

The background features a large, semi-transparent watermark of the SRPS logo. The logo consists of the letters 'SRPS' in a serif font, positioned above a stylized graphic of a building or structure with several circular elements. The entire watermark is centered on the page.

SRPS
Actuarial Section



Gabriel Roeder Smith & Company
Consultants & Actuaries

One Towne Square
Suite 800
Southfield, MI 48076-3723

248.799.9000 phone
248.799.9020 fax
www.gabrielroeder.com

October 1, 2015

Board of Trustees
Maryland State Retirement and Pension System
120 East Baltimore Street
Baltimore, MD 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") are presented in this report.

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 MSRPS with regard to funding,
- Provide the Board with State and PGU contribution rates for certification,
- Determine actuarial and statutory contribution rates with reinvested savings,
- Analyze the aggregate experience of the System over the past year.

Information required by Statements No. 67 and No. 68 of the Governmental Accounting Standards Board ("GASB") that is for fiscal year 2015 is provided in a separate report.

The individual member data required for the valuations was furnished by the SRA, together with pertinent data on financial operations (unaudited). 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.

New funding methodology set forth by Maryland legislation was first reflected in the June 30, 2015 valuation. The legislation removed the corridor funding method effective with the June 30, 2015 valuation.

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. Portions of the savings from the 2011 pension reforms passed by the General Assembly are to be reinvested as additional contributions into the Systems. Legislation enacted in 2015 reduced the amount of reinvested savings to \$75 million per year beginning in fiscal year 2016 until the combined funded ratio of the Systems reaches 85%.

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.

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 Power Point presentation presented to the Board on October 20, 2015 and the PowerPoint presentation presented to the Joint Committee on Pensions on November 4, 2015.

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,

Sincerely,

Brad L. Armstrong, ASA, MAAA
Consulting Actuary

Brian B. Murphy, FSA, MAAA
Consulting Actuary

Amy Williams, ASA, MAAA
Consulting Actuary

BOARD SUMMARY

The funding valuation report presents the results of the June 30, 2015 annual actuarial valuation of the Maryland State Retirement and Pension System (MSRPS). The purposes of the annual funding valuations are as follows:

- Measure the financial position of MSRPS,
- Assist the Board in determining employer contribution rates (including reinvested savings) necessary to fund the benefits provided by MSRPS, as well as establishing statutory employer contribution rates,
- Indicate trends in the financial progress of the fund, and
- Analyze the experience of the System over the past year.

A summary of the primary funding valuation results as of June 30, 2015 is presented on the following page.

The Governmental Accounting Standards Board (GASB) 67 and 68 valuation report presents the results of the June 30, 2015 annual accounting valuation of the Maryland State Retirement and Pension System (MSRPS). The purpose of the annual accounting valuations is as follows:

- Provide actuarial reporting and disclosure information for the System's financial report.

A summary of the primary accounting valuation results as of June 30, 2015 is presented in a separate report.

SUMMARY OF VALUATION RESULTS
JUNE 30, 2015
(\$ IN MILLIONS)
(STATE AND MUNICIPAL)

	2015						2014		% Change
	TCS	ECS	State Police	Judges	LEOPS	CORS ¹	Total	Total	
A. Demographic Information									
1. Active Number Counts	105,526	83,794	1,394	307	2,488	91	193,600	193,522	0.0%
2. Active Payroll	\$ 6,471	\$ 4,301	\$ 91	\$ 45	\$ 152	\$ 5	\$ 11,064	\$ 10,804	2.4%
3. Retired Number Counts	71,176	72,031	2,508	397	1,711	27	147,850	142,887	3.5%
4. Annual Benefits for Retired Members ²	\$ 1,942	\$ 1,177	\$ 116	\$ 30	\$ 58	\$ 1	\$ 3,323	\$ 3,148	5.6%
5. Deferred / Inactive Number Counts	24,541	27,846	81	8	293	0	52,769	52,133	1.2%
6. Total Number Counts	201,243	183,671	3,983	712	4,492	118	394,219	388,542	1.5%
B. Assets									
1. Market Value (MV)	\$ 27,764	\$ 15,490	\$ 1,303	\$ 413	\$ 800	\$ 20	\$ 45,790	\$ 45,340	1.0%
2. Rate of Return on MV ³							2.66 %	14.27 %	
3. Funding Value (FV)	\$ 27,995	\$ 15,615	\$ 1,314	\$ 417	\$ 808	\$ 21	\$ 46,171	\$ 42,997	7.4%
4. Rate of Return on FV							9.20 %	11.22 %	
5. Ratio of FV to MV							100.8%	94.8%	
C. Actuarial Results									
1. Normal Cost as a % of Payroll	11.55%	10.35%	32.42%	38.68%	21.74%	13.93%	11.51%	11.97%	
2. Actuarial Accrued Liability (AAL)									
a. Active	\$ 15,791	\$ 9,176	\$ 389	\$ 173	\$ 421	\$ 10	\$ 25,960	\$ 24,931	4.1%
b. Retired	22,333	13,347	1,702	336	859	11	38,588	36,077	7.0%
c. Deferred/Inactive	811	880	12	3	28	0	1,733	1,602	8.2%
d. Total	\$ 38,934	\$ 23,403	\$ 2,103	\$ 511	\$ 1,309	\$ 21	\$ 66,282	\$ 62,610	5.9%
3. Unfunded AAL (UAAL)	\$ 10,939	\$ 7,788	\$ 789	\$ 95	\$ 500	\$ 1	\$ 20,111	\$ 19,613	2.5%
4. Funded Ratio	71.90 %	66.72 %	62.49 %	81.45 %	61.78 %	96.29 %	69.66 %	68.67 %	
D. Contribution Rates⁴									
	STATE PORTION ONLY								
	FY 2017						FY 2016⁵	FY 2015⁶	
1. Pension Contributions									
a. Employer Normal Cost	4.56%	3.94%	24.42%	32.22%	15.07%		4.77%	5.25%	5.72%
b. Member Contribution Rate	6.99%	6.73%	8.00%	6.46%	7.00%		6.74%	6.72%	6.70%
c. UAAL Contribution Rate	<u>11.23%</u>	<u>14.34%</u>	<u>56.98%</u>	<u>14.34%</u>	<u>24.53%</u>		<u>12.81%</u>	<u>12.36%</u>	<u>13.19%</u>
d. Total	22.78%	25.01%	89.40%	53.02%	46.60%		24.32%	24.33%	25.61%
2. Total Actuarial Employer Rate (1.a + 1.c)	15.79%	18.28%	81.40%	46.56%	39.60%		17.58%	17.61%	18.91%
3. Total Employer Budgeted Rate									
a. Employer Budgeted Rate	15.79%	18.28%	81.40%	46.56%	39.60%		17.58%	16.83%	16.41%
b. Reinvested Savings Rate	<u>0.76%</u>	<u>0.65%</u>	<u>1.10%</u>	<u>0.00%</u>	<u>1.12%</u>		<u>0.74%</u>	<u>0.75%</u>	<u>1.03%</u>
c. Total Employer Budgeted Rate	16.55%	18.93%	82.50%	46.56%	40.72%		18.32%	17.58%	17.44%

