THE ANNE ARUNDEL COUNTY
DETENTION OFFICERS' AND DEPUTY SHERIFFS' RETIREMENT PLAN

ACTUARIAL VALUATION
AS OF
JANUARY 1, 2014

Bolton Partners, Inc.
100 Light Street, 9th Floor
Baltimore, MD 21202

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BOLTON PARTNERS

April 24, 2014

PERSONAL & CONFIDENTIAL
John Peterson
Acting Personnel Officer
Anne Arundel County Government
P.O. Box 6675
Annapolis, MD 21401

Re: Detention Officers' and Deputy Sheriffs' Retirement Plan Valuation

Dear John:

The following report sets forth the actuarial valuation as of January 1, 2014 of the Anne Arundel County Detention Officers' and Deputy Sheriffs' Retirement Plan, for the plan year beginning on that date. The valuation is based on participant data submitted by the personnel department of Anne Arundel County and Aetna and unaudited asset data submitted by the County.

INVESTMENT PERFORMANCE

The market value of plan assets as of December 31, 2013 was $104,930,415. The average investment return for the fund for the year ended December 31, 2013 was 9.8% on a market basis and 8.8% on an actuarial basis.

The plan utilizes an actuarial averaging method to smooth out swings in investment performance and thus in asset values from year to year. Under the method, investment gains or losses above or below the 8% actuarial assumption are phased in over a five-year period. As of December 31, 2013, the actuarial value of assets was $102,136,092. Details of the development of the actuarial value of assets are set forth later in this report.

ASSUMPTION AND METHOD CHANGES

We have lowered the inflation assumption from 3.5% to 3.0%. This changed the following economic assumptions: investment return assumption (discount rate), salary growth assumption, total payroll growth assumption, retiree COLA increase assumptions. Most of these changes were offsetting but there is a net increase in the liabilities and the County's contribution since the drop in the investment assumption from 8.0% to 7.5% was more significant that the other changes.

We also have prospectively changed the amortization period for gains and losses and assumption changes from 30 to 20 years.

Finally we made a small change in the treatment of the accrued contribution in the calculation of the investment gains used in the asset smoothing method. This change was not material but was felt to be a better method.

The net effect of these changes was an increase of about $3.0 million to the unfunded liability and an increase of about $0.3 million to the County's contribution.

PRINCIPAL RESULTS

The principal purpose of the valuation is to set forth the County's contributions for the fiscal year ending June 30, 2015. In addition, the report sets forth the information on the plan for the County's financial statements and for the plan's own financial statements.

The total recommended employer contribution for the plan year and fiscal year ending June 30, 2015 increased from $6,006,849 to $6,215,127. This is in addition to employee contributions of 6.75% of pay for the DT1 employees and 5% of pay for DSM employees. The increase can be broken down to the following factors:

January 1, 2013 valuation	33.6%
Pay Increases	0.0%
Investment Gains	(0.2%)
New Entrants/Change in Normal Cost	(0.2%)
COLAs	(0.3%)
Expenses	0.1%
Assumption Changes	1.5%
Amortization Change	0.0%
Demographics and Other Changes	(0.2%)
January 1, 2014 valuation	34.3%

The overall funded ratio based on the actuarial value of assets for the plan increased from 69.3% to 71.1%. Currently the market value of assets of $104.9 million is $2.8 million more than the actuarial value of the assets ($102.1 million). This difference of $2.8 million represents deferred investment gains that will be recognized in future valuations.

There have been changes in pension accounting rules. These changes do not impact funding or this valuation report. The new GASB 67 rules will impact the plan accounting in 2014 and the new GASB 68 rules will impact the employer's accounting in FY15. We have discussed with the Board and the County how these new rules are to be implemented.

The assumptions have been changed in this valuation based on last year's experience study which was adopted by the Board. There have been no changes in the plan provisions since the last valuation.

The balance of this report sets forth details of changes in participation in the plan and the results of the valuation. A statement of funding progress under GASB 25 is also included. The Actuarial Certification at the end of this report contains other important information to understand about this valuation.

Sincerely,

BOLTON PARTNERS, INC.

