

# **North Dakota Public Employees' Retirement System**

## **Results of the July 1, 2009 Actuarial Valuation**

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# Purposes of the Actuarial Valuation

- Report the Plan's assets
- Estimate the Plan's liabilities
- Determine the recommended contribution for 2009
- 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
- Project a benefit for each member, for each possible benefit
- Apply assumptions about:
  - ❖ Economics (investment return, CPI, pay raises)
  - ❖ People (death, disablement, retirement, turnover)
- Apply assumptions to benefits to determine a total liability and assign liabilities to service
- Apply the funding policy to determine recommended contribution

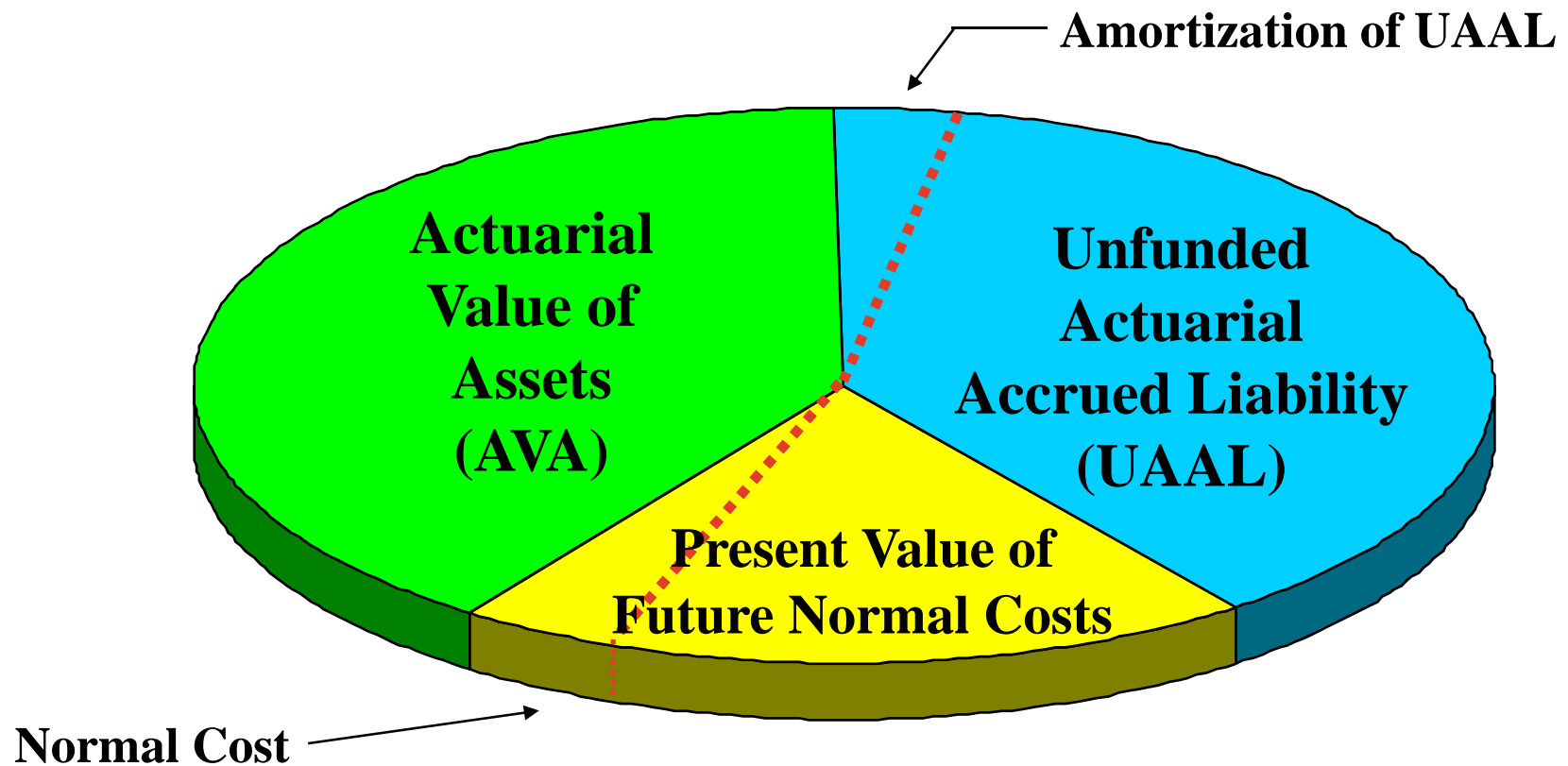
# What is the Current Funding Policy?

