

*ACTUARIAL
SECTION*

Actuary's Certification Letter



A Xerox Company

March 16, 2011

Board of Trustees
Employees' Retirement System
of Baltimore County
Towson, Maryland

Members of the Board:

Actuarial valuations of the Employees' Retirement System of Baltimore County are performed annually. The results of the latest actuarial valuation of the System, which was prepared as of June 30, 2010, are presented in the valuation report.

The valuation reflects the benefits in effect on the valuation date, and was prepared on the basis of the data submitted by the County and the actuarial assumptions as adopted by the Board of Trustees.

The actuarial assumptions and methods comply with the parameters set forth in Statement No. 25 of the Governmental Accounting Standards Board (GASB).

Financing Objective and Contribution Appropriation

The results of the June 30, 2010 valuation determine the contribution appropriation for the fiscal year ending June 30, 2012.

The financing objectives of the System are to:

- (a) fully fund all current costs based on the normal contribution payable determined under the funding method; and
- (b) liquidate the unfunded accrued liability based on accrued liability contributions payable over an amortization period of 30 years.

Assets and Participant Data

The County reported the individual data for members of the System as of the valuation date to the actuary. While we did not verify the data at their source, we did perform tests for internal consistency and reasonability in relation to the data submitted for the previous valuation.

The amount of current assets in the trust fund taken into account in the valuation was based on statements prepared for us by the County.

Actuarial Assumptions and Methods

The actuarial asset valuation method is a ten-year moving market method that spreads the difference between actual investment income and expected income (based on the valuation interest rate) over a period of ten years, as adopted for valuation purposes effective June 30, 2010. The nature and effect of this change are discussed in the report. An interest rate of 7⁷/₈% was used in the valuation, as adopted for valuation purposes effective June 30, 1993.

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Included in the valuation report is a schedule that presents an outline of the actuarial assumptions and methods used to prepare the actuarial valuation results. The most recent study of the plan's experience, used in developing the current actuarial assumptions, was based on a period from July 2001 to June 2006. In our opinion, the actuarial assumptions used in the valuation are, in the aggregate, reasonable.

Effective with the fiscal 2003 contribution, all administrative and operating expenses of the ERS are paid from System assets. As a result, the normal cost includes these expenses.

Funding Adequacy

The results of the valuation indicate that the recommended contribution appropriation is adequate to fund the actuarial liabilities on account of all benefits payable under the System, when taken together with member contributions and with the current assets of the System. Included in the valuation report are contribution and funding progress schedules prepared by the actuary.

Financial Results and Membership Data

Detailed summaries of the financial results of the valuation and membership data used in preparing the valuation are shown in the valuation report. The actuary prepared supporting schedules and required supplementary information included in the Actuarial, Financial and Statistical Sections of the Comprehensive Annual Financial Report.

This report was prepared by Lawrence Lin under the supervision of Timothy J. Abramic and reviewed by David L. Driscoll. To the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally accepted actuarial principles and Actuarial Standards of Practice. The signing actuaries are members of the American Academy of Actuaries and meet the Academy's Qualification Standards to render the actuarial opinion contained herein. They are available to answer questions concerning this report.

Respectfully submitted,



David L. Driscoll, F.S.A., E.A., M.A.A.A
Principal



Timothy J. Abramic, E.A., M.A.A.A
Director, Retirement Consulting



Lawrence (Yen-An) Lin, A.S.A., M.A.A.A
Consultant, Retirement

DD/TJA/LL:pl

BUCK CONSULTANTS

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Summary of Actuarial Assumptions and Methods

ASSUMPTIONS

Interest Rate: $7\frac{7}{8}\%$ per annum, compounded annually.

Inflation: 3.0% per annum.

Salary Increase: Representative values for fiscal years beginning July 1, 2012 are as follows (adopted as of June 30, 2009 effective for the fiscal 2011 contribution):

Age	Annual Rates of Salary Increase	
	General Employees, Correctional Officers and Deputy Sheriffs	Police Officers and Firefighters
25	6.40%	6.55%
30	4.90	5.05
35	3.90	4.05
40	3.40	3.55
45	2.90	3.05
50	2.40%	2.55%
55	1.90	2.30
60	1.90	2.30
65	1.90	2.30

Salary increase rates at all ages for the fiscal years ending June 30, 2010 and June 30, 2011 are 3% for Police and 2.5% for all other groups. Salary increase rates for the year ending June 30, 2012 at all ages are 2% for Police and 1.5% for all other groups.

The effect of these assumptions is illustrated by the following examples: When used in the valuation process, these assumptions produce an effective annual average increase of 4.0% over a 27-year career for a Policeman hired at age 25, and 3.0% over a 30-year career for a General Employee hired at age 30.

Expenses: The assumed interest rate is gross of the administrative expenses of the fund. All administrative and operating expenses of the ERS are included in the normal cost.

Loading or Contingency Reserves: None

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Summary of Actuarial Assumptions and Methods, continued

Illustrative Rates of Separation from Service (adopted as of June 30, 2007)

