



## North Dakota Public Employees Retirement System

# DISCUSSION OF VALUATION RESULTS AND PROJECTIONS

Actuarial Valuation as of July 1, 2015

October 27, 2015

*Presented by:*

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**Vice President and Actuary**

#5393080v2

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# Discussion Topics

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- Valuation Basis
  - Methods
  - Assumptions
  - Plan of Benefits
- Valuation Highlights
- Membership and Demographics
- Valuation Results
- GASB No. 67
- Projections
- Appendix

# Actuarial Methods

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- **Asset Valuation Method** (actuarial value of assets)
  - Investment returns above or below the expected return are recognized over five years
- **Actuarial Cost Method** (allocation of liability between past service and future service)
  - PERS and HPRS use the entry age normal cost method (as do most retirement systems)
  - Job Service uses the aggregate method
  - Retiree Health Insurance Credit Fund (RHIC) uses the projected unit credit cost method
- **Amortization Method**
  - 20-year “open” period to pay off unfunded actuarial accrued liability (15 years remaining “closed” period for RHIC Fund)
  - Based on level percentage of payroll
  - An open amortization period will yield contributions that reduce the unfunded actuarial accrued liability, but will not pay it off by a specified date.
  - Projections for the ongoing plan (including new entrants and a level population) demonstrate anticipated funding progress. The projections begin on page 44.

# Assumptions

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## ➤ Set by the ND PERS Board in September 2015

- Discount Rate and Expected Rate of Return on Investments remain at 8%
- Payroll Growth remains at 4.5% (4.0% for Judges)
- Mortality updated to RP 2000 Combined Healthy Mortality Table, set back two years for males and three years for females, projected generationally using SSA 2014 intermediate cost scale from 2014
  - Life expectancy for a Male, currently age 65, increased from 20.1 to 20.4 years
  - Life expectancy for a Female, currently age 65, increased from 22.7 to 23.8 years

## ➤ Detailed summary of assumption changes in the Appendix

- Impact of changes was an increase in recommended contribution rate by 1.26% of payroll for Main System from 10.95% to 12.21% as of July 1, 2015

# Plan of Benefits

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- **SB2015 and HB1062 passed for Main System**
- **For new entrants on or after January 1, 2016**
  - Changed rules for full retirement from 85 points (age + service) to 90 points with minimum age 60
  - Increased early retirement reduction from 6% to 8% per year
- **Added 3-month window allowing DC participants to transfer to DB Plan**
- **National Guard group now included in Law Enforcement with Prior Main Service group**

## Plan of Benefits (continued)

<b>Statutory Contributions</b>	<b>Member Rate</b>	<b>Employer Rate</b>
Main System Full-Time Employees	7.00%	7.12%
Main System Part-Time Employees	14.12	N/A
Judges	8.00	17.52
Law Enforcement with Prior Main System Service	5.50 <sup>1</sup>	N/A
Law Enforcement without Prior Main System Service	5.50	N/A
Highway Patrol	13.30	19.70
Retiree Health	0.00	1.14
Job Service	0.00	0.00

<b>Board Set Rates</b>	<b>Member Rate</b>	<b>Employer Rate</b>
Law Enforcement with Prior Main System Service	N/A	9.81% <sup>2</sup>
Law Enforcement without Prior Main System Service	N/A	7.93

<sup>1</sup> 6.00% for Bureau of Criminal Investigation (BCI); 6.00% for National Guard (NG) decreasing to 5.50% as of 1/1/2016

<sup>2</sup> 10.31% for BCI; 7.00% for NG increased to 9.81% as of 8/1/2015

# Valuation Highlights – PERS and HPRS

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- Market value of combined assets for PERS and HPRS was \$2.438 billion vs. \$2.347 billion last year
- Assets returned 3.6% for the year ending 6/30/2015 (Segal estimate – market value)
- Actuarial value of combined assets for PERS and HPRS was \$2.153 billion vs. \$1.950 billion last year
  - Gradual recognition of deferred gains resulted in 10.0% return on actuarial assets
  - Actuarial value of assets (AVA) is 88.3% of market value of assets (MVA)
  - There is a total of \$285.3 million of deferred investment gains that will be recognized in future years

# Valuation Highlights

## EMPLOYER CONTRIBUTION SUFFICIENCY AS A PERCENT OF PAYROLL

	2015 - 2016			2014 - 2015		
	Recommended	Statutory Rate	Contribution Sufficiency/ (Deficiency)	Recommended	Statutory Rate	Contribution Sufficiency/ (Deficiency)
Main	12.21%	7.12%	(5.09%)	11.06%	7.12%	(3.94)%
Judges	10.75%	17.52%	6.77%	14.80%	17.52%	(2.72)%
Law Enforcement with Prior Service	9.78%	9.81% <sup>1</sup>	0.03%	9.42% <sup>1</sup>	9.81% <sup>2</sup>	(0.39)%
Law Enforcement without Prior Service	8.03%	7.93%	(0.10%)	7.42%	7.93%	0.51%
Highway Patrol	21.42%	19.70%	(1.72)%	21.70%	19.70%	(2.00)%
Retiree Health	0.72%	1.14%	0.42%	0.64%	1.14%	0.50%
Job Service	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

<sup>1</sup> Reflects combination of Law Enforcement with Prior Service and National Guard

<sup>2</sup> 10.31% for BCI

# Valuation Highlights

## FUNDED RATIO USING ACTUARIAL VALUE OF ASSETS

	July 1, 2015	July 1, 2014	Increase/ (Decrease)
Main	68.1%	64.1%	4.0%
Judges	99.0%	90.9%	8.1%
Law Enforcement with Prior Service	73.8% <sup>1</sup>	66.6%	7.2%
Law Enforcement without Prior Service	92.2%	80.9%	11.3%
<b>PERS</b>	<b>68.6%</b>	<b>64.5%</b>	<b>4.1%</b>
Highway Patrol	73.5%	72.3%	1.2%
Retiree Health	69.4%	66.8%	2.6%
Job Service	118.7%	119.4%	(0.7)%

<sup>1</sup> Includes former National Guard members

# Membership

## Main System

	2015	2014	Change
<b>Actives</b>			
• Number	22,381	21,814	2.6%
• Projected payroll	\$993.6 million <sup>1</sup>	\$946.2 million	5.0%
• Average Age	46.5 years	46.7 years	-0.2 years
• Average Service	9.7 years	10.1 years	-0.4 years
<b>Retirees and Beneficiaries<sup>2</sup></b>			
• Number	9,945	9,199	8.1%
• Total Monthly Benefits	\$10.8 million	\$9.4 million	14.9%
• Average Monthly Benefit	\$1,085	\$1,024	5.9%

<sup>1</sup> Includes assumption change

<sup>2</sup> Does not include 28 suspended retirees as of 2015 and 26 as of 2014.

# Membership

## Judges

	2015	2014	Change
<b>Actives</b>			
• Number	51	50	2.0%
• Projected payroll	\$7.3 million <sup>1</sup>	\$7.0 million	4.3%
• Average Age	58.1 years	58.7 years	-0.6 years
• Average Service	15.5 years	16.8 years	-1.3 years
<b>Retirees and Beneficiaries</b>			
• Number	44	38	15.8%
• Total Monthly Benefits	\$181,984	\$143,410	26.9%
• Average Monthly Benefit	\$4,136	\$3,774	9.6%

<sup>1</sup> Includes assumption change

# Membership

## Law Enforcement with Prior Main System Service

	2015 <sup>1</sup>	2014 <sup>1</sup>	Change
<b>Actives</b>			
• Number	318	315	1.0%
• Projected payroll	\$18.7 million <sup>2</sup>	\$16.7 million	12.0%
• Average Age	37.1 years	38.2 years	-1.1 years
• Average Service	6.3 years	7.0 years	-0.7 years
<b>Retirees and Beneficiaries</b>			
• Number	73	62	17.7%
• Total Monthly Benefits	\$116,889	\$91,802	27.3%
• Average Monthly Benefit	\$1,601	\$1,481	8.1%

<sup>1</sup> Includes former National Guard members

<sup>2</sup> Includes assumption change

# Membership

## *Law Enforcement without Prior Main System Service*

	2015	2014	Change
<b>Actives</b>			
• Number	95	83	14.5%
• Projected payroll	\$4.6 million <sup>1</sup>	\$3.6 million	27.8%
• Average Age	37.8 years	38.2 years	-0.4 years
• Average Service	3.8 years	3.6 years	0.2 years
<b>Retirees and Beneficiaries</b>			
• Number	1	1	0%
• Total Monthly Benefits	\$816	\$816	0%
• Average Monthly Benefit	\$816	\$816	0%

<sup>1</sup> Includes assumption change

# Membership

## PERS

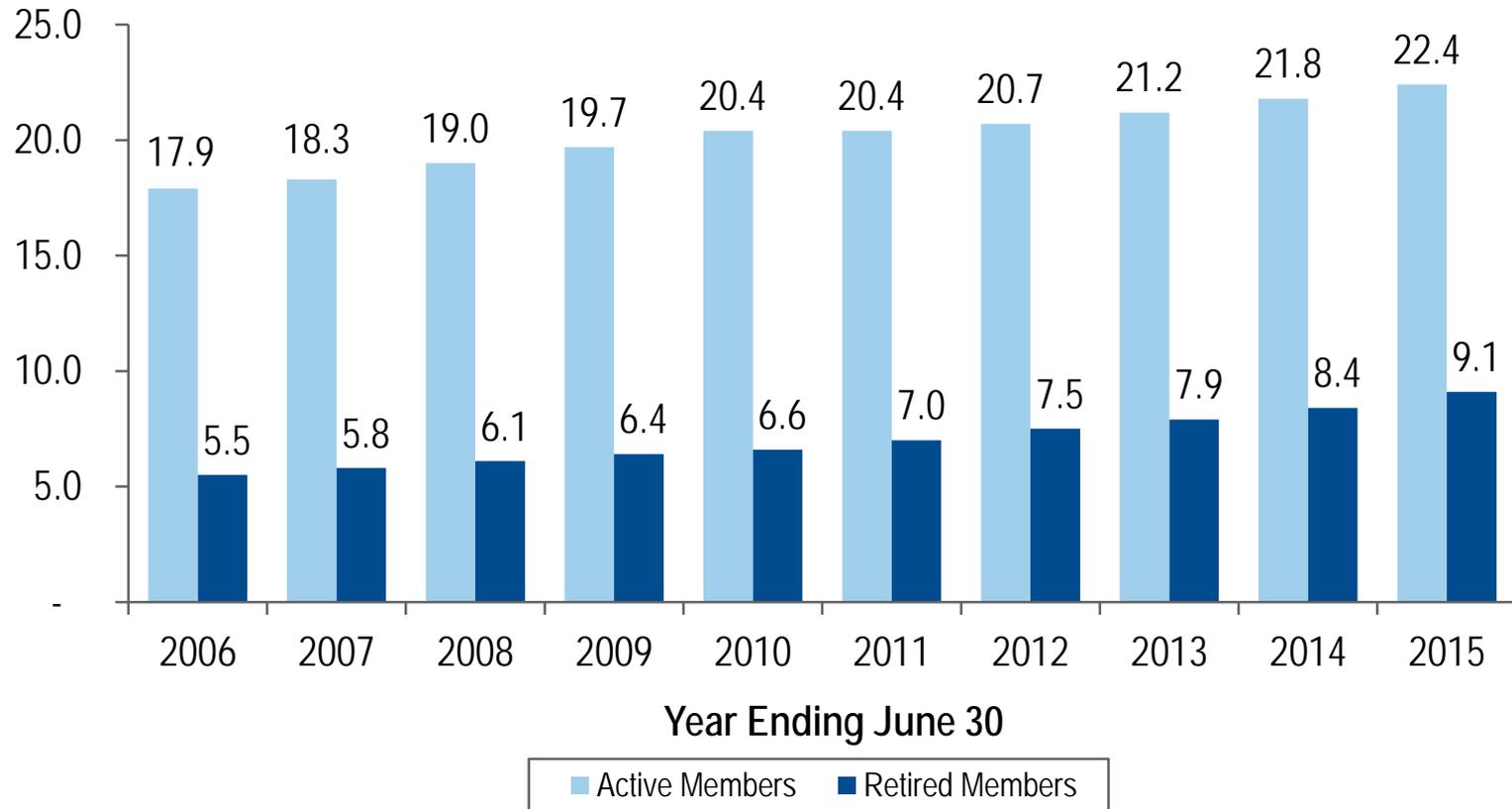
	2015	2014	Change
<b>Actives</b>			
• Number	22,845	22,262	2.6%
• Projected payroll	\$1.024 billion <sup>1</sup>	\$0.974 billion	5.2%
• Average Age	46.3 years	46.6 years	-0.3 years
• Average Service	9.7 years	10.0 years	-0.3 years
<b>Retirees and Beneficiaries<sup>2</sup></b>			
• Number	10,063	9,300	8.2%
• Total Monthly Benefits	\$11.1 million	\$9.7 million	14.4%
• Average Monthly Benefit	\$1,102	\$1,038	6.2%

<sup>1</sup> Includes assumption change

<sup>2</sup> Does not include 28 suspended retirees as of 2015 and 26 as of 2014.

# Main System

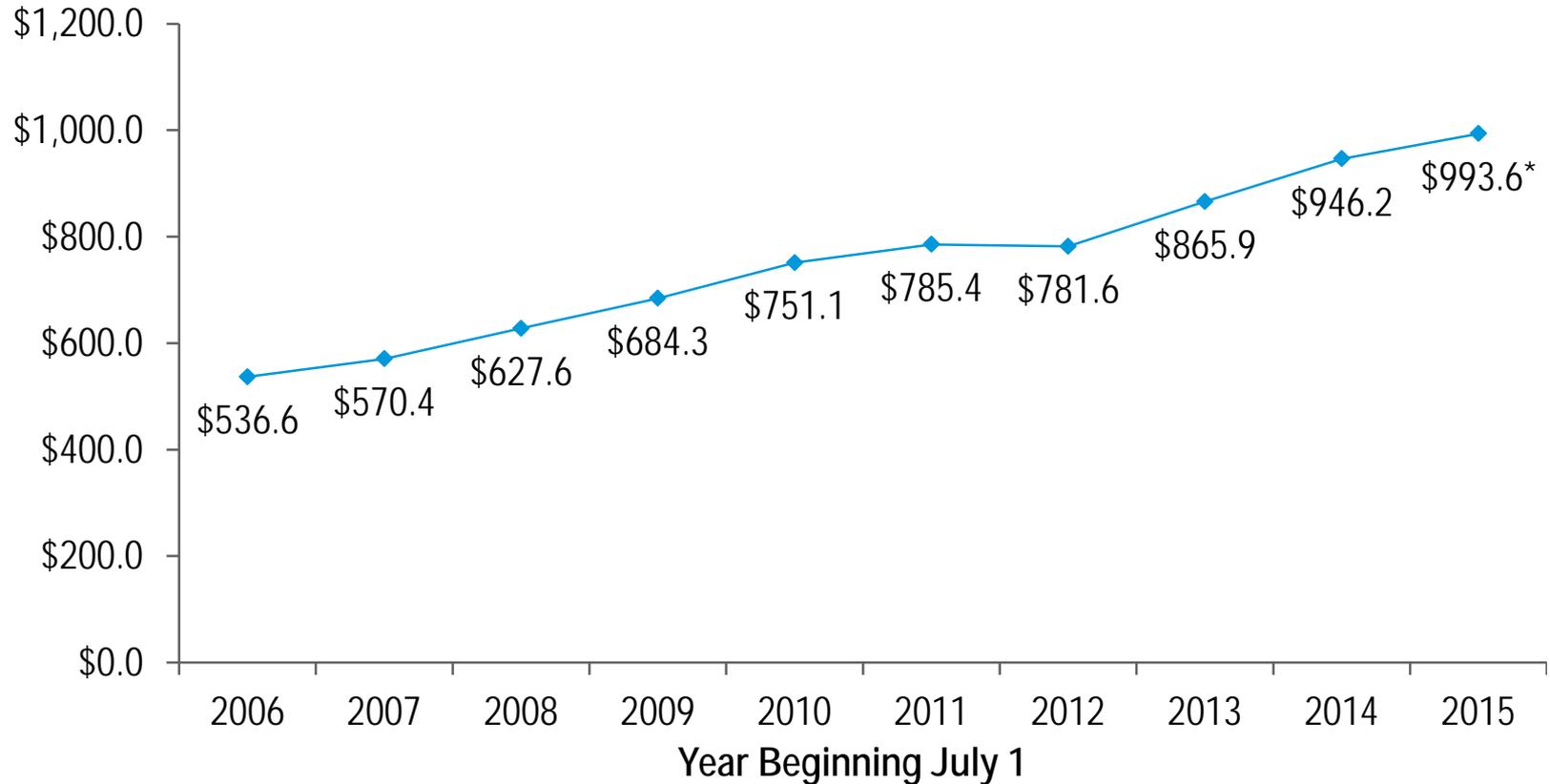
## ACTIVE AND RETIRED MEMBERSHIP (In Thousands)



**Active Population increased 2.6% from 21,814 to 22,381.  
Retired Members, excluding beneficiaries, increased 8.4% from 8,395 to 9,097.**

