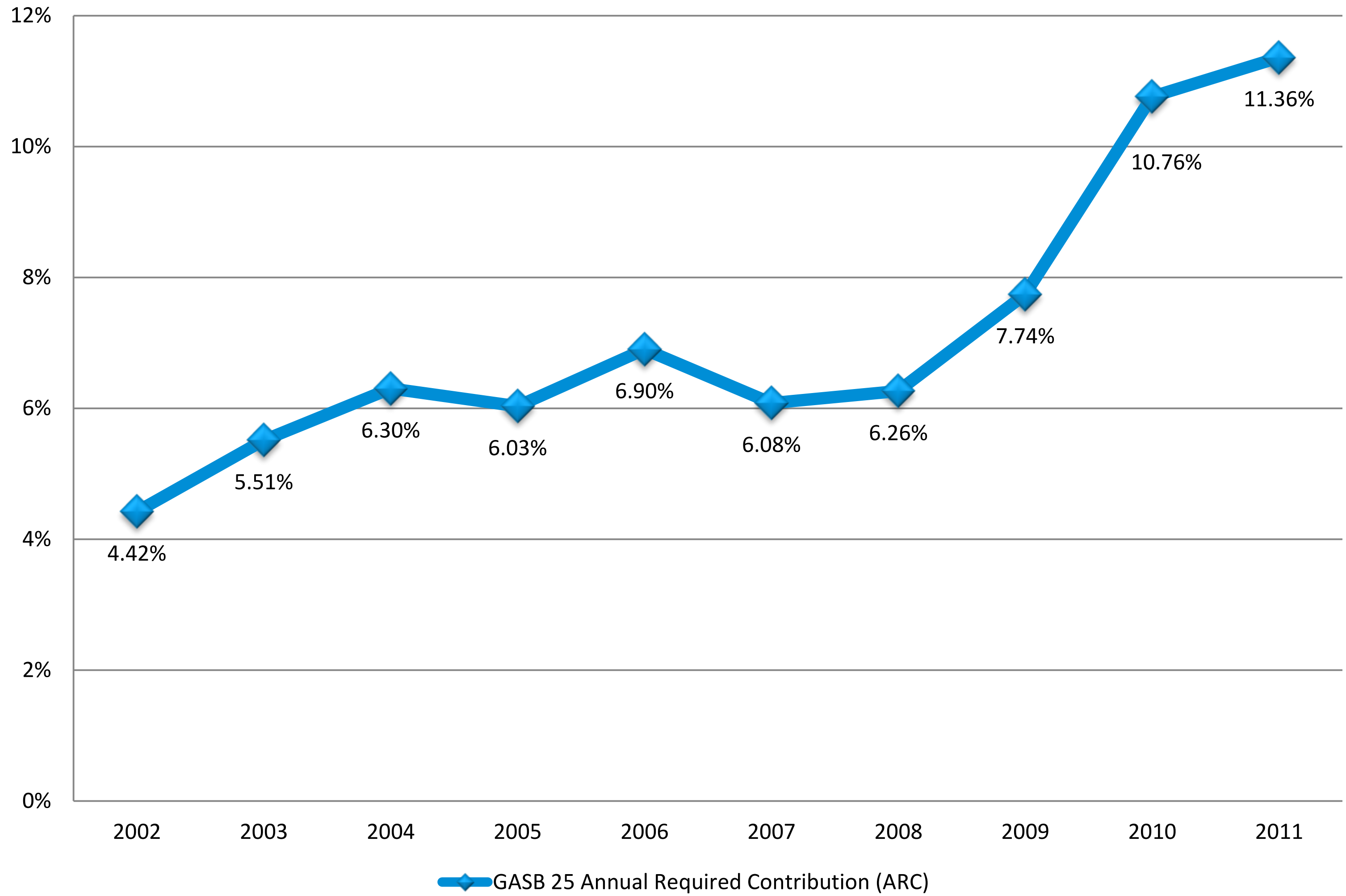
Funded Ratios - Main



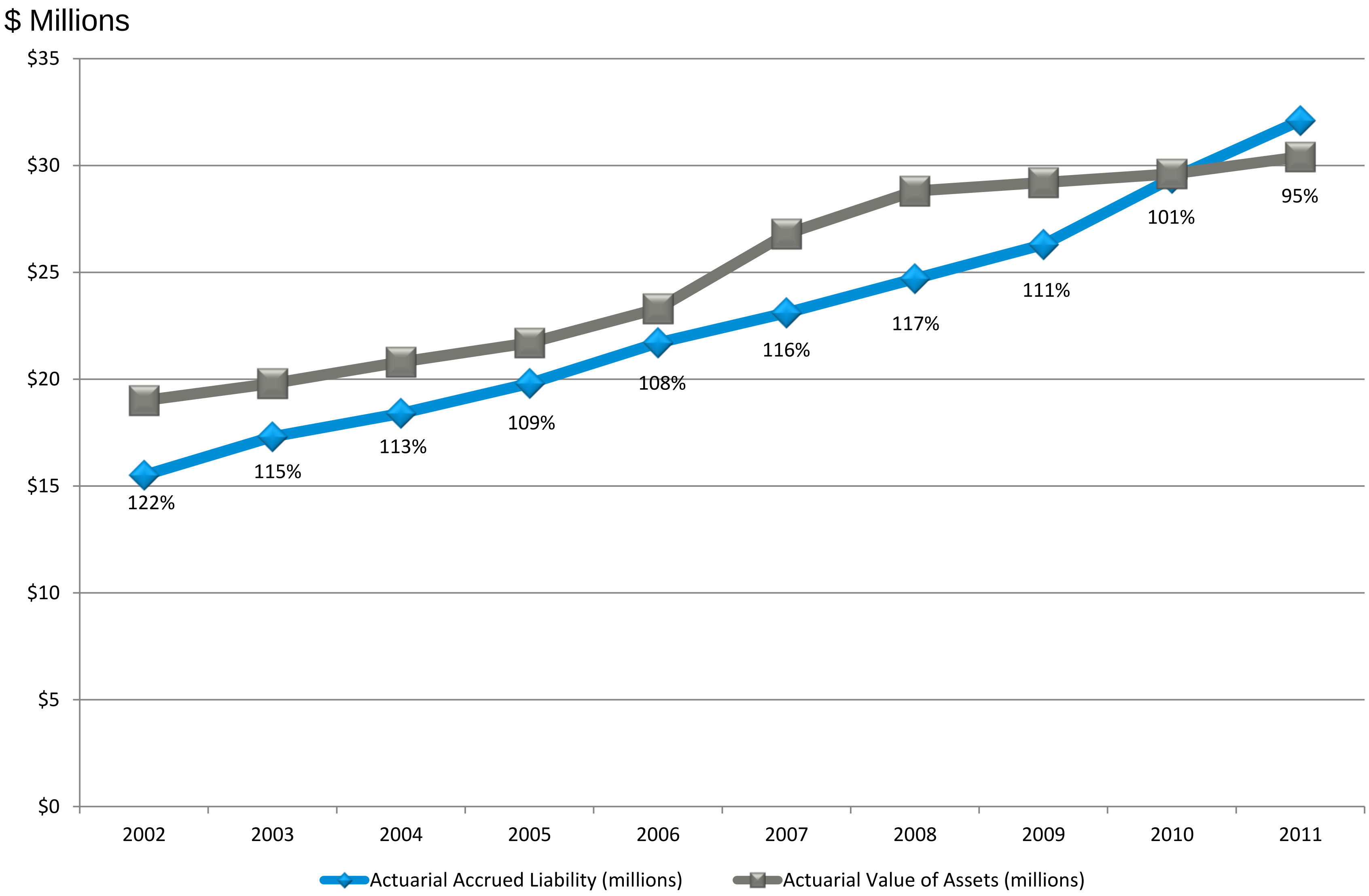
GASB 25 Annual Required Contribution (ARC) - Main



Funded Ratio History - Judges

Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2002	15.5	19.0	122%
2003	17.3	19.8	115%
2004	18.4	20.8	113%
2005	19.8	21.7	109%
2006	21.7	23.3	108%
2007	23.1	26.8	116%
2008	24.7	28.8	117%
2009	26.3	29.2	111%
2010	29.4	29.6	101%
2011	32.1	30.4	95%