Age	Hired Before 7/01/2007							
	Withdrawal			Disability		Death		
	Refund Before 10 Years of Service	Refund After 10 Years of Service	Termination Benefit After 10 Years of Service	Ordinary	Accidental	Ordinary		Accidental
						Males	Females	
General Employees, Correctional Officers and Deputy Sheriffs								
20	17.406%			0.036%	0.009%	0.056%	0.015%	0.002%
25	13.500			0.051	0.009	0.054	0.014	0.001
30	10.350	1.087%	1.200%	0.087	0.019	0.052	0.022	0.001
35	9.900	0.810	1.200	0.145	0.019	0.061	0.038	0.001
40	9.900	0.773	1.200	0.253	0.028	0.082	0.050	0.002
45	9.900	0.735	1.350	0.361	0.047	0.121	0.079	0.003
50	7.200	0.697	1.500	0.506	0.056	0.188	0.124	0.006
55	5.400	0.660	1.500	0.615	0.066	0.310	0.180	0.009
60	4.500	0.630	1.500	0.615	0.084	0.588	0.288	0.015
64	3.780	0.630	1.500	0.615	0.084	0.994	0.529	0.022
65				0.615	0.084	1.127	0.623	0.024
69				0.615	0.084	1.787	1.111	0.035
Police Officers								
20	5.625%			0.023%	0.045%	0.028%	0.008%	0.008%
25	2.925			0.023	0.056	0.027	0.007	0.012
30	2.700	0.750%	1.030%	0.028	0.068	0.026	0.011	0.016
35	1.800	0.500	0.630	0.106	0.096	0.031	0.010	0.024
40	1.350	0.300	0.390	0.106	0.164	0.041	0.025	0.036
45	1.350	0.300	0.220	0.106	0.310	0.060	0.040	0.052
50	0.900	0.300	0.120	0.149	0.570	0.094	0.062	0.084
55	0.562	0.300	0.030	0.553	1.015	0.155	0.090	0.140
59				0.553	1.636	0.257	0.128	0.240
60				0.553	1.636	0.294	0.144	0.272
64				0.553	1.636	0.497	0.265	0.400
Firefighters								
20	5.000%			0.023%	0.011%	0.028%	0.008%	0.008%
25	2.600			0.023	0.014	0.027	0.007	0.012
30	2.400	0.750%	1.030%	0.028	0.017	0.026	0.011	0.016
35	1.600	0.500	0.630	0.106	0.024	0.031	0.010	0.024
40	1.200	0.300	0.390	0.106	0.033	0.041	0.025	0.036
45	1.200	0.300	0.220	0.106	0.062	0.060	0.040	0.052
50	0.800	0.300	0.120	0.149	0.115	0.094	0.062	0.084
55	0.500	0.300	0.030	0.553	0.204	0.155	0.090	0.140
59	0.100	0.300	0.010	0.553	0.229	0.257	0.128	0.240
60				0.553	0.229	0.294	0.144	0.272
64				0.553	0.229	0.497	0.265	0.400

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Summary of Actuarial Assumptions and Methods, continued

Illustrative Rates of Separation from Service (adopted as of June 30, 2007)

Age	Hired After 6/30/2007							
	Withdrawal			Disability		Death		
	Refund Before 10 Years of Service	Refund After 10 Years of Service	Termination Benefit After 10 Years of Service	Ordinary	Accidental	Ordinary		Accidental
						Males	Females	
General Employees, Correctional Officers and Deputy Sheriffs								
20	14.505%			0.043%	0.013%	0.056%	0.015%	0.002%
25	11.250			0.059	0.013	0.054	0.014	0.001
30	8.625	1.688%	0.600%	0.102	0.025	0.052	0.022	0.001
35	8.250	1.613	0.600	0.170	0.025	0.061	0.038	0.001
40	8.250	1.538	0.600	0.298	0.038	0.082	0.050	0.002
45	8.250	1.462	0.675	0.425	0.062	0.121	0.079	0.003
50	6.000	1.388	0.750	0.595	0.075	0.188	0.124	0.006
55	4.500	1.313	0.750	0.723	0.088	0.310	0.180	0.009
60	3.750	1.237	0.750	0.723	0.112	0.588	0.288	0.015
64	3.150	1.178	0.750	0.723	0.112	0.994	0.529	0.022
65	3.000	1.162	0.750	0.723	0.112	1.127	0.623	0.024
69				0.723	0.112	1.787	1.111	0.035
Police Officers								
20	3.750%			0.047%	0.060%	0.056%	0.015%	0.008%
25	1.950			0.047	0.075	0.056	0.014	0.012
30	1.800	0.750%	0.515%	0.056	0.090	0.052	0.022	0.016
35	1.200	0.500	0.315	0.213	0.128	0.061	0.038	0.024
40	0.900	0.300	0.195	0.213	0.218	0.082	0.050	0.036
45	0.900	0.300	0.110	0.213	0.412	0.121	0.079	0.052
50	0.600	0.300	0.060	0.298	0.758	0.188	0.124	0.084
55	0.375	0.300	0.015	1.105	1.350	0.310	0.180	0.140
59	0.075	0.300	0.005	1.105	2.175	0.514	0.255	0.240
60				1.105	2.175	0.588	0.288	0.272
64				1.105	2.175	0.994	0.529	0.400
Firefighters								
20	2.500%			0.047%	0.045%	0.056%	0.015%	0.008%
25	1.300			0.047	0.056	0.056	0.014	0.012
30	1.200	0.750%	0.515%	0.056	0.068	0.052	0.022	0.016
35	0.800	0.500	0.315	0.213	0.095	0.061	0.038	0.024
40	0.600	0.300	0.195	0.213	0.131	0.082	0.050	0.036
45	0.600	0.300	0.110	0.213	0.247	0.121	0.079	0.052
50	0.400	0.300	0.060	0.298	0.454	0.188	0.124	0.084
55	0.250	0.300	0.015	1.105	0.810	0.310	0.180	0.140
59	0.050	0.300	0.005	1.105	0.910	0.514	0.255	0.240
60				1.105	0.910	0.588	0.288	0.272
64				1.105	0.910	0.994	0.529	0.400

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Summary of Actuarial Assumptions and Methods, continued

Illustrative Rates of Retirement (adopted as of June 30, 2007):

Age	General Employees							
	Hired before 7/01/2007						Hired After 6/30/2007	
	Early Retirement (Age 55 with 20 Years)	Normal Retirement (Age 60 and 5 Yrs, or 30 Yrs)*					DROP Retirement with 5-9 Years DROP Participation	Normal Retirement (Age 67 and 10 Years or 35 Years)
		Under Age 60 at June 30, 2007				30 Years or Age 65** with 5 Years		
5 - 9 Years Service		10 - 19 Years Service	20 - 29 Years Service But Without Rule of 85	5 - 9 Years Service				
45					8.29%			
46					8.29			
47					8.29			
48					8.29			
49					8.29			
50					8.29			
51					8.29			
52					8.29			
53					8.29			
54					8.29		11.05%	
55	9.262%				8.29		11.05	
56	2.925				8.29		11.05	
57	1.950				8.29		11.05	
58	3.120				8.29		11.05	
59	4.388				8.29		11.05	
60		2.00%	10.00%	20.00%	8.29	5.00%	11.05	
61		2.00	10.00	20.00	9.53	10.00	12.71	
62		2.00	10.00	20.00	17.34	15.00	23.11	
63		2.00	10.00	20.00	12.37	20.00	16.48	
64		2.00	10.00	20.00	14.02	25.00	18.69	
65					22.73	30.00	30.29	
66					19.33	35.00	25.76	
67					18.33	40.00	24.44	
68					17.34	45.00	23.11	
69					16.51	50.00	22.01	
70					100.00		100.00	