# Main System

## PROJECTED PAYROLL (In Millions)

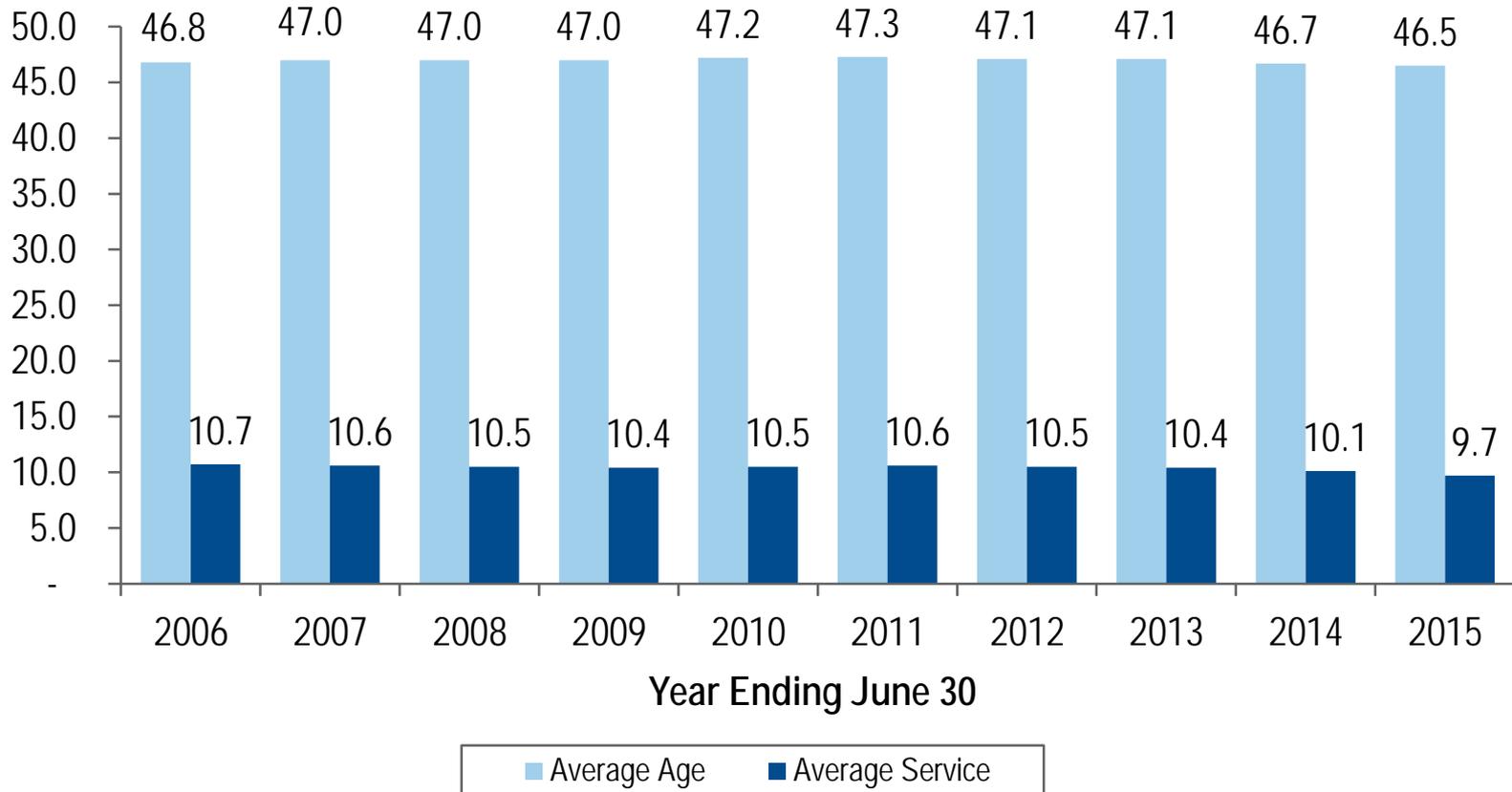


**Total compensation projected for the upcoming year increased 5.0% from \$946.2 million to \$993.6 million.**

\* Includes assumption change

# Main System

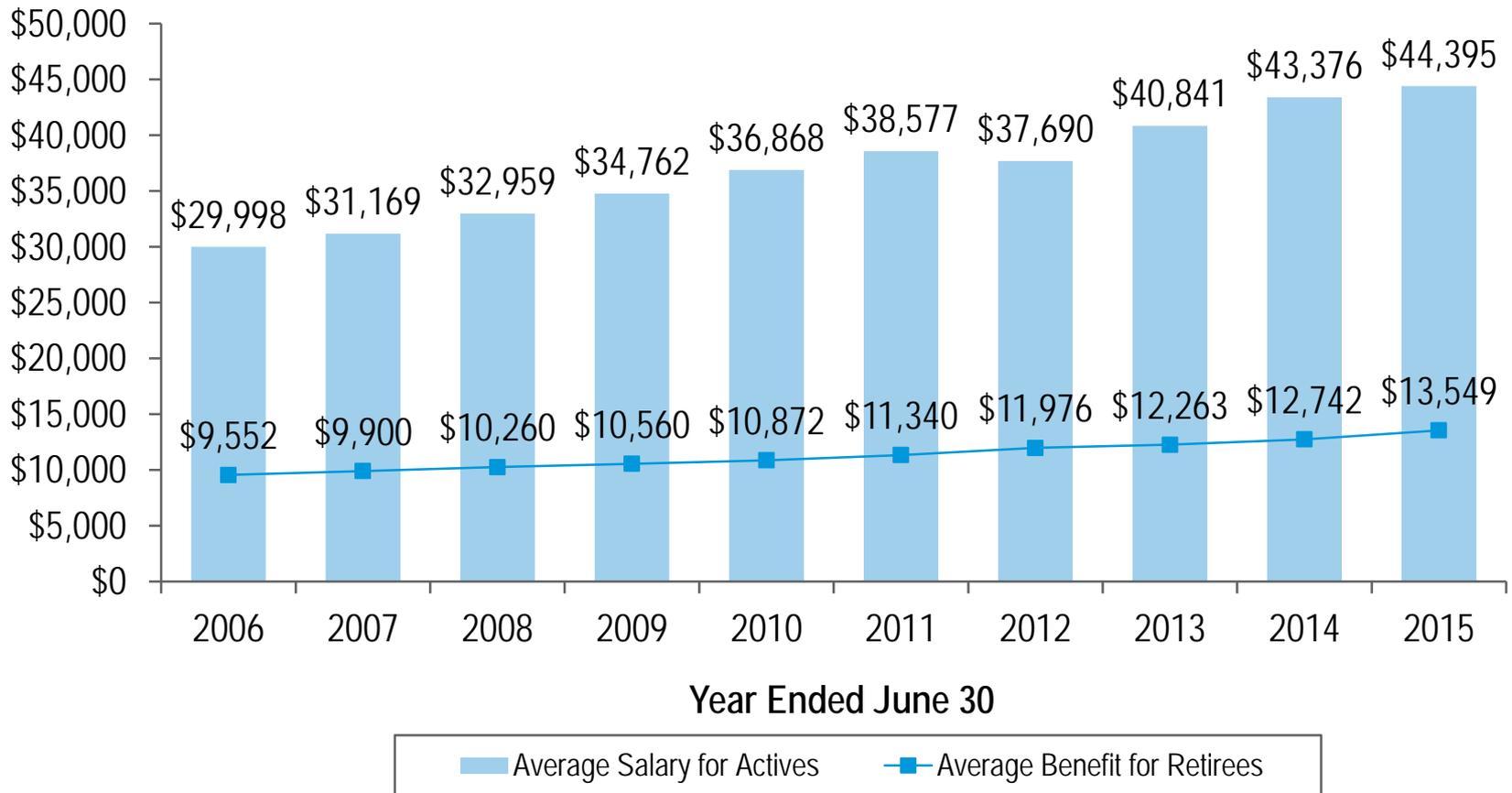
## AVERAGE AGE AND SERVICE OF ACTIVE MEMBERS



The average service has decreased slightly as new participants with lower service replace retiring participants. For 2015, the relationship between the average age and service implies an entry age of 36.8 years ( $46.5 - 9.7$ ).

# Main System

## AVERAGE SALARY AND AVERAGE ANNUAL BENEFIT



**Average Salary for Actives increased 2.3% from \$43,376 to \$44,395. Average Benefit for Retired Members, excluding beneficiaries, increased 6.3% from \$12,742 to \$13,549.**

# Market Value of Assets (\$ in billions)

## *PERS and HPRS*

Fiscal Year Ending June 30, 2015	
Beginning of Year	\$2.347
Contributions	
• Employer	0.073
• Member	0.069
• Service Purchases	0.007
<b>Total Contributions</b>	<b>0.149</b>
Benefits, Expenses and Refunds	(0.142)
Investment Income (net)	0.084
<b>End of Year</b>	<b>\$2.438</b>
Rate of Return	3.57%

# Actuarial Value of Assets (\$ in billions)

## PERS and HPRS

1. Market Value of Assets as of June 30, 2014	\$2.347
2. Contributions, Interest, Dividends, Benefits and Expenses	0.045
3. Preliminary Market Value as of June 30, 2015: #1 + #2 =	2.392
4. Actual Market Value as of June 30, 2015	\$2.438
5. Excess/(Shortfall) Return for Year Ended June 30, 2015	0.046

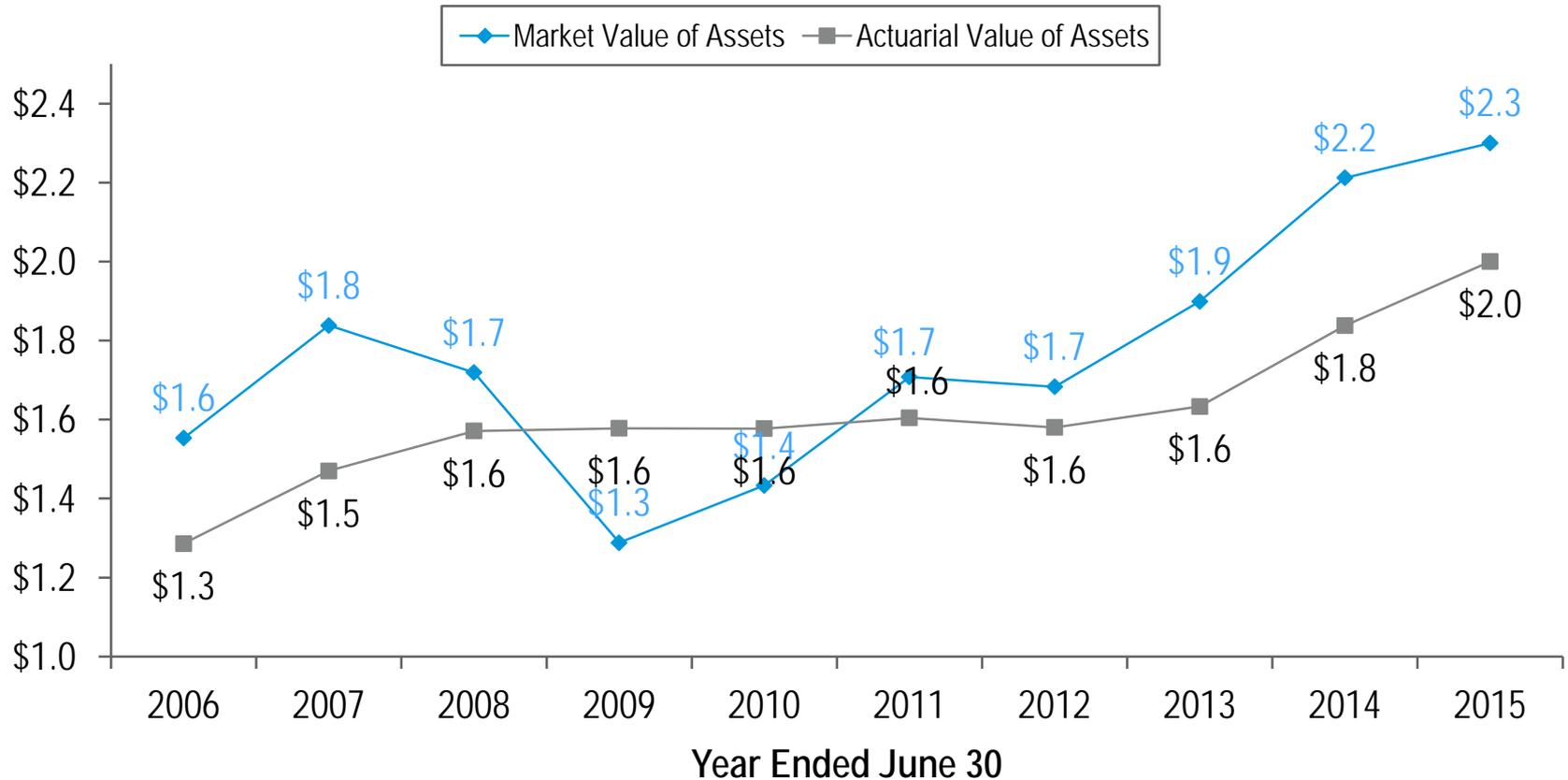
Excess/(Shortfall) Returns for 5 years:

Year	Initial Amount	Deferral %	Unrecognized Amount
2015	\$0.046	80%	\$0.037
2014	0.293	60%	0.176
2013	0.201	40%	0.080
2012	(0.040)	20%	(0.008)
2011	0.289	0%	0.000
<b>6. Total</b>			<b>\$0.285</b>

7. Actuarial Value of Assets as of June 30, 2015: #4 - #6 =	\$2.153
8. Actuarial Value of Assets as a % of Market Value of Assets	88.3%

# Main System

## MARKET AND ACTUARIAL VALUE OF ASSETS (\$ In Billions)



**In the year ended June 30, 2015, the Plan experienced a market value investment loss of \$98.2 million and an actuarial value investment gain of \$37.1 million.**

# Market Value of Assets

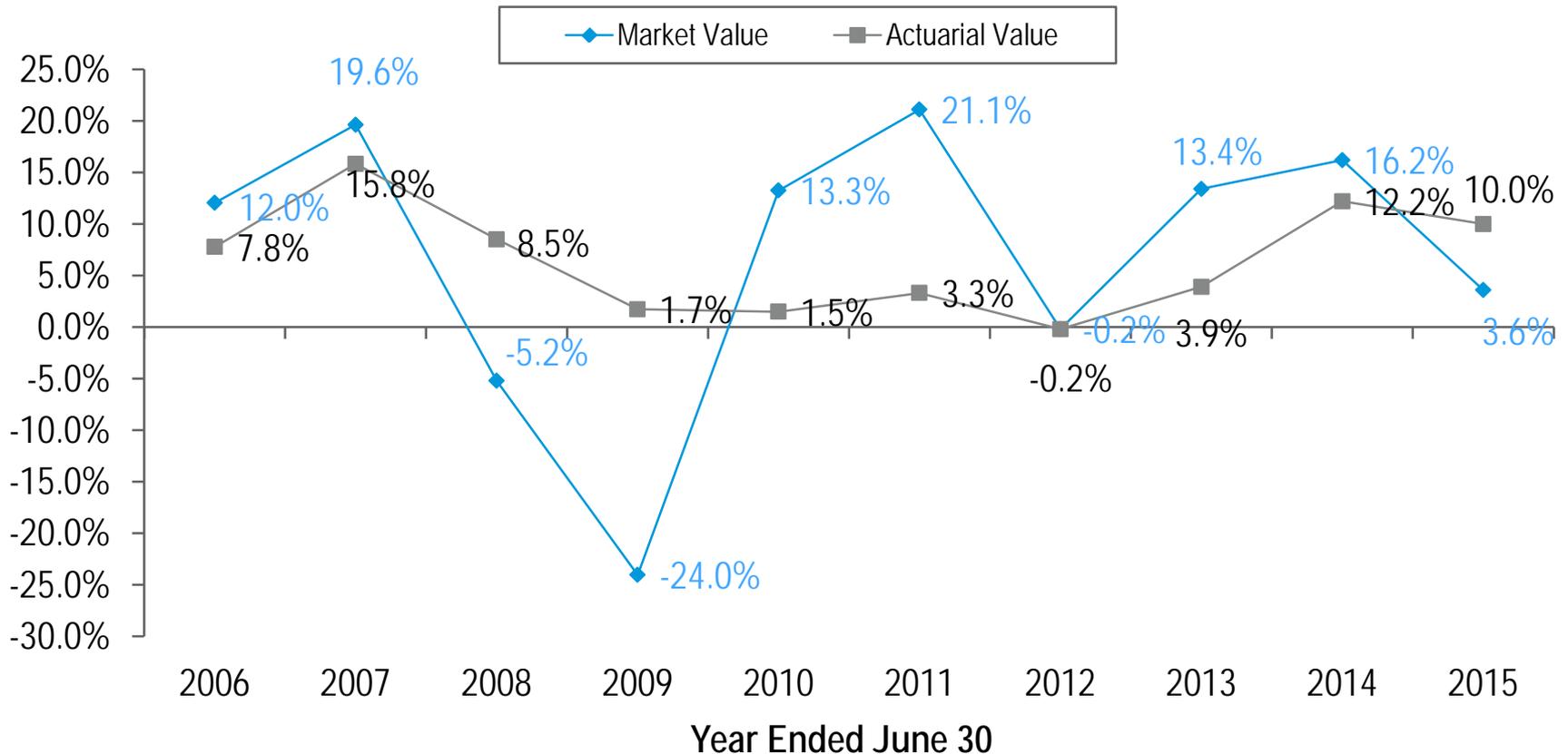
## *PERS and HPRS – Historical Returns*

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Year Ending June 30	Market Value	Actuarial Value
2006	12.04%	7.79%
2007	19.63	15.84
2008	(5.21)	8.51
2009	(24.05)	1.72
2010	13.25	1.48
2011	21.09	3.31
2012	(0.20)	(0.15)
2013	13.41	3.93
2014	16.15	12.20
2015	3.57	10.01
10-Year Average	6.06%	6.35%

# PERS and HPRS

## MARKET AND ACTUARIAL RATES OF RETURN



For 2015, the market value return was 3.6% and the actuarial value return was 10.0%. The assumed rate of return for all years shown was 8.0%. The average annual return over the past 10 years is 6.1% on a market value basis.

