GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

ANNUAL ACTUARIAL VALUATION REPORT FOR MARYLAND MUNICIPAL CORPORATIONS AS OF JUNE 30, 2015

OUTLINE OF CONTENTS

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November 20, 2015

Board of Trustees for the
Maryland State Retirement and Pension System
120 East Baltimore Street, 16th Floor
Baltimore, Maryland 21202

Dear Members of the Board:

The results of the ***June 30, 2015 annual actuarial valuation*** of the Maryland State Retirement and Pension System ("MSRPS") for participating Municipal Corporations in the Employees' Combined System Municipal (ECS Municipal), Correctional Officers' Retirement System (CORS) and the Municipal Law Enforcement Officers Pension System (LEOPS Municipal) are presented in this report. Participating Municipal Corporations which are the responsibility of the State for funding purposes have been excluded, and certain previously withdrawn Municipal Corporations have been valued as part of the State valuation, and are therefore excluded from this valuation. The State acts as guarantor to the extent the present value of their future payments are in excess of or less than the present value of their future liabilities for previously withdrawn municipal corporations. Municipal employers who withdraw on or after June 30, 1997 will have their employees' benefits guaranteed by the other municipalities covered by this plan.

This report was prepared at your request and is intended for use by the Maryland State Retirement Agency (SRA) and the Board of Trustees of the MSRPS and those designated or approved by the SRA or the Board. This report may be provided to other parties only in its entirety and only with the permission of the SRA or the Board.

The purposes of the valuation are as follows:

- Measure the financial position of Municipal Corporation Systems of MSRPS, and
- Assist the Board in establishing basic or pooled employer contribution rates necessary to fund the benefits provided by MSRPS.

Additional statistical and actuarial reporting and disclosure information covering the MSRPS Municipal Corporations can be found in the combined State and Municipal MSRPS actuarial valuation report and the GASB Statement Nos. 67 and 68 report.

The individual member data required for the valuations was furnished by the SRA, together with pertinent data on financial operations (unaudited) and Participating Governmental Unit (PGU) schedules. The cooperation and collaboration of SRA staff in furnishing these materials is acknowledged with appreciation. We checked for internal and year-to-year consistency, but did not otherwise audit the data. We are not responsible for the accuracy or completeness of the information provided by SRA.

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopts these assumptions after considering the advice of the actuary and other professionals.

Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. GRS performed an experience study of MSRPS for the period 2010-2014 after completion of the June 30, 2014 valuations. Assumptions from the experience study including investment return, inflation, COLA increases, mortality rates, retirement rates, withdrawal rates, disability rates, and rates of salary increase were adopted by the Board for first use in the actuarial valuation as of June 30, 2015. As a result, an investment return assumption of 7.55% and an inflation assumption of 2.70% were used for the June 30, 2015 valuation. It is our opinion that the actuarial assumptions used for the valuation are reasonable.

The benefit provisions valued in the actuarial valuation as of June 30, 2015, are the same as the provisions from the last actuarial valuation as of June 30, 2014.

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. The actuary did not perform an analysis of the potential range of such future measurements in this actuarial valuation report.

Based on recent legislation, effective with the valuation as of June 30, 2013, the amortization method for the MSRPS State systems was changed to a single 25-year closed period. Currently the net single equivalent amortization period for ECS Municipal is over 100 years. **We recommend that the amortization method for ECS Municipal be reviewed and changed as well.** This is due to a large credit base that was established in the 2000 valuation that will be completely amortized on June 30, 2020, at which time a large increase in contribution rates is scheduled to occur.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. We certify that, to the best of our knowledge, this report is complete and accurate and has been prepared in accordance with Maryland's Annotated Code and generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board.

This report should not be relied on for any purpose other than the purposes previously described.

The signing actuaries are independent of the plan sponsor.

This is one of multiple documents comprising the actuarial report. The other documents comprising the actuarial report are the PowerPoint presentation presented to the Board on October 20, 2015, and subsequent PowerPoint presentations presented in November.

Brian B. Murphy, Brad L. Armstrong and Amy Williams are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Brian B. Murphy, FSA, EA, FCA, MAAA

Brad L. Armstrong, ASA, EA, FCA, MAAA

Amy Williams, ASA, FCA, MAAA

BLA/AW:sc

SECTION I

BOARD SUMMARY

BOARD SUMMARY

During the 1996 legislative session, legislation was passed which changed the contribution calculations for participating employers in the Municipal Pension Plan. Commencing with the June 30, 1996 actuarial valuation, the ongoing funding requirements for all Municipal Corporations consist of four components. The first two components are the same for all Corporations. The last two components, which vary by individual Corporation, are based on some characteristics unique to those Corporations.

The shared components are:

(1) **Normal Cost Rate** based upon Pension System provisions.
(2) **Unfunded Liability Rate** based upon all plan provisions.

The varying components are:

(3) Various **surcharges** on normal cost and unfunded liability, based on plan elections.
(4) **Special Adjustments** to the final rate reflecting:

- credits for "over-funded" Corporations as of 6/30/95,
- charges for "under-funded" Corporations as of 6/30/95,
- certain "special payments" called for under prior and future entry into the System, and
- any withdrawal liability payments owed to the System for withdrawals after 6/30/96.

The normal cost rate is a single rate determined by the actuary, based upon the valuation year demographics of the participants.

The unfunded liability rate is determined annually by the actuary and is the rate that, when applied to current and future expected payrolls, is sufficient to pay for all future benefits of current and prior plan participants not funded by:

- current actuarial value of assets,
- the present value of all future normal costs (employer and employee),
- the present value of all future surcharge contributions,
- the net present value of all future "special adjustment" contributions, and
- the present value of all future withdrawal liability payments on behalf of withdrawn Corporations.

The special adjustments include a dollar amount credit or charge subtracted from, or added to, the other three pieces. In no event can the total credits exceed the sum of the otherwise called for contribution.

A charge applies to each Municipal Corporation which as of 6/30/95 was determined to be under-funded on the basis of having less assets in the Retirement System than would be needed to fund the present value of benefits **accrued** as of 6/30/95 for prior and current participants in the Retirement System. Once this "deficit" was determined as of 6/30/95, the actuary determined a series of charges increasing by 5% per year to the year 2020 with present value equal to the amount of the deficit. For a few Municipal Corporations, the deficit payment was calculated to be greater than 2% of payroll when using a 25-year amortization payment. These Corporations are amortizing their charges to the year 2035. Individual deficit amounts and December 2016 charges are displayed in Table III-2 (page 15).

A credit applies to each Municipal Corporation which, as of 6/30/95, was determined to be over-funded on the basis of having assets which exceed the present value of all future benefits expected to be paid to current and prior participants of that employer. Once this **"surplus"** was determined as of 6/30/95, the actuary determined a series of credits increasing by 5% per year to the year 2020 with present value equal to the amount of the surplus. Individual surplus amounts and December 2016 credits are displayed in Table III-3 (page 16).

The un-pooled unfunded liability (the unfunded liability before reflecting the liabilities for special adjustments, withdrawals, and surcharges) decreased from $729 million to $720 million for Employees' Combined System (ECS). However, the *pooled* unfunded liability increased from $458 million to $467 million for the ECS. This happened because the liabilities for special adjustments, withdrawals, and surcharges are amortized faster than the pooled unfunded liability. The pooled unfunded liability decreased from $145 million to $142 million for LEOPS and decreased from $859 thousand to $790 thousand for CORS. The decrease in the unfunded liability is comprised of an asset gain compared to the actuarial assumptions and a small liability gain, which was partially offset by an increase in unfunded liability due to assumption changes.

The combined Municipal System's market value of assets earned 2.66%[1] for the year ended June 30, 2015, which is less than the 7.65% assumed rate of investment return during fiscal year 2015. The actuarial, or smoothed, rate of return measured from this past year was 9.13%, compared to the actuarial assumption of 7.65%, which resulted in an overall asset gain. The return of 9.13% was due to partial recognition of asset losses from FY 2012 and FY 2015, and partial recognition of asset gains from FY 2011, FY 2013 and FY 2014.

All of the Systems experienced gains on the liabilities due to lower salary increases than assumed. Salaries stayed flat or increased by less than the assumption which resulted in gains. Gains were also experienced due to lower COLA increases on average than assumed. COLA increases of 1.62% were granted to eligible retirees who have a COLA cap of 3.00%, 5.00%, or no COLA cap compared to the actuarial assumptions of 2.65%, 2.88% and 2.90%, respectively.

In 2011, the General Assembly enacted pension reforms which were effective July 1, 2011, and affected both current actives and new hires. The member contribution rate was increased for members of the Employees' Pension System from 5% to 7%, and from 4% to 6% in fiscal year 2012 and 7% in fiscal year 2013 and beyond for LEOPS. In addition, the benefit attributable to service on or after July 1, 2011, will be subject to different cost-of-living adjustments (COLA) that is based on the increase in the Consumer Price Index and capped at 2.5% or 1.0% based on whether the market value investment return for the preceding calendar year was higher or lower than the investment return assumption used in the valuation (currently 7.55% in the June 30, 2015 valuation).

[1]*Actuarial calculation may differ from figures reported by State Street.*

The basic, or pooled, contribution rate, which includes a normal cost rate and an unfunded liability rate, decreased for each System from those calculated in the June 30, 2014 valuation to those calculated in the June 30, 2015 valuation which determines the FY 2016 and FY 2017 contributions, respectively. The rate decreased from 5.00% to 4.64% for the Employees' Combined System, decreased from 31.94% to 31.18% for LEOPS, and decreased from 10.43% to 9.81% for CORS. The unfunded liability rate is calculated by amortizing the pooled unfunded liability.

The decrease in the contribution rate was mainly attributable to the decrease in the normal cost due to assumption changes. Favorable investment returns, increases in payroll which were lower than assumed and COLA increases that were lower than assumed also contributed to the decrease. These decreases were partially offset by recognition of assumptions changes.

Maryland's laws specify a 40-year level-percent-of-pay closed period amortization schedule starting June 30, 1980 for the pre-2001 ECS liability, starting June 30, 1999 for LEOPS, and starting June 30, 2006 for CORS. In addition, individual 25-year layers for each portion of the ECS UAL arising on or after June 30, 2001 are established. The remaining amortization period as of June 30, 2015, is 24 years for LEOPS, 31 years for CORS and the equivalent single period is over 100 years for Employees' Combined System. Based on recent legislation, effective with the valuation as of June 30, 2013, the amortization method for the MSRPS State systems was changed to a single 25-year closed period. **We recommend that the amortization method for ECS Municipal be changed as well in order to smooth out a large contribution increase in FY 2022.**

In addition to the basic contribution rate, the following surcharges apply for ECS:

	Surcharge			
Surcharge Group	**Normal Cost**	**Unfunded Liability**[1]	**Total**	**Applicable Payroll**
Retirement System	5.00%	0.00%	5.00%	Retirement System
Non-Contributory to CPB	1.00%	1.42%	2.42%	Retirement and Pension System
CPB to ACPS[2]	(0.40)%	1.51%	1.11%	Pension System
Non-Contributory to ACPS	0.60%	6.84%	7.44%	Pension System

[1] *The Contributory Pension Benefit UAL surcharge will be paid through 2020 and the other two UAL surcharges are payable through 2031.*
[2] *Contributory Pension Benefit to Alternate Contributory Pension System.*

Each employer with current active participants in the Retirement System must pay 5% on the Retirement System payroll. Municipal Corporations who elected to provide CPB have a 2.42% surcharge applied to total Retirement and Pension System payroll. The surcharge consists of a 1.00% normal cost rate surcharge and a 1.42% UAL rate surcharge. Municipal Corporations who elected to provide CPB and who later elected to participate in the ACPS pay a 1.11% surcharge applied to Pension System payroll. The surcharge is the net result of a (0.40)% normal cost rate surcharge and a 1.51% UAL rate surcharge. This is paid in addition to the 2.42% CPB surcharge. Municipalities who did not elect the CPB but did elect the ACPS pay a surcharge of 7.44% applied to Pension System payroll. The surcharge consists of 0.60% normal cost rate surcharge and a 6.84% UAL rate surcharge. The 2011 General Assembly pension reforms changed the relative cost to the employers to provide benefits under the Non-Contributory Pension System (NCPS), the Contributory Pension System (ECPS) and the Alternate Contributory Pension Selection (ACPS) by increasing the ACPS employee contribution rate from 5% to 7%, while not changing the employee contribution rate for the NCPS and ECPS. In order to address the change in the relative cost between the different plans (NCPS, ECPS, ACPS), it may be appropriate to add up to a 2% of payroll surcharge for employers whose members are covered under ECPS or NCPS.

The special adjustments to the final contribution rate that apply to each Municipal Corporation can be found in Tables III-2 through III-4 for the Employees' Combined System, Table III-5 for LEOPS and Table III-6 for CORS.

Municipalities with credits in the plan may use up to the amount shown to offset their basic December 2016 billing amount. Any unused credit will revert to the pooled plan on an annual basis.