* Members not meeting DROP entry requirements by age 65 are assumed to retire on normal service retirement at the rates shown above. Members who meet DROP entry requirements by age 65 are assumed to (a) retire on service retirement at 75% of the normal retirement rates shown above prior to entering the DROP; (b) enter the DROP as soon as they are eligible; (c) retire normally (5%) or with DROP benefits (95%) at the DROP retirement rates shown after five years of DROP participation. The DROP retirement rate becomes 100% upon completion of ten years of DROP participation, or attainment of age 70, whichever occurs first.

** Substitute 60 for 65 if the member was age 60 or older on or before 6/30/07.

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Summary of Actuarial Assumptions and Methods, continued

Age	Correctional Officers and Deputy Sheriffs				
	Hired Before 7/01/2007*				Hired After 6/30/2007
	Normal Retirement (20 Years)	DROP Retirement (27 Years)	Age 60 with 5 to 10 Years of Service	Age 60 with 10 to 20 Years of Service	Retirement (Age 67 and 10 Years or 25 Years)
40	3.393%				
41	3.393				
42	3.393				
43	3.393				
44	3.393				
45	3.393	17.192%			14.95%
46	3.393	17.192			14.95
47	3.393	17.192			14.95
48	3.393	17.192			14.95
49	3.393	17.192			14.95
50	3.393	17.192			14.95
51	3.393	17.192			14.95
52	3.393	17.192			14.95
53	3.393	17.192			14.95
54	3.393	17.192			14.95
55	3.393	17.192			14.95
56	3.393	17.192			14.95
57	3.393	17.192			14.95
58	3.393	17.192			14.95
59	3.393	17.192			14.95
60	3.393	17.192	4.00%	10.00%	14.95%
61	5.968	19.769	4.00	12.00	17.19
62	22.166	35.966	4.00	14.00	31.27
63	11.845	25.645	4.00	16.00	22.30
64	15.283	29.083	4.00	18.00	25.29
65	27.588	41.388	4.00	20.00	40.99
66	20.539	34.339	4.00	22.00	34.86
67	18.469	32.269	4.00	24.00	33.06
68	16.410	30.210	4.00	26.00	31.27
69	14.685	28.486	4.00	28.00	29.77
70	100.000	100.000			100.00

* Members meeting the service requirement for the DROP are assumed to retire at 75% of the normal retirement rates shown above prior to eligibility for the benefit. Members not qualifying for the DROP are assumed to retire at the normal retirement rates shown above. An additional 20% is applied at the point a member is first eligible to retire under the DROP. Also, an additional 25% is applied at the point a member first reaches the 25-year service point due to the added health care subsidy. 95% of eligible members are assumed to elect the DROP.

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Summary of Actuarial Assumptions and Methods, continued

Age	Police			
	Hired Before 7/01/2007*			Hired After 6/30/2007
	Normal Retirement (20 Years)	Age 55 with 5 to 10 Years of Service	Age 55 with 10 to 20 Years of Service	Retirement (Age 60 and 10 Years or 25 Years)
40	5.16%			
41	5.21			
42	5.26			
43	5.31			
44	5.34			
45	5.41			9.41%
46	5.47			9.47
47	5.56			9.56
48	5.67			9.67
49	5.78			9.78
50	5.91			9.91
51	6.05			10.05
52	6.23			10.23
53	6.44			10.44
54	6.69			10.69
55	15.30	3.00%	25.00%	19.30
56	13.79	3.00	30.00	17.79
57	5.86	3.00	35.00	9.86
58	6.07	3.00	40.00	10.07
59	6.41	3.00	45.00	10.41
60	95.00	3.00	50.00	95.00
61	40.00	3.00	55.00	40.00
62	75.00	3.00	60.00	75.00
63	50.00	3.00	65.00	50.00
64	50.00	3.00	70.00	50.00
65	100.00			100.00

* Members meeting the service requirement for the DROP are assumed to retire at 75% of the normal retirement rates shown above prior to eligibility for the benefit. Members not qualifying for the DROP are assumed to retire at the normal retirement rates shown above. An additional 10% is applied at the point a member is first eligible to retire under the DROP. Also, an additional 10% is applied at the point a member first reaches the 25-year service point due to the added health care subsidy. 80% of eligible members are assumed to elect the DROP.

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Summary of Actuarial Assumptions and Methods, continued

Age	Fire				
	Hired Before 7/01/2007*				Hired After 6/30/2007
	Normal Retirement (25 years of service)	Age 60 with 5 to 10 Years of Service	Age 60 with 10 to 20 Years of Service	Age 50 with 20 to 25 Years of Service	Retirement (Age 60 and 10 Years or 30 Years)
44	12.00%				
45	12.00				
46	12.00				
47	12.00				
48	12.00				
49	12.00				12.00%
50	10.25			2.00%	10.25
51	10.40			2.00	10.40
52	10.58			2.00	10.58
53	10.80			2.00	10.80
54	11.05			2.00	11.05
55	19.89			2.00	19.89
56	18.32			2.00	18.32
57	10.10			2.00	10.10
58	10.31			2.00	10.31
59	10.65			2.00	10.65
60	85.00	3.00%	25.00%	2.00	85.00
61	35.00	3.00	35.00	2.00	35.00
62	60.00	3.00	45.00	2.00	60.00
63	40.00	3.00	55.00	2.00	40.00
64	50.00	3.00	65.00	2.00	50.00
65	100.00				100.00

* Members meeting the service requirement for the DROP are assumed to retire at 75% of the normal retirement rates shown above prior to eligibility for the benefit. Members not qualifying for the DROP are assumed to retire at the normal retirement rates shown above. An additional 10% is applied at the point a member is first eligible to retire under the DROP. Also, an additional 10% is applied at the point a member first reaches the 25-year service point due to the added health care subsidy. 100% of eligible members are assumed to elect the DROP.