# Market Value of Assets (\$ in millions)

## PERS

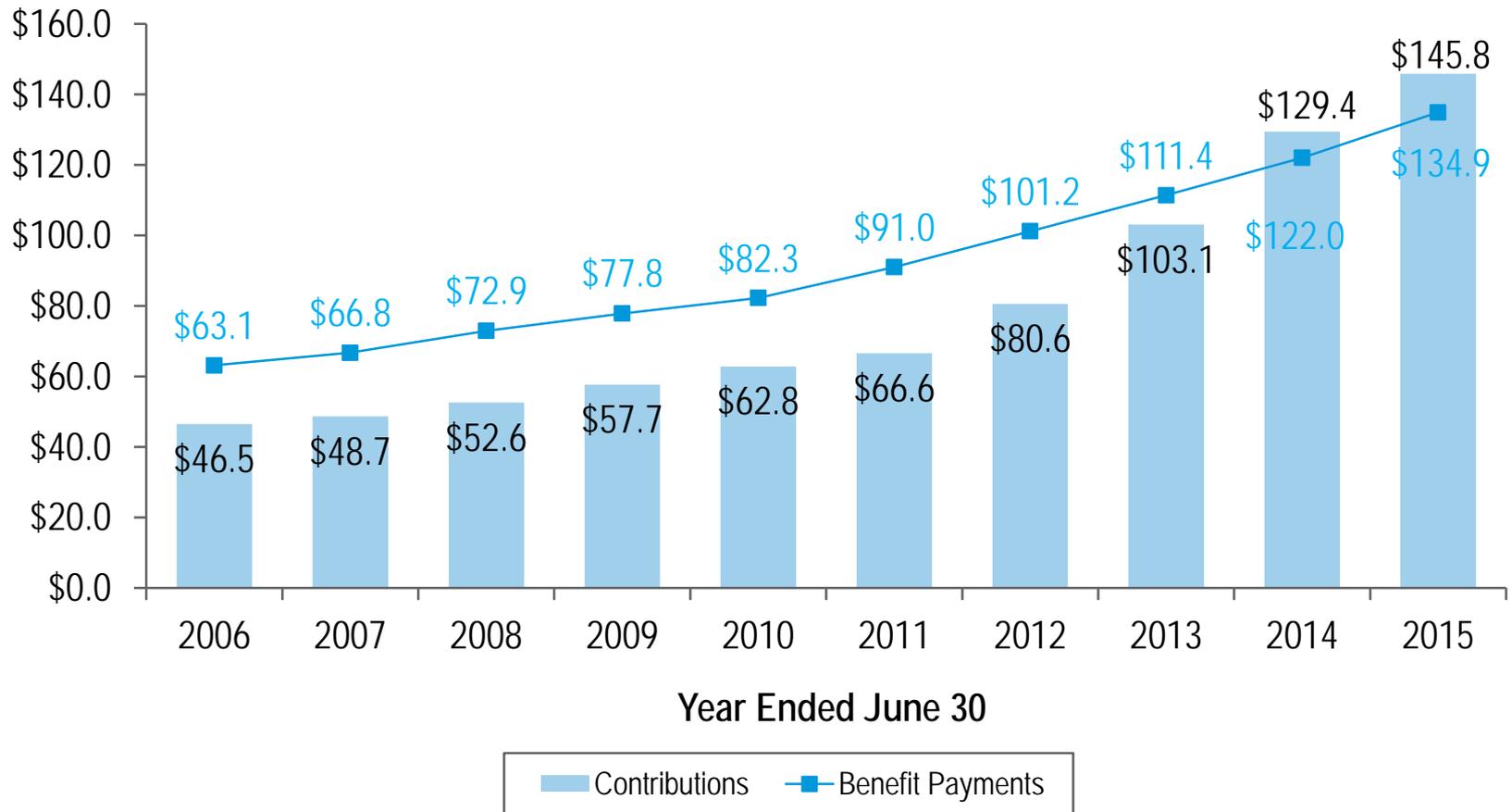
### FISCAL YEAR ENDING JUNE 30, 2015

	Main	Judges	Law Enforcement		Total PERS
			With Prior Service <sup>1</sup>	Without Prior Service	
Beginning of Year	\$2,211.9	\$42.7	\$24.8	\$2.2	\$2,281.6
Contributions	140.8	1.9	2.6	0.5	145.8
Benefits, Refunds and Expenses	(133.8)	(2.0)	(1.4)	( 0.0)	(137.2)
Investment Income (net)	77.2	1.5	2.7	0.1	81.5
End of Year	\$2,296.1	\$44.1	\$28.7	\$2.8	\$2,371.7
Rate of Return	3.56%	3.59%	3.70%	3.54%	3.57%

<sup>1</sup> Includes former National Guard members

# PERS

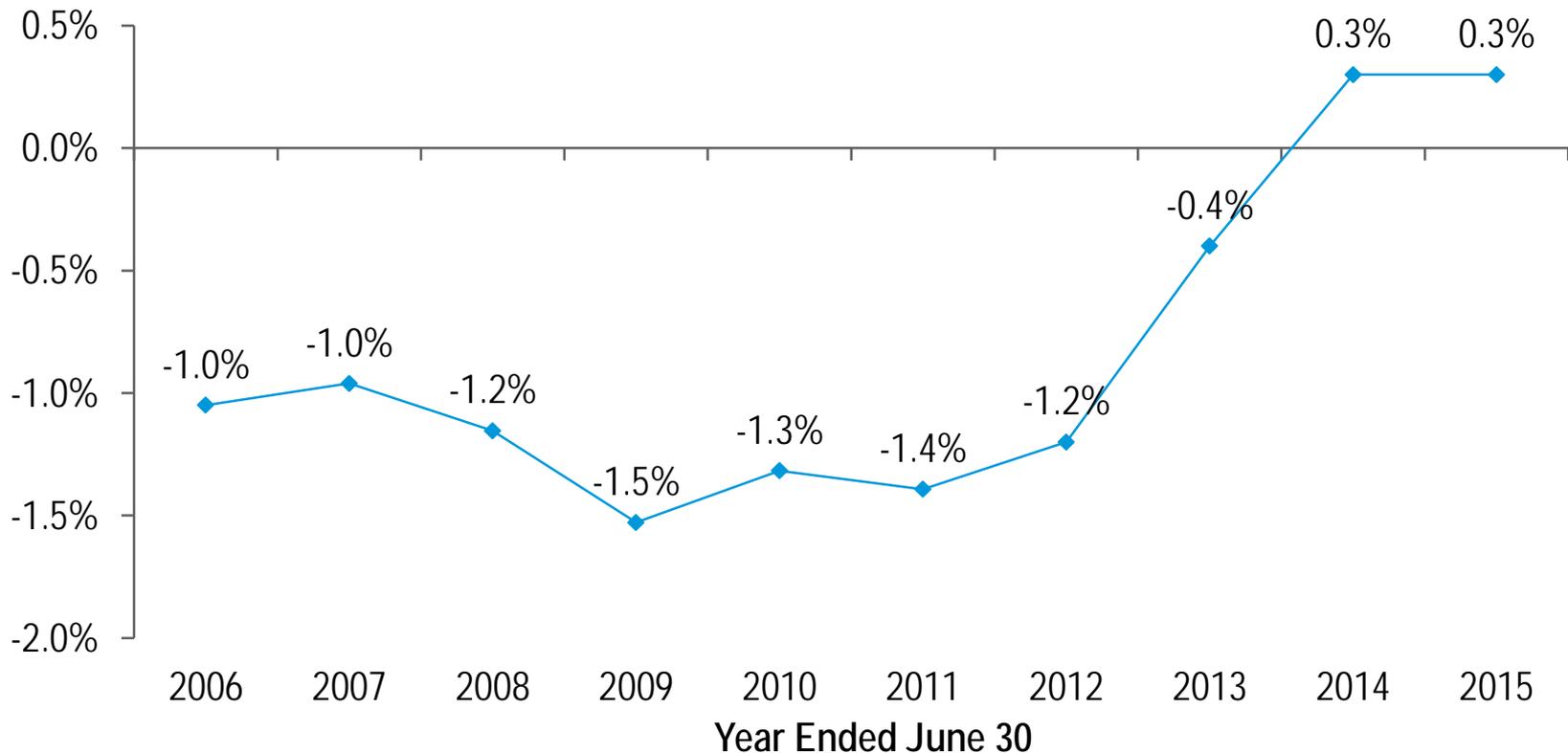
## CONTRIBUTIONS VS BENEFIT PAYMENTS (\$ In Millions)



**Benefit Payments have generally exceeded Contributions. However for 2014 and 2015, contributions exceeded benefit payments.**

# PERS

## EXTERNAL CASH FLOW AS OF PERCENT OF MARKET VALUE



The net cash flow each year is very small, allowing a large portion of the market value of assets to be invested.

# July 1, 2015 Valuation Results (\$ in millions)

## PERS

	Law Enforcement				Total PERS
	Main	Judges	With Prior Service <sup>1</sup>	Without Prior Service	
<b>Actuarial Accrued Liability (AAL)</b>					
• Active Members	\$1,579	\$18	\$16	\$2	\$1,615
• Inactive Members	169	<1	3	<1	174
• Retirees and Beneficiaries	1,228	20	15	<1	1,263
<b>Total AAL</b>	<b>\$2,976</b>	<b>\$39</b>	<b>\$34</b>	<b>\$3</b>	<b>\$3,052</b>
<i>Prior year Total AAL</i>	<b>2,867</b>	<b>39</b>	<b>31</b>	<b>2</b>	<b>2,939</b>
Actuarial Value of Assets	\$2,027	\$39	\$25	\$2	\$2,094
<i>Prior year Actuarial Value of Assets</i>	1,838	35	21	2	1,896
Unfunded Accrued Liability (UAAL)	\$949	<\$1	\$9	<\$1	\$958
<i>Prior Year UAAL</i>	1,029	4	10	<\$1	1,043
Funded Ratio	68.1%	99.0%	73.8%	92.2%	68.6%
<i>Prior Year Funded Ratio</i>	64.1%	90.9%	66.6%	80.9%	64.5%
<i>Funded Ratio on Market Value</i>	77.2%	112.1%	83.6%	104.4%	77.7%
<i>Prior Year Funded Ratio on Market Value</i>	77.2%	109.4%	80.2%	97.4%	77.6%

<sup>1</sup> Includes former National Guard members

# July 1, 2015 Actuarially Recommended Contribution

## PERS (Shown as a % of Payroll)

	Law Enforcement			
	Main	Judges	With Prior Service <sup>1</sup>	Without Prior Service
<b>Normal Cost Rate</b>	12.31%	18.18%	11.85%	13.05%
<b>Member Rate</b>	7.00%	8.00%	5.59% <sup>2</sup>	5.50%
<b>Employer Normal Cost Rate</b>	<b>5.31%</b>	<b>10.18%</b>	<b>6.26%</b>	<b>7.55%</b>
<i>Prior Year Employer Normal Cost Rate</i>	<b>3.36%</b>	<b>11.00%</b>	<b>5.08%</b>	<b>6.38%</b>
<b>20 Year Amortization of UAAL + Expenses</b>	6.90%	0.57%	3.51%	0.48%
<i>Prior Year Amortization of UAAL</i>	7.70%	3.80%	4.34%	1.04%
<b>Actuarially Recommended Contribution</b>	12.21%	10.75%	9.78%	8.03%
<i>Prior Year Actuarially Recommended Contribution</i>	11.06%	14.80%	9.42%	7.42%
<b>Employer Contribution Rate</b>	7.12%	17.52%	9.88% <sup>3</sup>	7.93%
<b>Contribution Sufficiency/(Deficiency)</b>	(5.09%)	6.77%	0.10%	(0.10%)
<i>Prior Year Contribution Sufficiency/(Deficiency)</i>	(3.94%)	2.72%	0.27%	0.51%
<b>Contribution Sufficiency/(Deficiency) on Market Value</b>	(3.21%)	11.93%	1.35%	0.40%
<i>Prior Year Contribution Sufficiency/(Deficiency) on Market Value</i>	(1.18%)	10.25%	2.01%	1.23%

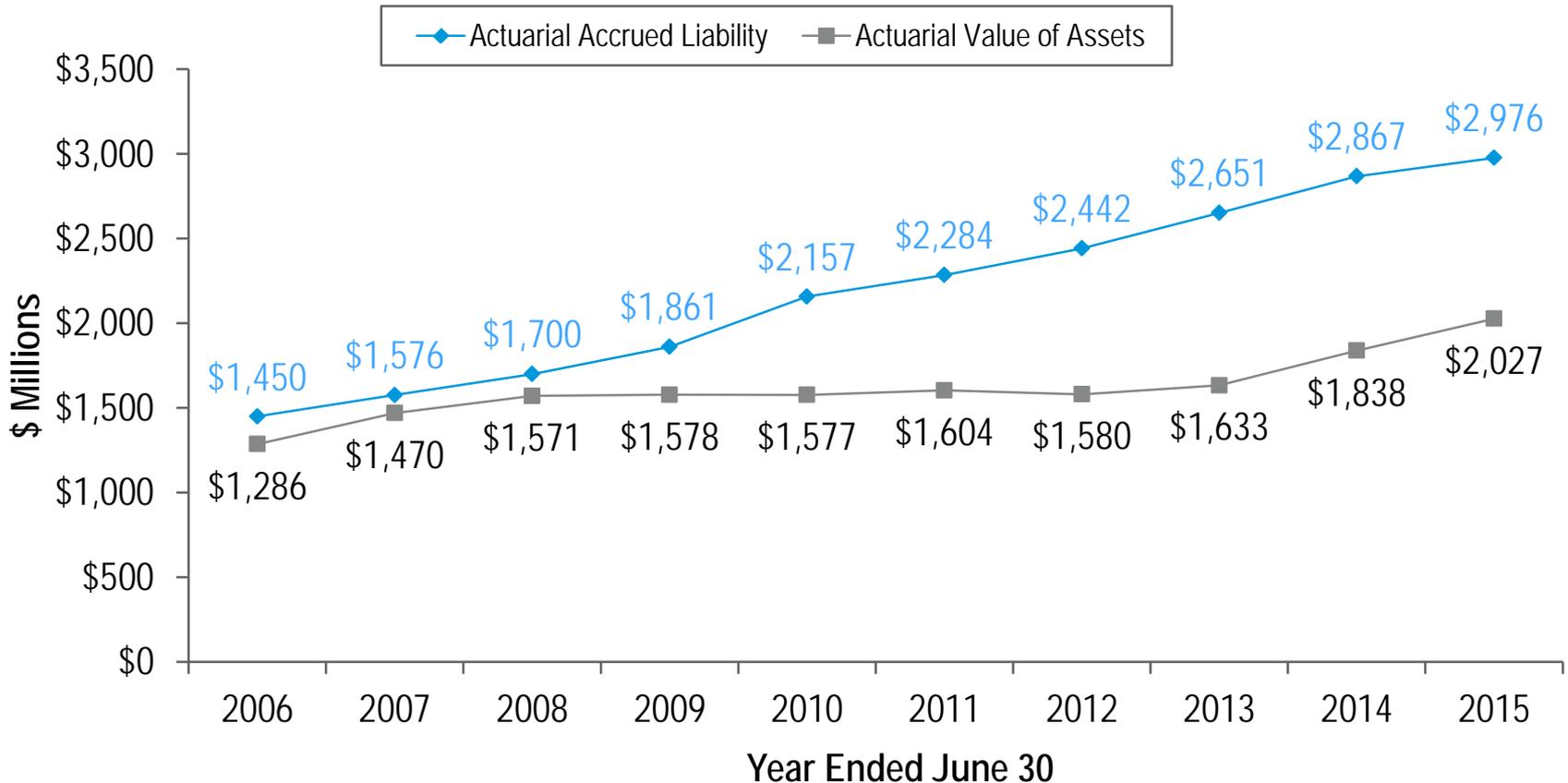
<sup>1</sup> Includes former National Guard members