- Funding method – “entry age normal”
  - ❖ Allocates benefits earned to periods of employment
  - ❖ Normal cost = benefits earned in next year
  - ❖ Most stable contribution rate as a percent of payroll
- Amortization Method – level percent of payroll
  - ❖ Most stable contribution rate as a percent of payroll
- Amortization Period – 20-year open
  - ❖ Does this pay off UAL?

Each year's contribution is the Plan's normal cost plus the amortization of the unfunded liability of the Plan.

# Annual Contribution

## Present Value of Future Benefits



## Review of 2008-2009

- Significant (Historic, Epic, . . .) drop in assets in the fourth quarter of 2008
- Changes to contribution rates and funded ratios were dampened by asset smoothing methods, but the drop in assets still had a significant effect

# July 1, 2009 Valuation Results

## ➤ Recommended contribution

	<b>2009-2010 Percent of Pay</b>	<b>2008-2009 Percent of Pay</b>	<b>Statutory/ Approved Percent of Pay</b>
<b>Main</b>	7.74%	6.26%	4.12%
<b>Judges</b>	10.48%	8.99%	14.52%
<b>National Guard</b>	3.71%	3.44%	6.50%
<b>Law Enforcement (with Prior Service)</b>	9.11%	9.04%	8.31%
<b>Law Enforcement (without Prior Service)</b>	6.83%	7.15%	6.43%
<b>Highway Patrol</b>	18.73%	15.76%	16.70%
<b>Retiree Health</b>	1.00%	0.88%	1.14%
<b>Job Service</b>	0.00%	0.00%	0.00%

## ➤ Funded Ratio (AVA)

	<b>July 1, 2009</b>	<b>July 1, 2008</b>
<b>PERS</b>	85.1%	92.6%
<b>HPRS</b>	87.2%	93.1%
<b>Retiree Health</b>	43.9%	48.6%
<b>Job Service</b>	104.7%	108.8%

## July 1, 2009 Valuation Results

- Market value of combined assets for PERS and HPRS was \$1.361 billion vs. \$1.817 billion last year
- Combined actuarial value of assets for PERS and HPRS was \$1.667 billion vs. \$1.661 billion last year
- Total actuarial value of assets is 122.5% of market value of assets
- Significant unrecognized losses will be recognized in subsequent valuations and yield increases in required contributions, unless offset by future gains



# Active Membership - PERS

	Number of Actives	Average Age	Average Service	Total Payroll	Average Payroll
<b>Main</b>	19,686 (+3%)	47.0 (---)	10.4 (-0.1)	\$684m (+9%)	\$34,762 (+5%)
<b>Judges</b>	47 (---)	57.0 (+1.0)	16.8 (+0.9)	\$5.44m (+4%)	\$115,741 (+4%)
<b>National Guard</b>	36 (-12%)	34.4 (+0.4)	3.6 (+0.1)	\$1.34m (-32%)	\$37,114 (-23%)
<b>Law Enforcement (with Prior Service)</b>	144 (+6%)	41.2 (-0.4)	8.7 (-0.4)	\$5.68m (+12%)	\$39,428 (+6%)
<b>Law Enforcement (without Prior Service)</b>	30 (---)	35.2 (+1.1)	2.5 (+0.5)	\$950K (+15%)	\$31,660 (+15%)
<b>Total</b>	19,943 (+3%)	47.0 (+0.1)	10.4 (---)	\$698m (+9%)	\$34,987 (+5%)