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Summary of Actuarial Assumptions and Methods, continued

Death After Retirement: The 1995 George B. Buck Mortality Table with ages set forward one year was used for service retirements and dependent beneficiaries. Special mortality tables are used for disability retirements. Illustrative rates are as follows (adopted as of June 30, 2007):

Age	Annual Rates of Mortality Among:				
	Service Pensioners		Disability Pensioners		
	All Members		Other than Police and Firefighters		Police and Firefighters
	Males	Females	Males	Females	
40	0.102%	0.062%	2.322%	1.732%	3.029%
45	0.151	0.099	2.444	1.842	2.114
50	0.235	0.155	2.635	2.020	1.947
55	0.387	0.226	2.939	2.299	2.109
60	0.735	0.360	3.417	2.740	2.437
65	1.408	0.779	4.166	3.431	2.964
70	2.485	1.562	5.340	4.515	3.781
75	4.176	2.566	7.157	6.193	5.055
80	6.934	4.195	9.920	8.770	7.007

Marital Status: For firefighters and police officers, 90% of active members are assumed to be married. For all other employees, 90% of active males and 50% of active females are assumed to be married. In all cases, it is assumed that the male spouse is three years older than the female spouse.

Credit for Unused Sick Leave: For members entitled to receive credit for unused sick leave, it was assumed that each member will accumulate such credit as follows:

Supervisory, management and confidential (SMC) members, other than firefighters	¾ year
Firefighters including SMC members	1 year
Employees other than Police and Firefighters, excluding SMC members	½ year
Police	½ year

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Summary of Actuarial Assumptions and Methods, continued

METHODS

Actuarial Cost Method: Projected Unit Credit. Changes in benefits and assumptions and gains or losses are amortized over 30 years with payments that increase by 3% per annum. (Adopted as of June 30, 2008)

Asset Valuation Method: A ten-year moving average market value of assets that spreads the difference between the actual investment income and the expected income on the market value (based on the valuation interest rate) over a period of ten years. For purposes of this calculation, the gain/(loss) is defined as the difference between the actual and the expected return on the market value of assets. There is no corridor limiting the valuation assets to a certain percentage of the market value. (Adopted as of June 30, 2010)

Liability Due to Assets in Post-Retirement Increase Fund: Liabilities for retirees and beneficiaries include the value of assets in the Post-Retirement Increase Fund.

Payroll Growth: 3% per annum, compounded annually.

DATA

The valuation was based on members of the System as of June 30, 2010 and does not take into account future members. All census data was supplied by the County and was subject to reasonable consistency checks. The County supplied asset data.

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SCHEDULE OF ACTIVE MEMBER VALUATION DATA

GENERAL EMPLOYEES

Valuation as of June 30	Number of Active members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2002	6,161	\$203,036,384	\$32,955	5.0%	1.1%
2003	6,089	208,335,050	34,215	3.8	2.1
2004	6,188	213,466,762	34,497	0.8	3.3
2005	6,200	222,429,135	35,876	4.0	2.5
2006	6,347	237,974,768	37,494	4.5	4.3
2007	6,203	246,590,348	39,753	6.0	2.7
2008	6,276	263,073,480	41,917	5.4	5.0
2009	6,458	276,789,524	42,860	2.2	(1.4)
2010	6,336	282,299,161	44,555	4.0	1.1
2011	6,248	285,485,138	45,692	2.6	3.6

POLICE OFFICERS

Valuation as of June 30	Number of Active members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2002	1,774	\$91,225,162	\$51,423	13.2%	1.1%
2003	1,761	90,956,535	51,651	0.4	2.1
2004	1,820	94,168,998	51,741	0.2	3.3
2005	1,830	99,331,097	54,279	4.9	2.5
2006	1,893	113,160,620	59,778	10.1	4.3
2007	1,911	117,584,303	61,530	2.9	2.7
2008	1,926	133,153,117	69,135	12.4	5.0
2009	1,936	142,060,736	73,378	6.1	(1.4)
2010	1,927	144,883,413	75,186	2.5	1.1
2011	1,919	148,430,584	77,348	2.9	3.6

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Schedule of Active Member Valuation Data, continued

FIREFIGHTERS

Valuation as of June 30	Number of Active members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2002	984	\$47,859,370	\$48,638	6.8%	1.1%
2003	1,007	51,149,350	50,794	4.4	2.1
2004	1,025	52,126,358	50,855	0.1	3.3
2005	999	53,487,198	53,541	5.3	2.5
2006	1,006	60,276,437	59,917	11.9	4.3
2007	985	59,689,970	60,599	1.1	2.7
2008	987	65,893,511	66,761	10.2	5.0
2009	985	68,906,384	69,956	4.8	(1.4)
2010	991	69,191,965	69,820	(0.2)	1.1
2011	1,013	71,676,716	70,757	1.3	3.6

CORRECTIONAL OFFICERS AND DEPUTY SHERIFFS

Valuation as of June 30	Number of Active members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2002	235	\$8,742,297	\$37,201	5.3%	1.1%
2003	284	10,572,203	37,226	0.1	2.1
2004	287	10,876,631	37,898	1.8	3.3
2005	332	12,804,147	38,567	1.8	2.5
2006	339	13,988,510	41,264	7.0	4.3
2007	372	16,048,623	43,141	4.5	2.7
2008	381	17,534,096	46,021	6.7	5.0
2009	393	19,151,020	48,730	5.9	(1.4)
2010	379	18,750,737	49,474	1.5	1.1
2011	391	19,729,598	50,459	2.0	3.6

— ACTUARIAL SECTION —

Schedule of Active Member Valuation Data, continued

ALL GROUPS

Valuation as of June 30	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2002	9,154	\$350,863,213	\$38,329	6.9%	1.1%
2003	9,141	361,013,138	39,494	3.0	2.1
2004	9,320	370,638,749	39,768	0.7	3.3
2005	9,361	388,051,577	41,454	4.2	2.5
2006	9,585	425,400,335	44,382	7.1	4.3
2007	9,471	439,913,244	46,448	4.7	2.7
2008	9,570	479,654,204	50,121	7.9	5.0
2009	9,772	506,907,664	51,873	3.5	(1.4)
2010	9,633	515,125,276	53,475	3.1	1.1
2011	9,571	525,322,036	54,887	2.6	3.6