¹Includes CORS Municipal only. State CORS included in ECS.

²Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2015 and July 1, 2014, respectively.

³Actuarial estimation method shown is expected to differ modestly from figures reported by State Street

⁴Contribution rates shown in the "Total" column are for informational purposes only and are not used for funding purposes.

⁵Reflects the reduction of reinvested savings from \$150 million to \$75 million passed by the General Assembly.

⁶Reflects the reduction of reinvested savings from \$300 million to \$100 million passed by the General Assembly.

Totals may not add due to rounding.

ACTUARY'S COMMENTS

The System's assets earned 2.66%¹ for the year ended June 30, 2015, which is less than the 7.65% assumed rate of investment return. Recognized asset gains from fiscal years 2011, 2013 and 2014 offset recognized asset losses from fiscal years 2012 and 2015 in the actuarial value of assets as of June 30, 2015. This resulted in a gain under the asset smoothing method.

UAAL and Actuarial Gain/(Loss)
(\$ in Millions)

			Total
	State	Municipal	SRPS
Unfunded Actuarial Accrued Liability (UAAL) as of June 30, 2014	\$18,750	\$863	\$19,613
Expected UAAL as of June 30, 2015 before changes	18,923	855	19,778
Changes in benefit provisions:	-	-	-
Changes in methods and assumptions:	1,392	85	1,477
Expected UAAL as of June 30, 2015 after changes	20,315	940	21,255
Actual UAAL as of June 30, 2015	19,260	851	20,111
Net actuarial gain (loss)	1,055	89	1,144
Actuarial gain (loss) by source:			
Actuarial investment experience	605	55	660
Actuarial accrued liability experience	450	34	484

In relative terms, the overall System funded ratio of actuarial value of assets to liabilities increased from 68.67% in 2014, to 69.66% this year. If market value of assets were the basis for the measurements, the funded ratio would have decreased from 72.42% to 69.08% funded.

The market value of assets exceeds the retiree liabilities by about 19% in total, a decrease from 26% last year. This is referred to as a short condition test and is demonstrated in the chart at the bottom of this page. It is looking at the current retiree liabilities as the benefits that will be paid the soonest since these benefits are already in pay status. Active liabilities and deferred vested liabilities do not have associated immediate cash flow requirements. Although the market value of assets exceeds the current retiree liabilities in total, this is not true for two of the smaller systems. For State Police and LEOPS, the market value of assets is less than the retiree liabilities.

Summary of Contribution Rates by State System (\$ in Millions)							
	TCS	ECS	State Police	Judges	LEOPS	CORS	Total
Market Value of Assets (MVA)	\$27,764	\$15,490	\$ 1,303	\$ 413	\$ 800	\$ 20	\$45,790
Retiree Liability	22,333	13,347	1,702	336	859	11	38,588
MVA as % of Retiree Liability	124%	116%	77%	123%	93%	178%	119%

¹ Actuarial calculations may differ from figures reported by State Street.

In the 2013 legislative session, the Legislature changed the method used to fund the State Systems of the MSRPS. The unfunded liability for each State System is being amortized over a single closed 25-year period beginning July 1, 2014 and ending June 30, 2039 (23 years remaining as of the June 30, 2015 valuation, which determines the fiscal year 2017 contribution). In addition, the corridor method used by the Teachers' Combined System and the State portion of the Employees' Combined System, which was established in 2001, was being phased-out over a 10-year period. In 2015, the Legislature removed the corridor funding method effective with the June 30, 2015 valuation.

The Teachers' Combined System (TCS) remained out of the corridor since the June 30, 2005 valuation and the State portion of the Employees Combined System (ECS) remained out of the corridor since the June 30, 2004 valuation resulting in contribution rates for TCS and ECS that are less than actuarial rates. With the elimination of the corridor effective with the June 30, 2015 valuation report, TCS and ECS will begin to contribute based on the actuarially determined rate beginning in fiscal year 2017.