<sup>2</sup> 6% for BCI and NG, 5.50% for others

<sup>3</sup> 10.31% for BCI, 9.81% for others

# Main System

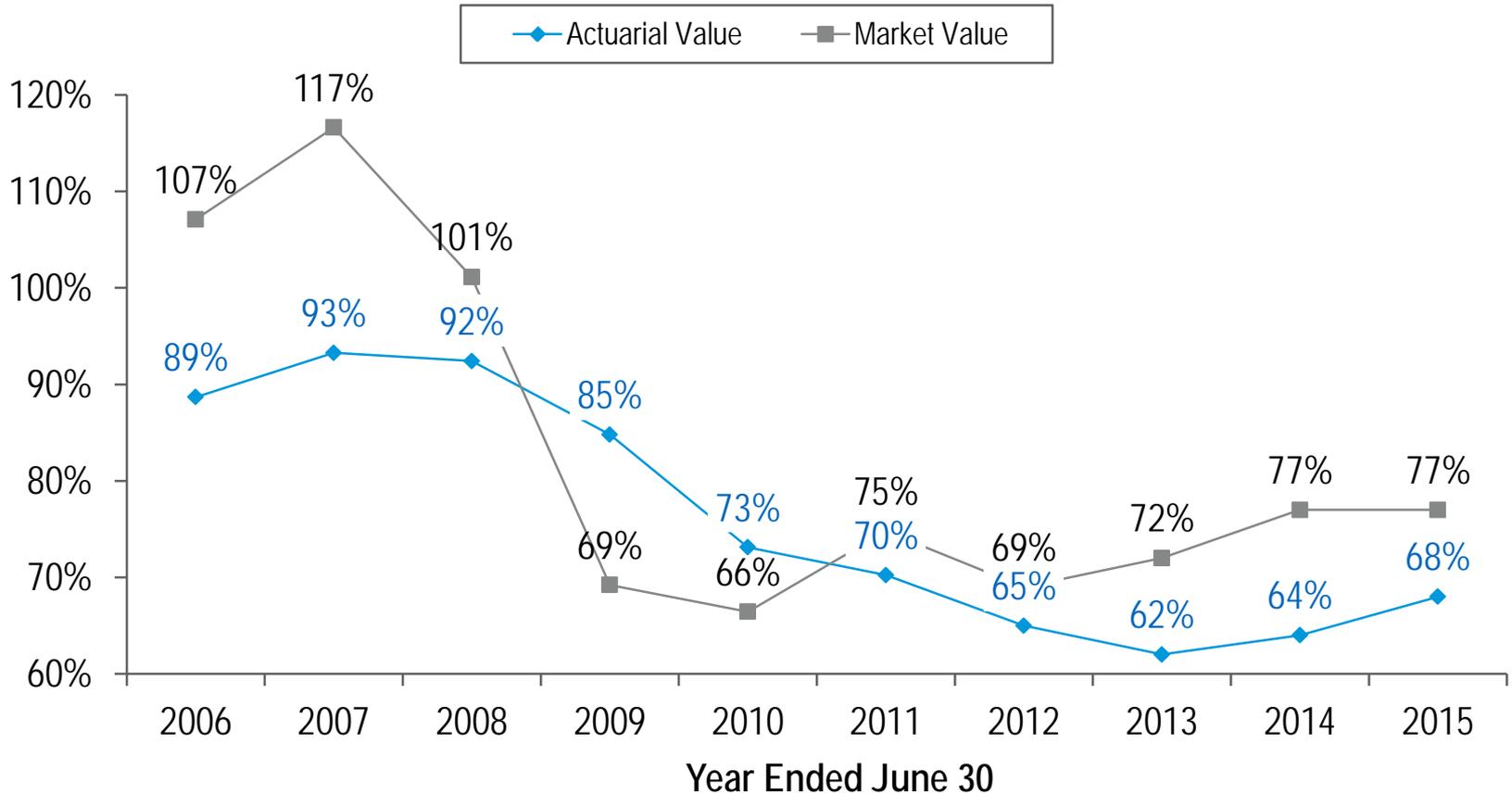
## ACTUARIAL VALUE OF ASSETS AND ACTUARIAL ACCRUED LIABILITY



The Unfunded Actuarial Accrued Liability is the difference between the blue line and the grey line. The UAAL is \$949 million as of July 1, 2015.

# Main System

## FUNDED RATIOS



Although there was a market value investment loss in 2015, the funded ratio based on actuarial value has increased due to the Plan's asset smoothing method.

# Membership

## Highway Patrol

	2015	2014	Change
<b>Actives</b>			
• Number	161	156	3.2%
• Payroll	\$10.8 million	\$10.1 million	6.9%
• Average Age	35.3 years	37.3 years	-2.0 years
• Average Service	9.2 years	11.2 years	-2.0 years
<b>Retirees and Beneficiaries</b>			
• Number	124	117	6.0%
• Total Annual Benefits	\$4.7 million	\$3.8 million	23.7%
• Average Monthly Benefit	\$3,157	\$2,723	15.9%

# Membership

## Job Service

	2015	2014	Change
<b>Actives</b>			
• Number	11	13	-15.4%
• Projected payroll	\$0.7 million	\$0.8 million	-12.5%
• Average Age	61.2 years	60.4 years	0.8 years
• Average Service	38.9 years	37.6 years	1.3 years
<b>Retirees and Beneficiaries</b>			
<b>Non-Travelers</b>			
• Number	142	140	1.4%
• Total Monthly Benefits	\$335,196	\$330,262	1.5%
• Average Monthly Benefit	\$2,361	\$2,359	0.0%
<b>Travelers</b>			
• Number	64	73	-12.3%
• Total Monthly Benefits	\$49,259	\$55,227	-10.8%
• Average Monthly Benefit	\$770	\$757	1.7%

# Membership

## *Retiree Health Insurance Credit Fund*

	2015 <sup>1</sup>	2014 <sup>2</sup>	Change
<b>Actives</b>			
• Number	23,237	22,642	2.3%
• Payroll	\$1.052.7 million	\$1,001.2 million	5.1%
• Average Age	46.3 years	46.6 years	-0.3 years
• Average Service	9.7 years	10.1 years	-0.4 years
<b>Retirees and Beneficiaries</b>			
• Number	5,212	4,829	7.9%
• Total Monthly Benefits	\$0.6 million	\$0.6 million	0.0%
• Average Monthly Benefit	\$121	\$119	1.7%

<sup>1</sup> Includes 231 active participants and 11 retirees and beneficiaries from the Defined Contribution Plan.

<sup>2</sup> Includes 224 active participants and 8 retirees and beneficiaries from the Defined Contribution Plan.

# Assets

## *Highway Patrol, Job Service, and RHIC*

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### ➤ Highway Patrol

- The market value of assets increased from \$65.7 million as of June 30, 2014 to \$66.7 million as of June 30, 2015
- The actuarial value of assets—which smooths investment gains and losses over five years—increased from \$54.6 million as of June 30, 2014 to \$58.9 million as of June 30, 2015
  - Investment return of 10.5%, net of investment expenses

### ➤ Job Service

- The market value of assets decreased from \$97.7 million as of June 30, 2014 to \$96.3 million as of June 30, 2015
- The actuarial value of assets increased from \$78.2 million as of June 30, 2014 to \$79.2 million as of June 30, 2015
  - Investment return of 7.5%, net of investment expenses

### ➤ Retirement Health Insurance Credit Fund (RHIC)

- The market value of assets increased from \$92.0 million as of June 30, 2014 to \$99.1 million as of June 30, 2015
- The actuarial value of assets increased from \$77.9 million as of June 30, 2014 to \$89.4 million as of June 30, 2015
  - Investment return of 8.9%, net of investment expenses

# July 1, 2015 Valuation Results (\$ in millions)

## Highway Patrol, Job Services, and RHIC

	Highway Patrol	Job Services	RHIC
Actuarial Accrued Liability			
• Active Members	\$25.988	\$7.186	\$62.633
• Inactive Members	3.816	0.011	0.000
• Retirees and Beneficiaries	50.308	56.245	66.307
<b>Total AAL</b>	<b>\$80.112</b>	<b>\$63.442</b>	<b>\$128.940</b>
<i>Prior Year AAL</i>	<b>75.464</b>	<b>65.479</b>	<b>116.633</b>
Actuarial Value of Assets	\$58.876	\$79.197	\$89.434
<i>Prior Year Actuarial Value of Assets</i>	54.563	78.157	77.925
Unfunded/(Overfunded) AAL	\$21.237	\$(15.755)	\$39.506
<i>Prior Year UAAL</i>	20.901	(12.678)	38.708
Funded Ratio	73.5%	124.5%	69.4%
<i>Prior Year Funded Ratio</i>	72.3%	119.4%	66.8%
Funded Ratio on Market Value	83.3%	151.3%	76.9%
<i>Prior Year Funded Ratio on Market Value</i>	87.0%	149.2%	78.9%

# July 1, 2015 Actuarially Recommended Contribution

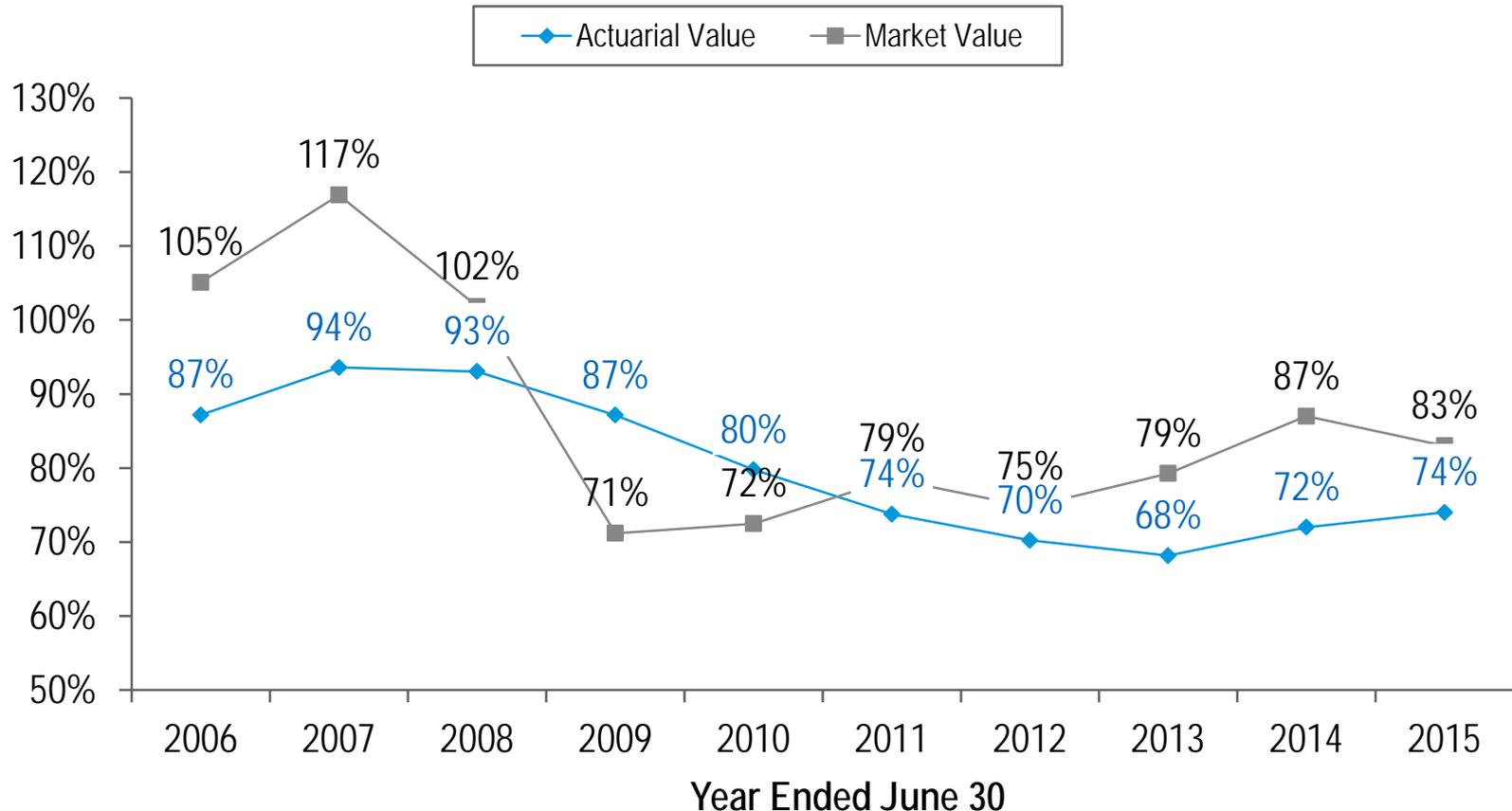
## Highway Patrol, Job Services, and RHIC (Shown as a % of Payroll)

	Highway Patrol	Job Services	RHIC*
Normal Cost Rate	20.66%	0.00%	0.37%
Member Rate	13.30%	0.00%	0.00%
<b>Employer Normal Cost Rate</b>	<b>7.36%</b>	<b>N/A</b>	<b>0.37%</b>
<i>Prior Year Employer Normal Cost Rate</i>	<i>7.14%</i>	<i>N/A</i>	<i>0.32%</i>
Period of Amortization	20 years	N/A	15 years
<i>Prior Year Period of Amortization</i>	<i>20 years</i>	<i>N/A</i>	<i>16 years</i>
Amortization of UAAL + Expenses	14.06%	N/A	0.35%
<i>Prior Year Amortization of UAAL + Expenses</i>	<i>7.14%</i>	<i>N/A</i>	<i>0.32%</i>
<b>Actuarially Recommended Contribution</b>	<b>21.42%</b>	<b>N/A</b>	<b>0.72%</b>
<i>Prior Year Actuarially Recommended Contribution</i>	<i>21.70%</i>	<i>N/A</i>	<i>0.64%</i>
Employer Contribution Rate	19.70%	N/A	1.14%
<i>Prior Year Employer Rate</i>	<i>19.70%</i>	<i>N/A</i>	<i>0.32%</i>
<b>Contribution Sufficiency/(Deficiency)</b>	<b>(1.72)%</b>	<b>N/A</b>	<b>0.42%</b>
<i>Prior Year Contribution Sufficiency/(Deficiency)</i>	<i>(2.00)%</i>	<i>N/A</i>	<i>0.50%</i>
Contribution Sufficiency/(Deficiency) on Market Value	3.34%	N/A	0.50%
<i>Prior Year Contribution Sufficiency/(Deficiency) on Market Value</i>	<i>5.64%</i>	<i>N/A</i>	<i>0.61%</i>

\* The amortization period is scheduled to end June 30, 2030

# Highway Patrolmen's Retirement System

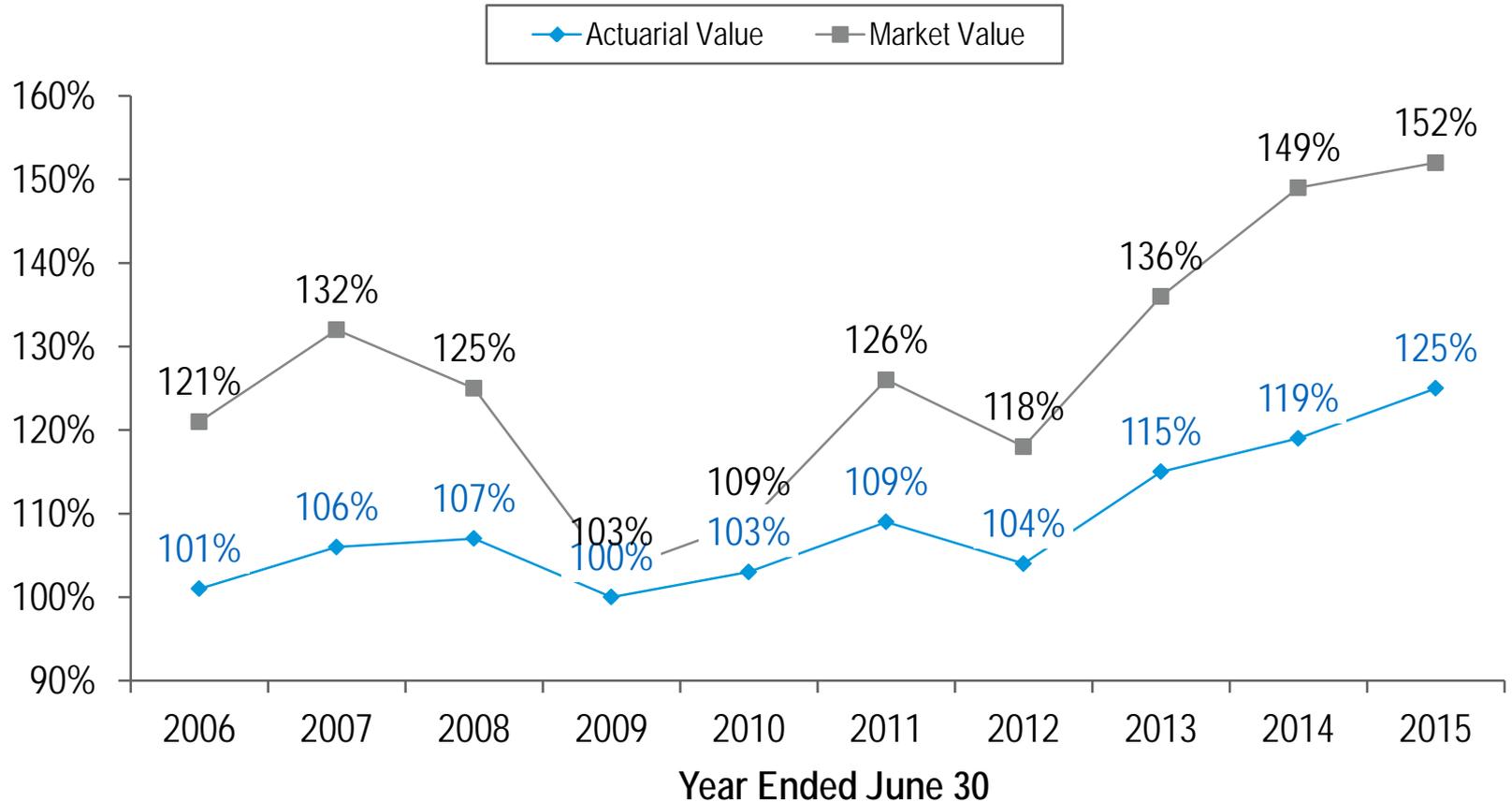
## FUNDED RATIOS



Although there was a market value investment loss in 2015, the funded ratio based on actuarial value has increased due to the Plan's asset smoothing method.