SCHEDULE OF RETIREE AND BENEFICIARY DATA

Valuation as of June 30	Added to Rolls		Removed from Rolls		Rolls – End of Year		Percent Increase In Annual Allowances	Average Annual Allowances
	Number	Annual* Allowances	Number	Annual Allowances	Number	Annual Allowances		
2002	307	\$7,364,669	208	\$1,479,395	5,656	\$95,408,736	6.6%	\$16,869
2003	292	7,819,671	179	2,238,672	5,769	100,989,735	5.8	17,506
2004	275	7,626,181	150	2,176,764	5,894	106,439,152	5.4	18,059
2005	349	7,886,485	206	2,109,495	6,037	112,216,142	5.4	18,588
2006	306	9,198,231	171	2,059,100	6,172	119,355,273	6.4	19,338
2007	405	10,144,583	176	2,416,858	6,401	127,082,998	6.5	19,854
2008	249	8,616,484	200	2,091,325	6,450	133,608,157	5.1	20,714
2009	281	13,789,920	221	2,802,573	6,510	144,595,504	8.2	22,211
2010	395	12,662,248	201	3,237,920	6,704	154,019,832	6.5	22,974
2011	303	12,530,487	235	3,946,193	6,772	162,604,126	5.6	24,011

*Cost of Living Increases included here.

— ACTUARIAL SECTION —

Solvency Test

Baltimore County's funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the system are level in concept and soundly executed, the system will pay all promised benefits when due - the ultimate test of financial soundness. Testing for level contribution rates is the long-term test.

A short conditions test is one means of checking a system's progress under its funding program. In a short condition test, the system's present assets (cash and investments) are compared with: (1) the liabilities for future benefits to present retired lives; (2) the liabilities for service already rendered by active members. In a system that has been following the discipline of level percent of payroll financing, the liabilities for future benefits to present retired lives (liability B) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability A & C) will be at least partially covered by the remainder of present assets. Generally, if the system has been using level cost financing, the funded portion of liability A & C will increase over time. This is the relationship between accrued liabilities and assets of the System over the last ten years:

Valuation as of June 30	Accrued Liability for:			Actuarial Value of Assets	Portion of Accrued Liability Covered by Actuarial Value of Assets		
	(A) Active Member Contribution	(B) Retirees and Beneficiaries	(C) Active Member Employer Financed		(A)	(B)	(C)
2001 ⁽¹⁾	\$247,121,190	\$888,237,904	\$481,229,389	\$1,744,066,828	100.0%	100.0%	100.0%
2002	267,367,396	911,599,906	545,916,909	1,764,776,154	100.0	100.0	100.0
2003 ⁽²⁾	286,223,066	947,448,642	596,912,599	1,740,713,074	100.0	100.0	84.9
2004 ⁽³⁾	309,108,608	969,870,802	645,563,619	1,803,810,968	100.0	100.0	81.3
2005 ⁽⁴⁾	325,300,280	1,044,483,625	579,827,565	1,832,922,033	100.0	100.0	79.9
2006	348,756,395	1,082,484,348	647,571,148	1,938,817,402	100.0	100.0	78.4
2007 ⁽⁵⁾	363,778,826	1,247,373,485	678,300,211	2,101,023,411	100.0	100.0	72.2
2008 ⁽⁶⁾	391,743,335	1,307,885,347	791,713,328	2,191,623,378	100.0	100.0	62.1
2009 ⁽⁷⁾	417,514,605	1,359,000,212	823,155,619	2,143,616,137	100.0	100.0	44.6
2010 ⁽⁸⁾	447,377,958	1,446,963,230	851,674,652	2,196,914,646	100.0	100.0	35.5

- (1) Change in benefits and retirement rates for Police and Firefighters.
- (2) Assumption changes recommended in 2001 experience study were adopted, amortization period was changed to 25 years, Police and Fire DROPs were added and Fire Joint & 50 eligibility was changed to 25 years.
- (3) Asset method change: difference between expected and actual return on market value smoothed over 4 years.
- (4) Cost method change: From Entry Age Normal to Projected Unit Credit.
- (5) Assumption changes recommended in 2006 experience study were adopted, plus plan changes to all groups including implementation of DROP programs for general employees, correctional officers and deputy sheriffs.
- (6) Amortization period was changed to 30 years.
- (7) Actuarial Asset Method is revised to remove 14% Corridor Around Market Value and the smoothing period was changed from 4 to 5 years. Salary increase rates for all members are reduced.
- (8) Actuarial Asset Method change: The Smoothing period was changed from 5 to 10 years.

— ACTUARIAL SECTION —

Analysis of Change in Unfunded Accrued Liability As of June 30, 2010

<i>Reconciliation of Gain (Loss) in the Unfunded Accrued Liability:</i>	Amount
1. Unfunded Accrued Liability at June 30, 2009	\$456,054,299
2. Interest Charge at 7.875% to June 30, 2010	35,914,274
3. Contributions Toward Unfunded Accrued Liability	20,707,234
4. Change in Asset Method (Change to 10-Year Smoothing)	(98,128,783)
5. Expected Unfunded Accrued Liability at June 30, 2010 (1) + (2) + (4) – (3)	373,132,556
6. Actual Unfunded Accrued Liability at June 30, 2010	549,101,194
7. Increase (Decrease) from Expected / Actuarial Loss (6) – (5)	<u>\$175,968,638</u>

Progress Toward Amortization of Unfunded Accrued Liability For the Year Ended June 30, 2010

Unfunded Accrued Liability	Amount	Amortization Period
1. 2008 Fresh Start Employer Base	\$192,808,117	28 Years
2. Member Base for 12 Month Average Final Compensation	1,220,904	2 Years
3. 2008 Actuarial Loss	117,738,220	28 Years
4. 2009 Actuarial Loss	566,962,042	29 Years
5. 2009 Asset Method Change / Remove Corridor & go to 5-Yr Smoothing	(351,805,672)	29 Years
6. 2009 Assumption Change / Salary Scale	(50,729,148)	29 Years
7. 2009 Plan Changes / Amendments	(4,933,124)	29 Years
8. 2010 Actuarial Loss	175,968,638	30 Years
9. 2010 Asset Method Change / Change to 10-Year Smoothing	<u>98,128,783</u>	30 Years
9. Total	<u>\$549,101,194</u>	