# Inactive Membership - PERS

	Number of Pensions in Force	Average Age	Total Monthly Benefits	Average Monthly Benefits
<b>Main</b>	6,416	72.0	\$5,648,031	\$880
<b>Judges</b>	22	73.1	\$78,607	\$3,573
<b>National Guard</b>	7	63.6	\$10,752	\$1,536
<b>Law Enforcement (with Prior Service)</b>	16	60.4	\$21,863	\$1,366
<b>Law Enforcement (w/o Prior Service)</b>	<u>0</u>	<u>---</u>	<u>---</u>	<u>---</u>
<b>Total</b>	6,461	71.9	\$5,759,253	\$891

## Financial Information - PERS

- Market value of assets decreased from \$1.761 billion to \$1.320 billion
- Actuarial value of assets increased from \$1.610 billion to \$1.617 billion
- Ratio of actuarial value to market value is 122.5% (a \$297 million difference)
- Approximate returns:
  - ❖ Market Value: -24.1% (ten-year average: 2.8%)
  - ❖ Actuarial Value: 1.7% (ten-year average: 6.9%)
- Benefits and Expenses: \$77,847,622 in 2008-2009
- Contributions: \$57,675,622 in 2008-2009

# Asset Smoothing Method

Market Value of assets as of June 30, 2009		\$1,360,977,213
	<b>Original Amount</b>	<b>Unrecognized Amount</b>
Year ended June 30, 2009	(\$463,523,678)	(\$370,818,942)
Year ended June 30, 2008	(\$133,303,450)	(\$ 79,982,070)
Year ended June 30, 2007	\$285,031,438	\$114,012,575
Year ended June 30, 2006	\$152,103,565	\$ 30,420,713
Year ended June 30, 2005	\$154,870,262	0
Total unrecognized return		(\$306,367,724)
Actuarial value of assets		\$1,667,344,937
Actuarial value as a percentage of market value		122.5%

Conclusions: The smoothing method was overwhelmed by the unprecedented returns of 2008.

Significant unrecognized losses remain and will be reflected in future valuations, unless offset by future gains.

## Valuation Results - Main

	July 1, 2009		July 1, 2008	
Actuarial accrued liability	\$1,861,032,305		\$1,700,171,588	
Actuarial value of assets	\$1,577,552,012		\$1,571,159,912	
Unfunded accrued liability	\$283,480,293		\$129,011,676	
Recommended Contribution				
	2009 - 2010		2008 - 2009	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	\$32,462,319	4.75%	\$29,558,792	4.71%
Expenses	\$710,000	0.10%	\$710,000	0.11%
20-Year UAL payment/(credit)	\$19,784,166	2.89%	\$9,003,760	1.44%
Actuarial recommended contribution	\$52,956,485	7.74%	\$39,272,552	6.26%
Projected payroll	\$684,333,238		\$627,601,090	
Statutory contribution rate		4.12%		4.12%
Contribution margin/(deficit)		(3.62%)		(2.14%)

## Valuation Results - Judges

	July 1, 2009		July 1, 2008	
Actuarial accrued liability	\$26,345,343		\$24,732,254	
Actuarial value of assets	\$29,218,689		\$28,833,710	
Unfunded accrued liability	(\$2,873,346)		(\$4,101,456)	
Recommended Contribution				
	2009 - 2010		2008 - 2009	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	\$773,568	14.22%	\$763,908	14.59%
Expenses	\$5,000	0.09%	\$5,000	0.10%
20-Year UAL payment/(credit)	(\$208,710)	(3.83%)	(\$297,916)	(5.70%)
Actuarial recommended contribution	\$569,858	10.48%	\$470,992	8.99%
Projected payroll	\$5,439,847		\$5,237,074	
Statutory contribution rate		14.52%		14.52%
Contribution margin/(deficit)		4.04%		5.53%