# Job Service Employees Retirement Plan

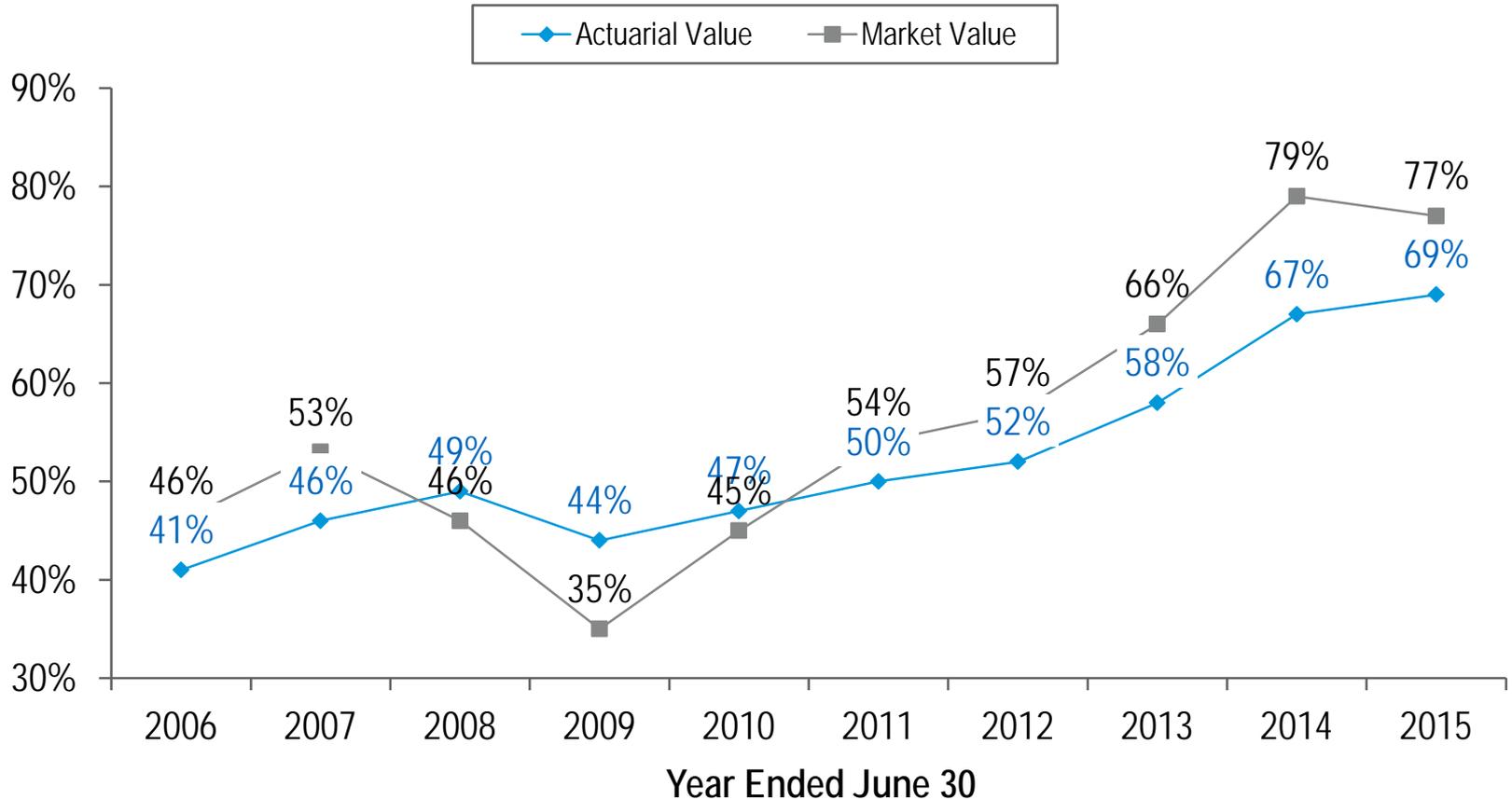
## FUNDED RATIOS USING PRESENT VALUE OF BENEFITS



Although there was a market value investment loss in 2015, the funded ratio based on actuarial value has increased due to the Plan's asset smoothing method.

# Retiree Health Insurance Credit Fund

## FUNDED RATIOS



Although there was a market value investment loss in 2015, the funded ratio based on actuarial value has increased due to the Plan's asset smoothing method.

# Valuation Results

## *Comments*

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- Potential risks to the system
  - Investment Risk
  - Longevity Risk
  - Demographic Risk
  - Other Risks
- Board should consider projections, studies, etc., to help quantify these risks, and make changes to the system, if appropriate (Actuarial Standards Board Risk ASOP)
- The asset valuation and amortization methods should be reviewed to make sure that they are in line with the Board's funding objectives
  - Consider change in asset valuation method so that AVA equals MVA when actual returns equal assumed return.
- Contributions are being made in accordance with the funding policy but some Plans remain less than 100% funded. A change in the policy could accelerate an improvement of the funded ratios.

## June 30, 2015 Valuation Results - GASB 67 (\$ in millions)

- Liability to be reported under new accounting standards
- Not for funding purposes
- Blended discount rate based on projected benefits and assets (8% for 2015/2016 fiscal year)

	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
Main System	\$2,976.1	\$2,296.1	\$680.0
Judges System	39.0	44.1	(5.1)
Law Enforcement with Prior Service System <sup>1</sup>	34.3	28.7	5.6
Law Enforcement without Prior Service System	2.7	2.8	(0.1)
Total PERS	\$3,052.1	\$2,371.7	\$680.4
Highway Patrolmen's Retirement System	80.1	66.7	13.4
Job Service Employees Retirement Plan	63.4	96.3	(32.9)

<sup>1</sup> Includes former National Guard members

# June 30, 2015 GASB 68 Proportionate Share – Sample

	Covered Employee Payroll	Proportionate Share	Allocated NPL
State Employees	\$65,000,000	6.539235%	\$44,466,801
Subdivision 1	60,000,000	6.036217%	41,046,278
Subdivision 2	45,000,000	4.527163%	30,784,708
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
Grand Total	\$994,000,000	100.000000%	\$680,000,000

# Projections

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## ➤ Projections of estimated funded ratios for 30 years

- Investment return scenarios ranging from -16% to +16% for 2015/2016, and 8% thereafter
- Investment returns of level 7% and 9% (for all years)
- Benefits are projected based on the actuarial assumptions for 15 years and are projected to grow annually by 5% thereafter.

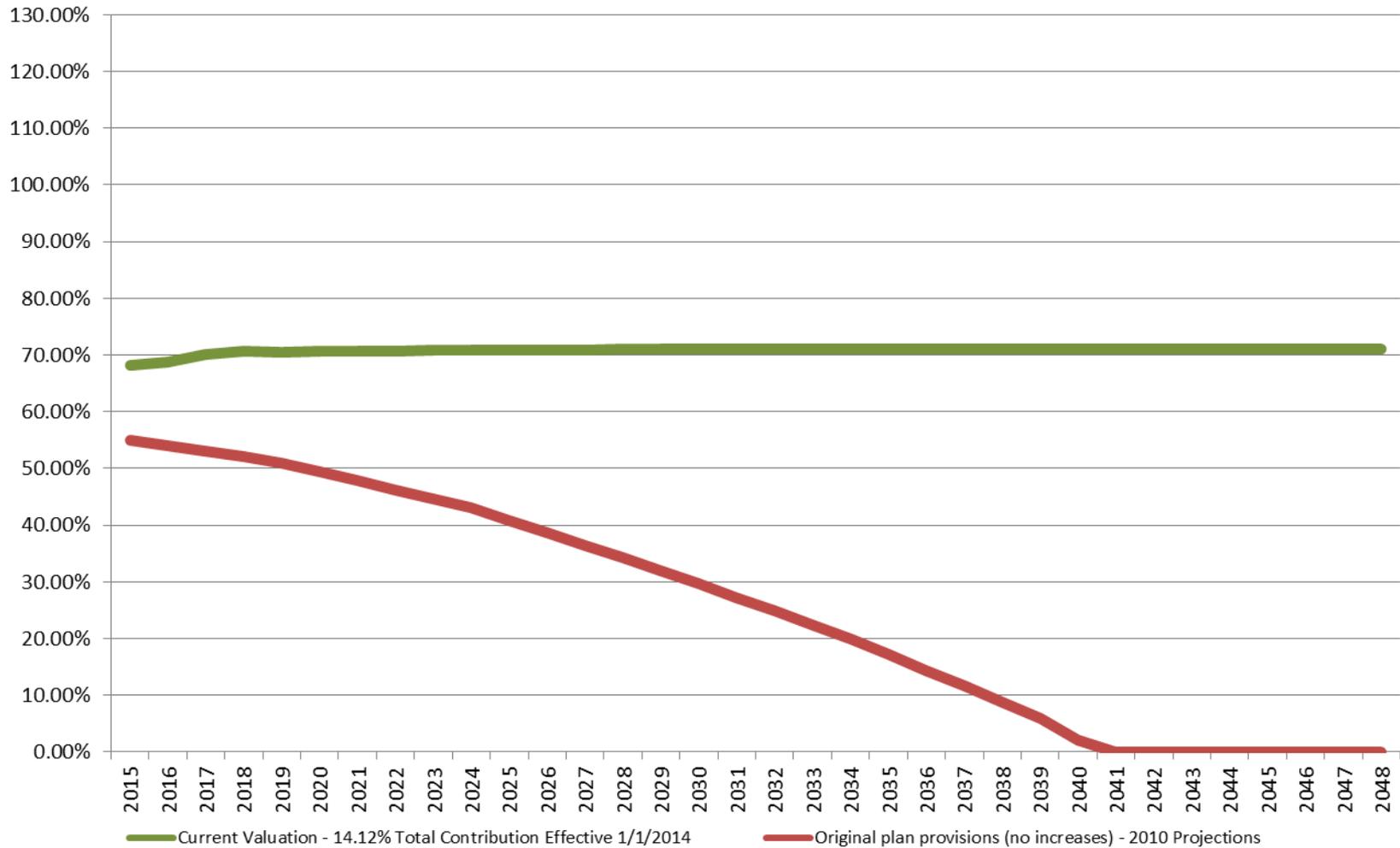
## ➤ Target Funded Ratios

- Investment return scenarios ranging from -16% to +16% for 2015/2016
- Assume Fund earns indicated return thereafter

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.

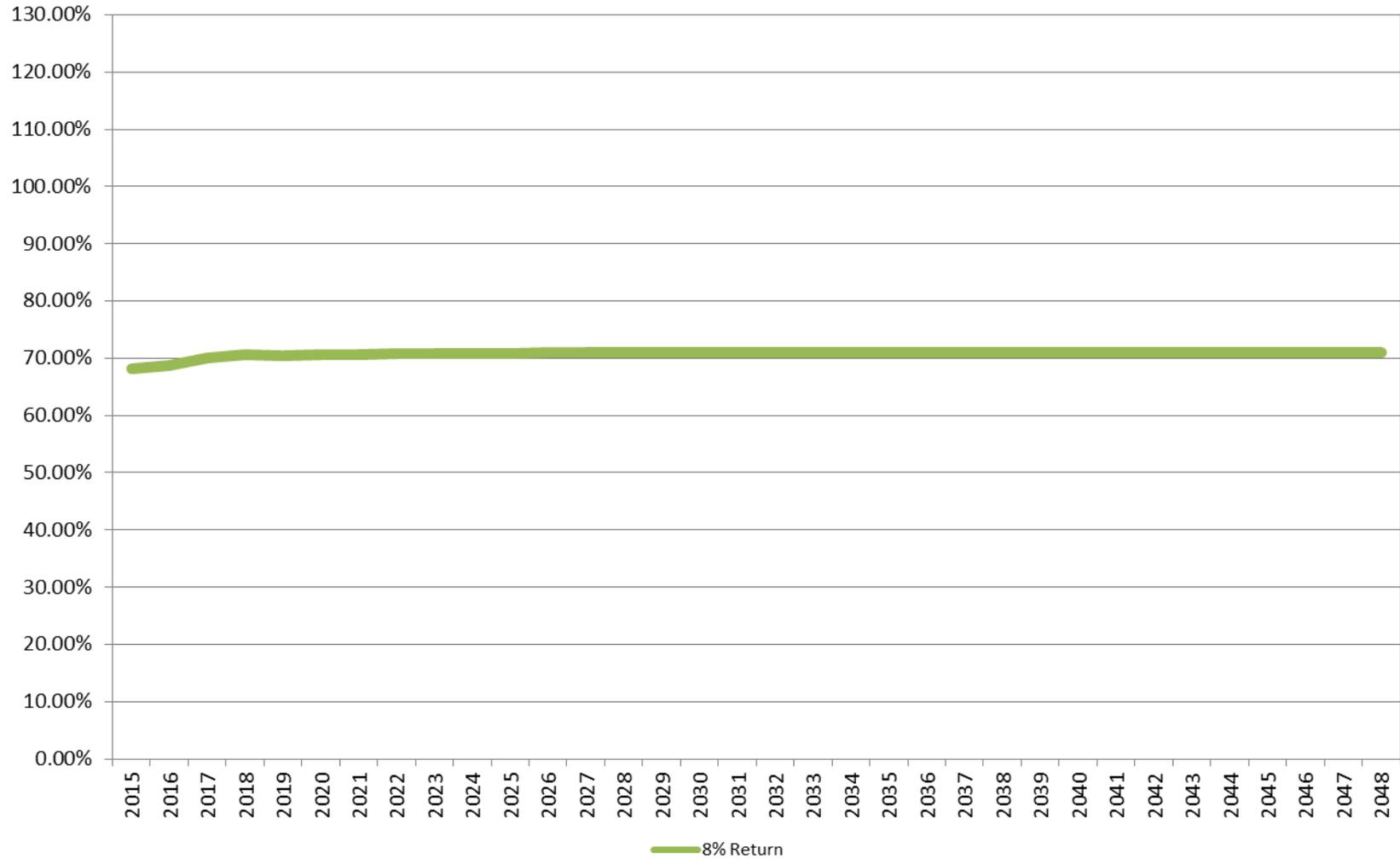
# Projected Funded Ratios (AVA Basis)

## Main System—Current Plan vs. Original Plan (2010 Projection)



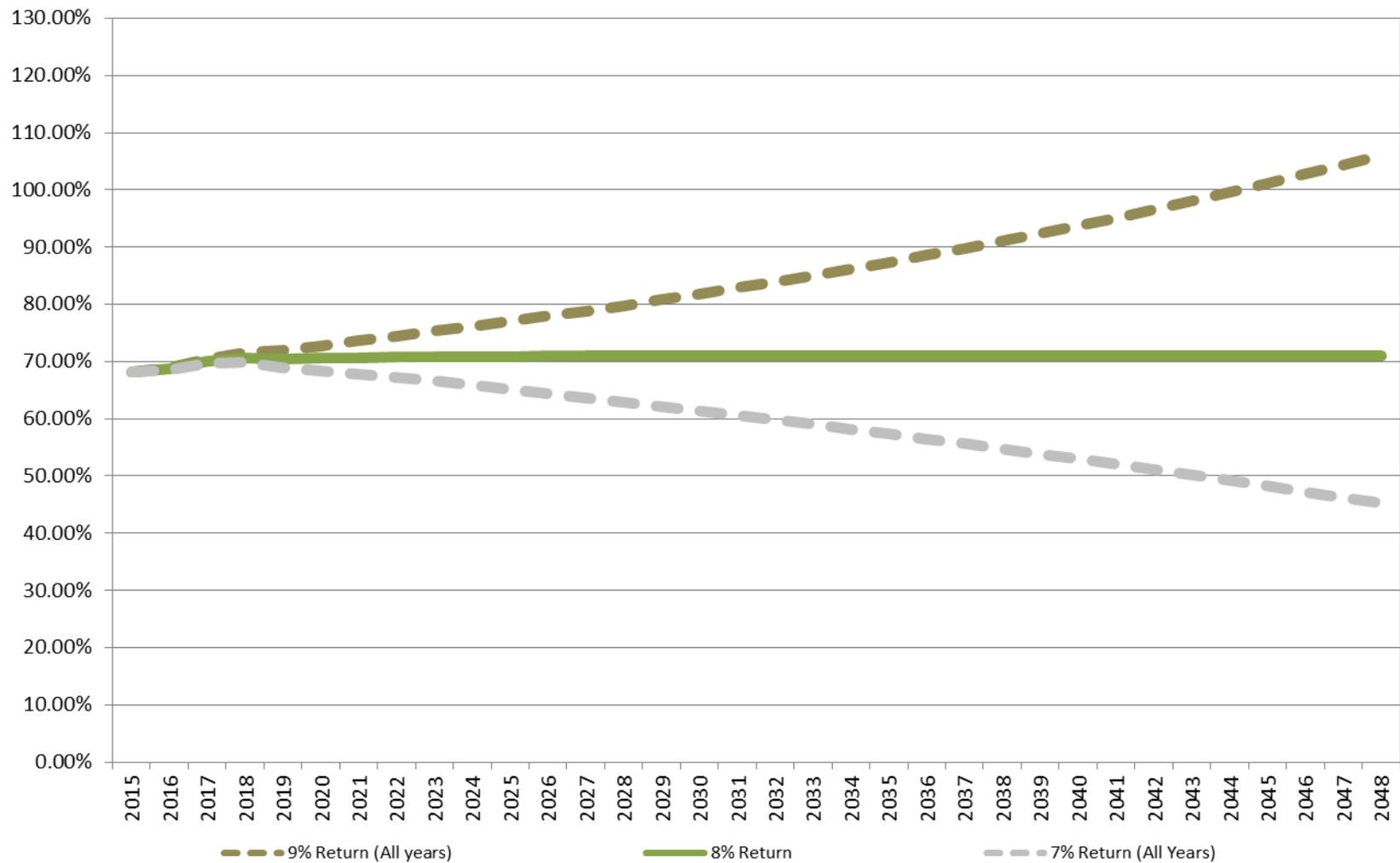
# Projected Funded Ratios (AVA Basis)