— ACTUARIAL SECTION —

Summary of Plan Provisions

The Employees' Retirement System provides members the following benefits:

- Retirement Benefits
- Disability Benefits
- Death Benefits

ELIGIBILITY

Full-time and part-time employees of Baltimore County and the Baltimore County Revenue Authority and employees of the Board of Education, Board of Library Trustees and the Community College of Baltimore County not eligible to participate in the Maryland State Retirement and Pension Systems are entitled to membership in the System. Employees, exclusive of firefighters and police officers, may become a System member at any time within the first two years of employment. System membership is compulsory for firefighters and police officers as a condition of employment. All other employees must become a System member at the end of the two-year period as a condition of employment, except for elected officials, employees appointed to certain non-merit positions and part-time employees that have the option to join the System. Selection of the option must be made within two years of employment. System members hired prior to July 1, 2007 are vested after five years of membership. System members hired on or after July 1, 2007 are vested after ten years of membership. The age of hire at which an employee may opt not to join the System was lowered from 59 to age 55.

Members are designated as elected officials, general employees, deputy sheriffs, correctional officers, firefighters and police officers. Elected officials include only the County Executive and County Council members. General employees include Baltimore County department heads, classified employees, and part-time employees (employees excluded from the classified service and work less than a standard full-time work schedule), Revenue Authority, education, library and community college employees. Firefighters and police officers include only the sworn personnel of the Fire Department and Police Department, respectively.

MEMBER CONTRIBUTIONS

System members contribute a percentage of their salary to the System. The contribution rate for members hired prior to July 1, 2007 is actuarially determined based on the member's age at enrollment and employee classification. The contribution rate for elected officials is fixed. Fiscal year 2011 contribution rates range as follows:

Classification	Contribution Rate as a % of Covered Payroll	
	Hired prior to July 1, 2007	Hired on or after July 1, 2007
Elected officials	13.85%	13.85%
Department Heads	7.61 - 11.98%	10.00%
General employees	4.92 - 8.86%	6.50%
Correctional Officers	4.98 - 8.62%	7.50%
Deputy Sheriffs	5.17 - 8.86%	7.50%
Firefighters	7.46 - 9.21%	8.00%
Police Officers	6.51 - 9.72%	8.00%

Interest is credited on member contributions at the rate of 5.0% per annum.

Contribution rate increased for all active members by 0.5% beginning July 1, 2010. Beginning July 1, 2011, contribution rates for deputy sheriffs and firefighters hired on or after July 1, 2011 increased to 10%.

— ACTUARIAL SECTION —

Summary of Plan Provisions, continued

MILITARY SERVICE CREDIT

Members hired prior to July 1, 2007, with five years of creditable service, or members hired on or after July 1, 2007, with ten years of creditable service are entitled to a military service credit on a year-for-year basis for up to a maximum of four years.

SICK LEAVE CREDIT

At the time of retirement, all members, except firefighters receive one month of service credit for each 22 unused sick leave days. One additional month is granted if fractional days of sick leave total 11 or more. Firefighters receive one month of service credit for each 16 unused sick leave days. Sick leave may be used to determine service credit except for the following circumstances: death benefit, ordinary disability, and vesting.

RETIREMENT ALLOWANCE DATES

Normal Retirement for Service: Members hired prior to July 1, 2007

Normal retirement for service can be granted to general employees and appointed officials who have reached the age of 60 with 5 years of creditable service or attained 30 years of creditable service. A normal retirement for service can be granted to elected officials who have attained 16 years of creditable service or age 55 and attained 4 years of creditable service. An early service retirement can be granted to general employees who have reached the age of 55 and have attained 20 years of creditable service. A normal retirement for service can be granted to correctional officers and deputy sheriffs who have reached the age of 60 with 5 years of creditable service or have attained 20 years of creditable service. A normal retirement for service can be granted to firefighters at the age of 60 with 5 years of creditable service or age 50 with 20 years of creditable service or 25 years creditable service regardless of age. A normal retirement for service can be granted to police officers who have reached the age of 55 or have attained 20 or more years of creditable service. The System does not have a mandatory retirement age requirement for general employees, deputy sheriffs and correctional officers. Firefighters and police officers must retire at age 65 unless approved for continuation of service by the Board on an annual basis.

Normal Retirement for Service: Members hired on or after July 1, 2007

Normal retirement for service can be granted to general employees and appointed officials who have reached the age of 67 with 10 years of creditable service or attained 35 years of creditable service regardless of age. A normal retirement for service can be granted to elected officials who have attained 16 years of creditable service or age 55 and attained 4 years of creditable service. A normal retirement for service can be granted to correctional officers and deputy sheriffs who have reached the age of 67 with 10 years of creditable service or have attained 25 years of creditable service regardless of age. A normal retirement for service can be granted to firefighters at the age of 60 with 10 years of creditable service or 30 years creditable service regardless of age. A normal retirement for service can be granted to police officers who have reached the age of 60 with 10 years of creditable service or have attained 25 years of creditable service regardless of age. The System does not have a mandatory retirement age requirement for general employees, deputy sheriffs and correctional officers. Firefighters and police officers must retire at age 65 unless approved for continuation of service by the Board on an annual basis.

Ordinary Disability Retirement may be granted to a member who can no longer perform their job due to a non-occupational related injury. A sworn police officer or firefighter, hired prior to July 1, 2007 must have five years of creditable service and be medically certified as incapacitated to continue performance of their duties. All other members must have 10 years of creditable service and be medically certified as incapacitated to continue performance of their duties.

— ACTUARIAL SECTION —

Summary of Plan Provisions, continued

Accidental Disability Retirement may be granted to a member upon application who has been physically incapacitated for duty as a result of an occupational related injury. Accidental disabilities for all members are now tiered based on the degree of disability (75%, 66.67%, or 50%) in lieu of 66.67% plus accumulated contributions.

