

Maryland State Retirement and Pension System

Actuarial Valuation Report
As of June 30, 2017



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November 29, 2017

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

Dear Members of the Board:

The results of the **June 30, 2017 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. GRS is not responsible for unauthorized use of this report.

The purposes of the valuation are as follows:

- Measure the financial position of MSRPS with regard to funding,
- Provide the Board with State and Participating Governmental Unit (“PGU”) contribution rates for certification,
- Determine actuarial and statutory contribution rates with reinvested savings, and
- 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 2017 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 audit the data. We are not responsible for the accuracy or completeness of the information provided by the 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. The Board adopted the use of an investment return assumption of 7.50% and an inflation assumption of 2.65% for the June 30, 2017 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 computed contribution rate shown on page I-2 may be considered as a minimum contribution rate that complies with the funding policy stated in the Statutes. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

This valuation assumes the continuing ability of the employer to make the contributions necessary to fund this system. A determination regarding whether or not the employer is actually able to do so is outside our scope of expertise. Consequently, we did not perform such an analysis.

The benefit provisions valued in the actuarial valuation as of June 30, 2017 are the same as the provisions from the last actuarial valuation as of June 30, 2016. 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% at which point the additional contributions cease.

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.



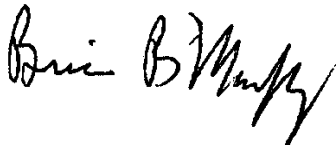
This report should not be relied on for any purpose other than the purposes previously described. Determinations of the financial values associated with benefits described in this report for a purpose other than the intended purpose may produce results that differ significantly from those presented in this report.

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 September 19, 2017.

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, PhD



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



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BBM/BLA/AW:rmn

SECTION I

BOARD SUMMARY

Introduction

The funding valuation report presents the results of the June 30, 2017 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, 2017 is presented on the following page.

The Governmental Accounting Standards Board (GASB) No. 67 and No. 68 valuation report presents the results of the June 30, 2017 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 and State's financial report.

The accounting valuation results for the year ended June 30, 2017 are presented in a separate report.

Summary of Valuation Results

June 30, 2017

(\$ in Millions)
(State and Municipal)

	2017						2016		% Change
	State						Total	Total	
	TCS	ECS	Police	Judges	LEOPS	CORS ¹			
A. Demographic Information									
1. Active Number Counts	106,302	82,087	1,371	312	2,574	96	192,742	192,494	0.1%
2. Active Payroll	\$ 6,781	\$ 4,319	\$ 100	\$ 47	\$ 167	\$ 5	\$ 11,419	\$ 11,156	2.4%
3. Retired Number Counts	75,509	75,940	2,572	417	1,896	32	156,366	152,566	2.5%
4. Annual Benefits for Retired Members ²	\$ 2,088	\$ 1,282	\$ 120	\$ 31	\$ 65	\$ 1	\$ 3,587	\$ 3,449	4.0%
5. Deferred / Inactive Number Counts	25,493	27,737	90	9	295	4	53,628	53,568	0.1%
6. Total Number Counts	207,304	185,764	4,033	738	4,765	132	402,736	398,628	1.0%
B. Assets									
1. Fair Value (FV)	\$ 29,731	\$ 16,518	\$ 1,372	\$ 441	\$ 902	\$ 23	\$ 48,987	\$ 45,366	8.0%
³ 2. Rate of Return on FV							9.95 %	1.10 %	
3. Actuarial Value (AV)	\$ 30,501	\$ 16,940	\$ 1,409	\$ 453	\$ 925	\$ 23	\$ 50,250	\$ 47,804	5.1%
4. Rate of Return on AV							6.96 %	5.59 %	
5. Ratio of AV to FV							102.6%	105.4%	
C. Actuarial Results									
1. Normal Cost as a % of Payroll	11.41%	10.25%	32.18%	38.91%	21.69%	13.63%	11.42%	11.44%	
2. Actuarial Accrued Liability (AAL)									
a. Active	\$ 16,552	\$ 9,205	\$ 450	\$ 180	\$ 471	\$ 11	\$ 26,869	\$ 26,141	2.8%
b. Retired	23,675	14,390	1,734	352	949	12	41,112	39,785	3.3%
c. Deferred/Inactive	971	985	14	3	29	1	2,005	1,856	8.0%
d. Total	\$ 41,199	\$ 24,580	\$ 2,198	\$ 536	\$ 1,449	\$ 24	\$ 69,987	\$ 67,782	3.3%
3. Unfunded AAL (UAAL)	\$ 10,698	\$ 7,640	\$ 790	\$ 83	\$ 525	\$ 1	\$ 19,736	\$ 19,978	-1.2%
4. Funded Ratio	74.03 %	68.92 %	64.08 %	84.56 %	63.80 %	95.68 %	71.80 %	70.53 %	
D. Contribution Rates⁴									
	STATE PORTION ONLY								
	FY 2019						FY 2018	FY 2017	
1. Pension Contributions									
a. Employer Normal Cost	4.41%	3.83%	24.18%	32.44%	15.07%	4.66%	4.69%	4.77%	
b. Member Contribution Rate	7.00%	6.75%	8.00%	6.47%	7.00%	6.93%	6.92%	6.91%	
c. UAAL Contribution Rate	<u>11.02%</u>	<u>14.75%</u>	<u>54.23%</u>	<u>12.09%</u>	<u>24.71%</u>	<u>12.76%</u>	<u>12.91%</u>	<u>12.81%</u>	
d. Total	22.43%	25.33%	86.41%	51.00%	46.78%	24.35%	24.52%	24.49%	
2. Total Actuarial Employer Rate (1.a + 1.c)	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%	17.60%	17.58%	
3. Total Employer Budgeted Rate									
a. Employer Budgeted Rate	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%	17.60%	17.58%	
b. Reinvested Savings Rate	<u>0.73%</u>	<u>0.65%</u>	<u>1.00%</u>	<u>0.00%</u>	<u>1.03%</u>	<u>0.73%</u>	<u>0.74%</u>	<u>0.74%</u>	
c. Total Employer Budgeted Rate	16.16%	19.23%	79.41%	44.53%	40.81%	18.15%	18.34%	18.32%	

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

²Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017 and July 1, 2016, 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.

Totals may not add due to rounding.

Actuary's Comments

For the year ended June 30, 2017, the System's assets earned **9.95%** based on our estimate and **10.02%** as reported by State Street (using a slightly different computation method) on a market value basis and **6.96%** on a smoothed or actuarial value basis. The smoothed rate of return is less than the 7.55% assumed rate of investment return. Recognized asset losses from fiscal years 2015 and 2016 offset recognized asset gains from fiscal years 2013, 2014 and 2017 in the actuarial value of assets as of June 30, 2017. This resulted in a loss under the asset smoothing method.

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

	State	Municipal	Total SRPS
Unfunded Actuarial Accrued Liability (UAAL) as of June 30, 2016	\$ 19,121	\$ 857	\$ 19,978
Expected UAAL as of June 30, 2017 before changes	19,062	861	19,923
Changes in benefit provisions	-	-	-
Changes in methods and assumptions	117	12	129
Expected UAAL as of June 30, 2017 after changes	19,179	873	20,052
Actual UAAL as of June 30, 2017	18,854	882	19,736
Net actuarial gain/(loss)	325	(9)	316
Actuarial gain/(loss) by source			
Actuarial investment experience	(254)	(25)	(279)
Actuarial accrued liability experience	579	16	595

Totals may not add due to rounding.

In relative terms, the overall System funded ratio of actuarial value of assets to liabilities increased from 70.53% in 2016 to **71.80%** this year. If market value of assets were the basis for the measurements, the funded ratio would have increased from 66.93% to 70.00% funded.

The market value of assets exceeds the retiree liabilities by about 19% in total (or 2% if accumulated member contributions of about \$7 billion are netted out), an increase from 14% 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.

(\$ in Millions)

Short Condition Test	TCS	ECS	State Police	Judges	LEOPS	CORS	Total
Fair Value of Assets (FVA)	\$ 29,731	\$ 16,518	\$ 1,372	\$ 441	\$ 902	\$ 23	\$ 48,987
Retiree Liability	23,675	14,390	1,734	352	949	12	41,112
FVA as % of Retiree Liability	126%	115%	79%	125%	95%	186%	119%

Actuary's Comments

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 (21 years remaining as of the June 30, 2017 valuation, which determines the fiscal year 2019 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 began to contribute based on the actuarially determined rate beginning in fiscal year 2017.

Beginning in fiscal year 2012, employers pay a per-member fee to cover the Retirement Agency's operating expenses (i.e., administrative expenses). The State pays the fee for libraries.

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 7.50%). 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, \$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% at which point the reinvestment ceases. 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 remaining unfunded liability as a level percentage of pay over a single 25-year closed period beginning July 1, 2014 and ending June 30, 2039 (21 years remaining as of June 30, 2017).

Actuary's Comments

The fiscal year 2019 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 2019.

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 (GASB) Statement 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 7.50% 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 21 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 free market 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 7.55% during FY 2017, 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 (7.55%). 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 year ended June 30, 2017, the System's assets earned **9.95%** based on our estimate and **10.02%** as reported by State Street (using a slightly different computation method) on a market value basis and **6.96%** on a smoothed or actuarial value basis. The System experienced an investment gain of **\$1,080** million on a market value basis and a loss of **\$279** million on an actuarial basis. A reconciliation of market value and actuarial value of assets are presented below:

(STATE AND MUNICIPAL)
(\$ in Millions)

	Fair Value	Actuarial Value
June 30, 2016 Value	\$ 45,366	\$ 47,804
Employer Contributions	2,033	2,033
Member Contributions	783	783
Benefit Payments and Other Disbursements	(3,668)	(3,668)
Expected Investment Earnings (7.55% in FY2017)	3,394	3,578
Expected Value June 30, 2017	\$ 47,907	\$ 50,529
Investment Gain/(Loss)	1,080	(279)
June 30, 2017 Value	\$ 48,987	\$ 50,250

Figures may not add exactly due to rounding

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 2017, 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

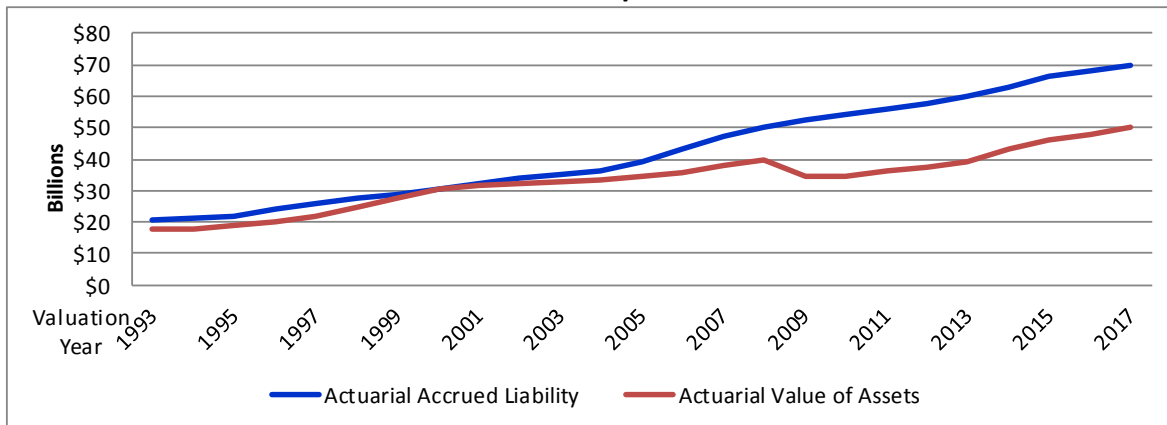


Chart B: Benefits vs. Contributions

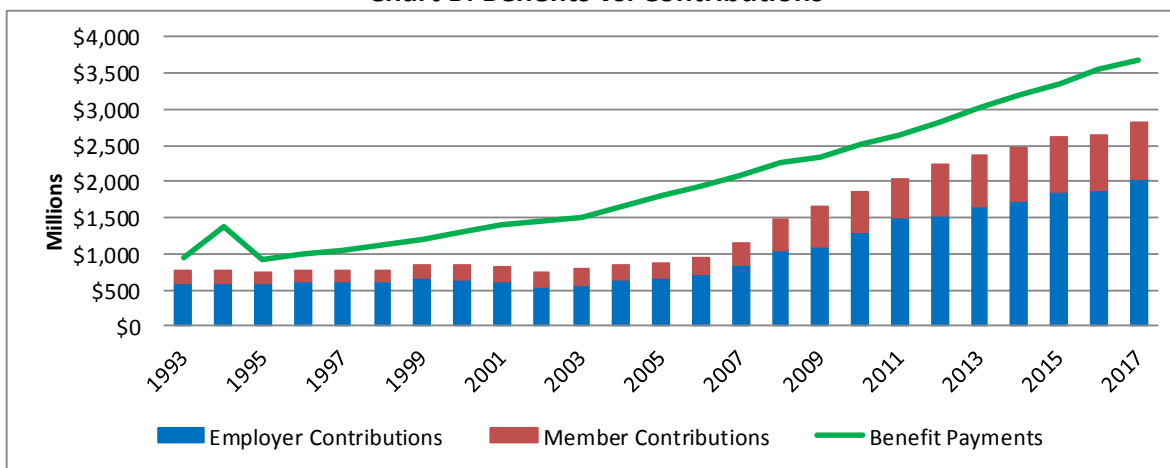
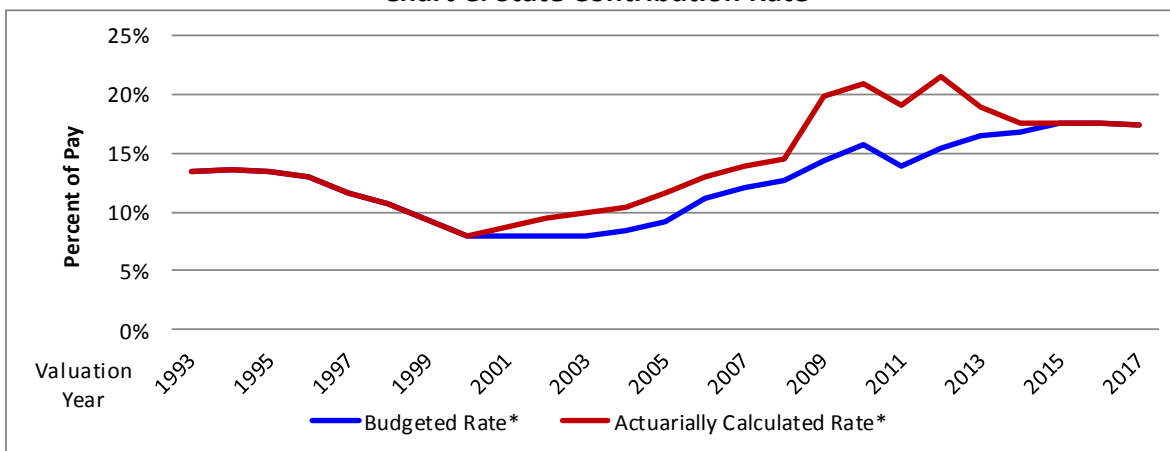


Chart C: State Contribution Rate



* Excludes reinvested savings in valuation years after 2010. 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 (AAL). The difference between the actuarial value of assets and the AAL is the Unfunded Actuarial Accrued Liability. The Unfunded Actuarial Accrued Liability is about \$20 billion as of June 30, 2017, and decreased by about \$242 million since the last valuation as of June 30, 2016. As of June 30, 2017, the actuarial value of assets under the 5-year asset smoothing method is 103% of the market value of assets, compared with 105% as of June 30, 2016.

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 were equal to 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, 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 2016.

SECTION II

VALUATION RESULTS

State Systems (Excludes Municipalities) Valuation Results

The combined State System's (excluding PGU's) Unfunded Actuarial Accrued Liability decreased by \$267 million, from \$19,121 million as of June 30, 2016, to \$18,854 million as of June 30, 2017. There was an expected decrease in the Unfunded Actuarial Accrued Liability of \$59 million, if all actuarial assumptions had been realized. The unfunded liability is expected to grow if the total contributions are less than the total normal cost plus interest on the unfunded liability.

There was a decrease in the Unfunded Actuarial Accrued Liability of \$325 million due to favorable plan experience combined with the expected decrease in the Unfunded Actuarial Accrued Liability. The decrease in the unfunded liability is attributable to slower growth in the actuarial liabilities than in the assets assuming all actuarial assumptions are met and the budgeted contributions are made.

The net gain due to plan experience of \$325 million is comprised of demographic gains on the liabilities of \$579 million and an asset loss (on the actuarial value of assets) of \$254 million.

The combined State System's market value of assets earned 9.95%¹ for the year ended June 30, 2017, which is more than the 7.55% assumed rate of investment return. The actuarial, or smoothed, rate of return measured from this past year was 6.96%, which fell short of the assumed rate of return on the actuarial value of assets, producing an asset loss. Partial recognition of asset gains from FY 2013, 2014 and 2017 combined with losses from FY 2015 and 2016 were recognized in the actuarial value of assets as of June 30, 2017, under the asset smoothing method, resulting in an overall asset loss of \$254 million. A reconciliation of market value and actuarial value of assets are presented below:

**(STATE Only)
(\$ in Millions)**

	Market Value	Actuarial Value
June 30, 2016 Value	\$ 41,405	\$ 43,630
Employer Contributions	1,924	1,924
Member Contributions	717	717
Benefit Payments and Other Disbursements	(3,414)	(3,414)
Expected Investment Earnings (7.55% in FY2017)	3,097	3,265
Expected Value June 30, 2017	\$ 43,730	\$ 46,123
Investment Gain/(Loss)	984	(254)
June 30, 2017 Value	\$ 44,714	\$ 45,869

Figures may not add exactly due to rounding

There were liability gains due to lower retiree COLA increases on average than assumed. COLA increases of 1.262% 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 2.29%, 2.68% and 2.70%, respectively. All of the State Systems experienced gains on active member liabilities as well, caused mainly due to actual increases in salaries compared to the actuarial assumptions.

¹ The actuarially computed rate of return, excluding municipalities.

State Systems (Excludes Municipalities) Valuation Results

The combined State System funded ratio increased from 69.5% at June 30, 2016 to 70.9% at June 30, 2017.

The actuarially determined contribution rates decreased for each System, except ECS and LEOPS, from those calculated in the June 30, 2016 valuation to those calculated in the June 30, 2017 valuation, which determines the FY2018 and FY2019 contributions, respectively.

A reconciliation of the actuarial contribution rate (excluding reinvested savings) is shown below:

	(STATE ONLY)					
	Teachers' Combined System	Employees' Combined System	State Police	Judges	LEOPS	Total
FY 2018 Actuarial Contribution Rate	15.71%	18.56%	80.29%	46.45%	39.69%	17.60%
Change due to Investment Return	0.18%	0.15%	0.60%	0.50%	0.31%	0.17%
Change due to Demographic and Non-Inv. Exp.	-0.43%	-0.33%	0.08%	-2.11%	0.00%	-0.40%
Change due to Other	-0.15%	0.07%	-2.77%	-0.28%	-0.51%	-0.09%
Change due to Assumption Changes	<u>0.13%</u>	<u>0.13%</u>	<u>0.22%</u>	<u>-0.03%</u>	<u>0.29%</u>	<u>0.13%</u>
FY 2019 Actuarial Contribution Rate	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%

Totals may not add due to rounding.

Each System, except State Police and LEOPS, saw a decrease in the contribution rates due to favorable demographic experience. This was somewhat offset by unfavorable investment experience.

There was a decrease in the contribution rate for all Systems except for ECS due to factors other than those previously described. The normal cost rate decreased for most Systems as a result of more active members being covered under the benefit provisions of the reformed benefit plans.

In addition, the increase in total payroll was lower than expected under the actuarial assumptions (3.20% in FY2017) for TCS and ECS, and higher than expected for State Police, Judges and LEOPS. Total payroll increased by 2.6% for TCS, 1.5% for ECS, 7.4% for State Police, 4.8% for Judges and 4.6% for LEOPS. Total payroll growth that was lower than assumed puts upward pressure on the contribution rates because the unfunded liability contribution is spread over a smaller payroll base. This is a contributing reason why ECS saw a slight increase in their contribution rate for FY2019.

Funded ratios are expected to progress toward 100% at a slightly lower rate than a static amortization schedule of the current unfunded actuarial accrued liabilities as the deferred investment losses from FY2015 and FY2016 are recognized in the actuarial value of assets.