Funded Ratio History - Judges



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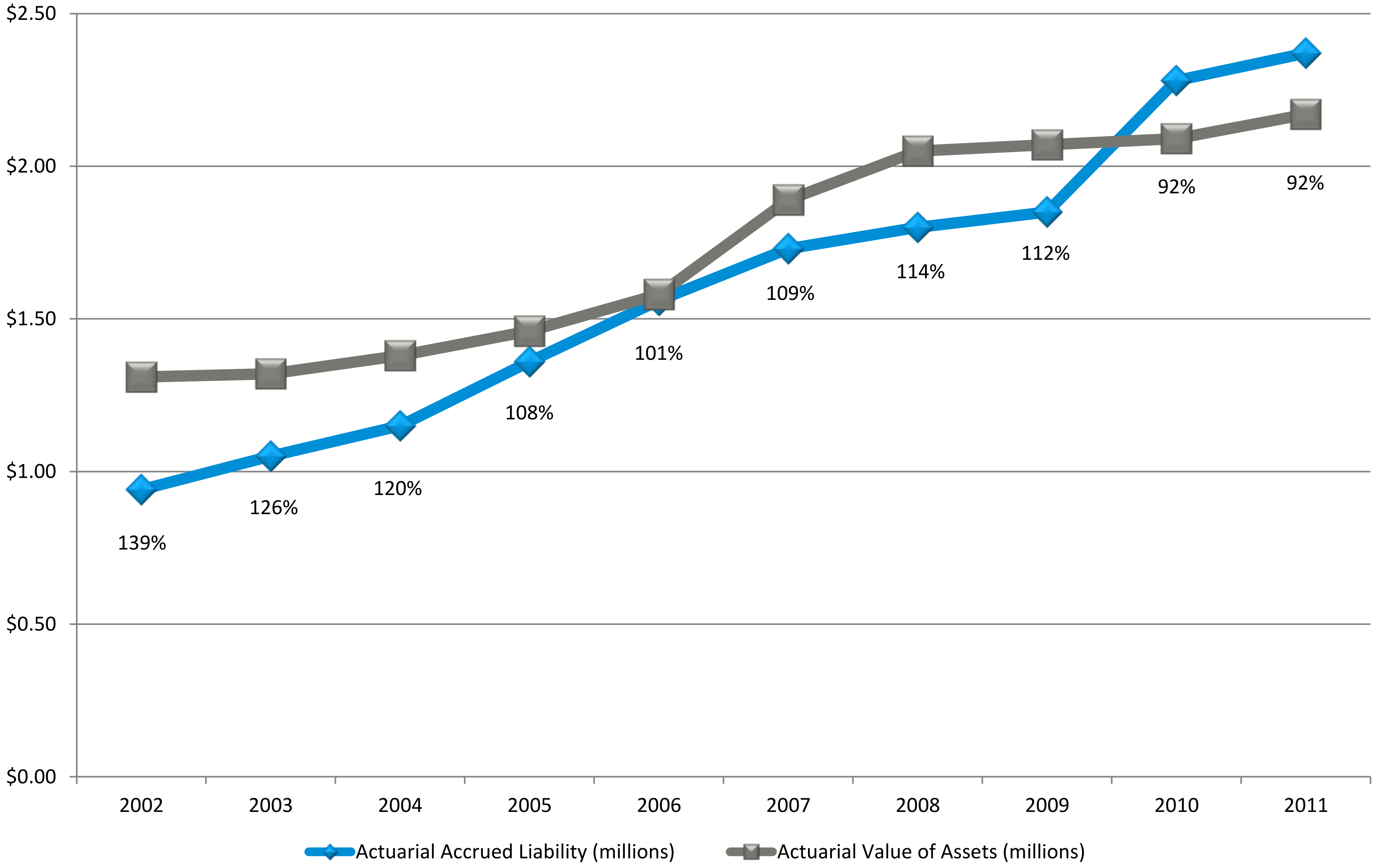
Funded Ratio History – National Guard

Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2002	0.94	1.31	139%
2003	1.05	1.32	126%
2004	1.15	1.38	120%
2005	1.36	1.46	108%
2006	1.56	1.58	101%
2007	1.73	1.89	109%
2008	1.80	2.05	114%
2009	1.85	2.07	112%
2010	2.28	2.09	92%
2011	2.37	2.17	92%

Funded Ratio History – National Guard

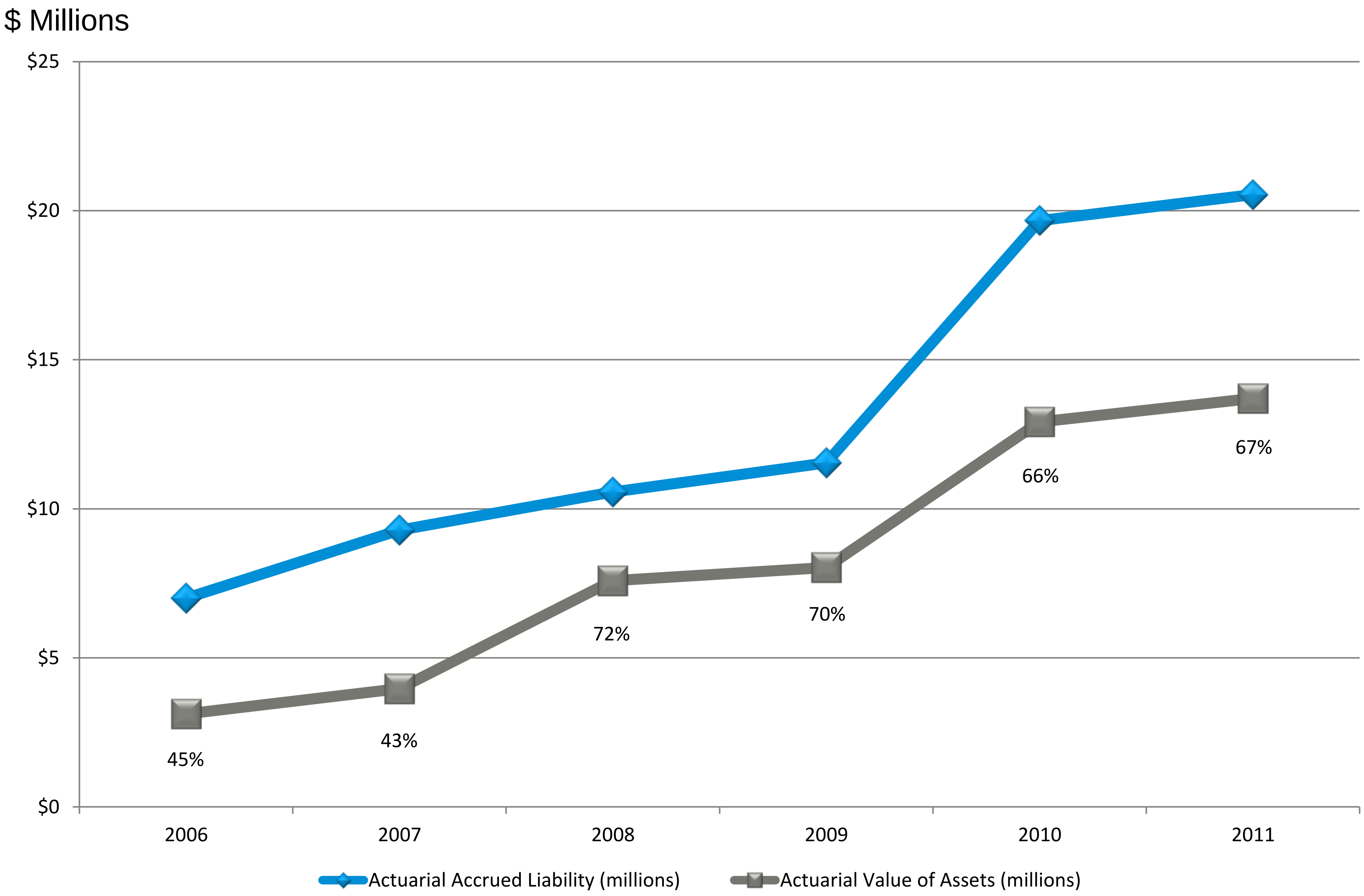
$ Millions



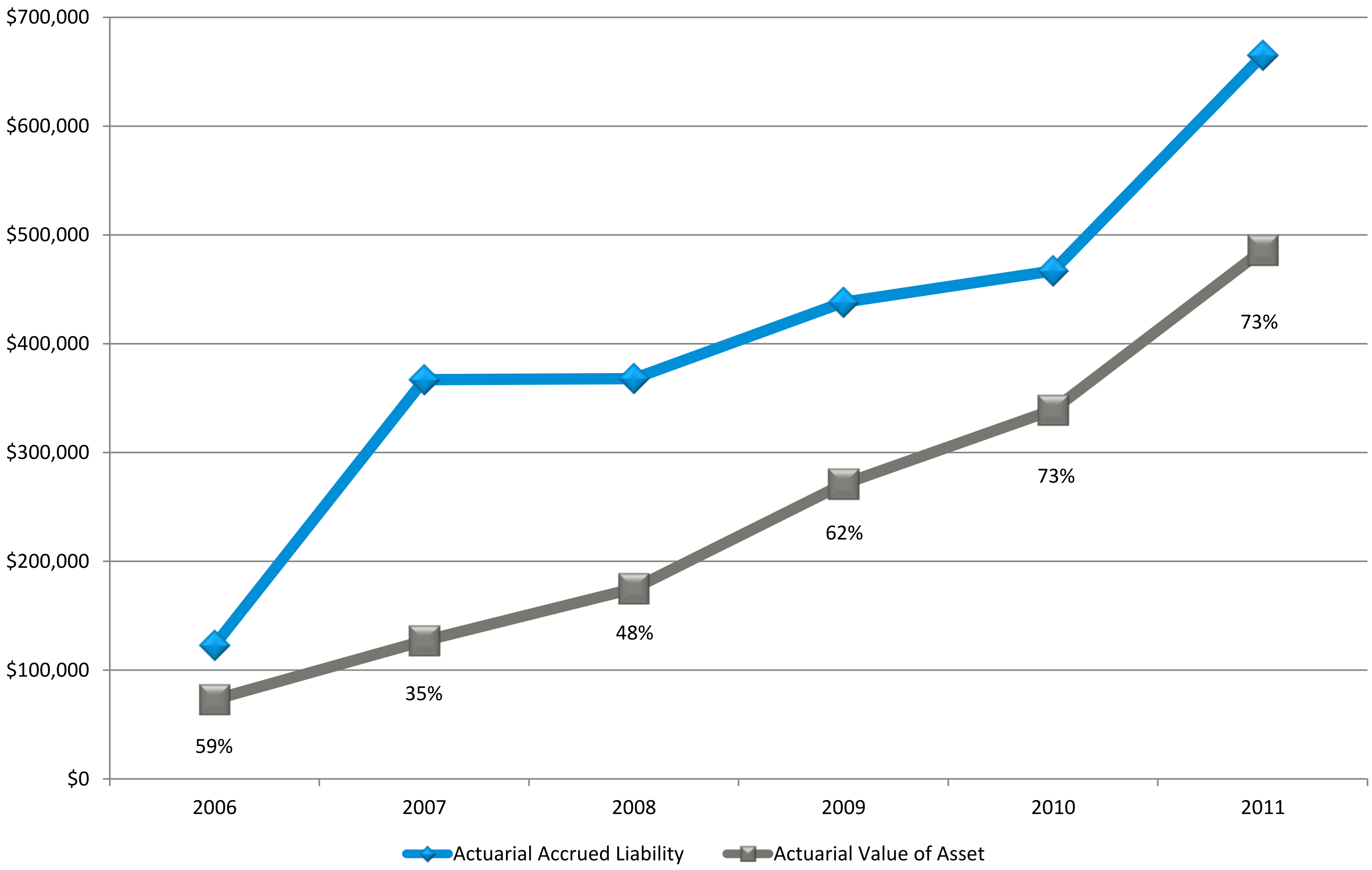
Funded Ratio History – Law Enforcement

WITH PRIOR SERVICE			
Year	**Actuarial Accrued Liability (millions)**	**Actuarial Value of Assets (millions)**	**Funded Ratio**
2006	7.00	3.12	45%
2007	9.28	3.97	43%
2008	10.56	7.59	72%
2009	11.54	8.03	70%
2010	19.67	12.91	66%
2011	20.54	13.70	67%
WITHOUT PRIOR SERVICE			
Year	**Actuarial Accrued Liability**	**Actuarial Value of Assets**	**Funded Ratio**
2006	123,000	73,000	59%
2007	367,000	127,000	35%
2008	368,000	175,000	48%
2009	438,000	271,000	62%
2010	467,000	339,000	73%
2011	665,000	486,000	73%