Summary of Valuation Results
June 30, 2015
($ in Millions)

	2015				2014	
	ECS	**LEOPS**	**CORS**	**Total**	**Total**	**% Change**
A. Demographic Information						
1. Active Number Counts	24,533	942	91	25,566	25,706	-0.5%
2. Active Payroll	$ 1,060	$ 53	$ 5	$ 1,118	$ 1,095	2.1%
3. Retired Number Counts	16,522	340	27	16,889	16,329	3.4%
4. Annual Benefits for Retired Members[1]	$ 218	$ 12	$ 1 [2]	$ 231	$ 216	7.0%
5. Deferred / Inactive Number Counts	6,746	100	0	6,846	6,717	1.9%
6. Total Number Counts	47,801	1,382	118	49,301	48,752	1.1%
B. Assets						
1. Market Value (MV)	$ 3,745	$ 218	$ 20	$ 3,983	$ 3,921	1.6%
2. Rate of Return on MV[3]				2.66 %	14.29 %	
3. Funding Value (FV)	$ 3,776	$ 220	$ 21	$ 4,016	$ 3,720	8.0%
4. Rate of Return on FV				9.13 %	11.09 %	
5. Ratio of FV to MV				100.8%	94.9%	
C. Actuarial Results						
1. Normal Cost as a % of Payroll	9.37% [4]	21.12%	13.93%	9.95%	10.32%	
2. Actuarial Accrued Liability (AAL)						
a. Active	$ 1,942	$ 150	$ 10	$ 2,101	$ 2,026	3.7%
b. Retired	2,383	192	11	2,587	2,391	8.2%
c. Deferred/Inactive	171	9	0	179	165	8.4%
d. Total	$ 4,495	$ 351	$ 21	$ 4,868	$ 4,583	6.2%
3. Unfunded AAL (UAAL)	$ 720	$ 131	$ 1	$ 851	$ 863	(1.4)%
4. Funded Ratio	83.98 %	62.77 %	96.29 %	82.51 %	81.16 %	
D. Basic Contribution Rates	**FY 2017**				**FY 2016**	
1. Pension Contributions						
a. Employer Normal Cost	3.18%	14.12%	8.93%	3.73%	4.13%	
b. Member Contribution Rate	5.67%	7.00%	5.00%	6.22%	6.19%	
c. UAAL Contribution Rate	1.46%	17.06%	0.88%	2.20%	2.19%	
d. Total	10.31%	38.18%	14.81%	12.15%	12.51%	
2. Total Basic Employer Contribution Rate	4.64%	31.18%	9.81%	5.93%	6.32%	

[1] *Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2015 and July 1, 2014, respectively.*
[2] *Annual benefits equal to $756,146.*
[3] *Actuarial calculation may differ from figures reported by State Street.*
[4] *Includes surcharges.*
Totals may not add due to rounding.

OTHER OBSERVATIONS

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected System Contributions and Funded Status

Given the System's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the System earning 7.55% on the actuarial value of assets), it is expected that:

(1) The employer normal cost as a percentage of pay will decrease to the level of the Reformed Benefit Plan's (i.e., plans for members hired after July 1, 2011) normal cost as time passes and the majority of the active population is comprised of Reformed Plan members,
(2) The unfunded actuarial accrued liabilities will be fully amortized after:
 25 years (June 30, 2041) for ECS
 24 years (June 30, 2040) for LEOPS
 31 years (June 30, 2047) for CORS
(3) The funded status of the plan will increase gradually towards a 100% funded ratio.

Under the current amortization method with separate amortization bases for ECS Municipal, the contribution rate is projected to significantly increase in fiscal year 2022 after the large credit base established in the 2000 valuation is fully amortized. **We recommend that the amortization method for ECS Municipal be changed in order to smooth out the large projected contribution increase in FY 2022.**

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

(1) The measurement is inappropriate for assessing the sufficiency of System assets to cover the estimated cost of settling the System's benefit obligations, for example: transferring the liability to an unrelated third party in a market value type transaction.
(2) The measurement is dependent upon the actuarial cost method which, in combination with the System's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the System would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
(3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is already used in the measurement.

SECTION II

ASSETS

ASSETS

The System uses and discloses two different asset measurements which are presented in this section of the report: market value and actuarial value of assets. The market value represents, as of the valuation date, the value of the assets if they were liquidated on that date. The actuarial value of assets is a value that attempts to smooth annual investment return performance over five years to reduce annual investment volatility, and is used in determining contribution rates for the three participating employer plans.

On the following pages we present detailed information on System assets:

- Disclosure of assets at June 30, 2015.
- Statement of cash flows during the year.
- Development of the actuarial value of assets.
- Disclosure of investment performance for the year.

Table II-1
Market Value and Cash Flow

	Employees (Municipal)	LEOPS (Municipal)	Corrections (Municipal)	Total Municipal
Market Value of Assets as of 6/30/2014	$ 3,698,394,546	$ 202,691,392	$ 19,845,805	$ 3,920,931,743
Employer Contributions	106,999,413	16,446,438	543,160	123,989,011
Member Contributions	59,064,538	3,585,872	243,475	62,893,885
Investment Returns	97,842,078	5,407,940	529,080	103,779,098
Disbursements from the Trust	(217,095,297)	(10,417,441)	(756,146)	(228,268,884)
Net Transfers	0	0	0	0
Market Value of Assets as of 6/30/2015	$ 3,745,205,278	$ 217,714,201	$ 20,405,374	$ 3,983,324,853

ASSETS

JUNE 30, 2015

	ECS	LEOPS	CORS	Total Municipal
Beginning of Year:				
(1) Market Value of Assets	$3,698,394,546	$202,691,392	$19,845,805	$3,920,931,743
(2) Actuarial Value of Assets	3,507,439,238	193,425,698	18,826,786	3,719,691,722
End of Year:				
(3) Market Value of Assets	3,745,205,278	217,714,201	20,405,374	3,983,324,853
(4) Net Cash Flow with Adjustment	(51,031,346)	9,614,869	30,489	(41,385,988)
(5) Total Investment Income =(3)-(1)-(4)	97,842,078	5,407,940	529,080	103,779,098
(6) Projected Rate of Return	7.65%	7.65%	7.65%	7.65%
(7) Projected Investment Income =(1)x(6)+([1+(6)]^.5-1)x(4)	281,011,202	15,866,883	1,519,349	298,397,434
(8) Beginning of Year Asset Adjustment				
(9) Investment Income in Excess of Projected Income	(183,169,124)	(10,458,943)	(990,269)	(194,618,336)
(10) Excess Investment Income Recognized This Year (5-year recognition)				
(10a) From This Year	(36,633,825)	(2,091,789)	(198,054)	(38,923,668)
(10b) From One Year Ago	42,921,714	2,126,696	229,112	45,277,522
(10c) From Two Years Ago	16,181,548	727,588	74,353	16,983,489
(10d) From Three Years Ago	(44,919,179)	(1,891,161)	(161,926)	(46,972,266)
(10e) From Four Years Ago	60,562,164	2,358,467	203,363	63,123,994
(10f) Total Recognized Investment Gain/(Loss)	38,112,422	1,229,801	146,848	39,489,071
(11) Change in Actuarial Value of Assets =(4)+(7)+(8)+(10f)	268,092,278	26,711,553	1,696,686	296,500,517
End of Year:				
(3) Market Value of Assets as of 6/30	**3,745,205,278**	**217,714,201**	**20,405,374**	**3,983,324,853**
(12) Preliminary Actuarial Value of Assets = (2)+(11)	3,775,531,516	220,137,251	20,523,472	4,016,192,239
(12a) Upper Collar Limit 120% x (3)	4,494,246,334	261,257,041	24,486,449	4,779,989,824
(12b) Lower Collar Limit 80% x (3)	2,996,164,222	174,171,361	16,324,299	3,186,659,882
(13) Adjustment to Remain within 20% Collar	0	0	0	0
(14) Final Actuarial Value of Assets as of 6/30	**3,775,531,516**	**220,137,251**	**20,523,472**	**4,016,192,239**
(15) Difference Between Market & Actuarial Values	(30,326,238)	(2,423,050)	(118,098)	(32,867,386)
(16) Actuarial Value Rate of Return	9.17%	8.62%	8.84%	9.13%
(17) Market Value Rate of Return*	2.66%	2.61%	2.66%	2.66%
(18) Ratio of Actuarial Value to Market Value	101%	101%	101%	101%

* *Actuarial calculation may differ from figures reported by State Street.*

Employees (Municipal)

	2014	2015	2016	2017	2018	2019
Beginning of Year:						
(1) Market Value of Assets	$3,256,541,265	$3,698,394,546				
(2) Actuarial Value of Assets	3,177,439,781	3,507,439,238				
End of Year:						
(3) Market Value of Assets	3,698,394,546	3,745,205,278				
(4) Net of Contributions and Disbursements	(22,653,000)	(51,031,346)				
(5) Total Investment Income						
=(3)-(1)-(4)	464,506,281	97,842,078				
(6) Projected Rate of Return	7.70%	7.65%				
(7) Projected Investment Income						
=(1)x(6)+([1+(6)]^.5-1)x(4)	249,897,709	281,011,202				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in						
Excess of Projected Income	214,608,572	(183,169,124)				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	42,921,714	(36,633,825)				
(10b) From One Year Ago	16,181,548	42,921,714	$ (36,633,825)			
(10c) From Two Years Ago	(44,919,179)	16,181,548	42,921,714	$ (36,633,825)		
(10d) From Three Years Ago	60,562,162	(44,919,179)	16,181,548	42,921,714	$ (36,633,825)	
(10e) From Four Years Ago	28,008,503	60,562,164	(44,919,179)	16,181,548	42,921,716	$ (36,633,824)
(10f) Total Recognized Investment Gain/(Loss)	102,754,748	38,112,422	(22,449,742)	22,469,437	6,287,891	(36,633,824)
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	329,999,457	268,092,278				
End of Year:						
(3) Market Value of Assets	**3,698,394,546**	**3,745,205,278**				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	3,507,439,238	3,775,531,516				
(12a) Upper Corridor Limit 120% x (3)	4,438,073,455	4,494,246,334				
(12b) Lower Corridor Limit 80% x (3)	2,958,715,637	2,996,164,222				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	**3,507,439,238**	**3,775,531,516**				
(15) Actuarial Value Rate of Return	11.14%	9.17%				
(16) Market Value Rate of Return*	14.31%	2.66%				
(17) Ratio of Actuarial Value to Market Value	95%	101%				

* *Actuarial calculation may differ from figures reported by State Street.*

ASSETS

LEOPS (Municipal)

	2014	2015	2016	2017	2018	2019
Beginning of Year:						
(1) Market Value of Assets	$167,504,675	$202,691,392				
(2) Actuarial Value of Assets	164,649,564	193,425,698				
End of Year:						
(3) Market Value of Assets	202,691,392	217,714,201				
(4) Net of Contributions and Disbursements	11,231,000	9,614,869				
(5) Total Investment Income						
=(3)-(1)-(4)	23,955,717	5,407,940				
(6) Projected Rate of Return	7.70%	7.65%				
(7) Projected Investment Income						
=(1)x(6)+([1+(6)]^.5-1)x(4)	13,322,236	15,866,883				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in						
Excess of Projected Income	10,633,481	(10,458,943)				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	2,126,696	(2,091,789)				
(10b) From One Year Ago	727,588	2,126,696	$ (2,091,789)			
(10c) From Two Years Ago	(1,891,161)	727,588	2,126,696	$ (2,091,789)		
(10d) From Three Years Ago	2,358,466	(1,891,161)	727,588	2,126,696	$ (2,091,789)	
(10e) From Four Years Ago	901,309	2,358,467	(1,891,159)	727,586	2,126,697	$ (2,091,787)
(10f) Total Recognized Investment Gain/(Loss)	4,222,898	1,229,801	(1,128,664)	762,493	34,908	(2,091,787)
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	28,776,134	26,711,553				
End of Year:						
(3) Market Value of Assets	**202,691,392**	**217,714,201**				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	193,425,698	220,137,251				
(12a) Upper Corridor Limit 120% x (3)	243,229,670	261,257,041				
(12b) Lower Corridor Limit 80% x (3)	162,153,114	174,171,361				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	**193,425,698**	**220,137,251**				
(15) Actuarial Value Rate of Return	10.30%	8.62%				
(16) Market Value Rate of Return*	13.84%	2.61%				
(17) Ratio of Actuarial Value to Market Value	95%	101%				

* *Actuarial calculation may differ from figures reported by State Street.*

CORS (Municipal)

	2014	2015	2016	2017	2018	2019
Beginning of Year:						
(1) Market Value of Assets	$17,273,999	$19,845,805				
(2) Actuarial Value of Assets	16,970,694	18,826,786				
End of Year:						
(3) Market Value of Assets	19,845,805	20,405,374				
(4) Net of Contributions and Disbursements	92,648	30,489				
(5) Total Investment Income						
=(3)-(1)-(4)	2,479,158	529,080				
(6) Projected Rate of Return	7.70%	7.65%				
(7) Projected Investment Income						
=(1)x(6)+([1+(6)]^.5-1)x(4)	1,333,599	1,519,349				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in						
Excess of Projected Income	1,145,559	(990,269)				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	229,112	(198,054)				
(10b) From One Year Ago	74,353	229,112	$ (198,054)			
(10c) From Two Years Ago	(161,926)	74,353	229,112	$ (198,054)		
(10d) From Three Years Ago	203,361	(161,926)	74,353	229,112	$ (198,054)	
(10e) From Four Years Ago	84,945	203,363	(161,924)	74,353	229,111	$ (198,053)
(10f) Total Recognized Investment Gain/(Loss)	429,845	146,848	(56,513)	105,411	31,057	(198,053)
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	1,856,092	1,696,686				
End of Year:						
(3) Market Value of Assets	**19,845,805**	**20,405,374**				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	18,826,786	20,523,472				
(12a) Upper Corridor Limit 120% x (3)	23,814,966	24,486,449				
(12b) Lower Corridor Limit 80% x (3)	15,876,644	16,324,299				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	**18,826,786**	**20,523,472**				
(15) Actuarial Value Rate of Return	10.36%	8.84%				
(16) Market Value Rate of Return*	14.31%	2.66%				
(17) Ratio of Actuarial Value to Market Value	95%	101%				

* *Actuarial calculation may differ from figures reported by State Street.*

SECTION III
LIABILITIES

LIABILITIES

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. There are several methods currently used in making such a determination.