# Valuation Results – National Guard

	July 1, 2009		July 1, 2008	
Actuarial accrued liability	\$1,847,643		\$1,797,107	
Actuarial value of assets	\$2,073,688		\$2,053,636	
Unfunded accrued liability	(\$226,045)		(\$256,529)	
Recommended Contribution				
	2009 - 2010		2008 - 2009	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	\$64,226	4.81%	\$84,310	4.29%
Expenses	\$1,115	0.08%	\$1,131	0.06%
20-Year UAL payment/(credit)	(\$15,776)	(1.18%)	(\$17,903)	(0.91%)
Actuarial recommended contribution	\$49,565	3.71%	\$67,538	3.44%
Projected payroll	\$1,336,097		\$1,964,662	
Approved contribution rate		6.50%		6.50%
Contribution margin/(deficit)		2.79%		3.06%

## Valuation Results – Law Enforcement with Prior Main Service

	July 1, 2009		July 1, 2008	
Actuarial accrued liability	\$11,537,085		\$10,557,744	
Actuarial value of assets	\$8,032,215		\$7,587,767	
Unfunded accrued liability	\$3,504,870		\$2,969,977	
Recommended Contribution				
	2009 - 2010		2008 - 2009	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	\$269,203	4.74%	\$246,545	4.88%
Expenses	\$3,253	0.06%	\$3,214	0.06%
20-Year UAL payment/(credit)	\$244,606	4.31%	\$207,275	4.10%
Actuarial recommended contribution	\$517,062	9.11%	\$457,034	9.04%
Projected payroll	\$5,677,624		\$5,057,594	
Approved contribution rate		8.31%		8.31%
Contribution margin/(deficit)		(0.80%)		(0.73%)



## Valuation Results – Law Enforcement without Prior Main Service

	July 1, 2009		July 1, 2008	
Actuarial accrued liability	\$438,380		\$368,306	
Actuarial value of assets	\$271,197		\$175,317	
Unfunded accrued liability	\$167,183		\$192,989	
Recommended Contribution				
	2009 - 2010		2008 - 2009	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	\$52,596	5.53%	\$44,827	5.44%
Expenses	\$632	0.07%	\$655	0.08%
20-Year UAL payment/(credit)	\$11,668	1.23%	\$13,469	1.63%
Actuarial recommended contribution	\$64,896	6.83%	\$58,951	7.15%
Projected payroll	\$949,790		\$824,167	
Approved contribution rate		6.43%		6.43%
Contribution margin/(deficit)		(0.40%)		(0.72%)

## Funded Ratio History - Main

Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2000	\$879	\$1,010	115%
2001	994	1,096	110%
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%

## Funded Ratio History - Judges

<b>Year</b>	<b>Actuarial Accrued Liability (millions)</b>	<b>Actuarial Value of Assets (millions)</b>	<b>Funded Ratio</b>
<b>2000</b>	\$11.8	\$16.1	136%
<b>2001</b>	13.9	17.9	130%
<b>2002</b>	15.5	19.0	122%
<b>2003</b>	17.3	19.8	115%
<b>2004</b>	18.4	20.8	113%
<b>2005</b>	19.8	21.7	109%
<b>2006</b>	21.7	23.3	108%
<b>2007</b>	23.1	26.8	116%
<b>2008</b>	24.7	28.8	117%
<b>2009</b>	26.3	29.2	111%