Thomas B. Lowman, FSA

David W. Ballard, CEBS

Kristopher E. Seets, ASA, EA

TBL/DWB/KS

Trust Fund Asset Statement

TRUST FUND ASSET STATEMENT FOR YEAR ENDED DECEMBER 31, 2013

Original Market Value 1/1/2013	$ 93,873,823
Audit Adjustment	$ 1
Market Value 1/1/2013	$ 93,873,824
Receipts:	
Employer Contributions	$ 5,532,399
Employee Contributions	1,187,980
Interest and Dividends	2,251,559
Stock Loan Income	9,984
Realized and Unrealized Gain/(Loss)	7,264,020
Other	315,381
Total Receipts:	$ 16,561,323
Disbursements:	
Benefit Payments	$ 5,390,442
Administrative Expenses	128,404
Investment Expenses	579,170
Total Disbursements	$ 6,098,016
Net Increase/(Decrease)	$ 10,463,307
Preliminary Ending Value 12/31/2013	$104,337,130
Contribution Receivable	$ 593,285
Ending Value 12/31/2013	$104,930,415

(Note: There may be some dollar rounding differences.)

Development of Actuarial Value of Assets

ACTUARIAL VALUE OF ASSETS

		2012	2013
1.	**MVA Beginning of Year**	**$81,761,419**	**$94,391,870**
2.	Contributions	6,301,609	6,795,617
3.	Benefit Payments	5,012,917	5,390,442
4.	Administrative Expenses	95,088	128,404
5.	Expected 8% Return	6,588,658	7,602,420
6.	**Expected Asset Value** (1. + 2. – 3. – 4. + 5.)	**$89,543,681**	**$103,271,061**
7.	Market Value End of Year	$93,873,823	$104,930,415
8.	**Asset Gain/(Loss)** (7. –6.)	**$4,330,142**	**$1,659,354**
9.	80% of 2012 Gain/(Loss) of $4,330,142	$3,464,114	
10.	60% of 2011 Gain/(Loss) of ($4,955,501)	($2,973,301)	
11.	40% of 2010 Gain/(Loss) of $4,254,775	$1,701,910	
12.	20% of 2009 Gain/(Loss) of ($2,093,203)	($418,641)	
13.	**Initial Actuarial Value of Assets 1/1/2013**	**$92,099,741**	
14.	Contribution Receivable	$518,047	
15.	**Final Actuarial Value of Assets 1/1/2013**	**$92,617,788**	
16.	80% of 2013 Gain/(Loss) of $1,659,354		$1,327,483
17.	60% of 2012 Gain/(Loss) of $4,330,142		$2,598,085
18.	40% of 2011 Gain/(Loss) of ($4,955,501)		($1,982,200)
19.	20% of 2010 Gain/(Loss) of $4,254,775		$850,955
20.	**Initial Actuarial Value of Assets 1/1/2014**		**$102,136,092**
21.	Contribution Receivable		N/A
22.	**Final Actuarial Value of Assets 1/1/2014**		**$102,136,092**
	Rate of Return on Actuarial Value of Assets *(net of investment expenses)*	**0.7%**	**8.8%**

Participant Summary

PARTICIPANT SUMMARY

		Inactive Participants		
	Active Participants	With Deferred Benefits	Receiving Benefits	Total
Participants as of January 1, 2013	338	12	197	547
Retired	(9)	(3)	12	0
Terminated Vested	0	0	0	0
Terminated Non Vested	(9)	0	0	(9)
Disabled	0	0	0	0
Deceased/Payment Expired	0	0	(3)	(3)
Lump Sum	0	0	0	0
New QDRO	0	0	1	1
Transfers in from:				
Fire Plan	0	0	0	0
Police Plan	0	0	0	0
Employee Plan	1	0	0	1
Transfers out to:				
Fire Plan	0	0	0	0
Police Plan	0	0	0	0
Employee Plan	(2)	0	0	(2)
New Hires	21	0	0	21
New Beneficiary	0	0	1	1
Data Adjustment	2	0	0	2
Net Change	4	(3)	11	12
Participants as of January 1, 2014	342	9	208	559