The method used for this valuation is referred to as the "individual entry age normal actuarial cost method." Under this method, a level-percent-of-pay employer cost is determined which, along with member contributions, will pay for projected retirement benefits for a new entrant to the plan. The level percent developed is called the "normal cost" rate.

The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability. If the employer's contributions exceed the employer's normal cost for the year, after allowing for interest earned on the previous balance of the unfunded actuarial liability, this liability will be reduced. Benefit improvements, actuarial gains and losses, and changes in actuarial procedures will also have an effect on the total liability and on the portion of it that is unfunded.

After the amount of the unfunded actuarial liability has been determined, a schedule of contributions is established to amortize that amount over a given period. Maryland's laws specify a 40-year level-percent-of-pay amortization schedule starting June 30, 1980 for the pre-2001 ECS liability, then individual 25-year layers for each portion of the UAL arising thereafter. The LEOPS 40 years started June 30, 1999. Thus, for the June 30, 2015 valuation, the remaining period of amortization is 24 years for the LEOPS. The CORS 40 years started June 30, 2006. Thus for the June 30, 2015 valuation, the remaining period of amortization is 31 years for CORS.

The following table (Table III-1) displays by System the Individual Entry Age Normal actuarial liabilities and unfunded actuarial liability. Table III-2 shows the portion of ECS Municipal unfunded liability (i.e., Deficit Amount) assigned to each of 16 individual participating municipalities. The table also shows the additional charge which will be billed to exhaust this liability starting with the December 2016 billing. The City of Greenbelt paid off its outstanding deficit balance since the last valuation as of June 30, 2014.

Table III-3 shows 14 municipalities who have credits in ECS Municipal. These municipalities may use up to the amount shown to offset their basic December 2016 billing amount. Any unused credit will revert to the pooled plan on an annual basis. The June 30, 2015 valuation includes PGU withdrawals as of June 30, 2015 and does not include PGUs entries as of July 1, 2015.

Table III-4 shows the new entrant and withdrawal liability balances and payments (credits) for ECS Municipal.

Table III-5 shows the new entrant and withdrawal liability balances and payments (credits) for LEOPS Municipal. The City of Greenbelt paid off its outstanding new entrant liability and the City of Oakland paid off its withdrawal liability since the last valuation as of June 30, 2014.

There are no new entrant liability or withdrawal liability balances for CORS Municipal (Table III-6).

LIABILITIES

JUNE 30, 2015

Table III-1
Liabilities

	Employees Combined System	LEOPS	Correctional Officers'	Total Municipal
Present Value of Benefits for:				
a. Active Members	$ 2,699,158,322	$ 237,037,093	$ 14,948,810	$ 2,951,144,225
b. Retired Member and Beneficiaries	2,383,050,448	192,473,588	11,452,018	2,586,976,054
c. Terminated Vested Members and Inactives*	170,610,354	8,502,404	11,101	179,123,859
d. Total	$ 5,252,819,124	$ 438,013,085	$ 26,411,929	$ 5,717,244,138
Individual Entry Age Actuarial Accrued Liability for:				
a. Active Members	$ 1,941,834,547	$ 149,717,147	$ 9,850,322	$ 2,101,402,016
b. Retired Member and Beneficiaries	2,383,050,448	192,473,588	11,452,018	2,586,976,054
c. Terminated Vested Members and Inactives*	170,610,354	8,502,404	11,101	179,123,859
d. Total	$ 4,495,495,349	$ 350,693,139	$ 21,313,441	$ 4,867,501,929
Actuarial Value of Assets	$ 3,775,531,516	$ 220,137,251	$ 20,523,472	$ 4,016,192,239
Unfunded Actuarial Liability	$ 719,963,833	$ 130,555,888	$ 789,969	$ 851,309,690
Funded Percent	84.0%	62.8%	96.3%	82.5%

* *Includes liability for accumulated member contributions with interest for non-vested inactive members.*

Table III-2
Schedule of Deficit Amounts as of June 30, 2015
and Deficit Payments for December 2016 Billing

Initial PLD Number	PLD Name	Deficit Amount at 6/30/2015*	December 2016 Payment	Year of Last Payment
7402	Dorchester Co. Bd. of Education	$ 224,311	$ 43,190	2020
7412	Dorchester Co. Roads Board	745,478	48,624 ***	2035
7425	Cambridge, City of	386,368	74,393	2020
7602/8	Garrett Co. Bd. of Ed & Bd of Ed Cafe	210,911	40,610	2020
7711	Harford Co. Government	4,419,000	850,855	2020
8102	Prince Georges Co. Bd of Education	8,304,453	1,598,978	2020
8111	Prince Georges Co. Government	20,836,191	4,011,897	2020
8134	Cheverly, City of	245,412	47,253	2020
8135	Prince Georges Co. Crossing Guards	12,934	2,490	2020
8502	Talbot Co. Bd. of Education	573,958	37,436 ***	2035
8604	Hagerstown Junior College	113,442	21,843	2020
8625	Hagerstown, City of	6,007,337	391,826 ***	2035
8725	Salisbury, City of	360,832	69,476	2020
8811	Worcester Co. Commission	51,820	9,977	2020
8816	Worcester Co. Liquor Bd.	6,717	1,293	2020
8827	Berlin, Town of	148,813	28,653	2020
	TOTAL	$ 42,647,977	$ 7,278,794	

* *The outstanding balance is based on the 7.55% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.*

*** *Denotes 40-year amortization, payments increase 15% per year for the first 5 years and 5% per year thereafter. All others are amortized over a 25-year period with increasing 5% per year.*

Table III-3
Schedule of Surplus Amounts as of June 30, 2015
& Maximum Credits to December 2016 Billing

Initial PLD Number	PLD Name	Surplus Amount at 6/30/2015*	December 2016 Credit	Year of Last Credit
6534	Tri-County Council of Western Maryland	$ (186,071)	$ (35,827)	2020
6533	Allegany Co. Housing Authority	(500)	(96)	2020
6731	Md. Health & Higher Educ. Fac. Auth	(94,445)	(18,185)	2020
7525	Brunswick, Town of	(366,919)	(70,648)	2020
7702	Harford Co. Bd. of Education	(171,623)	(33,045)	2020
7804	Howard Community College	(164,031)	(31,583)	2020
8004	Montgomery College	(169,701)	(32,675)	2020
8129	New Carrollton, City of	(251,800)	(48,483)	2020
8131	Upper Marlboro, Town of	(3,661)	(705)	2020
8202	Queen Anne Co. Bd. of Education	(42,953)	(8,270)	2020
8402	Somerset Co. Bd. of Education	(137,977)	(26,567)	2020
8426	Crisfield, City of	(19,576)	(3,769)	2020
8610	Washington Co. Library	(282,126)	(54,322)	2020
8825	Pocomoke City	(130,313)	(25,091)	2020
	TOTAL	$ (2,021,696)	$ (389,266)	

* *The outstanding balance is based on the 7.55% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.*

Amortized over a 25-year period with credits increasing 5% per year.

Table III-4
Employees Combined System (Municipal)
Schedule of New Entrant and Withdrawal Payments and Credits as of June 30, 2015 for December 2016 Billing
(Unless noted, amounts are amortized over 25 years with payments increasing 5% per year)

LOC Number	Municipal Corporation	Outstanding Balance as of 6/30/2015*	December 2016 Payment		Last Payment Year
	NEW ENTRANT				
6533	Allegany Co Housing Authority	$ 8,396	$ 1,917		2019
7025	Town of Preston	31,554	7,206		2019
7026	Town of Denton	445,519	101,738		2019
7028	Town of Federalsburg	344,275	36,433	**	2030
7127	Carroll Soil Conservation District	1,681	384		2019
7206	Cecil County Library	7,641	1,745		2019
7380	So MD Tri-County Comm Action	508,724	116,171		2019
7528	Catoctin & Frederick Soil Conservation	718	164		2019
7529	Town of Thurmont#	1,316,586	223,449	**	2022
7706	Harford Co Library	5,040	1,151		2019
7880	Howard Co Comm Action Comm	109,857	25,087		2019
7902	Kent Co Brd of Education	511,390	116,780		2019
7926	Town of Rock Hall	9,515	1,084	**	2028
7927	Kent County Soil and Water Conserv. Dist.	(39,263)	(3,518)	**	2037
8142	Town of Edmonston	(123,928)	(11,104)	**	2037
8144	Town of Morningside	24,577	2,167		2038
8426	City of Crisfield	74,671	17,820	**	2019
8428	Town of Princess Anne	684	156		2019
8429	Somerset County Economic Dev. Comm.	(14,241)	(1,276)	**	2037
8528	Town of Oxford	64,005	14,616		2019
8780	Shore Up	372,363	85,032		2019
8834	Tri-County Council for the Lower Eastern Shore	(25,349)	(5,789)		2019
	TOTAL NEW ENTRANT	$ 3,634,415	$ 731,413		
	WITHDRAWAL				
6628	AAC Econ Opp Com	$ 402,063	$ 36,664	**	2036
	TOTAL WITHDRAWAL	$ 402,063	$ 36,664		
	GRAND TOTAL	$ 4,036,478	$ 768,077		

* *The outstanding balance is based on the 7.55% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.*

** *Level dollar payments or credits.*

\# *The Town made additional payments of $326,360 in 2012 and $230,189 in 2014 which accelerated the last payment year from 2028 to 2022 and reduced the final payment from $223,449 to $157,627.*

Table III-5
LEOPS (Municipal)
Schedule of New Entrant Payments and Credits as of June 30, 2015 for December 2016 Billing
(Amounts are amortized over 25 years with level annual payments)

LOC Number	Municipal Corporation	Outstanding Balance as of 6/30/2015*	December 2016 Payment	Last Payment Year
7128	City of Taneytown	$ (291,680)	$ (33,229)	2028
7130	Town of Hampstead	(491,130)	(50,370)	2031
7411	Dorchester County	(127,543)	(68,541) **	2016
7425	City of Cambridge	(281,789)	(39,676)	2024
7711	Harford County Sheriffs	(848,247)	0	2015
7925A	Town of Chestertown	(486,472)	(51,481)	2030
8126	City of Hyattsville	(472,151)	(59,012)	2026
8211	Queen Anne Public Safety EEs	(1,627,645)	(185,426)	2028
8428	Town of Princess Anne	(563,508)	(61,748)	2029
8628	Town of Hancock	(59,152)	(7,039)	2027
8725A	Salisbury Police	(780,940)	(92,930)	2027
8725B	Salisbury Fire	(1,287,388)	(146,663)	2028
8811	Worcester County	(2,548,220)	(254,054)	2032
7427	Town of Hurlock	(486,286)	(48,482)	2032
7030	Caroline County Sheriffs	(27,369)	(2,660)	2033
8727	City of Fruitland	(1,354,568)	(128,611)	2034
	TOTAL NEW ENTRANT	$(11,734,088)	$(1,229,922)	
	WITHDRAWAL			
	TOTAL WITHDRAWAL	$ 0	$ 0	
	GRAND TOTAL	$(11,734,088)	$(1,229,922)	

* *The outstanding balance is based on the 7.55% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.*

** *Denotes 10-year amortization.*

Table III-6
Correctional Officers' Retirement System (Municipal)
Schedule of New Entrant Payments and Credits as of June 30, 2015 for December 2016 Billing
(Amounts are amortized over 25 years with level annual payments)

LOC Number	Municipal Corporation#	Outstanding Balance as of 6/30/2015*	December 2016 Payment	Last Payment Year
	TOTAL	$ 0	$ 0	

\# *There are currently no PGUs with new entrant payments or credits.*

* *The outstanding balance is based on the 7.55% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.*

SECTION IV

CONTRIBUTIONS

CONTRIBUTIONS

A. Contribution Results for December 2016 Billings (FY 2017)

Each Municipal Corporation's basic appropriation to the Systems in Fiscal Year 2017 may be determined by applying the contribution rates set forth in this report to the expected FY 2017 active member payrolls for each Municipal Corporation.