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 Teachers' Pension System and Employees' Pension System from 5% to 7%, and from 4% to 6% in fiscal year 2012 and to 7% in fiscal year 2013 and beyond for LEOPS. In addition, the benefit attributable to service on or after July 1, 2011, is subject to different cost-of-living adjustments (COLAs) that are 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 from the preceding calendar year was higher or lower than the investment return assumption used in the valuation (currently 7.55%). There were also changes to the provisions for members hired on or after July 1, 2011. The valuation as of June 30, 2012, was the first valuation which included members covered under the Reformed Benefit Plans applicable to members hired on or after July 1, 2011.

In addition to the benefit provision changes, a portion of the savings from the pension reforms is to be reinvested in certain State Systems (TCS, ECS, State Police, and LEOPS). Legislation enacted in 2014 reduced the amount of reinvested savings from \$300 million each year beginning in fiscal year 2014, to \$100 million each year for fiscal years 2014 and 2015, \$150 million for fiscal year 2016, \$200 million for fiscal year 2017, \$250 million for fiscal year 2018, and \$300 million each year beginning in fiscal year 2019 and thereafter until the later of the combined funded ratio of the Systems reaching 85% and the corridor funding method being fully phased out. Legislation enacted in 2015 further reduced the amount of reinvested savings to \$75 million per year beginning in fiscal year 2016 until the combined funded ratio of the Systems reaches 85%. The allocation of reinvested savings by System is in proportion to the savings from the pension reforms as measured in the actuarial valuation as of June 30, 2011.

The actuarially determined rates are equal to the employer normal cost plus the unfunded actuarial accrued liability contribution rate. The unfunded actuarial contribution rate is equal to the payment resulting from amortizing the current unfunded liability as a level percentage of pay over a single 25-year closed period as of June 30, 2013 (23 years remaining as of June 30, 2015).

The fiscal year 2017 budgeted rates for TCS and ECS are equal to the actuarially determined rate. The budgeted rates with reinvested savings are based on a projection of payroll. It is our understanding that the Retirement Agency will monitor contributions to ensure that the System receives the proper amount of reinvested dollar savings during fiscal year 2017.

Beginning in fiscal year 2013, local employers contributed a portion of the statutory normal cost contribution for the Teachers Combined System. Normal cost contribution amounts for local employers for fiscal years 2013 through 2016 are defined by the Maryland statutes. Beginning in fiscal year 2017, local employers will contribute the full normal cost contribution on behalf of their employees.

The schedules required under Government Accounting Standards Board Statement (GASB) No. 67 (beginning with fiscal year 2014) and No. 68 (beginning with fiscal year 2015) are provided in a separate report.

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 as the majority of the active population is comprised of Reformed Plan members,

2. The unfunded actuarial accrued liabilities will be fully amortized after 23 years (June 30, 2039), and
3. The funded status of the plan will increase gradually towards a 100% funded ratio.

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 used in the measurement.

PRIOR YEAR EXPERIENCE

Assets (State and Municipal)

Plan assets for this System are measured on both a market value and an actuarial or smoothed value basis. The actuarial smoothing method, described in detail in Appendix A, annually recognizes 20% of the difference between (a) the expected investment return if the market value of assets had earned the assumed rate of 7.65% during FY 2015, and (b) the actual investment return. In addition, there is a market value collar that constrains the actuarial value to be within 20% of the market value of assets. In periods of high returns, this method defers the amount of asset gains above the assumed return (7.65% for FY 2015 and 7.55% for FY 2016). Conversely, in periods of returns below the assumed rate, recognition of the losses is deferred. The primary advantage of this smoothing technique is contribution stability. The System does not immediately feel the full impact of lower (or higher) costs when asset values fluctuate dramatically.

For the plan year ending June 30, 2015, the System’s assets earned 2.66%¹ on a market value basis and 9.20% on a smoothed or actuarial basis. The System experienced an investment loss of \$2,243 million on a market value basis and a gain of \$660 million on an actuarial basis. A reconciliation of market value and actuarial value of assets are presented below.

(STATE AND MUNICIPAL)
(\$ in Millions)

Item (In Millions)	Market Value	Actuarial Value
June 30, 2014 Value	\$ 45,340	\$ 42,997
Employer Contributions	1,859	1,859
Member Contributions	755	755
Benefit Payments and Other Disbursements	(3,362)	(3,362)
Expected Investment Earnings (7.70% in FY2014)	<u>3,440</u>	<u>3,261</u>
Expected Value June 30, 2014	\$ 48,033	\$ 45,510
INVESTMENT GAIN (LOSS)	(2,243)	660
June 30, 2012 ⁴ Value	\$ 45,790	\$ 46,171
Figures may not add correctly due to rounding		

¹ Actuarial estimation method shown is expected to differ modestly from figures reported by State Street.

Trends (State and Municipal)

One of the best ways to measure or evaluate the financial condition of a pension plan is to examine the historical trends that are evolving. Below are three charts which illustrate trend information from 1993 through the end of 2015, on the System's assets and liabilities, annual cash flows in and out of the fund, and the State contribution rate. Our comments on each follow.