Service - Age Distribution

AGE, SERVICE AND AVERAGE SALARY DISTRIBUTION

Age as of 1/1/2014	Under 1	01-04	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40 +	Total
Under 25	6	5	2	0	0	0	0	0	0	0	13
	38,052	39,222	42,392	0	0	0	0	0	0	0	39,170
25-29	3	20	6	0	0	0	0	0	0	0	29
	38,052	39,007	42,864	0	0	0	0	0	0	0	39,706
30-34	3	6	15	1	0	0	0	0	0	0	25
	39,901	39,707	45,137	48,865	0	0	0	0	0	0	43,355
35-39	0	3	15	13	6	0	0	0	0	0	37
	0	26,129	46,110	52,221	59,165	0	0	0	0	0	48,754
40-44	2	5	11	20	24	1	0	0	0	0	63
	39,626	40,521	45,983	53,189	61,625	76,265	0	0	0	0	54,075
45-49	3	4	9	5	21	12	0	0	0	0	54
	39,736	41,305	48,186	53,092	63,185	70,470	0	0	0	0	58,446
50-54	3	7	11	6	15	10	5	1	0	0	58
	40,151	51,316	47,660	53,475	61,488	70,567	76,529	81,661	0	0	58,915
55-59	1	3	8	6	9	5	0	2	0	0	34
	41,201	39,893	46,198	53,541	62,772	68,896	0	84,079	0	0	56,744
60-64	0	2	5	4	7	0	0	0	1	0	19
	0	39,193	39,859	57,293	62,956	0	0	0	89,459	0	54,579
35-69	0	0	0	3	5	0	0	0	0	0	8
	0	0	0	33,071	85,087	0	0	0	0	0	65,581
70 & Up	0	0	0	1	1	0	0	0	0	0	2
	0	0	0	52,329	61,254	0	0	0	0	0	56,792
Total	21	55	82	59	88	28	5	3	1	0	342
	39,156	40,327	45,650	52,200	63,358	70,431	76,529	83,273	89,459	0	53,020

Average Age: 44.99

Average Service: 11.27

Average Salary: $53,020

Actuarial Costs

ACTUARIAL COSTS

	As of 01/01/2013	As of 01/01/2014
Participants		
Active	338	342
Inactive receiving benefits	197	208
Inactive with deferred benefits	12	9
Total	547	559
Active Payroll (Rate at January 1st)	$17,896,574	$18,132,868
1. Accrued Liabilities		
Active Participants	$64,678,225	$69,937,496
Participants Receiving Benefits	67,754,241	72,813,635
Participants with Deferred Benefits	1,245,619	945,215
Total	$133,678,085	$143,696,346
2. Actuarial Value of Assets	$92,617,788	$102,136,092
3. Unfunded Actuarial Liability	$41,060,297	$41,560,254
4. County's Normal Cost	$ 2,863,247	$ 2,959,744
5. Amortization Payment	$ 2,610,650	$ 2,709,769
6. Estimated Expenses	$ 88,000	$ 112,000
7. Total Recommended Contributions as of January 1st	$ 5,561,897	$ 5,781,513
8. Total Recommended Contribution as of December 31st December 31st (7 x 1.08 for 2013; 1.075 for 2014)	$ 6,006,849	$ 6,215,127
9. Contributions as a Percentage of Payroll	33.6%	34.3%