Funded Ratio History – Law Enforcement with Prior Main Service



Funded Ratio History –
Law Enforcement without Prior Main Service



Membership – Highway Patrol

	2011	2010	Change
Number of actives	133	139	- 4.3%
Average age	37.7	36.9	+ 0.8
Average service	11.3	10.4	+ 0.9
Total payroll	$8,002,340	$7,737,624	+ 3.4%
Average payroll	$60,168	$55,666	+ 8.1%
Number of pensioners and beneficiaries	115	113	+ 1.8%
Average age	67.2	66.4	+ 0.8
Total annual benefits	$3,560,532	$3,502,382	+ 1.7%
Average monthly benefit	$2,580	$2,583	- 0.1%

** Excludes 1 suspended retiree*

Financial Information – Highway Patrol

- Market value of assets increased from \$44.8 million to \$52.7 million
- Actuarial value of assets increased from \$49.3 million to \$49.5 million
- Ratio of actuarial value to market value is 94% (a \$3.2 million deferred gain)
- Approximate returns:
  - Market Value: 21.2% (ten-year average: 5.6%)
  - Actuarial Value: 3.3% (ten-year average: 5.2%)
- Benefits and administrative expenses:
  \$3,591,035 in 2010 - 2011
- Contributions: \$2,125,571 in 2010 - 2011

Valuation Results – Highway Patrol

	July 1, 2011	July 1, 2010
Actuarial accrued liability	$67,144,926	$61,782,124
Actuarial value of assets	49,479,855	49,325,610
Unfunded actuarial accrued liability	17,665,071	12,456,514

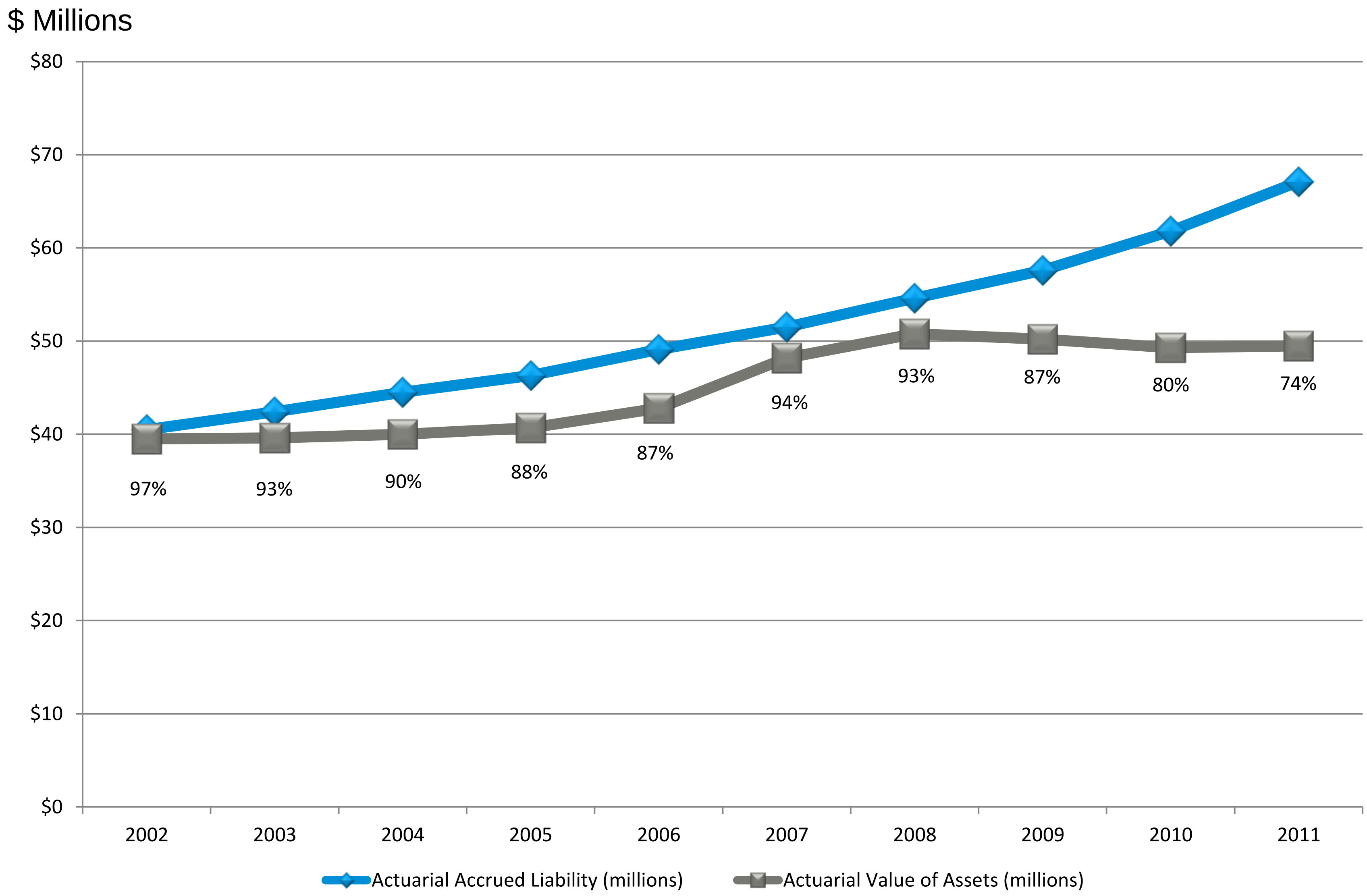
Recommended Contribution

	2011 – 2012		2010 – 2011	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	$919,889	11.50%	$858,927	11.10%
Expenses	$18,000	0.22%	$16,000	0.21%
20-Year UAAL payment/(credit)	$1,232,850	15.41%	$869,343	11.23%
Actuarial recommended contribution	$2,170,739	27.13%	$1,744,270	22.54%
Projected payroll	$8,002,340		$7,737,624	
Statutory contribution rate		16.70%-17.70%		16.70%
Contribution margin/(deficit)		(9.93%)		(5.84%)

Funded Ratio History – Highway Patrol

Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2002	40.5	39.5	97%
2003	42.4	39.6	93%
2004	44.5	40.0	90%
2005	46.3	40.7	88%
2006	49.1	42.8	87%
2007	51.5	48.2	94%
2008	54.6	50.8	93%
2009	57.6	50.2	87%
2010	61.8	49.3	80%
2011	67.1	49.5	74%

Funded Ratio History – Highway Patrol



Membership – Retiree Health Insurance Credit Fund

	2011	2010	Change
Number of actives	21,062	21,047	+ 0.1%
Average age	47.1	47.1	0.0
Average service	10.5	10.4	+ 0.1
Total payroll	$828,978,328	$793,633,973	+ 4.5%
Average payroll	$39,359	$37,708	+ 4.4%
Number of pensioners and beneficiaries	4,242	4,105	+ 3.3%
Average age	73.4	73.3	+ 0.1
Total annual benefits	$5,914,182	$5,664,900	+ 4.4%
Average monthly benefit	$116	$115	+ 0.9%

Financial Information – Retiree Health Insurance Credit Fund

- Market value of assets increased from \$45.8 million to \$58.7 million
- Actuarial value of assets increased from \$48.7 million to \$53.7 million
- Ratio of actuarial value to market value is 91.5%
  (a \$5.0 million deferred gain)
- Approximate returns:
  - Market Value: 20.7% (ten-year average: 4.6%)
  - Actuarial Value: 3.7% (ten-year average: 3.7%)
- Benefits and administrative expenses: \$12,100,487 in 2010 - 2011
- Contributions: \$15,270,440 in 2010 - 2011

