





## REPORT OF INDEPENDENT PUBLIC ACCOUNTANTS

To the Board of Trustees  
Maryland State Retirement and Pension System

### **Report on the Financial Statements**

We have audited the accompanying financial statements of the Maryland State Retirement and Pension System (the System), as of June 30, 2018 and 2017, and for the years then ended and the related notes to the financial statements, which collectively comprise the System's basic financial statements, as listed in the table of contents.

#### ***Management's Responsibility for the Financial Statements***

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

#### ***Auditor's Responsibility***

Our responsibility is to express an opinion on these basic financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the basic financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the basic financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the basic financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the basic financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### ***Opinion***

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the financial position of the System, as of June 30, 2018 and 2017, and the respective changes in plan net position for the years then ended, in accordance with accounting principles generally accepted in the United States of America.

## **Other Matters**

### *Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, schedule of changes in employers' net pension liability, schedule of employers' net pension liability and related ratios, schedule of employers' contributions, schedule of investment returns, and notes to required supplementary information be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

### *Other Supplementary Information*

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the System's basic financial statements. The schedule of funding progress, schedule of contributions from employers and other contributing entity, schedule of fund balance accounts, schedule of administrative expenses, schedule of investment expenses, schedule of plan net position by system, and schedule of changes in plan net position by system are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The other supplementary information as listed in the previous paragraph is the responsibility of management and was derived from, and relates directly to, the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audits of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the other supplementary information as listed in the previous paragraph is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Hunt Valley, Maryland  
November 27, 2018

*SB + Company, LLC*

## MANAGEMENT'S DISCUSSION AND ANALYSIS

To help facilitate a better understanding of the Maryland State Retirement and Pension System's (the System) financial condition as of June 30, 2018, the results of its operations for the fiscal year then ended, and the fiscal policies that govern its significant business operations, management has prepared this narrative analysis. This narrative is intended to supplement the System's audited financial statements and, as such should be read in conjunction with these statements, which are presented beginning on page 24.

### OVERVIEW OF THE FINANCIAL STATEMENTS

As required by accounting principles generally accepted in the United States of America, the System's basic financial statements are comprised of the comparative Statements of Plan Net Position and Statements of Changes in Plan Net Position, along with the related note disclosures. In addition, the System's financial statements include certain required supplementary information (e.g., schedule of changes in employers' net pension liability, schedule of employers' net pension liability and related ratios, schedule of employers' contributions, and schedule of investment returns) as well as other supplementary schedules considered relevant to the financial statement user (e.g., schedules of fund balance accounts, administrative and investment expenses, plan net position by system, and related changes by system). To better understand the relevance of the information presented in the System's financial statements, related notes, and supplementary information, it is helpful to first consider what purpose each component is intended to serve.

The Statements of Plan Net Position present a comparative, summary-level snapshot, as of a specific point in time (i.e., June 30th – the last day of the System's fiscal year), of the fair value of the net position available to pay future pension benefits to retirees and beneficiaries. To assist the reader in understanding the composition of the System's accumulated net position the most significant components (e.g., cash and cash equivalent securities, investments) are separately disclosed. In this regard, cash and cash equivalents represent that portion of the System's assets that, as of the end of the fiscal year, reside in the form of actual cash or short-term, highly liquid, investment securities. This amount gives an indication of the System's liquidity at fiscal year-end. Conversely, the amounts shown as investments represent those funds invested in longer-term securities (e.g., stocks, bonds, real estate) held for the purpose of generating investment income. The sum of these assets, reduced by any liabilities owed by the System as of fiscal year-end, represents the net position held in trust to pay pension benefits.

By contrast, the Statements of Changes in Plan Net Position are intended to show, on a comparative basis, the major categories of income earned (additions to plan net position) and expenses incurred (deductions from plan net position) by the System during the previous fiscal year. As such, the System's net income or loss accounts for the entire change in the net position held in trust to pay pension benefits during the fiscal year as a result of System operations. As with the System's assets and liabilities, significant categories of income and expense, as reported on the Statements of Changes in Plan Net Position, are separately disclosed to help clarify the major sources and uses of the System's resources.

Finally, the note disclosures are provided as an integral component of the basic financial statements to help explain in narrative form some of the more complex or less obvious elements of the statements. Further, the notes to the financial statements provide additional information (e.g., significant accounting policies, various types of investment risk) that is essential for a comprehensive understanding of the System's financial condition and the results of its operations.

The Schedule of Funding Progress, while similar in scope to the Statements of Plan Net Position in that it is primarily focused on reporting on the accumulation of assets, differs from such statements both in its method for valuing such assets and in its approach to explaining its relevance to the liability it is being accumulated to satisfy. In this regard, the Schedule of Funding Progress first takes a long-term, actuarial view toward valuing the System's investment portfolio, as opposed to the fair value approach reflected on the Statements of Plan Net Position. Specifically, the System's assets are valued (for funding purposes) using a methodology that distributes investment gains and losses over a five-year period in order to minimize the effects of annual market volatility on employer contribution rates.

The Schedule of Changes in Employers' Net Pension Liability, Schedule of Employers' Net Pension Liability and Related Ratios, Schedule of Employers' Contributions, and Schedule of Investment Returns share common characteristics with data

disclosed in the basic financial statements. In this regard, both the Statements of Changes in Plan Net Position and the Schedule of Contributions from Employers and Other Contributing Entity disclose the amount of contributions received from participating employers. However, the Schedule of Employer Contributions differs from the Statements of Changes in Plan Net Position in that the Schedule's primary focus is to disclose the contributions required to be made in accordance with the System's funding policy and the percentage of the required contributions actually made during the fiscal years presented.

Finally, the other supplementary schedules, presented immediately after the required supplementary information, summarize the changes in fund balances, disclose major categories of operating and investment expenses, and provide combining, plan-level detail related to asset, liability, income, and expense amounts summarized in the basic financial statements.

#### **ANALYSIS OF FINANCIAL POSITION AND RESULTS OF OPERATIONS**

The System's overall funding objective is to accumulate sufficient assets over time to meet its long-term benefit obligations as they become due. Accordingly, collecting employer and member contributions as well as earning an adequate long-term rate of return on its investments are essential components of the System's plan for accumulating the funds needed to finance future retirement benefits.

### Fiscal Year 2018 Compared to 2017

The following condensed comparative Statement of Plan Net Position for the fiscal years ended June 30, 2018 and 2017, presents an increase in the System's net position of \$2.8 billion (5.8%). This increase is primarily due to positive net returns in equities, real estate, and private alternative investments.

A schedule of the System's investments and changes (by type) from fiscal year 2018 to 2017 is as follows (expressed in millions):

	<b>June 30,</b>		<b>Change</b>	
	<b>2018</b>	<b>2017</b>	<b>Variance</b>	<b>%</b>
Cash & cash equivalents	\$ 1,252.5	\$ 1,034.2	\$ 218.3	21.1%
U.S. Government obligations	6,585.1	7,371.6	(786.5)	-10.7%
Domestic corporate obligations	3,472.3	3,927.9	(455.6)	-11.6%
International obligations	90.5	121.0	(30.5)	-25.2%
Domestic stocks	9,466.3	8,008.9	1,457.4	18.2%
International stocks	10,186.0	9,881.6	304.4	3.1%
Mortgages & mortgage-related securities	1,528.4	1,515.3	13.1	0.9%
Alternative investments	19,245.0	18,233.9	1,011.1	5.5%
<b>Total managed investments</b>	<b>51,826.1</b>	<b>50,094.4</b>	<b>1,731.7</b>	<b>3.5%</b>
Collateral for loaned securities	2,043.4	2,553.9	(510.5)	-20.0%
<b>Total investments and cash &amp; cash equivalents</b>	<b>53,869.5</b>	<b>52,648.3</b>	<b>1,221.2</b>	<b>2.3%</b>
Receivables	1,195.0	1,128.6	66.4	5.9%
<b>Total Assets</b>	<b>55,064.5</b>	<b>53,776.9</b>	<b>1,287.6</b>	<b>2.4%</b>
Liabilities	3,237.3	4,789.7	(1,552.4)	-32.4%
<b>Total Net Position, End of Year</b>	<b>\$51,827.2</b>	<b>\$ 48,987.2</b>	<b>\$ 2,840.0</b>	<b>5.8%</b>

As depicted in the following comparative Statement of Changes in Plan Net Position for fiscal years 2018 and 2017, contributions to the System during fiscal year 2018 decreased by approximately \$75 million as a result of the Maryland Legislature's waiver of a "sweeper amendment" during the 2017 General Assembly thus eliminating an additional State contribution to the System of \$50 million of State excess revenues and \$25 million of additional voluntary contributions, both of which were added as part of budget legislation during the 2015 legislative session. Additionally, the System's investments experienced a positive money-weighted investment return of 8.08%(time-weighted of 8.06%), net of fees, recognizing \$3,899 million in net investment income.