Chart A:
Assets/Liabilities

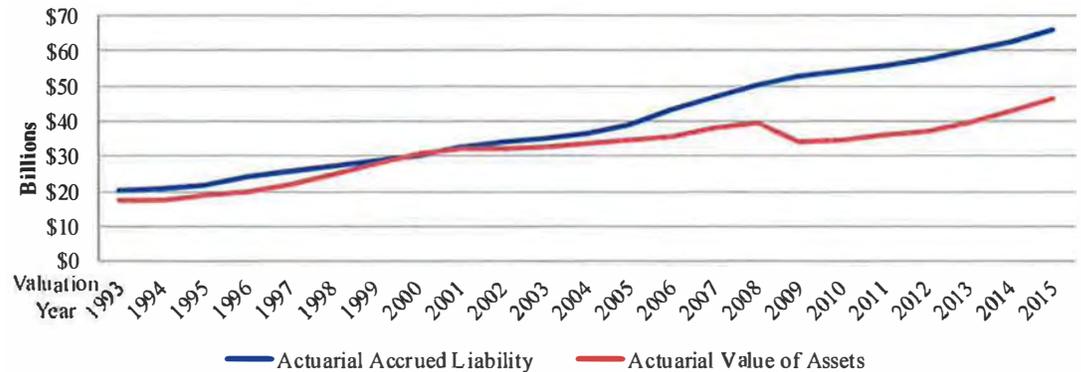


Chart B:
Benefits vs Contributions

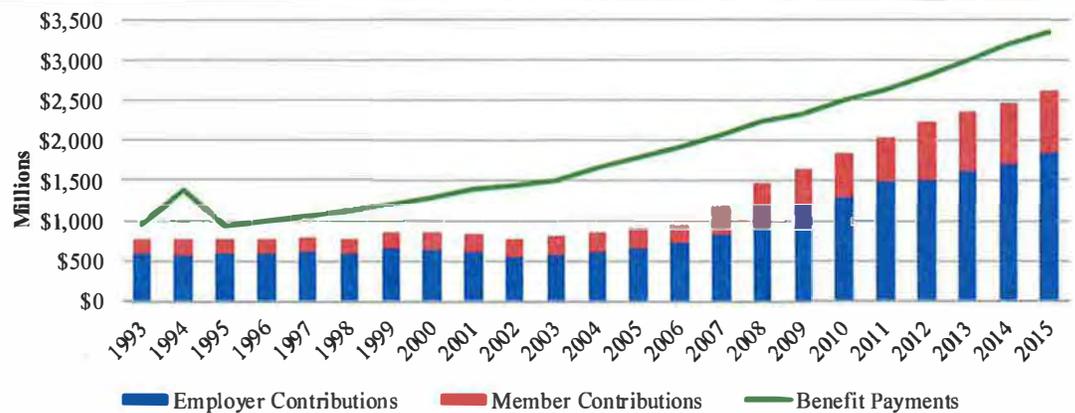
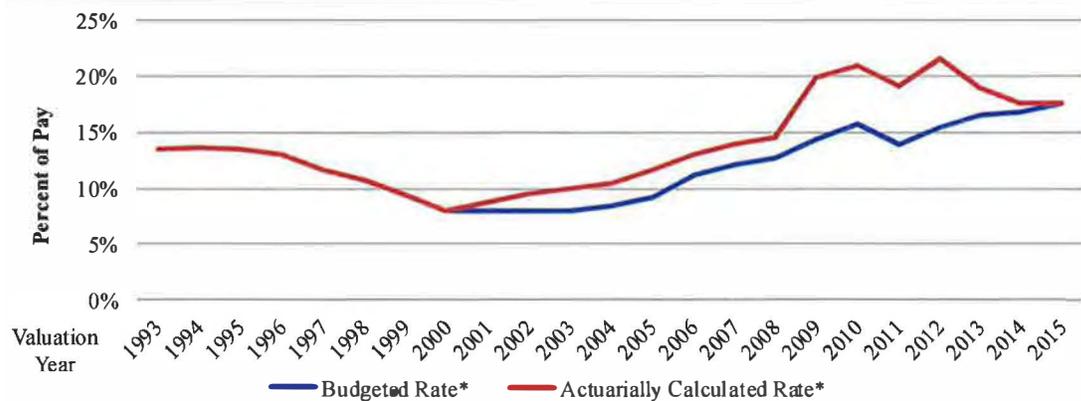


Chart C:
State Contribution Rate



* Excludes reinvested savings in valuation years 2011- 2015. 2010 rates are prior to the 2011 GA Reforms.

Comments

Chart A displays a comparison of the actuarial value of assets and the actuarial accrued liability. The difference between the actuarial value of assets and the actuarial accrued liability is the unfunded actuarial accrued liability. The unfunded actuarial accrued liability is about \$20 billion as of June 30, 2015, and increased by about \$500 million since the last valuation as of June 30, 2014. As of June 30, 2015, the actuarial value of assets under the 5-year asset smoothing method is 101% of the market value of assets, compared with 95% as of June 30, 2014.

Chart B presents non-investment cash flow trend information that can have investment implications. Many statewide retirement systems, with the aging and retirements of the baby boom generation, are seeing payments to retirees on the increase. This is expected for mature retirement systems. Benefit payments, which is the total amount below the green line, exceeds the total contributions, which is the total amount below the top of the red bar. The amount needed to pay excess benefit payments over total contributions comes from investment return or current assets. If the difference between the total benefit payments and total contributions increases, a larger portion of investment return will be needed to pay benefits and may require a change in asset allocation. As long as cash into the fund from employer and employee contributions is increasing in a similar manner to benefit payments, the financial objectives of the System will continue to be met. The budgeted rates under the corridor funding method first became less than the actuarial rates in FY 2006 for ECS and in FY 2007 for TCS. The corridor method increased the extent of negative cash flows. The corridor funding method was eliminated first effective with the June 30, 2015 valuation. The budgeted rates will equal the actuarial rates beginning in fiscal year 2017.