## Main System



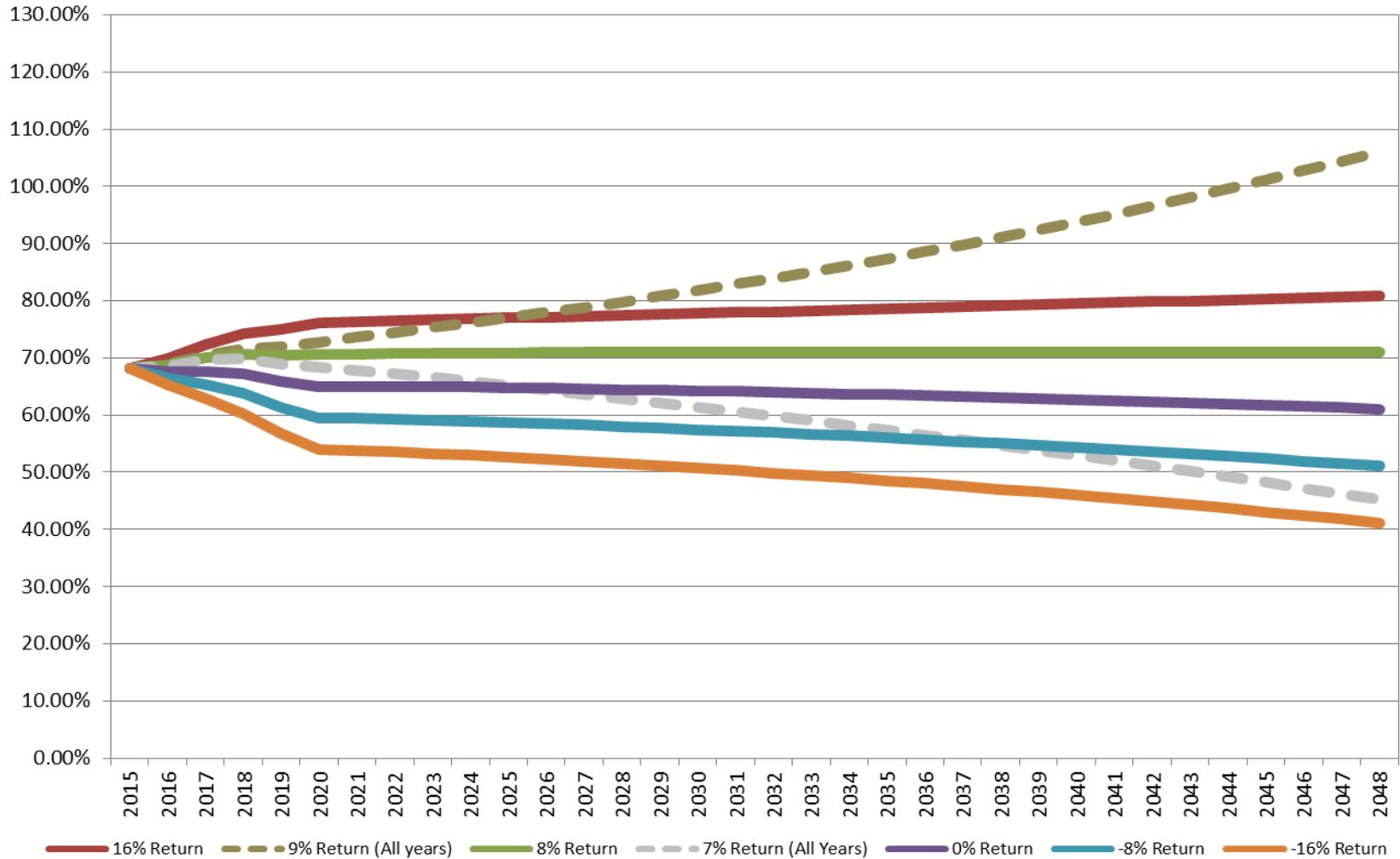
# Projected Funded Ratios (AVA Basis)

## Main System



# Projected Funded Ratios (AVA Basis)

*Main System – Range of Returns for 2015/2016, 8% thereafter*



# Target Funded Ratios

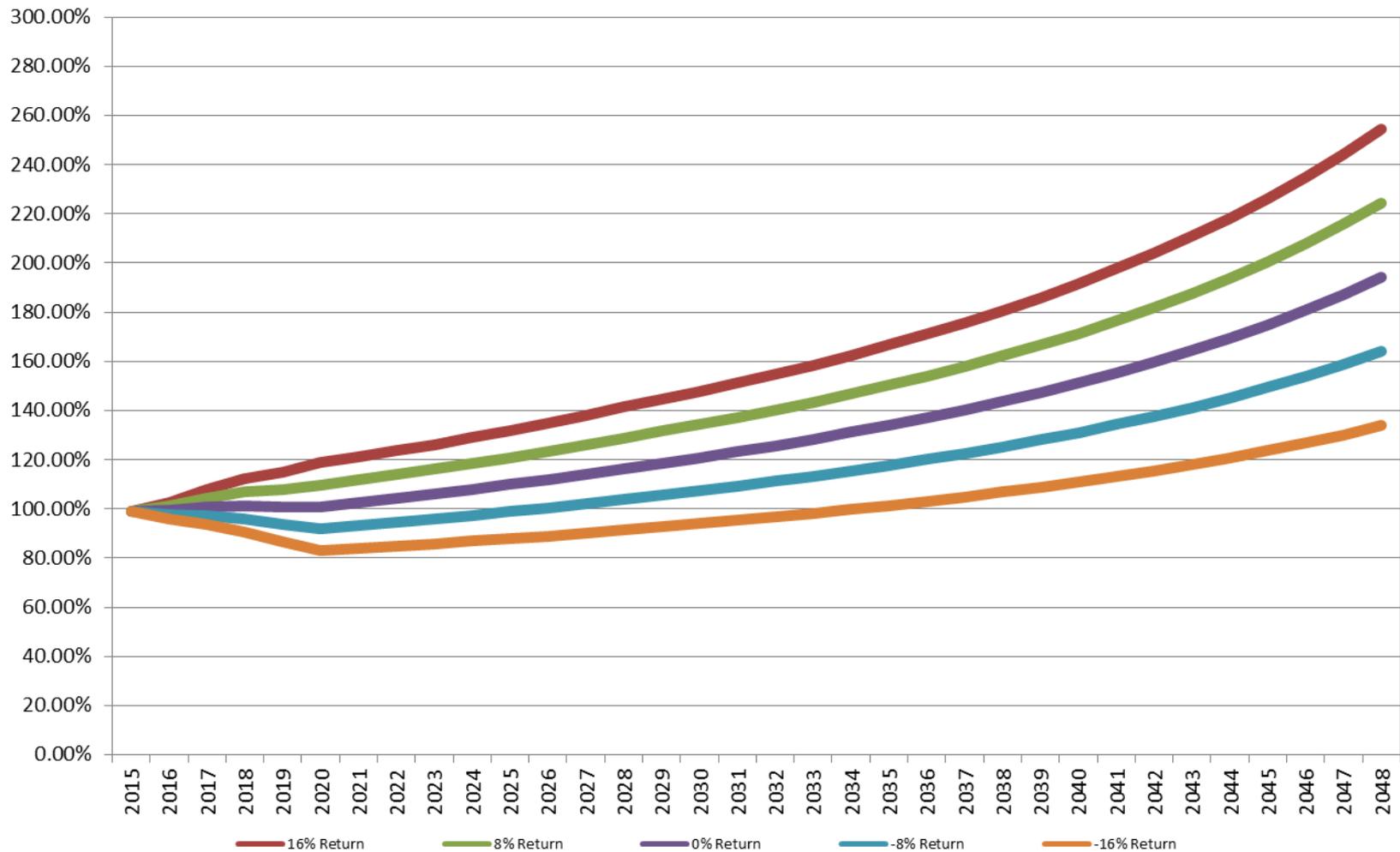
## Main System

**RATE OF RETURN REQUIRED FOR ALL YEARS  
BEGINNING ON AND AFTER 2016/2017 TO ACHIEVE TARGET IN 2035**

Target Funded Ratio	Assumed 2015/2016 Return				
	16.0%	8.0%	0.0%	-8.0%	-16.0%
70%	7.4%	7.9%	8.5%	9.1%	9.8%
80%	8.1%	8.6%	9.2%	9.8%	10.5%
90%	8.7%	9.2%	9.8%	10.4%	11.1%
100%	9.3%	9.8%	10.4%	11.0%	11.7%

# Projected Funded Ratios (AVA Basis)

*Judges – Range of Returns for 2015/2016, 8% thereafter*



# Target Funded Ratios

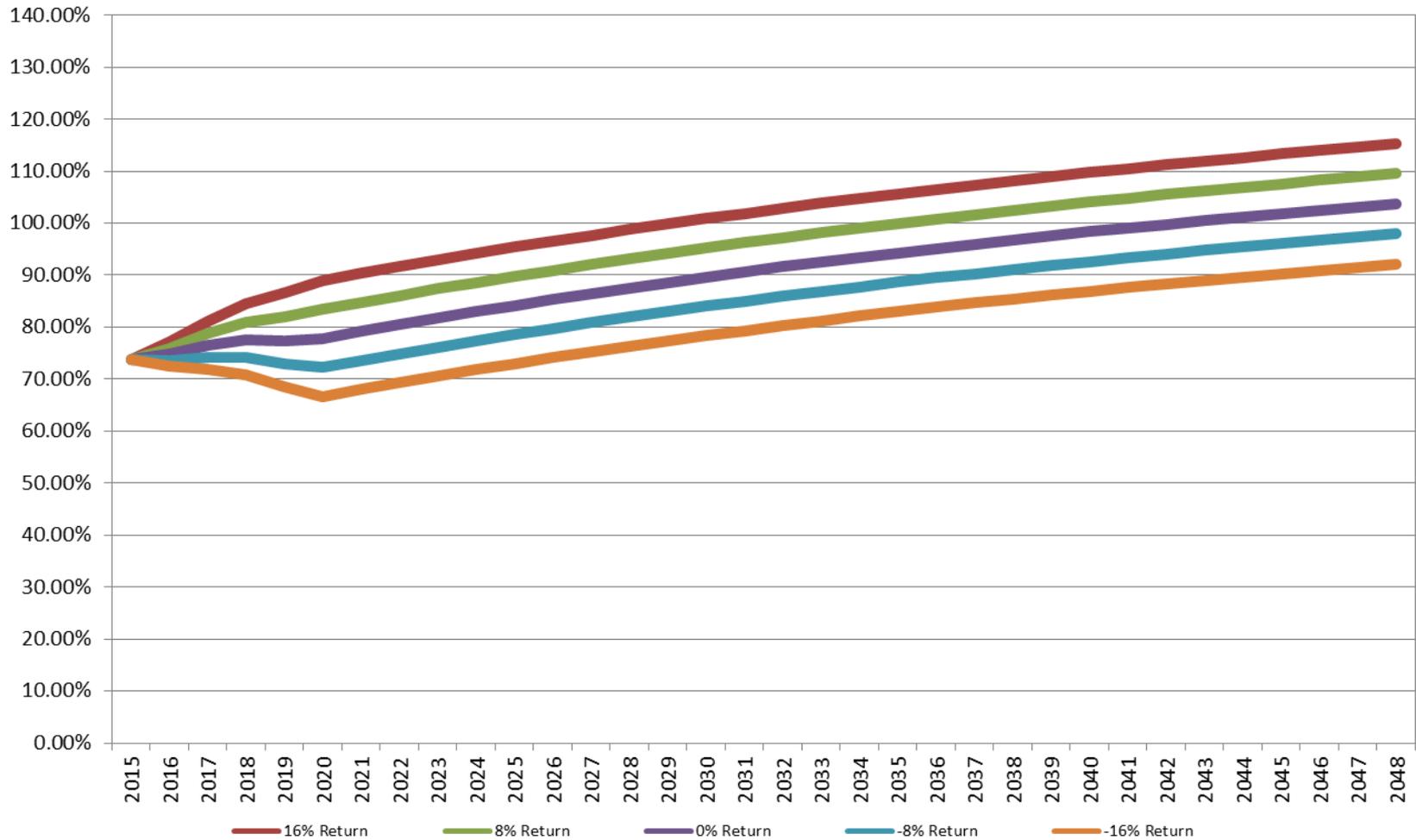
## Judges

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### RATE OF RETURN REQUIRED FOR ALL YEARS BEGINNING ON AND AFTER 2016/2017 TO ACHIEVE TARGET IN 2035

Target Funded Ratio	Assumed 2015/2016 Return				
	16.0%	8.0%	0.0%	-8.0%	-16.0%
70%	3.8%	4.3%	4.9%	5.6%	6.3%
80%	4.4%	4.9%	5.5%	6.2%	6.9%
90%	4.9%	5.5%	6.1%	6.7%	7.4%
100%	5.4%	6.0%	6.6%	7.2%	7.9%

# Projected Funded Ratios (AVA Basis): Law Enforcement with Prior Main System Service - Range of Returns for 2015/2016, 8% thereafter



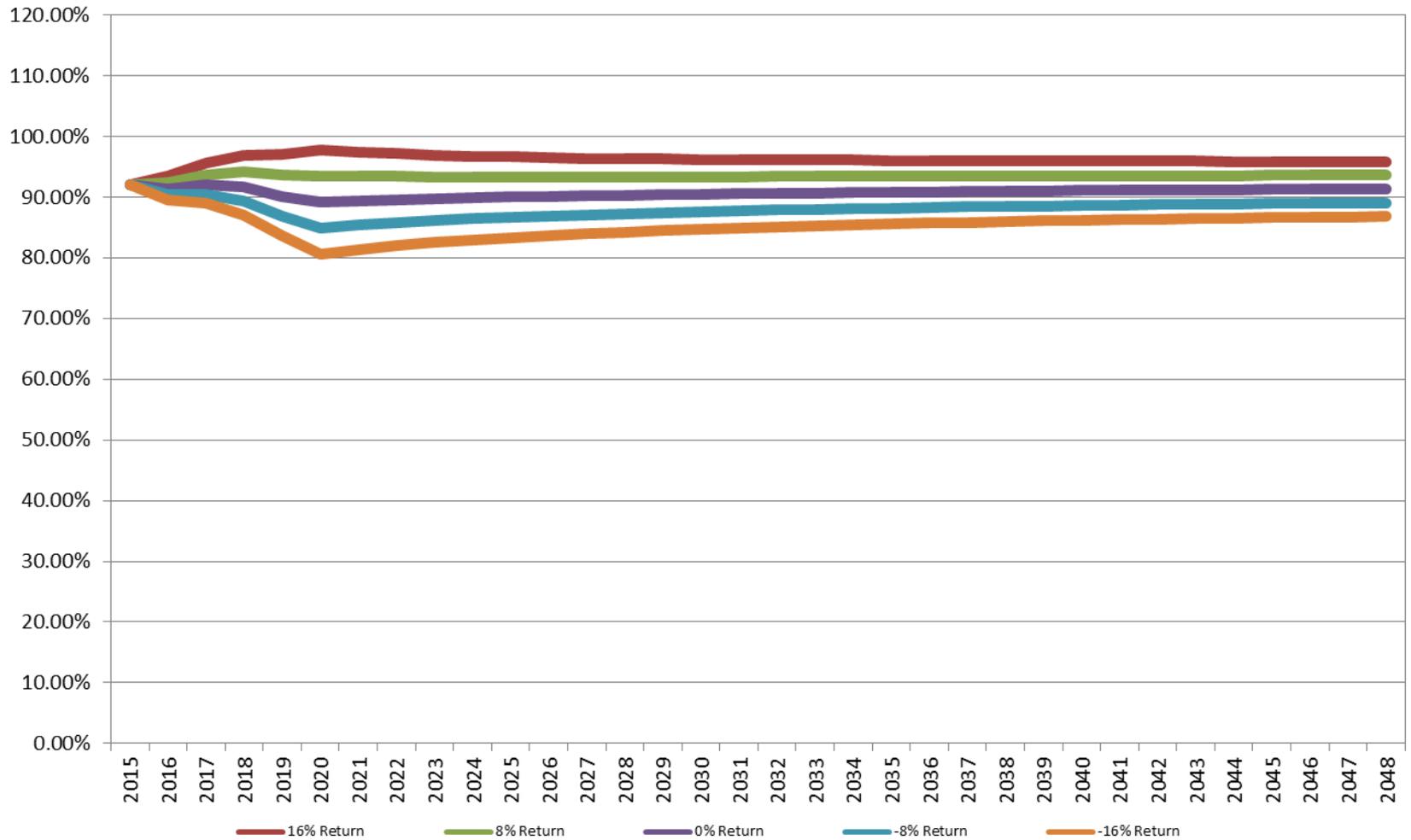
# Target Funded Ratios

## Law Enforcement with Prior Main System Service

**RATE OF RETURN REQUIRED FOR ALL YEARS  
BEGINNING ON AND AFTER 2016/2017 TO ACHIEVE TARGET IN 2035**

	<b>Assumed 2015/2016 Return</b>				
<b>Target Funded Ratio</b>	<b>16.0%</b>	<b>8.0%</b>	<b>0.0%</b>	<b>-8.0%</b>	<b>-16.0%</b>
<b>70%</b>	5.1%	5.5%	5.9%	6.3%	6.8%
<b>80%</b>	6.1%	6.4%	6.8%	7.3%	7.7%
<b>90%</b>	6.9%	7.3%	7.7%	8.1%	8.6%
<b>100%</b>	7.6%	8.0%	8.4%	8.9%	9.4%