Valuation Results – Retiree Health Insurance Credit Fund

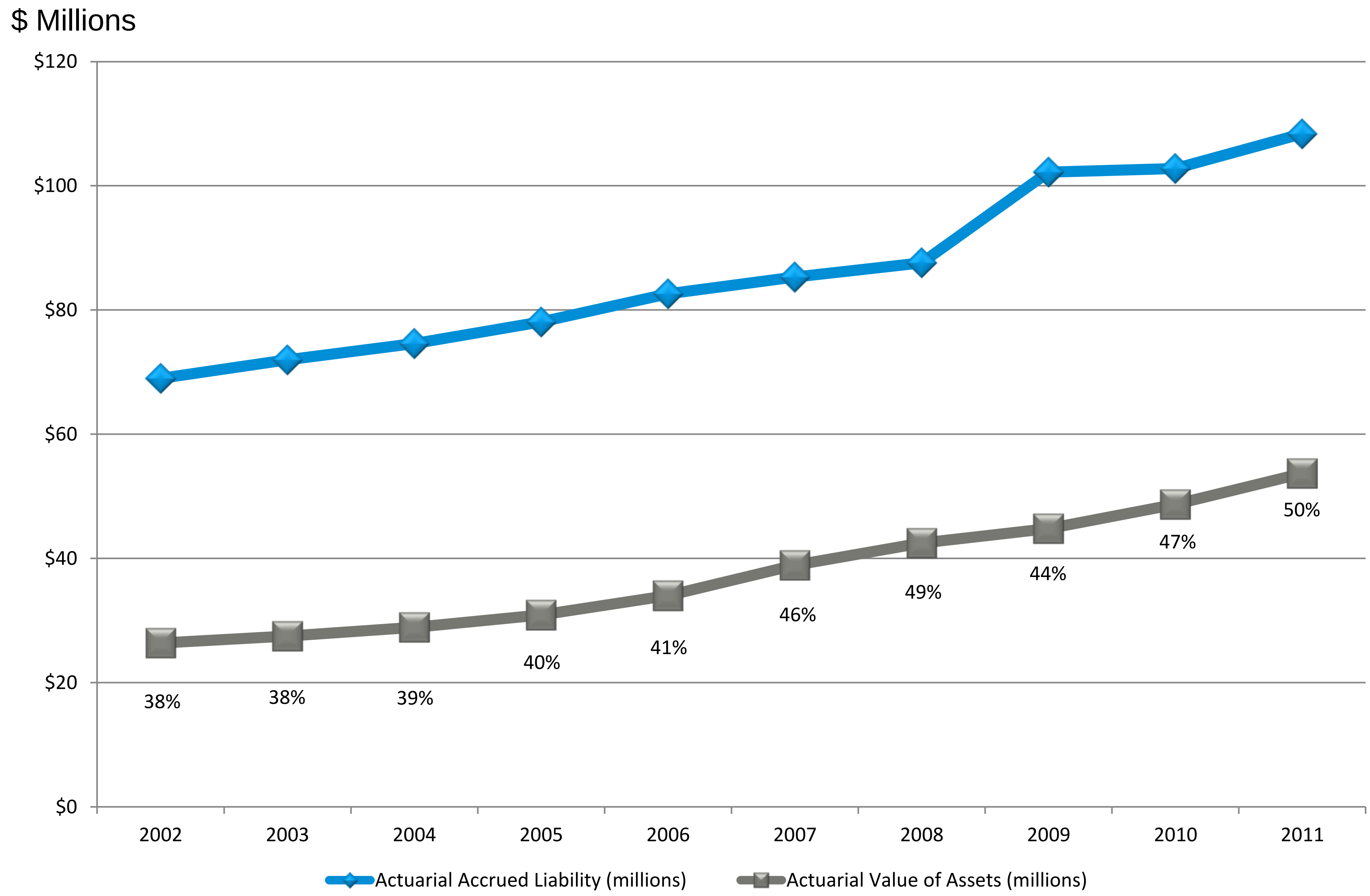
	July 1, 2011		July 1, 2010	
Actuarial accrued liability	$108,384,942		$102,805,439	
Actuarial value of assets	$53,730,426		$48,723,475	
Unfunded actuarial accrued liability	$54,654,516		$54,081,964	
Recommended Contribution				
	2011 - 2012		**2010 - 2011**	
	Amount	**% of Payroll**	**Amount**	**% of Payroll**
Normal cost	$3,210,049	0.39%	$3,181,820	0.40%
Expenses	$97,000	0.01%	$97,000	0.01%
UAAL payment*	$3,956,438	0.48%	$3,774,395	0.48%
Actuarial recommended contribution	$7,263,487	0.88%	$7,053,215	0.89%
Projected payroll	$828,978,328		$793,633,973	
Statutory contribution rate		1.14%		1.14%
Contribution margin/(deficit)		0.26%		0.25%

**Closed amortization ending July 1, 2030*

Funded Ratio History – Retiree Health Insurance Credit Fund

Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2002	69.0	26.4	38%
2003	72.0	27.5	38%
2004	74.6	28.9	39%
2005	78.1	30.9	40%
2006	82.6	34.0	41%
2007	85.3	38.9	46%
2008	87.6	42.5	49%
2009	102.2	44.8	44%
2010	102.8	48.7	47%
2011	108.4	53.7	50%

Funded Ratio History – Retiree Health Insurance Credit Fund



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Membership – Job Service

	2011	2010	Change
Number of actives	23	31	- 25.8%
Average age	58.1	58.0	+ 0.1
Average service	35.3	34.1	+ 1.2
Total projected compensation	$1,200,792	$1,611,216	- 25.5%
Average payroll	$52,208	$51,975	+ 0.4%
Number of pensioners and beneficiaries*	128	122	+ 4.9%
Average age	73.5	73.5	
Total annual benefits*	$3,370,187	$3,245,084	+ 3.9%
Average monthly benefit*	$2,194	$2,217	- 1.0%

* *Not including annuities paid by Travelers*

Financial Information – Job Service

- Market value of assets increased from $77.7 million to $85.7 million
- Actuarial value of assets increased from $73.5 million to $74.2 million
- Ratio of actuarial value to market value is 87%
  (a $11.5 million deferred gain)
- Approximate returns:
  - Market Value: 15.8% (ten-year average: 5.8%)
  - Actuarial Value: 6.5% (ten-year average: 4.7%)
- Benefits and administrative expenses: $4,039,075 in 2010 - 2011
- Contributions: $97,591 in 2010 - 2011

Valuation Results – Job Service

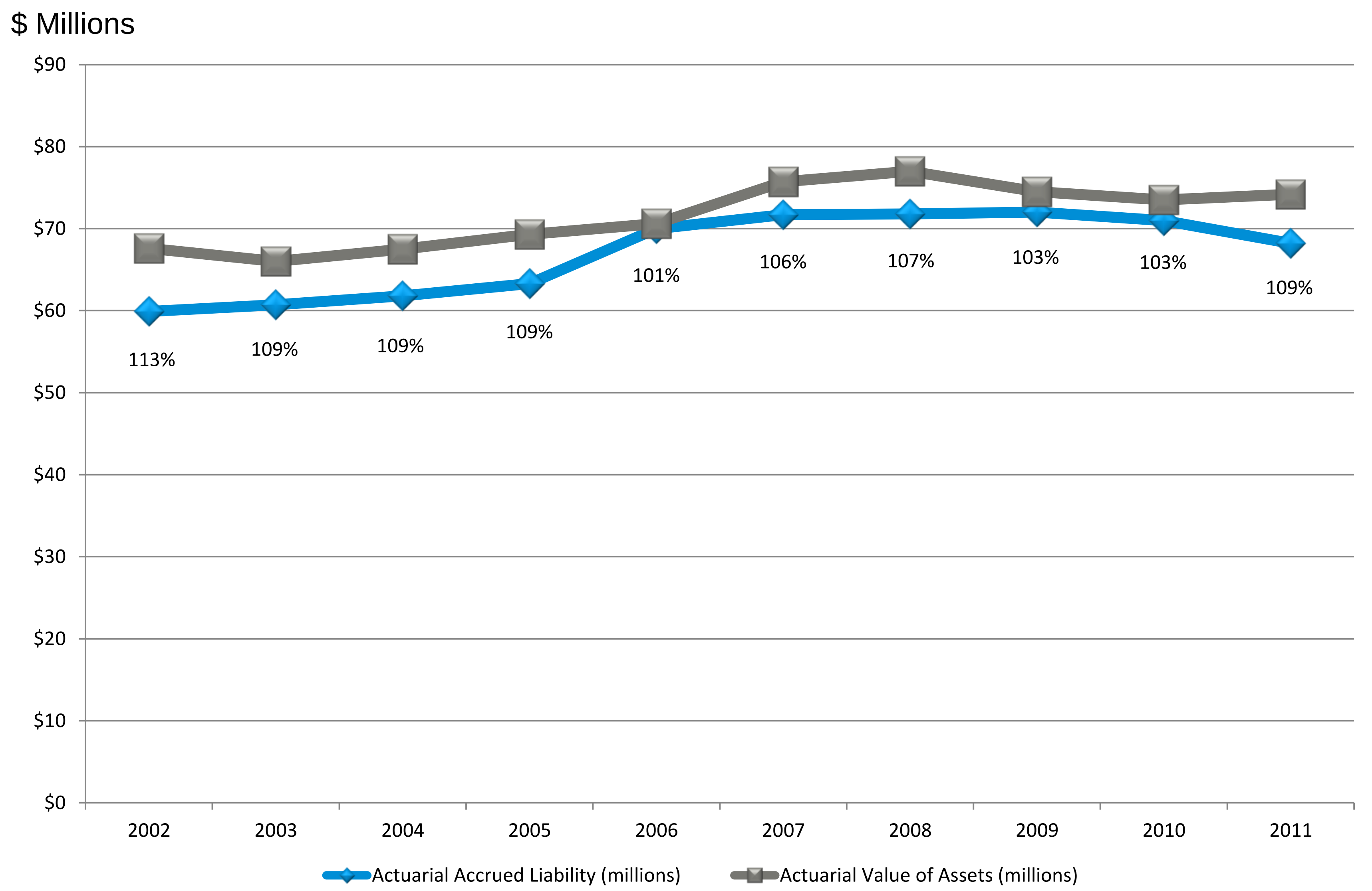
	July 1, 2011	July 1, 2010
Actuarial present value of benefits	$68,235,147	$70,986,876
Actuarial value of assets	$74,190,381	$73,458,863
Unfunded present value of benefits	$0	$0

If the actuarial present value of benefits is greater than the actuarial value of assets, a required contribution would be triggered under the current funding method.