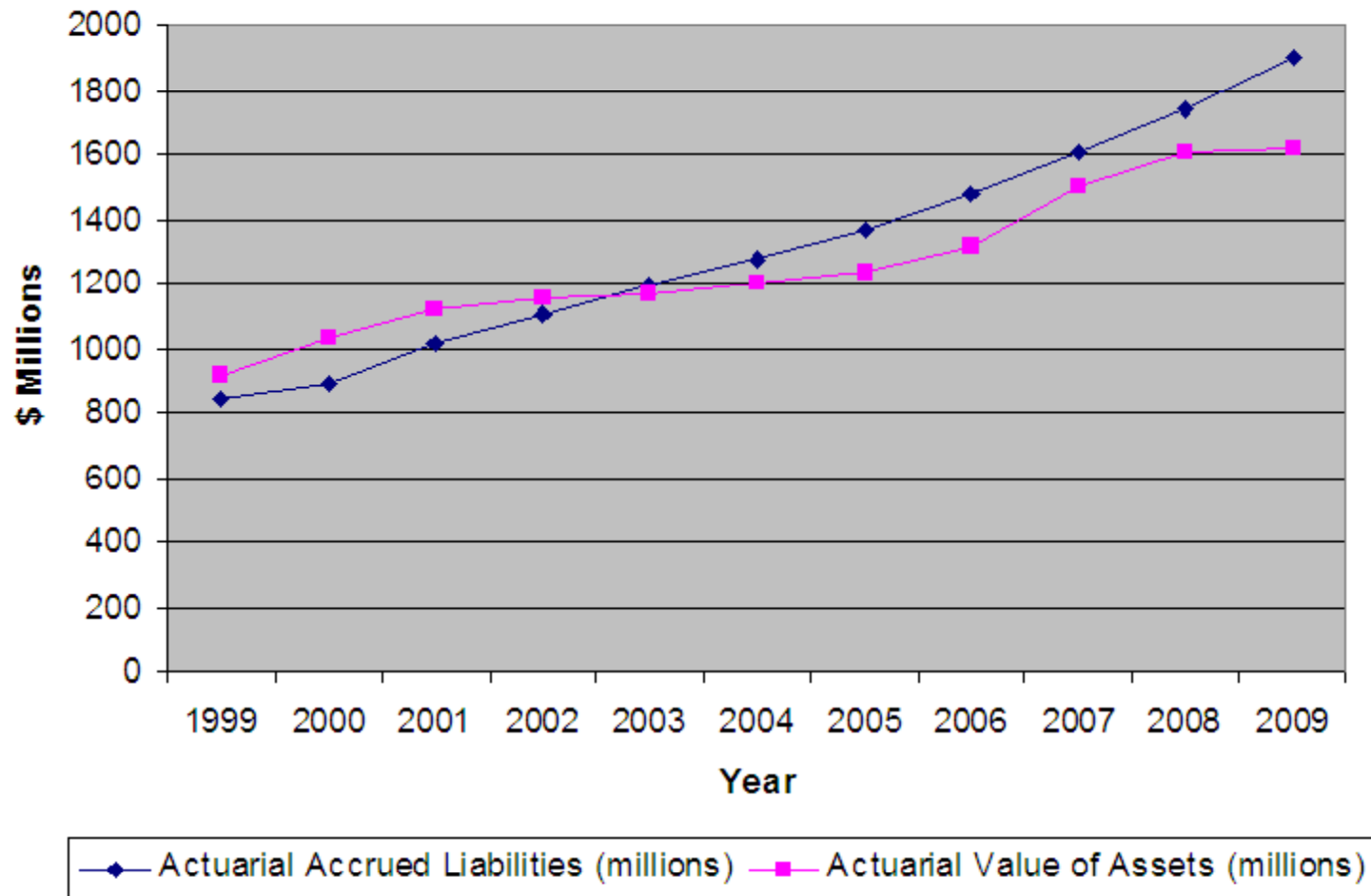
## Funded Ratio History – National Guard

<b>Year</b>	<b>Actuarial Accrued Liability (millions)</b>	<b>Actuarial Value of Assets (millions)</b>	<b>Funded Ratio</b>
<b>2000</b>	\$0.85	\$1.16	135%
<b>2001</b>	1.02	1.27	125%
<b>2002</b>	0.94	1.31	139%
<b>2003</b>	1.05	1.32	126%
<b>2004</b>	1.15	1.38	120%
<b>2005</b>	1.36	1.46	108%
<b>2006</b>	1.56	1.58	101%
<b>2007</b>	1.73	1.89	109%
<b>2008</b>	1.80	2.05	114%
<b>2009</b>	1.85	2.07	112%

# Funded Ratio History – Law Enforcement

WITH PRIOR SERVICE			
Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2004	\$2.43	\$2.11	87%
2005	6.40	2.62	41%
2006	7.00	3.12	45%
2007	9.28	3.97	43%
2008	10.56	7.59	72%
2009	11.54	8.03	70%
WITHOUT PRIOR SERVICE			
Year	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio
2004	\$10,000	\$11,000	109%
2005	87,000	42,000	48%
2006	123,000	73,000	59%
2007	367,000	127,000	35%
2008	368,000	175,000	48%
2009	438,000	271,000	62%