# Projected Funded Ratios (AVA Basis): *Law Enforcement without Prior Main System Service - Range of Returns for 2015/2016, 8% thereafter*



# Target Funded Ratios

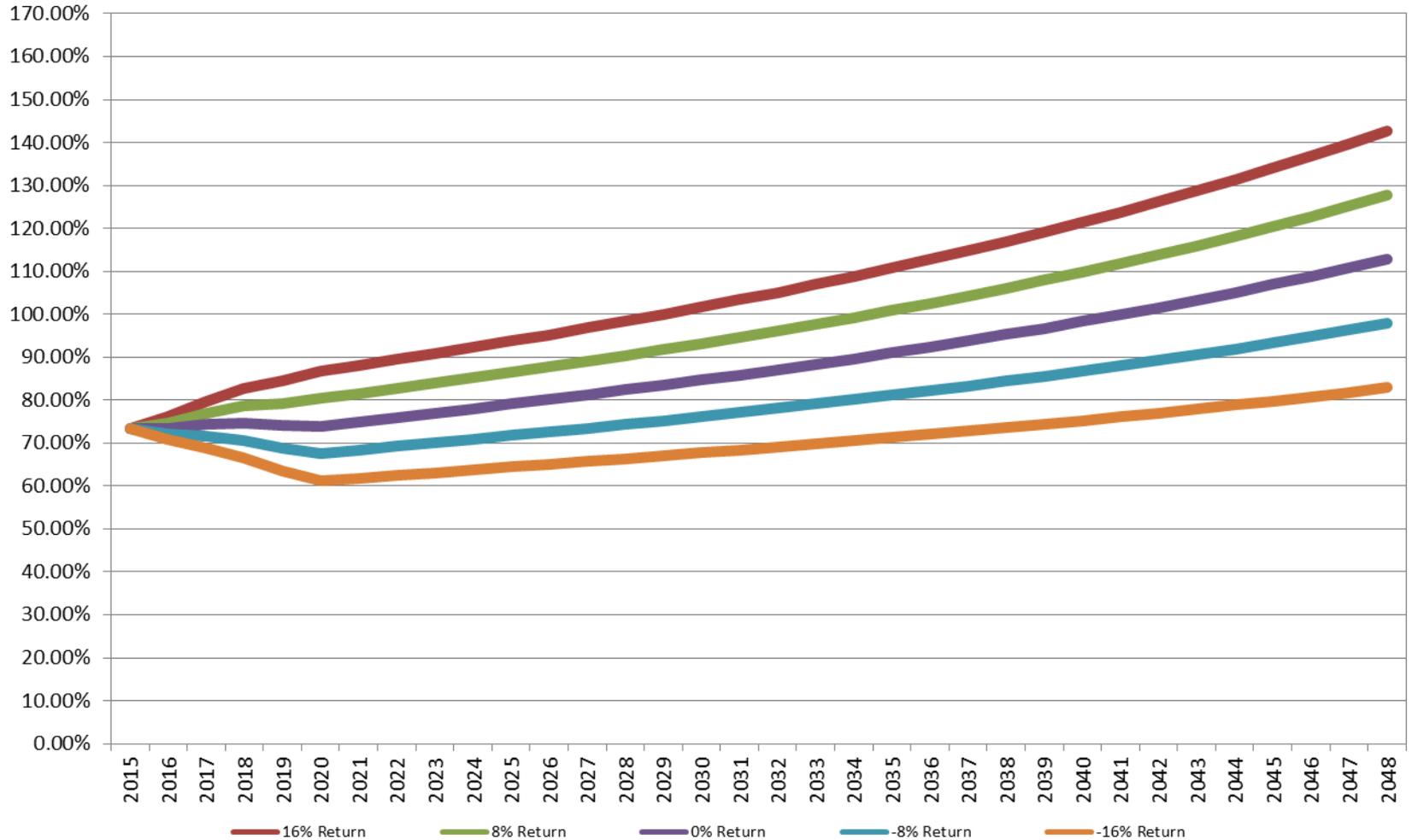
## *Law Enforcement without Prior Main System Service*

**RATE OF RETURN REQUIRED FOR ALL YEARS  
BEGINNING ON AND AFTER 2016/2017 TO ACHIEVE TARGET IN 2035**

	<b>Assumed 2015/2016 Return</b>				
<b>Target Funded Ratio</b>	<b>16.0%</b>	<b>8.0%</b>	<b>0.0%</b>	<b>-8.0%</b>	<b>-16.0%</b>
<b>70%</b>	5.3%	5.5%	5.7%	6.0%	6.2%
<b>80%</b>	6.4%	6.7%	6.9%	7.2%	7.4%
<b>90%</b>	7.5%	7.7%	7.9%	8.2%	8.4%
<b>100%</b>	8.3%	8.6%	8.8%	9.1%	9.4%

# Projected Funded Ratios (AVA Basis)

*Highway Patrol – Range of Returns for 2015/2016, 8% thereafter*



# Target Funded Ratios

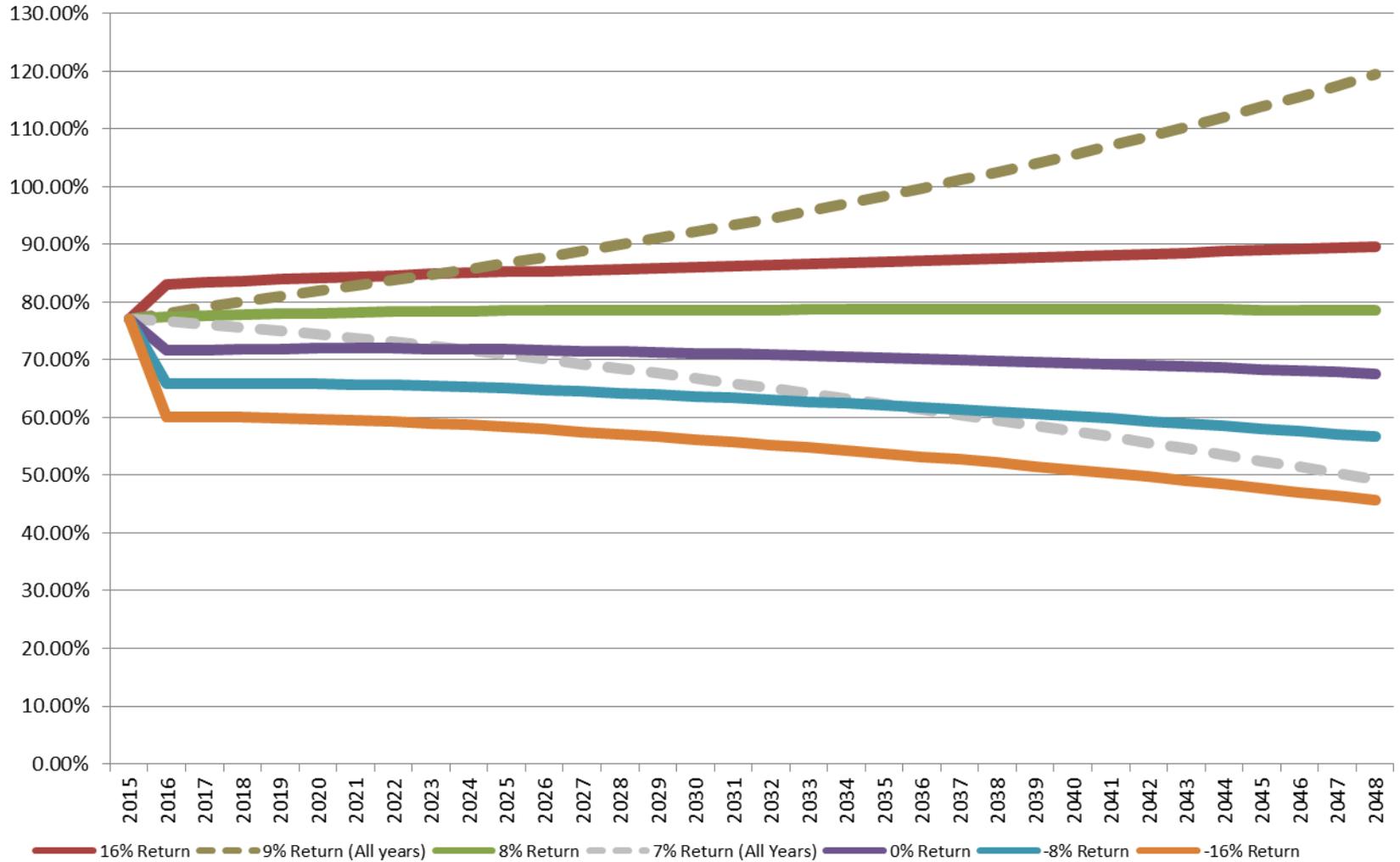
## Highway Patrol

**RATE OF RETURN REQUIRED FOR ALL YEARS  
BEGINNING ON AND AFTER 2016/2017 TO ACHIEVE TARGET IN 2035**

	Assumed 2015/2016 Return				
Target Funded Ratio	16.0%	8.0%	0.0%	-8.0%	-16.0%
70%	5.6%	6.1%	6.6%	7.2%	7.9%
80%	6.3%	6.8%	7.3%	7.9%	8.6%
90%	6.9%	7.4%	8.0%	8.6%	9.2%
100%	7.5%	8.0%	8.5%	9.1%	9.8%

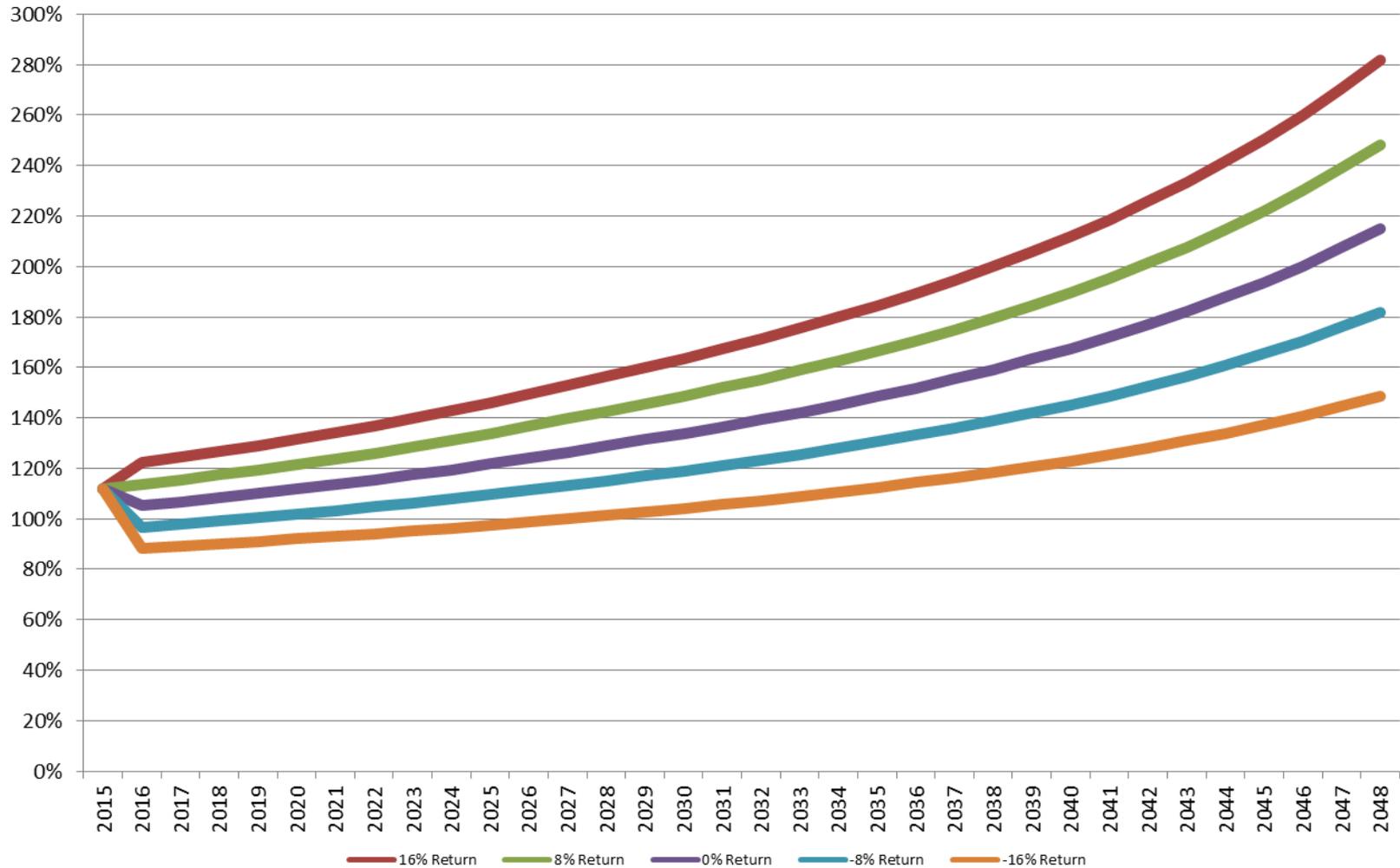
# Projected Funded Ratios (MVA Basis)