Funded Ratio History – Job Service

Year	Actuarial Present Value of Benefits (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2002	59.9	67.6	113%
2003	60.7	66.0	109%
2004	61.8	67.5	109%
2005	63.3	69.3	109%
2006	70.0	70.6	101%
2007	71.7	75.7	106%
2008	71.8	77.0	107%
2009	72.0	74.5	103%
2010	71.0	73.5	103%
2011	68.2	74.2	109%

Funded Ratio History – Job Service



Valuation Results - Comments

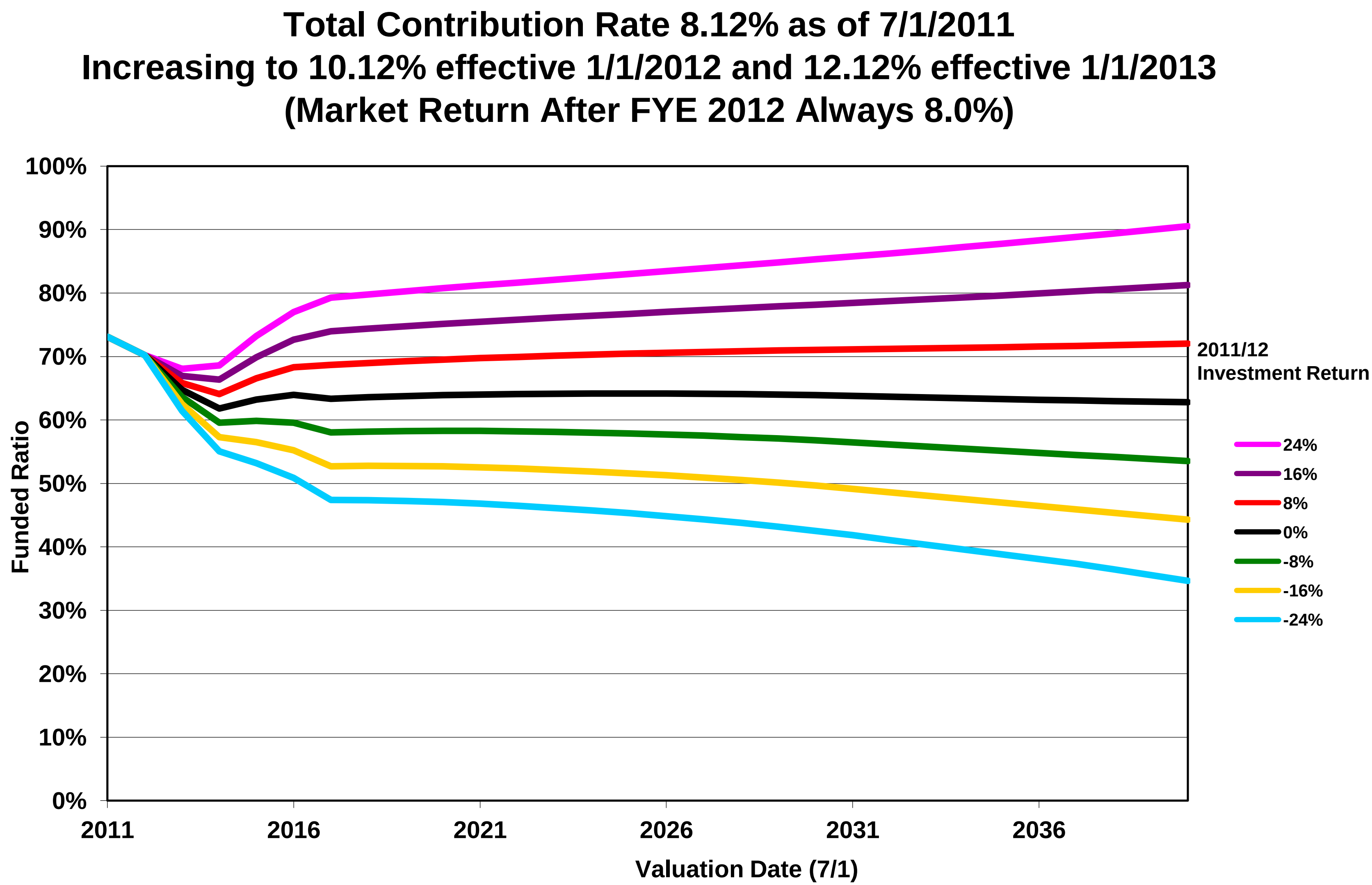
- Potential risks to the system:
  - Continued aging of population
  - Unforeseen demographic “shocks”
  - Change in asset return environment
- Board should consider projections, studies, etc., to help quantify these risks, and make changes to the system, if appropriate
- The asset valuation and amortization methods should be reviewed to make sure that they are in line with the Board’s funding objectives

Projections

- Projections of estimated funded ratios for 30 years
  - Based on FY12 investment return scenarios ranging from -24% to +24%
  - Assumed Fund earns 8% per year in FY13 and each year thereafter
  - All other experience is assumed to emerge as expected
- Includes statutory contribution rate increases from SB 2108 and Board approved employer contribution rate increases for the Law Enforcement Plan

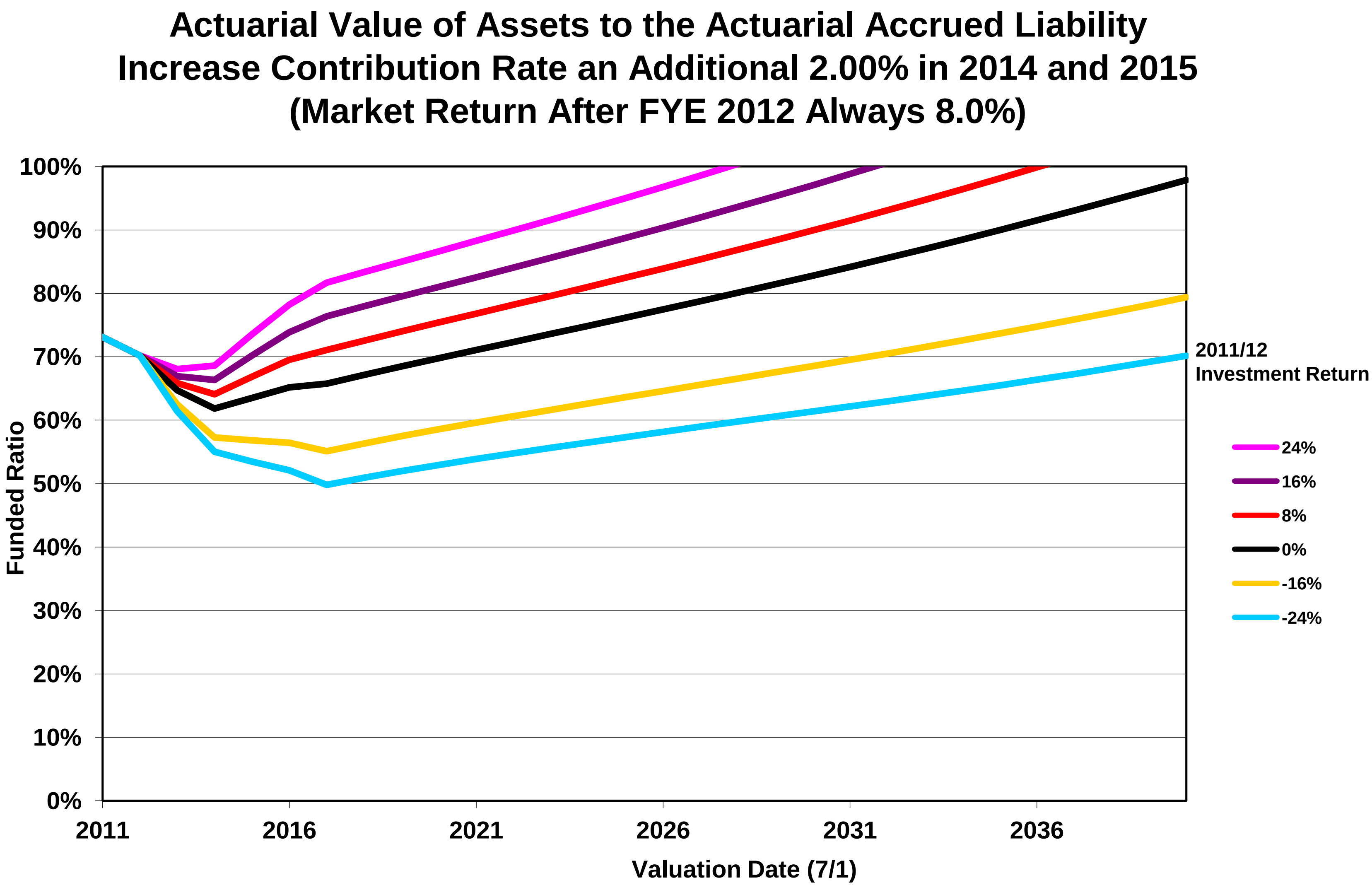
North Dakota PERS - Main System

Projected Funded Ratio – Actuarial Value of Assets to Actuarial Accrued Liability



North Dakota PERS - Main System

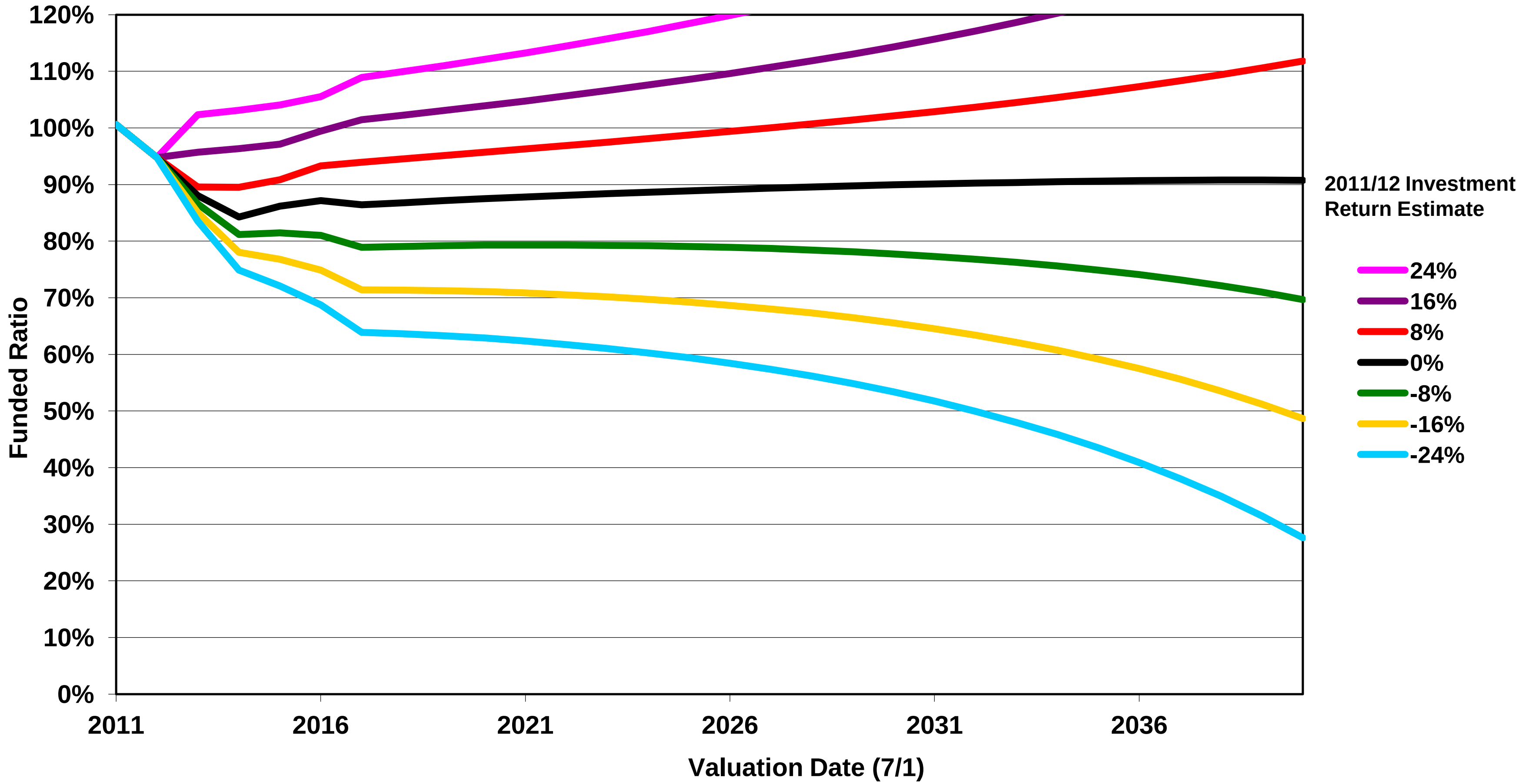
Projected Funded Ratio – Actuarial Value of Assets to Actuarial Accrued Liability