Summary of Valuation Results by System as of June 30, 2017 (State and Municipal)

<u>State Sponsored Plans</u>	<u>Employees</u>				<u>LEOPS</u>	<u>Total State*</u>	
	<u>Teachers</u>	<u>(State)</u>	<u>State Police</u>	<u>Judges</u>	<u>(State)</u>		
Actuarial Liability - Active Members	\$ 16,552,354,806	\$ 7,186,250,417	\$ 450,125,874	\$ 180,187,760	\$ 301,797,466	\$ 24,670,716,323	
Actuarial Liability - Retirees, Term. Vested, & Inactives	<u>24,646,630,645</u>	<u>12,563,815,834</u>	<u>1,748,210,667</u>	<u>355,713,898</u>	<u>737,857,759</u>	<u>40,052,228,803</u>	
Total Actuarial Liability	\$ 41,198,985,451	\$ 19,750,066,251	\$ 2,198,336,541	\$ 535,901,658	\$ 1,039,655,225	\$ 64,722,945,126	
Actuarial Value of Assets	<u>30,500,872,500</u>	<u>12,848,684,018</u>	<u>1,408,753,508</u>	<u>453,133,735</u>	<u>657,128,367</u>	<u>45,868,572,128</u>	
Unfunded Actuarial Accrued Liability (UAAL)	10,698,112,951	6,901,382,233	789,583,033	82,767,923	382,526,858	18,854,372,998	
Funded Ratio	74.03%	65.06%	64.08%	84.56%	63.21%	70.87%	
Active Member Payroll	\$ 6,780,838,352	\$ 3,218,597,591	\$ 100,384,047	\$ 46,875,642	\$ 106,826,152	\$ 10,253,521,784	
UAAL as a Percent-of-Payroll	157.8%	214.4%	786.6%	176.6%	358.1%	183.9%	
<i>Before Reinvested Savings</i>							
Employer Normal Cost Contribution	4.41%	3.83%	24.18%	32.44%	15.07%	4.66%	
UAAL Contribution	<u>11.02%</u>	<u>14.75%</u>	<u>54.23%</u>	<u>12.09%</u>	<u>24.71%</u>	<u>12.76%</u>	
Total Employer Contribution Without Reinvested Savings	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%	
<i>After Reinvested Savings</i>							
Total Employer Contribution Without Reinvested Savings	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%	
Reinvested Savings Rate	<u>0.73%</u>	<u>0.65%</u>	<u>1.00%</u>	<u>0.00%</u>	<u>1.03%</u>	<u>0.73%</u>	
Total Employer Contribution With Reinvested Savings	16.16%	19.23%	79.41%	44.53%	40.81%	18.15%	
<u>Municipal Plans</u>		<u>Employees</u>		<u>LEOPS</u>	<u>CORS</u>	<u>Total Municipal</u>	
		<u>(Municipal)</u>		<u>(Municipal)</u>	<u>(Municipal)</u>		
Actuarial Liability - Active Members		\$ 2,018,259,714		\$ 169,595,717	\$ 10,927,951	\$ 2,198,783,382	
Actuarial Liability - Retirees, Term. Vested, & Inactives		<u>2,811,503,980</u>		<u>240,114,417</u>	<u>13,228,612</u>	<u>3,064,847,009</u>	
Total Actuarial Liability		\$ 4,829,763,694		\$ 409,710,134	\$ 24,156,563	\$ 5,263,630,391	
Actuarial Value of Assets		<u>4,091,203,391</u>		<u>267,577,071</u>	<u>23,112,127</u>	<u>4,381,892,589</u>	
Unfunded Actuarial Accrued Liability (UAAL)		738,560,303		142,133,063	1,044,436	881,737,802	
Funded Ratio		84.71%		65.31%	95.68%	83.25%	
Active Member Payroll		\$ 1,100,455,307		\$ 59,734,705	\$ 5,261,521	\$ 1,165,451,533	
UAAL as a Percent-of-Payroll		67.1%		237.9%	19.9%	75.7%	
<u>State and Municipal Sponsored Plans</u>	<u>Teachers</u>	<u>Employees</u>	<u>State Police</u>	<u>Judges</u>	<u>LEOPS</u>	<u>CORS</u>	<u>Total SRPS</u>
Actuarial Liability - Active Members	\$ 16,552,354,806	\$ 9,204,510,131	\$ 450,125,874	\$ 180,187,760	\$ 471,393,183	\$ 10,927,951	\$ 26,869,499,705
Actuarial Liability - Retirees, Term. Vested, & Inactives	<u>24,646,630,645</u>	<u>15,375,319,814</u>	<u>1,748,210,667</u>	<u>355,713,898</u>	<u>977,972,176</u>	<u>13,228,612</u>	<u>43,117,075,812</u>
Total Actuarial Liability	\$ 41,198,985,451	\$ 24,579,829,945	\$ 2,198,336,541	\$ 535,901,658	\$ 1,449,365,359	\$ 24,156,563	\$ 69,986,575,517
Actuarial Value of Assets	<u>30,500,872,500</u>	<u>16,939,887,409</u>	<u>1,408,753,508</u>	<u>453,133,735</u>	<u>924,705,438</u>	<u>23,112,127</u>	<u>50,250,464,717</u>
Unfunded Actuarial Accrued Liability (UAAL)	10,698,112,951	7,639,942,536	789,583,033	82,767,923	524,659,921	1,044,436	19,736,110,800
Funded Ratio	74.03%	68.92%	64.08%	84.56%	63.80%	95.68%	71.80%
Active Member Payroll	\$ 6,780,838,352	\$ 4,319,052,898	\$ 100,384,047	\$ 46,875,642	\$ 166,560,857	\$ 5,261,521	\$ 11,418,973,317
UAAL as a Percent-of-Payroll	157.8%	176.9%	786.6%	176.6%	315.0%	19.9%	172.8%

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

Calculation of State Contribution Rates and Illustrated State Contributions (Including Reinvested Savings)

	Teachers	Employees (State)	State Police	Judges	LEOPS (State)	Total State
Percentage of Total Pension Reform Savings*	67.7%	29.4%	1.4%	0.0%	1.5%	100.0%
Reinvested Savings	\$ 50,772,568	\$ 22,019,803	\$ 1,050,207	\$ -	\$ 1,157,423	\$ 75,000,000
FY 2019 Contributions						
Employer Normal Cost Contribution	4.41%	3.83%	24.18%	32.44%	15.07%	4.66%
UAAL Contribution	11.02%	14.75%	54.23%	12.09%	24.71%	12.76%
Total Actuarial Employer Contribution	<u>15.43%</u>	<u>18.58%</u>	<u>78.41%</u>	<u>44.53%</u>	<u>39.78%</u>	<u>17.42%</u>
Total Employer Contribution	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%
Reinvested Saving Rate	<u>0.73%</u>	<u>0.65%</u>	<u>1.00%</u>	<u>0.00%</u>	<u>1.03%</u>	<u>0.73%</u>
Estimated Total Employer Contribution	16.16%	19.23%	79.41%	44.53%	40.81%	18.15%
Projected Payroll	\$ 6,994,434,760	\$ 3,371,867,733	\$ 105,164,352	\$ 49,107,868	\$ 111,913,231	\$ 10,632,487,944
Illustrated Contribution Dollars						
Local Employers' Portion	\$ 283,815,618					\$ 283,815,618
State Portion	795,425,665	\$ 626,493,025	# \$ 82,459,368	# \$ 21,867,734	# \$ 44,519,083	1,570,764,875
Dollar Reinvested Savings	<u>50,772,568</u>	<u>22,019,803</u>	<u>1,050,207</u>	<u>-</u>	<u>1,157,423</u>	<u>75,000,000</u>
Total Illustrated Contribution Dollars	\$ 1,130,013,851	\$ 648,512,828	\$ 83,509,575	\$ 21,867,734	\$ 45,676,506	\$ 1,929,580,493

*Reinvested savings allocated among the State systems based on their proportionate share of the total savings measured as of June 30, 2011. The allocation percentages do not change.

Summary of State Contributions – Including Reinvested Savings (State Portion Only)

		Teachers' Combined	Employees' Combined	State Police	Judges	LEOPS	Total State#
7/1/2017 Valuation Results (FY 2019)	Unfunded Actuarial Liability	\$ 10,698,112,951	\$ 6,901,382,233	\$ 789,583,033	\$ 82,767,923	\$ 382,526,858	\$ 18,854,372,998
	Illustrated Contribution Dollars	\$ 1,130,013,851	\$ 648,512,828	\$ 83,509,575	\$ 21,867,734	\$ 45,676,506	\$ 1,929,580,493
	Local Employers' Portion	283,815,618	NA	NA	NA	NA	\$ 283,815,618
	State Portion	\$ 846,198,233	\$ 648,512,828	\$ 83,509,575	\$ 21,867,734	\$ 45,676,506	\$ 1,645,764,875
	Projected Payroll	\$ 6,994,434,760	\$ 3,371,867,733	\$ 105,164,352	\$ 49,107,868	\$ 111,913,231	\$ 10,632,487,944
	Total Contributions as Percentage of Payroll	16.16%	19.23%	79.41%	44.53%	40.81%	18.15%
7/1/2016 Valuation Results (FY 2018)	Unfunded Actuarial Liability	\$ 10,913,316,194	\$ 6,957,959,389	\$ 780,623,231	\$ 93,365,315	\$ 375,502,258	\$ 19,120,766,387
	Illustrated Contribution Dollars	\$ 1,122,601,622	\$ 639,101,809	\$ 79,745,575	\$ 21,773,176	\$ 43,640,269	\$ 1,906,862,450
	Local Employers' Portion	280,496,700	NA	NA	NA	NA	\$ 280,496,700
	State Portion	\$ 842,104,922	\$ 639,101,809	\$ 79,745,575	\$ 21,773,176	\$ 43,640,269	\$ 1,626,365,750
	Projected Payroll	\$ 6,822,591,050	\$ 3,324,795,289	\$ 98,013,910	\$ 46,874,438	\$ 107,036,650	\$ 10,399,311,337
	Total Contributions as Percentage of Payroll	16.45%	19.22%	81.36%	46.45%	40.77%	18.34%

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

State Budgeted Contribution Rates by System for the Fiscal Years 1999 to 2019 (State Portion Only)

Valuation Date June 30,	Fiscal Year	Teachers' Combined	Employees' Combined	State Police	Judges	LEOPS	Total State*
2017	2019 @	16.16%	19.23%	79.41%	44.53%	40.81%	18.15%
2017	2019 #	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%
2016	2018 @	16.45%	19.22%	81.36%	46.45%	40.77%	18.34%
2016	2018 #	15.71%	18.56%	80.29%	46.45%	39.69%	17.60%
2015	2017 @	16.55%	18.93%	82.50%	46.56%	40.72%	18.32%
2015	2017 #	15.79%	18.28%	81.40%	46.56%	39.60%	17.58%
2014	2016 @^	16.49%	17.04%	80.08%	40.70%	40.95%	17.58%
2014	2016 @	17.27%	17.70%	81.24%	40.70%	42.14%	18.32%
2014	2016 #	15.71%	16.38%	78.91%	40.70%	39.77%	16.83%
2013	2015 @^	16.53%	16.45%	84.73%	42.74%	43.10%	17.44%
2013	2015 @	18.64%	18.30%	88.06%	42.74%	46.56%	19.48%
2013	2015 #	15.47%	15.53%	83.06%	42.74%	41.37%	16.41%
2012	2014 @	17.94%	16.84%	71.85%	50.92%	57.72%	18.54%
2012	2014 #	14.71%	14.05%	66.71%	50.92%	52.47%	15.43%
2011	2013 @	15.30%	14.05%	64.57%	61.18%	50.14%	15.80%
2011	2013 #	13.29%	12.29%	61.21%	61.18%	46.81%	13.85%
2010	2012	15.45%	13.40%	61.01%	60.37%	49.26%	15.67%
2009	2011	14.34%	11.69%	57.03%	59.07%	47.67%	14.33%
2008	2010	13.15%	9.93%	30.79%	48.89%	38.63%	12.62%
2007	2009	11.70%	8.73%	20.53%	43.61%	36.99%	11.14%
2006	2008	11.60%	8.86%	15.44%	44.12%	41.74%	11.10%
2005	2007	9.71%	6.83%	13.83%	42.43%	40.60%	9.18%
2004	2006	9.35%	5.76%	8.22%	41.12%	38.47%	8.46%
2003	2005	9.35%	4.73%	0.00%	36.72%	37.73%	7.97%
2002	2004	9.35%	4.73%	7.58%	43.74%	35.13%	7.98%
2001	2003	9.35%	4.73%	5.78%	43.92%	36.10%	7.98%
2000	2002	9.35%	4.73%	5.83%	42.66%	32.41%	7.98%
1999	2001	10.95%	5.71%	8.44%	46.75%	23.38%	9.31%

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

@ Includes effect of reinvested savings.

Excludes effect of reinvested savings.

^ Reflects the reduction of reinvested savings passed by the General Assembly from \$300 million to \$100 million for FY 2015 and from \$150 million to \$75 million beginning FY 2016.

Detailed Actuarial Information

Teachers' Combined System

	Actuarial Valuation Performed		% Change
	June 30, 2017 (for FY 2019)	June 30, 2016 (for FY 2018)	
A. Demographic Information			
1. Active Number Count	106,302	105,547	0.7%
2. Retired Member and Beneficiary Count	75,509	73,582	2.6%
3. Vested Former Member Count	25,493	25,298	0.8%
4. Total Number Count	207,304	204,427	1.4%
5. Active Payroll	\$ 6,780,838,352	\$ 6,611,037,839	2.6%
6. Annual Benefits for Retired Members [#]	\$ 2,088,365,347	\$ 2,012,244,463	3.8%
B. Actuarial Results			
1. Present Value of Projected Benefits Attributable to:			
a. Retired and Disabled Members, and Beneficiaries	\$ 23,675,420,066	\$ 22,978,737,182	3.0%
b. Terminated Vested Members	971,210,579	889,842,954	9.1%
c. Active Members	24,255,682,661	23,608,415,011	2.7%
d. Total Present Value	\$ 48,902,313,306	\$ 47,476,995,147	3.0%
2. Less Present Value Total Future Normal Costs	7,703,327,855	7,542,869,773	2.1%
3. Actuarial Accrued Liability (1d – 2)	\$ 41,198,985,451	\$ 39,934,125,374	3.2%
4. Less Actuarial Value of Assets	30,500,872,500	29,020,809,180	5.1%
5. Unfunded Actuarial Accrued Liability (UAAL) (3 - 4)	\$ 10,698,112,951	\$ 10,913,316,194	-2.0%
6. Funded Ratio	74.03%	72.67%	
7. Amortization Payments	\$ 773,897,861	\$ 767,033,741	0.9%
8. Employer Normal Cost	\$ 308,454,573	\$ 304,969,820	1.1%
9. Total Projected Payroll	\$ 6,994,434,760	\$ 6,822,591,050	2.5%
10. Total Normal Cost Rate	11.41%	11.46%	
11. Employee Contribution Rate	7.00%	6.99%	
12. Employers' [@] Normal Cost Rate	4.41%	4.47%	
13. UAAL Amortization Rate [*]	11.02%	11.24%	
14. Total Actuarial Employer Contribution Rate	15.43%	15.71%	
15. Estimated Employer Rate after Reinvestment of Savings	16.16%	16.45%	

[#] Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017 and July 1, 2016, respectively.

[@] Employers include the State and local Boards of Education.

^{*} Includes the effects of the one year lag between the valuation date and the beginning of the contribution period.

Detailed Actuarial Information

Employees' Combined System (State)

	Actuarial Valuation Performed		% Change
	June 30, 2017 (for FY 2019)	June 30, 2016 (for FY 2018)	
A. Demographic Information			
1. Active Number Count	57,615	58,083	-0.8%
2. Retired Member and Beneficiary Count	58,256	57,026	2.2%
3. Vested Former Member Count	20,887	21,087	-0.9%
4. Total Number Count	136,758	136,196	0.4%
5. Active Payroll	\$ 3,218,597,591	\$ 3,171,358,688	1.5%
6. Annual Benefits for Retired Members [#]	\$ 1,039,769,310	\$ 997,446,819	4.2%
B. Actuarial Results			
1. Present Value of Projected Benefits Attributable to:			
a. Retired and Disabled Members, and Beneficiaries	\$ 11,774,848,429	\$ 11,350,668,816	3.7%
b. Terminated Vested Members	788,967,405	741,097,066	6.5%
c. Active Members	9,723,858,723	9,610,323,556	1.2%
d. Total Present Value	\$ 22,287,674,557	\$ 21,702,089,438	2.7%
2. Less Present Value Total Future Normal Costs	2,537,608,306	2,523,496,530	0.6%
3. Actuarial Accrued Liability (1d – 2)	\$ 19,750,066,251	\$ 19,178,592,908	3.0%
4. Less Actuarial Value of Assets	12,848,684,018	12,220,633,519	5.1%
5. Unfunded Actuarial Accrued Liability (UAAL) (3 - 4)	\$ 6,901,382,233	\$ 6,957,959,389	-0.8%
a. Less Special Liability Payments ^{**}	18,930,642	23,929,235	-20.9%
b. State Portion of UAAL (5 - 6)	6,882,451,591	6,934,030,154	-0.7%
6. Funded Ratio	65.06%	63.72%	
7. Amortization Payments	\$ 497,874,213	\$ 487,352,789	2.2%
8. Employer Normal Cost	\$ 125,198,773	\$ 124,357,653	0.7%
9. Total Projected Payroll	\$ 3,268,897,463	\$ 3,221,700,861	1.5%
10. Total Normal Cost Rate	10.58%	10.60%	
11. Employee Contribution Rate	6.75%	6.74%	
12. Employer Normal Cost Rate	3.83%	3.86%	
13. UAAL Amortization Rate*	14.75%	14.70%	
14. Total Employer Contribution Rate	18.58%	18.56%	
15. Estimated Employer Rate after Reinvestment of Savings	19.23%	19.22%	

^{**} For Municipalities that withdrew prior to 1996, and thus are part of the State pool. Please see page II-9 for additional details.

* Includes the effects of the one year lag between the valuation date and the beginning of the contribution period.

[#] Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017 and July 1, 2016, respectively.

Special Liability Payments Employees' Combined System (State)

Schedule of Special Payments as of June 30, 2017 for December 2018 Billing
(Unless noted, amounts are amortized over 25 years with payments increasing 5% per year)

LOC Number	Municipal Corporation	Outstanding Balance as of 6/30/2017*	December 2017 Payment	December 2018 Payment	Last Payment Year
7012	Caroline County Roads Board	\$ 71,775	\$ 26,620 **	\$ 26,620 **	2019
7716	Harford County Liquor Board	27,966	10,372 **	10,372 **	2019
8006	Montgomery County Public Library	10,122	3,754 **	3,754 **	2019
8028	Interstate Comm. on Potomac River Basin	12,104	4,489 **	4,489 **	2019
8031	Bethesda Fire Department	5,886	2,183 **	2,183 **	2019
8032	Chevy Chase Fire Department	12,052	4,470 **	4,470 **	2019
8712	Wicomico County Roads Board	12,435	4,612 **	4,612 **	2019
6529	Health Systems Agency of Western MD	122,762	43,430	45,601	2019
6611	Anne Arundel County Government	6,068,013	2,146,686	2,254,020	2019
6735	Lexington Market Authority	246,638	87,253	91,616	2019
6740	Univ of MD Medical Systems Corp	1,247,476	532,497 ***	457,777 ***	2019
8002	Montgomery County Board of Education	1,838,095	650,265	682,778	2019
8011	Montgomery County Government	4,083,268	1,444,541	1,516,768	2019
8026	MD Nat. Capital Parks and Planning Comm.	1,375,811	486,722	511,058	2019
8128	Washington Suburban Sanitary Commission	2,827,685	1,000,352	1,050,370	2019
8325	St. Mary's Nursing Home	323,419	114,416	120,137	2019
8611	Washington County Commission	240,603	85,118	89,374	2019
8612	Washington County Roads Board	194,151	68,685	72,119	2019
8614	Washington County License Commission	1,459	516	542	2019
8626	Washington County Sanitary District	58,601	20,731	21,768	2019
8726	Wicomico Co. Dept. Recreation & Parks	150,321	53,179	55,838	2019
TOTAL		\$ 18,930,642	\$ 6,790,890	\$ 7,026,266	

* The outstanding balance is based on the 7.50% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the State liability and the special payment liability. The special payment 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.

*** Dollar payments decrease each year based on a schedule provided by the prior actuary.

Detailed Actuarial Information

State Police

	Actuarial Valuation Performed		
	June 30, 2017 (for FY 2019)	June 30, 2016 (for FY 2018)	% Change
A. Demographic Information			
1. Active Number Count	1,371	1,402	-2.2%
2. Retired Member and Beneficiary Count	2,572	2,536	1.4%
3. Vested Former Member Count	90	84	7.1%
4. Total Number Count	4,033	4,022	0.3%
5. Active Payroll	\$ 100,384,047	\$ 93,490,648	7.4%
6. Annual Benefits for Retired Members [#]	\$ 120,251,026	\$ 117,700,921	2.2%
B. Actuarial Results			
1. Present Value of Projected Benefits Attributable to:			
a. Retired and Disabled Members, and Beneficiaries	\$ 1,733,887,279	\$ 1,709,028,680	1.5%
b. Terminated Vested Members	14,323,388	11,963,517	19.7%
c. Active Members	677,862,556	621,294,192	9.1%
d. Total Present Value	\$ 2,426,073,223	\$ 2,342,286,389	3.6%
2. Less Present Value Total Future Normal Costs	227,736,682	217,500,640	4.7%
3. Actuarial Accrued Liability (1d – 2)	\$ 2,198,336,541	\$ 2,124,785,749	3.5%
4. Less Actuarial Value of Assets	1,408,753,508	1,344,162,518	4.8%
5. Unfunded Actuarial Accrued Liability (UAAL) (3 - 4)	\$ 789,583,033	\$ 780,623,231	1.1%
6. Funded Ratio	64.08%	63.26%	
7. Amortization Payments	\$ 57,118,169	\$ 54,865,482	4.1%
8. Employer Normal Cost	\$ 24,652,196	\$ 22,983,882	7.3%
9. Total Projected Payroll	\$ 101,952,837	\$ 94,974,719	7.3%
10. Total Normal Cost Rate	32.18%	32.20%	
11. Employee Contribution Rate	8.00%	8.00%	
12. Employer Normal Cost Rate	24.18%	24.20%	
13. UAAL Amortization Rate [*]	54.23%	56.09%	
14. Total Employer Contribution Rate	78.41%	80.29%	
15. Estimated Employer Rate after Reinvestment of Savings	79.41%	81.36%	

* Includes the effects of the one year lag between the valuation date and the beginning of the contribution period.

Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017 and July 1, 2016, respectively.

Detailed Actuarial Information

Judges

	Actuarial Valuation Performed		% Change
	June 30, 2017 (for FY 2019)	June 30, 2016 (for FY 2018)	
A. Demographic Information			
1. Active Number Count	312	298	4.7%
2. Retired Member and Beneficiary Count	417	407	2.5%
3. Vested Former Member Count	9	7	28.6%
4. Total Number Count	738	712	3.7%
5. Active Payroll	\$ 46,875,642	\$ 44,711,221	4.8%
6. Annual Benefits for Retired Members [#]	\$ 31,359,577	\$ 30,682,291	2.2%
B. Actuarial Results			
1. Present Value of Projected Benefits Attributable to:			
a. Retired and Disabled Members, and Beneficiaries	\$ 352,335,702	\$ 345,282,784	2.0%
b. Terminated Vested Members	3,378,196	2,153,606	56.9%
c. Active Members	292,984,445	280,173,814	4.6%
d. Total Present Value	\$ 648,698,343	\$ 627,610,204	3.4%
2. Less Present Value Total Future Normal Costs	112,796,685	103,681,685	8.8%
3. Actuarial Accrued Liability (1d – 2)	\$ 535,901,658	\$ 523,928,519	2.3%
4. Less Actuarial Value of Assets	453,133,735	430,563,204	5.2%
5. Unfunded Actuarial Accrued Liability (UAAL) (3 - 4)	\$ 82,767,923	\$ 93,365,315	-11.4%
6. Funded Ratio	84.56%	82.18%	
7. Amortization Payments	\$ 5,987,403	\$ 6,562,107	-8.8%
8. Employer Normal Cost	\$ 15,444,103	\$ 14,711,851	5.0%
9. Total Projected Payroll	\$ 47,608,209	\$ 45,420,967	4.8%
10. Total Normal Cost Rate	38.91%	38.88%	
11. Employee Contribution Rate	6.47%	6.49%	
12. Employer Normal Cost Rate	32.44%	32.39%	
13. UAAL Amortization Rate*	12.09%	14.06%	
14. Total Employer Contribution Rate	44.53%	46.45%	

*Includes the effects of the one year lag between the valuation date and the beginning of the contribution period.

[#]Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017 and July 1, 2016, respectively.

Detailed Actuarial Information LEOPS (State)

	Actuarial Valuation Performed		
	June 30, 2017 (for FY 2019)	June 30, 2016 (for FY 2018)	% Change
A. Demographic Information			
1. Active Number Count	1,564	1,577	-0.8%
2. Retired Member and Beneficiary Count	1,482	1,424	4.1%
3. Vested Former Member Count	190	194	-2.1%
4. Total Number Count	3,236	3,195	1.3%
5. Active Payroll	\$ 106,826,152	\$ 102,096,996	4.6%
6. Annual Benefits for Retired Members [#]	\$ 49,994,236	\$ 47,351,769	5.6%
B. Actuarial Results			
1. Present Value of Projected Benefits Attributable to:			
a. Retired and Disabled Members, and Beneficiaries	\$ 717,757,710	\$ 686,680,685	4.5%
b. Terminated Vested Members	20,100,049	20,767,015	-3.2%
c. Active Members	464,859,212	439,491,060	5.8%
d. Total Present Value	\$ 1,202,716,971	\$ 1,146,938,760	4.9%
2. Less Present Value Total Future Normal Costs	163,061,746	157,465,949	3.6%
3. Actuarial Accrued Liability (1d – 2)	\$ 1,039,655,225	\$ 989,472,811	5.1%
4. Less Actuarial Value of Assets	657,128,367	613,970,553	7.0%
5. Unfunded Actuarial Accrued Liability (UAAL) (3 - 4)	\$ 382,526,858	\$ 375,502,258	1.9%
6. Funded Ratio	63.21%	62.05%	
7. Amortization Payments	\$ 27,671,863	\$ 26,391,877	4.8%
8. Employer Normal Cost	\$ 16,350,290	\$ 15,547,281	5.2%
9. Total Projected Payroll	\$ 108,495,619	\$ 103,717,685	4.6%
10. Total Normal Cost Rate	22.07%	21.99%	
11. Employee Contribution Rate	7.00%	7.00%	
12. Employer Normal Cost Rate	15.07%	14.99%	
13. UAAL Amortization Rate*	24.71%	24.70%	
14. Total Employer Contribution Rate	39.78%	39.69%	
15. Estimated Employer Rate after Reinvestment of Savings	40.81%	40.77%	

*Includes the effects of the one year lag between the valuation date and the beginning of the contribution period.