UNFUNDED LIABILITY AMORTIZATION SCHEDULE

	Amortization Period			Balances		
Charges	Date Created	Initial Years	Years Left	Initial	Outstanding	2014 Payment
Unfunded Accrued Liability	01/01/2003	30	19	$8,245,799	$ 9,258,232	$696,736
Actuarial Loss	01/01/2005	30	21	$ 780,906	$ 872,146	$ 61,606
Actuarial Loss	01/01/2006	30	22	$1,772,183	$ 1,967,467	$135,088
Plan and Assumption Change	01/01/2006	30	22	$ 744,267	$ 826,290	$ 56,734
Actuarial Loss	01/01/2008	30	24	$3,220,741	$ 3,513,561	$229,215
Assumption Change	01/01/2008	30	24	$1,378,213	$ 1,503,516	$ 98,085
Actuarial Loss	01/01/2009	30	25	$7,322,632	$ 7,899,201	$503,551
Actuarial Loss	01/01/2010	30	26	$ 4,497,219	$ 4,814,326	$ 300,326
Asset Method Change	01/01/2011	30	27	$ 5,057,664	$ 5,312,110	$324,715
Actuarial Loss	01/01/2012	30	28	$3,386,496	$ 3,503,020	$210,083
Assumption Change	01/01/2013	30	29	$1,256,642	$ 1,278,749	$ 75,325
Actuarial Loss	01/01/2013	30	30	$3,030,285	$ 3,030,285	$220,677
Assumption Change	01/01/2014	20	20	$3,722,087	$ 3,787,569	$223,107
Credits						
Actuarial Gain and Assumption Change	01/01/2004	30	20	$1,216,481	$ 1,363,828	$ 99,319
Actuarial Gain	01/01/2007	30	23	$1,161,281	$ 1,279,121	$ 85,533
Actuarial Gain	01/01/2011	30	27	$ 350,009	$ 367,618	$ 22,472
Actuarial Gain	01/01/2014	20	20	$2,995,651	$ 2,995,651	$218,155
Net					$41,560,254	$2,709,769

Note: Bases are amortized as an equal percent of payroll each year. Total payroll is assumed to increase 3.0% annually.

Assumptions and Methods

ASSUMPTIONS AND METHODS

Funding Method:	Projected Unit Credit Cost Method. This method divides the cost of funding benefits into two parts: normal cost and actuarial accrued liability. The normal cost is the estimated cost of the benefits that are considered to be accrued in that plan year. The actuarial accrued liability is the estimated cost of all benefits that are considered to have been accrued to the valuation date. The unfunded actuarial accrued liability is the actuarial accrued liability minus plan assets. An actuarial gain or loss is calculated each year based on the change in the unfunded actuarial accrued liability. The total contribution is the normal cost plus (minus) a payment to amortize actuarial losses (gains) that occur. The benefit that is considered to be accrued in a year is the participant's projected benefit divided by his total projected years of service.
Asset Method:	Asset smoothing method. Spreading the investment gains or losses in excess of the assumed return over a 5-year period. Actuarial Value of Assets recognizes adjustments resulting from an audit.
Interest:	7.5% compounded annually net of investment expenses effective January 1, 2014. 8.0% in prior year.
COLA Increases:	Benefits accrued before Bill 88-96 are assumed to increase by 3.0% of the original benefit each year from retirement effective January 1, 2014. 3.5% in prior year. Benefits accrued after Bill 88-96 are assumed to increase by 1.8% of the current benefit each year from retirement effective January 1, 2014. 2.1% in prior year.

ASSUMPTIONS AND METHODS

(continued)

Salary Increases (Eff. 1/1/2014): The following graded schedule is used:

Attained Age	% Increase at Attained Age
20	6.00%
25	6.00%
30	5.50%
35	5.25%
40	4.75%
45	4.25%
50	4.25%

Mortality (Eff. 1/1/2013): *Healthy:* RP-2000 Blue Collar Mortality Table for males and females projected generationally using scale AA. Pre-Termination mortality uses 60% of these rates.

Disabled: RP-2000 Blue Collar Mortality Table for males and females set forward five years and then projected generationally using scale AA.

100% of pre-retirement deaths are assumed to be non-duty related.

Disability (Eff. 1/1/2013): Sample rates are:

Age	Rate
30	0.245%
35	0.362%
40	0.747%
45	1.250%
50	1.839%
55	0.000%

75% of disablements are assumed to be duty-related.

Turnover (Eff. 1/1/2013): Sample rates are:

	Less Than 10 Years of Service		10 or More Years of Service	
Age	Male	Female	Male	Female
20	12.38%	18.75%	8.67%	13.13%
25	8.98%	14.06%	6.29%	9.84%
30	6.81%	11.25%	4.77%	7.88%
35	4.95%	8.44%	3.47%	5.91%
40	3.41%	6.19%	2.39%	4.33%
45	1.86%	3.94%	1.30%	2.76%
50	0.00%	0.00%	0.00%	0.00%

ASSUMPTIONS AND METHODS

(continued)

Retirement (Category I) (Eff. 1/1/2013): Retirement rates are as follows:

Less than 20 years of service	
Age	**Rate**
50	10%
51-54	5%
55-59	20%
60	100%

20 or more years of service		
Age	**20 years but less than 30 years**	**30 or more years**
40-49	15%	
50-59	30%	100%
60	100%	100%

Retirement (Category II) (Eff. 1/1/2013): Retirement rates are as follows:

Age	< 20 years of service	20 years of service	21-29 years of service	≥ 30 years of service
<50	N/A	5%	2%	100%
50	10%	30%	30%	100%
51-59	10%	15%	15%	100%
60-64	10%	20%	20%	100%
65+	100%	100%	100%	100%

Disability Leave: Service credit for benefit formula purposes is increased by 1.75% to account for disability leave which is converted to service credit at retirement.