Finally, **Chart C**, looks at the composite actuarially determined and budgeted State contribution rates. The budgeted contribution rates by System determine the fiscal year State appropriation. It shows the impact of the 1990's decade sustained investment gains, a continuous lowering of the rate until 2000. Effective with the 2001 valuation, the State appropriations were performed under

a corridor funding method for the two largest plans. The appropriation remained essentially level for a few years before increasing with the 2004 valuation. Legislation enacted in 2015 has removed the corridor funding method for TCS and ECS beginning with the valuation as of June 30, 2015. The budgeted rate is now equal to the actuarial rate for TCS and ECS.

Chart C further illustrates that, since inception, the corridor method has consistently acted to reduce the State's contributions calculated in valuations between 2000 and 2015.

SUMMARY OF UNFUNDED ACTUARIAL
(STATE AND

Valuation Date June 30,	Actuarial Liabilities For			Total Liabilities	Actuarial Value of Assets
	Active Member Contributions	Retirees, Term Vested and Inactives	Active Members Employer Fin. Portion		
2006	\$ 2,217,897,868	\$ 22,086,452,920	\$ 18,939,141,669	\$ 43,243,492,457	\$ 35,795,025,134
2007	2,489,643,667	25,790,846,645	18,863,863,688	47,144,354,000	37,886,935,596
2008	2,787,163,875	27,224,603,428	20,232,279,697	50,244,047,000	39,504,284,202
2009	2,959,415,829	28,914,824,184	20,854,931,317	52,729,171,330	34,284,568,617
2010	3,389,265,622	29,900,015,751	20,795,799,745	54,085,081,118	34,688,345,696
2011	3,732,934,034	31,901,090,890	20,283,517,888	55,917,542,812	36,177,655,993
2012	4,274,269,025	34,208,190,190	19,386,686,257	57,869,145,472	37,248,400,780
2013	4,818,674,217	36,001,888,558	19,239,528,603	60,060,091,378	39,350,969,353
2014	5,369,806,786	37,679,277,545	19,561,109,243	62,610,193,574	42,996,956,526
2015	5,908,597,531	40,321,760,550	20,051,422,798	66,281,780,879	46,170,624,066

SUMMARY OF RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
(STATE AND MUNICIPAL)

Fiscal Year Ended	Added to Rolls		Removed from Rolls		Rolls-End of Year		% Increase in Annual Allowances	Average Annual Allowance
	Number	Annual Allowance	Number	Annual Allowances	Number	Annual Allowances		
2006	6,822	\$ 164,369,688	3,247	\$ 34,799,179	103,831	\$ 1,859,904,684	7.49%	\$ 17,913
2007	5,967	177,884,598	1,443	17,852,392	108,355	2,019,936,890	8.60%	18,642
2008	7,310	205,072,079	3,243	48,851,264	112,422	2,176,157,700	7.73%	19,357
2009	6,700	218,347,411	3,115	56,523,577	116,007	2,337,981,534	7.44%	20,154
2010	6,908	147,419,991	2,668	50,510,952	120,247	2,434,890,574	4.14%	20,249
2011	8,639	226,843,465	1,715	55,062,716	127,171	2,606,671,323	7.05%	20,497
2012	7,936	264,562,994	2,614	58,769,603	132,493	2,812,464,714	7.89%	21,227
2013	7,874	238,239,133	2,442	62,081,371	137,925	2,988,622,476	6.26%	21,668
2014	7,698	217,542,920	2,736	58,512,733	142,887	3,147,652,663	5.32%	22,029
2015	8,459	239,724,802	3,496	64,129,306	147,850	3,323,248,158	5.58%	22,477

Notes: Members added to rolls were estimated based on a retirement date/change date after June 30, 2014.
Annual allowances added to rolls include COLA increases for continuing members.
COLA increases were estimated based on the benefits for the continuing members.

LIABILITIES / SOLVENCY TEST
MUNICIPAL)

Ratio of Assets to Actuarial Liabilities			Funded Ratio (Assets/Liab. Coverage)	Unfunded Actuarial Accrued Liability (UAAL)	Covered Payroll	UAAL as % of Covered Payroll
Active Member Contributions	Retirees Term Vested and Inactives	Active Members Employer Fin. Portion				
100.00%	100.00%	60.67%	82.78%	7,448,467,323	9,287,575,596	80%
100.00%	100.00%	50.93%	80.36%	9,257,418,404	9,971,012,066	93%
100.00%	100.00%	46.92%	78.62%	10,739,762,798	10,542,806,018	102%
100.00%	100.00%	11.56%	65.02%	18,444,602,713	10,714,167,517	172%
100.00%	100.00%	6.73%	64.14%	19,396,735,421	10,657,943,561	182%
100.00%	100.00%	2.68%	64.70%	19,739,886,819	10,478,799,565	188%
100.00%	96.39%	0.00%	64.37%	20,620,744,692	10,336,536,835	199%
100.00%	95.92%	0.00%	65.52%	20,709,122,025	10,477,544,241	198%
100.00%	99.86%	0.00%	68.67%	19,613,237,049	10,803,632,045	182%
100.00%	99.85%	0.00%	69.66%	20,111,156,814	11,063,961,664	182%