The Individual Entry Age Normal method was used to develop the contribution rates. Under this funding method, as with most other actuarial funding methods, a total contribution rate is determined which consists of two elements: the normal cost rate and the unfunded actuarial liability rate. In addition, each employer with current active participants in the Retirement System must pay 5% on the Retirement System payroll. Municipal Corporations who elected to provide CPB have a 2.42% surcharge applied to total Retirement and Pension System payroll. The surcharge consists of a 1.00% normal cost rate surcharge and a 1.42% UAL rate surcharge. Municipal Corporations who elected to provide CPB and who later elected to participate in the ACPS pay a 1.11% surcharge applied to Pension System payroll. The surcharge is the net result of a (0.40)% normal cost rate surcharge and a 1.51% UAL rate surcharge. This is paid in addition to the 2.42% CPB surcharge. Municipalities who did not elect the CPB but did elect the ACPS pay a surcharge of 7.44% applied to Pension System payroll. The surcharge consists of 0.60% normal cost rate surcharge and a 6.84% UAL rate surcharge.

The 1.42% UAL surcharge for CPB participation will be paid through 2020, while the other two ACPS UAL surcharges will be paid through 2031.

Certain participating employers will have to pay special liability amounts calculated at their entry to the System or deficit payments based on the 1996 legislation, and other participating employers will be able to apply credits also based on the 1996 legislation.

TABLE IV-1
Detailed Actuarial Information
Employees' Combined System

	Actuarial Valuation Performed June 30, 2015 (for FY 2017)	Actuarial Valuation Performed June 30, 2014 (for FY 2016)	% Change
A. Demographic Information			
Number of:			
Active Members	24,533	24,674	(0.57)%
Retired Members and Beneficiaries	16,522	16,002	3.25%
Vested Deferred Members	6,746	6,624	1.84%
Annual Salaries of Active Members	$ 1,059,709,482	$ 1,037,279,250	2.16%
Annual Retirement Allowance for Retired Members and Beneficiaries#	$ 218,269,662	$ 204,699,484	6.63%
B. Actuarial Results			
1. Entry Age Actuarial Accrued Liability	$ 4,495,495,349	$ 4,236,757,358	6.11%
2. Actuarial Value of Assets	3,775,531,516	3,507,439,238	7.64%
3. Unfunded Actuarial Accrued Liability (1-2)	$ 719,963,833	$ 729,318,120	(1.28)%
4. Funded Ratio	84.0%	82.8%	
5. Assigned Liability			
a. Deficit Balances (Table III-2)	$ 42,647,977	$ 47,715,764	
b. Surplus Balances (Table III-3)	(2,021,696)	(2,213,222)	
c. New Entrant Liability Balances (Table III-4)	4,036,478	5,333,300	
d. UAL Portion of CPB Surcharge (Table IV-2)	53,788,123	61,810,560	
e. UAL Portion of CPB to ACPS Surcharge (Table IV-2)	147,690,574	151,173,292	
f. UAL Portion of Noncontributory to ACPS Surcharge (Table IV-2)	6,872,752	7,014,550	
g. Total Assigned Liability Balances	$ 253,014,208	$ 270,834,244	(6.58)%
6. Pooled Unfunded Actuarial Accrued Liability (3-5g)	466,949,625	458,483,876	
7. Outstanding Balance of Previously Amortized Bases	477,170,182	594,860,214	
8. Current Year Amortization Base (6-7)	$ (10,220,557)	($136,376,338)	92.51%
9. Sum of Pooled Unfunded Amortization Payments	15,958,627	15,794,698	1.04%
10. Total Projected Payroll	$ 1,076,531,319	$ 1,054,765,606	2.06%
11. UAL Amortization Rate	1.46%	1.44%	
12. Employer Normal Cost			
a. Pension System Employer Normal Cost	$ 39,209,251	$ 42,320,993	
b. Retirement System Normal Cost (Table IV-2)	291,911	349,823	
c. CPB Normal Cost Surcharge (Table IV-2)	8,518,334	8,304,945	
d. CPB to ACPS Normal Cost Surcharge (Table IV-2)	(3,394,409)	(3,308,578)	
e. Noncontributory to ACPS normal cost surcharge (Table IV-2)	52,306	50,837	
f. Employer Normal Cost After Adjustment (a-b-c-d-e)	$ 33,741,109	$ 36,923,967	(8.62)%
13. Employer Normal Cost Adjusted for Timing	$ 34,276,716	$ 37,546,428	
14. Employer Normal Cost Rate	3.18%	3.56%	
15. Basic Employer Cost Rate (11+ 14)	4.64%	5.00%	

Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2015 and July 1, 2014, respectively. The FY 2017 Basic Employer Rate would be approximately 1.35% of pay higher based on amortizing the pooled unfunded liability over a 25-year period.

Employees' Combined System

Base Year		Current Balance	Remaining Financing Period	Amortization Factor		Dollar Contribution
2000	$	(191,747,016)	5 yrs.	4.446757	$	(43,120,642)
2001		22,240,230	11	8.702199		2,555,702
2002		63,645,588	12	9.314489		6,832,966
2003		124,208,001	13	9.902014		12,543,711
2004		(11,233,229)	14	10.465775		(1,073,330)
2005		126,591,771	15	11.006735		11,501,301
2006		(72,050,049)	16	11.525814		(6,251,189)
2007		17,548,603	17	12.023899		1,459,477
2008		40,198,775	18	12.501838		3,215,429
2009		467,701,624	19	12.960447		36,086,845
2010		22,248,212	20	13.400506		1,660,252
2011		(10,649,742)	21	13.822766		(770,449)
2012		34,594,833	22	14.227948		2,431,470
2013		(18,450,312)	23	14.616742		(1,262,273)
2014		(137,677,107)	24	14.989810		(9,184,713)
2015		(10,220,557)	25	15.347789		(665,930)
	$	466,949,625		29.260012	$	15,958,627

The average remaining financing period associated with the average amortization factor is over 100 years. (The dollar contribution based on amortizing the total pooled unfunded liability over a 100-year period is $19,906,953.)

The unfunded liability portion of the PGU contribution rate is expected to increase significantly in fiscal year 2022 when the $192 million credit is fully amortized. We recommend that the funding policy be changed such that the pooled unfunded liability is amortized over a period that is 25 years or less. The dollar contribution based on amortizing the total pooled unfunded liability over a 25-year period is $30,424,554. If the contribution cannot be raised to the $30 Million level immediately, a phase-in, while less desirable from a pure actuarial point of view, could be considered.

Table IV-2
Surcharges
Employees' Combined System

	Actuarial Valuation Performed June 30, 2015 (for FY 2017)	Actuarial Valuation Performed June 30, 2014 (for FY 2016)
Normal Cost Surcharges		
1. Retirement System Payroll	$ 5,838,219	$ 6,996,458
2. Retirement System Normal Cost Surcharge Rate	5.00%	5.00%
3. Retirement System Normal Cost Surcharge Amount	$ 291,911	$ 349,823
4. Payroll for Municipals Under CPB	$ 851,833,368	$ 830,494,477
5. CPB Normal Cost Surcharge Rate	1.00%	1.00%
6. CPB Normal Cost Surcharge Amount	$ 8,518,334	$ 8,304,945
7. Payroll for Municipals Going From CPB to ACPS	$ 848,602,305	$ 827,144,492
8. CPB to ACPS Normal Cost Surcharge Rate	(0.40%)	(0.40%)
9. CPB to ACPS Normal Cost Surcharge Amount	$ (3,394,409)	$ (3,308,578)
10. Payroll for Noncontributory ACPS	$ 8,717,721	$ 8,472,800
11. CPB to ACPS Normal Cost Surcharge Rate	0.60%	0.60%
12. CPB to ACPS Normal Cost Surcharge Amount	$ 52,306	$ 50,837
Unfunded Liability Surcharges		
1. Payroll for Municipals Under CPB	$ 851,833,368	$ 830,494,477
2. CPB UAL Surcharge Rate	1.42%	1.42%
3. Amortization Factor*	4.446757	5.241283
4. CPB UAL Surcharge Amount	$ 53,788,123	$ 61,810,560
5. Payroll for Municipals Going From CPB to ACPS	$ 848,602,305	$ 827,144,492
6. CPB to ACPS UAL Surcharge Rate	1.51%	1.51%
7. Amortization Factor**	11.525814	12.103661
8. CPB to ACPS UAL Surcharge Amount	$ 147,690,574	$ 151,173,292
9. Payroll for Noncontributory ACPS	$ 8,717,721	$ 8,472,800
10. CPB to ACPS UAL Surcharge Rate	6.84%	6.84%
11. Amortization Factor**	11.525814	12.103661
12. CPB to ACPS UAL Surcharge Amount	$ 6,872,752	$ 7,014,550

* *The remaining amortization period is 5 years in 2015 and 6 years in 2014.*
** *The remaining amortization period is 16 years in 2015 and 17 years in 2014.*
Amortization factors are based on 7.55% interest and 3.20% payroll growth assumptions in 2015 and 7.65% interest and 3.40% payroll growth assumptions in 2014.

TABLE IV-3
Detailed Actuarial Information
LEOPS

	Actuarial Valuation Performed June 30, 2015 (for FY 2017)	June 30, 2014 (for FY 2016)	% Change
A. Demographic Information			
Number of:			
Active Members	942	941	0.11%
Retired Members and Beneficiaries	340	304	11.84%
Vested Deferred Members	100	91	9.89%
Annual Salaries of Active Members	$ 53,334,820	$ 52,645,649	1.31%
Annual Retirement Allowance for Retired Members and Beneficiaries#	$ 12,177,475	$ 10,765,017	13.12%
B. Actuarial Results			
1. Entry Age Actuarial Accrued Liability	$ 350,693,139	$ 326,448,173	7.43%
2. Actuarial Value of Assets	$ 220,137,251	$ 193,425,698	13.81%
3. Funded Ratio	62.77%	59.25%	
4. Unfunded Actuarial Accrued Liability (1-2)	$ 130,555,888	$ 133,022,475	(1.85)%
5. New Entrant Liability Balances (Table III-5)	(11,734,088)	(11,806,744)	0.62%
6. Pooled Unfunded Actuarial Accrued Liability (4-5)	$ 142,289,976	$ 144,829,219	(1.75)%
7. Amortization Factors*	14.989810	15.494556	
8. Unfunded Amortization Payment	$ 9,492,447	$ 9,347,104	1.55%
9. Total Projected Payroll	$ 54,181,457	$ 53,533,144	1.21%
10. UAL Amortization Rate	17.06%	17.16%	
11. Employer Normal Cost	$ 7,530,877	$ 7,781,027	
12. Employer Normal Cost Adjusted for Timing	$ 7,650,422	$ 7,912,199	(3.31)%
13. Employer Normal Cost Rate	14.12%	14.78%	
14. Basic Employer Cost Rate (10 + 13)	31.18%	31.94%	

** The remaining amortization period is 24 years in 2015 and 25 years in 2014.*
 # Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2015 and July 1, 2014, respectively.
Amortization factors are based on 7.55% interest and 3.20% payroll growth assumptions in 2014 and 7.65% interest and 3.40% payroll growth assumptions in 2014.

TABLE IV-4
Detailed Actuarial Information
Correctional Officers' Retirement System

	Actuarial Valuation Performed: June 30, 2015 (for FY 2017)	Actuarial Valuation Performed: June 30, 2014 (for FY 2016)	% Change
A. Demographic Information			
Number of:			
Active Members	91	91	0.00%
Retired Members and Beneficiaries	27	23	17.39%
Vested Deferred Members	0	2	(100.00)%
Annual Salaries of Active Members	$ 4,890,091	$ 4,752,059	2.90%
Annual Retirement Allowance for Retired Members and Beneficiaries#	$ 756,146	$ 680,025	11.19%
B. Actuarial Results			
1. Entry Age Actuarial Accrued Liability	$ 21,313,441	$ 19,685,305	8.27%
2. Actuarial Value of Assets	$ 20,523,472	$ 18,826,786	9.01%
3. Funded Ratio	96.29%	95.64%	
4. Unfunded Actuarial Accrued Liability (1-2)	$ 789,969	$ 858,519	(7.98)%
5. New Entrant Liability Balances (Table III-6)	-	-	
6. Pooled Unfunded Actuarial Accrued Liability (4-5)	$ 789,969	$ 858,519	(7.98)%
7. Amortization Factors*	17.211293	17.685753	
8. Unfunded Amortization Payment	$ 45,898	$ 48,543	(5.45)%
9. Total Projected Payroll	$ 4,967,716	$ 4,832,169	2.81%
10. UAL Amortization Rate	0.88%	0.94%	
11. Employer Normal Cost	$ 436,685	$ 450,970	
12. Employer Normal Cost Adjusted for Timing	$ 443,617	$ 458,573	(3.26)%
13. Employer Normal Cost Rate	8.93%	9.49%	
14. Basic Employer Cost Rate (10 + 13)	9.81%	10.43%	

** The remaining amortization period is 31 years in 2015 and 32 years in 2014.*
 # Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2015 and July 1, 2014, respectively.
Amortization factors are based on 7.55% interest and 3.20% payroll growth assumptions in 2015 and 7.65% interest and 3.40% payroll growth assumptions in 2014.

APPENDIX A

MEMBERSHIP INFORMATION

Membership Information

The State Retirement Agency provided the actuary with all necessary membership data. This information was gathered as of June 30, 2015.

In this section we present a thorough review of the current membership statistics. First, we summarize the membership count, payroll and benefits by status and system. Following this summary, active membership distributions are examined by age and service.