[#]Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017 and July 1, 2016, respectively.

Risk Measures Summary

State and Municipal

(\$ in Millions)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Accrued	Market	Market	Valuation	Market	Retiree	RetLiab /	AAL /	Assets /
Valuation	Liabilities	Value of	Value	Payroll	Value	Liabilities	AAL	Payroll	Payroll
Date (6/30)	(AAL)	Assets	Unfunded		Funded	(RetLiab)	(6)/(1)	(1)/(4)	(2)/(4)
			AAL		Ratio				
					(2)/(1)				
2012	\$ 57,869	\$ 37,179	\$ 20,690	\$ 10,337	64.2%	\$ 32,779	56.6%	559.9%	359.7%
2013	60,060	40,363	19,697	10,478	67.2%	34,498	57.4%	573.2%	385.2%
2014	62,610	45,340	17,270	10,804	72.4%	36,077	57.6%	579.5%	419.7%
2015	66,282	45,790	20,492	11,064	69.1%	38,588	58.2%	599.1%	413.9%
2016	67,782	45,366	22,416	11,156	66.9%	39,785	58.7%	607.6%	406.7%
2017	69,987	48,987	20,999	11,419	70.0%	41,112	58.7%	612.9%	429.0%

- (5). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.
- (6) and (7). The ratio of Retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio change. A ratio on the order of 50% indicates a maturing system.
- (8) and (9). The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

Risk Measures Summary

State and Municipal

(\$ in Millions)

	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				Non- Investment Cash Flow (NICF)	NICF / Assets (13)/(2)	Market Rate of Return	5-year Trailing Average
Valuation Date (6/30)	Portfolio StdDev	Std Dev % of Pay	Unfunded / Payroll				
2012			200.2%	\$ (518)	-1.4%	19.8%	
2013			188.0%	(661)	-1.6%	0.3%	
2014			159.9%	(729)	-1.6%	10.4%	
2015	12.5%	51.7%	185.2%	(748)	-1.6%	14.3%	11.6%
2016	12.0%	48.8%	200.9%	(921)	-2.0%	2.7%	9.3%
2017	13.3%	57.1%	183.9%	(852)	-1.7%	10.0%	7.4%

(10) and(11). The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability.

(12). The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability within a reasonable time frame. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(13) and (14). The ratio of Non-Investment Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(15) and (16). Investment return is probably the largest single risk that most systems face. The year-by-year return and the 5-year geometric average both give an indication of the reasonableness of the system's assumed return. Of course, past performance is not a guarantee of future results. Market rate shown is based on actuarial estimation method and differs modestly from figures reported by State Street.

SECTION III

ASSETS

Assets

Pension plan assets play a key role in the financial operation of the plan and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, negotiated contributions, and the ultimate security of participants' benefits.

In this section we present detailed information on plan assets including:

- **Disclosure** of plan assets at June 30, 2017 and June 30, 2016;
- Statement of the **changes** in market values during the year;
- Development of the Actuarial Value of Assets; and
- An assessment of **investment performance**.

Disclosure

Market values represent "snapshot" or "cash-out" values which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate. As a result, actuaries have traditionally smoothed market fluctuations when developing long range contribution rates.

Current methods employed by this Fund set the actuarial value equal to the expected adjusted market value plus one-fifth of the difference between the actual market value and the expected adjusted market value. In addition, there is a 20% collar limitation which restricts the actuarial value of assets from differing outside the range of 80% to 120% of the market value of assets.

Disclosure of Plan Market Value of Assets (State and Municipal) (in Thousands)

	June 30,	
	2017	2016
Assets:		
Cash & Cash Equivalents	\$ 1,034,221	\$ 1,366,155
<i>Receivables</i>		
Contributions		
Employers	16,621	12,710
Employers - Long Term	22,965	27,328
Members	3,157	3,790
Accrued Investment Income	88,691	113,802
Investment Sales Proceeds	997,205	402,910
Total Receivables	1,128,639	560,540
<i>Investments</i>		
U.S. Government Obligations	7,371,619	6,719,149
Domestic Corporate Obligations	3,927,861	3,233,707
International Obligations	120,974	46,289
Domestic Stocks	8,008,898	6,703,203
International Stocks	9,881,644	9,228,831
Mortgages & Mortgage Related Securities	1,515,284	1,590,173
Alternative Investments	18,233,852	17,284,686
Collateral For Loaned Securities	2,553,919	2,070,270
Total Investments	51,614,051	46,876,308
Total Assets	53,776,911	48,803,003
Liabilities:		
Accounts Payable & Accrued Expenses	63,796	62,311
Investment Commitments Payable	2,172,013	1,304,496
Obligation For Collateral For Loaned Securities	2,553,919	2,070,270
Other Liabilities	-	-
Total Liabilities	4,789,728	3,437,077
Net Assets Held in Trust for Pension Benefits	\$ 48,987,183	\$ 45,365,926

Changes in Market Values (State and Municipal)

	Employees				LEOPS	Total State
	Teachers	(State)	State Police	Judges	(State)	
State Sponsored Plans						
Market Value of Assets as of 6/30/2016	\$ 27,542,212,468	\$ 11,600,263,665	\$ 1,274,132,477	\$ 407,663,481	\$ 581,207,002	\$ 41,405,479,093
Employer Contributions	1,137,472,447	639,796,158	82,999,792	21,861,236	42,073,633	1,924,203,267
Member Contributions	477,194,311	220,553,438	7,995,570	3,003,614	7,842,768	716,589,701
Investment Returns	2,710,600,954	1,147,794,917	125,127,852	40,127,004	58,141,203	4,081,791,930
Disbursements from the Trust	(2,136,132,179)	(1,078,027,124)	(118,530,461)	(31,301,378)	(49,775,496)	(3,413,766,638)
Net Transfers	(157,382)	(1,117,021)	55,834	(1,770)	1,220,340	-
Market Value of Assets as of 6/30/2017	\$ 29,731,190,619	\$ 12,529,264,032	\$ 1,371,781,065	\$ 441,352,187	\$ 640,709,450	\$ 44,714,297,353

	Employees	LEOPS	CORS	Total Municipal
	(Municipal)	(Municipal)	(Municipal)	
Municipal Plans				
Market Value of Assets as of 6/30/2016	\$ 3,710,593,132	\$ 229,257,940	\$ 20,595,826	\$ 3,960,446,898
Employer Contributions	90,231,727	18,398,524	477,730	109,107,981
Member Contributions	61,928,095	3,909,525	261,425	66,099,045
Investment Returns	366,247,309	23,350,487	2,052,698	391,650,494
Disbursements from the Trust	(240,156,450)	(13,432,164)	(830,653)	(254,419,267)
Net Transfers	-	-	-	-
Market Value of Assets as of 6/30/2017	\$ 3,988,843,813	\$ 261,484,312	\$ 22,557,026	\$ 4,272,885,151

	Employees				LEOPS	CORS	Total State & Municipal
	Teachers	(State & Municipal)	State Police	Judges	(State & Municipal)	(Municipal)	
State and Municipal Sponsored Plans							
Market Value of Assets as of 6/30/2016	\$ 27,542,212,468	\$ 15,310,856,797	\$ 1,274,132,477	\$ 407,663,481	\$ 810,464,942	\$ 20,595,826	\$ 45,365,925,991
Employer Contributions	1,137,472,447	730,027,885	82,999,792	21,861,236	60,472,157	477,730	2,033,311,248
Member Contributions	477,194,311	282,481,533	7,995,570	3,003,614	11,752,293	261,425	782,688,746
Investment Returns	2,710,600,954	1,514,042,226	125,127,852	40,127,004	81,491,690	2,052,698	4,473,442,424
Disbursements from the Trust	(2,136,132,179)	(1,318,183,574)	(118,530,461)	(31,301,378)	(63,207,660)	(830,653)	(3,668,185,905)
Net Transfers	(157,382)	(1,117,021)	55,834	(1,770)	1,220,340	-	-
Market Value of Assets as of 6/30/2017	\$ 29,731,190,619	\$ 16,518,107,845	\$ 1,371,781,065	\$ 441,352,187	\$ 902,193,763	\$ 22,557,026	\$ 48,987,182,504

Totals may not add due to rounding.

Summary of the Development of the Actuarial Value of Assets

June 30, 2017

	Total State	Total Municipal	Total MSRPS
Beginning of Year:			
(1) Market Value of Assets	\$41,405,479,093	\$3,960,446,898	\$45,365,925,991
(2) Actuarial Value of Assets	43,630,138,974	4,173,540,322	47,803,679,296
End of Year:			
(3) Market Value of Assets	44,714,297,353	4,272,885,151	48,987,182,504
(4) Net Cash Flow with Adjustment	(772,973,670)	(79,212,241)	(852,185,911)
(5) Total Investment Income			
=(3)-(1)-(4)	4,081,791,930	391,650,494	4,473,442,424
(6) Projected Rate of Return	7.55%	7.55%	7.55%
(7) Projected Investment Income			
=(1)x(6)+([1+(6)] ⁵ -1)x(4)	\$ 3,097,464,824	\$ 296,077,885	\$ 3,393,542,709
(8) Beginning of Year Asset Adjustment	0	0	0
(9) Investment Income in Excess of Projected Income	984,327,106	95,572,609	1,079,899,715
(10) Excess Investment Income Recognized This Year (5-year recognition)			
(10a) From This Year	196,865,422	19,114,522	215,979,944
(10b) From One Year Ago	(534,124,901)	(50,965,240)	(585,090,141)
(10c) From Two Years Ago	(409,628,622)	(38,923,668)	(448,552,290)
(10d) From Three Years Ago	479,895,493	45,277,522	525,173,015
(10e) From Four Years Ago	180,934,608	16,983,487	197,918,095
(10f) Total Phase-ins	(86,058,000)	(8,513,377)	(94,571,377)
(11) Change in Actuarial Value of Assets			
=(4)+(7)+(8)+(10f)	2,238,433,154	208,352,267	2,446,785,421
End of Year:			
(3) Market Value of Assets as of 6/30	44,714,297,353	4,272,885,151	48,987,182,504
(12) Preliminary Actuarial Value of Assets = (2)+(11)	45,868,572,128	4,381,892,589	50,250,464,717
(12a) Upper Collar Limit 120% x (3)	53,657,156,824	5,127,462,181	58,784,619,005
(12b) Lower Collar Limit 80% x (3)	35,771,437,883	3,418,308,121	39,189,746,004
(13) Adjustment to Remain within 20% Collar	0	0	0
(14) Final Actuarial Value of Assets as of 6/30	45,868,572,128	4,381,892,589	50,250,464,717
(15) Difference Between Market & Actuarial Values	(1,154,274,775)	(109,007,438)	(1,263,282,213)
(16) Actuarial Value Rate of Return	6.96%	6.96%	6.96%
(17) Market Value Rate of Return	9.95%	9.99%	9.95%
(18) Ratio of Actuarial Value to Market Value	103%	103%	103%

Summary of the Development of the Actuarial Value of Assets (State Portion Only)

June 30, 2017

	TCS	ECS	State Police	Judges	LEOPS	Total State
Beginning of Year:						
(1) Market Value of Assets	\$27,542,212,468	\$11,600,263,665	\$ 1,274,132,477	\$407,663,481	\$581,207,002	\$41,405,479,093
(2) Actuarial Value of Assets	29,020,809,180	12,220,633,519	1,344,162,518	430,563,204	613,970,553	43,630,138,974
End of Year:						
(3) Market Value of Assets	29,731,190,619	12,529,264,032	1,371,781,065	441,352,187	640,709,450	44,714,297,353
(4) Net Cash Flow with Adjustment	(521,622,804)	(218,794,550)	(27,479,264)	(6,438,298)	1,361,246	(772,973,670)
(5) Total Investment Income						
=(3)-(1)-(4)	\$ 2,710,600,954	\$1,147,794,917	\$ 125,127,852	\$ 40,127,004	\$ 58,141,202	\$ 4,081,791,930
(6) Projected Rate of Return	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
(7) Projected Investment Income						
=(1)x(6)+([1+(6)]^5-1)x(4)	\$ 2,060,104,051	\$ 867,710,689	\$ 95,178,534	\$ 30,539,969	\$ 43,931,581	\$ 3,097,464,824
(8) Beginning of Year Asset Adjustment	0	0	0	0	0	0
(9) Investment Income in Excess of Projected Income	\$ 650,496,903	\$ 280,084,228	\$ 29,949,318	\$ 9,587,035	\$ 14,209,621	\$ 984,327,106
(10) Excess Investment Income Recognized This Year (5-year recognition)						
(10a) From This Year	130,099,381	56,016,846	5,989,864	1,917,407	2,841,924	196,865,422
(10b) From One Year Ago	(355,000,835)	(149,780,626)	(16,596,414)	(5,277,155)	(7,469,871)	(534,124,901)
(10c) From Two Years Ago	(271,625,085)	(115,130,832)	(13,107,124)	(4,050,868)	(5,714,713)	(409,628,622)
(10d) From Three Years Ago	318,173,274	136,116,176	15,071,592	4,482,029	6,052,422	479,895,493
(10e) From Four Years Ago	119,935,338	51,912,796	5,533,803	1,397,446	2,155,225	180,934,608
(10f) Total Phase-ins	(58,417,927)	(20,865,640)	(3,108,279)	(1,531,141)	(2,135,013)	(86,058,000)
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	1,480,063,320	628,050,499	64,590,991	22,570,530	43,157,814	2,238,433,154
End of Year:						
(3) Market Value of Assets as of 6/30	29,731,190,619	12,529,264,032	1,371,781,065	441,352,187	640,709,450	44,714,297,353
(12) Preliminary Actuarial Value of Assets = (2)+(11)	30,500,872,500	12,848,684,018	1,408,753,508	453,133,735	657,128,367	45,868,572,128
(12a) Upper Collar Limit 120% x (3)	35,677,428,743	15,035,116,838	1,646,137,278	529,622,625	768,851,340	53,657,156,824
(12b) Lower Collar Limit 80% x (3)	23,784,952,495	10,023,411,226	1,097,424,852	353,081,750	512,567,560	35,771,437,883
(13) Adjustment to Remain within 20% Collar	0	0	0	0	0	0
(14) Final Actuarial Value of Assets as of 6/30	30,500,872,500	12,848,684,018	1,408,753,508	453,133,735	657,128,367	45,868,572,128
(15) Difference Between Market & Actuarial Values	(769,681,881)	(319,419,986)	(36,972,444)	(11,781,547)	(16,418,917)	(1,154,274,775)
(16) Actuarial Value Rate of Return	6.96%	6.99%	6.92%	6.79%	6.80%	6.96%
(17) Market Value Rate of Return	9.94%	9.99%	9.93%	9.92%	9.99%	9.95%
(18) Ratio of Actuarial Value to Market Value	103%	103%	103%	103%	103%	103%

Development of the Actuarial Value of Assets Teachers' Combined System

	2016	2017	2018	2019	2020	2021
Beginning of Year:						
(1) Market Value of Assets	\$27,763,928,268	\$27,542,212,468				
(2) Actuarial Value of Assets	27,995,476,456	29,020,809,180				
End of Year:						
(3) Market Value of Assets	27,542,212,468	29,731,190,619				
(4) Net of Contributions and Disbursements	(523,486,157)	(521,622,804)				
(5) Total Investment Income						
=(3)-(1)-(4)	301,770,357	2,710,600,954				
(6) Projected Rate of Return	7.55%	7.55%				
(7) Projected Investment Income						
=(1)x(6)+[(1+(6)) ⁵ -1]x(4)	2,076,774,532	2,060,104,051				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in						
Excess of Projected Income	(1,775,004,175)	650,496,903				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	(355,000,835)	130,099,381				
(10b) From One Year Ago	(271,625,085)	(355,000,835)	\$ 130,099,381			
(10c) From Two Years Ago	318,173,274	(271,625,085)	(355,000,835)	\$ 130,099,381		
(10d) From Three Years Ago	119,935,340	318,173,274	(271,625,085)	(355,000,835)	\$ 130,099,381	
(10e) From Four Years Ago	(339,438,345)	119,935,338	318,173,272	(271,625,086)	(355,000,835)	\$ 130,099,379
(10f) Total Phase-ins	(527,955,651)	(58,417,927)	(178,353,267)	(496,526,540)	(224,901,454)	130,099,379
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	1,025,332,724	1,480,063,320				
End of Year:						
(3) Market Value of Assets	27,542,212,468	29,731,190,619				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	29,020,809,180	30,500,872,500				
(12a) Upper Collar Limit 120% x (3)	33,050,654,962	35,677,428,743				
(12b) Lower Collar Limit 80% x (3)	22,033,769,974	23,784,952,495				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	29,020,809,180	30,500,872,500				
(15) Difference Between Market & Actuarial Values	(1,478,596,712)	(769,681,881)				
(16) Actuarial Value Rate of Return	5.58%	6.96%				
(17) Market Value Rate of Return	1.10%	9.94%				
(18) Ratio of Actuarial Value to Market Value	105%	103%				

Development of the Actuarial Value of Assets Employees' Combined System (State)

	2016	2017	2018	2019	2020	2021
Beginning of Year:						
(1) Market Value of Assets	\$11,745,180,022	\$11,600,263,665				
(2) Actuarial Value of Assets	11,839,795,052	12,220,633,519				
End of Year:						
(3) Market Value of Assets	11,600,263,665	12,529,264,032				
(4) Net of Contributions and Disbursements	(272,668,368)	(218,794,550)				
(5) Total Investment Income						
=(3)-(1)-(4)	127,752,011	1,147,794,917				
(6) Projected Rate of Return	7.55%	7.55%				
(7) Projected Investment Income						
=(1)x(6)+([1+(6)]^1.5-1)x(4)	876,655,140	867,710,689				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in Excess of Projected Income	(748,903,129)	280,084,228				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	(149,780,626)	56,016,846				
(10b) From One Year Ago	(115,130,832)	(149,780,626)	\$ 56,016,846			
(10c) From Two Years Ago	136,116,176	(115,130,832)	(149,780,626)	\$ 56,016,846		
(10d) From Three Years Ago	51,912,796	136,116,176	(115,130,832)	(149,780,626)	\$ 56,016,846	
(10e) From Four Years Ago	(146,265,819)	51,912,796	136,116,175	(115,130,834)	(149,780,625)	\$ 56,016,844
(10f) Total Phase-ins	(223,148,305)	(20,865,640)	(72,778,437)	(208,894,614)	(93,763,779)	56,016,844
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	380,838,467	628,050,499				
End of Year:						
(3) Market Value of Assets	11,600,263,665	12,529,264,032				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	12,220,633,519	12,848,684,018				
(12a) Upper Collar Limit 120% x (3)	13,920,316,398	15,035,116,838				
(12b) Lower Collar Limit 80% x (3)	9,280,210,932	10,023,411,226				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	12,220,633,519	12,848,684,018				
(15) Difference Between Market & Actuarial Values	(620,369,854)	(319,419,986)				
(16) Actuarial Value Rate of Return	5.58%	6.99%				
(17) Market Value Rate of Return	1.10%	9.99%				
(18) Ratio of Actuarial Value to Market Value	105%	103%				

Development of the Actuarial Value of Assets State Police

	2016	2017	2018	2019	2020	2021
Beginning of Year:						
(1) Market Value of Assets	\$ 1,302,836,963	\$ 1,274,132,477				
(2) Actuarial Value of Assets	1,314,315,006	1,344,162,518				
End of Year:						
(3) Market Value of Assets	1,274,132,477	1,371,781,065				
(4) Net of Contributions and Disbursements	(42,511,015)	(27,479,264)				
(5) Total Investment Income						
= (3)-(1)-(4)	13,806,529	125,127,852				
(6) Projected Rate of Return	7.55%	7.55%				
(7) Projected Investment Income						
= (1)x(6)+([1+(6)] ⁵ -1)x(4)	96,788,598	95,178,534				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in Excess of Projected Income	(82,982,069)	29,949,318				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	(16,596,414)	5,989,864				
(10b) From One Year Ago	(13,107,124)	(16,596,414)	\$ 5,989,864			
(10c) From Two Years Ago	15,071,592	(13,107,124)	(16,596,414)	\$ 5,989,864		
(10d) From Three Years Ago	5,533,803	15,071,592	(13,107,124)	(16,596,414)	\$ 5,989,864	
(10e) From Four Years Ago	(15,331,928)	5,533,803	15,071,593	(13,107,126)	(16,596,413)	\$ 5,989,862
(10f) Total Phase-ins	(24,430,071)	(3,108,279)	(8,642,081)	(23,713,676)	(10,606,549)	5,989,862
(11) Change in Actuarial Value of Assets						
= (4)+(7)+(8)+(10f)	29,847,512	64,590,991				
End of Year:						
(3) Market Value of Assets	1,274,132,477	1,371,781,065				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	1,344,162,518	1,408,753,508				
(12a) Upper Collar Limit 120% x (3)	1,528,958,972	1,646,137,278				
(12b) Lower Collar Limit 80% x (3)	1,019,305,982	1,097,424,852				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	1,344,162,518	1,408,753,508				
(15) Difference Between Market & Actuarial Values	(70,030,041)	(36,972,444)				
(16) Actuarial Value Rate of Return	5.60%	6.92%				
(17) Market Value Rate of Return	1.08%	9.93%				
(18) Ratio of Actuarial Value to Market Value	105%	103%				

Development of the Actuarial Value of Assets Judges

	2016	2017	2018	2019	2020	2021
Beginning of Year:						
(1) Market Value of Assets	\$412,532,170	\$407,663,481				
(2) Actuarial Value of Assets	416,546,609	430,563,204				
End of Year:						
(3) Market Value of Assets	407,663,481	441,352,187				
(4) Net of Contributions and Disbursements	(9,284,964)	(6,438,298)				
(5) Total Investment Income						
=(3)-(1)-(4)	4,416,275	40,127,004				
(6) Projected Rate of Return	7.55%	7.55%				
(7) Projected Investment Income						
=(1)x(6)+[(1+(6)) ⁵ -1]x(4)	30,802,049	30,539,969				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in Excess of Projected Income	(26,385,774)	9,587,035				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	(5,277,155)	1,917,407				
(10b) From One Year Ago	(4,050,868)	(5,277,155)	\$ 1,917,407			
(10c) From Two Years Ago	4,482,029	(4,050,868)	(5,277,155)	\$ 1,917,407		
(10d) From Three Years Ago	1,397,446	4,482,029	(4,050,868)	(5,277,155)	\$ 1,917,407	
(10e) From Four Years Ago	(4,051,942)	1,397,446	4,482,027	(4,050,870)	(5,277,154)	\$ 1,917,407
(10f) Total Phase-ins	(7,500,490)	(1,531,141)	(2,928,589)	(7,410,618)	(3,359,747)	1,917,407
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	14,016,595	22,570,530				
End of Year:						
(3) Market Value of Assets	407,663,481	441,352,187				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	430,563,204	453,133,735				
(12a) Upper Collar Limit 120% x (3)	489,196,177	529,622,625				
(12b) Lower Collar Limit 80% x (3)	326,130,785	353,081,750				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	430,563,204	453,133,735				
(15) Difference Between Market & Actuarial Values	(22,899,723)	(11,781,547)				
(16) Actuarial Value Rate of Return	5.66%	6.79%				
(17) Market Value Rate of Return	1.08%	9.92%				
(18) Ratio of Actuarial Value to Market Value	106%	103%				