Main System – Range of Returns for 2015/2016, 8% thereafter

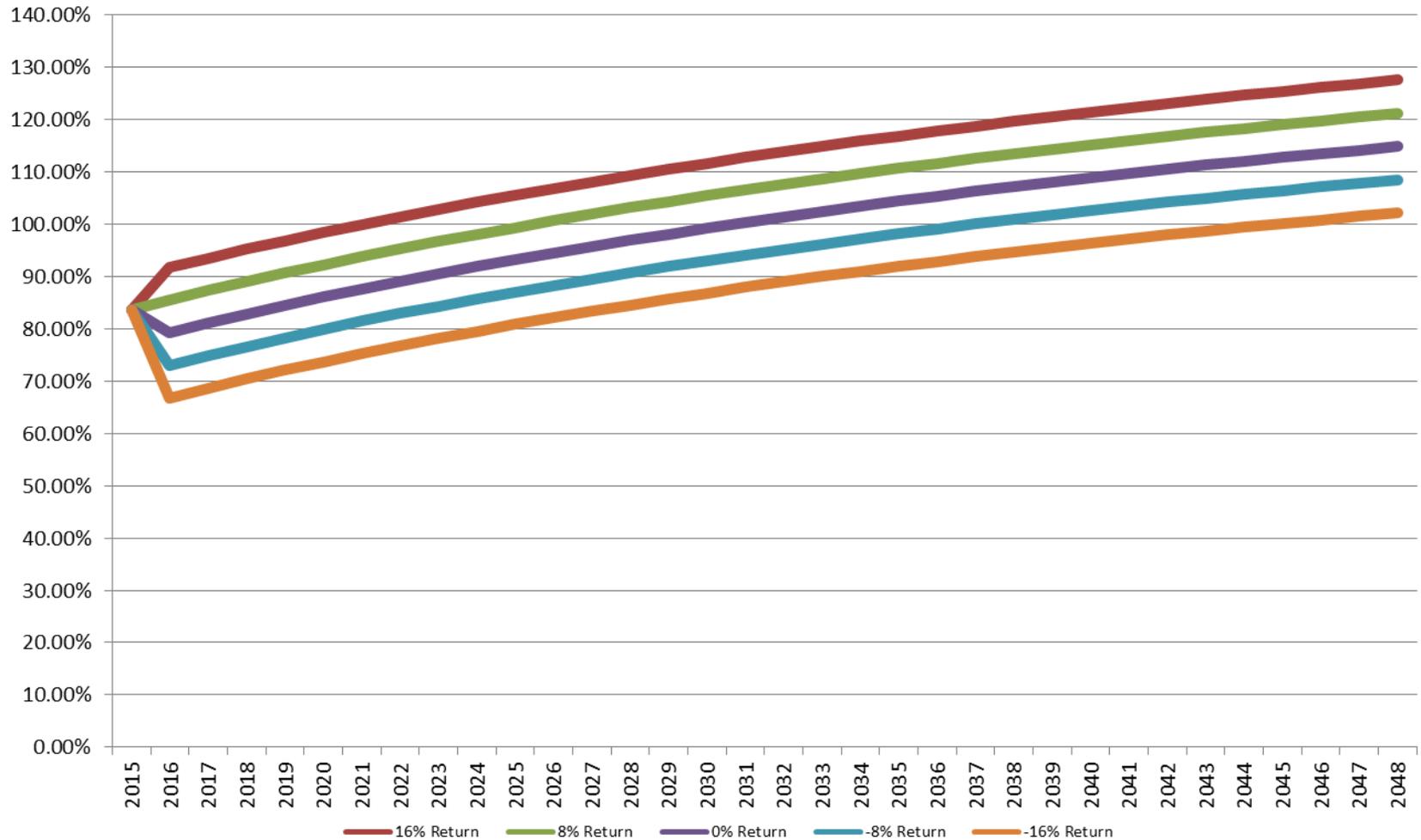


# Projected Funded Ratios (MVA Basis)

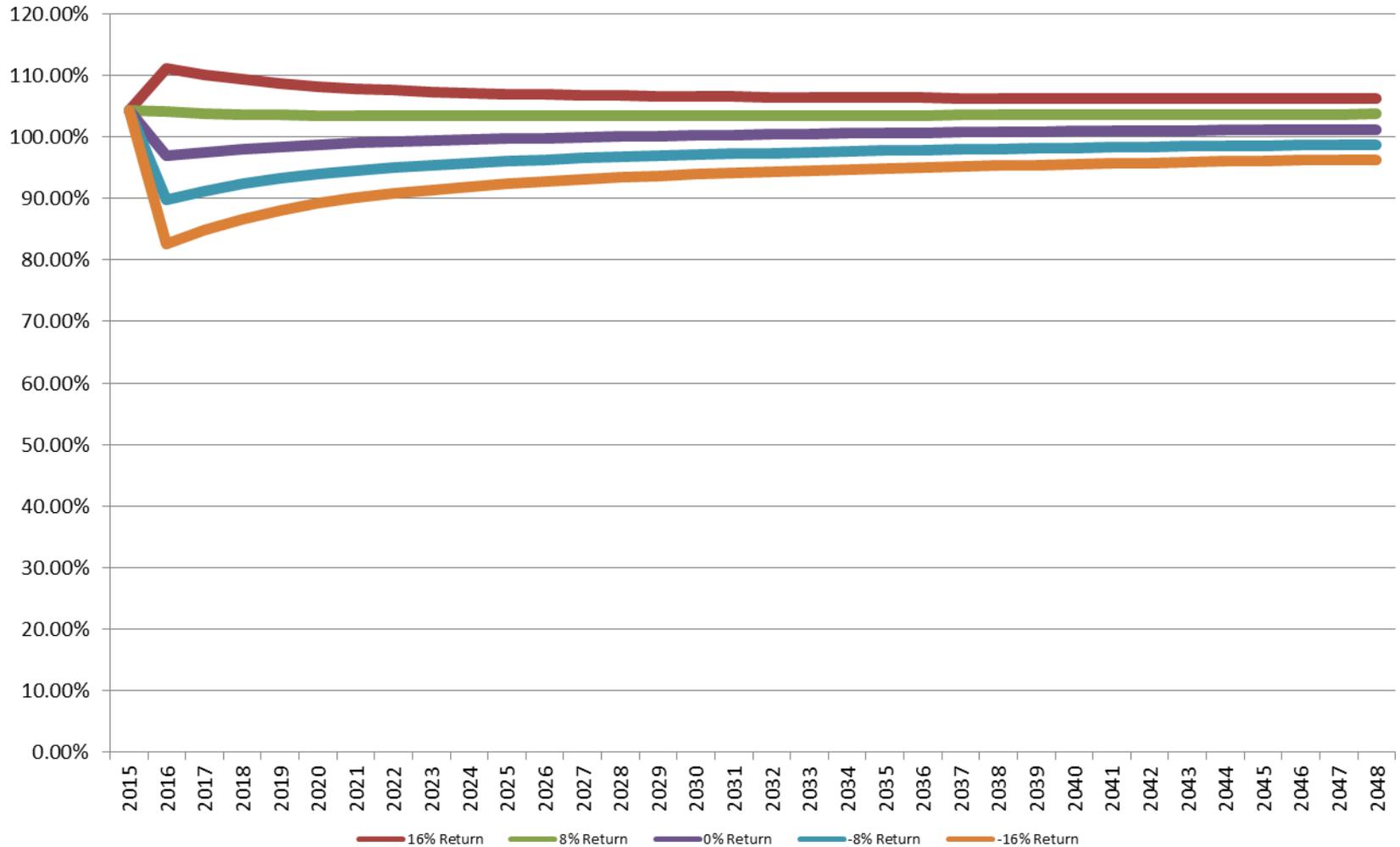
*Judges – Range of Returns for 2015/2016, 8% thereafter*



# Projected Funded Ratios (MVA Basis): Law Enforcement with Prior Main System Service - Range of Returns for 2015/2016, 8% thereafter

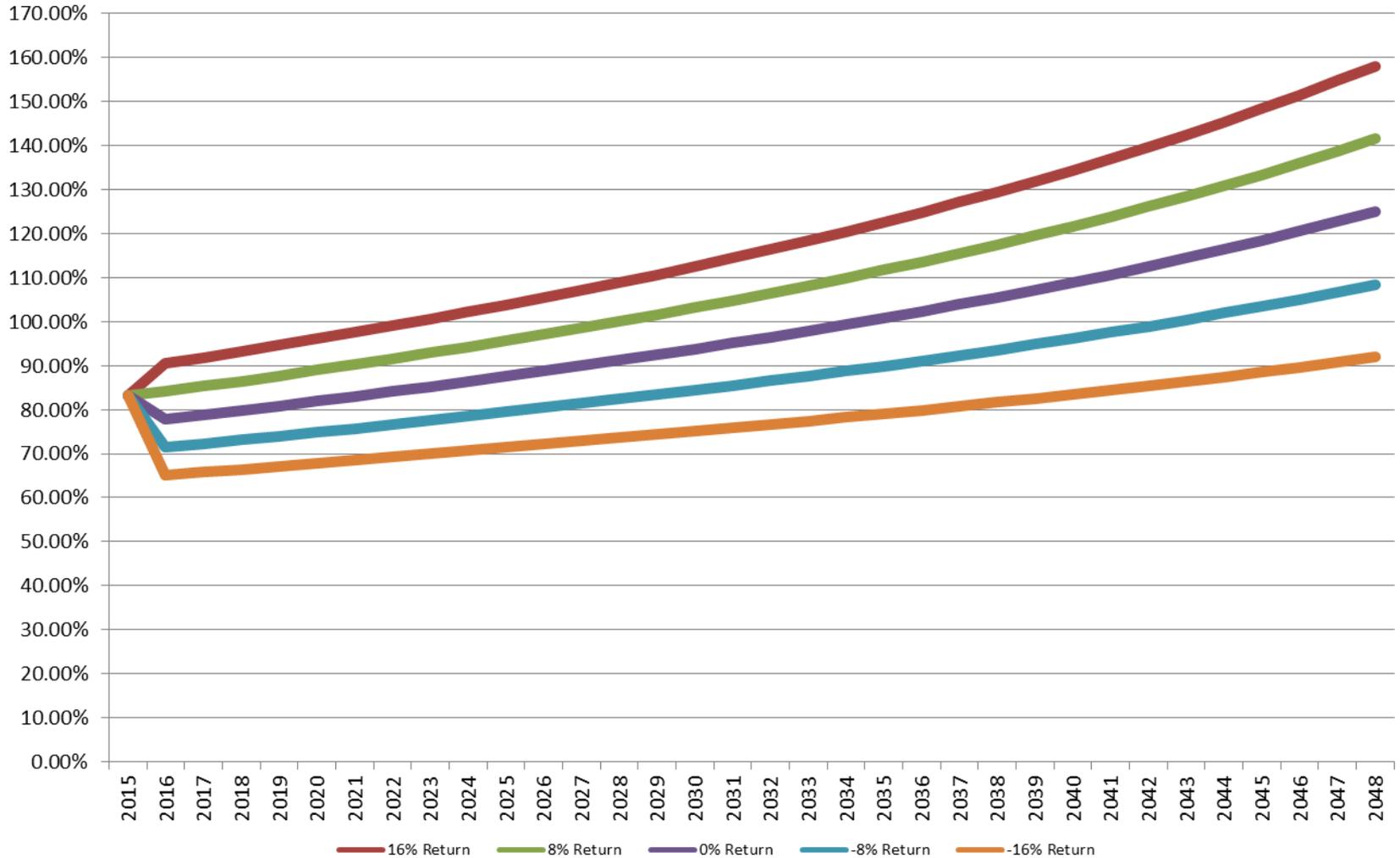


# Projected Funded Ratios (MVA Basis): *Law Enforcement without Prior Main System Service - Range of Returns for 2015/2016, 8% thereafter*



# Projected Funded Ratios (MVA Basis)

*Highway Patrol – Range of Returns for 2015/2016, 8% thereafter*



# Appendix

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- This Appendix summarizes the economic and demographic assumptions for each system. The descriptions have been shortened for ease of reference.
- Full details of the assumptions are available in the Experience Review: July 2009 – June 2014 Presentation dated May 21, 2015.

# Summary of Assumptions – Main System

Assumption	July 1, 2014	July 1, 2015
Inflation/Productivity	3.50%/1.00% (4.50% Payroll Growth)	No Change
Salary Scale	Based on age/service	Based on age/service, split by State/Non-State
Investment Return	8.00%	8.00%
Administrative Expenses	\$1,100,000	Prior year expenses increased by inflation rate (3.5%)
Termination	Based on age/service	No change
Disability	Gender-distinct rates based on age	Lower rates at all ages
Active Retirement	Based on age/eligibility for unreduced benefits	Adjusted rates at some ages
Inactive Retirement	Earlier of age 64 and unreduced retirement	Same as active retirement rates
Healthy Mortality	RP-2000 Combined Healthy, with setback	RP-2000 Combined Healthy, with setback, projected generationally using SSA 2014 Intermediate Cost scale from 2014
Disabled Mortality	RP-2000 Disabled Mortality Table set back one year for males (no setback for females)	RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%
Spouse Information	80% of males and 65% of females married, male spouses are three years older	75% are married. No other changes.
Benefit election	Married elect 50% joint & survivor, non-married elect life annuity	50% elect life annuity, 45% elect 50% joint & survivor, 5% elect refund of contributions
Refund of Contributions	Only if account balance is higher than value of annuity	No Change
Account balance due to vested Employer Contributions (PEP)	Those contributing continue to contribute. Those who haven't contributed will not contribute in the future.	No Change

# Summary of Assumptions – Judges

Assumption	July 1, 2014	July 1, 2015
Inflation/Productivity	3.50%/0.50% (4.00% Payroll Growth)	No Change
Salary Scale	5% for all years	4% for all years
Investment Return	8.00%	8.00%
Administrative Expenses	\$7,500	Prior year expenses increased by inflation rate (3.5%)
Termination	Rates based on age	Eliminate rates
Disability	Gender-distinct rates based on age	Lower rates at all ages
Active Retirement	Rates based on age	Adjusted rates based on age
Inactive Retirement	Earlier of age 64 and unreduced retirement	Same as active retirement rates
Healthy Mortality	RP-2000 Combined Healthy, with setback	RP-2000 Combined Healthy, with setback, projected generationally using SSA 2014 Intermediate Cost scale from 2014
Disabled Mortality	RP-2000 Disabled Mortality Table set back one year for males (no setback for females)	RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%
Spouse Information	100% of all participants are married, male spouses are three years older than female spouses	No changes
Benefit election	Married elect 50% joint & survivor, non-married elect life annuity	All elect 50% joint & survivor
Refund of Contributions	Only if account balance is higher than value of annuity	No Change

# Summary of Assumptions – Law Enforcement with Prior Service

Assumption	July 1, 2014	July 1, 2015
Inflation/Productivity	3.50%/1.00% (4.50% Payroll Growth)	No Change
Salary Scale	Based on age/service	Based on age/service, adjusted for recent experience
Investment Return	8.00%	8.00%
Administrative Expenses	\$2,500	Prior year expenses increased by inflation rate (3.5%)
Termination	Based on age/service	No change
Disability	Gender-distinct rates based on age	Lower rates at all ages
Active Retirement	Rates based on age	Adjusted rates based on age
Inactive Retirement	Earlier of age 55 and unreduced retirement	Same as active retirement rates
Healthy Mortality	RP-2000 Combined Healthy, with setback	RP-2000 Combined Healthy, with setback, projected generationally using SSA 2014 Intermediate Cost scale from 2014
Disabled Mortality	RP-2000 Disabled Mortality Table set back one year for males (no setback for females)	RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%
Spouse Information	80% of males and 65% of females married, male spouses are three years older	75% are married. No other changes.
Benefit election	Married elect 50% joint & survivor, non-married elect life annuity	50% elect life annuity, 45% elect 50% joint & survivor, 5% elect refund of contributions
Refund of Contributions	Only if account balance is higher than value of annuity	No Change
Account balance due to vested Employer Contributions (PEP)	Those contributing continue to contribute. Those who haven't contributed will not contribute in the future.	No Change

# Summary of Assumptions – Law Enforcement without Prior Service

Assumption	July 1, 2014	July 1, 2015
Inflation/Productivity	3.50%/1.00% (4.50% Payroll Growth)	No Change
Salary Scale	Based on age/service	Based on age/service, adjusted for recent experience
Investment Return	8.00%	8.00%
Administrative Expenses	\$7,500	Prior year expenses increased by inflation rate (3.5%)
Termination	Rates based on age/service	No change
Disability	Gender-distinct rates based on age	Lower rates at all ages
Active Retirement	Rates based on age	Adjusted rates based on age
Inactive Retirement	Earlier of age 55 and unreduced retirement	Same as active retirement rates
Healthy Mortality	RP-2000 Combined Healthy, with setback	RP-2000 Combined Healthy, with setback, projected generationally using SSA 2014 Intermediate Cost scale from 2014
Disabled Mortality	RP-2000 Disabled Mortality Table set back one year for males (no setback for females)	RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%
Spouse Information	80% of males and 65% of females married, male spouses are three years older	75% are married. No other changes.
Benefit election	Married elect 50% joint & survivor, non-married elect life annuity	50% elect life annuity, 45% elect 50% joint & survivor, 5% elect refund of contributions
Refund of Contributions	Only if account balance is higher than value of annuity	No Change
Account balance due to vested Employer Contributions (PEP)	Those contributing continue to contribute. Those who haven't contributed will not contribute in the future.	No Change

# Summary of Assumptions – Highway Patrolmen

Assumption	July 1, 2014	July 1, 2015
Inflation/Productivity	3.50%/1.00% (4.50% Payroll Growth)	No Change
Salary Scale	Based on age/service	Based on age/service, adjusted for recent experience
Investment Return	8.00%	8.00%
Administrative Expenses	\$18,000	Prior year expenses increased by inflation rate (3.5%)
Termination	Based on age/service	No change
Disability	Rates based on age	Lower rates at all ages
Active Retirement	Based on age/eligibility for unreduced benefits	Adjusted rates at some ages
Inactive Retirement	Age 55	Same as active retirement rates
Healthy Mortality	RP-2000 Combined Healthy, with setback	RP-2000 Combined Healthy, with setback, projected generationally using SSA 2014 Intermediate Cost scale from 2014
Disabled Mortality	RP-2000 Disabled Mortality Table set back one year for males (no setback for females)	RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%
Spouse Information	90% of non-retired members are married, male spouses are three years older than female spouses	100% are married. No other changes.
Benefit election	Married elect 50% joint & survivor, non-married elect life annuity	100% elect 50% joint & survivor
Indexing for benefits of inactive members	4.5% per annum	4.0% per annum
Refund of Contributions	Only if account balance is higher than value of annuity	No Change

# Summary of Assumptions – Job Service

Assumption	July 1, 2014	July 1, 2015
Inflation/Productivity	3.50%/1.00%	No Change
Salary Scale	5.00%	3.50%
Investment Return	8.00%	7.00%
Administrative Expenses	Implicitly included in the investment return assumption	Prior year expenses increased by inflation rate (3.5%)
COLA	5.00%	3.00%
Termination	Rates based on age	Not applicable
Disability	Rates based on age	Lower rates at all ages
Active Retirement	75% retire when first eligible. The rest retire at Normal Retirement Age	Adjusted rates based on age
Inactive Retirement	100% at first optional retirement age	Same as active retirement rates
Healthy Mortality	1994 Group Annuity Mortality Table	RP-2000 Combined Healthy, with setback, projected generationally using SSA 2014 Intermediate Cost scale from 2014
Disabled Mortality	1983 Railroad Retirement Board Disabled Life Mortality Table	RP-2000 Disabled Mortality Table set back one year for males (no setback for females) multiplied by 125%
Spouse Information	85% of all non-retired are married, male spouses are four years older than female spouses	No change
Benefit election	All participants are assumed to elect the 10-year certain and life annuity	55% elect 10-year certain and life, 45% elect 55% joint & survivor

# Questions?

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