North Dakota PERS - Judges System

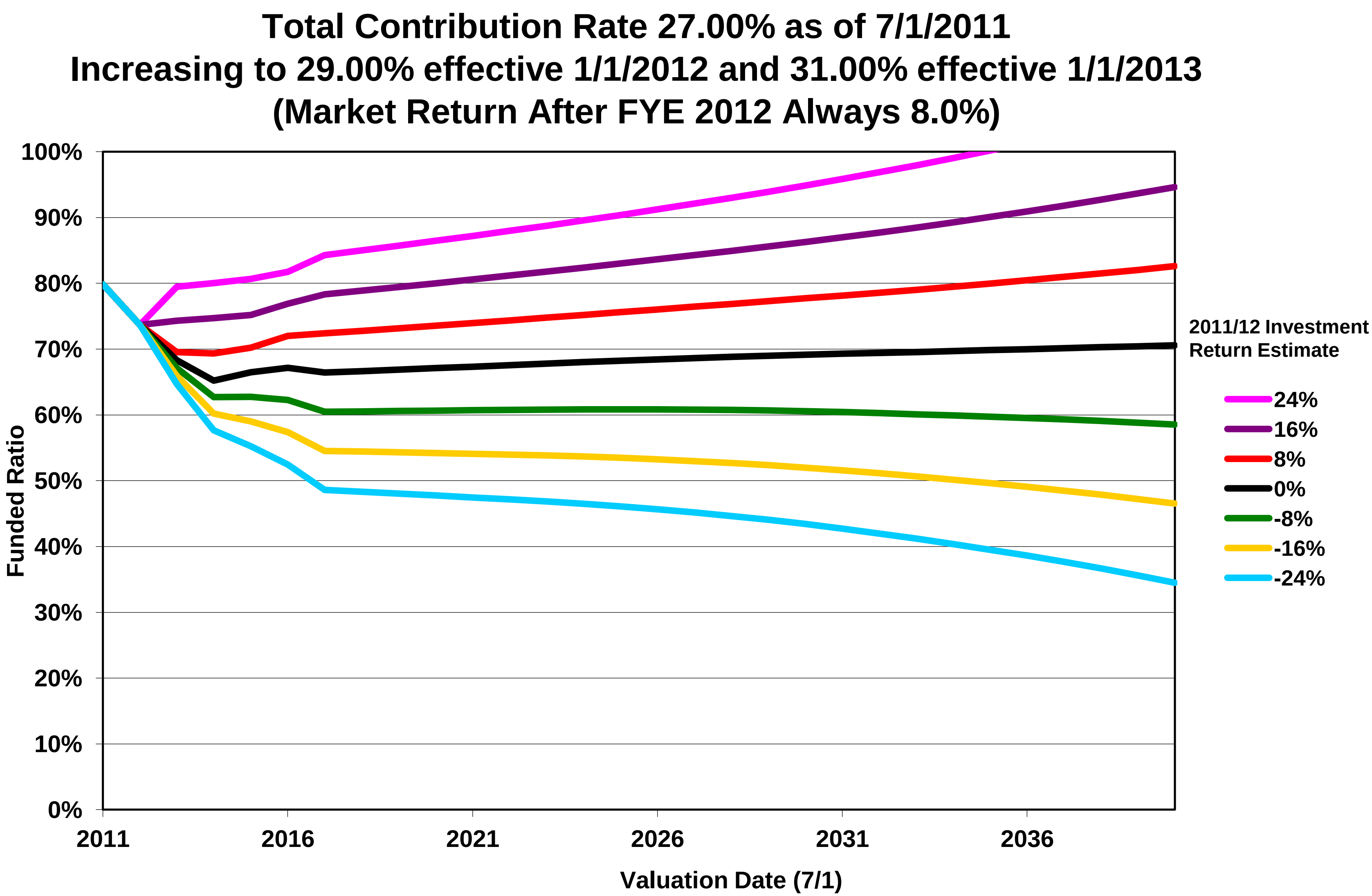
Projected Funded Ratio – Actuarial Value of Assets to Actuarial Accrued Liability

Total Contribution Rate 19.52% as of 7/1/2011
Increasing to 21.52% effective 1/1/2012 and 23.52% effective 1/1/2013
(Market Return After FYE 2012 Always 8.0%)



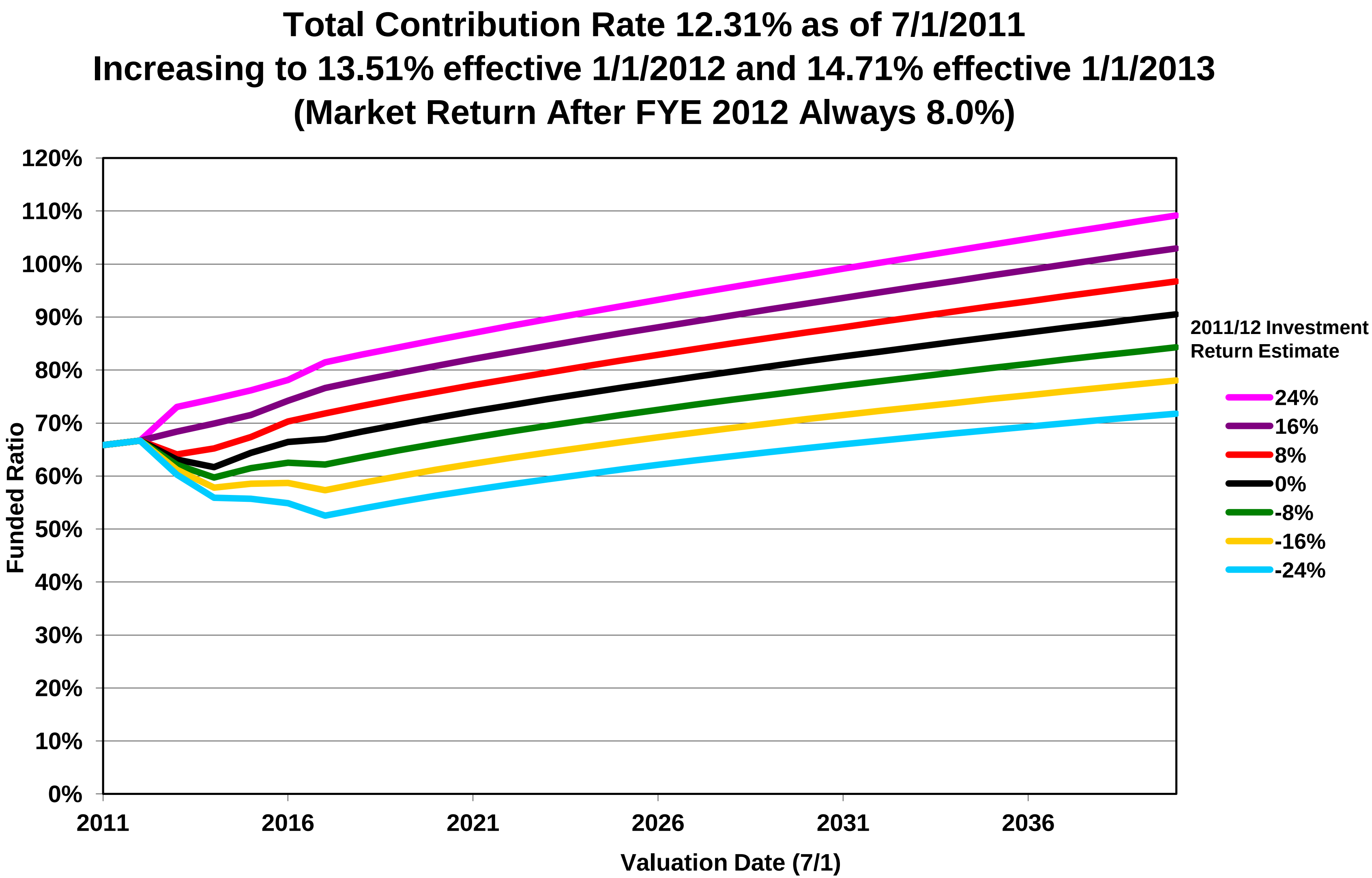
North Dakota Highway Patrolmen's Retirement System

Projected Funded Ratio – Actuarial Value of Assets to Actuarial Accrued Liability