Military Service: Active liabilities (which depend on credit service) are loaded by 3.25% to account for future crediting of military service.

In addition, it is assumed that participants with 30 or more years of service will have credit for 1 year of combined Disability Leave and military service.

Marriage (Eff. 1/1/2013): It is assumed that 80% of employees are married.

Other Methods and Assumptions: Administrative Expenses are $112,000 for FY2015 and $88,000 for FY2014 (average of actual expenses for the two years preceding the valuation date).

It is assumed that vested terminations prior to age 40 will choose to take a lump sum while those 40 and older will choose a deferred benefit.

ASSUMPTIONS AND METHODS

(continued)

The rationale for the demographic assumptions is based on the results of the December 2012 Experience Study. The economic assumptions are based on future expectations with an underlying 3.0% inflation assumption.

Plan Provisions

PLAN PROVISIONS

Normal Retirement Age:	Category I Participants: 20 years of service, or age 50 with 5 years. Category II Participants: Age 50 with 5 years of service.
Normal Form of Benefit:	Monthly life annuity with payments guaranteed for 5 years.
Cost of Living Increase (simple, for benefits accrued as of 1/31/97):	Retiree benefits are adjusted each year. The revised benefit amount is the lesser of: a. Prior year benefit plus base benefit multiplied by increase in current CPI from CPI for prior year, or b. Benefit increased by 4% of original benefit.
Cost of Living Increase (compound, for benefits accrued after 1/31/97):	Retiree benefits are adjusted each year. The revised benefit amount is the lesser of: a. Prior year benefit multiplied by 60% of the increase in the current March CPI from March CPI for prior year, or b. Benefit increased by 2.5%.
Employee Contributions:	5% of compensation for DSM and 6.75% for DT1.
Compensation:	Regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses, and commissions. Some members receive a special FY10 increase for pension purposes.
Final Earnings:	The average of the highest 3 years of annual basic pay.
Benefit Formula:	2 ½% of final earnings for each year of service up to 20 years plus 2% of final earnings for each year of service after 20 years (maximum 70% plus 2% times unused disability credit and pre-employment military service credit)

PLAN PROVISIONS
(continued)

Benefit Formula:	2 ½% of final earnings for each year of service up to 20 years plus 2% of final earnings for each year of service after 20 years (maximum 70% plus 2% times unused disability credit and pre-employment military service credit)
Early Retirement:	Reduced benefits are available the first of any month coincident with or next following the completion of 20 years of continuous service.
Termination Prior to Retirement:	
Less than 5 years of service:	Return of employee contributions with 4.25% interest.
5 years of service or more:	At the discretion of the employee, either a return of contributions with interest or the accrued normal retirement benefit taking into account final earnings and service at date of termination, payable at normal retirement date.
Disability Benefit:	Must be totally and permanently disabled (except as the result of activities specified in the County code) regardless of length of service.
Line of Duty Disability:	The greater of the accrued benefit or 66 2/3% of final earnings, payable immediately, unreduced.
Non-Line of Duty Disability:	The greater of the accrued benefit or 20% of final earnings, payable immediately, unreduced.
Pre-Retirement Spouse's Benefit:	
Line of Duty Death Benefit:	Greater of accrued benefit or 66 2/3% of final earnings.
Non-Line of Duty Death Benefit:	Accrued benefit.
Other Pre-Retirement Death Benefits:	Return of employee contributions with 4.25% interest, and a lump sum equal to 50% of annual pay.