The System continues to pay out more benefits than contributions collected. An increase of \$167.0 million in benefits paid to retirees correlates to the increase in the number of retirees and beneficiaries experienced in fiscal year 2018. The total fiscal year 2018 in additions to the System exceeded in benefits, refunds and administrative expenses resulting in an increase in net position of \$2.8 billion.

A schedule of the System's additions to and deductions from plan net position and related changes (by major category) from fiscal year 2018 to 2017, is as follows (expressed in millions):

	June 30,		Change	
	2018	2017	Variance	%
Employer contributions	\$ 1,247.7	\$ 1,322.8	\$ (75.1)	-5.7%
Member contributions	791.6	782.7	8.9	1.1%
State contributions on behalf of local governments & contribution interest	747.2	713.8	33.4	4.7%
Net investment income	3,899.4	4,473.4	(574.0)	-12.8%
<b>Total additions</b>	<b>6,685.9</b>	<b>7,292.7</b>	<b>(606.8)</b>	<b>-8.3%</b>
Benefit payments	3,744.1	3,577.1	167.0	4.7%
Refunds	68.6	63.4	5.2	8.2%
Administrative expenses	33.2	30.9	2.3	7.4%
<b>Total deductions</b>	<b>3,845.9</b>	<b>3,671.4</b>	<b>174.5</b>	<b>4.8%</b>
<b>Net increase (decrease) in plan net position</b>	<b>\$2,840.0</b>	<b>\$ 3,621.3</b>	<b>\$ (781.3)</b>	<b>-21.6%</b>

#### Analysis of Net Pension Liability (*expressed in millions*)

	June 30,		Change	
	2018	2017	Variance	%
Total Pension Liability	\$ 72,808.8	\$ 70,610.9	\$ 2,197.9	3.1%
Plan Fiduciary Net Position	51,827.2	48,987.2	2,840.0	5.8%
Net Pension Liability	20,981.6	21,623.7	\$ (642.1)	-3.0%
Ratio - Fiduciary Net Position/TPL	71.2%	69.4%		

The System's net pension liability decreased by \$642.2 million as a result of the pay down of unfunded liabilities during the fiscal year and will continue over the next 21 years according to the current funding policy. Additionally, favorable investment and liability experience also helped to accelerate the decrease in the net pension liability.

**Fiscal Year 2017 Compared to 2016**

The following condensed comparative Statement of Plan Net Position for the fiscal years ended June 30, 2017 and 2016, presents an increase in the System's net position of \$3,621.3 million (8.0%). This increase is primarily due to positive net returns in equities, real estate, and private alternative investments.

A schedule of the System's investments and changes (by type) from fiscal year 2017 to 2016 is as follows (expressed in millions):

	<b>June 30,</b>		<b>Change</b>	
	<b>2017</b>	<b>2016</b>	<b>Variance</b>	<b>%</b>
Cash & cash equivalents	\$ 1,034.2	\$ 1,366.2	\$ (332.0)	-24.3%
U.S. Government obligations	7,371.6	6,719.1	652.5	9.7%
Domestic corporate obligations	3,927.9	3,233.7	694.2	21.5%
International obligations	121.0	46.3	74.7	161.3%
Domestic stocks	8,008.9	6,703.2	1,305.7	19.5%
International stocks	9,881.6	9,228.8	652.8	7.1%
Mortgages & mortgage-related securities	1,515.3	1,590.2	(74.9)	-4.7%
Alternative investments	18,233.9	17,284.7	949.2	5.5%
<b>Total managed investments</b>	<b>50,094.4</b>	<b>46,172.2</b>	<b>3,922.2</b>	<b>8.5%</b>
Collateral for loaned securities	2,553.9	2,070.3	483.6	23.4%
<b>Total investments and cash &amp; cash equivalents</b>	<b>52,648.3</b>	<b>48,242.5</b>	<b>4,405.8</b>	<b>9.1%</b>
Receivables	1,128.6	560.5	568.1	101.4%
<b>Total Assets</b>	<b>53,776.9</b>	<b>48,803.0</b>	<b>4,973.9</b>	<b>10.2%</b>
Liabilities	4,789.7	3,437.1	1,352.6	39.4%
<b>Total Net Position, End of Year</b>	<b>\$ 48,987.2</b>	<b>\$ 45,365.9</b>	<b>\$ 3,621.3</b>	<b>8.0%</b>

As depicted in the following comparative Statement of Changes in Plan Net Position for fiscal years 2017 and 2016, contributions to the System during fiscal year 2017 increased as a result of the Maryland Legislature's removal of the corridor funding method during the 2015 General Assembly session, the effect of which first began to upwardly impact employer contribution rates in fiscal year 2017. Additionally, the System's investments experienced a positive investment return of 10%, recognizing \$4.473.4 million in net investment income.

The System continues to pay out more benefits than contributions collected. An increase of \$107.6 million in benefits paid to retirees correlates to the increase in the number of retirees and beneficiaries experienced in fiscal year 2017. The increase in additions to the System exceeded the increase in benefits, refunds and administrative expenses resulting in a net increase in net position of \$3,621 million.

A schedule of the System's additions to and deductions from plan net position and related changes (by major category) from fiscal year 2017 to 2016, is as follows (expressed in millions):

	June 30,		Change	
	2017	2016	Variance	%
Employer contributions	\$ 1,322.8	\$ 1,138.8	\$ 184.0	16.2%
Member contributions	782.7	764.4	18.3	2.4%
State contributions on behalf of				
local governments & contribution interest	713.8	732.0	(18.2)	-2.5%
Net investment income	4,473.4	497.5	3,975.9	799.2%
<b>Total additions</b>	<b>7,292.7</b>	<b>3,132.7</b>	<b>4,160.0</b>	<b>132.8%</b>
Benefit payments	3,577.1	3,469.5	107.6	3.1%
Refunds	63.4	58.4	5.0	8.6%
Administrative expenses	30.9	28.7	2.2	7.7%
<b>Total deductions</b>	<b>3,671.4</b>	<b>3,556.6</b>	<b>114.8</b>	<b>3.2%</b>
<b>Net increase (decrease) in plan net position</b>	<b>\$ 3,621.3</b>	<b>\$ (423.9)</b>	<b>\$ 4,045.2</b>	<b>-954.3%</b>

#### **Analysis of Net Pension Liability (expressed in millions)**

	June 30,		Change	
	2017	2016	Variance	%
Total Pension Liability (TPL)	\$ 70,610.9	\$ 68,960.0	\$ 1,650.9	2.4%
Plan Fiduciary Net Position	48,987.2	45,365.9	3,621.3	8.0%
Net Pension Liability	<u>\$ 21,623.7</u>	<u>\$ 23,594.1</u>	<u>\$ (1,970.4)</u>	<u>-8.4%</u>
Ratio - Fiduciary Net Position/TPL	<u>69.4%</u>	<u>65.8%</u>		

During the year the net pension liability decreased by \$1,970.4 million. This was mainly due to the increase in net investment income of \$3,975.9 million.

#### **Requests for Information**

Members of the System's Board of Trustees and senior management are fiduciaries of the pension trust fund and, as such, are charged with the responsibility of ensuring that the System's assets are used exclusively for the benefit of plan participants and their beneficiaries. This financial report is designed to provide an overview of the System's finances and to demonstrate accountability for the resources entrusted to the System for the benefit of all of the System's stakeholders. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to:

State Retirement and Pension System of Maryland  
Attn: Melody Countess  
120 E. Baltimore Street, Suite 1660  
Baltimore, Maryland 21202-1600

**MARYLAND STATE RETIREMENT AND PENSION SYSTEM**

## STATEMENTS OF PLAN NET POSITION

**As of June 30, 2018 and 2017**

(Expressed in Thousands)

	<b>2018</b>	<b>2017</b>
<b>Assets:</b>		
Cash & Cash Equivalents (note 3)	<u>\$1,252,466</u>	<u>\$1,034,221</u>
<b>Receivables</b>		
Contributions:		
Employers	11,643	16,621
Employers - long term (Note 5)	18,120	22,965
Members	7,461	3,157
Accrued investment income	151,421	88,691
Investment sales proceeds	1,006,317	997,205
Total receivables	<u>1,194,962</u>	<u>1,128,639</u>
<b>Investments, at fair value (Notes 2 &amp; 3)</b>		
U.S. Government obligations	6,585,127	7,371,619
Domestic corporate obligations	3,472,338	3,927,861
International obligations	90,497	120,974
Domestic stocks	9,466,331	8,008,898
International stocks	10,185,922	9,881,644
Mortgages & mortgage-related securities	1,528,439	1,515,284
Alternative investments	19,245,043	18,233,852
Collateral for loaned securities	2,043,411	2,553,919
Total investments	<u>52,617,108</u>	<u>51,614,051</u>
<b>Total Assets</b>	<u>55,064,536</u>	<u>53,776,911</u>
<b>Liabilities</b>		
Accounts payable & accrued expenses (Note 8)	60,407	63,796
Investment commitments payable	1,133,485	2,172,013
Obligation for collateral for loaned securities	<u>2,043,411</u>	<u>2,553,919</u>
<b>Total Liabilities</b>	<u>3,237,303</u>	<u>4,789,728</u>
<b>NET POSITION RESTRICTED FOR PENSIONS</b>	<u><b>\$51,827,233</b></u>	<u><b>\$48,987,183</b></u>

The accompanying notes are an integral part of these financial statements.