## Funded Ratio History – PERS



## Membership – Highway Patrol

	2009	2008	Change
<b>Number of actives</b>	133	130	+ 2.3%
<b>Average age</b>	37.0	37.0	---
<b>Average service</b>	10.6	10.7	- 0.1
<b>Total payroll</b>	\$7,009,297	\$6,508,644	+ 7.7%
<b>Average payroll</b>	\$52,701	\$50,066	+ 5.3%
<b>Number of pensioners and beneficiaries</b>	109*	105	+ 3.8%
<b>Average age</b>	65.9	65.9	---
<b>Total annual benefits</b>	\$3,324,423	\$3,171,170	+ 4.8%
<b>Average monthly benefit</b>	\$2,542	\$2,517	+ 1.0%

\* Excludes 1 suspended retiree

## Financial Information – Highway Patrol

- Market value of assets decreased from \$55.6 million to \$41.0 million.
- Actuarial value of assets decreased from \$50.8 million to \$50.2 million.
- Ratio of actuarial value to market value is 123% (a \$9.2 million difference).
- Approximate returns:
  - ❖ Market Value: - 24.1% (ten-year average: 2.8%)
  - ❖ Actuarial Value: 1.6% (ten-year average: 7.0%)
- Benefits and Expenses: \$3,213,310 in 2008 - 2009.
- Contributions: \$1,815,040 in 2008 - 2009.



## Valuation Results – Highway Patrol

	July 1, 2009		July 1, 2008	
Actuarial accrued liability	\$57,555,716		\$54,558,943	
Actuarial value of assets	\$50,197,136		\$50,808,884	
Unfunded accrued liability	\$7,358,580		\$3,750,059	
Recommended Contribution				
	2009 - 2010		2008 - 2009	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost net of contributions	\$783,034	11.17%	\$748,019	11.49%
Expenses	\$16,000	0.23%	\$16,000	0.25%
20-Year UAL payment/(credit)	\$513,557	7.33%	\$261,718	4.02%
Actuarial recommended contribution	\$1,312,591	18.73%	\$1,025,737	15.76%
Projected payroll	\$7,009,297		\$6,508,644	
Statutory contribution rate		16.70%		16.70%
Contribution margin/(deficit)		(2.03%)		0.94%

## Funded Ratio History – Highway Patrol

Year	Actuarial Accrued Liability (millions)	Actuarial Value of Assets (millions)	Funded Ratio
2000	\$34.0	\$35.9	105%
2001	38.1	38.8	102%
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%

## Membership – Retiree Health Insurance Credit Fund

	2009	2008	Change
<b>Number of actives</b>	20,317	19,659	+ 3.3%
<b>Average age</b>	46.9	46.8	+ 0.1
<b>Average service</b>	10.4	10.4	---
<b>Total payroll</b>	\$719,811,815	\$660,875,428	+ 8.9%
<b>Average payroll</b>	\$35,429	\$33,617	+ 5.4%
<b>Number of pensioners and beneficiaries</b>	4,030	3,935	+ 2.4%
<b>Average age</b>	73.0	72.8	+ 0.2
<b>Total annual benefits</b>	\$5,464,680	\$4,722,000	+ 15.7%
<b>Average monthly benefit</b>	\$113	\$100	+ 13.0%

## Financial Information – Retiree Health Insurance Credit Fund

- Market value of assets decreased from \$40.4 million to \$36.1 million.
- Actuarial value of assets increased from \$42.5 million to \$44.8 million.
- Ratio of actuarial value to market value is 124.0% (a \$8.7 million difference).
- Approximate returns:
  - ❖ Market Value: - 15.1% (ten-year average: 1.0%)
  - ❖ Actuarial Value: 0.7% (ten-year average: 5.1%)
- Benefits and Expenses: \$10,815,390 in 2008 - 2009.
- Contributions: \$12,792,648 in 2008 - 2009.