MARYLAND STATE RETIREMENT
ACCOUNTING STATEMENT
AS OF
(STATE AND

	Teachers' Combined System	Employees' Combined System
1. Actuarial Accrued Liability		
a. Employee Contributions	\$ 3,578,789,150	\$ 2,141,654,530
b. Retirees, Term Vesteds & Inactives	23,143,828,858	14,226,546,698
c. Active Members	12,211,841,128	7,034,649,208
2. Total Actuarial Accrued Liability (1(a)+1(b)+1(c))	\$ 38,934,459,136	\$23,402,850,436
3. Actuarial Value of Assets	<u>27,995,476,456</u>	<u>15,615,326,568</u>
4. Unfunded Actuarial Accrued Liability (2-3)	<u>\$ 10,938,982,680</u>	<u>\$ 7,787,523,868</u>
5. Funded Ratio	71.90%	66.72%
6. Annual Payroll	\$ 6,470,706,276	\$ 4,300,747,731
7. UAAL as % of Payroll	169%	181%

AND PENSION SYSTEM
INFORMATION
JUNE 30, 2015
MUNICIPAL)

State Police	Judges	LEOPS	CORS	Total MSRPS
\$ 79,875,662	\$ 29,697,255	\$ 76,756,561	\$ 1,824,372	\$ 5,908,597,531
1,713,919,567	338,746,569	887,255,740	11,463,119	40,321,760,551
309,339,155	142,946,625	344,620,733	8,025,950	20,051,422,798
\$ 2,103,134,384	\$ 511,390,449	\$ 1,308,633,034	\$ 21,313,441	\$66,281,780,880
<u>1,314,315,006</u>	<u>416,546,609</u>	<u>808,435,955</u>	<u>20,523,472</u>	<u>46,170,624,066</u>
<u>\$ 788,819,378</u>	<u>\$ 94,843,840</u>	<u>\$ 500,197,079</u>	<u>\$ 789,969</u>	<u>\$20,111,156,814</u>
62.49%	81.45%	61.78%	96.29%	69.66%
\$ 91,049,875	\$ 44,612,624	\$ 151,955,067	\$ 4,890,091	\$11,063,961,664
866%	213%	329%	16%	182%

REPORT OF THE ACTUARY ON THE VALUATION OF THE
TEACHERS' COMBINED SYSTEM OF THE STATE OF MARYLAND
Summary of Principal Plan Results

	Actuarial Valuation Performed		% Change
	June 30, 2015 (for FY2017)	June 30, 2014 (for FY2016)	
A. Demographic Information			
Active Member Count	105,526	104,470	1.0%
Retired Member and Beneficiary Count	71,176	68,929	3.3%
Vested Former Member Count	24,541	24,220	1.3%
Total Member Count	201,243	197,619	1.8%
Active Payroll	\$ 6,470,706,276	\$6,310,253,394	2.5%
Annual Benefits for Retired Members	\$ 1,941,845,919	\$1,850,897,041	4.9%
B. Actuarial Results			
Actuarial Accrued Liability	\$38,934,459,136	\$36,882,586,657	5.6%
Actuarial Value of Assets	27,995,476,456	26,067,576,669	7.4%
Unfunded Actuarial Accrued Liability (UAAL)	\$10,938,982,680	\$10,815,009,988	1.1%
Funded Ratio	71.90%	70.68%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	4.56%	5.12%	
UAAL Amortization Rate	11.23%	11.03%	
Total Actuarial Employer Contribution Rate	15.79%	16.15%	
D. Corridor Contribution Rate (State Portion Only)			
Prior Year Corridor Rate	NA	15.47%	
36% for FY2016 (28% for FY2015) of Difference between Preliminary Funding Rate and Prior year Corridor Rate	NA	0.24%	
Employer Corridor Contribution Rate	NA	15.71%	
Estimated Employer Rate after Reinvestment of Saving,*	16.55%	16.49%	

*FY2016 Employer Rate was 17.27% before the reduction of reinvested savings from \$150 million to \$75 million.

REPORT OF THE ACTUARY ON THE VALUATION OF THE
EMPLOYEES' COMBINED SYSTEM OF THE STATE OF MARYLAND
(STATE AND MUNICIPAL)

Summary of Principal Plan Results

	Actuarial Valuation Performed		% Change
	June 30, 2015 (for FY2017)	June 30, 2014 (for FY2016)	
A. Demographic Information			
Active Member Count	83,794	84,825	-1.2%
Retired Member and Beneficiary Count	72,031	69,459	3.7%
Vested Former Member Count	<u>27,846</u>	<u>27,538</u>	1.1%
Total Member Count	183,671	181,822	1.0%
Active Payroll	\$ 4,300,747,731	\$ 4,214,980,653	2.0%
Annual Benefits for Retired Members	\$ 1,176,657,042	\$ 1,100,490,089	6.9%
B. Actuarial Results			
Actuarial Accrued Liability	\$ 23,402,850,436	\$ 22,059,764,681	6.1%
Actuarial Value of Assets	<u>15,615,326,568</u>	<u>14,547,389,616</u>	7.3%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 7,787,523,868	\$ 7,512,375,065	3.7%
Funded Ratio	66.72%	65.95%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	3.94%	4.32%	
UAAL Amortization Rate	14.34%	13.57%	
Total Actuarial Employer Contribution Rate	<u>18.28%</u>	<u>17.89%</u>	
D. Corridor Contribution Rate (State Portion Only)			
Prior Year Corridor Rate	NA	15.53%	
36% for FY2016 (28% for FY2015) of Difference between Preliminary Funding Rate and Prior year Corridor Rate	NA	0.85%	
Employer Corridor Contribution Rate	<u>NA</u>	<u>16.38%</u>	
Estimated Employer Rate after Reinvestment of Saving,*	18.93%	17.04%	

*FY 2016 Employer Rate was 17.70% before the reduction of reinvested savings from \$150 million to \$75 million.