Development of the Actuarial Value of Assets LEOPS (State)

	2016	2017	2018	2019	2020	2021
Beginning of Year:						
(1) Market Value of Assets	\$582,037,638	\$581,207,002				
(2) Actuarial Value of Assets	588,298,704	613,970,553				
End of Year:						
(3) Market Value of Assets	581,207,002	640,709,450				
(4) Net of Contributions and Disbursements	(7,159,761)	1,361,246				
(5) Total Investment Income						
= (3)-(1)-(4)	6,329,125	58,141,202				
(6) Projected Rate of Return	7.55%	7.55%				
(7) Projected Investment Income						
= (1)x(6)+[(1+(6))^5-1]x(4)	43,678,478	43,931,581				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in Excess of Projected Income	(37,349,353)	14,209,621				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	(7,469,871)	2,841,924				
(10b) From One Year Ago	(5,714,713)	(7,469,871)	\$ 2,841,924			
(10c) From Two Years Ago	6,052,422	(5,714,713)	(7,469,871)	\$ 2,841,924		
(10d) From Three Years Ago	2,155,224	6,052,422	(5,714,713)	(7,469,871)	\$ 2,841,924	
(10e) From Four Years Ago	(5,869,930)	2,155,225	6,052,422	(5,714,712)	(7,469,869)	\$ 2,841,925
(10f) Total Phase-ins	(10,846,868)	(2,135,013)	(4,290,238)	(10,342,659)	(4,627,945)	2,841,925
(11) Change in Actuarial Value of Assets						
= (4)+(7)+(8)+(10f)	25,671,849	43,157,814				
End of Year:						
(3) Market Value of Assets	581,207,002	640,709,450				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	613,970,553	657,128,367				
(12a) Upper Collar Limit 120% x (3)	697,448,402	768,851,340				
(12b) Lower Collar Limit 80% x (3)	464,965,602	512,567,560				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	613,970,553	657,128,367				
(15) Difference Between Market & Actuarial Values	(32,763,551)	(16,418,917)				
(16) Actuarial Value Rate of Return	5.61%	6.80%				
(17) Market Value Rate of Return	1.09%	9.99%				
(18) Ratio of Actuarial Value to Market Value	106%	103%				

SECTION IV

GAIN/LOSS EXPERIENCE ANALYSIS

Gain/(Loss) Experience Analysis

Comments

Purpose of Gain/Loss Analysis

Regular actuarial valuations provide valuable information about the composite change in unfunded actuarial accrued liabilities – whether or not the liabilities are increasing or decreasing, and by how much. However, valuations do not show the portion of the change attributable to each risk area within the retirement system financial mechanism: the rate of investment income on plan assets; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed ages at actual retirement. In an actuarial valuation, assumptions are made as to what these rates will be for the next year and for decades in the future.

The objective of a gain and loss analysis is to determine the portion of the change in unfunded actuarial accrued liabilities attributable to each risk area.

The fact that actual experience differs from assumed experience is to be expected – the future cannot be predicted with precision. Changes in the valuation assumed experience for a risk area should be made when the differences between assumed and actual experience have been observed to be sizeable and persistent. One year's gain/loss analysis may or may not be indicative of *long-term trends, which are the basis of financial assumptions.*

The expected and actual numbers of retirements, disabilities, deaths, and terminations found on pages IV-5 through IV-11 reflect experience over the 12-month period from June 30, **2016** through June 30, **2017**.

Derivation of Experience Gain/(Loss) Year Ended June 30, 2017 State Only (in Millions)

Actual experience will never (except by coincidence) coincide exactly with assumed experience. Gains and losses often offset one another over a period of years, but sizable year-to-year fluctuations are common.

	Fiscal Year Ended June 30,	
	2017	2016
(1) UAAL* at start of year	\$19,121	\$19,260
(2) Normal cost from last valuation	1,192	1,172
(3) Actual contributions	2,641	2,461
(4) Interest accrual: $[(1) \times .0755 + \{(2)-(3)\} \times \{1.0755^{.5}\}-1]$	1,390	1,406
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	19,062	19,377
(6) Change in benefit provisions	0	0
(7) Changes in methods and assumptions	117	0
(8) Expected UAAL after changes: (5) + (6) + (7)	19,179	19,377
(9) Actual UAAL at end of year	18,854	19,121
(10) Gain/(loss): (8) - (9)	325	256
(10a) Portion of gain/(loss) due to Assets	(254)	(820)
(10b) Portion of gain/(loss) due to Liabilities	579	1,076
(10c) Actuarial accrued liabilities at beginning of year	62,751	61,414
(11) Gain/(loss) as a percent of beginning accrued liabilities	0.5%	0.4%

* *Unfunded Actuarial Accrued Liability.*
Numbers may not add due to rounding.

Summary of System Experience

Year Ended June 30, 2017

State Only

(in Millions)

	2017	
	Total State	% of AAL
Beginning of Year		
1. Total Actuarial Accrued Liabilities (AAL) #	\$62,750.91	100.0 %
2. Valuation Assets	43,630.14	69.5 %
3. Unfunded Actuarial Accrued Liabilities	\$19,120.77	30.5 %
2017 Experience Gains (Losses)		
4. Gains (losses) in economic risk areas		
a. Pay increases	185.83	0.3 %
b. Investment return	(254.02)	(0.4)%
c. Total	(68.19)	(0.1)%
5. Gains (losses) from active member decrement experience		
a. Service retirement	8.18	0.0 %
b. Disability retirement	19.26	0.0 %
c. Death-in-service	(6.99)	0.0 %
d. Other separations	115.58	0.2 %
e. Total	136.03	0.2 %
6. Gains (losses) from retiree experience		
a. Mortality	91.60	0.1 %
b. Benefit related/COLAs	301.16	0.5 %
c. Other/unexpected retirees & beneficiaries	16.11	0.0 %
d. Total	408.87	0.7 %
7. Gains (losses) from other sources		
a. Actual vs. expected liability for active terminations	95.21	0.2 %
b. Deferred members returning to work	(53.14)	(0.1)%
c. Deferred mortality/actual vs. expected liability	(9.52)	0.0 %
d. Data related	(22.13)	0.0 %
e. All other sources	(162.04)	(0.3)%
f. Total	(151.62)	(0.2)%
8. Total experience gains (losses) (4c) + (5e) + (6d) + (7f)	325.09	0.4 %
End of Year		
9. Total Actuarial Accrued Liabilities*	\$64,605.68	100.0 %
10. Valuation Assets	45,868.57	71.0 %
11. Unfunded Actuarial Accrued Liabilities	\$18,737.11	29.0 %

* Prior to reflecting changes in assumptions.
Totals may not add due to rounding.

Historical Summary of System Experience State Only (in Millions)

Year	Gain (Loss) During the Year Due To								Total Experience
	Service Retirement	Disability Retirement	Survivor Benefits	Other Turnover	Pay Increases	Investment Return	Retiree Experience	Other Sources	
2017	8.2	19.3	(7.0)	115.6	185.8	(254.0)	408.9	(151.6)	325.1

Active Member Population Development Year Ended June 30, 2017 State Only

	Total State	
	Actual	Expected
Beginning Census	166,907	
- Service Retirement	4,525	5,127
- Death	157	247
- Disability Retirement	424	523
- Other Separations	9,721	10,142
- Transfers Out	58	
+ Transfers In	52	
+ New Entrants	15,090	
Ending Census	167,164	

This page reconciles the active member populations reported in connection with the 2016 and 2017 valuations on an actual and expected basis. Assumptions related to population development are a primary focus of the gain/loss analysis. They generally tend to be more stable than economic assumptions, and therefore, measurements have more meaning.

Assumptions used for the pension valuation were established on a population-weighted basis with the exception of the withdrawal assumptions. Therefore, the expected "Other Separations" presented above for these divisions are based upon liability-weighted assumptions. If population-weighted assumptions were used, the expected numbers would be different.

Salary Increases
for Member Active Both at Beginning and End of Year
During the Year Ended June 30, 2017
State Only

Service Beginning of Year	Number	Salary Increases	
		Actual	Expected
0	567	8.76%	6.69%
1	10,428	5.98%	6.93%
2	9,748	5.60%	5.71%
3	8,571	5.34%	5.38%
4	7,330	5.20%	5.21%
5	5,826	5.23%	5.17%
6	5,363	4.88%	5.17%
7	4,949	4.91%	5.23%
8	6,069	4.66%	5.09%
9	7,403	4.58%	5.20%
Total	66,254		

Age Group	Number	Salary Increases for More than 10 Years of Service	
		Actual	Expected
25-29	94	6.01%	4.57%
30-34	3,715	4.95%	5.19%
35-39	9,572	4.64%	4.96%
40-44	11,393	4.01%	4.71%
45-49	14,260	3.54%	4.42%
50-54	14,449	3.12%	3.93%
55-59	15,113	2.81%	3.59%
60-64	11,464	2.42%	3.20%
65 & Over	5,708	2.05%	3.20%
Total	85,768		

Total Payroll Growth			
	2017	2016	2015
Actual	2.30%	0.77%	2.44%
Assumed	3.20%	3.20%	3.40%

**Active Members Who Retired with
Retirement Benefits (Unreduced or Reduced)
During the Year Ended June 30, 2017
State Only**

Ages	Male		Female		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 50	67	89	39	30	106	119
50	15	19	9	10	24	29
51	11	17	15	14	26	31
52	10	16	28	24	38	40
53	19	22	48	35	67	57
54	24	25	34	42	58	67
55	34	31	77	76	111	107
56	31	34	86	85	117	119
57	32	34	91	93	123	127
58	26	38	97	101	123	139
59	48	42	120	112	168	154
60	38	48	172	163	210	211
61	58	63	177	181	235	244
62	131	152	511	535	642	687
63	85	115	341	351	426	466
64	83	96	254	283	337	379
65	76	93	259	281	335	374
66	90	98	286	240	376	338
67	66	66	166	160	232	226
68	45	51	129	116	174	167
69	28	39	98	89	126	128
70	46	49	97	81	143	130
71	17	21	53	44	70	65
72	18	21	35	35	53	56
73	10	16	36	23	46	39
74	6	9	26	22	32	31
75 & Over	53	255	74	342	127	597
Totals	1,167	1,559	3,358	3,568	4,525	5,127

Beginning of Year	Male	Female	Total
Average Age	62.2 years	63.0 years	62.8 years
Average Service	25.9 years	25.3 years	25.5 years

**Active Members Who Retired with
Disability Benefits
During the Year Ended June 30, 2017
State Only**

Ages	Male		Female		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 25	0	1	0	0	0	1
25-29	2	4	0	3	2	7
30-34	1	8	1	7	2	15
35-39	6	10	12	12	18	22
40-44	8	15	31	21	39	36
45-49	14	25	31	42	45	67
50-54	24	32	73	70	97	102
55-59	35	37	79	100	114	137
60-64	30	28	58	70	88	98
65-69	5	11	10	20	15	31
70 & Over	2	3	2	4	4	7
Totals	127	174	297	349	424	523

Beginning of Year Average	Male	Female	Total
Age	53.8 years	53.2 years	53.4 years
Service	17.4 years	18.2 years	17.9 years

**Active Members Who Left Active Status with a
Deferred Benefit (Payments Beginning at a Later Age)
During the Year Ended June 30, 2017
State Only**

Ages	Male		Female		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 25	3	0	1	0	4	0
25-29	30	22	86	59	116	81
30-34	136	103	479	270	615	373
35-39	149	98	429	242	578	340
40-44	138	92	348	232	486	324
45-49	119	100	384	241	503	341
50-54	110	87	328	216	438	303
55-59	78	35	301	104	379	139
60-64	47	15	122	32	169	47
65-69	16	0	15	0	31	0
70-74	4	0	5	0	9	0
75 and over	3	0	2	0	5	0
Totals	833	552	2,500	1,396	3,333	1,948

Beginning of Year Average	Male	Female	Total
Age	43.9 years	43.6 years	43.7 years
Service	10.5 years	10.1 years	10.2 years

**Active Members Who Left Active Status with
No Benefit Payable (Contributions Refunded)
During the Year Ended June 30, 2017
State Only**

Ages	Male		Female		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 25	130	101	291	272	421	373
25-29	484	387	1,203	986	1,687	1,373
30-34	372	286	810	617	1,182	903
35-39	248	194	579	476	827	670
40-44	193	148	440	397	633	545
45-49	165	150	384	401	549	551
50-54	134	126	295	315	429	441
55-59	97	89	189	221	286	310
60-64	99	69	118	108	217	177
65-69	41	23	66	35	107	58
70-74	15	9	20	9	35	18
75 and over	5	0	10	0	15	0
Totals	1,983	1,582	4,405	3,837	6,388	5,419

Beginning of Year Average	Male	Female	Total
Age	37.9 years	36.8 years	37.1 years
Service	4.0 years	3.5 years	3.6 years

Does not include members that died while in active status.

**Comparison of Actual to Expected Deaths
Among Retired Lives
During the Year Ended June 30, 2017
State Only**

Ages	Male			Female			Total		
	Actual	Expected	Exposure	Actual	Expected	Exposure	Actual	Expected	Exposure
Under 50	9	7	812	7	6	679	16	13	1,491
50-54	20	13	1,355	10	12	1,196	30	25	2,551
55-59	17	25	2,310	36	28	3,228	53	53	5,538
60-64	64	59	4,947	111	88	11,207	175	147	16,154
65-69	134	152	10,488	238	225	23,002	372	377	33,490
70-74	219	194	9,223	254	273	18,462	473	467	27,685
75-79	200	189	5,604	269	271	11,165	469	460	16,769
80-84	228	217	3,822	362	303	7,432	590	521	11,254
85-89	248	207	2,131	413	333	4,717	661	540	6,848
90-94	134	122	755	327	270	2,229	461	391	2,984
95-99	39	35	144	152	130	681	191	165	825
100 & Over	8	8	154	37	27	246	45	36	400
Totals	1,320	1,229	41,745	2,216	1,967	84,244	3,536	3,195	125,989

SECTION V

HISTORICAL GASB No. 25 AND No. 27 INFORMATION

GASB Statements No. 67 and No. 68 are the accounting standards which replaced GASB Statements No. 25 and 27. GASB Statement No. 67 is first effective for fiscal year 2014 and GASB Statement No. 68 is first effective for fiscal year 2015. A separate GASB Statements No. 67 and No. 68 report has been issued outside of this report. This section contains historical GASB Statements No. 25 and No. 27 reporting information for prior fiscal years and illustrative information for fiscal year 2015 and after.

Schedule of Funding Progress (State and Municipal) (In Thousands)

Actuarial Valuation Date June 30,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Payroll (c)	UAAL as a Percentage of Payroll [(b - a) / c]
2001	\$ 31,914,778	\$ 32,469,942	\$ 555,164	98.29%	\$ 7,255,036	8%
2002	32,323,263	34,131,284	1,808,021	94.70%	7,867,794	23%
2003	32,631,465	34,974,601	2,343,136	93.30%	8,134,419	29%
2004	33,484,657	36,325,704	2,841,047	92.18%	8,069,481	35%
2005	34,519,500	39,133,450	4,613,949	88.21%	8,603,761	54%
2006	35,795,025	43,243,492	7,448,467	82.78%	9,287,576	80%
2007	37,886,936	47,144,354	9,257,418	80.36%	9,971,012	93%
2008	39,504,284	50,244,047	10,739,763	78.62%	10,542,806	102%
2009	34,284,569	52,729,171	18,444,603	65.02%	10,714,241	172%
2010	34,688,346	54,085,081	19,396,735	64.14%	10,657,944	182%
2011	36,177,656	55,917,543	19,739,887	64.70%	10,478,800	188%
2012	37,248,401	57,869,145	20,620,745	64.37%	10,336,537	199%
2013	39,350,969	60,060,091	20,709,122	65.52%	10,477,544	198%
2014	42,996,957	62,610,194	19,613,237	68.67%	10,803,632	182%
2015	46,170,624	66,281,781	20,111,157	69.66%	11,063,962	182%
2016	47,803,679	67,781,924	19,978,245	70.53%	11,155,924	179%
2017	50,250,465	69,986,576	19,736,111	71.80%	11,418,973	173%

The figures for fiscal years prior to 2015 were applicable for both funding and accounting purposes under GASB Statements 25 and 27. The figures shown for fiscal year 2015 and after are applicable for funding purposes only. Accounting figures under GASB Statements 67 and 68 for fiscal year 2015 and after are shown in a separate report.

Schedule of Funding Progress (In Thousands)

Teachers' Combined System

Actuarial Valuation Date June 30,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Payroll (c)	UAAL as a Percentage of Payroll [(b - a) / c]
2001	\$ 19,182,749	\$ 20,126,943	\$ 944,194	95.31%	\$ 3,994,201	24%
2002	19,424,000	21,117,047	1,693,047	91.98%	4,323,054	39%
2003	19,626,676	21,152,063	1,525,387	92.79%	4,522,202	34%
2004	20,155,415	21,724,178	1,568,764	92.78%	4,543,444	35%
2005	20,801,529	23,305,198	2,503,669	89.26%	4,867,396	51%
2006	21,575,451	25,617,484	4,042,033	84.22%	5,269,185	77%
2007	22,814,760	28,122,575	5,307,815	81.13%	5,709,765	93%
2008	23,784,404	29,868,705	6,084,301	79.63%	6,117,590	99%
2009	20,605,618	31,172,917	10,567,299	66.10%	6,194,734	171%
2010	20,908,149	31,963,421	11,055,272	65.41%	6,254,648	177%
2011	21,868,875	32,985,145	11,116,270	66.30%	6,196,976	179%
2012	22,523,978	34,252,715	11,728,737	65.76%	6,080,603	193%
2013	23,845,618	35,530,441	11,684,823	67.11%	6,185,176	189%
2014	26,067,577	36,882,587	10,815,010	70.68%	6,310,253	171%
2015	27,995,476	38,934,459	10,938,983	71.90%	6,470,706	169%
2016	29,020,809	39,934,125	10,913,316	72.67%	6,611,038	165%
2017	30,500,873	41,198,985	10,698,113	74.03%	6,780,838	158%

The figures for fiscal years prior to 2015 were applicable for both funding and accounting purposes under GASB Statements 25 and 27. The figures shown for fiscal year 2015 and after are applicable for funding purposes only. Accounting figures under GASB Statements 67 and 68 for fiscal year 2015 and after are shown in a separate report.

Schedule of Funding Progress (In Thousands)

Employees' Combined System (State and Municipal)

Actuarial Valuation Date June 30,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Payroll (c)	UAAL as a Percentage of Payroll [(b - a) / c]
2001	\$ 11,021,958	\$ 10,789,907	\$ (232,051)	102.15%	\$ 3,084,859	-8%
2002	11,162,265	11,385,749	223,484	98.04%	3,356,671	7%
2003	11,244,008	12,083,197	839,189	93.05%	3,424,054	25%
2004	11,514,655	12,621,578	1,106,923	91.23%	3,337,543	33%
2005	11,855,673	13,671,756	1,816,083	86.72%	3,537,602	51%
2006	12,287,942	15,291,091	3,003,149	80.36%	3,793,125	79%
2007	13,026,321	16,385,823	3,359,502	79.50%	4,016,221	84%
2008	13,599,717	17,609,769	4,010,052	77.23%	4,165,013	96%
2009	11,839,115	18,517,486	6,678,371	63.93%	4,249,536	157%
2010	11,937,944	19,009,788	7,071,844	62.80%	4,137,474	171%
2011	12,387,810	19,722,264	7,334,453	62.81%	4,027,810	182%
2012	12,667,592	20,283,028	7,615,436	62.45%	3,998,475	190%
2013	13,326,586	21,046,733	7,720,147	63.32%	4,030,261	192%
2014	14,547,390	22,059,765	7,512,375	65.95%	4,214,981	178%
2015	15,615,327	23,402,850	7,787,524	66.72%	4,300,748	181%
2016	16,130,438	23,817,251	7,686,814	67.73%	4,245,333	181%
2017	16,939,887	24,579,830	7,639,943	68.92%	4,319,053	177%

The figures for fiscal years prior to 2015 were applicable for both funding and accounting purposes under GASB Statements 25 and 27. The figures shown for fiscal year 2015 and after are applicable for funding purposes only. Accounting figures under GASB Statements 67 and 68 for fiscal year 2015 and after are shown in a separate report.

Schedule of Funding Progress (In Thousands)

State Police

Actuarial Valuation Date June 30,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Payroll (c)	UAAL as a Percentage of Payroll [(b - a) / c]
2001	\$ 1,305,556	\$ 993,847	\$ (311,710)	131.36%	\$ 79,383	-393%
2002	1,300,402	1,030,575	(269,827)	126.18%	83,142	-325%
2003	1,285,201	1,062,383	(222,818)	120.97%	80,839	-276%
2004	1,287,981	1,200,605	(87,376)	107.28%	76,445	-114%
2005	1,289,345	1,284,950	(4,395)	100.34%	76,463	-6%
2006	1,301,877	1,325,875	23,998	98.19%	80,649	30%
2007	1,334,375	1,516,935	182,560	87.97%	83,191	219%
2008	1,343,208	1,601,576	258,367	83.87%	86,464	299%
2009	1,119,766	1,710,356	590,591	65.47%	85,586	690%
2010	1,085,281	1,722,564	637,283	63.00%	81,705	780%
2011	1,090,383	1,759,676	669,293	61.96%	75,551	886%
2012	1,134,511	1,826,546	692,035	62.11%	77,690	891%
2013	1,164,217	1,882,501	718,284	61.84%	79,848	900%
2014	1,241,758	1,966,572	724,814	63.14%	85,660	846%
2015	1,314,315	2,103,134	788,819	62.49%	91,050	866%
2016	1,344,163	2,124,786	780,623	63.26%	93,491	835%
2017	1,408,754	2,198,337	789,583	64.08%	100,384	787%

The figures for fiscal years prior to 2015 were applicable for both funding and accounting purposes under GASB Statements 25 and 27. The figures shown for fiscal year 2015 and after are applicable for funding purposes only. Accounting figures under GASB Statements 67 and 68 for fiscal year 2015 and after are shown in a separate report.