Summary of Legislative Changes

SUMMARY OF MAJOR LEGISLATIVE CHANGES

County Council Bill No. 34-92:	Effective 6/1/92 through 8/31/92. Participants over age 50 or with at least 20 years of service could elect to retire with an additional pension equal to 1/12 of 2.5% of final earnings for the first 20 years of service, plus 1/12 of 2% of final earnings for each additional year of service. The additional amount could be taken as a pension increase, a lump sum, or as a temporary supplement to age 62. Appropriate actuarial adjustments apply.
State House Bill No. 687:	Effective 7/1/90. County employees were given the opportunity to apply for credit under the County's plan for previous service with the State of Maryland (or a political subdivision of the State).
County Council Bill 90-93:	Effective 12/22/93. Plan participants are required to pay the full actuarial value for service purchases. Purchases can only be made at retirement. To be eligible, an employee must have 60 months of County service. Existing plan participants must be notified of their right to purchase service under existing law.
County Council Bill No. 94-93:	Effective 11/19/93. All current and future employees shall be 100% vested after 5 years of Credited Service.
County Council Bill 88-96:	Effective 12/4/96. The previous method of calculating cost of living increases will only apply to benefits accrued as of 1/31/97. The cost of living increase for future benefits is a compound increase equal to 60% of the annual change in the CPI, not to exceed 2.5%. Employees hired, or rehired, on or after 12/4/96 will be Tier Two employees and will have different benefits than current employees.

SUMMARY OF MAJOR LEGISLATIVE CHANGES

(continued)

County Council Bill No. 41-99: Effective 6/15/99.

Employees paid under the deputy sheriff employees pay schedule become Tier Two members of the Detention Center Plan effective as of January 1, 1999. Service credited under the Employees' Plan will count as credited service in the Detention Center Plan and no future benefit will be paid from the Employees' Plan. Assets are transferred from the Employees' Plan to the Detention Center Plan in an amount equal to the projected unit credit accrued liability in the Employees' Plan.

Recodification: Effective 2/25/2002.

Allows a benefit based on disability leave service and pre-plan military service to be paid over the 70% cap. Elimination of Tier 2 benefits. Changed early retirement factors. Added a death benefit.

County Council Bill No. 32-04: Effective 7/1/2004.

Allows retirement after 20 years of service for "Category I" participants. Changes vesting for new hires from 5 years to 20 years. Provides for employees contributions to be made on a pre-tax ("pick up") basis.

County Council Bill No. 74-09: Effective 12/11/2009.

For non-represented members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 3% for determining the final average basic pay. For D3 and S2 members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 4% for determining the final average basic pay.

SUMMARY OF MAJOR LEGISLATIVE CHANGES

(continued)

County Council Bill No. 78-09:	Effective 11/16/2009. For D1 and D2 members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 4% for determining the final average basic pay.
County Council Bill No. 6-10:	Effective 4/18/2010. Provides for a disability benefit for those participants who are totally and permanently disabled as a result of qualified military service.
County Council Bill No. 41-10:	Effective 7/1/2010. Increased the contribution rate for Detention Officers, Detention Corporals and Detention Sergeants to 6.75%. Added a "pop-up" option.
County Council Bill No. 98-12:	Effective 5/13/2013. Changed the definition of "final average basic pay" from highest 3 out of the last 5 years basic pays to higher 3 of all basic pays.