REPORT OF THE ACTUARY ON THE VALUATION OF THE
STATE POLICE RETIREMENT SYSTEM OF THE STATE OF MARYLAND

Summary of Principal Plan Results

	June 30, 2015 (for FY2017)	June 30, 2014 (for FY2016)	% Change
A. Demographic Information			
Active Member Count	1,394	1,351	3.2%
Retired Member and Beneficial ¹ Count	2,508	2,468	1.6%
Vested Former Member Cmmt	<u>81</u>	<u>82</u>	-1.2%
Total Member Count	3,983	3,901	2.1%
Active Payroll	\$ 91,049,875	\$ 85,660,006	6.3%
Annual Benefits for Retired Members	\$ 116,339,773	\$ 113,133,192	2.8%
B. Actuarial Results			
Actuarial Accrued Liability	\$2,103,134,384	\$1,966,572,422	6.9%
Actuarial Value of Assets	<u>1,314,315,006</u>	<u>1,241,758,473</u>	5.8%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 788,819,378	\$ 724,813,949	8.8%
Funded Ratio	62.49%	63.14%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	24.42%	25.56%	
UAAL Amortization Rate	<u>56.98%</u>	<u>53.35%</u>	
Total Actuarial Employer Contribution Rate	81.40%	78.91%	
Estimated Employer Rate after Reinvestment of Savings*	82.50%	80.08%	

*FY 2016 Employer Rate was 81.24% before the reduction of reinvested savings from \$150 million to \$75 million.

REPORT OF THE ACTUARY ON THE VALUATION OF THE
PENSION PLAN OF JUDGES AND THEIR SURVIVING SPOUSES

Summary of Principal Plan Results

	June 30, 2015 (for FY2017)	June 30, 2014 (for FY2016)	% Change
A. Demographic Information			
Active Member Count	307	301	2.0%
Retired Member and Beneficiary Count	397	395	0.5%
Vested Former Member Count	<u>8</u>	<u>8</u>	0.0%
Total Member Count	712	704	1.1%
Active Payroll	\$ 44,612,624	\$ 42,313,395	5.4%
Annual Benefits for Retired Members	\$ 29,995,284	\$ 28,712,353	4.5%
B. Actuarial Results			
Actuarial Accrued Liability	\$ 511,390,449	\$ 459,447,222	11.3%
Actuarial Value of Assets	<u>416,546,609</u>	<u>389,071,868</u>	7.1%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 94,843,840	\$ 70,375,354	34.8%
Funding Ratio	81.45%	84.68%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	32.22%	30.27%	
UAAL Amortization Rate	<u>14.34%</u>	<u>10.43%</u>	
Total Actuarial Employer Contribution Rate	46.56%	40.70%	

REPORT OF THE ACTUARY ON THE VALUATION OF THE
LAW ENFORCEMENT OFFICERS' PENSION SYSTEM OF THE STATE OF MARYLAND
(STATE AND MUNICIPAL)

Summary of Principal Plan Results

	June 30, 2015 (for FY2017)	June 30, 2014 (for FY2016)	% Change
A. Demographic Information			
Active Member Count	2,488	2,484	0.2%
Retired Member and Beneficiary Count	1,711	1,613	6.1%
Vested Former Member Count	<u>293</u>	<u>283</u>	3.5%
Total Member Count	4,492	4,380	2.6%
Active Payroll	\$ 151,955,067	\$ 145,672,538	4.3%
Annual Benefits for Retired Members	\$ 57,653,994	\$ 53,739,964	7.3%
B. Actuarial Results			
Actuarial Accrued Liability	\$1,308,633,034	\$1,222,137,287	7.1%
Actuarial Value of Assets	<u>808,435,955</u>	<u>732,333,113</u>	10.4%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 500,197,079	\$ 489,804,174	2.1%
Funded Ratio	61.78%	59.92%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	15.07%	15.63%	
UAAL Amortization Rate	24.53%	24.14%	
Total Actuarial Employer Contribution Rate	<u>39.60%</u>	<u>39.77%</u>	
Estimated Employer Rate after Reinvestment of Savings*	40.72%	40.95%	

*FY 2016 Employer Rate was 42.14% before the reduction of reinvested savings from \$150 million to \$75 million.