Schedule of Funding Progress (In Thousands)

Judges

Actuarial Valuation Date June 30,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Payroll (c)	UAAL as a Percentage of Payroll [(b - a) / c]
2001	\$ 229,022	\$ 254,913	\$ 25,891	89.84%	\$ 30,554	85%
2002	234,558	267,532	32,974	87.67%	31,824	104%
2003	240,208	279,008	38,801	86.09%	33,169	117%
2004	250,272	312,285	62,013	80.14%	32,937	188%
2005	260,125	328,033	67,908	79.30%	33,074	205%
2006	273,679	352,537	78,858	77.63%	35,939	219%
2007	293,052	371,987	78,936	78.78%	37,638	210%
2008	306,716	406,782	100,066	75.40%	37,943	264%
2009	270,870	421,039	150,169	64.33%	40,266	373%
2010	276,643	426,215	149,572	64.91%	39,961	374%
2011	293,801	433,240	139,439	67.81%	38,810	359%
2012	330,154	421,286	91,132	78.37%	39,955	228%
2013	354,900	438,836	83,937	80.87%	40,001	210%
2014	389,072	459,447	70,375	84.68%	42,313	166%
2015	416,547	511,390	94,844	81.45%	44,613	213%
2016	430,563	523,929	93,365	82.18%	44,711	209%
2017	453,134	535,902	82,768	84.56%	46,876	177%

The figures for fiscal years prior to 2015 were applicable for both funding and accounting purposes under GASB Statements 25 and 27. The figures shown for fiscal year 2015 and after are applicable for funding purposes only. Accounting figures under GASB Statements 67 and 68 for fiscal year 2015 and after are shown in a separate report.

Schedule of Funding Progress (In Thousands)

LEOPS (State and Municipal)

Actuarial Valuation Date June 30,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Payroll (c)	UAAL as a Percentage of Payroll [(b - a) / c]
2001	\$ 165,478	\$ 290,504	\$ 125,026	56.96%	\$ 60,438	207%
2002	191,100	312,058	120,958	61.24%	65,916	184%
2003	225,111	382,287	157,176	58.89%	69,470	226%
2004	271,587	454,815	183,228	59.71%	77,369	237%
2005	310,087	537,736	227,648	57.67%	87,220	261%
2006	352,416	649,826	297,410	54.23%	106,669	279%
2007	414,153	738,549	324,396	56.08%	122,015	266%
2008	465,386	748,005	282,619	62.22%	133,445	212%
2009	441,827	895,099	453,273	49.36%	140,071	324%
2010	471,728	950,236	478,508	49.64%	140,199	341%
2011	526,807	1,002,708	475,900	52.54%	135,177	352%
2012	580,826	1,070,087	489,261	54.28%	135,185	362%
2013	642,678	1,143,154	500,476	56.22%	137,613	364%
2014	732,333	1,222,137	489,804	59.92%	145,673	336%
2015	808,436	1,308,633	500,197	61.78%	151,955	329%
2016	855,997	1,359,432	503,434	62.97%	156,396	322%
2017	924,705	1,449,365	524,660	63.80%	166,561	315%

The figures for fiscal years prior to 2015 were applicable for both funding and accounting purposes under GASB Statements 25 and 27. The figures shown for fiscal year 2015 and after are applicable for funding purposes only. Accounting figures under GASB Statements 67 and 68 for fiscal year 2015 and after are shown in a separate report.

Schedule of Funding Progress (In Thousands)

CORS

Actuarial Valuation Date June 30,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Payroll (c)	UAAL as a Percentage of Payroll [(b - a) / c]
2009	\$ 7,373	\$ 12,273	\$ 4,900	60.08%	\$ 4,048	121%
2010	8,601	12,858	4,257	66.89%	3,956	108%
2011	9,980	14,511	4,531	68.78%	4,475	101%
2012	11,341	15,483	4,143	73.24%	4,628	90%
2013	16,971	18,426	1,456	92.10%	4,646	31%
2014	18,827	19,685	859	95.64%	4,752	18%
2015	20,523	21,313	790	96.29%	4,890	16%
2016	21,709	22,401	692	96.91%	4,954	14%
2017	23,112	24,157	1,044	95.68%	5,262	20%

The figures for fiscal years prior to 2015 were applicable for both funding and accounting purposes under GASB Statements 25 and 27. The figures shown for fiscal year 2015 and after are applicable for funding purposes only. Accounting figures under GASB Statements 67 and 68 for fiscal year 2015 and after are shown in a separate report.

Schedule of Employer Contributions (State and Municipal) (In Thousands)

Fiscal Year Ended June 30,	Annual Required Contributions	Actual Contributions	Percentage Contributed
2001	\$ 634,309	\$ 634,309	100%
2002	574,019	574,019	100%
2003	654,578	602,212	92%
2004	710,632	632,462	89%
2005	805,564	668,618	83%
2006	874,079	716,745	82%
2007	1,025,972	831,037	81%
2008	1,183,765	1,053,551	89%
2009	1,313,560	1,109,564	84%
2010	1,519,980	1,308,920	86%
2011	2,035,401	1,512,473	74%
2012	2,146,624	1,521,761	71%
2013	2,149,985	1,643,101	76%
2014	2,320,991	1,733,652	75%
2015	2,107,731	1,858,613	88%
2016	1,948,082	1,870,655	96%
2017	2,033,311	2,033,311	100%

The Annual Required Contribution "ARC" was an accounting term defined in GASB Statements 25 and 27 and is no longer applicable for fiscal year 2015 and after. The amount for fiscal year 2015 and after was calculated in the same manner as the previous years, but is not used under the current accounting standards GASB Statements 67 and 68.

Schedule of Employer Contributions By System (State and Municipal) (In Thousands)

	Fiscal Year Ended June 30,	Annual Required Contributions	Actual Contributions	Percentage Contributed
Teachers' Combined System	2013	\$ 1,265,418	\$ 981,004	78%
	2014	1,358,991	1,000,192	74%
	2015	1,189,318	1,063,763	89%
	2016	1,112,989	1,084,049	97%
	2017	1,137,472	1,137,472	100%
Employees' Combined System	2013	741,003	526,532	71%
	2014	812,206	591,747	73%
	2015	766,239	642,676	84%
	2016	688,920	640,433	93%
	2017	730,028	730,028	100%
State Police	2013	59,329	51,330	87%
	2014	64,325	56,244	87%
	2015	76,057	76,057	100%
	2016	72,320	72,320	100%
	2017	83,000	83,000	100%
Judges	2013	24,062	24,062	100%
	2014	21,109	21,109	100%
	2015	19,028	19,028	100%
	2016	18,384	18,384	100%
	2017	21,861	21,861	100%
LEOPS	2013	55,272	55,272	100%
	2014	63,923	63,923	100%
	2015	56,546	56,546	100%
	2016	54,959	54,959	100%
	2017	60,472	60,472	100%
CORS (Muni)	2013	4,901	4,901	100%
	2014	437	437	100%
	2015	543	543	100%
	2016	510	510	100%
	2017	478	478	100%
Total State	2013	2,037,989	1,531,106	75%
	2014	2,179,715	1,592,376	73%
	2015	1,983,742	1,734,624	87%
	2016	1,837,721	1,760,294	96%
	2017	1,924,203	1,924,203	100%
Total Municipal	2013	111,995	111,995	100%
	2014	141,276	141,276	100%
	2015	123,989	123,989	100%
	2016	110,361	110,361	100%
	2017	109,108	109,108	100%
Total MSRPS	2013	2,149,985	1,643,101	76%
	2014	2,320,991	1,733,652	75%
	2015	2,107,731	1,858,613	88%
	2016	1,948,082	1,870,655	96%
	2017	2,033,311	2,033,311	100%

The Annual Required Contribution "ARC" was an accounting term defined in GASB Statements 25 and 27 and is no longer applicable for fiscal year 2015 and after. The amount for fiscal year 2015 and after was calculated in the same manner as the previous years, but is not used under the current accounting standards GASB Statements 67 and 68.

APPENDIX A

ACTUARIAL ASSUMPTIONS AND METHODS

Brief Summary of Actuarial Assumptions and Methods

Valuation date	June 30, 2017
Actuarial cost method	Individual entry age
Amortization method for Unfunded Actuarial Accrued Liabilities (UAAL)	Level percent closed
Amorization period	25-year closed schedule ending June 30, 2039; 21 years remaining
Asset valuation method	5-year smoothed market (max. 120% and min. 80% of market value)
Actuarial assumptions:	
Investment rate of return	7.50%
Inflation	2.65% general; 3.15% wage
Projected salary increases	3.15% - 9.15%
Cost-of-living adjustments	2.26% - 3.15% for service prior to July 1, 2011.* 1.47% - 3.15% for service after June 30, 2011.* <i>* Based on System and provisions. See page A-1 and Appendix C for details.</i>
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2015 valuation pursuant to the 2015 Experience Study for the period July 1, 2010 to June 30, 2014.
Mortality	RP-2014 Mortality Tables with projected generational mortality improvements based on the MP-2014 2-dimensional mortality improvement scale.

Actuarial Assumptions and Methods

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. New economic assumptions were adopted by the Board for the 2017 valuation on July 18, 2017. Actuarial assumptions are based on a combination of future expectations and historical data. Specific assumptions are shown below.

A. ACTUARIAL ASSUMPTIONS

	1. Valuation Interest Rate	2. Annual Rate of Increase in Cost of Living			3. Aggregate Payroll Growth
		Service Before 7/1/11	Service After 7/1/11		
Teachers' Retirement	7.50%	2.65%	2.65%	#	3.15%
Teachers' Pension	7.50%	2.26%	1.47%	***	3.15%
Employees' Retirement					
Regular	7.50%	2.65%	2.65%	#	3.15%
Correctional	7.50%	2.65%	1.47%	***	3.15%
Legislative	7.50%	3.15%	3.15%		3.15%
Employees' Pension	7.50%	2.26%	1.47%	*,***	3.15%
State Police Retirement	7.50%	2.65%	1.47%	***	3.15%
Judges Pension	7.50%	3.15%	3.15%		3.15%
LEOPS	7.50%	2.26%	1.47%	**,***,#	3.15%
CORS Municipal	7.50%	2.65%	1.47%	***	3.15%

* A 2.65% simple rate is applicable for municipal members of these Systems, who do not elect to be covered under the Contributory plan.

** A 2.65% simple rate is applicable for former EPS members.

*** 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 7.50% 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 7.50%.

For groups whose COLA is capped at 5%, a 2.63% COLA was assumed. A 2.65% COLA was assumed for groups with an unlimited COLA, 2.26% is assumed for groups that are capped at 3%.

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 2.65% and wage inflation (i.e., aggregate payroll growth) is assumed to be 3.15%.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Salary Increases

Years of Service	Annual Rates of Salary Increases for First 10 Years of Service							
	Teachers' Retirement & Pension	Employees' Retirement			Employees' Pension	State Police	Judges	LEOPS
		Regular	Correctional	Legislative				
0	8.65%	6.15%	8.90%	3.15%	6.15%	6.15%	3.15%	7.15%
1	7.15%	6.40%	7.15%	3.15%	6.40%	8.65%	3.15%	6.90%
2	5.65%	5.90%	3.40%	3.15%	5.90%	9.15%	3.15%	6.15%
3	5.65%	4.90%	3.40%	3.15%	4.90%	8.90%	3.15%	4.65%
4	5.65%	4.40%	3.40%	3.15%	4.40%	5.15%	3.15%	4.65%
5	5.65%	4.40%	3.90%	3.15%	4.40%	5.15%	3.15%	4.40%
6	5.65%	4.40%	3.90%	3.15%	4.40%	5.15%	3.15%	4.40%
7	5.65%	4.40%	3.65%	3.15%	4.40%	4.40%	3.15%	4.15%
8	5.65%	4.15%	3.40%	3.15%	4.15%	4.40%	3.15%	4.15%
9	5.65%	4.15%	3.40%	3.15%	4.15%	4.40%	3.15%	4.15%

CORS Municipal assumptions were the same as shown for Employees' Retirement Correctional.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Salary Increases

Sample Ages	Annual Rates of Salary Increases for Sample Ages with 10 or More Years of Service							
	Teachers' Retirement & Pension	Employees' Retirement			Employees' Pension	State Police	Judges	LEOPS
		Regular	Correctional	Legislative				
25	5.65%	4.40%	4.15%	3.15%	4.40%	4.40%	3.15%	4.15%
30	5.40%	4.15%	3.90%	3.15%	4.15%	4.40%	3.15%	4.15%
35	5.15%	3.90%	3.65%	3.15%	3.90%	4.15%	3.15%	4.15%
40	4.90%	3.90%	3.65%	3.15%	3.90%	4.15%	3.15%	3.90%
45	4.65%	3.65%	3.65%	3.15%	3.65%	4.15%	3.15%	3.90%
50	4.15%	3.40%	3.15%	3.15%	3.40%	3.90%	3.15%	3.65%
55	3.65%	3.40%	3.15%	3.15%	3.40%	3.15%	3.15%	3.15%
60	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%
65	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%

CORS Municipal assumptions were the same as shown for Employees' Retirement Correctional.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Withdrawal

Sample Ages	Years of Service	Annual Rates of Withdrawal from Active Service													
		Teachers' Retirement & Pension		Employees' Retirement					Employees' Pension		State Police		Judges	LEOPS	
		Male	Female	Regular		Correctional		Legislative	Male	Female	Male	Female		Male	Female
				Male	Female	Male	Female						Male		
All	0	20.00%	16.00%	21.00%	20.00%	16.00%	18.00%	*	21.00%	20.00%	13.00%	13.00%	0.00%	17.00%	17.00%
	1	16.00%	12.50%	15.00%	15.00%	12.00%	16.00%	*	15.00%	15.00%	9.00%	9.00%	0.00%	10.00%	10.00%
	2	14.00%	12.00%	13.00%	13.00%	9.00%	12.00%	*	13.00%	13.00%	7.00%	7.00%	0.00%	8.50%	8.50%
	3	11.00%	9.00%	10.50%	11.00%	8.00%	10.00%	*	10.50%	11.00%	4.25%	4.25%	0.00%	7.00%	7.00%
	4	8.00%	7.75%	8.50%	9.00%	6.00%	10.00%	*	8.50%	9.00%	4.00%	4.00%	0.00%	6.00%	6.00%
	5	6.50%	6.00%	7.25%	6.50%	5.50%	8.50%	*	7.25%	6.50%	3.50%	3.50%	0.00%	5.50%	5.50%
	6	5.75%	5.50%	6.50%	6.00%	5.00%	8.00%	*	6.50%	6.00%	2.50%	2.50%	0.00%	5.00%	5.00%
	7	4.75%	4.75%	5.50%	5.25%	4.00%	7.00%	*	5.50%	5.25%	2.00%	2.00%	0.00%	4.50%	4.50%
	8	3.75%	4.00%	5.00%	4.75%	3.50%	6.00%	*	5.00%	4.75%	2.00%	2.00%	0.00%	3.50%	3.50%
	9	3.00%	3.50%	4.50%	4.00%	3.50%	5.00%	*	4.50%	4.00%	1.50%	1.50%	0.00%	3.50%	3.50%
25	10 & Over	4.00%	3.50%	4.00%	4.00%	3.00%	3.75%	*	4.00%	4.00%	1.00%	1.00%	0.00%	3.50%	3.50%
30		2.00%	2.75%	3.50%	4.00%	3.00%	3.75%	*	3.50%	4.00%	1.00%	1.00%	0.00%	2.50%	2.50%
35		1.75%	2.00%	2.75%	3.25%	3.00%	3.75%	*	2.75%	3.25%	1.00%	1.00%	0.00%	2.00%	2.00%
40		1.50%	1.75%	2.25%	2.50%	3.00%	3.75%	*	2.25%	2.50%	1.00%	1.00%	0.00%	1.75%	1.75%
45		1.50%	1.25%	2.00%	2.25%	3.00%	3.75%	*	2.00%	2.25%	1.00%	1.00%	0.00%	1.75%	1.75%
50		1.50%	1.00%	2.00%	2.00%	3.00%	3.75%	*	2.00%	2.00%	1.00%	1.00%	0.00%	1.75%	1.75%
55		1.50%	1.00%	2.00%	2.00%	3.00%	3.75%	*	2.00%	2.00%	1.00%	1.00%	0.00%	1.75%	1.75%
60		1.50%	1.00%	2.00%	2.00%	3.00%	3.75%	*	2.00%	2.00%	1.00%	1.00%	0.00%	1.75%	1.75%
65	1.50%	1.00%	2.00%	2.00%	3.00%	3.75%	*	2.00%	2.00%	1.00%	1.00%	0.00%	1.75%	1.75%	

CORS Municipal assumptions were the same as shown for Employees' Retirement Correctional.

* 20% of legislative members are assumed to withdraw after 8 years and each fourth year thereafter.

For active members of the Teachers Retirement and Pension Systems and 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% are assumed to elect a deferred benefit.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Summary of Mortality Assumptions

	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 1952)	RP 2014 Employee Mortality Tables with Generational Projection Using MP-2014	
	<u>Collar</u>	<u>Year Projected to in 2014</u>	<u>Life Expectancy</u>	<u>Collar</u>	<u>Year Projected to in 2014</u>
Teachers' Combined System					
Male	Male White Collar Annuitant Table	2012	22.97	Male White Collar Employee Table	2014
Female	Female White Collar Annuitant Table	2016	25.36	Female White Collar Employee Table	2014
Employees' Combined System					
Male	Male Blue Collar Annuitant Table	2010	20.18	Male Blue Collar Employee Table	2014
Female	Female Blue Collar Annuitant Table	2012	23.12	Female Blue Collar Employee Table	2014
State Police					
Male	Male Combined Annuitant Table	2014	21.85	Male Combined Employee Table	2014
Female	Female Combined Annuitant Table	2014	24.04	Female Combined Employee Table	2014
Judges					
Male	Male White Collar Annuitant Table	2012	22.97	Male White Collar Employee Table	2014
Female	Female White Collar Annuitant Table	2016	25.36	Female White Collar Employee Table	2014
LEOPS					
Male	Male Combined Annuitant Table	2014	21.85	Male Combined Employee Table	2014
Female	Female Combined Annuitant Table	2014	24.04	Female Combined Employee Table	2014

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Summary of Mortality Assumptions

Disabled Mortality Assumption			
	RP 2014 Disabled Annuitant Mortality Tables with no projection (static tables)		Future Life Expectancy Age 65 (Birth Year 1952)
	<u>Collar</u>	<u>Set Forward</u>	<u>Life Expectancy</u>
Teachers' Combined System			
Male	Male Disabled Annuitant Table	1	14.38
Female	Female Disabled Annuitant Table	0	17.45
Employees' Combined System			
Male	Male Disabled Annuitant Table	2	13.85
Female	Female Disabled Annuitant Table	3	15.55
Judges			
Male	Male Disabled Annuitant Table	1	14.38
Female	Female Disabled Annuitant Table	0	17.45
	RP 2014 Healthy Annuitant Mortality Tables with Generational Projection Using MP-2014		Future Life Expectancy Age 65 (Birth Year 1952)
	<u>Collar</u>	<u>Year Projected to in 2014</u>	<u>Life Expectancy</u>
State Police			
Male	Male Blue Collar Annuitant Table	2014	20.80
Female	Female Blue Collar Annuitant Table	2014	23.48
LEOPS			
Male	Male Blue Collar Annuitant Table	2014	20.80
Female	Female Blue Collar Annuitant Table	2014	23.48

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Healthy Retired Mortality

Sample Ages in 2017	Actuarial Present Value of \$1 Monthly for Life (Without COLA)											
	Teachers' Retirement & Pension		Employees' Retirement & Pension		Employees' Retirement Correctional & Legislative		State Police		Judges		LEOPS	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
50	\$148.56	\$151.55	\$143.23	\$148.08	\$143.23	\$148.08	\$145.40	\$149.30	\$148.56	\$151.55	\$145.40	\$149.30
55	142.94	146.61	136.36	142.32	136.36	142.32	139.28	143.93	142.94	146.61	139.28	143.93
60	135.60	139.99	127.82	134.87	127.82	134.87	131.65	136.85	135.60	139.99	131.65	136.85
65	125.95	131.34	117.16	125.35	117.16	125.35	122.03	127.75	125.95	131.34	122.03	127.75
70	113.71	120.38	104.47	113.56	104.47	113.56	110.16	116.40	113.71	120.38	110.16	116.40
75	98.97	106.86	89.88	99.64	89.88	99.64	95.93	102.78	98.97	106.86	95.93	102.78
80	82.09	91.05	74.01	84.04	74.01	84.04	79.79	87.15	82.09	91.05	79.79	87.15

Sample Ages in 2017	Future Life Expectancy (Years)											
	Teachers' Retirement & Pension		Employees' Retirement & Pension		Employees' Retirement Correctional & Legislative		State Police		Judges		LEOPS	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
50	37.32	40.11	33.81	37.40	33.81	37.40	35.59	38.44	37.32	40.11	35.59	38.44
55	32.41	35.08	29.05	32.48	29.05	32.48	30.82	33.50	32.41	35.08	30.82	33.50
60	27.62	30.15	24.51	27.71	24.51	27.71	26.25	28.69	27.62	30.15	26.25	28.69
65	22.97	25.36	20.18	23.12	20.18	23.12	21.85	24.04	22.97	25.36	21.85	24.04
70	18.53	20.79	16.17	18.78	16.17	18.78	17.69	19.62	18.53	20.79	17.69	19.62
75	14.41	16.49	12.52	14.78	12.52	14.78	13.82	15.52	14.41	16.49	13.82	15.52
80	10.71	12.58	9.32	11.22	9.32	11.22	10.34	11.82	10.71	12.58	10.34	11.82

CORS Municipal assumptions were the same as shown for Employees' Retirement Correctional.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Disabled Retired Mortality

Sample Ages in 2017	Actuarial Present Value of \$1 Monthly for Life (Without COLA)											
	Teachers' Retirement & Pension		Employees' Retirement & Pension		Employees' Retirement Correctional & Legislative		State Police		Judges		LEOPS	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
50	\$117.89	\$130.17	\$116.82	\$126.71	\$116.82	\$126.71	\$144.11	\$148.44	\$117.89	\$130.17	\$144.11	\$148.44
55	112.15	124.24	110.86	120.13	110.86	120.13	137.38	142.80	112.15	124.24	137.38	142.80
60	105.07	117.05	103.44	111.85	103.44	111.85	129.08	135.54	105.07	117.05	129.08	135.54
65	96.25	107.96	94.29	101.53	94.29	101.53	118.80	126.21	96.25	107.96	118.80	126.21
70	85.81	96.90	83.56	89.57	83.56	89.57	106.54	114.58	85.81	96.90	106.54	114.58
75	74.10	84.51	71.64	76.80	71.64	76.80	92.24	100.79	74.10	84.51	92.24	100.79
80	61.55	71.65	59.01	64.02	59.01	64.02	76.46	85.30	61.55	71.65	76.46	85.30

Sample Ages in 2017	Future Life Expectancy (Years)											
	Teachers' Retirement & Pension		Employees' Retirement & Pension		Employees' Retirement Correctional & Legislative		State Police		Judges		LEOPS	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
50	22.35	27.30	21.82	25.28	21.82	25.28	34.50	37.77	22.35	27.30	34.50	37.77
55	19.70	23.96	19.17	22.00	19.17	22.00	29.71	32.85	19.70	23.96	29.71	32.85
60	17.04	20.69	16.51	18.74	16.51	18.74	25.14	28.08	17.04	20.69	25.14	28.08
65	14.38	17.45	13.85	15.55	13.85	15.55	20.80	23.48	14.38	17.45	20.80	23.48
70	11.79	14.32	11.29	12.55	11.29	12.55	16.75	19.11	11.79	14.32	16.75	19.11
75	9.38	11.44	8.92	9.89	8.92	9.89	13.05	15.08	9.38	11.44	13.05	15.08
80	7.20	8.93	6.80	7.62	6.80	7.62	9.77	11.48	7.20	8.93	9.77	11.48

CORS Municipal assumptions were the same as shown for Employees' Retirement Correctional.