MEMBERSHIP INFORMATION

JUNE 30, 2015

		Active Members			Retirees and Beneficiaries					Vested Former Members (Includes Inactives)	
		Number		**Salary**	**Number**		**Benefits#**	**Avg. Age**	**Avg. Age at Ret.***	**Number**	**Total Number**
Employees'	Total	100	$	5,838,219							
Retirement	Vested	100	$	5,838,219							
	Non-vested	0	$	-	3,323	$	64,535,152	78.1	63.2	35	3,458
Employees'	Total	24,433	$	1,053,871,263							
Pension	Vested	17,251	$	808,335,772							
	Non-vested	7,182	$	245,535,491	13,199	$	153,734,510	69.4	60.0	6,711	44,343
LEOPS	Total	942	$	53,334,820							
	Vested	720	$	43,339,555							
	Non-vested	222	$	9,995,265	340	$	12,177,475	54.8	51.9	100	1,382
CORS	Total	91	$	4,890,091							
	Vested	65	$	3,709,377							
	Non-vested	26	$	1,180,714	27	$	756,146	57.4	56.1	0	118
Total Systems	Total	25,566	$	1,117,934,393							
	Vested	18,136	$	861,222,923							
	Non-vested	7,430	$	256,711,470	16,889	$	231,203,283	70.8	62.3	6,846	49,301

* *Includes normal and early service retirees only.*
\# *Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2015.*

Maryland State Retirement and Pension System
Active Membership Statistics
June 30, 2015

System	Number	Average Age	Average Service	Average Salary
Employees' Retirement	100	62.2	38.6	$58,382
Employees' Pension	24,433	49.2	10.9	43,133
Employees' Combined System	24,533	49.3	11.0	43,195
LEOPS – Municipal	942	39.1	10.7	56,619
CORS	91	41.5	9.2	53,737
TOTAL SYSTEMS	25,566	48.8	11.0	$43,727

APPENDIX B

ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

Actuarial assumptions were developed in connection with a study of 2010-2014 experience in the Experience Study report dated May 21, 2015, which includes the rationale for the assumptions. The assumptions were adopted by the Board on May 21, 2015. All actuarial assumptions are based on future expectations, not market measures. Specific assumptions are shown below.

	1. Valuation Interest Rate	2. Annual Rate of Increase in Cost: Service Before 7/1/11	2. Annual Rate of Increase in Cost: Service After 7/1/11		3. Aggregate Payroll Growth
Employees' Retirement	7.55%	2.70%	2.70%	*	3.20%
Employees' Pension	7.55%	2.29%	1.49%	**,***	3.20%
LEOPS	7.55%	2.29%	1.49%	**,***,#	3.20%
Correctional Officers' Retirement System	7.55%	2.70%	1.49%	***	3.20%

* *A rate of 2.29% is applicable for members with a COLA cap of 3%, a rate of 2.68% is applicable for members with a COLA cap of 5%, and a 2.70% COLA is applicable for members with no COLA cap.*

** *A 2.29% simple rate is applicable for municipal members of these Systems, who do not elect to be covered under the Contributory plan.*

*** *For benefits attributable to service on or after July 1, 2011, a 1.49% COLA was assumed. The increase is capped at the lesser of 2.5% and increase in CPI if the most recent calendar year market value rate of return was greater than or equal to the assumed rate (currently 7.55% as approved by the Board of Trustees). The increase is capped at the lesser of 1% and increase in CPI if the market value return was less than the assumed rate of 7.55%.*

\# *For groups whose COLA is capped at 5%, a 2.68% COLA was assumed. A 2.70% COLA was assumed for groups with an unlimited COLA.*

The valuation interest rate is net of investment expenses. Administrative expenses are assumed to be paid directly by employers external to the plan assets. Price inflation is assumed to be 2.7% and wage inflation (i.e., aggregate payroll growth) is assumed to be 3.2%.

A. Actuarial Assumptions, cont.

Years of Service	3. Annual Rates of Salary Increases for First 10 Years of Service			
	Employees' Retirement	Employees' Pension	LEOPS	Correctional Officers
0	6.20%	6.20%	7.20%	8.95%
1	6.45%	6.45%	6.95%	7.20%
2	5.95%	5.95%	6.20%	3.45%
3	4.95%	4.95%	4.70%	3.45%
4	4.45%	4.45%	4.70%	3.45%
5	4.45%	4.45%	4.45%	3.95%
6	4.45%	4.45%	4.45%	3.95%
7	4.45%	4.45%	4.20%	3.70%
8	4.20%	4.20%	4.20%	3.45%
9	4.20%	4.20%	4.20%	3.45%

3. Annual Rates of Salary Increases for Sample Ages with 10 or More Years of Service				
Age	Employees' Retirement	Employees' Pension	LEOPS	Correctional Officers
25	4.45%	4.45%	4.20%	4.20%
30	4.20%	4.20%	4.20%	3.95%
35	3.95%	3.95%	4.20%	3.70%
40	3.95%	3.95%	3.95%	3.70%
45	3.70%	3.70%	3.95%	3.70%
50	3.45%	3.45%	3.70%	3.20%
55	3.45%	3.45%	3.20%	3.20%
60	3.20%	3.20%	3.20%	3.20%
65	3.20%	3.20%	3.20%	3.20%

A. Actuarial Assumptions, cont.

Sample Ages	Years of Service	4. Annual Rates of Withdrawal							
		Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
		Male	Female	Male	Female	Male	Female	Male	Female
All	0	21.00%	20.00%	21.00%	20.00%	17.00%	17.00%	16.00%	18.00%
	1	15.00%	15.00%	15.00%	15.00%	10.00%	10.00%	12.00%	16.00%
	2	13.00%	13.00%	13.00%	13.00%	8.50%	8.50%	9.00%	12.00%
	3	10.50%	11.00%	10.50%	11.00%	7.00%	7.00%	8.00%	10.00%
	4	8.50%	9.00%	8.50%	9.00%	6.00%	6.00%	6.00%	10.00%
	5	7.25%	6.50%	7.25%	6.50%	5.50%	5.50%	5.50%	8.50%
	6	6.50%	6.00%	6.50%	6.00%	5.00%	5.00%	5.00%	8.00%
	7	5.50%	5.25%	5.50%	5.25%	4.50%	4.50%	4.00%	7.00%
	8	5.00%	4.75%	5.00%	4.75%	3.50%	3.50%	3.50%	6.00%
	9	4.50%	4.00%	4.50%	4.00%	3.50%	3.50%	3.50%	5.00%
25	10 & Over	4.00%	4.00%	4.00%	4.00%	3.50%	3.50%	3.00%	3.75%
30		3.50%	4.00%	3.50%	4.00%	2.50%	2.50%	3.00%	3.75%
35		2.75%	3.25%	2.75%	3.25%	2.00%	2.00%	3.00%	3.75%
40		2.25%	2.50%	2.25%	2.50%	1.75%	1.75%	3.00%	3.75%
45		2.00%	2.25%	2.00%	2.25%	1.75%	1.75%	3.00%	3.75%
50		2.00%	2.00%	2.00%	2.00%	1.75%	1.75%	3.00%	3.75%
55		2.00%	2.00%	2.00%	2.00%	1.75%	1.75%	3.00%	3.75%
60		2.00%	2.00%	2.00%	2.00%	1.75%	1.75%	3.00%	3.75%
65		2.00%	2.00%	2.00%	2.00%	1.75%	1.75%	3.00%	3.75%

For active members of Employees' Retirement (Regular) and Pension Systems, the probability of electing a refund upon withdrawal (if eligible for a vested benefit) is 15% upon first becoming vested, grading down to 0% upon reaching first eligibility for retirement. Active members that terminate from the other Systems that are eligible for a deferred vested benefit are assumed to leave their contributions in the plan and 100 percent are assumed to elect a deferred benefit.

A. Actuarial Assumptions, cont.

Rates of Mortality

	Healthy Retiree (Non-Disabled) Mortality Assumption			Pre-Retirement Mortality Assumption	
	RP 2014 Healthy Annuitant Mortality Tables with Generational Projection Using MP-2014		Future Life Expectancy Age 65 (Birth Year 1950)	RP 2014 Employee Mortality Tables with Generational Projection Using MP-2014	
Employees' Combined System	**Collar**	**Year Projected to in 2014**	**Life Expectancy**	**Collar**	**Year Projected to in 2014**
Male	Male Blue Collar Annuitant Table	2010	20.03	Male Blue Collar Employee Table	2014
Female	Female Blue Collar Annuitant Table	2012	22.94	Female Blue Collar Employee Table	2014
LEOPS					
Male	Male Combined Annuitant Table	2014	21.68	Male Combined Employee Table	2014
Female	Female Combined Annuitant Table	2014	23.86	Female Combined Employee Table	2014
CORS					
Male	Male White Collar Annuitant Table	2012	20.03	Male White Collar Employee Table	2014
Female	Female White Collar Annuitant Table	2016	22.94	Female White Collar Employee Table	2014

A. Actuarial Assumptions, cont.

Rates of Mortality

Disabled Mortality Assumption

	RP 2014 Disabled Annuitant Mortality Tables with no projection (static tables)		Future Life Expectancy Age 65 (Birth Year 1950)
Employees' Combined System	**Collar**	**Set Forward**	**Life Expectancy**
Male	Male Disabled Annuitant Table	2	13.85
Female	Female Disabled Annuitant Table	3	15.55
CORS			
Male	Male Disabled Annuitant Table	2	13.85
Female	Female Disabled Annuitant Table	3	15.55

	RP 2014 Healthy Annuitant Mortality Tables with Generational Projection Using MP-2014		Future Life Expectancy Age 65 (Birth Year 1950)
LEOPS	**Collar**	**Year Projected to in 2014**	**Life Expectancy**
Male	Male Blue Collar Annuitant Table	2014	20.62
Female	Female Blue Collar Annuitant Table	2014	23.29

A. Actuarial Assumptions, cont.

5. Actuarial Present Value of $1 Monthly for Life (Without COLA) - Healthy Members								
Sample Ages in 2015	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
	Male	Female	Male	Female	Male	Female	Male	Female
50	142.27	147.09	142.27	147.09	144.37	148.31	142.27	147.09
55	135.44	141.36	135.44	141.36	138.28	142.97	135.44	141.36
60	126.92	133.93	126.92	133.93	130.69	135.90	126.92	133.93
65	116.31	124.38	116.31	124.38	121.09	126.78	116.31	124.38
70	103.65	112.56	103.65	112.56	109.18	115.39	103.65	112.56
75	89.11	98.64	89.11	98.64	94.90	101.76	89.11	98.64
80	73.35	83.07	73.35	83.07	78.76	86.14	73.35	83.07

	5. Future Life Expectancy (Years) - Healthy Members							
Sample Ages in 2015	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
	Male	Female	Male	Female	Male	Female	Male	Female
50	33.61	37.20	33.61	37.20	35.38	38.24	33.61	37.20
55	28.87	32.29	28.87	32.29	30.63	33.32	28.87	32.29
60	24.34	27.53	24.34	27.53	26.06	28.51	24.34	27.53
65	20.03	22.94	20.03	22.94	21.68	23.86	20.03	22.94
70	16.03	18.60	16.03	18.60	17.52	19.44	16.03	18.60
75	12.39	14.62	12.39	14.62	13.65	15.35	12.39	14.62
80	9.22	11.08	9.22	11.08	10.19	11.66	9.22	11.08

A. Actuarial Assumptions, cont.

5. Actuarial Present Value of $1 Monthly for Life (Without COLA) - Disabled Members								
Sample	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
Ages	Male	Female	Male	Female	Male	Female	Male	Female
50	116.35	126.18	116.35	126.18	143.09	147.45	116.35	126.18
55	110.45	119.66	110.45	119.66	136.38	141.84	110.45	119.66
60	103.10	111.45	103.10	111.45	128.11	134.58	103.10	111.45
65	94.00	101.20	94.00	101.20	117.86	125.22	94.00	101.20
70	83.34	89.32	83.34	89.32	105.54	113.56	83.34	89.32
75	71.47	76.62	71.47	76.62	91.18	99.76	71.47	76.62
80	58.90	63.89	58.90	63.89	75.40	84.27	58.90	63.89

	5. Future Life Expectancy (Years) - Disabled Members							
Sample	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
Ages	Male	Female	Male	Female	Male	Female	Male	Female
50	21.82	25.28	21.82	25.28	34.29	37.57	21.82	25.28
55	19.17	22.00	19.17	22.00	29.50	32.66	19.17	22.00
60	16.51	18.74	16.51	18.74	24.95	27.90	16.51	18.74
65	13.85	15.55	13.85	15.55	20.62	23.29	13.85	15.55
70	11.29	12.55	11.29	12.55	16.58	18.93	11.29	12.55
75	8.92	9.89	8.92	9.89	12.88	14.91	8.92	9.89
80	6.80	7.62	6.80	7.62	9.62	11.33	6.80	7.62

A. Actuarial Assumptions, cont.

Accidental Death Mortality Rates		
LEOPS		
Sample Ages	Male	Female
20	0.0122%	0.0049%
25	0.0145%	0.0052%
30	0.0136%	0.0065%
35	0.0157%	0.0086%
40	0.0188%	0.0119%
45	0.0292%	0.0197%
50	0.0506%	0.0331%
55	0.0836%	0.0502%
60	0.1406%	0.0733%
65	0.2483%	0.1109%
70	0.4156%	0.1893%
75	0.6956%	0.3230%
80	1.1643%	0.5514%

Additional margin for future mortality improvements are included in the projection scale.