**MARYLAND STATE RETIREMENT AND PENSION SYSTEM**

**STATEMENTS OF CHANGES IN PLAN NET POSITION**  
**for the Fiscal Years Ended June 30, 2018 and 2017**  
*(Expressed in Thousands)*

	<b>2018</b>	<b>2017</b>
<b>ADDITIONS:</b>		
Contributions:		
Employers	\$ 1,247,722	\$ 1,322,805
Members	791,583	782,686
State contributions on behalf of local governments	746,354	712,536
Contribution interest	941	1,255
<b>Total contributions</b>	<b>2,786,600</b>	<b>2,819,282</b>
Investment Income:		
Net appreciation (depreciation) in fair value of investments	2,221,834	3,020,461
Interest	398,732	236,601
Dividends	1,641,374	1,538,740
<b>Income before securities lending activity</b>	<b>4,264,940</b>	<b>4,795,802</b>
Gross income from securities lending activity	36,609	21,616
Securities lending borrower rebates	(25,345)	(8,204)
Securities lending agent fees	(1,807)	(2,133)
Net income from securities lending activity	9,457	11,279
Total investment income	4,271,397	4,807,081
Investment expenses	(372,004)	(333,638)
Net investment income	3,899,393	4,473,443
<b>TOTAL ADDITIONS</b>	<b>6,685,993</b>	<b>7,292,725</b>
<b>DEDUCTIONS</b>		
Benefit payments	3,744,132	3,577,123
Refunds	68,600	63,441
Administrative expenses	33,211	30,904
<b>TOTAL DEDUCTIONS</b>	<b>3,845,943</b>	<b>3,671,468</b>
<b>Net increase (decrease) in plan position</b>	<b>2,840,050</b>	<b>3,621,257</b>
<b>Net position restricted for pensions</b>		
Beginning of the fiscal year	48,987,183	45,365,926
<b>END OF THE FISCAL YEAR</b>	<b>\$ 51,827,233</b>	<b>\$48,987,183</b>

*The accompanying notes are an integral part of these financial statements.*

## NOTES TO THE FINANCIAL STATEMENTS

### 1. GENERAL DESCRIPTION OF THE SYSTEM

#### A. Organization

The State Retirement Agency (the Agency) is the administrator of the Maryland State Retirement and Pension System (the System). The System was established by the State Personnel and Pensions Article of the Annotated Code of Maryland to provide retirement allowances and other benefits to State employees, teachers, police, judges, legislators, and employees of participating governmental units. Responsibility for the System's administration and operation is vested in a 15-member Board of Trustees. The System is made up of two cost-sharing employer pools: the "State Pool" and the "Municipal Pool." The "State Pool" consists of the State agencies, boards of education, community colleges, and libraries. The "Municipal Pool" consists of the participating governmental units that elected to join the System. Neither pool shares in each other's actuarial liabilities, thus participating governmental units that elect to join the System (the "Municipal Pool") share in the liabilities of the Municipal Pool only.

The State of Maryland is the statutory guarantor for the payment of all pensions, annuities, retirement allowances, refunds, reserves, and other benefits of the System. The State is obligated to annually pay into the accumulation fund of each State system at least an amount that, when combined with the System's accumulation funds, is sufficient to provide benefits payable under each plan during that fiscal year. The System is accounted for as one defined benefit plan as defined in accordance with accounting principles generally accepted in the United States of America. Additionally, the System is fiscally dependent on the State by virtue of the legislative and executive controls exercised with respect to its operations, policies, and administrative budget. Accordingly, the System is included in the State's reporting entity and disclosed in its financial statements as a pension trust fund.

The System is comprised of the Teachers' Retirement and Pension Systems, Employees' Retirement and Pension Systems, State Police Retirement System, Judges' Retirement System, and the Law Enforcement Officers' Pension System.

#### B. Covered Members

The Teachers' Retirement System was established on August 1, 1927, to provide retirement allowances and other benefits to teachers in the State. Effective January 1, 1980, the Teachers' Retirement System was closed to new members and the Teachers' Pension System was established. As a result, teachers hired after December 31, 1979, became members of the Teachers' Pension System as a condition of employment. On or after January 1, 2005, an individual who is a member of the Teachers' Retirement System may not transfer membership to the Teachers' Pension System.

On October 1, 1941, the Employees' Retirement System was established to provide retirement allowances and other benefits to State employees, elected and appointed officials, and the employees of participating governmental units. Effective January 1, 1980, the Employees' Retirement System was essentially closed to new members and the Employees' Pension System was established. As a result, State employees (other than correctional officers) and employees of participating governmental units hired after December 31, 1979, became members of the Employees' Pension System as a condition of employment, while all State correctional officers and members of the Maryland General Assembly continue to be enrolled as members of the Employees' Retirement System. On or after January 1, 2005, an individual who is a member of the Employees' Retirement System may not transfer membership to the Employees' Pension System. Currently, more than 150 governmental units participate in the Employees' Retirement System.

The State Police Retirement System was established on July 1, 1949, to provide retirement allowances and other benefits to any police employee or cadet of the Maryland State Police.

The Judges' Retirement System was established on June 30, 1969, to provide retirement allowances and other benefits for State and local, appointed, or elected judges.

The Law Enforcement Officers' Pension System (LEOPS) was established on July 2, 1990, to provide retirement allowances and other benefits for certain State and local law enforcement officers. This System includes both retirement plan and pension plan provisions which are applicable to separate portions of this System's membership. The retirement plan provisions are only applicable to those members who, on the date they elected to participate in LEOPS, were members of the Employees' Retirement System. This System's pension plan provisions are applicable to all other participating law enforcement officers.

The following tables present a summary of membership by system as of June 30, 2018 and 2017, with comparative prior year totals:

Teachers' Retirement & Pension Systems	25,188	77,201	67,617	39,229	106,846
Employees' Retirement & Pension Systems*	26,700	78,321	48,498	32,807	81,305
Judges' Retirement System	9	421	197	119	316
State Police Retirement System	99	2,477	921	426	1,347
Law Enforcement Officers' Pension System	305	1,954	1,602	1,015	2,617
<b>Total as of June 30, 2018</b>	<b>52,301</b>	<b>160,374</b>	<b>118,835</b>	<b>73,596</b>	<b>192,431</b>
Total as of June 30, 2017	53,628	156,366	127,537	65,205	192,742

<b>Inactive &amp; Deferred Vested</b>	<b>Retirees &amp; Beneficiaries</b>	<b>Active Plan Participants</b>		
		<b>Vested</b>	<b>Non-vested</b>	<b>Total</b>
25,188	77,201	67,617	39,229	106,846
26,700	78,321	48,498	32,807	81,305
9	421	197	119	316
99	2,477	921	426	1,347
305	1,954	1,602	1,015	2,617
<b>Total as of June 30, 2018</b>	<b>52,301</b>	<b>160,374</b>	<b>118,835</b>	<b>73,596</b>
Total as of June 30, 2017	53,628	156,366	127,537	65,205
				192,742

\*Employees' Retirement and Pension Systems includes 60 vested and 37 non-vested active members, 2 deferred vested members, and 34 retired members for the Correctional Officers Retirement System (CORS).

Teachers' Retirement & Pension Systems	25,493	75,509	71,687	34,615	106,302
Employees' Retirement & Pension Systems*	27,741	75,972	52,972	29,211	82,183
Judges' Retirement System	9	417	204	108	312
State Police Retirement System	90	2,572	972	399	1,371
Law Enforcement Officers' Pension System	295	1,896	1,702	872	2,574
<b>Total as of June 30, 2017</b>	<b>53,628</b>	<b>156,366</b>	<b>127,537</b>	<b>65,205</b>	<b>192,742</b>
Total as of June 30, 2016	53,568	152,566	136,009	56,485	192,494

<b>Inactive &amp; Deferred Vested</b>	<b>Retirees &amp; Beneficiaries</b>	<b>Active Plan Participants</b>		
		<b>Vested</b>	<b>Non-vested</b>	<b>Total</b>
25,493	75,509	71,687	34,615	106,302
27,741	75,972	52,972	29,211	82,183
9	417	204	108	312
90	2,572	972	399	1,371
295	1,896	1,702	872	2,574
<b>Total as of June 30, 2017</b>	<b>53,628</b>	<b>156,366</b>	<b>127,537</b>	<b>65,205</b>
Total as of June 30, 2016	53,568	152,566	136,009	56,485
				192,494

\*Employees' Retirement and Pension Systems include 61 vested and 35 non-vested active members, 32 retired members, and 4 inactive member from the Correctional Officers Retirement System.