Discontinued Service Retirement may be granted to a member whose employment has been discontinued through no fault of their own after completion of 25 years of creditable service or age 50 and 20 years of creditable service.

RETIREMENT ALLOWANCES

Retirement allowances are comprised of an annuity equal to the actuarial equivalent of the accumulated contributions plus a pension which together with the annuity shall provide a maximum allowance as provided for in the Code.

Normal Retirement for Service Allowance is granted as follows:

(A) General employees (excluding appointed officials and correctional officers and part-time employees) hired prior to July 1, 2007, with 30 years of creditable service, or age 60 as of June 30, 2007 and attain 5 years of creditable service, or age 65 with 5 years of creditable service receive an allowance equal to 1/55th of the Average Final Compensation (AFC) times the number of years of creditable service. General employees hired prior to July 1, 2007 may retire at age 60 with at least 5 years of creditable service, however, such members will be granted a blended benefit. For creditable service earned prior to July 1, 2007, members will receive an allowance equal to 1/55th of AFC times the number of years of creditable service and for creditable service earned on or after July 1, 2007, members will receive an allowance equal to 1/70th of AFC times the number of years of creditable service. The AFC definition is determined by the employee's classification as the highest 12 or 36 consecutive months.

General employees (excluding appointed officials and correctional officers) hired on or after July 1, 2007, receive an allowance equal to 1/70th of the Average Final Compensation (AFC) times the number of years of creditable service. The AFC definition for most general employees hired on or after July 1, 2007, is the annual earnable compensation for the highest 36 consecutive months.

Part-time employees earn creditable service on a proportionate basis equal to the time worked annually as compared to the standard work year.

(B) Appointed officials receive an allowance equal to 2.5% of their AFC times the number of years of creditable service.

(C) Elected officials receive an allowance equal to 5.0% of their AFC times the number of years of creditable service. Any Council member who becomes a member of the retirement system on or after February 1, 2010 may not receive a retirement allowance in excess of 60% of the member's AFC. (Bill 94-09)

(D) Firefighters receive an allowance equal to 2.5% times years of creditable service up to 20 years plus 2% of AFC for each year of creditable service in excess of 20 years, and 3% of AFC for each year of creditable service in excess of 30 years for years beginning on or after July 1, 2007. The 3% rate does not apply to service earned prior to July 1, 2007. AFC is defined as the annual earnable compensation during the 12 consecutive calendar months affording the highest average.

(E) Police officers with 20 or more years of creditable service receive an allowance equal to 2.5% of AFC times years of creditable service up to 20 years plus 2% of AFC for each year of creditable service in excess of 20 years, and 3% of AFC for each year of creditable service in excess of 25 years for years beginning on or after July 1, 2007. The 3% rate does not apply to service earned prior to July 1, 2007. Police officers with less than 20 years of creditable service receive an allowance equal to 2% of AFC times years of creditable service. AFC is defined as the annual earnable compensation during the 12 consecutive calendar months affording the highest average.

— ACTUARIAL SECTION —

Summary of Plan Provisions, continued

- (F) Correctional officers and deputy sheriffs with 20 or more years of creditable service receive an allowance equal to 2.5% of AFC times years of creditable service up to 20 years plus 2% of AFC for each year of creditable service in excess of 20 years. Correctional officers and deputy sheriffs hired prior to July 1, 2007, with less than 20 years of creditable service receive an allowance equal to general employees. Correctional officers and deputy sheriffs hired on or after July 1, 2007, with less than 20 years of creditable service receive an allowance equal to 1.43% of AFC times the number of years of creditable service.

Ordinary Disability Retirement Allowance is granted to members as follows:

- (A) General employees, correctional officers and deputy sheriffs hired prior to July 1, 2007, receive an ordinary disability retirement allowance equal to 1.82% of AFC times the number of years of creditable service. General employees, correctional officers and deputy sheriffs hired on or after July 1, 2007, receive a retirement allowance equal to 1.43% of AFC times the number of years of creditable service. The minimum allowance is equal to 25% of AFC. No member may receive a benefit in excess of that which they would have received at normal service retirement age. General employees, correctional officers and deputy sheriffs who are eligible for a normal service retirement and apply for an ordinary disability retirement may be required by the Board to accept a normal service retirement.
- (B) Firefighters and police officers receive an ordinary disability retirement allowance equal to 2.5% of AFC times the number of years of creditable service not in excess of 20 years, and 2% of AFC times the number of years of creditable service in excess of 20 years. The minimum retirement allowance for Firefighters and police officers for an ordinary disability retirement allowance shall equal to 50% of AFC. No member may receive a benefit in excess of that which they would have received at normal service retirement age.

RETIREMENT ALLOWANCE OPTIONS

Members may select one of seven retirement allowance options in addition to the maximum allowance. The selection of an option, excluding *Option 7*, reduces the maximum allowance as described above. The options are as follows:

- Option 1.* Allows the member's undistributed accumulated contributions to be paid to the beneficiary in a lump sum if the member's death occurs prior to a complete payout of all member contributions.
- Option 2.* Allows 100% of the member's retirement allowance to continue to be paid to the beneficiary after the member's death.
- Option 3.* Allows 50% of the member's retirement allowance to continue to be paid to the beneficiary after the member's death.
- Option 4.* Allows any portion of the retirement allowance to continue to be paid to the beneficiary after the member's death.
- Option 5.* Allows 100% of the member's reduced retirement allowance to be paid to the beneficiary after the member's death. If the member becomes divorced from the beneficiary or the beneficiary dies before the retiree, upon notification to the Board of Trustees, the member's allowance will be increased to the maximum allowance described above. If after such death or divorce, the member wishes to select a new beneficiary and retirement option, the member may select *options 2, 3, 4, 5 or 6*. The retirement allowance will then be recomputed.
- Option 6.* Allows 50% of the member's reduced retirement allowance to be paid to the beneficiary after the member's death. If the member becomes divorced from the beneficiary or the beneficiary dies before the retiree, upon notification to the Board of Trustees, the member's allowance will be increased to the maximum allowance described above. If after such death or divorce, the member wishes to select a new beneficiary and retirement option, the member may select *options 2, 3, 4, 5 or 6*. The retirement allowance will then be recomputed.