The RP-2014 tables used in the valuation were extended in order that no zero rates exist in the tables. For Annuitant tables, ages 1-17 were populated using RP-2014 Juvenile rates, ages 18-19 were populated with Employee rates, and ages 20-49 were derived using a cubic spline. For Employee tables, ages 1-17 were populated using RP-2014 Juvenile rates, ages 81-94 were derived using a cubic spline, and ages 95-120 were populated with Annuitant rates.

A. Actuarial Assumptions, cont.

	6. Annual Rates of Disability															
	Employees' Retirement				Employees' Pension				LEOPS				Correctional Officers			
Sample	Ordinary		Accidental		Ordinary		Accidental		Ordinary		Accidental		Ordinary		Accidental	
Ages	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
25	0.02665%	0.02451%	0.00960%	0.00880%	0.12570%	0.07810%	0.04032%	0.02121%	0.17136%	0.51612%	0.32368%	0.62560%	0.12570%	0.11560%	0.10413%	0.16065%
30	0.02633%	0.02425%	0.01000%	0.00920%	0.16110%	0.07720%	0.04228%	0.02226%	0.21966%	0.55297%	0.34578%	0.55860%	0.16110%	0.12010%	0.12495%	0.16065%
35	0.04550%	0.04225%	0.01400%	0.01300%	0.20130%	0.13350%	0.05908%	0.03119%	0.27456%	0.55803%	0.42143%	0.54940%	0.20130%	0.20760%	0.15768%	0.16065%
40	0.08619%	0.07794%	0.01840%	0.01670%	0.26670%	0.24660%	0.07756%	0.03990%	0.36372%	0.65428%	0.48671%	0.56160%	0.26670%	0.38360%	0.19933%	0.17850%
45	0.10933%	0.11557%	0.01630%	0.01730%	0.35770%	0.36500%	0.06888%	0.04137%	0.48780%	0.79332%	0.53992%	0.56360%	0.35770%	0.56780%	0.24990%	0.20528%
50	0.13195%	0.16562%	0.01450%	0.01820%	0.51670%	0.62800%	0.06132%	0.04358%	0.65784%	0.98241%	0.75463%	0.72340%	0.51150%	0.81410%	0.35403%	0.26775%
55	0.17635%	0.22926%	0.01370%	0.01780%	0.73010%	0.80460%	0.05782%	0.04263%	0.65784%	0.98241%	0.98464%	1.12040%	0.65770%	1.12760%	0.43733%	0.37485%
60	0.23043%	0.31701%	0.01400%	0.01930%	0.74020%	0.90260%	0.05908%	0.04620%	0.65784%	0.98241%	1.21737%	1.98120%	0.80690%	1.55820%	0.43733%	0.37485%

A. Actuarial Assumptions, cont.

	7. Annual Rates of Normal Retirement															
	Employees' Retirement		Employees' Pension				LEOPS				Correctional Officers					
	All Years of Service		At Least 30 Years		Less Than 30 Years		At Least 25 Years		Less Than 25 Years		At Least 20 Years		Less Than 20 Years			
Ages	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
40							40.0%	40.0%			23.0%	23.0%				
41							40.0%	40.0%			18.0%	18.0%				
42							40.0%	40.0%			18.0%	18.0%				
43							40.0%	40.0%			16.0%	16.0%				
44							40.0%	40.0%			16.0%	16.0%				
45	17.0%	16.0%	12.0%	11.0%			36.0%	36.0%			15.0%	15.0%				
46	17.0%	16.0%	12.0%	11.0%			36.0%	36.0%			14.0%	14.0%				
47	17.0%	16.0%	12.0%	11.0%			36.0%	36.0%			14.0%	14.0%				
48	17.0%	16.0%	12.0%	11.0%			36.0%	36.0%			13.0%	13.0%				
49	17.0%	16.0%	12.0%	11.0%			36.0%	36.0%			13.0%	13.0%				
50	10.0%	11.0%	9.0%	11.0%			32.0%	32.0%	5.0%	5.0%	13.0%	13.0%				
51	10.0%	11.0%	9.0%	11.0%			32.0%	32.0%	5.0%	5.0%	12.0%	12.0%				
52	10.0%	11.0%	9.0%	11.0%			32.0%	32.0%	5.0%	5.0%	12.0%	12.0%				
53	10.0%	11.0%	9.0%	11.0%			20.0%	20.0%	5.0%	5.0%	12.0%	12.0%				
54	10.0%	11.0%	9.0%	11.0%			25.0%	25.0%	5.0%	5.0%	12.0%	12.0%				
55	11.0%	13.0%	9.0%	10.0%			23.0%	23.0%	5.0%	5.0%	12.0%	12.0%	4.5%	4.5%		
56	11.0%	13.0%	9.0%	10.0%			23.0%	23.0%	5.0%	5.0%	11.0%	11.0%	4.5%	4.5%		
57	11.0%	13.0%	9.0%	10.0%			23.0%	23.0%	5.0%	5.0%	11.0%	11.0%	4.5%	4.5%		
58	11.0%	13.0%	9.0%	10.0%			23.0%	23.0%	5.0%	5.0%	11.0%	11.0%	4.5%	4.5%		
59	11.0%	13.0%	9.0%	10.0%			18.0%	18.0%	5.0%	5.0%	11.0%	11.0%	4.5%	4.5%		
60	13.0%	13.0%	10.0%	14.0%			23.0%	23.0%	8.0%	8.0%	11.0%	11.0%	4.5%	4.5%		
61	15.0%	18.0%	13.0%	14.0%			23.0%	23.0%	8.0%	8.0%	13.0%	13.0%	4.5%	4.5%		
62	27.0%	22.0%	25.0%	28.0%	16.0%	18.0%	30.0%	30.0%	15.0%	15.0%	30.0%	30.0%	12.0%	12.0%		
63	23.0%	22.0%	23.0%	24.0%	13.0%	16.0%	30.0%	30.0%	15.0%	15.0%	30.0%	30.0%	12.0%	12.0%		
64	19.0%	22.0%	18.0%	20.0%	13.0%	14.0%	30.0%	30.0%	15.0%	15.0%	20.0%	20.0%	12.0%	12.0%		
65	20.0%	22.0%	17.0%	20.0%	13.0%	16.0%	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%	12.0%	12.0%		
66	25.0%	25.0%	25.0%	25.0%	18.0%	18.0%	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%	25.0%	25.0%		
67	25.0%	22.0%	25.0%	22.0%	16.0%	17.0%	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%	20.0%	20.0%		
68	18.0%	22.0%	18.0%	22.0%	14.0%	15.0%	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%	20.0%	20.0%		
69	18.0%	22.0%	18.0%	18.0%	14.0%	15.0%	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%	20.0%	20.0%		
70	20.0%	20.0%	22.0%	22.0%	16.0%	18.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		
71	20.0%	20.0%	22.0%	20.0%	13.0%	15.0%										
72	20.0%	20.0%	22.0%	20.0%	13.0%	15.0%										
73	20.0%	20.0%	22.0%	20.0%	13.0%	15.0%										
74	20.0%	20.0%	22.0%	20.0%	13.0%	15.0%										
75 & Over	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%										

A. Actuarial Assumptions, cont.

Ages	7. Annual Rates of Early Retirement					
	Employees' Retirement		Employees' Pension			
			Non-Reformed		Reformed	
	Male	Female	Male	Female	Male	Female
40	5.0%	5.0%				
41	5.0%	5.0%				
42	5.0%	5.0%				
43	5.0%	5.0%				
44	5.0%	5.0%				
45	5.0%	5.0%				
46	5.0%	5.0%				
47	5.0%	5.0%				
48	5.0%	5.0%				
49	5.0%	5.0%				
50	5.0%	5.0%				
51	5.0%	5.0%				
52	5.0%	5.0%				
53	5.0%	5.0%				
54	5.0%	5.0%				
55	5.0%	5.0%	2.0%	2.0%		
56	5.0%	5.0%	1.5%	2.5%		
57	5.0%	5.0%	2.0%	2.5%		
58	5.0%	5.0%	2.0%	3.0%		
59	5.0%	5.0%	2.5%	3.0%		
60			4.0%	4.5%	9.5%	11.5%
61			6.0%	5.5%	6.0%	5.5%
62					6.5%	6.0%
63					7.0%	6.5%
64					7.5%	7.0%

Ages	8. Additional Rates to Add to Annual Rates of Normal Retirement at Age of First Eligibility			
	Employees' Pension Reformed			
	At Least 30 Years		Less Than 30 Years	
	Male	Female	Male	Female
55 and Under	35.0%	35.0%		
56	28.0%	28.0%		
57	21.0%	21.0%		
58	14.0%	14.0%		
59	7.0%	7.0%		
60	0.0%	0.0%		
61	0.0%	0.0%		
62	0.0%	0.0%		
63	0.0%	0.0%		
64	0.0%	0.0%		
65+	0.0%	0.0%	25.0%	25.0%

A. Actuarial Assumptions, cont.

9. Social Security Covered Compensation

Employees' Retirement	Not applicable
Employees' Pension	Future covered compensation levels, used to estimate member contributions and retirement allowances, were calculated using a 3.20% per annum compounded increase in the 2015 Social Security Maximum Taxable Wage Base.
LEOPS	Future covered compensation levels, used to estimate member contributions and retirement allowances, were calculated using a 3.20% per annum compounded increase in the 2015 Social Security Maximum Taxable Wage Base.
Correctional Officers' Retirement	Not applicable

A. Actuarial Assumptions, concluded

10. Retirement Age for Inactive Vested Participants

Employees' Retirement	Age 60
Employees' Pension	Age 55 if at least 15 years of eligibility service. Age 62 if less than 15 years of eligibility service. Age 60 if at least 15 years of eligibility service (hired after 6/30/11). Age 65 if less than 15 years of eligibility service (hired after 6/30/11).
LEOPS	Age 50
Correctional Officers' Retirement	Age 55

Marriage Assumption:	75% of males and females are assumed to be married for purposes of death-in-service benefits.
Pay Increase Timing:	Middle of (Fiscal) year. This is equivalent to assuming that reported pays represent the annualized rate of pay at the beginning of the (Fiscal) year.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and rounded integer service on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Decrement Operation:	Mortality and disability operate during retirement eligibility.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.
Unused Sick Leave:	Each member is assumed to have an additional 5 months of service at retirement attributable to sick leave.
Unknown Data for Participants:	Average characteristics of the group as a whole are used to fill in the unknown data.
Age of Spouse:	In the absence of complete data, females are assumed to be 4 years younger than males.
Option Elections:	It was assumed optional forms of payment were actuarially equivalent to the normal form of payment.

Liability Adjustments:

An additional liability was added to the aggregate results for Employees' Pension Systems to reflect that the past service benefits would be calculated based on the full time salary equivalent for part-time members. The additional liability amount is $17,180,000 for EPS.

For LEOPS, the value of the DROP interest credits of 4% to 6% vs. the valuation interest rate of 7.55% was accounted for through the use of certain load factors as shown in the table below. The assumed length of time members would stay in the DROP was 4.83 years for LEOPS, based on the average projected DROP period of current DROP members in the data provided by the SRA.

Load Applied to	**Load Factor LEOPS**
Active Normal Retirement Decrement	0.9890
Liabilities for Members in the DROP	0.9958
DROP Account Balances	0.9361

1. **Asset Valuation Method**

All Systems use a method based on the principle that the difference between actual and expected investment returns should be subject to partial recognition to smooth out fluctuations in the total return achieved by the fund from year to year. Under this method, the actuarial value of the assets reflects annually one-fifth of the market value gains for the five prior years. The resulting value is restricted to be not less than 80% of market value nor greater than 120% of market value. As of June 30, 2007, the calculation of market gains included the difference between market and actuarial assets as of June 30, 2006.

For the Employees' Retirement & Pension System and for LEOPS, assets must be allocated between State and Municipal Corporation members. Beginning July 1, 1984, this allocation is based upon actual cash flows and shared investment results.

2. **Funding Method**

All Systems use the individual entry age normal method to determine costs. Under this funding method, a total contribution rate is determined which consists of two elements, the normal cost rate and the unfunded actuarial liability (UAL) rate.

The Individual Entry Age Normal cost rate is determined as the value, as of age at entry into the plan, of the member's projected future benefits, and divided by the value, also as of the member's entry age, of his expected future salary. For purposes of calculating the normal cost rate, the same benefit accrual rates used to calculate the present value of future benefits are used to calculate the normal cost. The benefit provisions applicable to each member are used in developing his/her individual normal cost rate.

In addition to contributions required to meet the System's normal cost, contributions will be required to fund the System's unfunded actuarial liability. Actuarial liability is defined as the present value of future benefits less the present value of future normal costs. The unfunded actuarial liability is the total of the actuarial liability for all members less the actuarial value of the System's assets.