## C. Summary of Significant Plan Provisions

All plan benefits are specified by the State Personnel and Pensions Article of the Annotated Code of Maryland. For all individuals who are members of the Employees', Teachers', Correctional Officers', or State Police Retirement System on or before June 30, 2011, retirement allowances are computed using both the highest three years' Average Final Compensation (AFC) and the actual number of years of accumulated creditable service. For individuals who become members of the State Police Retirement System or the Correctional Officers' Retirement System on or after July 1, 2011, retirement allowances are computed using both the highest five years' AFC and the actual number of years of accumulated creditable service. For all individuals who are members of the pension systems of the State Retirement and Pension System on or before June 30, 2011, pension allowances are computed using both the highest three consecutive years' AFC and the actual number of years of accumulated creditable service. For any individual who becomes a member of one of the pension systems on or after July 1, 2011, pension allowances are computed using both the highest five consecutive years' AFC and the actual number of years of accumulated creditable service. Various retirement options are available under each system which ultimately determines how a retiree's benefit allowance will be computed. Some of these options require actuarial reductions based on the retiree's and/or designated beneficiary's attained age and similar actuarial factors.

The member contribution rate for members of the Teachers' Retirement Pension System and Employees' Retirement Pension System is 7% and 6%, respectively, and 7% for members of the Law Enforcement Officers' Pension System. The member contribution rate for members of the Judges' Retirement System is 8%.

In addition, the benefit attributable to service on or after July 1, 2011 in many of the pension systems now will be subject to different cost-of-living adjustments (COLA) that is based on the increase in the Consumer Price Index (CPI) and capped at 2.5% or 1.0% based on whether the fair value investment return for the preceding calendar year was higher or lower than the investment return assumption used in the valuation (currently 7.50%).

A brief summary of the retirement eligibility requirements of and the benefits available under the various systems in effect during fiscal year 2018, are as follows:

**Service Retirement Allowances**

A member of either the Teachers' or Employees' Retirement System is generally eligible for full retirement benefits upon the earlier of attaining age 60 or accumulating 30 years of creditable service regardless of age. The annual retirement allowance equals 1/55 (1.81%) of the member's AFC multiplied by the number of years of accumulated creditable service.

An individual who is a member of either the Teachers' or Employees' Pension System on or before June 30, 2011, is eligible for full retirement benefits upon the earlier of attaining age 62, with specified years of eligibility service, or accumulating 30 years of eligibility service regardless of age. An individual who becomes a member of either the Teachers' or Employees' Pension System on or after July 1, 2011, is eligible for full retirement benefits if the member's combined age and eligibility service equals at least 90 years, or if the member is at least age 65 and has accrued at least 10 years of eligibility service.

For most individuals who retired from either the Teachers' or Employees' Pension System on or before June 30, 2006, the annual pension allowance equals 1.2% of the member's AFC, multiplied by the number of years of creditable service accumulated prior to July 1, 1998, plus 1.4% of the member's AFC, multiplied by the number of years of creditable service accumulated subsequent to June 30, 1998. With certain exceptions, for individuals who are members of the Teachers' or Employees' Pension System on or after July 1, 2006, the annual pension allowance equals 1.2% of the member's AFC, multiplied by the number of years of creditable service accumulated prior to July 1, 1998, plus 1.8% of the member's AFC, multiplied by the number of years of creditable service accumulated subsequent to June 30, 1998. Beginning July 1, 2011, any new member of the Teachers' or Employees' Pension System shall earn an annual pension allowance equal to 1.5% of the member's AFC multiplied by the number of years of creditable service accumulated as a member of the Teachers' or Employees' Pension System.

Exceptions to these benefit formulas apply to members of the Employees' Pension System, who are employed by a participating governmental unit that does not provide the 1998 or 2006 enhanced pension benefits or the 2011 reformed pension benefits. The pension allowance for these members equals 0.8% of the member's AFC up to the social security integration level (SSIL), plus 1.5% of the member's AFC in excess of the SSIL, multiplied by the number of years of accumulated creditable service. For the purpose of computing pension allowances, the SSIL is the average of the social security wage bases for the past 35 calendar years ending with the year the retiree separated from service.

An individual who is a member of the State Police Retirement System on or before June 30, 2011, is eligible for full retirement benefits upon the earlier of attaining age 50 or accumulating 22 years of eligibility service regardless of age. An individual who becomes a member of the State Police Retirement System on or after July 1, 2011 is eligible for full retirement benefits upon the earlier of attaining age 50 or accumulating 25 years of eligibility service regardless of age. The annual retirement allowance equals 2.55% of the member's AFC multiplied by the number of years of accumulated creditable service and may not exceed 71.4% of the member's AFC.

A member of the Judges' Retirement System is eligible for full retirement benefits upon attaining age 60. The annual retirement allowance for a member with at least 16 years of accumulated creditable service equals 2/3 (66.7%) of the salary of an active judge holding a comparable position. The annual retirement allowance is prorated if the member retires with fewer than 16 years of accumulated creditable service.

A member of the Law Enforcement Officers' Pension System is eligible for full retirement benefits upon the earlier of attaining age 50 or accumulating 25 years of eligibility service regardless of age. The annual retirement allowance for a member who is covered under the retirement plan provisions equals 1/50 (2.0%) of the member's AFC multiplied by the number of years of accumulated creditable service up to 30 years, plus 1/100 (1.0%) of the member's AFC multiplied by the number of years of accumulated creditable service in excess of 30 years. For members subject to the pension provisions, full service pension allowances equal 2.0% of AFC up to a maximum benefit of 60% (30 years of credit).

**Vested Allowances**

Any individual who is a member of the State Retirement and Pension System on or before June 30, 2011 (other than a judge or a legislator), and who terminates employment before attaining retirement age but after accumulating five years of eligibility service is eligible for a vested retirement allowance. Any individual who joins the State Retirement and Pension System on or after July 1, 2011 (other than a judge or a legislator), and who terminates employment before attaining retirement age, but after accumulating 10 years of eligibility service, is eligible for a vested retirement allowance. An individual who is a member of the Judges' Retirement System on or before June 30, 2014, has no minimum service requirements prior to vesting. However, individuals who join the Judges' Retirement System on or after July 1, 2013, and terminate employment before attaining retirement age, will have to accrue five years of eligibility service in order to receive a vested retirement allowance. Legislators become eligible for a vested retirement allowance upon accumulating eight years of eligibility services. A member, who terminates employment prior to attaining retirement age and before vesting, receives a refund of all member contributions and interest.

### **Early Service Retirement**

A member of either the Teachers' or Employees' Retirement System may retire with reduced benefits after completing 25 years of eligibility service. Benefits are reduced by 0.5% per month for each month remaining until the retiree either attains age 60 or would have accumulated 30 years of creditable service, whichever is less. The maximum reduction for a Teachers' or Employees' Retirement System member is 30%.

An individual who is a member of either the Teachers' or Employees' Pension System on or before June 30, 2011, may retire with reduced benefits upon attaining age 55 with at least 15 years of eligibility service. Benefits are reduced by 0.5% per month for each month remaining until the retiree attains age 62. The maximum reduction for these members of the Teachers' or Employees' Pension System is 42%. An individual who becomes a member of either the Teachers' or Employees' Pension System on or after July 1, 2011, may retire with reduced benefits upon attaining age 60 with at least 15 years of eligibility service. Benefits are reduced by 0.5% per month for each month remaining until the retiree attains age 65. The maximum reduction for these members of the Teachers' or Employees' Pension System is 30%.

Members of the State Police, Judges', Law Enforcement Officers' and Local Fire and Police Systems are not eligible for early service benefits.

### **Disability and Death Benefits**

Generally, a member covered under retirement plan provisions who is permanently disabled after five years of service receives a service allowance based on a minimum percentage (usually 25%) of the member's AFC. A member covered under pension plan provisions who is permanently disabled after accumulating five years of eligibility service receives a service allowance computed as if service had continued with no change in salary until the retiree attained age 62. A member (other than a member of the Maryland General Assembly or a judge, both of which are ineligible for accidental disability benefits) who is permanently and totally disabled as the result of an accident occurring in the line of duty receives 2/3 (66.7%) of the member's AFC plus an annuity based on all member contributions and interest. Death benefits are equal to a member's annual salary as of the date of death plus all member contributions and interest.

### **Adjusted Retirement Allowances**

Retirement and pension allowances are increased annually to provide for changes in the cost of living according to prescribed formulae. Such adjustments for retirees are based on the annual change in the CPI. For the Teachers' and Employees' Retirement Systems (TRS/ERS) the method by which the annual COLA's are computed depends upon elections made by members who were active on July 1, 1984 (or within 90 days of returning to service, for members who were inactive on July 1, 1984) enabling the member to receive either an unlimited COLA, a COLA limited to 5% or a two part combination COLA depending upon the COLA election made by the member.

Members of the State Police Retirement System (SPRS) and Law Enforcement Officers' Pension System (LEOPS) are eligible to participate in a Deferred Retirement Option Program (DROP). For members who enter the DROP on or after July 1, 2011, the member is deemed retired and the retirement allowance is placed in an account earning 4% interest per year, compounded annually. At the end of the DROP period, the lump sum held in the DROP account is paid to the retiree. The SPRS and LEOPS members must end employment and fully retire at the end of the DROP period. The maximum period of participation is 4 years for SPRS and 5 years for LEOPS. The amount of funds held in the DROP as of June 30, 2018 and 2017, was \$18,887,820 and \$21,913,547, respectively.