Statement No. 25 of the GASB

STATEMENT NO. 25 OF THE GOVERNMENTAL ACCOUNTING STANDARDS BOARD

Schedules of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Unfunded AAL (UAAL) (b-a)	Actuarial Accrued Liability (AAL) (b)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a)/c)
01/01/2004	$45,710,154	$7,174,384	$52,884,538	86.4%	$15,396,301	46.6%
01/01/2005	$52,200,204	$8,072,549	$60,272,753	86.6%	$15,355,590	52.6%
01/01/2006	$58,379,332	$10,713,394	$69,092,726	84.5%	$16,794,068	63.8%
01/01/2007	$66,233,757	$9,712,479	$75,946,236	87.2%	$17,367,873	55.9%
01/01/2008[1]	$74,355,736	$13,061,602	$87,417,338	85.1%	$18,122,458	72.1%
01/01/2008[2]	$74,355,736	$14,439,815	$88,795,551	83.7%	$18,122,458	79.7%
01/01/2009	$76,525,847	$21,959,305	$98,485,152	77.7%	$19,785,653	111.0%
01/01/2010	$84,490,610	$26,787,087	$111,277,697	75.9%	$20,203,895	132.6%
01/01/2011[3]	$92,968,797	$26,798,406	$119,767,203	77.6%	$19,310,216	138.8%
01/01/2011[4]	$87,911,133	$31,856,070	$119,767,203	73.4%	$19,310,216	165.0%
01/01/2012	$90,334,022	$35,653,262	$125,987,284	71.7%	$18,760,664	190.0%
01/01/2013[1]	$92,617,788	$39,803,655	$132,421,443	69.9%	$17,896,574	222.4%
01/01/2013[2]	$92,617,788	$41,060,297	$133,678,085	69.3%	$17,896,574	229.4%
01/01/2014[1]	$102,136,092	$38,529,969	$140,666,061	72.6%	$18,132,868	212.5%
01/01/2014[2]	$102,136,092	$41,560,254	$143,696,346	71.1%	$18,132,868	229.2%

Schedules of County's Contributions

Year Ended December 31	*Annual Required Contribution*	*Annual Contribution*	*Percentage Contributed*
2013	$5,600,175	$5,600,178[5]	100.0%

[1] *Prior to Assumption Changes*
[2] *After Assumption Changes*
[3] *Prior to Asset Method Change*
[4] *After Asset Method Change*
[5] *On an accrual basis. Subject to verification.*

STATEMENT NO. 25 OF THE GOVERNMENTAL ACCOUNTING STANDARDS BOARD

(continued)

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows.

Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of pay, closed
Remaining amortization period	Remaining Amortization periods range from 20 to 29 years with an average of 24 years. Starting with new bases in 2014, Assumption changes and gains and losses are amortized over 20 years and plan changes are amortized over the average future service of the active population at time of the change.
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.5%
Projected salary increases	Varies by age
Post Retirement Cost-of-living adjustments	3.0% for pre 2/97 accruals 1.8% for post 2/97 accruals

ACTUARIAL CERTIFICATION

This actuarial valuation sets forth our calculation of an estimate of the liabilities of the Anne Arundel County Detention Officers' and Deputy Sheriffs' Retirement Plan, together with a comparison of these liabilities with the value of the plan assets, as submitted by Anne Arundel County (the County). This calculation and comparison with assets is applicable for the valuation date only. The future is uncertain, and the plan may become better funded or more poorly funded in the future. This valuation does not provide any guarantee that the plan will be able to provide the promised benefits in the future.

This is a deterministic valuation in that it is based on a single set of assumptions. This set of assumptions is one possible basis for our calculations. Other assumptions may be equally valid. The future is uncertain and the plan's actual experience will differ from those assumptions; these differences may be significant or material because these results are very sensitive to the assumptions made and, in some cases, to the interaction between the assumptions. We may consider that some factors are not material to the valuation of the plan and may not provide a specific assumption for those factors. We may have used other assumptions in the past. We will likely consider changes in assumptions at a future date.

Different assumptions or scenarios within the range of possibilities may also be reasonable and results based on those assumptions would be different. As a result of the uncertainty inherent in a forward looking projection over a very long period of time, no one projection is uniquely "correct" and many alternative projections of the future could also be regarded as reasonable. Two different actuaries could, quite reasonably, arrive at different results based on the same data and different views of the future. A "sensitivity analysis" shows the degree to which results would be different if you substitute alternative assumptions within the range of possibilities for those utilized in this report. We have not been engaged to perform such a sensitivity analysis and thus the results of such an analysis are not included in this report. At the County's request, Bolton Partners, Inc. is available to perform such a sensitivity analysis.

The County is responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in this report. The County is solely responsible for communicating to Bolton Partners, Inc. any changes required thereto.

The County could reasonably ask how the valuation would change if we used a different assumption set or if plan experience exhibited variations from our assumptions. This report does not contain such an analysis. This type of analysis would be a separate assignment.

In addition, decisions regarding benefit improvements, benefit changes, the trust's investment policy, and similar issues should not be based on this valuation. These are complex issues and other factors should be considered when making such decisions. These other factors might include the anticipated vitality of the local economy and future growth expectations, as well as other economic and financial factors.