There is an additional component in the unfunded actuarial accrued liability amortization contribution rate that accounts for the effects of the lag between the valuation date and when the contribution is made. This calculation assumes the contributions that would be received in fiscal year 2016 are equal to the budgeted contributions developed in the valuation as of June 30, 2014.

If the Employees' Combined System's UAL is increased by plan changes or actuarial losses or decreased by plan changes or actuarial gains, these amounts will be included as part of the UAL and amortized over closed 25-year periods.

The UAL for LEOPS is being amortized over a closed 24-year period ending June 30, 2040.

The UAL for CORS is being amortized over a closed 31-year period ending June 30, 2047.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

MARYLAND STATE RETIREMENT AND PENSION SYSTEM
EMPLOYEES' RETIREMENT SYSTEM
SUMMARY OF PLAN PROVISIONS

1. Membership

System closed to new members hired on or after January 1, 1980. Members on December 31, 1979 continue to be members unless they elected to transfer into the Employees' Pension System (established January 1, 1980) prior to January 1, 2005.

Membership includes employees of the State and approximately 121 participating employers.

2. Member Contributions

- Plan A: Generally 7% of earnable compensation to maintain all benefits, including unlimited compounded cost-of-living adjustments.
- Plan B: Generally 5% of earnable compensation to maintain all benefits, except the compounded cost-of-living adjustments which are capped at 5%.
- Plan C: (Plan C provides a two-part benefit based on benefits of the Employees' Retirement System and the Employees' Non-Contributory Pension System). Employee contributions, if any are based on participation of the employer in one of the three plans under the Employees' Pension System (refer to summary of Employees' Pension System).

Interest earned on all employee contributions is 4% per year.

3. Service Retirement Allowance

Eligibility: 30 years of eligibility service or attainment of age 60.

Allowance: 1/55th of average final compensation for the three highest years as a member for each year of creditable service.

Plan C: For creditable service before election date, the amount determined by the service retirement formula for Employees' Retirement System; for creditable service after election date, the amount determined by the service retirement formula for the Employees' Non-Contributory Pension System under which the employer participates.

4. Early Retirement Allowance

Eligibility: 25 years of eligibility service.

Allowance: Service retirement allowance reduced by .005 for each month that date of retirement precedes the earlier of age 60 or the date the member would have completed 30 years of eligibility service. The maximum reduction is 30%.

Plan C: For creditable service before election date, the amount determined by the service retirement formula for Employees' Retirement System with a maximum reduction of 30%; for creditable service after election date, the amount determined by the service retirement formula for the Employees' Non-Contributory Pension System under which the employer participates with a .005 reduction for each month retirement occurs prior to age 62 (maximum reduction of 42%).

5. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is mentally or physically incapacitated from the performance of the normal duties of the member's position, and that incapacity is permanent.

Allowance: The benefit is $1/55^{th}$ of average final compensation for the three highest years as a member for each year of creditable service. The minimum benefit is 25% of average final compensation; the maximum benefit can be no greater than $1/55^{th}$ of average final compensation for each year of creditable service the member would have accrued if employment continued to age 60.

Plan C: The benefit is the greater of the Employees' Retirement System allowance noted above, or the ordinary disability benefit of the Employees' Pension System.

Accidental

Eligibility: Certification of the Medical Board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty.

Allowance: The benefit is 66 2/3% of average final compensation for the three highest years as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation.

6. Death Benefits

Eligibility: One year of eligibility service.

Benefit: One time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions. If member dies prior to accruing one year of service, payment is only the return of accumulated member contributions.

Spouse Law

Eligibility: Surviving spouse designated as the sole primary beneficiary and the deceased member was eligible to retire or was at least age 55 with at least 15 years of eligibility service.

Benefit: Surviving spouse may elect a one-time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions, or a monthly allowance under Option 2 (100% survivor benefit).

Special Death Benefit

Eligibility: Killed in line of duty.

Benefit: 66 2/3% of average final compensation for the three highest years as a member payable to a surviving spouse, dependent children or dependent parents. Accumulated member contributions are paid to the designated beneficiary(ies).

Note: Death benefits outlined above are payable upon death of an active member. If member is not active, only accumulated member contributions are payable at time of death.

7. Vested Retirement Allowance

Eligibility: Five years of eligibility service.

Allowance: Accrued retirement allowance payable at age 60, provided member does not withdraw accumulated member contributions.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted based on the Consumer Price Index (CPI). Any adjustments are effective July 1 for all benefits which have been in payment for one year.

- Plan A: Unlimited and compounded.
- Plan B: Capped at 5% and compounded.
- Plan C: Combination of COLA for either Plan A or Plan B - (depending on member selection prior to electing Plan C) - for benefit calculated under the Employees' Retirement System, plus capped at 3% compounded COLA on benefit calculated under the Employees' Non-Contributory Pension System.

In years in which COLAs would be less than zero due to a decline in the Consumer Price Index, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

9. Optional Forms of Payment

Normal service allowance is a single life annuity.

Option 1: Cash refund equal to excess of present value of retirement allowance at date of retirement over total amount of payments made to date of death.

Option 2: 100% joint and survivor annuity. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 3: 50% joint and survivor annuity.

Option 4: This option guarantees a return of accumulated member contributions remaining at date of death.

Option 5: 100% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree.

Retirees who are to receive a service retirement, early service retirement, disability benefit, or vested allowance of less than $50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

For Option 5 and 6 – If the designated beneficiary predeceases the retiree, a new beneficiary may be named. However, the retirement allowance will be re-calculated.

10. Miscellaneous Provisions

For Detention Center Officers

Effective July 1, 2006, Maryland counties may elect to participate on behalf of their detention center officers.

An immediate service retirement allowance is payable to a detention center officer if, on or before the retirement, the officer has completed 20 years of eligibility service and served at least five years as a detention center officer immediately preceding retirement. The vested retirement allowance of a detention center officer who was in that position for at least five years preceding retirement commences at age 55.

11. Change in Benefits for Employees' Retirement System

None.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM
EMPLOYEES' PENSION SYSTEM
SUMMARY OF PLAN PROVISIONS

1. Membership

Membership is a condition of employment for all regular employees of the State of Maryland hired on or after January 1, 1980, excluding those eligible for the Teachers' Retirement System, Teachers' Pension System, State Police Retirement System, certain judges, correctional officers, and members of the General Assembly. Certain governmental units also have elected to participate in the System.

There are four plans under the Employees' Pension System.

- Noncontributory Pension System **(NCPS)** - The original pension system established on January 1,1980 that only applies to certain participating governmental units that did not elect to participate in the Contributory Pension System or the Alternate Contributory Pension Selection.
- Employees' Contributory Pension System **(ECPS)** – The ECPS established July 1, 1998 that only applies to certain participating governmental units that elected the ECPS but did not elect to participate in the Alternate Contributory Pension Selection.
- Alternate Contributory Pension Selection **(ACPS)** - Applies to all State employees and employees of participating governmental units that are members of the ACPS on or before June 30, 2011.
- Reformed Contributory Pension Benefit (**RCPB**) – Applies to all State employees and, employees of participating governmental units enrolling in the Employees' Pension System on or after July 1, 2011. It does not apply to employees of participating governmental units participating in the NCPS or ECPS who in enroll in the Employees' Pension System on or after July 1, 2011.

2. Member Contributions

NCPS: Members are only required to make contributions of 5% on earnable compensation that exceeds the Social Security Taxable Wage Base.

ECPS: Members are required to make contributions of 2% of earnable compensation.

ACPS: Members are required to make contributions of 7% of earnable compensation.

RCPB: Members are required to make contributions of 7% of earnable compensation.

Contributions earn interest at 5% per year.

3. Service Retirement Allowance

NCPS, ECPS, and ACPS Eligibility: 30 years of eligibility service or attainment of one of the following:

Age 62 with 5 years of eligibility service
Age 63 with 4 years of eligibility service
Age 64 with 3 years of eligibility service
Age 65 or older with 2 years of eligibility service

NCPS Allowance:
0.8% of average final compensation up to the SSIL for the three highest consecutive years as a member plus 1.5% of average final compensation over the SSIL for each year of creditable service.

ECPS Allowance: The greater of (i) or (ii), plus (iii), as described below:

(i) 1.2% of average final compensation for the three highest consecutive years as an employee for each year of creditable service on or before June 30, 1998;

(ii) 0.8% of average final compensation up to the SSIL for the three highest consecutive years as a member plus 1.5% of average final compensation over the SSIL for each year of creditable service on or before June 30, 1998; or

(iii) 1.4% of average final compensation for the three highest consecutive years as an employee for each year of creditable service after June 30, 1998.

ACPS Allowance: The greater of (i) or (ii), plus (iii), as described below:

(i) 1.2% of average final compensation for the three highest consecutive years as an employee for each year of creditable service on or before June 30, 1998;

(ii) 0.8% of average final compensation up to the SSIL for the three highest consecutive years as a member plus 1.5% of average final compensation over the SSIL for each year of creditable service on or before June 30, 1998; or

(iii) 1.8% of average final compensation for the three highest consecutive years as an employee for each year of creditable service after June 30, 1998.

The Social Security Integration Level (SSIL) is the average of all Social Security Wage Bases over the thirty-five (35) calendar years prior to your retirement.

Note: Members who transferred into the Employees' Pension System, on or after April 1, 1998, receive benefits based on the provisions of the NCPS as in effect on January 1, 1980 except for COLA benefits. The COLAs are capped at a maximum of 3% compounded annually.

RCPB Eligibility: Combined age and eligibility service of at least 90 years or age 65 after 10 years of eligibility service.

RCPB Allowance: 1.5% of average final compensation for the five highest consecutive years as an employee for each year of creditable service on or after July 1, 2011.

4. **Early Retirement Allowance**

NCPS, ECPS, and ACPS Eligibility: Attainment of age 55 and at least 15 years of eligibility service.

NCPS, ECPS, and ACPS Allowance: Service retirement allowance computed as of early retirement date, reduced by .005 for each month that early retirement date precedes age 62 (maximum reduction is 42%).

RCPB Eligibility: Attainment of age 60 with at least 15 years of eligibility service.

RCPB Allowance: Service retirement allowance computed as of early retirement date, reduced by .005 for each month that early retirement date precedes age 65 (maximum reduction is 30%).

5. **Disability Retirement Allowance**

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is mentally or physically incapacitated from the performance of the normal duties of the member's position, and that incapacity is permanent.

Allowance: The benefit is the service retirement allowance computed on the basis that service continues until age 62 without any change in the rate of earnable compensation. If disability occurs on or after age 62, the benefit is based on creditable service at time of retirement.

Accidental

Eligibility: Certification of the Medical Board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty.

Allowance: The benefit is 66 2/3% of average final compensation for the three highest consecutive years as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation.

6. **Death Benefits**

Eligibility: One year of eligibility service.

Benefit: One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions. If member dies prior to accruing one year of service, payment is only the return of accumulated member contributions.

Spouse Law

Eligibility: Surviving spouse designated as the sole primary beneficiary and the deceased member was eligible to retire or had at least 25 years of eligibility service**,** or was at least 55 years old with at least 15 years of eligibility service.

Benefit: Surviving spouse may elect one time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions or a monthly allowance under Option 2 (100% survivor benefit).

Special Death Benefit

Eligibility: Killed in the line of duty.

Benefit: 66 2/3% of average final compensation for the three highest consecutive years as a member payable to a surviving spouse, dependent children or dependent parents. Accumulated member contributions are paid to the designated beneficiary(ies).

Note: Death benefits outlined above are payable upon death of an active member. If member is not active, only accumulated member contributions are payable at time of death.

7. **Vested Retirement Allowance**

NCPS, ECPS, and ACPS Eligibility: Five years of eligibility service.

NCPS, ECPS, and ACPS Allowance: Accrued retirement allowance payable at age 62. A member who has completed 15 years of eligibility service may begin to receive benefit payments at any time on or after attainment of age 55, reduced by .005 for each month that benefit commencement date precedes age 62.

If member does not commence to receive benefit payments, and dies before attaining age 62, only accumulated member contributions are returned.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Effective July 1, 1998, the adjustment is capped at a maximum of 3% compounded COLA, and is applied to all benefits which have been in payment for one year. All adjustments are effective July 1.

Retirement allowances of NCPS retirees (retirees of participating employers who did not elect the ECPS or ACPS) have a COLA that is capped at a maximum of 3% of the initial benefit. The COLA is applied to all benefits which have been in payment for one year. All adjustments are effective July 1.

For benefits attributable to service on or after July 1, 2011, the Cost-of-living adjustment is capped at the lesser of 2.5% or the increase in CPI if the most recent calendar year market value rate of return was greater than or equal to the assumed rate. The adjustment is capped at the lesser of 1% or the increase in CPI if the market value return was less than the assumed rate.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

9. Optional Forms of Payment

Normal service allowance is in a single life annuity.

Option 1: Cash refund equal to excess of present value of retirement allowance at date of retirement over total amount of payments made to date of death.

Option 2: 100% joint and survivor annuity. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 3: 50% joint and survivor annuity.

Option 4: This option guarantees a return of accumulated member contributions remaining at date of death.

Option 5: 100% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree.

For Options 5 and 6 – If the designated beneficiary predeceases the retiree, a new beneficiary may be named. However, the retirement allowance will be re-calculated.