However, beginning July 1, 2011, for benefits attributable to service earned on or after July 1, 2011, in all of the systems except the judges' and legislators' systems, the adjustment is capped at the lesser of 2.5% or the increase in CPI if the most recent calendar year fair value rate of return was greater than or equal to the assumed rate. The adjustment is capped at the lesser of 1% or the increase in CPI if the fair value return was less than the assumed rate of return. 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.

Retirement allowances for legislators and judges are recalculated when the salary of an active member holding a comparable position is increased.

## **2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

### **A. Basis of Accounting**

The System's financial statements are prepared on the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America. Accordingly, investment purchases and sales are recorded as

of their respective trade dates. Employer and Member contributions are recognized in the period when due, pursuant to statutory or contractual requirements. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

## B. Investment Limitations

The State Personnel and Pensions Article of the Annotated Code of Maryland authorizes the System to invest plan assets in stocks, bonds, notes, certificates of indebtedness, mortgage notes, real estate, debentures or other obligations, subject to the terms, conditions, limitations and restrictions imposed by the Board of Trustees of the Maryland State Retirement and Pension System.

## C. Portfolio Valuation Method

The System's investments are reported at fair value. Fair value is the amount that the System can reasonably expect to receive for an investment in a current sale. See Note 3.H for the description of investments at fair value.

Investment amounts presented in the accompanying Statements of Plan Net Position represent the fair value of the respective portfolios as of the fiscal year-end. Similarly, investment income amounts reported in the accompanying Statements of Changes in Plan Net Position represent the income or loss derived for the years then ended. Accordingly, significant market fluctuations could periodically occur subsequent to the financial statement valuation date, which are not reflected in either the fair value of investments or the related investment income presented in these financial statements.

## D. Derivatives

As permitted by guidelines established by the Board of Trustees, the System may invest in derivatives. Compliance with these guidelines is monitored by Agency staff. Pursuant to such authority, the System invests in foreign currency forward contracts, options, futures, and swaps. The Agency does not purchase rights and warrants; however, it can accrue ownership through corporate actions. No derivatives were purchased with borrowed funds.

Derivatives are generally used to hedge against foreign currency risk and changes in interest rates, improve yield, and adjust the duration of the System's fixed income portfolio. These securities are subject to changes in value due to changes in currency valuations or interest rates. Credit risk for derivatives results from the same considerations as other counterparty risk assumed by the System, which is the risk that the counterparty might be unable to meet its obligations.

The System enters into forward foreign currency exchange contracts for hedging purposes to minimize the short-term impact of foreign currency fluctuations. Foreign currency exchange contracts are reported at fair value based on published market prices and quotations from major investment firms. The System could be exposed to risk if the counterparties to the contracts are unable to meet the terms of the contracts. The System seeks to minimize risk from counterparties by establishing minimum credit quality standards.

## E. Administrative and Investment Expenses

All of the System's administrative and investment expenses (e.g., salaries of Agency employees, investment advisory fees, etc.) are incurred centrally and charged to each individual retirement or pension system on the basis of its active membership and percentage ownership in the System's net position, respectively. The System's investment expenses are funded from investment income. The System's administrative expenses are funded from administrative fees assessed to each participating employer. See pages 66 and 67 for detailed Schedules of Administrative and Investment Expenses, respectively.

## F. Federal Income Tax Status

During the fiscal years ended June 30, 2018 and 2017, the System qualified under Section 401(a) of the Internal Revenue Code (the Code) and was exempt from Federal income taxes under Section 501(a) of the Code.

## G. Adoption of New Accounting Standards

As of the year ended June 30, 2018, Governmental Accounting Standards Board (GASB) issued GASB Statement No. 84, *Fiduciary Activities*, GASB Statement No. 87, *Leases* and GASB Statement No. 88, *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements*. These statements may have a material effect on the Board's financial statements once implemented. The System has not completed will be analyzing the effects of these pronouncements and plans to adopt them by their respective effective dates.

### 3. CASH, CASH EQUIVALENTS, AND INVESTMENTS

#### A. Legal Provisions

The Board of Trustees is required by Section 21-116 (c), State Personnel and Pensions Article, Annotated Code of Maryland (SPP), to establish and maintain an Investment Policy Manual (IPM), which is available on the Agency's web site. The IPM authorizes investing in all major sectors of the capital market in order to diversify and minimize total investment program risk. Such sectors include, but are not limited to:

<b>Type</b>	<b>Description</b>	<b>As of June 30, 2018</b>	
		<b>Strategic Target</b>	<b>Actual</b>
<b>Public Equity</b>	Investments in securities, known as shares or stocks, that represent an ownership interest in corporations and are generally traded on a stock exchange.	37.0%	37.5%
<b>Private Equity</b>	Investments in companies that are not registered with the SEC and are not traded in the public markets. Private equity may also be referred to as venture capital or buy-outs.	13.0%	12.5%
<b>Rate Sensitive</b>	Investments in securities, known as bonds, that represent an ownership interest in the debt of governments and corporations that are generally not traded on an exchange. They generally pay interest on a regular schedule and repay principal or face value at maturity. Short term investments such as money market funds U.S. treasury bills and currency are also included.	19.0%	19.9%
<b>Credit/Debt Related Strategies:</b>	Debt issued by corporations and other non-government sectors of the fixed income market such as distressed debt, convertibles, corporate and mortgage related credit strategies, mezzanine debt, bank loans, high yield, emerging markets and preferred securities.	9.0%	8.0%
<b>Absolute Return</b>	Investments whose performance is expected to exceed the three month U.S. Treasury bill by 4-5% over a full market cycle and exhibit low correlation to public stocks. The System's program may include strategies such as hedge fund of funds, multi- strategy, global tactical asset allocation, event driven, relative value, macro, insurance and equity hedged.	8.0%	8.4%
<b>Real Assets</b>	Investments whose performance is expected to exceed the rate of inflation over an economic cycle. The System's Real Return program may include the following investment vehicles in both public and private investments: energy related, infrastructure, timber and other natural resources, multi-asset class portfolios with a real return mandate, and real estate including direct investments, REITs and private partnerships.	14.0%	11.9%
<b>Cash, Equivalents and Equitization</b>	Investments that provide daily liquidity and either have very low risk or principal loss such as treasury bills or high quality commercial paper or act as a proxy for the overall System asset allocation through a combination of Exchange Traded Funds and fully funded futures contracts.	0.0%	1.8%

The above listed strategic targets were implemented in stages throughout the fiscal year. All classes are within the transitional target ranges, which have been identified within the Chief Investments Officer's Report in the Investment Section of this report.

The System is also authorized by its Board of Trustees to operate a securities lending program, and has contracted with its custodian bank to reinvest cash collateral received from the transfer of securities in investment instruments

authorized by the investment policy. The System's Board of Trustees has established a policy that determines collateralization percentages necessary for both foreign and domestic demand deposits. The policy requires collateral equal to 105% for international equity securities and 102% for all other securities, which is marked to market daily. See section G of this note for additional information.

## B. Cash and Cash Equivalents

For cash deposits and cash equivalents, custodial credit risk is the risk that, in the event of a bank failure, the System's deposits may not be returned to it.

The System does not have any funds or deposits that are not covered by depository insurance, that are uncollateralized, collateralized with securities held by the pledging financial institution, or collateralized with securities held by the pledging financial institution's trust department or agent, but not in the System's name and there are no legal or contractual provisions for deposits and investments. Nor does the System have any investments that are not registered in its name and are either held by the counterparty or the counterparty's trust department or agent, but not in the System's name.

The amount of the System's total cash and cash equivalents as of June 30, 2018 and 2017, was \$1,252,466 and \$1,034,221 (in thousands), respectively.

## C. Investments

These investments are accounted for as the System and are allocated to Teachers' Retirement and Pension, Employees' Retirement and Pension, Judges' Retirement, State Police Retirement and Law Enforcement Officers' Pension.

All investments are governed by the Prudent Person Rule as described in SPP Section 21-203 which states: A fiduciary shall discharge the fiduciary's duties with respect to the several systems solely in the interest of the participants and as follows: (1) for the exclusive purposes of providing benefits to the participants and for reasonable expenses of administering the several systems; (2) with the care, skill, prudence, and diligence under the circumstances then prevailing, that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims; (3) by diversifying the investments of the several systems so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so; (4) in accordance with the laws governing the several systems; and (5) in accordance with the documents and instruments governing the several systems to the extent that the documents and instruments are consistent with this subtitle..