Actuarial Assumptions and Methods

ACTUARIAL ASSUMPTIONS

Accidental Death Mortality Rates		
State Police and 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.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Disability

Sample Ages	Annual Rates of Disability															
	Teachers' Retirement				Teachers' Pension				Employees' Retirement							
	Ordinary		Accidental		Ordinary		Accidental		Ordinary				Accidental			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
25	0.0053%	0.0096%	0.0007%	0.0015%	0.0280%	0.0370%	0.0012%	0.0019%	0.0267%	0.0245%	0.1257%	0.1156%	0.0096%	0.0088%	0.1041%	0.1607%
30	0.0053%	0.0096%	0.0007%	0.0015%	0.0280%	0.0370%	0.0012%	0.0019%	0.0263%	0.0242%	0.1611%	0.1201%	0.0100%	0.0092%	0.1250%	0.1607%
35	0.0053%	0.0226%	0.0007%	0.0035%	0.0280%	0.0470%	0.0012%	0.0024%	0.0455%	0.0423%	0.2013%	0.2076%	0.0140%	0.0130%	0.1577%	0.1607%
40	0.0167%	0.0450%	0.0022%	0.0069%	0.0920%	0.0820%	0.0041%	0.0041%	0.0862%	0.0779%	0.2667%	0.3836%	0.0184%	0.0167%	0.1993%	0.1785%
45	0.0335%	0.0772%	0.0045%	0.0119%	0.1840%	0.1560%	0.0082%	0.0078%	0.1093%	0.1156%	0.3577%	0.5678%	0.0163%	0.0173%	0.2499%	0.2053%
50	0.0502%	0.1126%	0.0067%	0.0173%	0.2750%	0.2630%	0.0122%	0.0132%	0.1320%	0.1656%	0.5115%	0.8141%	0.0145%	0.0182%	0.3540%	0.2678%
55	0.0668%	0.1931%	0.0089%	0.0297%	0.3670%	0.4420%	0.0163%	0.0221%	0.1763%	0.2293%	0.6577%	1.1276%	0.0137%	0.0178%	0.4373%	0.3749%
60	0.0802%	0.1931%	0.0111%	0.0297%	0.3960%	0.3780%	0.0204%	0.0189%	0.2304%	0.3170%	0.8069%	1.5582%	0.0140%	0.0193%	0.4373%	0.3749%

Sample Ages	Annual Rates of Disability													
	Employees' Pension				State Police				Judges		LEOPS			
	Ordinary		Accidental		Ordinary		Accidental		Male	Female	Ordinary		Accidental	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
25	0.1257%	0.0781%	0.0403%	0.0212%	0.1566%	0.4860%	0.5742%	1.7820%	0.0060%	0.0111%	0.1714%	0.5161%	0.3237%	0.6256%
30	0.1611%	0.0772%	0.0423%	0.0223%	0.1996%	0.5207%	0.6098%	1.5912%	0.0060%	0.0111%	0.2197%	0.5530%	0.3458%	0.5586%
35	0.2013%	0.1335%	0.0591%	0.0312%	0.2511%	0.5254%	0.7477%	1.5652%	0.0060%	0.0260%	0.2746%	0.5580%	0.4214%	0.5494%
40	0.2667%	0.2466%	0.0776%	0.0399%	0.3332%	0.6113%	0.8653%	1.5877%	0.0190%	0.0520%	0.3637%	0.6543%	0.4867%	0.5616%
45	0.3577%	0.3650%	0.0689%	0.0414%	0.4466%	0.7443%	0.9593%	1.5991%	0.0379%	0.0891%	0.4878%	0.7933%	0.5399%	0.5636%
50	0.5167%	0.6280%	0.0613%	0.0436%	0.6383%	0.9770%	1.3405%	2.0515%	0.0569%	0.1300%	0.6578%	0.9824%	0.7546%	0.7234%
55	0.7301%	0.8046%	0.0578%	0.0426%	0.8205%	1.4919%	1.7489%	3.1797%	0.0757%	0.2228%	0.6578%	0.9824%	0.9846%	1.1204%
60	0.7402%	0.9026%	0.0591%	0.0462%	1.0065%	2.6214%	2.1617%	5.6299%	0.0947%	0.2228%	0.6578%	0.9824%	1.2174%	1.9812%

CORS Municipal assumptions were the same as shown for Employees' Retirement Correctional.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Normal Retirement

Ages	Annual Rates of Normal Retirement													
	Teachers' Retirement		Teachers' Pension				Employees' Retirement		Legislators*		Employees' Pension			
	All Years of Service		At Least 30 Years		Less Than 30 Years		All Years of Service		All Years of Service		At Least 30 Years		Less Than 30 Years	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
45	15.0%	15.0%	10.0%	9.0%			17.0%	16.0%			12.0%	11.0%		
46	15.0%	15.0%	10.0%	9.0%			17.0%	16.0%			12.0%	11.0%		
47	15.0%	15.0%	10.0%	9.0%			17.0%	16.0%			12.0%	11.0%		
48	15.0%	15.0%	10.0%	9.0%			17.0%	16.0%			12.0%	11.0%		
49	15.0%	15.0%	10.0%	9.0%			17.0%	16.0%			12.0%	11.0%		
50	15.0%	15.0%	10.0%	9.0%			10.0%	11.0%			9.0%	11.0%		
51	15.0%	15.0%	10.0%	9.0%			10.0%	11.0%			9.0%	11.0%		
52	15.0%	15.0%	10.0%	9.0%			10.0%	11.0%			9.0%	11.0%		
53	15.0%	15.0%	10.0%	9.0%			10.0%	11.0%			9.0%	11.0%		
54	15.0%	15.0%	10.0%	9.0%			10.0%	11.0%			9.0%	11.0%		
55	15.0%	15.0%	10.0%	10.0%			11.0%	13.0%			9.0%	10.0%		
56	15.0%	15.0%	10.0%	10.0%			11.0%	13.0%			9.0%	10.0%		
57	15.0%	15.0%	10.0%	10.0%			11.0%	13.0%			9.0%	10.0%		
58	15.0%	15.0%	10.0%	10.0%			11.0%	13.0%			9.0%	10.0%		
59	15.0%	15.0%	10.0%	11.0%			11.0%	13.0%			9.0%	10.0%		
60	15.0%	18.0%	13.0%	15.0%			13.0%	13.0%	10.0%	10.0%	10.0%	14.0%		
61	15.0%	18.0%	16.0%	18.0%			15.0%	18.0%	10.0%	10.0%	13.0%	14.0%		
62	28.0%	25.0%	25.0%	25.0%	14.0%	21.0%	27.0%	22.0%	10.0%	10.0%	25.0%	28.0%	16.0%	18.0%
63	23.0%	20.0%	23.0%	23.0%	14.0%	16.0%	23.0%	22.0%	10.0%	10.0%	23.0%	24.0%	13.0%	16.0%
64	20.0%	20.0%	19.0%	23.0%	14.0%	16.0%	19.0%	22.0%	10.0%	10.0%	18.0%	20.0%	13.0%	14.0%
65	20.0%	25.0%	25.0%	25.0%	16.0%	18.0%	20.0%	22.0%	30.0%	30.0%	17.0%	20.0%	13.0%	16.0%
66	20.0%	25.0%	25.0%	25.0%	16.0%	22.0%	25.0%	25.0%	30.0%	30.0%	25.0%	25.0%	18.0%	18.0%
67	20.0%	20.0%	20.0%	25.0%	16.0%	20.0%	25.0%	22.0%	30.0%	30.0%	25.0%	22.0%	16.0%	17.0%
68	20.0%	18.0%	20.0%	25.0%	16.0%	18.0%	18.0%	22.0%	30.0%	30.0%	18.0%	22.0%	14.0%	15.0%
69	20.0%	18.0%	20.0%	25.0%	16.0%	18.0%	18.0%	22.0%	30.0%	30.0%	18.0%	18.0%	14.0%	15.0%
70	20.0%	18.0%	25.0%	25.0%	16.0%	20.0%	20.0%	20.0%	35.0%	35.0%	22.0%	22.0%	16.0%	18.0%
71	15.0%	18.0%	25.0%	25.0%	16.0%	20.0%	20.0%	20.0%	35.0%	35.0%	22.0%	20.0%	13.0%	15.0%
72	15.0%	18.0%	25.0%	25.0%	16.0%	15.0%	20.0%	20.0%	35.0%	35.0%	22.0%	20.0%	13.0%	15.0%
73	15.0%	18.0%	25.0%	25.0%	16.0%	15.0%	20.0%	20.0%	35.0%	35.0%	22.0%	20.0%	13.0%	15.0%
74	15.0%	18.0%	25.0%	25.0%	16.0%	15.0%	20.0%	20.0%	35.0%	35.0%	22.0%	20.0%	13.0%	15.0%
75 & Over	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Retirement rates for Legislative members are assumed to apply every four years to members eligible for retirement (beginning with the year ending June 30, 2015, and each fourth year thereafter).

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Normal Retirement

Ages	Annual Rates of Normal Retirement													
	Correctional Officers				State Police *				Judges		LEOPS			
	At Least 20 Years		Less Than 20 Years		At Least 22 Years		Less Than 22 Years		All Years of Service		At Least 25 Years		Less Than 25 Years	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
40	23.0%	23.0%			25.0%	25.0%					40.0%	40.0%		
41	18.0%	18.0%			25.0%	25.0%					40.0%	40.0%		
42	18.0%	18.0%			30.0%	30.0%					40.0%	40.0%		
43	16.0%	16.0%			30.0%	30.0%					40.0%	40.0%		
44	16.0%	16.0%			35.0%	35.0%					40.0%	40.0%		
45	15.0%	15.0%			35.0%	35.0%					36.0%	36.0%		
46	14.0%	14.0%			35.0%	35.0%					36.0%	36.0%		
47	14.0%	14.0%			35.0%	35.0%					36.0%	36.0%		
48	13.0%	13.0%			35.0%	35.0%					36.0%	36.0%		
49	13.0%	13.0%			35.0%	35.0%					36.0%	36.0%		
50	13.0%	13.0%			30.0%	30.0%	10.0%	10.0%			32.0%	32.0%	5.0%	5.0%
51	12.0%	12.0%			30.0%	30.0%	10.0%	10.0%			32.0%	32.0%	5.0%	5.0%
52	12.0%	12.0%			30.0%	30.0%	10.0%	10.0%			32.0%	32.0%	5.0%	5.0%
53	12.0%	12.0%			30.0%	30.0%	10.0%	10.0%			20.0%	20.0%	5.0%	5.0%
54	12.0%	12.0%			30.0%	30.0%	10.0%	10.0%			25.0%	25.0%	5.0%	5.0%
55	12.0%	12.0%	4.5%	4.5%	35.0%	35.0%	15.0%	15.0%			23.0%	23.0%	5.0%	5.0%
56	11.0%	11.0%	4.5%	4.5%	35.0%	35.0%	15.0%	15.0%			23.0%	23.0%	5.0%	5.0%
57	11.0%	11.0%	4.5%	4.5%	35.0%	35.0%	15.0%	15.0%			23.0%	23.0%	5.0%	5.0%
58	11.0%	11.0%	4.5%	4.5%	35.0%	35.0%	15.0%	15.0%			23.0%	23.0%	5.0%	5.0%
59	11.0%	11.0%	4.5%	4.5%	35.0%	35.0%	15.0%	15.0%			18.0%	18.0%	5.0%	5.0%
60	11.0%	11.0%	4.5%	4.5%	100.0%	100.0%	100.0%	100.0%	8.0%	15.0%	23.0%	23.0%	8.0%	8.0%
61	13.0%	13.0%	4.5%	4.5%					8.0%	10.0%	23.0%	23.0%	8.0%	8.0%
62	30.0%	30.0%	12.0%	12.0%					8.0%	10.0%	30.0%	30.0%	15.0%	15.0%
63	30.0%	30.0%	12.0%	12.0%					8.0%	10.0%	30.0%	30.0%	15.0%	15.0%
64	20.0%	20.0%	12.0%	12.0%					8.0%	10.0%	30.0%	30.0%	15.0%	15.0%
65	30.0%	30.0%	12.0%	12.0%					8.0%	10.0%	50.0%	50.0%	50.0%	50.0%
66	30.0%	30.0%	25.0%	25.0%					10.0%	15.0%	50.0%	50.0%	50.0%	50.0%
67	30.0%	30.0%	20.0%	20.0%					10.0%	15.0%	50.0%	50.0%	50.0%	50.0%
68	30.0%	30.0%	20.0%	20.0%					10.0%	15.0%	50.0%	50.0%	50.0%	50.0%
69	30.0%	30.0%	20.0%	20.0%					15.0%	20.0%	50.0%	50.0%	50.0%	50.0%
70 & Over	100.0%	100.0%	100.0%	100.0%					100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* 50% of participants are expected to elect DROP participation.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Normal Retirement

Ages	Additional Rates to Add to Annual Rates of Normal Retirement at Age of First Eligibility							
	Teachers' Pension Reformed				Employees' Pension Reformed			
	At Least 30 Years		Less Than 30 Years		At Least 30 Years		Less Than 30 Years	
	Male	Female	Male	Female	Male	Female	Male	Female
55 and Under	33.0%	30.0%			35.0%	35.0%		
56	26.0%	23.0%			28.0%	28.0%		
57	19.0%	17.0%			21.0%	21.0%		
58	11.0%	9.0%			14.0%	14.0%		
59	2.0%	1.0%			7.0%	7.0%		
60	0.0%	0.0%			0.0%	0.0%		
61	0.0%	0.0%			0.0%	0.0%		
62	0.0%	0.0%			0.0%	0.0%		
63	0.0%	0.0%			0.0%	0.0%		
64	0.0%	0.0%			0.0%	0.0%		
65+	0.0%	0.0%	20.0%	15.0%	0.0%	0.0%	25.0%	25.0%

State Police Reformed: Add additional 20% to annual rate at age of first eligibility if under age 50.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Rates of Early Retirement

Ages	Annual Rates of Early Retirement *											
	Teachers' Retirement		Teachers' Pension				Employees' Retirement		Employees' Pension			
			Non-Reformed		Reformed				Non-Reformed		Reformed	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
40	5.0%	5.0%					5.0%	5.0%				
41	5.0%	5.0%					5.0%	5.0%				
42	5.0%	5.0%					5.0%	5.0%				
43	5.0%	5.0%					5.0%	5.0%				
44	5.0%	5.0%					5.0%	5.0%				
45	5.0%	5.0%					5.0%	5.0%				
46	5.0%	5.0%					5.0%	5.0%				
47	5.0%	5.0%					5.0%	5.0%				
48	5.0%	5.0%					5.0%	5.0%				
49	5.0%	5.0%					5.0%	5.0%				
50	5.0%	5.0%					5.0%	5.0%				
51	5.0%	5.0%					5.0%	5.0%				
52	5.0%	5.0%					5.0%	5.0%				
53	5.0%	5.0%					5.0%	5.0%				
54	5.0%	5.0%					5.0%	5.0%				
55	10.0%	10.0%	1.5%	2.0%			5.0%	5.0%	2.0%	2.0%		
56	5.0%	5.0%	1.5%	2.5%			5.0%	5.0%	1.5%	2.5%		
57	5.0%	5.0%	1.5%	3.0%			5.0%	5.0%	2.0%	2.5%		
58	5.0%	5.0%	2.5%	3.0%			5.0%	5.0%	2.0%	3.0%		
59	5.0%	5.0%	3.5%	3.5%			5.0%	5.0%	2.5%	3.0%		
60			3.5%	5.0%	8.0%	12.5%			4.0%	4.5%	9.5%	11.5%
61			6.5%	7.0%	6.5%	7.0%			6.0%	5.5%	6.0%	5.5%
62					7.0%	7.5%					6.5%	6.0%
63					7.5%	8.0%					7.0%	6.5%
64					8.0%	8.5%					7.5%	7.0%

* Divisions without early retirement eligibility are not shown.

Actuarial Assumptions and Methods

A. ACTUARIAL ASSUMPTIONS

Social Security Covered Compensation

Teachers' Retirement	Not applicable
Teachers' Pension	Future covered compensation levels, used to estimate member contributions and retirement allowances, were calculated using a 3.15% per annum compounded increase in the 2017 Social Security Maximum Taxable Wage Base.
Employees' Retirement	Not applicable
Employees' Pension	Future covered compensation levels, used to estimate member contributions and retirement allowances, were calculated using a 3.15% per annum compounded increase in the 2017 Social Security Maximum Taxable Wage Base.
State Police Retirement	Not applicable
Judges' Pension	Not applicable
LEOPS	Future covered compensation levels, used to estimate member contributions and retirement allowances, were calculated using a 3.15% per annum compounded increase in the 2017 Social Security Maximum Taxable Wage Base.
Correctional Officers' Retirement System	Not applicable

Actuarial Assumptions and Methods

B. ACTUARIAL PROCEDURES

1. Asset Valuation Method

All six 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 assets reflects annually one-fifth of the market value gains or losses 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 or losses included the difference between market and actuarial assets as of June 30, 2006.

For the Employees' Retirement and 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.

Actuarial Assumptions and Methods

B. ACTUARIAL PROCEDURES

2. Funding Method

All six 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 the member's 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 for all members is the actuarial liability less the actuarial value of the System's assets.

The System's unfunded actuarial liability is funded over a 25-year closed amortization period ending June 30, 2039 (21 years remaining as of June 30, 2017) as a level percentage of payroll.

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 2018 are equal to the budgeted contributions developed in the valuation as of June 30, 2016, plus the proportionate share of reinvested savings allocated to each System for fiscal year 2018 under the pension reforms.

A portion of the savings from the 2011 pension reforms passed by the General Assembly are to be reinvested as additional contributions into the Systems. Beginning in fiscal year 2016, \$75 million of additional contributions are to be reinvested each year until the combined System reaches 85% funded.

Summary of Assumptions Used

June 30, 2017

Miscellaneous and Technical Assumptions

Marriage Assumption:	75% of males and females are assumed to be married for purposes of death-in-service benefits.
Pay Increase Timing:	Teachers' Systems assume beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date. All other Systems assume 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, except for Teachers' Systems which assumed beginning of year (i.e., July 1) for retirement and termination.
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.
Actuarial Equivalence:	
TCS, ECS, & Judges	5.85% interest, RP 2014 Combined Annuitant Mortality, 50% Unisex, 2.29% COLA pre-reform, 1.49% COLA post-reform
State Police & LEOPS	5.85% interest, RP 2014 Combined Annuitant Mortality, 85% Unisex, 2.46% COLA pre-reform, 1.49% COLA post-reform

Summary of Assumptions Used

June 30, 2017

Miscellaneous and Technical Assumptions

Reinvested Savings Allocation: Total savings from the 2011 pension reforms that are to be reinvested in each of the Systems as additional contributions are allocated between the Systems in proportion to the savings as measured in the actuarial valuation as of June 30, 2011.

Vested Deferred Benefit Commencement: Active members assumed to terminate with a vested benefit, current vested deferred, and inactive members are assumed to commence receiving benefits at the following ages.:

Correctional Officers: Age 55

Employees' and Teachers' Retirement, Judges, and Legislators: Age 60

Employees' and Teachers' Pension: Age 62 or age 55 if the member has at least 15 years of service

Employees' and Teachers' Pension Reformed: Age 65 or age 60 if the member has at least 15 years of service

LEOPS and State Police: Age 50

Liability Adjustments: An additional liability was added to the aggregate results for Teachers' and 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 amounts are \$200,000,000 for TPS and \$48,070,000 for EPS state.

For State Police and LEOPS, the value of the DROP interest credits of 4% to 6% vs. the valuation interest rate of 7.50% 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 3.86 years for State Police and 4.73 years for LEOPS, based on the average projected DROP period of current DROP members in the data provided by the SRA.

<u>Load Applied to</u>	<u>Load Factor</u>	
	<u>State Police</u>	<u>LEOPS</u>
Active Normal Retirement Decrement	0.9925	0.9890
Liabilities for Members in the DROP	0.9944	0.9924
DROP Account Balances	0.9359	0.9276

Definitions of Technical Terms

Accrued Service

Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability

The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as "past service liability."

Actuarial Assumptions

Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method

A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future benefits" between future normal costs and Actuarial Accrued Liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent

One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

Actuarial Gain (Loss)

The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

Actuarial Present Value

The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payments.

Amortization

Paying off an interest-discounted amount with periodic payments of interest and (generally) principal -- as opposed to paying off with a lump sum payment.

Definitions of Technical Terms

Normal Cost

The portion of the actuarial present value of future benefits that is assigned to the current year by the actuarial cost method. Sometimes referred to as "current service cost."

Projected Benefit Obligation

The portion of a member's projected benefit attributable to service before the valuation date - allocated based on the ratio of accrued service to projected total service and based on anticipated future compensation.

Unfunded Actuarial Accrued Liabilities

The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as "unfunded past service liability" or "unfunded supplemental present value."

Most retirement systems have unfunded actuarial accrued liabilities. They arise each time new benefits are added and each time an actuarial loss occurs.

The existence of unfunded actuarial accrued liabilities is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liabilities do not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liabilities and the trend in their amount (after due allowance for devaluation of the dollar).

APPENDIX B

MEMBERSHIP INFORMATION

State Retirement and Pension System Summary of Membership Data as of June 30, 2017 (State and Municipal)

		Active Members		Retirees and Beneficiaries					Vested Former Members (Includes Inactives)	Total
		Number	Salary	Number	Benefits#	Avg. Monthly Benefit	Avg. Age	Avg. Age at Ret.*		
Teachers' Retirement - STATE	Total	124	\$ 14,147,889							
	Vested	124	\$ 14,147,889							
	Non-vested	0	\$ -	3,622	\$ 133,155,542	\$ 3,064	79.8	62.1	97	3,843
Teachers' Pension - STATE	Total	8,915	\$ 527,496,758							
	Vested	5,464	\$ 358,283,285							
	Non-vested	3,451	\$ 169,213,473	5,625	\$ 93,196,142	\$ 1,381	72.6	63.3	3,163	17,703
Teachers' Retirement - LOCAL	Total	413	\$ 37,688,479							
	Vested	413	\$ 37,688,479							
	Non-vested	0	\$ -	23,140	\$ 883,344,481	\$ 3,181	76.9	58.3	171	23,724
Teachers' Pension - LOCAL	Total	96,850	\$ 6,201,505,226							
	Vested	65,686	\$ 4,688,144,935							
	Non-vested	31,164	\$ 1,513,360,291	43,122	\$ 978,669,181	\$ 1,891	70.1	61.8	22,062	162,034
Employees' Retirement	Total	7,632	\$ 389,389,294							
	Vested	5,772	\$ 307,394,293							
	Non-vested	1,860	\$ 81,995,001	20,734	\$ 478,063,829	\$ 1,921	73.4	57.0	777	29,143
Employees' Pension	Total	74,455	\$ 3,929,663,604							
	Vested	47,139	\$ 2,701,268,418							
	Non-vested	27,316	\$ 1,228,395,186	55,206	\$ 803,455,634	\$ 1,213	69.8	62.1	26,960	156,621
State Police	Total	1,371	\$ 100,384,047							
	Vested	972	\$ 79,366,371							
	Non-vested	399	\$ 21,017,676	2,572	\$ 120,251,026	\$ 3,896	63.5	47.9	90	4,033
Judges	Total	312	\$ 46,875,642							
	Vested	204	\$ 30,845,478							
	Non-vested	108	\$ 16,030,164	417	\$ 31,359,577	\$ 6,267	77.3	65.1	9	738
LEOPS	Total	2,574	\$ 166,560,857							
	Vested	1,702	\$ 119,871,756							
	Non-vested	872	\$ 46,689,101	1,896	\$ 64,927,090	\$ 2,854	60.1	52.6	295	4,765
CORS	Total	96	\$ 5,261,521							
	Vested	61	\$ 3,612,099							
	Non-vested	35	\$ 1,649,422	32	\$ 830,653	\$ 2,163	59.4	56.7	4	132
Total Systems	Total	192,742	\$ 11,418,973,317							
	Vested	127,537	\$ 8,340,623,003							
	Non-vested	65,205	\$ 3,078,350,314	156,366	\$ 3,587,253,156	\$ 1,912	71.5	60.6	53,628	402,736

* Includes normal and early service retirees only.

Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017.

State Retirement and Pension System Summary of Membership Data as of June 30, 2017 (State Only)

		Active Members		Retirees and Beneficiaries				Vested Former Members (Includes Inactives)		Total
		Number	Salary	Number	Benefits#	Avg. Monthly Benefit	Avg. Age	Avg. Age at Ret.*	Number	Number
Teachers' Retirement - STATE	Total	124	\$ 14,147,889							
	Vested	124	\$ 14,147,889							
	Non-vested	0	\$ -	3,622	\$ 133,155,542	\$ 3,064	79.8	62.1	97	3,843
Teachers' Pension - STATE	Total	8,915	\$ 527,496,758							
	Vested	5,464	\$ 358,283,285							
	Non-vested	3,451	\$ 169,213,473	5,625	\$ 93,196,142	\$ 1,381	72.6	63.3	3,163	17,703
Teachers' Retirement - LOCAL	Total	413	\$ 37,688,479							
	Vested	413	\$ 37,688,479							
	Non-vested	0	\$ -	23,140	\$ 883,344,481	\$ 3,181	76.9	58.3	171	23,724
Teachers' Pension - LOCAL	Total	96,850	\$ 6,201,505,226							
	Vested	65,686	\$ 4,688,144,935							
	Non-vested	31,164	\$ 1,513,360,291	43,122	\$ 978,669,181	\$ 1,891	70.1	61.8	22,062	162,034
Employees' Retirement	Total	7,566	\$ 385,359,172							
	Vested	5,706	\$ 303,364,171							
	Non-vested	1,860	\$ 81,995,001	17,730	\$ 416,428,110	\$ 1,957	72.5	56.6	752	26,048
Employees' Pension	Total	50,049	\$ 2,833,238,419							
	Vested	32,262	\$ 1,949,868,219							
	Non-vested	17,787	\$ 883,370,200	40,526	\$ 623,341,199	\$ 1,282	69.7	61.7	20,135	110,710
State Police	Total	1,371	\$ 100,384,047							
	Vested	972	\$ 79,366,371							
	Non-vested	399	\$ 21,017,676	2,572	\$ 120,251,026	\$ 3,896	63.5	47.9	90	4,033
Judges	Total	312	\$ 46,875,642							
	Vested	204	\$ 30,845,478							
	Non-vested	108	\$ 16,030,164	417	\$ 31,359,577	\$ 6,267	77.3	65.1	9	738
LEOPS	Total	1,564	\$ 106,826,152							
	Vested	1,026	\$ 76,208,065							
	Non-vested	538	\$ 30,618,087	1,482	\$ 49,994,236	\$ 2,811	61.3	52.7	190	3,236
Total Systems	Total	167,164	\$ 10,253,521,784							
	Vested	111,857	\$ 7,537,916,892							
	Non-vested	55,307	\$ 2,715,604,892	138,236	\$ 3,329,739,496	\$ 2,007	71.6	60.3	46,669	352,069

* Includes normal and early service retirees only.

Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017.

State Retirement and Pension System Summary of Membership Data as of June 30, 2017 (Municipal Only)

		Active Members		Retirees and Beneficiaries				Vested Former Members (Includes Inactives)	Total	
		Number	Salary	Number	Benefits#	Avg. Monthly Benefit	Avg. Age	Avg. Age at Ret.*	Number	Number
Employees' Retirement	Total	66	\$ 4,030,122							
	Vested	66	\$ 4,030,122							
	Non-vested	0	\$ -	3,004	\$ 61,635,718	\$ 1,710	78.7	59.8	25	3,095
Employees' Pension	Total	24,406	\$ 1,096,425,185							
	Vested	14,877	\$ 751,400,199							
	Non-vested	9,529	\$ 345,024,986	14,680	\$ 180,114,435	\$ 1,022	70.0	63.2	6,825	45,911
LEOPS	Total	1,010	\$ 59,734,705							
	Vested	676	\$ 43,663,691							
	Non-vested	334	\$ 16,071,014	414	\$ 14,932,854	\$ 3,006	56.0	52.4	105	1,529
CORS	Total	96	\$ 5,261,521							
	Vested	61	\$ 3,612,099							
	Non-vested	35	\$ 1,649,422	32	\$ 830,653	\$ 2,163	59.4	56.7	4	132
Total Systems	Total	25,578	\$ 1,165,451,533							
	Vested	15,680	\$ 802,706,111							
	Non-vested	9,898	\$ 362,745,422	18,130	\$ 257,513,660	\$ 1,184	71.1	62.4	6,959	50,667

* Includes normal and early service retirees only.

Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017.

Active Membership Information

Maryland State Retirement and Pension System				
Active Membership Statistics				
June 30, 2017				
System	Number	Average Age	Average Credited Service	Average Salary
Teachers' Retirement	537	66.2	41.2	\$ 96,530
Teachers' Pension	105,765	44.9	11.8	63,622
Employees' Retirement – State	390	64.3	40.7	75,982
Employees' Retirement – Municipal	66	63.1	40.6	61,062
Employees' Retirement – Legislators	188	55.5	9.4	48,777
Employees' Retirement – Correctional Officers	6,988	43.9	12.3	49,593
Employees' Retirement – Total	7,632	45.4	13.9	51,021
Employees' Pension – State	50,049	48.3	12.5	56,609
Employees' Pension – Municipal	24,406	49.2	10.8	44,924
Employees' Pension – Total	74,455	48.6	12.0	52,779
State Police	1,371	35.9	11.6	73,220
Judges	312	57.9	8.7	150,242
LEOPS – State	1,564	42.8	10.9	68,303
LEOPS – Municipal	1,010	39.1	10.7	59,143
LEOPS – Total	2,574	41.3	10.8	64,709
CORS	96	40.9	9.5	54,808
TOTAL SYSTEMS	192,742	46.3	12.1	59,245
	Teachers' Retirement		Employees' Retirement	
	Number	Earnings	Number	Earnings
Unlimited COLA	317	\$ 31,868,366	279	\$ 20,773,537
5% COLA Cap	136	12,577,151	137	10,225,442
Bifurcate	84	7,390,851	40	2,664,296
	<u>537</u>	<u>\$ 51,836,368</u>	<u>456</u>	<u>\$ 33,663,275</u>

Active Membership – Age & Service Distribution

June 30, 2017

Teachers' Combined System

Age Nearest Birthday	Nearest Whole Years of Service on the Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	12							12	\$ 212,958
20-24	2,097	5						2,102	86,771,804
25-29	8,382	2,269	13					10,664	505,004,345
30-34	4,329	5,511	2,730	12				12,582	694,650,099
35-39	2,971	2,580	6,128	1,792	5			13,476	851,699,858
40-44	2,558	1,864	3,004	4,470	1,028	1		12,925	894,096,326
45-49	2,712	2,124	2,694	3,105	3,353	815	8	14,811	1,044,691,586
50-54	2,027	1,841	2,500	2,247	1,743	2,114	573	13,045	891,447,083
55-59	1,294	1,390	2,447	2,376	1,562	1,283	1,592	11,944	795,100,103
60	197	215	428	454	319	265	377	2,255	150,510,234
61	159	182	407	456	311	235	401	2,151	148,062,729
62	136	176	303	395	318	245	355	1,928	132,342,357
63	105	131	263	312	300	181	320	1,612	111,919,189
64	104	123	260	258	219	181	323	1,468	101,628,463
65	74	94	185	220	175	179	327	1,254	92,421,023
66	61	83	164	172	152	119	282	1,033	73,521,818
67	50	65	120	115	90	72	194	706	51,499,789
68	44	50	93	91	63	72	140	553	37,437,620
69	34	28	70	77	57	45	110	421	28,775,025
70	30	30	76	47	36	38	103	360	24,127,812
71	20	24	43	41	23	31	76	258	17,034,189
72	16	17	33	30	19	11	38	164	10,425,879
73	7	15	25	25	14	16	50	152	10,069,350
74	12	6	19	19	12	8	32	108	7,313,181
75	7	4	18	17	5	4	36	91	5,645,971
76	3	4	11	10	6	8	19	61	3,705,250
77	4	4	11	5	5	5	15	49	3,145,469
78	2	3	9	3		1	13	31	2,303,020
79+	1	10	9	15	8	6	37	86	5,275,822
Totals	27,448	18,848	22,063	16,764	9,823	5,935	5,421	106,302	\$6,780,838,352

Active Membership – Age & Service Distribution

June 30, 2017

Employees' Combined System

Age Nearest Birthday	Nearest Whole Years of Service on the Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	26							26	\$ 506,078
20-24	1,219	13						1,232	40,906,300
25-29	4,220	843	52					5,115	208,171,219
30-34	3,799	2,422	1,099	18				7,338	338,955,329
35-39	3,248	1,989	1,978	631	16			7,862	394,158,903
40-44	2,439	1,796	1,893	1,711	426	16		8,281	434,467,862
45-49	2,575	1,924	1,954	2,078	1,329	598	72	10,530	571,425,986
50-54	2,455	1,998	2,200	2,108	1,481	1,484	992	12,718	696,681,453
55-59	2,119	1,804	2,040	2,090	1,436	1,495	2,197	13,181	741,030,875
60	319	348	386	380	257	271	478	2,439	138,057,994
61	341	321	316	348	255	250	505	2,336	133,930,657
62	241	254	314	364	214	192	492	2,071	119,356,830
63	192	238	268	271	165	162	382	1,678	97,318,895
64	174	167	237	204	118	150	342	1,392	81,935,114
65	140	181	192	161	114	118	262	1,168	67,980,694
66	96	132	173	152	96	88	252	989	58,228,219
67	88	115	124	125	64	66	175	757	43,968,139
68	68	88	139	100	55	50	126	626	34,269,052
69	62	82	89	84	51	37	127	532	29,519,823
70	43	49	78	67	46	38	84	405	22,398,653
71	45	47	64	45	28	21	56	306	15,661,869
72	30	26	42	29	26	20	49	222	11,062,699
73	27	37	35	39	15	15	38	206	9,634,605
74	20	19	30	27	13	11	19	139	6,677,747
75	47	16	27	19	11	11	21	152	6,217,211
76	11	16	19	15	8	4	20	93	4,106,629
77	19	12	17	15	8	5	13	89	3,493,240
78	9	4	10	8	6	7	9	53	2,182,453
79+	2	12	31	36	17	14	39	151	6,748,370
Totals	24,074	14,953	13,807	11,125	6,255	5,123	6,750	82,087	\$4,319,052,898

Active Membership – Age & Service Distribution

June 30, 2017

State Police

Age Nearest Birthday	Nearest Whole Years of Service on the Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	12							12	\$ 306,024
20-24	97	13						110	4,820,709
25-29	123	118	20					261	15,525,093
30-34	40	112	105	15				272	18,491,058
35-39	12	36	79	96	4			227	17,361,244
40-44	7	8	41	71	77	2		206	17,913,621
45-49	4	13	23	35	102	21	1	199	18,143,864
50-54		2	11	14	28	8	7	70	6,449,496
55-59			1	5	3	2	3	14	1,372,938
Totals	295	302	280	236	214	33	11	1,371	\$100,384,047

Active Membership – Age & Service Distribution

June 30, 2017

Judges

Age Nearest Birthday	Nearest Whole Years of Service on the Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
35-39	2							2	\$ 282,666
40-44	12							12	1,761,496
45-49	24	11						35	5,182,455
50-54	24	12	6	2				44	6,573,752
55-59	23	19	13	20				75	11,272,275
60	4	4	2	9				19	2,877,927
61	6	2	3	5				16	2,401,528
62	3	4	5	5				17	2,507,461
63	2	3	3	6				14	2,131,662
64	1	1	1	6				9	1,359,797
65	2	5	8	1				16	2,467,828
66	2	3	1	3				9	1,439,797
67		2	4	7				13	1,951,029
68		1	4	10				15	2,250,407
69		1	2	7				10	1,502,064
70		1	1	4				6	913,498
Totals	105	69	53	85	0	0	0	312	\$46,875,642

Active Membership – Age & Service Distribution

June 30, 2017

LEOPS

Age Nearest Birthday	Nearest Whole Years of Service on the Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	78	1						79	\$ 3,558,111
25-29	222	122	9					353	18,230,792
30-34	106	169	92	6				373	21,248,057
35-39	61	71	125	93	1			351	21,789,198
40-44	46	53	88	98	53	2		340	22,728,280
45-49	58	49	69	104	163	33		476	34,099,134
50-54	50	56	47	42	62	37	13	307	22,503,527
55-59	27	31	30	18	28	7	13	154	11,582,557
60	2	4	8	4	7	2	2	29	2,383,706
61	2	5	5	5	1		3	21	1,629,067
62		10	6	1	3	1	3	24	1,750,824
63	1	1	9	1	1		1	14	1,019,682
64	4	2	3	2	2		2	15	1,015,345
65		1	1	1	1			4	216,873
66		1	4	3	2	1	3	14	1,278,221
67		2		2			1	5	467,079
68		2	2	1				5	347,530
69		1	2	3				6	401,330
70				1	1			2	180,558
74				1				1	40,558
76					1			1	90,428
Totals	657	581	500	386	326	83	41	2,574	\$166,560,857

Active Membership – Age & Service Distribution

June 30, 2017

CORS

Age Nearest Birthday	Nearest Whole Years of Service on the Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	1							1	\$ 46,530
25-29	9	6	1					16	745,909
30-34	9	6	2					17	833,334
35-39	1	5	3	2				11	618,614
40-44	3	4	1	4	2			14	816,526
45-49		5	4	3	3			15	881,131
50-54		4			1			5	250,557
55-59	1	4	4	3	2		2	16	1,017,606
61		1						1	51,314
Totals	24	35	15	12	8	0	2	96	\$5,261,521

Retired Membership Statistics June 30, 2017 (State and Municipal)

System	Number	Average Age	Average Credited Service*	Average Final Average Salary*	Average Benefit
Teachers' Retirement	26,762	77.3	28.7	\$ 52,122	\$ 37,983
Teachers' Pension	48,747	70.4	21.9	57,838	21,988
Employees' Retirement – State	17,730	72.5	24.3	38,910	23,487
Employees' Retirement – Municipal	3,004	78.7	24.9	31,104	20,518
Employees' Retirement – Total	20,734	73.4	24.4	37,779	23,057
Employees' Pension – State	40,526	69.7	20.8	44,486	15,381
Employees' Pension – Municipal	14,680	70.0	17.9	38,180	12,269
Employees' Pension – Total	55,206	69.8	20.0	42,809	14,554
State Police	2,572	63.5	22.5	50,869	46,754
Judges	417	77.3	13.7	147,794	75,203
LEOPS – State	1,482	61.3	22.2	57,193	33,734
LEOPS – Municipal	414	56.0	22.0	63,313	36,070
LEOPS – Total	1,896	60.1	22.1	58,529	34,244
CORS – Municipal	32	59.4	20.2	64,195	25,958
Total - State	138,236	71.6	23.2	50,524	24,087
Total - Municipal	18,130	71.1	19.1	37,628	14,204
TOTAL SYSTEMS	156,366	71.5	22.7	49,029	22,941

* Only non-zero values included in averages.

Retired Membership Statistics –by Type
June 30, 2017
(State and Municipal)

System	Service Retirees		Disabilities		Beneficiaries	
	Number	Average Age	Number	Average Age	Number	Average Age
Teachers' Retirement	23,597	77.1	687	76.4	2,478	79.8
Teachers' Pension	43,462	70.9	3,827	63.6	1,458	71.4
Employees' Retirement – State	13,609	72.8	1,634	61.4	2,487	78.4
Employees' Retirement – Municipal	2,230	78.6	207	76.4	567	79.8
Employees' Retirement – Total	15,839	73.6	1,841	63.1	3,054	78.7
Employees' Pension – State	32,701	70.7	5,513	63.2	2,312	71.1
Employees' Pension – Municipal	11,250	71.8	2,656	62.5	774	70.6
Employees' Pension – Total	43,951	71.0	8,169	62.9	3,086	71.0
State Police	1,612	64.3	630	56.4	330	72.7
Judges	302	75.3	3	69.6	112	82.7
LEOPS – State	1,079	63.2	314	53.6	89	65.3
LEOPS – Municipal	300	58.7	99	48.8	15	50.5
LEOPS – Total	1,379	62.2	413	52.4	104	63.2
CORS – Municipal	26	61.2	6	51.8		
Total - State	116,362	72.2	12,608	63.2	9,266	75.6
Total - Municipal	13,806	72.6	2,968	63.0	1,356	74.2
TOTAL SYSTEMS	130,168	72.2	15,576	63.2	10,622	75.4

Retired Membership – Attained Age June 30, 2017 (State and Municipal)

Age at Valuation Date	Teachers'		Employees		State Police		Judges		LEOPS		CORS (Municipal)		Total	
	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Annual Benefits	
Under 30	9	\$ 84,080	37	\$ 343,106	4	\$ 131,244	-	-	7	\$ 145,171	-	-	57	\$ 703,603
30-34	24	668,167	60	1,182,718	11	433,255	-	-	14	485,100	-	-	109	2,769,239
35-39	51	1,578,869	137	2,739,502	19	724,120	-	-	31	1,059,911	-	-	238	6,102,401
40-44	129	4,063,127	314	6,969,774	78	3,464,783	-	-	52	1,979,365	-	-	573	16,477,050
45-49	211	6,027,878	917	20,121,308	223	11,038,918	-	-	152	5,734,292	2	\$ 22,153	1,505	42,944,550
50-54	513	15,604,275	2,282	51,062,064	388	18,530,942	-	-	316	11,341,676	6	152,205	3,505	96,691,162
55-59	1,879	55,935,226	4,903	105,699,637	322	15,624,699	2	\$ 70,667	358	12,907,084	10	299,170	7,474	190,536,482
60-64	8,391	251,991,486	10,909	217,199,091	357	17,679,165	24	1,910,929	359	12,547,338	7	164,831	20,047	501,492,841
65-69	19,893	570,309,442	17,894	308,479,688	360	16,997,949	59	5,126,246	325	10,549,665	5	101,546	38,536	911,564,536
70-74	18,459	504,438,894	15,308	247,499,955	354	15,864,718	96	7,263,848	172	5,086,888	1	15,739	34,390	780,170,042
75-79	11,127	290,845,125	9,958	143,421,083	237	9,835,359	87	7,126,336	63	1,882,873	1	75,008	21,473	453,185,785
80-84	7,363	191,865,811	6,819	92,182,009	137	5,724,641	66	4,684,048	37	963,719	-	-	14,422	295,420,228
85-89	4,747	127,047,130	4,055	54,016,596	57	2,561,667	52	3,343,844	8	187,857	-	-	8,919	187,157,094
90-94	2,081	52,151,866	1,816	24,166,400	19	1,186,751	23	1,325,066	2	56,151	-	-	3,941	78,886,235
95-99	560	13,810,100	466	5,617,453	4	293,370	7	457,117	-	-	-	-	1,037	20,178,041
100-104	67	1,829,450	62	798,863	2	159,443	1	51,478	-	-	-	-	132	2,839,234
105-109	5	114,421	3	20,213	-	-	-	-	-	-	-	-	8	134,634
	75,509	\$ 2,088,365,347	75,940	\$ 1,281,519,462	2,572	\$ 120,251,026	417	\$ 31,359,577	1,896	\$ 64,927,090	32	\$ 830,653	156,366	\$ 3,587,253,156

Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017.

Retired Membership* – By Calendar Year of Retirement

June 30, 2017

(State and Municipal)

Year of Retirement	Teachers'		Employees		State Police		Judges		LEOPS		CORS (Municipal)		Total	
	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Number	Annual Benefits#	Annual Benefits	
Before 1987	3,496	\$ 93,020,224	2,934	\$ 44,943,634	356	\$ 14,259,072	33	\$ 1,496,004	-	-	-	-	6,819	\$ 153,718,935
1987	548	14,573,830	532	8,123,657	45	1,710,613	7	418,507	-	-	-	-	1,132	24,826,607
1988	640	17,904,680	643	10,333,583	42	1,478,966	6	332,026	-	-	-	-	1,331	30,049,254
1989	808	22,336,554	704	11,350,270	55	2,322,353	7	337,330	-	-	-	-	1,574	36,346,507
1990	814	23,341,010	770	12,003,493	47	1,877,194	11	654,138	10	\$ 236,027	-	-	1,652	38,111,863
1991	1,044	32,298,598	980	15,977,155	45	2,017,116	3	187,505	17	436,914	-	-	2,089	50,917,289
1992	1,537	49,200,355	1,163	18,188,658	99	4,516,438	6	325,422	21	600,398	-	-	2,826	72,831,271
1993	1,268	36,382,536	1,113	16,135,944	64	2,788,971	5	202,810	13	374,232	-	-	2,463	55,884,494
1994	1,353	36,198,359	1,205	17,321,604	71	3,181,565	7	453,104	11	321,435	-	-	2,647	57,476,068
1995	1,530	40,077,383	1,435	20,926,349	60	2,675,207	14	900,497	13	392,181	-	-	3,052	64,971,616
1996	1,732	46,864,328	2,498	42,716,089	81	3,521,400	14	967,570	14	413,854	-	-	4,339	94,483,240
1997	1,826	49,837,573	1,707	27,199,221	61	2,569,703	7	479,988	15	338,872	-	-	3,616	80,425,356
1998	2,012	56,923,809	1,578	21,670,458	62	2,669,220	10	619,022	23	511,620	-	-	3,685	82,394,129
1999	2,501	71,411,900	1,708	24,856,371	63	3,182,315	10	868,158	33	727,623	-	-	4,315	101,046,366
2000	2,485	69,461,797	1,871	25,967,856	138	7,126,757	11	987,932	74	2,176,637	-	-	4,579	105,720,979
2001	2,452	67,834,133	1,969	29,007,731	95	5,027,135	13	924,913	99	3,457,486	-	-	4,628	106,251,397
2002	2,595	70,217,426	2,245	33,628,877	90	4,935,578	15	1,092,655	91	3,095,323	-	-	5,036	112,969,859
2003	2,616	72,555,443	2,649	42,809,455	106	6,016,948	10	835,369	91	3,566,320	-	-	5,472	125,783,535
2004	2,992	83,537,893	3,010	50,359,275	102	5,264,262	14	1,122,151	81	2,936,147	-	-	6,199	143,219,729
2005	3,027	79,896,394	3,230	54,063,209	118	5,746,615	14	1,196,654	96	3,509,635	-	-	6,485	144,412,507
2006	2,685	71,341,229	2,928	48,362,923	87	4,257,231	17	1,323,678	91	3,097,692	-	-	5,808	128,382,753
2007	2,991	83,120,936	3,249	56,817,961	97	4,493,998	22	1,900,365	92	2,990,216	-	-	6,451	149,323,476
2008	3,080	83,029,796	3,391	58,073,310	85	3,855,678	13	1,145,210	101	3,515,451	-	-	6,670	149,619,446
2009	2,956	74,534,352	3,467	57,674,423	69	3,467,695	17	1,467,807	123	4,400,450	1	\$ 13,955	6,633	141,558,681
2010	3,490	98,482,267	4,096	74,088,781	77	4,339,858	16	1,407,220	100	3,686,472	7	192,753	7,786	182,197,352
2011	4,278	125,497,209	4,391	80,776,824	85	3,815,816	16	1,385,611	121	4,363,218	3	182,551	8,894	216,021,229
2012	3,614	98,261,252	3,660	61,422,523	53	2,592,594	14	1,255,247	120	4,267,395	3	99,657	7,464	167,898,669
2013	3,686	101,845,771	3,977	70,074,366	63	2,995,908	22	1,708,935	119	4,187,740	6	171,470	7,873	180,984,191
2014	3,662	102,237,675	3,384	59,527,430	43	2,084,735	16	1,518,904	83	2,762,962	6	93,195	7,194	168,224,901
2015	3,753	104,584,776	4,455	88,008,706	49	2,414,658	18	1,526,042	111	3,830,828	3	35,000	8,389	200,400,009
2016	3,382	95,849,521	3,584	70,366,640	42	1,975,799	17	1,412,627	97	3,501,823	3	42,072	7,125	173,148,481
2017	656	15,706,337	1,414	28,742,683	22	1,069,629	12	906,176	36	1,228,141	-	-	2,140	47,652,966
	75,509	\$ 2,088,365,347	75,940	\$ 1,281,519,462	2,572	\$ 120,251,026	417	\$ 31,359,577	1,896	\$ 64,927,090	32	\$ 830,653	156,366	\$ 3,587,253,156

Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2017.