North Dakota Law Enforcement with prior Main Service

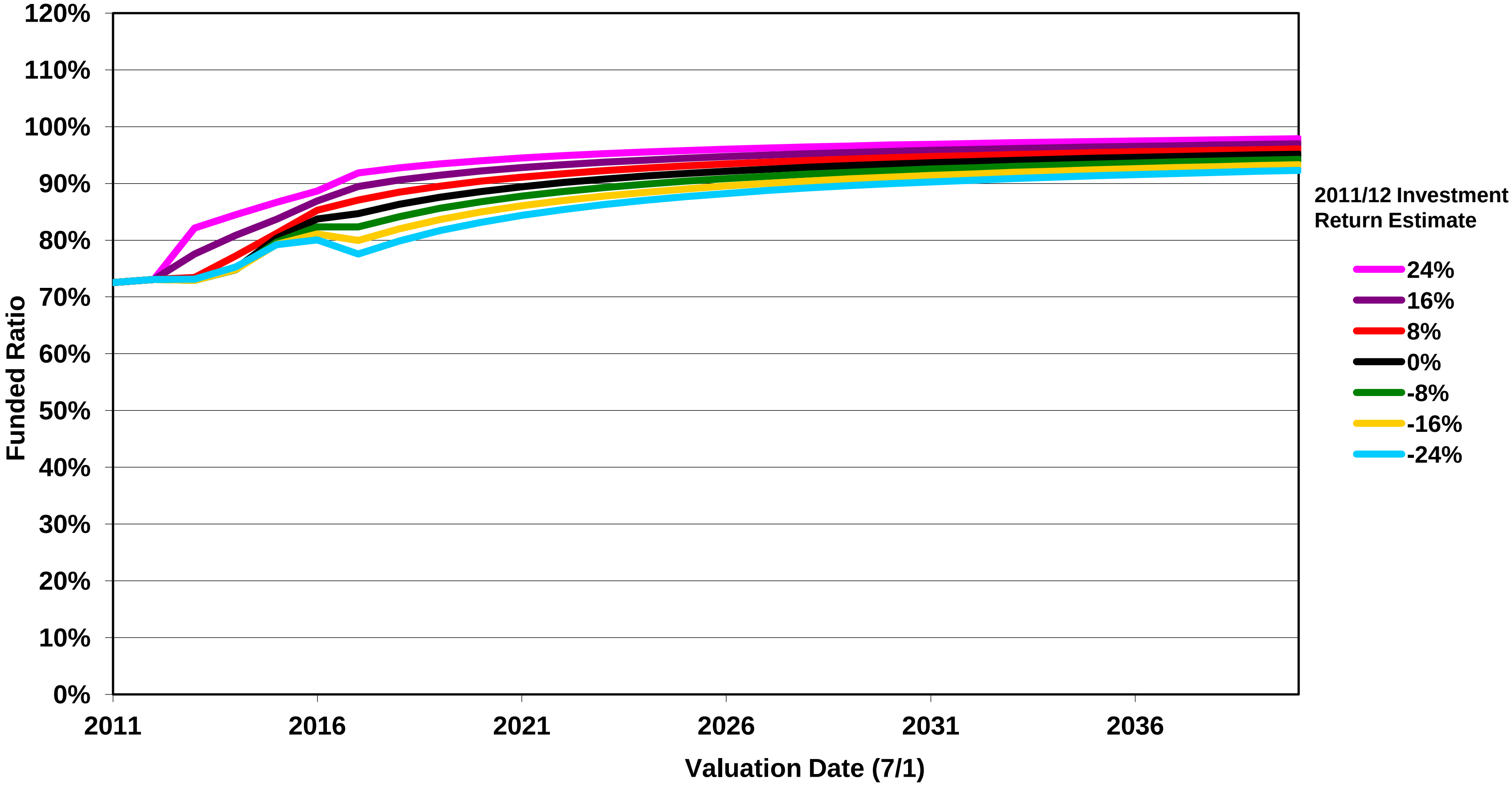
Projected Funded Ratio – Actuarial Value of Assets to Actuarial Accrued Liability



North Dakota Law Enforcement without prior Main Service

Projected Funded Ratio – Actuarial Value of Assets to Actuarial Accrued Liability

Total Contribution Rate 10.43% as of 7/1/2011
Increasing to 11.43% effective 1/1/2012 and 12.43% effective 1/1/2013
(Market Return After FYE 2012 Always 8.0%)



Disclaimer

Projections, by their nature, are not a guarantee of future results. The modeling projections are intended to serve as illustrations of future financial outcomes that are based on the information available to us at the time the modeling is undertaken and completed, and the agreed-upon assumptions and methodologies described herein. Emerging results may differ significantly if the actual experience proves to be different from these assumptions or if alternative methodologies are used. Actual experience may differ due to such variables as demographic experience, the economy, stock market performance and the regulatory environment.

All calculations were completed under the supervision of Mark Hamwee, FSA, MAAA, Enrolled Actuary.

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LEGISLATIVE EMPLOYEE BENEFITS PROGRAMS COMMITTEE

Defined Benefit, Defined Contribution, and Hybrid Plans

January 12, 2012

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Discussion Topics

Segal

- Defined Benefit/Defined Contribution
- Hybrid Plan Designs
- Hybrid Examples and Recent Trends

Defined Benefit versus Defined Contribution

- Under a DB plan, the benefit is defined and the contribution is not
- Under a DC plan, the contribution is defined, but the benefit is not
- Types of plan risks:
  - Investment risk
  - Inflation risk
  - Contribution risk
  - Longevity risk
- In a DB plan, the employer usually bears these risks
  - In North Dakota, the employee bears a portion of these risks
- In a DC plan the employee bears these risks
- A hybrid plan is a combination of a DB and DC plan

Definition of Risks

- Investment Risk
  - Rate of return on assets
  - In DB plan, employer usually bears all the investment risk
  - In DC plan, employee bears all the investment risk
  - In North Dakota, contribution rates are fixed for both employer and employee
  - The employer and employee contribution rates are scheduled to increase for PERS and TFFR, so both employer and employee are sharing the investment risk
- Inflation risk
  - Cost of living before and after retirement
  - DB plans usually based on final average salary, so employee has limited cost of living risk
  - Most public sector DB plans provide some form of post-retirement benefit increase, so employee has some protection against inflation in retirement
  - PERS and TFFR are based on final average salary, so employee has limited cost of living risk prior to retirement
  - PERS and TFFR do not have post-retirement benefit increases, so employees bear the inflation risk after retirement

Definition of Risks *continued*

- Contribution risk
  - Level and volatility of annual contributions
  - In DB plan, employer usually bears this risk
  - In DC plan, contributions are a percentage of salary
    - If investment returns are poor, employees may need to make additional contributions
  - The employer and employee contribution rates are scheduled to increase for PERS and TFFR, so both employer and employee are sharing this risk
- Longevity risk
  - Outliving retirement assets
  - In DB plan, benefits paid as life annuity, so employer usually bears all risk
  - In DC plan, benefits based on account balance, so employee bears all risk
  - The employer and employee contribution rates are scheduled to increase for PERS and TFFR, so both employer and employee are sharing this risk

North Dakota Plans

- TFFR is a defined benefit plan
  - Defined benefit based upon service and final average salary
  - Deferred vested, disability, and death benefits are also available

- PERS Judges, HP, and Job Service are defined benefit plans
  - Defined benefit based upon service and final average salary
  - Deferred vested, disability, and death benefits are also available

- PERS Main, National Guard, and Law Enforcement plans are hybrid plans
  - Defined benefit based upon service and final average salary
  - Portability Enhancement Provision (“PEP”) – allows a member to vest in employer contributions in the hybrid plans
  - Requires participation in a deferred compensation plan (457/403(b))
  - Dollars contributed to DC plan are matched by vested employer contributions subject to a vesting schedule (up to 4% after three years of service)
  - Deferred vested, disability, and death benefits are also available

Comparison of DB and DC Plans

Objective	Defined Benefit	Defined Contribution
Funding Certainty	Plan liabilities change based on actuarial assumptions, e.g., future salary increases, investment earnings, employee turnover.	Employer liability is fulfilled annually as contributions are made to employee accounts based on a percentage of payroll.
Predictable Contributions	Annual contributions may vary from year-to-year based upon actuarial assumptions. Rates may be set by statute to increase predictability. (These rates may need to be changed periodically.)	Annual cash expenditures are more predictable as they are based on a set percentage of employee salaries.
Recruitment Tool	Some portability through service credit purchase or return of employee contributions.	Assets are portable.
Reward Career Employees	Benefits are typically based on final year(s) salary, rewarding career employees.	Benefits are based upon accumulated contributions and earnings.
Expenses	Expenses include actuarial valuations, investment fees, and administrative fees. Employer pays these fees.	Employee expenses may be lower than a defined benefit plan because no actuarial valuations are necessary and investment fees are shifted to the employee. Employee education costs may be higher.

Comparison of DB and DC Plans

Objective	Defined Benefit	Defined Contribution
Benefit Potential	Benefits paid at retirement are for life and are guaranteed by the plan's benefit formula.	Benefits paid at retirement are based on contributions and earnings. The final retirement benefit can be eroded by pre-retirement distributions.
Understandable Benefits	Benefits require explanation because they are based on a set of variables, e.g., future earnings and year of service at retirement.	Benefits are based on accumulated contributions plus earnings at the time of retirement. Market fluctuations and life expectancy make it difficult to manage retirement benefit.
Access to Benefits While Employed	Benefits may not be withdrawn while actively employed.	Benefits may be withdrawn or loaned under certain circumstances.