## D. Interest Rate Risk

As of June 30, 2018 and 2017, the System had the following fixed income investments allocated by year of maturity with the exception of the Commingled Funds, which are based on their average maturity

<b>Investment Type:</b>	<b>Fair Value (in thousands)</b>	<b>As of June 30, 2018</b>			
		<b>Investment Maturities (in years)</b>	<b>Less than 1</b>	<b>1 thru 5</b>	<b>5+ thru 10</b>
Asset backed securities	\$201,452		\$ 640	\$ 42,606	\$ 41,470
Bank loans	734,443		47	258,093	476,303
Collateralized mortgage obligations	479,500		995	7,782	24,767
Credit/debt commingled funds	1,969,014		380,454	968,875	376,400
Domestic corporate obligations	1,855,531		42,933	566,196	847,288
International obligations	126,128		33,411	41,809	36,218
Mortgage pass-throughs	1,038,548		386	1,285	25,000
Municipals	57,874		570	6,999	6,515
Options	(6,839)		(6,036)	(803)	-
Short-term	1,166,907		1,166,907	-	-
Swaps	30,208		1,083	3,835	24,451
U.S. government agency	200,629		550	4,434	8,301
U.S. treasury notes/bonds	6,011,627		23,516	978,420	1,152,083
U.S. treasury strips	77,179		-	-	77,179
Yankee bonds	518,811		4,208	178,000	226,955
<b>Total</b>	<b>\$ 14,461,012</b>		<b>\$ 1,649,664</b>	<b>\$ 3,057,531</b>	<b>\$ 3,245,751</b>
					<b>\$ 6,508,066</b>

<b>Investment Type:</b>	<b>Fair Value (in thousands)</b>	<b>As of June 30, 2017</b>			
		<b>Less than 1</b>	<b>1 thru 5</b>	<b>5+ thru 10</b>	<b>More than 10</b>
Asset backed securities	\$ 237,079	\$ -	\$ 40,858	\$ 52,637	\$ 143,584
Bank loans	687,764	708	239,850	447,206	-
Collateralized mortgage obligations	406,010	1,260	11,906	17,888	374,956
Credit/debt commingled funds	2,431,069	81,313	1,366,206	654,651	328,899
Domestic corporate obligations	2,297,710	101,071	614,843	937,641	644,155
International obligations	120,975	44,284	9,490	40,893	26,308
Mortgage pass-throughs	1,109,274	11,036	5,854	18,657	1,073,727
Municipals	48,142	2,246	3,507	3,460	38,929
Options	(1,777)	(1,187)	(424)	-	(166)
Short-term	903,920	903,920	-	-	-
Swaps	15,159	2,696	2,358	10,101	4
U.S. government agency	247,575	10,832	27,649	14,146	194,948
U.S. treasury inflation linked	15,245	15,245	-	-	-
U.S. treasury notes/bonds	6,820,143	357,896	1,042,068	1,622,595	3,797,584
U.S. treasury strips	288,656	-	-	-	288,656
Yankee bonds	631,367	12,745	175,015	303,651	139,956
<b>Total</b>	<b>\$ 16,258,311</b>	<b>\$ 1,544,065</b>	<b>\$ 3,539,180</b>	<b>\$ 4,123,526</b>	<b>\$ 7,051,540</b>

Market or interest rate risk is the greatest risk faced by an investor in the fixed income market. The price of a fixed income security typically moves in the opposite direction of the change in interest rates. Derivative securities, variable rate investments with coupon multipliers greater than one, and securities with long terms to maturity are examples of investments whose fair values may be highly sensitive to interest rate changes. These securities are reported at fair value in the Statements of Plan Net Position.

Securities that would qualify as "highly interest rate sensitive" include interest only, principal only and inverse floaters, of which the System had no significant holdings as of June 30, 2018 and 2017.

As of June 30, 2018 and 2017, the System had \$1,038,548 and \$1,109,274 (in thousands), invested in mortgage pass-through securities issued by the Federal National Mortgage Association, Federal Home Loan Mortgage Corporation, and Government National Mortgage Association. These investments are moderately sensitive to changes in interest rates because they are backed by mortgage loans in which the borrowers have the option of prepaying.

Investment guidelines developed for each mandate determines the amount of interest rate risk allowable for each manager.

Derivatives held as of June 30, 2018 and 2017, are identified in greater detail in Note 4.

## E. Credit Risk

The System's exposure to credit risk (in thousands) as of June 30, 2018 and 2017, is shown below:

<b>Credit Quality Distribution for Securities with Credit Exposure as a Percentage of Total Investments</b> <i>(Expressed in Thousands)</i>				
<b>Rating</b>	<b>2018 Fair Value</b>	<b>Percentage Total Investments</b>	<b>2017 Fair Value</b>	<b>Percentage Total Investments</b>
AAA	\$ 245,453	0.474%	\$ 267,466	0.546%
AA	359,715	0.694%	409,669	0.836%
A	1,713,999	3.307%	1,563,667	3.192%
BAA	109,517	0.211%	158,392	0.323%
BA	10,622	0.020%	27,843	0.057%
BBB	1,008,148	1.945%	1,253,379	2.559%
BB	391,204	0.755%	462,148	0.943%
B	339,162	0.654%	333,377	0.681%
CAA	59,734	0.115%	39,066	0.080%
CA	10,290	0.020%	2,961	0.006%
CCC	51,168	0.099%	66,537	0.136%
CC	4,613	0.009%	3,181	0.006%
C	1,104	0.002%	-	0.000%
D	15,345	0.030%	18,188	0.037%
NR	5,006,272	9.660%	5,226,865	10.670%
	<b>\$ 9,326,346</b>		<b>\$ 9,832,739</b>	

The current policy regarding credit risk is determined by each investment manager's mandate. The above listed ratings are based on the most conservative rating when multiple ratings were offered. NR represents securities not rated; primarily made up of commingled funds, alternative investments and swaps, which by nature do not have credit quality ratings.

## F. Foreign Currency Risk

The System's exposure to foreign currency risk as of June 30, 2018 and 2017 is shown below:

**International Investment Securities – At Fair Value as of June 30, 2018**  
(U.S. Dollars in Thousands)

Currency	Equity	Fixed Income	Cash	Alternative Investments	Total
Australian Dollar	\$ 177,848	\$ 275	\$ 2,015	\$ 175,050	\$ 355,188
Brazilian Real	137,836	12,344	534	-	150,714
Canadian Dollar	288,168	766	5,875	66,570	361,379
Czech Koruna	8,636	-	-	-	8,636
Danish Krone	92,420	14,063	286	-	106,769
Egyptian Pound	2,548	-	-	-	2,548
Euro Currency	1,578,665	76,342	16,735	847,081	2,518,823
Hong Kong Dollar	399,223	-	2,226	88,904	490,353
Hungarian Forint	5,398	12,098	767	-	18,263
Indonesian Rupiah	15,413	12,706	344	-	28,463
Japanese Yen	878,851	(306)	5,878	76,135	960,558
Malaysian Ringgit	3,321	-	293	-	3,614
Mexican Peso	64,711	6,008	925	-	71,644
New Israeli Sheqel	16,712	-	459	273	17,444
New Taiwan Dollar	75,111	-	8,860	-	83,971
New Zealand Dollar	6,231	1,111	120	1,419	8,881
Norwegian Krone	54,182	643	1,085	7,247	63,157
Philippine Peso	5,635	-	26	-	5,661
Polish Zloty	17,246	-	297	-	17,543
Pound Sterling	781,012	54,062	17,112	264,844	1,117,030
Qatari Rial	407	-	6	-	413
Russian Ruble	-	16,665	-	-	16,665
Singapore Dollar	42,396	-	971	13,555	56,922
South African Rand	41,121	-	221	-	41,342
South Korean Won	212,640	-	749	-	213,389
Swedish Krona	99,758	217	248	7,130	107,353
Swiss Franc	297,116	-	190	5,605	302,911
Thailand Baht	31,821	-	295	-	32,116
Turkish Lira	3,444	-	168	-	3,612
Uae Dirham	7,732	-	4	-	7,736
Not Applicable (1)	4,109,872	1,323,123	97,753	22,546	5,553,294
<b>Total Holdings Subject to Foreign Currency Risk</b>	<b>\$ 9,455,474</b>	<b>\$ 1,530,117</b>	<b>\$ 164,442</b>	<b>\$ 1,576,359</b>	<b>\$ 12,726,392</b>