APPENDIX C

SUMMARY OF PLAN PROVISIONS

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Teachers' Retirement System of the State of Maryland

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 Teachers' Pension System (established January 1, 1980) prior to January 1, 2005.

Membership includes any teacher, helping teacher, principal, supervisor, superintendent, or clerk employed in public day school within the State of Maryland, or controlled by the State; any librarian or clerical employee of a library established or operated under the Education Article; any professional or clerical employee of a community college established or operated under the Education Article; or staff employee of the University System of Maryland, Morgan University or St. Mary's College who is a member as of January 1, 1998.

2. Member Contributions

Retirement System members participate under one of three elections (effective July 1, 1984):

- 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: 5% of earnable compensation as determined under the employee contribution for the Teachers' Pension System (Plan C provides a two-part benefit based on benefits of the Teachers' Retirement System and the Teachers' 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: $1/55^{\text{th}}$ of average final compensation for the three highest years as a member for each year of creditable service. Creditable service is based on a full normal working time for teachers – ten months equals one year.

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

Teachers' Retirement System of the State of Maryland

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 Teachers' Retirement System with a maximum reduction of 30%; for creditable service after election date, the amount determined by the service retirement formula for the Teachers' Pension System 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 $1/55^{\text{th}}$ 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 $1/55^{\text{th}}$ 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 Teachers' Retirement System allowance noted above, or the ordinary disability benefit of the Teachers' 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.

Teachers' Retirement System of the State of Maryland

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 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 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). Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

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 contributions.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted based on the Consumer Price Index. The 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 Plan A or Plan B - depending on member election prior to electing Plan C - for benefit calculated under the Teachers' Retirement System, plus capped 3% compounded COLA on benefit calculated under the Teachers' Pension System.

Teachers' Retirement System of the State of Maryland

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 minus 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 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.

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. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid for the same period of time for which the retirement benefits are paid.

11. Change in Benefits

Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

Teachers' Pension System of the State of Maryland

1. Membership

Membership is a condition of employment for all teachers hired on or after January 1, 1980. Certain eligible higher education employees may elect to join an optional defined contribution program provided by the State. Included in the definition of teacher is any teacher, helping teacher, principal, supervisor, superintendent, or clerk employed in public day school within the State of Maryland, or controlled by the State; any faculty employee of an educational institution supported or controlled by the State; any librarian or clerical employee of a library established or operated under the Education Article; any professional or clerical employee of a community college established or operated under the Education Article.

All individuals who are members of the Teacher's Pension System on or before June 30, 2011, participate in the Alternate Contributory Pension Selection (ACPS) except for the few members who transferred from the Teachers' Retirement System after April 1, 1998 or former vested members who terminated employment prior to July 1, 1998.

All individuals who enroll in the Teachers' Pension System on or after July 1, 2011, participate in the Reformed Contributory Pension Benefit (RCPB).

2. Member Contributions

Members of both the ACPS and the RCPB are required to make contributions of 7% of earnable compensation.

Contributions earn interest at 5% per year.

3. Service Retirement Allowance

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 and older with 2 years of eligibility service.

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.

Teachers' Pension System of the State of Maryland

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 for the three highest consecutive years as an employee up to the Social Security integration level plus 1.5% of average final compensation over the integration level for each year of creditable service on or before June 30, 1998;
- (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. Eligibility service is given based on a full normal working time in one year equal to ten months.

Note: Members who transferred into the Teachers' Pension System, on or after April 1, 1998, receive benefits based on the provisions of the NCPS (refer to page C-18) as in effect of January 1, 1980 except for COLA benefits. The COLAs are capped at a maximum of 3% compounded annually.

4. Early Retirement Allowance

ACPS Eligibility: Attainment of age 55 with at least 15 years of eligibility service.

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 (age 65 for RCPB) without any change in rate of earnable compensation. If disability occurs after age 62 (age 65 for RCPB), the benefit is based on creditable service at time of retirement.

Teachers' Pension System of the State of Maryland

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 (five highest for RCPB) 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 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 contributions are paid to the designated beneficiary(ies). Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

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.

Teachers' Pension System of the State of Maryland

7. Vested Retirement Allowance

ACPS Eligibility: Five years of eligibility service.

ACPS Allowance: Accrued retirement allowance payable at age 62 provided member does not withdraw accumulated contributions. 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.

RCPB Eligibility: Ten years of eligibility service.

RCPB Allowance: Accrued retirement allowance payable at age 65 provided member does not withdraw accumulated contributions. 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 60, reduced by .005 for each month that benefit commencement date precedes age 65.

If member does not commence to receive benefit payments, and dies before attaining age 65, 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 and is applied to 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 of investment return from the most recent actuarial valuation. The adjustment is capped at the lesser of 1% or the increase in CPI if the most recent calendar year market value rate of return was less than the assumed rate of investment return from the most recent actuarial valuation.

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.

Any adjustments are effective July 1.

Teachers' Pension System of the State of Maryland

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 minus 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 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.

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. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves and COLA, are reduced for workers' compensation benefits payable after retirement from injury occurring during employment by the State, if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid for the same period of time for which the retirement benefits are paid.

11. Change in Benefits

Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

Employees' Retirement System of the State of Maryland

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.

Employees' Retirement System of the State of Maryland

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 $1/55^{\text{th}}$ 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 $1/55^{\text{th}}$ 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.

Employees' Retirement System of the State of Maryland

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). Beginning July 1, 2017, the duration of payments that may be made to dependent children of deceased ERS and CORS members receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

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.

Employees' Retirement System of the State of Maryland

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 minus 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.

Employees' Retirement System of the State of Maryland

10. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves and COLA, are reduced for workers' compensation benefits payable after retirement from injury occurring during employment by the State, if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid for the same period of time for which the retirement benefits are paid.

11. Miscellaneous Provisions

For Members of the General Assembly

For individuals who are members of the Legislative Pension Plan on or before December 31, 2014, the retirement allowance is equal to 3.00% of current legislative salary for each year of creditable service (maximum 22 years, 3 months) upon attainment of age 60 and at least eight years of creditable service. Reduced benefits are payable upon attainment of age 50 and completion of 8 years of creditable service. The benefit is reduced by .005 for each month between ages 50 and 60 that the early retirement date precedes age 60.

An individual who is a member of the Legislative Pension Plan on or before December 31, 2014, with eight years of creditable service who has not attained age 60 may leave contributions in the system and receive a retirement allowance at age 60, or a reduced benefit on or after age 50. If termination occurs before the completion of eight years of creditable service, the member may make contributions equal to the member's and the State's required contributions until the member would have completed eight years of eligibility service, (and receive 24% of creditable compensation at age 60 or a reduced benefit on or after age 50).

For individuals who join the Legislative Pension Plan on or after January 1, 2015, the retirement allowance is equal to 3.00% of current legislative salary for each year of creditable service (maximum 22 years, 3 months) upon attainment of age 62 and at least eight years of creditable service. Reduced benefits are payable upon attainment of age 55 and completion of 8 years of creditable service. The benefit is reduced by .005 for each month between ages 55 and 62 that the early retirement date precedes age 62.

An individual who joins the Legislative Pension Plan on or after January 1, 2015, accrues eight years of creditable service, and who has not attained age 62 may leave contributions in the system and receive a retirement allowance at age 62, or a reduced benefit on or after age 55. If termination occurs before the completion of eight years of creditable service, the member may make contributions equal to the member's and the State's required contributions until the member would have completed eight years of eligibility service, (and receive 24% of creditable compensation at age 62 or a reduced benefit on or after age 55).

Employees' Retirement System of the State of Maryland

A member who is certified as disabled by the Medical Board and approved by the Board of Trustees for a disability retirement benefit after attaining at least 8 years of creditable service may resign from the General Assembly and immediately receive a retirement allowance based on their creditable service.

The **member's surviving spouse receives 50% of the member's retirement allowance** if the member i) is retired, ii) is eligible for a deferred vested benefit, or iii) is active and has eight years of creditable service. The surviving spouse of a member who had accrued less than eight years of creditable service and dies in office shall receive a lump sum death benefit of accumulated contributions plus an amount equal to the deceased's annual earnable compensation at the time of death.

Members contribute 5% (7% beginning January 1, 2015) of their earnable compensation during their first 22 years, 3 months of service with contributions earning interest at 4% per year.

All retirement allowances are recalculated each time the salaries for current members of the General Assembly are increased.

For Correctional Officers

Correctional officers serving in the first six job classifications, individuals serving as a security chief, a facility administrator, and assistant warden or a warden, maximum security attendants at Clifton T. Perkins Hospital Center, a Correctional Dietary, Maintenance or Supply Officer, Maryland Correctional Enterprise Officers and Trainees, Plant Supervisors, Plant Managers, Regional Managers and Laundry Officers, and Correctional Case Management Specialists participate under this System. Effective July 1, 2006, Maryland counties may elect to participate on behalf of their detention center officers. Additionally, beginning July 1, 2017, individuals serving as parole and probation agents, supervisors, and regional administrators and individuals employed by the Department of Public Safety and Correctional Services as alcohol and drug counselors, mental health counselors, psychologists, social workers, or recreation officers.

The retirement allowance for an individual who is a correctional officer on or before June 30, 2011, is 1/55th 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 1/55th of average final compensation for the five highest years as a member for each year of creditable service.

An immediate service retirement allowance is payable to a correctional officer if, on or before the retirement, the officer has completed 20 years of eligibility service. For individuals who are members of this System on June 30, 2011, the vested retirement allowance of a member who has accrued at least 5 years of eligibility service commences at age 55. For individuals who become members on or after July 1, 2011, the vested retirement allowance for a member who has accrued at least 10 years of eligibility service commences at age 55.

Employees' Retirement System of the State of Maryland

For benefits attributable to service on or after July 1, 2011, the cost-of-living adjustment for Correctional Officers 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 of investment return from the most recent actuarial valuation. The adjustment is capped at the lesser of 1% or the increase in CPI if the most recent calendar year market value rate of return was less than the assumed rate of investment return from the most recent actuarial valuation.

12. Changes in Benefits for Employees' Retirement System and Correctional Officers

Beginning July 1, 2017, the duration of payments that may be made to dependent children of deceased ERS and CORS members receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

Beginning July 1, 2017, individuals serving as parole and probation agents, supervisors, and regional administrators and individuals employed by the Department of Public Safety and Correctional Services as alcohol and drug counselors, mental health counselors, psychologists, social workers, or recreation officers will participate in the Correctional Officers' Retirement System.

Employees' Pension System of the State of Maryland

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 covered by the NCPS or ECPS.

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.

Employees' Pension System of the State of Maryland

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;
- (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;
- (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.

Employees' Pension System of the State of Maryland

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 (age 65 for RCPB) without any change in the rate of earnable compensation. If disability occurs on or after age 62 (age 65 for RCPB), 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 (five years for RCPB) as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation.

Employees' Pension System of the State of Maryland

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 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). Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

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.

RCPB Eligibility: Ten years of eligibility service.

Employees' Pension System of the State of Maryland

RCPB Allowance: Accrued retirement allowance payable at age 65 provided member does not withdraw accumulated contributions. 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 60, reduced by .005 for each month that benefit commencement date precedes age 65.

If member does not commence to receive benefit payments, and dies before attaining age 65, 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 of investment return from the most recent actuarial valuation. The adjustment is capped at the lesser of 1% or the increase in CPI if the most recent calendar year market value rate of return was less than the assumed rate of investment return from the most recent actuarial valuation.

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 minus 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.

Employees' Pension System of the State of Maryland

- 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 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.

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. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves and COLA, are reduced for workers' compensation benefits payable after retirement from injury occurring during employment by the State, if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid for the same period of time for which the retirement benefits are paid.

11. Change in Benefits

Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

State Police Retirement System of the State of Maryland

1. Membership

Membership is a condition of employment for all officers of the Maryland State Police. The Superintendent of the Maryland State Police may elect membership in this System or the Employees' Pension System.

2. Member Contributions

Members are required to contribute 8% of earnable compensation.

Contributions earn interest at 4% per year.

3. Service Retirement Allowance

Eligibility: For individuals who are members on or before June 30, 2011, 22 years of eligibility service or attainment of age 50. For individuals who become members on or after July 1, 2011, 25 years of eligibility service or attainment of age 50. Retirement at age 60 is mandatory for all but the Superintendent.

Allowance: For individuals who are members on or before June 30, 2011, 2.55% of average final compensation for the three highest years as a member for each of the first 28 years of creditable service. For individuals who become members on or after July 1, 2011, 2.55% of average final compensation for the five highest years as a member for each of the first 28 years of creditable service. Maximum benefit is 71.4% of average final compensation.

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 mentally or physically incapacitated from the performance of the normal duties of the member's position, and that incapacity is permanent.

Allowance: 2.55% of average final compensation for the three highest years as a member for each of the first 28 years of creditable service. Minimum payable is 35% of average final compensation.

Special (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.

State Police Retirement System of the State of Maryland

Allowance: The benefit is 66 2/3% of average final compensation plus the 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: More than two years of eligibility service or death in the performance of duty.

Benefit: Accumulated member contributions paid to designated beneficiary plus an allowance of one-half (two-thirds if death arises out of or in the course of the actual performance of duty) 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 26, one-half of average final compensation continues until the youngest child reaches age 26. If the child is disabled, the benefit will continue past age 26 as long as the child remains disabled. If there is no surviving spouse or children under the age of 26, or disabled children older than age 26, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

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 member on or after July 1, 2011, 10 years of eligibility service.

Allowance: Service retirement allowance payable at age 50.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Unlimited compounded COLAs are effective July 1 and are applied to all benefits which have been in payment for one year.

State Police Retirement System of the State of Maryland

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 of investment return from the most recent actuarial valuation. The adjustment is capped at the lesser of 1% or the increase in CPI if the most recent calendar year market value rate of return was less than the assumed rate of investment return from the most recent actuarial valuation.

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.

Retirees and beneficiaries receiving a retirement allowance on or before June 30, 1999, who receive an annual adjustment to their benefit ranging from \$1,200 to \$2,100 may receive separate COLAs on this adjustment commencing effective July 1, 2000.

9. Optional Forms of Payment

Normal service allowance is 80% joint and survivor annuity with spouse, if any. If there is no surviving spouse or upon the death of the surviving spouse, payment is made to any children of the deceased retiree under the age of 18 years, until each child becomes age 18. If there is no spouse at time of retirement, member may select an optional allowance.

- Option 1: Cash refund equal to excess of present value of retirement allowance at date of retirement minus 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 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.

State Police Retirement System of the State of Maryland

10. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves and COLA, are reduced for workers' compensation benefits payable after retirement from injury occurring during employment if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid for the same period of time for which the retirement benefits are paid.

11. Deferred Retirement Option Program (DROP)

For members who are less than 60 years old and who enter DROP on or before June 30, 2011, DROP participation is the lesser of 4 years or the difference between 28 years and the member's creditable service. For members who are less than 60 years old and who enter DROP on or after July 1, 2011, DROP participation is the lesser of 4 years or the difference between 29 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 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 Special Disability benefits if incapacitated while in DROP.

12. Changes in Benefits

Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled.

Judges Retirement System of the State of Maryland*

1. Membership

Membership is a condition of employment for a judge of the Court of Appeals, Court of Special Appeals, Circuit Court, or District Court of Maryland. Members of the State Workers' Compensation Commission also participate.

2. Member Contributions

Members are required to make contributions of 6% of salary until they have accrued 16 years of service credit. Beginning July 1, 2012, members are required to make contributions of 8% of salary until they have accrued 16 years of service credit.

Contributions earn interest at 4% per year.

3. Service Retirement Allowance

Eligibility: Attainment of age 60, or retired by order of the Court of Appeals.

Allowance: 66 2/3% of current judicial salary for 16 years of service. With less than 16 years, the benefit is prorated based on the ratio of years of service to 16.

4. Early Retirement Allowance

Not applicable to this System.

5. Disability Retirement Allowance

Eligibility: 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: Same as service allowance payable immediately. However, if a judge has at least three years of service, the pension will not be less than 1/3 of the judge's salary.

** This summary includes provisions of the contributory plan only, as all members currently belong to that plan.*

Judges Retirement System of the State of Maryland

6. Death Benefits

Monthly Allowance

Eligibility: Death of a judge or former judge at any age, leaving a surviving spouse or dependent children under the age of 26, or a child who is disabled.

Allowance: 50% of the pension that would have been payable to the judge or former judge at the date of death as if the judge or former judge was eligible to receive a retirement allowance is payable to surviving spouse. If there is no spouse, payment is paid to children until age 26. If the child is disabled, the benefit will continue past age 26 as long as the child remains disabled.

Lump Sum

Eligibility: Termination of service by death of a judge leaving no spouse, or children under age 26.

Allowance: Annual salary at time of death plus return of accumulated member contributions paid to designated beneficiary.

7. Deferred Vested Allowance

Eligibility: For individuals who are members before July 1, 2012, termination of service prior to age 60. For individuals who join the Judges' Retirement System on or after July 1, 2012, five years of eligibility service. For individuals joining the Judges' Retirement System on or after July 1, 2012 who are required to retire due to mandatory retirement and have less than 5 years of service at that time, eligibility service equal to 70 minus the member's age when the individuals first become members of the System.

Allowance: Same as service allowance payable at age 60.

In lieu of a deferred vested allowance pension, a former judge may elect to withdraw accumulated contributions following the judge's termination of service.

8. Cost-of-Living Adjustments

Allowances are recalculated each time the salary for a sitting judge from the Court from which the judge retired increases.

NOTE: Masters who retire from the Judges' Retirement System receive COLA benefits equal to the percentage increase in salary provided to judges of the Circuit Court.

Judges Retirement System of the State of Maryland

9. Optional Forms of Payment

Normal service allowance is 50% joint and survivor annuity with spouse. However, a judge or former judge, who at the time of retirement, does not have a spouse or eligible minor children, may elect one of the following optional forms of payment:

- Option 1: Cash refund equal to excess of present value of retirement allowance at date of retirement minus 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 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.

Special note: After retirement neither the option nor designation of beneficiary may be changed.

10. Change in Benefits

Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a death benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a death benefit may receive a special death benefit as long as they remain disabled.

Law Enforcement Officers Pension System of the State of Maryland (Retirement Plan)

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 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.

Law Enforcement Officers Pension System of the State of Maryland (Retirement Plan)

Allowance: The benefit is 66 2/3% of average final compensation plus an annuity provided by accumulated 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: More than two years of eligibility service or death in the performance of duty.

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 26, one-half of average final compensation continues until the youngest child reaches age 26. If the child is disabled, the benefit will continue past age 26 as long as the child remains disabled. If none of the above conditions is met, the ordinary death benefit is paid to the designated beneficiary.

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 26, one-half of average final compensation continues until the youngest child reaches age 26. If the child is disabled, the benefit will continue past age 26 as long as the child remains disabled. If none of the above conditions is met, the ordinary death benefit is paid to the designated beneficiary.

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.

Law Enforcement Officers Pension System of the State of Maryland (Retirement Plan)

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 been 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 26 years, until every child dies or becomes 26 years old. If the child is disabled, the benefit will continue past age 26 as long as the child remains disabled.

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 minus 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.

Law Enforcement Officers Pension System of the State of Maryland (Retirement Plan)

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

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. Reduction for Benefits Payable under Workers’ Compensation

Disability retirement allowances, excluding the annuity reserves and COLA, are reduced for workers’ compensation benefits payable after retirement from injury occurring during employment with the State, if the workers’ compensation benefits are for the same injury for which disability retirement was granted and are paid for the same period of time for which the retirement benefits are paid.

11. 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.

12. Change in Benefits

Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit or a retiree survivor benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit or a retiree survivor benefit may receive a special death benefit as long as they remain disabled.

Law Enforcement Officers Pension System of the State of Maryland

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

Members are required to contribute 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

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 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.

Law Enforcement Officers Pension System of the State of Maryland

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: More than two years of eligibility service or death in the performance of duty.

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 26, one-half of average final compensation continues until the youngest child reaches age 26. 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 26, one-half of average final compensation continues until the youngest child reaches age 26. 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.

Law Enforcement Officers Pension System of the State of Maryland

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 of investment return from the most recent actuarial valuation. The adjustment is capped at the lesser of 1% or the increase in CPI if the most recent calendar year market value rate of return was less than the assumed rate of investment return from the most recent actuarial valuation.

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 26 years, until every child dies or becomes 26 years of age. If the child is disabled, the benefit will continue past age 26 as long as the child remains disabled.

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 minus 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.

Law Enforcement Officers Pension System of the State of Maryland

- 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 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.

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Disability retirement allowances, excluding the annuity reserves and COLA, are reduced for workers’ compensation benefits payable after retirement from injury occurring during employment with the State if the workers’ compensation benefits are for the same injury for which disability retirement was granted and are paid for the same period of time for which the retirement benefits are paid.

11. 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.

12. Changes in Benefits

Beginning July 1, 2017, the duration of payments that may be made to dependent children receiving a special death benefit or a retiree survivor benefit is extended to surviving nondisabled children until each child turns 26 years old. Disabled children receiving a special death benefit or a retiree survivor benefit may receive a special death benefit as long as they remain disabled.