— ACTUARIAL SECTION —

Summary of Plan Provisions, continued

Option 7. Allows 50% of the member's retirement allowance to continue to be paid to the original beneficiary at no cost to the employee. This option is available to employees who have completed at least 25 years of actual service as a sworn Baltimore County police officer or 25 years of actual service as a sworn Baltimore County Firefighter.

DEFERRED RETIREMENT OPTION PLAN (DROP)

Police Officers and Firefighters DROP

The County has adopted a Back DROP for police officers with at least 27 years of service and Firefighters with at least 32 years of service, under which eligible active members may elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit for life. Election to participate in the DROP will be made at retirement. The DROP participant benefit will be calculated along with all other available options, and the member will then choose between the DROP benefit and the regular pension benefits provided by the County. The DROP participant monthly pension will be determined as of a date that is three to five years prior to retirement date based on the plan provisions, the member's salary and service at that earlier date. The lump sum payment will be based on the accumulation of member contributions, monthly pension payments, interest earned in the DROP period and any retiree COLAs after at least twelve months in the DROP. This program became effective with retirements that occurred on or after July 1, 2004. Police officers and firefighters hired on or after July 1, 2007 are not eligible to participate in the DROP.

Correctional Officers and Deputy Sheriffs Deferred Retirement Option Plan (DROP)

Effective July 1, 2010, a Back-DROP is offered to eligible correctional officers and deputy sheriffs hired prior to July 1, 2007. The Back-DROP program allows eligible correctional officers and deputy sheriffs to elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit. The DROP period is from 3 to 5 years. Eligibility is based on 27 years of service. Correctional officers and deputy sheriffs hired on or after July 1, 2007 are not eligible to participate in the DROP.

General Employees Deferred Retirement Option Plan (DROP)

Effective July 1, 2007, General employees hired prior to July 1, 2007, are offered a DROP. The DROP allows eligible general employees to elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit. The DROP period is a minimum of 5 years and a maximum of 10 years. Eligibility is age 55 plus a total of age and service of at least 85. The DROP account will include benefit payments at the maximum option, employee contributions, an interest credit of 5%, plus any cost of living increase granted to retirees, provided the member has been in the DROP for at least 12 months. This program is effective for retirements that occur on or after July 1, 2012. General employees hired on or after July 1, 2007 are not eligible to participate in the DROP.

DEATH BENEFITS

Ordinary Death Benefit is granted as a result of a member's death from non-occupational causes as follows:

- (A) A general employee's designated beneficiary or estate receives a lump sum payment of the member's contributions plus interest. Additionally, after five year of creditable service, the member's designated beneficiary or estate may receive a one-time payment equal to 100% of the member's annual earnable compensation. If the member was eligible for a service retirement or had 15 years of creditable service at the time of death, the surviving spouse or surviving minor children, if designated as the beneficiary, may receive a retirement allowance, in lieu of other benefit payments, based on service years equivalent to *Option 2*.

— ACTUARIAL SECTION —

Summary of Plan Provisions, continued

- (B) A firefighter's or police officer's designated beneficiary or estate receives a lump sum payment consisting of the member's accumulated contributions plus interest. Additionally, after one year of creditable service, the member's designated beneficiary or estate may receive a one-time payment equal to 50% of the member's annual earnable compensation. If the firefighter or police officer had two years of creditable service, a surviving dependent family member, if designated as the beneficiary, may receive an allowance equal to 25% of AFC in lieu of another benefit. If the firefighter or police officer had 15 years of creditable service or was eligible for a service retirement, the surviving spouse or surviving minor children, if designated as the beneficiary, may receive a retirement allowance in lieu of other benefit payments based on service years equivalent to *Option 2*.

Accidental Death Benefit is granted as the result of death from an occupational related injury as follows:

- (A) The dependent beneficiary of a general employee may receive an allowance equal to $66\frac{2}{3}\%$ of AFC plus the annuity.
- (B) The dependent beneficiary of a firefighter or police officer may receive an allowance equal to 100% of the annual earnable compensation at the time of death plus the annuity.

TERMINATION BENEFITS

Employees hired prior to July 1, 2007, with 5 or more years of membership service have the option of requesting a refund of their contributions and interest or remain in the System. If such member terminates employment or dies in service, with less than 5 years creditable service, the employee contributions plus interest are refundable to the former member or a designated beneficiary.

Employees hired on or after July 1, 2007, with 10 or more years of creditable service have the option of requesting a refund of their contributions and interest or remain in the System. If such member terminates employment or dies in service, with less than 10 years creditable service, the employee contributions plus interest are refundable to the former member or a designated beneficiary.

POST-RETIREMENT ALLOWANCE INCREASES

Retirement allowance increases can be granted each July 1 if sufficient investment income has accumulated in the Post-Retirement Increase Fund balance account. Increases will be granted in an amount equal to the Consumer Price Index - All Urban Consumers (CPI-U) increase for the previous calendar year. The increase cannot exceed 3%. If there are insufficient funds in the Post-Retirement Increase Fund balance account to finance the full CPI increase, the allowance will be increased to the nearest $\frac{1}{4}\%$ for which there are sufficient moneys. If there are insufficient funds to finance a one percent increase, no retirement allowance increase shall be granted. Effective July 1, 2010 the following changes regarding COLAs were implemented:

- Active members hired prior to July 1, 2007 must have at least 20 years of creditable service to be eligible for post-retirement COLAs.
- Active members hired on or after July 1, 2007 must have at least twenty five (25) years of creditable service to be eligible for post-retirement COLAs.
- The cap on post-retirement COLAs has been reduced from 4% to 3% for all members.
- The maximum account balance in the PRIF has been reduced from 2 times the cost of a 4% COLA to 2 times the cost of a 3% COLA for all members.
- For active members who do not select the Deferred Retirement Option Program (DROP), the eligibility period to receive post-retirement COLAs has been increased from a minimum of 12 months to a minimum of 60 months.
- For active members who select the DROP program, the eligibility period to receive COLAs in the DROP remains a minimum of 12 months. Once the member actually retires, the eligibility period for a post-retirement COLA is a minimum of 48 months.