ACTUARIAL CERTIFICATION

(continuation)

The cost of this plan is determined by the benefits promised by the plan, the plan’s participant population, the investment experience of the plan and many other factors. An actuarial valuation is a budgeting tool for the County. It does not affect the cost of the plan. Different funding methods provide for different timing of contributions to the plan. As the experience of the plan evolves, it is normal for the level of contributions to the plan to change. If a contribution is not made for a particular year, either by deliberate choice or because of an error in a calculation, that contribution can be made in later years. We will not be responsible for contributions that are made at a future time rather than an earlier time. The plan sponsor is responsible for funding the cost of the plan.

We make every effort to ensure that our calculations are accurately performed. These calculations are complex. Despite our best efforts, we may make a mistake. We reserve the right to correct any potential errors by amending the results of this report or by including the corrections in a future valuation report.

Because modeling all aspects of a situation is not possible or practical, we may use summary information, estimates, or simplifications of calculations to facilitate the modeling of future events in an efficient and cost-effective manner. We may also exclude factors or data that are immaterial in our judgment. Use of such simplifying techniques does not, in our judgment, affect the reasonableness of valuation results for the plan.

This report is based on plan provisions, census data, and asset data submitted by the County. We have relied on this information for purposes of preparing this report, but have not performed an audit. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information. The plan sponsor is solely responsible for the validity and completeness of this information.

The County is solely responsible for selecting the plan’s investment policies, asset allocations and individual investments. Bolton Partners, Inc.’s actuaries have not provided any investment advice to the County.

The information in this report was prepared for the internal use of the County and its auditors in connection with our actuarial valuations of the pension plan. It is neither intended nor necessarily suitable for other purposes. Bolton Partners, Inc. is not responsible for the consequences of any other us.

ACTUARIAL CERTIFICATION

(continuation)

The only purposes of this report are to:

- Present Bolton Partners, Inc.'s actuarial estimates of the Plan's liabilities and expenses for the County to incorporate, as the County deems appropriate, in its financial statements,
- Provide the recommended employer contribution for fiscal year beginning July 1, 2014.

This report may not be used for any other purpose; Bolton Partners, Inc. is not responsible for the consequences of any unauthorized use.

The calculation of actuarial liabilities for valuation purposes is based on a current estimate of future benefit payments. The calculation includes a computation of the "present value" of those estimated future benefit payments using an assumed discount rate; the higher the discount rate assumption, the lower the estimated liability will be. For purposes of estimating the liabilities (future and accrued) in this report, you selected an assumption based on the expected long-term rate of return on plan investments. Using a lower discount rate assumption, such as a rate based on long-term bond yields, could substantially increase the estimated present value of future and accrued liabilities.

Because valuations are a snapshot in time and are based on estimates and assumptions that are not precise and will differ from actual experience, contribution calculations are inherently imprecise. There is no uniquely "correct" level of contributions for the coming plan year.

This report provides certain financial calculations for use by the auditor. These values have been computed in accordance with our understanding of generally accepted actuarial principles and practices and fairly reflect the actuarial position of the Plan. The various actuarial assumptions and methods which have been used are, in our opinion, appropriate for the purposes of this report.

The report is conditioned on the assumption of an ongoing plan and is not meant to present the actuarial position of the Plan in the case of Plan termination. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status), and changes in plan provisions or applicable law.

ACTUARIAL CERTIFICATION

(continuation)

The County should notify Bolton Partners, Inc. promptly after receipt of this report if the County disagrees with anything contained in the report or is aware of any information that would affect the results of the report that has not been communicated to Bolton Partners, Inc. or incorporated therein. The report will be deemed final and acceptable to the County unless the County promptly provides such notice to Bolton Partners, Inc.

The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. They are currently compliant with the Continuing Professional Development Requirement of the Society of Actuaries. We are not aware of any direct or material indirect financial interest or relationship, including investments or other services that could create a conflict of interest that would impair the objectivity of our work.

We are available to answer any questions on the material in this report to provide explanations or further details as appropriate.

Bolton Partners, Inc.

Thomas B. Lowman, FSA, EA

Kristopher E. Seets, ASA, EA