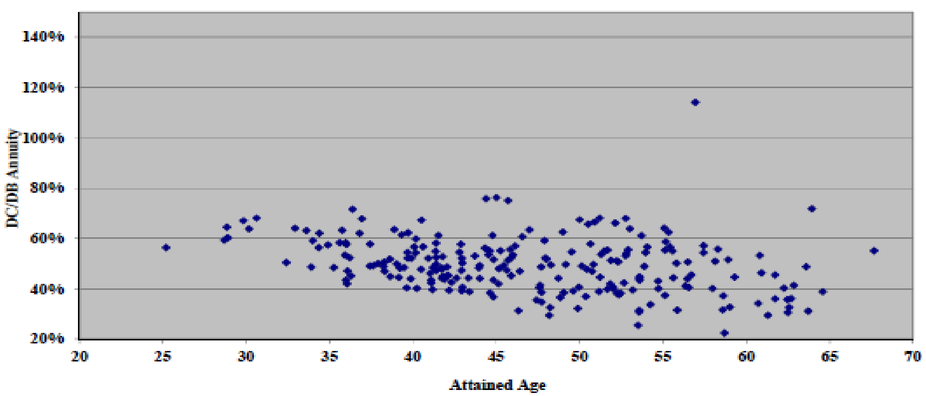
Public Sector Defined Contribution Plans

- Alaska
  - In 2006, the DB plans were closed and new DC plans were established for public employees and teachers
  - Non-vested employees in the DB plans were permitted to transfer to the DC plans
  - Employees contribute 8% of pay
  - Non-teacher employers contribute 5% of pay and teacher employers contribute 7% of pay.
- West Virginia
  - In 1991, DB plan was closed and a new DC plan was created
    - Employers contributed 7.5% and employees contributed 4.5%
  - The DC plan was closed to new members in 2005
  - In 2006 members of the DC plan voted to merge with the DB plan
  - Effective in 2008, members in the DC plan were permitted to elect to transfer back into the closed DB plan – 80% elected to transfer back to the DB plan
- Michigan
  - In 1997, the DB plans were closed to new members and a DC plan was made mandatory for state employees hired after that date
    - The State contributes 4%, and will match an additional 3% (a maximum of 7%). Employees are not required to contribute but may contribute up to 12%
  - Members of the closed DB plan were allowed to transfer to the DC plan

North Dakota PERS Defined Contribution Plan

- Approximately 290 members (226 are active)
- Participants are allowed to direct contributions to over 30 investment options
- A self-directed brokerage option is also available
- Plan is benchmarked to PERS hybrid plan goal of providing a career employee (25 years of service) a benefit of approximately 50% of final average salary at retirement
- A recent study compared projected DC benefits to the PERS hybrid plan
  - To address the funding challenge of providing adequate benefits, a 2% contribution increase was proposed for each year from 2012 through 2015 in SB 2108. The 2012 and 2013 increase was approved. The 2014 and 2015 increases were deferred for future consideration.

Exhibit III
Ratio of Projected DC Account (Converted to an Annuity) to DB Benefit
by Attained Age as of June 30, 2011
With Current Statutory Contribution Rates



What Is a Hybrid Plan?

A combination of a defined benefit plan
and
a defined contribution plan

Reasons Hybrids are Considered

- Lower employer costs
- Reduce employer contribution volatility
- Provide greater benefit flexibility, especially for short service employees
- Increase portability
- Make the plan more understandable
- Modify the risk characteristics of the benefit offering

Hybrid Plan Considerations

- DB and DC plans have very different approaches to benefit design
  - DB plans focus on benefit security
  - DC plans focus on wealth accumulation
- Shifting of plan risks may have unintended consequences
- There is no magic equivalent plan (DB = DC)
  - Difference rests in risk and performance
- Whether retirement benefits are provided by a DB plan, DC plan, or a hybrid plan, contributions should be sufficient so that employees have a reasonable opportunity for a viable retirement plan

Menu of Basic Plan Designs

Defined Benefit

- Final Average Salary
- Career Average Salary
- Flat Benefit Accruals

Defined Contribution

- Traditional DC
- 401(k)
- 403(b)
- 457
- Matching plans

Menu of Hybrid Plan Designs

- DB plans with lump sum options
- Combined plans
- Crossover plans
- Cash balance plans

Combined Plan

- Have both defined benefit and defined contribution components
- Variations:
  - Defined benefit is primary plan with defined contribution to enhance portability
  - Defined contribution is primary plan with defined benefit as “safety net” plan
  - NDPERS “PEP” Provision – enhanced return of contribution withdrawal benefits, payable as a lump sum

Crossover Plan

- Members can choose among defined benefit, defined contribution, or combined plan at hire date
- Members have option to “crossover” from one plan to another with restrictions
  - In Ohio State Teachers Retirement System, members have option to elect another plan after 3 or 5 years, default to DB plan unless they affirmatively elect another plan
  - PERS non-classified state employees may elect to participate in the DC plan within six months of the date of employment, otherwise participation in the DB plan will continue.

Cash Balance Plan

- Defined benefit plan that looks like a defined contribution plan
- Hypothetical account balance credited with percentage of salary and interest each year.
- For example:
  - Annual credit to account balance of 5% of salary
  - Annual interest on account balance equal to 10-year treasury rate plus 1.5%
  - Benefits paid at retirement or termination based on value of hypothetical account balance
- Actual contributions based on annual valuation and expected to be less than annual credit plus interest

Combined Plan Attributes

- Allocates portion of the plan risk to the member
- Provides additional benefit flexibility to the member
- Lowers future contributions for the plan sponsor
- Maintains a core DB for the base retirement benefit
- Provides a platform for death and disability benefits

Examples of Public Sector Hybrid Plans

<table>
<tr><th>Combined Plans</th><th>Cash Balance</th></tr>
<tr><td>
Oregon (2003)
• Combined DB/DC plan
• Tier II:
– DB– 1.5% of pay plan employer funded
– DC 6% employee funded
Georgia (2008)
• Combined DB/DC plan mandatory for new hires since 2009 and optional for those hired before 2009
• DB–1% of pay plan
– Employee contributes 1.25% and employer contributes remainder
• DC Employer matches 100% of employee’s first 1% and 50% of next 4% with maximum employer contribution of 3%
Rhode Island (2011)
• Combined DB/DC plan mandatory for new hires except for public safety employees and judges
• DB–1% of pay plan for teachers and general, 2% of pay for public safety
– Teachers and general contribute 3.75%, public safety contribute 8.75%
• DC 5% employee/1% employer (7% employee/3% employer for teachers)
</td><td>
Nebraska (2003)
• DC plan closed in 2003, replaced with a cash balance plan for new hires
• Employee contribution: 4.8%
• Employer contribution: 7.5%
• Investment return guarantee:
– At least 5% annual return
– Potential for additional Board approved amount
– Total not to exceed 8%
</td></tr>
</table>

Examples of Public Sector Hybrid Plans

<table>
<tr><th>Combined Plans</th><th>Cash Balance</th></tr>
<tr><td>
Michigan Public Schools (2010)
• For employees hired after 6/30/2010:
– DB–1.5% of pay plan
– Employee contributions to DB plan based on graduated scale based on pay
– Employer contributes remainder
– DC 1% employer contribution and 2% employee contribution

Utah (July 2011)
Employee Choice of:
• Tier II:
– DB–1.5% of pay plan (2% for public safety)
– 15% cap on employer contributions (17% for public safety). Employees fund any shortfall.
• DC funded by “excess” employer contributions
OR
• DC 10% employer contributions (12% for public safety)
</td><td></td></tr>
</table>

Transition Issues

Changing from a defined benefit to a defined contribution plan or a hybrid plan results in transition issues that must be addressed

- Unfunded liabilities are not eliminated by a change to a DC plan or a hybrid plan
  - Best practices and accounting standards call for accelerated funding, driving up short-term costs
  - Longer term asset allocation changes may lead to reduced investment return and therefore to *higher total costs for the plan sponsor*.
- If DC plan investments are participant-directed, employee education is needed
- Creating a new DC Plan could add administrative complexity and cost
- Allowing choice between plans introduces anti-selection issues
- Adequate death and disability benefits cannot be provided by a DC plan
- Workforce management is difficult with a DC plan

Trends in Public Retirement Plan Redesign

Summary of Recent State Plan Changes 1/2010 – 9/2011

		State	Change	
Contribution Rate Changes	Employer New Hires	CA, HI, IA, KA, LA, MN, NJ, NM	• Raise all contribution rates • Reinstate higher contributions based on funding levels or investment returns	• Lower employer contribution rates • Mandate employee contributions • Prohibit "pick-up" of employee contributions
	Employee New Hires	FL, DE, HI, IA, LA, MN, MO, MS, MT, VA, VT, WY		
	ALL EE	AL, AZ, CO, DE, FL, KS, MD, NE, NH, NJ, ND, NM, OH, TX, VT, WI		
	ALL ER (+)	HI, ND, NE		
	ALL ER (-)	AL, AR, CO, FL, NM, OH, TX, VT		
COLA	New Hires	CT, HI, FL, IL, MD, MI, MS, KS, OK, UT, VA	• Suspension tied to funding or CPI • Suspension tied to funding percentage or investment returns • Elimination tied to benefit amount	• Freeze based on service accrual date • Delay start • Retirement after a date certain
	Actives	AZ, CT, FL, KA, MD, MS		
	Retirees	CO, ME, MN, NJ, RI, SD		
Sponsor Contribution Rules		IA, LA, MD, NJ, VA, VT	• Additional contributions to ARC • Require ARC	• Earmark pension savings to pay down unfunded liability • Require payment of the ARC
Anti-Spiking	New Hires	AZ, DE, FL, CO, CT, IA, IL, LA, MT, ND*	• Limits pensionable compensation • Longer FAS period	• Longer vesting period • Cap compensation growth in FAS period • Cap on benefit percent or dollar amount
	Actives	NH, NJ, NC, ND, MD, VA, WV		
Multiplier	New Hires	GA, HI, MD, MS, MT, NH, NJ, KS	• Lower multiplier • Rolling rate based on service	• Reduce longevity multiplier or period
	Actives	KA, VT		
Retirement Eligibility	New Hires	AZ, CT, DE, FL, HI, IL, MN, MO, MS, MT, NH, NJ, NC, ND*, OK, WV, WI	• Raise service requirements • Longer vesting period	• Eliminate combined age/service rule • Increase combined age/service rule
	Actives	AZ, CO, CT, ND*, TX		
Retirement Age	New Hires	DE, HI, ME, MO, NH, ND*, OK	• Raise normal retirement age	• Coordinate with social security normal retirement age
	Actives	AZ, CO, ME, ND, VT		
Re-employment		AZ, AK, CO, GA, IL, MD, ME, MI, MS, ND*, NM, SD, UT	• Eliminate service accrual after rehire • Limit compensation	• Suspend pension and health benefits based on earnings after rehire • Require full contribution
Hybrid	New Hires	GA, IN, MI, UT	• Combine a lower multiplier DB plan with a DC account	• Choice of Defined Benefit, Hybrid, or Defined Contribution
	Actives	RI		
Defined Contribution	New Hires	NJ, UT	• Part-time workers	• Optional

Source: National Conference of State Legislatures, May 2011 and September 2011

* Note that benefit changes applied only to TFFR while contribution changes apply to both PERS and TFFR

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