Retirees who are to receive a service retirement, early service retirement, disability benefit, or vested allowance of less than $50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

10. Change in Benefits

None.

Maryland State Retirement and Pension System
Law Enforcement Officers' Pension System
(Retirement Plan)
Summary of Plan Provisions

A. Retirement System Provisions

1. Membership

The retirement tier was closed to new participants effective January 1, 2005.

2. Member Contributions

Members who transferred from the Employees' Retirement System (Plan A) are required to contribute 7% of earnable compensation. Members who transferred from the Employees' Retirement System (Plan B) contribute 5% of earnable compensation.

Contributions earn interest at 4% per year.

3. Service Retirement Allowance

Eligibility: 25 years of eligibility service or attainment of age 50.

Allowance: 2.3% of average final compensation for the three highest years as a member for each of the first 30 years of creditable service, plus 1.0% of average final compensation for each additional year.

4. Early Retirement Allowance

Not applicable to this System.

5. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is incapacitated for the performance of duty, and that incapacity is permanent.

Allowance: Service retirement allowance with a minimum of 25% of average final compensation.

Accidental

Eligibility: Total and permanent disability as certified by the medical board arising out of or in the course of the actual performance of duty.

Allowance: The benefit is 66 2/3% of average final compensation plus an annuity provided by accumulated member contributions with a maximum of average final compensation.

6. Death Benefits

Ordinary

Eligibility: 1 through 2 years of eligibility service and not eligible for special death benefit.

Benefit: Member's annual earnable compensation at time of death plus accumulated contributions.

Regardless of length of service, members' accumulated contributions are paid.

Special Benefit

Eligibility: Two or more years of eligibility service.

Benefit: Accumulated contributions paid to designated beneficiary plus an allowance of 50% of the ordinary disability benefit. Payment is made to the surviving spouse; however if there is no surviving spouse or spouse dies before youngest child reaches age 18, one-half of average final compensation continues until the youngest child reaches age 18. If none of the above conditions are met, the ordinary death benefit is paid to the designated beneficiary(ies).

Eligibility: Death arises out of or in the course of the actual performance of duty.

Benefit: Accumulated contributions paid to designated beneficiary plus an allowance of 66 2/3% of the member's average final compensation. Payment is made to the surviving spouse; however if there is no surviving spouse or spouse dies before youngest child reaches age 18, one-half of average final compensation continues until the youngest child reaches age 18. If none of the above conditions are met, the ordinary death benefit is paid to the designated beneficiary(ies).

Note: Death benefits outlined above are payable upon death of an active member. If member is not active, only member accumulated contributions and interest are payable at time of death, unless benefit payment has commenced.

7. Vested Retirement Allowance

Eligibility: Five years of eligibility service.

Allowance: Accrued retirement allowance payable at age 50 if the member does not withdraw the member's accumulated contributions.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). COLAs are effective July 1 and are applied to all benefits which have been in payment for one year. For members contributing 7% of earnable compensation, unlimited COLA is compounded annually. For members contributing 5% of earnable compensation, the cost-of-living adjustment is capped at a maximum 5% compounded annually.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

9. Optional Forms of Payment

The normal service allowance is a 50% joint and survivor annuity with spouse, if any; or if there is no surviving spouse or upon the death of the surviving spouse, to any children of the deceased under the age of 18 years, until every child dies or becomes 18 years.

Other forms of payment may be elected if there is no spouse at time of retirement.

Option 1: Cash refund equal to excess of present value of retirement allowance at date of retirement over total amount of payments made to date of death.

Option 2: 100% joint and survivor annuity. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 3: 50% joint and survivor annuity.

Option 4: This option guarantees a return of accumulated member contributions remaining at date of death.

Option 5: 100% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree.

For Options 5 and 6 – If the designated beneficiary predeceases the retiree, a new beneficiary may be named. However, the retirement allowance will be re-calculated

10. Deferred Retirement Option Program (DROP)

Members with 25 years of eligibility service, but less than 30 years of eligibility service, may elect to enter the DROP program for no more than five years. Members who enter DROP are retired and cease making member contributions, and cease accruing service credit and additional benefits. For members who enter DROP on or before June 30, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 6% per year, compounded monthly. For members who enter DROP on or after July 1, 2011, the service retirement allowance, with COLAs, is credited to an account earning interest at the rate of 4% per year, compounded annually. When the DROP period ends, members terminate employment and begin receiving their monthly allowance plus the lump sum payment from their DROP account. During the DROP period, members remain eligible for Accidental Disability benefits if incapacitated while in DROP.

11. Change in Benefit

None.

B. Pension System Provisions

1. Membership

Membership is a condition of employment for all law enforcement officers who are employees of the State as provided in the Annotated Code of Maryland, State Personnel and Pensions Article, Title 26, Section 26-201. This includes participating governmental units who elect to have their law enforcement officers or firefighters/paramedics participate in the System.

2. Member Contributions

Beginning July 1, 2011, members are required to make contributions of 6% of earnable compensation. Beginning July 1, 2012, member contributions will increase to 7% of earnable compensation .

Contributions earn interest at 5% per year.

3. Service Retirement Allowance

Eligibility: 25 years of eligibility service or attainment of age 50.

Allowance: For individuals who are members on or before June 30, 2011, 2.0% of average final compensation for the three highest consecutive years as an employee for each of the first 30 years of creditable service. For individuals who are members on or after July 1, 2011, 2.0% of average compensation for the five highest consecutive years as an employee for each of the first 30 years of creditable service. Maximum benefit is 60% of average final compensation.

4. Early Retirement Allowance

Not applicable to this System.

5. Disability Retirement Allowance

<u>Ordinary</u>

Eligibility: Five years of eligibility service and certification of the Medical Board designated by the Board of Trustees that member is incapacitated for the performance of duty, and that incapacity is permanent.

Allowance: Service retirement allowance computed on the basis that service continues until age 50 without any change in rate of earnable compensation. If disability occurs after age 50, the benefit is based on creditable service at time of retirement.

Accidental

Eligibility: Total and permanent disability as certified by the Medical Board arising out of or in the course of the actual performance of duty.

Allowance: The benefit is 66 2/3% of average final compensation plus an annuity provided by accumulated member contributions with a maximum of average final compensation.

6. Death Benefits

Normal

Eligibility: 1 through 2 years of eligibility service and not eligible for special death benefit as noted below.

Benefit: One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions. If member dies prior to accruing one year of service, payment is only the return of accumulated member contributions.

Special Death Benefit

Eligibility: Two or more years of eligibility service.

Benefit: Accumulated member contributions paid to designated beneficiary plus an allowance of 50% of the ordinary disability benefit. Payment is made to the surviving spouse; however if there is no surviving spouse or spouse dies before youngest child reaches age 18, one-half of average final compensation continues until the youngest child reaches age 18. If none of the above conditions are met, the ordinary death benefit is paid to the designated beneficiary(ies).

Eligibility: Death arises out of or in the course of the actual performance of duty.

Benefit: Accumulated member contributions paid to designated beneficiary plus an allowance of 66 2/3% of the member's average final compensation. Payment is made to the surviving spouse; however if there is no surviving spouse or spouse dies before youngest child reaches age 18, one-half of average final compensation continues until the youngest child reaches age 18. If none of the above conditions are met, the ordinary death benefit is paid to the designated beneficiary(ies).

Note: Death benefits outlined above are payable upon death of an active member. If member is not active, only accumulated member contributions are payable at time of death, unless benefit payment has commenced.

7. Vested Retirement Allowance

Eligibility: For individuals who are members on or before June 30, 2011, 5 years of eligibility service. For individuals who become members on or after July 1, 2011, 10 years of eligibility service.

Allowance: Accrued retirement allowance payable at age 50 if the member does not withdraw their accumulated member contributions.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Effective July 1, 2000, the adjustment is capped at a maximum 3% compounded and is applied to all benefits which have been in payment for one year. All adjustments are effective July 1.

For benefits attributable to service on or after July 1, 2011, the Cost-of-living adjustment is capped at the lesser of 2.5% or the increase in CPI if the most recent calendar year market value rate of return was greater than or equal to the assumed rate. The adjustment is capped at the lesser of 1% or the increase in CPI if the market value return was less than the assumed rate.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

9. Optional Forms of Payment

The normal service allowance is a 50% joint and survivor annuity with spouse, if any; or if there is no surviving spouse or upon the death of the surviving spouse, to any children of the deceased under the age of 18 years, until every child attains 18 years of age.

Other forms of payment may be elected if there is no spouse at time of retirement.

Option 1: Cash refund equal to excess of present value of retirement allowance at date of retirement over total amount of payments made to date of death.

Option 2: 100% joint and survivor annuity. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 3: 50% joint and survivor annuity.

Option 4: This option guarantees a return of accumulated member contributions remaining at date of death.

Option 5: 100% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree.

For Options 5 and 6 – If the designated beneficiary predeceases the retiree, a new beneficiary may be named. However, the retirement allowance will be re-calculated.

10. Deferred Retirement Option Plan (DROP)

DROP participation is the lesser of 5 years or the difference between 30 years and the member's creditable service. Members who enter DROP are retired and cease making member contributions, and cease accruing service credit and additional benefits. For members who enter DROP on or before June 30, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 6% per year, compounded monthly. For members who enter DROP on or after July 1, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 4% per year, compounded annually. When the DROP period ends, members terminate employment and begin receiving their monthly allowance plus the lump sum payment from their DROP account. During the DROP period, members remain eligible for Accidental Disability benefits if incapacitated while in DROP.

11. Changes in Benefits

None.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM
CORRECTIONAL OFFICERS RETIREMENT SYSTEM
SUMMARY OF PLAN PROVISIONS

1. Membership

Membership is limited to detention center officers of Maryland Counties that elect to participate.

2. Member Contributions

Members are required to contribute 5% of earnable compensation. Contributions earn interest at 4% per year.

3. Service Retirement Allowance

Eligibility: 20 years of eligibility service, with at least the last five years served as a detention center officer.

Allowance: $1/55^{th}$ of average final compensation for the three highest years as a member for each year of creditable service. The retirement allowance for an individual who is a correctional officer on or after July 1, 2011, is $1/55^{th}$ of average final compensation for the five highest years as a member for each year of creditable service.

Note: Members are eligible to receive a vested benefit at age 55. Therefore, members may receive an immediate retirement allowance at age 55 if they have accrued at least five years (ten years for an individual who became a correctional officer on or after July 1, 2011) of eligibility service as a detention center officer.

4. Early Retirement Allowance

Not applicable to this System.

5. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the Medical Board designated by the Board of Trustees that the member is mentally or physically incapacitated from the performance of the normal duties of the member's position, and that the incapacity is permanent.

Allowance: The benefit is $1/55^{th}$ of average final compensation for the three highest years as a member for each year of creditable service. The minimum benefit is 25% of average final compensation; the maximum benefit can be no greater than $1/55^{th}$ of average final compensation for each year of creditable service the member would have accrued if employment continued to age 60.

Accidental

Eligibility: Certification of the Medical Board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty.

Allowance: The benefit is 66 2/3% of average final compensation for the three highest years as a member plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation.

6. Death Benefits

Eligibility: One year of eligibility service.

Benefit: One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions. If member dies prior to accruing one year of service, payment is only the return of accumulated member contributions.

Spouse Law

Eligibility: Surviving spouse designated as the sole primary beneficiary and the deceased member was eligible to retire or was at least age 55 with at least 15 years of eligibility service.

Benefit: Surviving spouse may elect one time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions or a monthly allowance under Option 2 (100% survivor benefit).

Special Death Benefit

Eligibility: Death in line of duty.

Benefit: 66 2/3% of average final compensation for the three highest years as a member payable to a surviving spouse or if no surviving spouse to dependent children until age 18. Accumulated member contributions are paid to the designated beneficiary (ies).

Note: Death benefits outlined above are payable upon death of an active member. If member is not active, only accumulated member contributions are payable at time of death.

7. Vested Retirement Allowance

Eligibility: Five years of eligibility service. Ten years of eligibility service for individuals who become correctional officers on or after July 1, 2011.

Allowance: Deferred vested benefit payable at age 55 (age 60 for maximum security attendants) provided member does not withdraw contributions.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index. The unlimited compounded COLAs are effective July 1 for all benefits which have been in payment for one year.

For benefits attributable to service on or after July 1, 2011, the Cost-of-living adjustment is capped at the lesser of 2.5% or the increase in CPI if the most recent calendar year market value rate of return was greater than or equal to the assumed rate. The adjustment is capped at the lesser of 1% or the increase in CPI if the market value return was less than the assumed rate.

9. Optional Forms of Payment

Basic form of payment is a single life annuity.

Option 1: Cash refund equal to excess of present value of retirement allowance at date of retirement over total amount of payments made to date of death.

Option 2: 100% joint and survivor annuity. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 3: 50% joint and survivor annuity.

Option 4: This option guarantees a return of accumulated member contributions remaining at the date of death.

Option 5: 100% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree. Your named beneficiary cannot be more than 10 years younger than you unless the beneficiary is your spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity with adjustment to maximum benefit if beneficiary predeceases retiree.

For Options 5 and 6 – If the designated beneficiary predeceases the retiree, a new beneficiary may be named. However, the retirement allowance will be re-calculated.

10. Change in Benefits

None.