REPORT OF THE ACTUARY ON THE VALUATION OF THE
CORRECTIONAL OFFICERS' RETIREMENT SYSTEM OF THE STATE OF MARYLAND
(MUNICIPAL)

Summary of Principal Plan Results

	June 30, 2015 (for FY2017)	June 30, 2014 (for FY2016)	% Change
A. Demographic Information			
Active Member Count	91	91	0.0%
Retired Member and Beneficiary Count	27	23	17.4%
Vested Former Members Count	<u>0</u>	<u>2</u>	-100.0%
Total Member Count	118	116	1.7%
Active Payroll	\$ 4,890,091	\$ 4,752,059	2.9%
Annual Benefits for Retired Members	\$ 756,146	\$ 680,025	11.2%
B. Actuarial Results			
Actuarial Accrued Liability	\$ 21,313,441	\$ 19,685,305	8.3%
Actuarial Value of Assets	<u>20,523,472</u>	<u>18,826,786</u>	9.0%
Unfunded Actuarial Accrued Liability (UAAL)	\$ 789,969	\$ 858,519	-8.0%
Funding Ratio	96.29%	95.64%	

SCHEDULE OF ACTIVE MEMBERSHIP VALUATION DATA BY PLAN

Teachers' Retirement

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2006	5,449	\$ 413,849,937	\$ 75,950	2.23 %
2007	4,788	383,619,438	80,121	5.49
2008	4,125	352,954,397	85,565	6.79
2009	3,554	306,096,545	86,127	0.66
2010	3,111	269,775,400	86,717	0.68
2011	2,589	225,118,122	86,952	0.27
2012	2,040	178,541,246	87,520	-0.65
2013	1,630	145,207,003	89,084	1.79
2014	1,276	116,356,416	91,188	2.36
2015	986	91,396,562	92,694	1.65

Teachers' Pension

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2006	94,869	\$ 4,855,335,579	\$ 51,179	2.04 %
2007	98,789	5,326,145,893	53,914	5.34
2008	101,836	5,764,636,027	56,607	4.99
2009	102,553	5,888,637,495	57,420	1.44
2010	103,162	5,984,872,410	58,014	1.03
2011	102,939	5,971,858,330	58,014	0.00
2012	101,654	5,902,062,066	58,060	0.08
2013	102,398	6,039,968,791	58,985	1.59
2014	103,194	6,193,896,978	60,022	1.76
2015	104,540	6,379,309,714	61,023	1.67

Employees' Retirement

(State and Municipal)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2006	10,121	\$ 467,808,791	\$ 46,222	7.66 %
2007	9,980	472,525,475	47,347	2.44
2008	9,740	472,800,066	48,542	2.52
2009	9,962	483,871,203	48,572	0.06
2010	9,665	463,375,639	47,944	-1.29
2011	9,189	432,469,190	47,064	-1.84
2012	9,113	421,320,077	46,233	-1.77
2013	8,976	417,020,134	46,459	0.49
2014	8,741	423,960,682	48,503	4.40
2015	8,566	429,223,262	50,108	3.31

SCHEDULE OF ACTIVE MEMBERSHIP VALUATION DATA BY PLAN
(continued)

Employees' Pension
(State and Municipal)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2006	76,979	\$ 3,325,316,541	\$ 43,198	4.07 %
2007	78,719	3,543,695,246	45,017	4.21
2008	79,462	3,692,212,569	46,465	3.22
2009	79,418	3,765,664,905	47,416	2.05
2010	77,660	3,674,098,155	47,310	-0.22
2011	76,264	3,595,340,448	47,143	-0.35
2012	76,061	3,577,154,799	47,030	-0.24
2013	75,701	3,613,240,787	47,730	1.49
2014	76,084	3,791,019,971	49,827	4.39
2015	75,228	3,871,524,469	51,464	3.29

Judges' Retirement

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2006	296	\$ 35,939,104	\$ 121,416	1.01 %
2007	297	37,638,491	126,729	4.38
2008	286	37,943,327	132,669	4.69
2009	297	40,266,330	135,577	2.19
2010	294	39,960,883	135,921	0.25
2011	286	38,810,261	135,700	-0.16
2012	294	39,955,368	135,903	0.15
2013	288	40,000,518	138,891	2.20
2014	301	42,313,395	140,576	1.21
2015	307	44,612,624	145,318	3.37

State Police Retirement

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2006	1,441	\$ 80,648,855	\$ 55,967	3.77 %
2007	1,416	83,190,937	58,751	4.97
2008	1,426	86,464,247	60,634	3.21
2009	1,408	85,585,708	60,785	0.25
2010	1,354	81,705,369	59,946	0.71
2011	1,295	75,551,283	58,341	-3.32
2012	1,332	77,689,914	58,326	-0.03
2013	1,320	79,848,029	60,491	3.71
2014	1,351	85,660,006	63,405	4.82
2015	1,394	91,049,875	65,316	3.01

SCHEDULE OF ACTIVE MEMBERSHIP VALUATION DATA BY PLAN

*(continued)***Law Enforcement Officers' Pension**

(STATE AND MUNICIPAL)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2006	2,063	\$ 106,668,684	\$ 51,706	6.17 %
2007	2,217	122,015,164	55,036	6.44
2008	2,327	133,445,391	57,347	4.20
2009	2,445	140,071,292	57,289	-0.10
2010	2,474	140,199,243	56,669	-1.08
2011	2,411	135,176,780	56,067	-1.06
2012	2,410	135,185,336	56,094	0.05
2013	2,407	137,612,972	57,172	1.92
2014	2,484	145,672,538	58,644	2.58
2015	2,488	151,955,067	61,075	4.15

Correctional Officers' Retirement System

(MUNICIPAL)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2009	68	\$ 4,047,633	\$ 59,524	N/A
2010	66	3,956,462	59,946	0.71 %
2011	86	4,475,151	52,037	-13.19
2012	90	4,628,029	51,423	-1.18
2013	90	4,646,007	51,622	0.39
2014	91	4,752,059	52,220	1.16
2015	91	4,890,091	53,737	2.90