## Valuation Results – Retiree Health Insurance Credit Fund

	July 1, 2009		July 1, 2008	
Actuarial accrued liability	\$102,191,552		\$87,592,818	
Actuarial value of assets	\$44,829,007		\$42,543,140	
Unfunded accrued liability	\$57,362,545		\$45,049,678	
Recommended Contribution				
	2009 - 2010		2008 - 2009	
	Amount	% of Payroll	Amount	% of Payroll
Normal cost	\$3,265,124	0.45%	\$2,796,833	0.42%
Expenses	\$65,000	0.01%	\$65,000	0.01%
UAL payment*	\$3,868,909	0.54%	\$2,942,827	0.45%
Actuarial recommended contribution	\$7,199,033	1.00%	\$5,804,660	0.88%
Projected payroll	\$719,811,815		\$660,875,428	
Statutory contribution rate		1.14%		1.00%
Contribution margin/(deficit)		0.14%		0.12%

\*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
2000	\$61.9	\$22.6	37%
2001	65.5	24.8	38%
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%

## Membership – Job Service

	2009	2008	Change
<b>Number of actives</b>	35	38	- 7.9%
<b>Average age</b>	57.3	56.4	+ 0.9
<b>Average service</b>	33.4	32.6	+ 0.8
<b>Total projected compensation</b>	\$1,709,424	\$1,762,644	- 3.0%
<b>Average payroll</b>	\$48,841	\$46,385	+ 5.3%
<b>Number of pensioners and beneficiaries*</b>	120	118	+ 1.7%
<b>Average age</b>			
<b>Total annual benefits*</b>	\$3,176,263	\$2,987,764	+ 6.3%
<b>Average monthly benefit*</b>	\$2,206	\$2,110	+ 4.5%

\* Not including annuities paid by Travelers

## Financial Information – Job Service

- Market value of assets decreased from \$89.9 million to \$72.2 million.
- Actuarial value of assets decreased from \$77.0 million to \$74.5 million.
- Ratio of actuarial value to market value is 103% (a \$2.3 million difference).
- Approximate returns:
  - ❖ Market Value: - 16.0% (eight-year average: 3.8%)
  - ❖ Actuarial Value: 1.5% (eight-year average: 4.6%)
- Benefits and Expenses: \$3,784,719 in 2008 - 2009.
- Contributions: \$119,115 in 2008 - 2009.



## Valuation Results – Job Service

	<b>July 1, 2009</b>	<b>July 1, 2008</b>
Actuarial present value of benefits	\$72,043,372	\$71,828,872
Actuarial value of assets	\$74,472,806	\$77,020,934
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 is triggered under the current funding method.

## Funded Ratio History – Job Service

<b>Year</b>	<b>Actuarial Present Value of Benefits (millions)</b>	<b>Actuarial Value of Assets (millions)</b>	<b>Funded Ratio</b>
<b>2000</b>	\$56.6	\$71.0	125%
<b>2001</b>	58.7	70.8	121%
<b>2002</b>	59.9	67.6	113%
<b>2003</b>	60.7	66.0	109%
<b>2004</b>	61.8	67.5	109%
<b>2005</b>	63.3	69.3	109%
<b>2006</b>	70.0	70.6	101%
<b>2007</b>	71.7	75.7	106%
<b>2008</b>	71.8	77.0	107%
<b>2009</b>	72.0	74.5	103%

# Conclusions

- Asset smoothing and amortization method have dampened effects of last year's losses (as intended)
- Significant asset losses will be recognized over the next five years, potentially leading to increased contribution requirements

Recommended contribution

	<b>2009-2010 (AVA) Percent of Pay</b>	<b>2009-2010 (MVA) Percent of Pay</b>
<b>Main</b>	7.74%	10.69%
<b>Judges</b>	10.48%	17.64%
<b>National Guard</b>	3.71%	5.70%
<b>Law Enforcement (with Prior Service)</b>	9.11%	10.92%
<b>Law Enforcement (without Prior Service)</b>	6.83%	7.20%
<b>Highway Patrol</b>	18.73%	27.91%
<b>Retiree Health</b>	1.00%	1.08%
<b>Job Service</b>	0.00%	0.00%

## Conclusions

- 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 method should be reviewed