**International Investment Securities – At Fair Value as of June 30, 2017**  
*(U.S. Dollars in Thousands)*

<b>Currency</b>	<b>Equity</b>	<b>Fixed Income</b>	<b>Cash</b>	<b>Alternative Investments</b>	<b>Total</b>
Australian Dollar	\$ 207,008	\$ 966	\$ 858	\$ 129,887	\$ 338,719
Brazilian Real	68,482	13,882	1,122	-	83,486
Canadian Dollar	315,912	4,868	7,125	13,292	341,197
Czech Koruna	8,372	-	1	-	8,373
Danish Krone	102,089	97	709	-	102,895
Egyptian Pound	2,359	-	-	-	2,359
Euro Currency	1,776,201	118,984	16,493	674,712	2,586,390
Hong Kong Dollar	520,205	-	6,549	57,038	583,792
Hungarian Forint	7,813	-	21	-	7,834
Indonesian Rupiah	47,071	6,795	554	-	54,420
Japanese Yen	1,064,349	38,315	6,348	67,219	1,176,231
Malaysian Ringgit	9,331	-	199	-	9,530
Mexican Peso	78,462	1,018	929	-	80,409
New Israeli Sheqel	22,585	-	161	246	22,992
New Taiwan Dollar	75,113	-	7,527	-	82,640
New Zealand Dollar	6,211	-	235	218	6,664
Norwegian Krone	44,222	347	380	2,084	47,033
Philippine Peso	16,234	-	10	-	16,244
Polish Zloty	30,639	495	285	-	31,419
Pound Sterling	857,947	58,602	9,108	207,871	1,133,528
Qatari Rial	1,841	-	-	-	1,841
Russian Ruble	-	15,799	617	-	16,416
Singapore Dollar	62,412	-	926	10,662	74,000
South African Rand	64,292	-	417	-	64,709
South Korean Won	303,439	-	404	-	303,843
Swedish Krona	139,521	155	1,102	5,975	146,753
Swiss Franc	391,532	-	904	4,942	397,378
Thailand Baht	46,380	-	383	-	46,763
Turkish Lira	11,565	393	205	-	12,163
Uae Dirham	15,856	-	-	-	15,856
Not Applicable (1)	3,292,108	3,504	-	29,460	3,325,072
<b>Total Holdings Subject to Foreign Currency Risk</b>	<b>\$ 9,589,551</b>	<b>\$ 264,220</b>	<b>\$ 63,572</b>	<b>\$ 1,203,606</b>	<b>\$ 11,120,949</b>

The majority foreign currency-denominated investments are in non-US stocks.

The Agency has an overlay program to help minimize its currency risk.

- (1) Note: This schedule does not agree with the total international obligations and international equities as listed on the Statement of Plan Net Position due to American Depository Receipts and international obligations valued in U.S. dollars but classified as International. Mutual Funds listed have exposure to multiple currencies, however, are valued in U.S. dollars.

## G. Security Lending Transactions

The System accounts for securities lending transactions in accordance with GASB Statement No. 28, *Accounting and Financial Reporting for Securities Lending Transactions*.

The following table details the net income from securities lending for the years ended June 30, 2018 and 2017 (in thousands):

	<b>2018</b>	<b>2017</b>
Interest income	\$ 36,609	\$ 21,616
Less:		
Interest expense	25,345	8,204
Program fees	1,807	2,133
Expenses from securities lending	<u>27,152</u>	<u>10,337</u>
Net income from securities lending	<u><u>\$ 9,457</u></u>	<u><u>\$ 11,279</u></u>

The Board of Trustees has authorized the System to lend its securities to broker-dealers with a simultaneous agreement to return the collateral for the same securities in the future. The System's custodian, pursuant to a written agreement, is permitted to lend long-term securities to authorized broker-dealers subject to the receipt of acceptable collateral. The System lends securities for collateral in the form of either cash or other securities. The types of securities on loan as of June 30, 2018 were long-term U.S. government obligations, domestic and international equities, as well as domestic and international obligations. At the initiation of a loan, borrowers are required to provide collateral amounts of 102 percent (domestic equities and bonds) and 105 percent (international equities) of the fair value of the securities lent. In the event the collateral fair value falls below the respective collateral percentages, the borrower is required to provide additional collateral by the end of the next business day. The contractual agreement with the System's custodian provides indemnification in the event the borrower fails to return the securities lent or fails to pay the System income distributions by the securities' issuers while the securities are on loan. There have been no violations of the provisions of the agreement during the period of these financial statements.

The System maintains the right to terminate securities lending transactions upon notice. The cash collateral received on each loan was invested, together with the cash collateral of other qualified tax-exempt plan lenders, in a collective investment pool. As of June 30, 2018, the investment pool had an average duration of 30.32 days and an average final maturity of 79.84 days for U.S. dollar collateral. As of June 30, 2017, the investment pool had an average duration of 26.7 days and an average final maturity of 63.02 days for U.S. dollar collateral. Because the loans were terminable at will, their duration did not generally match the duration of the investments made with cash collateral. The System cannot pledge or sell collateral securities received unless (and until) a borrower defaults. As of June 30, 2018 and 2017, the System had no credit risk exposure to borrowers because the amount the System owed the borrowers exceeded the amount the borrowers owed the System. The fair value of collateral held and the fair value of securities on loan for the System as of June 30, 2018 and 2017 (in thousands) was \$2,043,411 and \$1,995,272, respectively. The fair value of collateral held and the fair value of securities on loan for the System as of June 30, 2017 (in thousands) was \$2,553,919 and \$2,484,281, respectively.

The following table presents the fair values of the underlying securities, and the value of the collateral pledged at June 30, 2018 and 2017 (in thousands):

	<b>As of June 30, 2018</b>		
<b>Securities Lent</b>	<b>Fair Value Loaned Securities</b>	<b>Collateral Fair Value</b>	<b>Percent Collateralized</b>
<b>Lent for cash collateral</b>			
U.S. government and agency	\$ 304,725	\$ 311,015	102.1%
Domestic bond & equity	901,718	923,320	102.4%
International fixed	482	488	101.2%
International equity	92,278	96,478	104.6%
<b>Lent for non-cash collateral</b>			
U.S. government and agency	368,502	376,450	102.2%
Domestic bond & equity	262,701	265,725	101.2%
International equity	64,866	69,935	102.4%
<b>Total securities lent</b>	<b>\$ 1,995,272</b>	<b>\$ 2,043,411</b>	102.4%

<b>As of June 30, 2017</b>			
<b>Securities Lent</b>	<b>Fair Value Loaned Securities</b>	<b>Collateral Fair Value</b>	<b>Percent Collateralized</b>
<b>Lent for cash collateral</b>			
U.S. government and agency	\$ 775,281	\$ 794,279	102.5%
Domestic bond & equity	827,271	846,628	102.3%
International fixed	5,876	6,006	102.2%
International equity	145,134	153,380	105.7%
<b>Lent for non-cash collateral</b>			
U.S. government and agency	226,648	231,348	102.1%
Domestic bond & equity	467,638	483,818	103.5%
International equity	36,433	38,460	105.6%
<b>Total securities lent</b>	<b><u>\$ 2,484,281</u></b>	<b><u>\$ 2,553,919</u></b>	102.8%

The securities collateral value is based on the System's pro rata share of the value of the securities collateral maintained in a pool at the custodian bank for all lending clients participating in the lending program. Collateral fair value listed above includes all collateral for securities on loan.

## H. Investments at Fair Value

Government Accounting Standards Board Statement Number 72 (GASB 72), *Fair Value Measurements and Application*, clarifies the definition of fair value for financial reporting, establishes a framework for measuring fair value, and requires additional disclosures about the use of fair value measurements. GASB 72 established a three-level valuation hierarchy for disclosure of fair value measurements. The valuation hierarchy is based upon the transparency of inputs to the valuation of an asset or liability as of the measurement date. The three levels are defined as follows:

Level 1 – observable market inputs that are unadjusted quoted prices for identical assets or liabilities in active markets that a government can access at the measurement date.

Level 2 – inputs other than quoted prices included within Level 1 – that are observable for the asset or liability, either directly or indirectly (For example, quoted prices for similar assets or liabilities in active markets).

Level 3 – inputs to the valuation methodology are unobservable and significant to the fair value measurement.

The System categorized its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The system had the following recurring fair value measurements as of June 30, 2018 and 2017:

Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Debt securities classified in Level 2 of the fair value hierarchy are valued using a combination of prevailing market prices and interest payments that are discounted at prevailing interest rates for similar instruments. Commercial and residential mortgage-backed securities classified in Level 3 are valued using discounted cash flow techniques. Collateralized debt obligations classified in Level 3 are valued using consensus pricing.

Derivative instruments classified in Level 2 of the fair value hierarchy are valued using a market approach that considers benchmark interest rates and foreign exchange rates.

As of June 30, 2018 and 2017, the System had the following recurring fair value measurements:

	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>As of June 30, 2018</b>				
<b>Investments by fair value level (expressed in millions)</b>				
<b>Debt Securities</b>				
U.S. Government obligations	\$ 6,585	\$ 6,585	\$ -	\$ -
Domestic corporate obligations	3,411		3,411	
International obligations	90		90	
Emerging markets debt	1,324		1,324	
Mortgages & mortgage related securities	1,528			1,528
<b>Total debt securities</b>	<b>12,938</b>	<b>6,585</b>	<b>4,825</b>	<b>1,528</b>
<b>Equity Securities</b>				
Domestic stocks (includes REITs)	9,455	9,455		
International stocks (includes (REITs))	10,173	10,173		
<b>Total equity securities</b>	<b>19,628</b>	<b>19,628</b>		
<b>Alternative Investment</b>				
<b>Cash and Cash Equivalents</b>				
<b>Total investment by fair value level</b>	<b>33,802</b>	<b>\$ 27,449</b>	<b>\$ 4,825</b>	<b>\$ 1,528</b>
<b>Investment measured at the net asset value (NAV)</b>				
Private funds (includes equity, real estate, credit, energy, infrastructure and timber)	9,283			
Real estate-open ended	3,183			
Global Macro	560			
Mult-strategy	418			
<b>Hedge Funds</b>				
Equity long/short	972			
Event-driven	876			
Global macro	858			
Multi-asset	1			
Relative Value	1,406			
Opportunistic	314			
<b>Total investment measured at the NAV</b>	<b>17,871</b>			
<b>Investment derivative instruments and foreign currency holdings</b>				
Credit default swaps	35	\$ -	\$ 35	\$ -
Foreign exchange contracts (liabilities)	13	-	13	-
Foreign - international currencies	67	-	67	-
Interest rate swaps	26	-	26	-
Warrants	11	-	11	-
<b>Total investment derivative instruments</b>	<b>152</b>	<b>\$ -</b>	<b>\$ 152</b>	<b>\$ -</b>
<b>Total</b>	<b>\$ 51,825</b>			

	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>As of June 30, 2017</b>				
<b>Investments by fair value level (expressed in millions)</b>				
<b>Debt Securities</b>				
U.S. Government obligations	\$ 7,372	\$ 7,372	\$ -	\$ -
Domestic corporate obligations	3,914	-	3,914	-
International obligations	121	-	121	-
Emerging Market Debt	1,473	-	1,473	-
Mortgages & mortgage related securities	1,515	-	-	1,515
<b>Total debt securities</b>	<b>14,395</b>	<b>7,372</b>	<b>5,508</b>	<b>1,515</b>
<b>Equity Securities</b>				
Domestic stocks (includes REITs)	7,963	7,963	-	-
International stocks (includes (REITs)	9,929	9,929	-	-
<b>Total equity securities</b>	<b>17,892</b>	<b>17,892</b>	<b>-</b>	<b>-</b>
<b>Cash and Cash Equivalents</b>	<b>997</b>	<b>997</b>	<b>-</b>	<b>-</b>
<b>Total investment by fair value level</b>	<b>33,284</b>	<b>\$ 26,261</b>	<b>\$ 5,508</b>	<b>\$ 1,515</b>
<b>Investment measured at the net asset value (NAV)</b>				
Private funds (includes equity, real estate, credit, energy, infrastructure and timber)	7,902			
Real estate-open ended	2,592			
Commodities	436			
Global Macro	307			
Global tactical	342			
Multi-strategy	108			
<b>Hedge Funds</b>				
Commodity	305			
Equity long/short	1,610			
Event-driven	564			
Global macro	617			
Multi-asset	26			
Multi-strategy	1,682			
Opportunistic	269			
<b>Total investment measured at the NAV</b>	<b>16,760</b>			
<b>Investment derivative instruments and foreign currency holdings</b>				
Credit default swaps	2	\$ -	\$ 2	\$ -
Foreign exchange contracts (liabilities)	(47)	-	(47)	-
Foreign - international currencies	37	-	37	-
Options bought/written	12	-	12	-
Warrants	46	-	46	-
<b>Total investment derivative instruments</b>	<b>50</b>	<b>\$ -</b>	<b>\$ 50</b>	<b>\$ -</b>
<b>Total</b>	<b>\$ 50,094</b>			

The valuation method for investments measured at net asset value (NAV) per share (or its equivalent) is presented in the following table (in millions):

	As of June 30, 2018				As of June 30, 2017			
	Unfunded Commitments		Redemption Frequency	Redemption Notice Period	Unfunded Commitments		Redemption Frequency	Redemption Notice
	Fair Value				Fair Value			
Private funds (includes equity, credit, energy, infrastructure, and timber) (1)	\$ 9,283	\$ 7,805			\$ 7,902	\$ 6,524		
Real estate-open ended (2)	3,183	-	Quarterly	45 - 90 days	2,592	-	Quarterly	45-90 days
Commodities					427	-	Monthly	5-30 days
Global macro (3)	352	-	Weekly	3 days	9	-	N/A	Daily
	208	-	Daily	2 days	307	-	Weekly	3 days
Multi-asset (4)	418	-	Monthly	5 days				
Global tactical					342	-	Monthly	5 days
Multi-strategy					108	-	Weekly	3 days
<b>Hedge Funds</b>								
Commodity					305	-	Monthly	30-60 days
Equity long/short (5)	819	-	Monthly	30-45 days	1,098	-	Monthly	30-45 days
	135	-	Quarterly	45-90 days	512	-	Quarterly	45-90 days
	18	-	N/A	Liquidating				
Event-driven (6)	159	-	Monthly	15 days	169	-	Annual	45 days
	127	-	Semi Annual	45 days	150	-	Quarterly	65 days
	524	-	Quarterly	65 days	149	-	Monthly	45 days
	66	-	N/A	Liquidating	96	-	N/A	Liquidating
Global macro (3)	858	-	Monthly	5 - 30 days	617	-	Monthly	5 days
Multi-asset (4)	1	-	N/A	Liquidating	26	-	N/A	Liquidating
Multi-strategy	1,406	-	Quarterly	60-65 days	1,682	-	Quarterly	60-90 days
Opporunitstic	228	-	Quarterly	90 days	220	-	Quarterly	90 days
	86	-	Semi Annual	90 - 120 days	49		Semi Annual	90 days
	<b>\$ 17,871</b>	<b>\$ 7,805</b>			<b>\$ 16,760</b>	<b>\$ 6,524</b>		

- (1) Private funds (includes equity, real estate, credit, energy, infrastructure and timber): This type includes 284 Global private funds, which cannot be redeemed. Instead, distributions are received through the liquidation of the underlying assets of the fund. These funds are valued based on individual, audited financial statements and assumptions used by fund managers.
- (2) Real estate-open ended: This type includes 7 domestic open-ended real estate funds, which can be liquidated. The fair values of the funds within this type have been determined using the NAV per share, which has been valued by the fund based on the characteristics of the underlying assets.
- (3) Global macro: This category includes 2 hedge funds and 2 non-hedges fund investment which invest in over 100 financial markets. The funds are diversified and take long, short and spread positions. The fair values of the funds within this type have been determined using the NAV per share, which has been valued by the fund based on the characteristics of the underlying assets. These assets have a liquidity structure which ranges from 3 to 30 days.

- (4) Multi-asset: This category includes 1 non-hedge fund which invests in developed global equity, fixed income and currencies and 2 diversified hedge fund-of-funds. Both fund-of fund investments are being redeemed. The fair values of the funds within this type have been determined using the NAV per share, which has been valued by the fund based on the characteristics of the underlying assets.
- (5) Equity long/short: This type includes investments in 6 hedge funds that invest both long and short, primarily in U.S. common stocks. Management of each hedge fund has the ability to shift investment from value to growth strategies, from small to large capitalization stocks, and from a net long position to a net short position. The fair values of the funds within this type have been determined using the NAV per share, which has been valued by the fund based on the characteristics of the underlying assets. These assets have a liquidity structure which ranges from 30 to 90 days; however, 2 funds have a one-year soft lock-up, 2 of the funds have a three-year lock-up (1 hard and 2 to 3 soft) and the remaining two funds are liquidating.
- (6) Event-driven: This type includes 6 investments, of which 3 are in credit hedge funds. These funds invest in equities and bonds of companies at risk of or in the process of reorganizing, to profit from economic, political, corporate and government-driven events. The other 3 funds are focused on financials, merger arbitrage and highly liquid assets across the capital structure. The fair values of the funds within this type have been determined using the NAV per share, which has been valued by the fund based on the characteristics of the underlying assets. Currently, the System is reducing its interests in two of the funds. The other four funds have 15 to 65 day liquidity structures.
- (7) Relative value: This category includes 4 hedge funds with liquidity structures between 30 and 65 days. These funds invest in a wide range of strategies. The fair values of the funds within this type have been determined using the NAV per share, which has been valued by the fund based on the characteristics of the underlying assets.
- (8) Opportunistic: Currently there are 2 hedge fund in this category, which invests in re-insurance for catastrophe risk (mostly hurricane and earthquake). One fund has a quarterly redemption with a 90-day notice and the other has a semi-annual redemption with a 90-120 day notice. The fair value of these funds have been determined using the NAV per share, which has been valued by the fund based on the characteristics of the underlying assets.

#### 4. DERIVATIVES

Each investment manager's guidelines outline permissible use of derivatives. Use of derivatives is permitted to the extent that it does not materially increase total portfolio volatility relative to its benchmark. Derivatives are permitted for the purposes of managing investment risk, replicating an investment that may otherwise be made directly in the cash market, or in acquiring active exposures permissible under respective guidelines. Use of derivatives is not permitted to materially alter the characteristics, including the investment risk, of each investment manager's account beyond respective guidelines' allowances. Futures and short option positions may be collateralized with cash, cash equivalents, or current portfolio security holdings.

The investment managers are required to have in place, and use, procedures that subject derivative based strategies to rigorous scenario and volatility analysis. Futures and short option positions must be hedged with cash, cash equivalents, or current portfolio security holdings.

**List of Derivatives Aggregated by Investment Type – At Fair Value as of June 30, 2018**  
(in Thousands)

<b>Currency</b>	<b>Changes in Fair Value(4)</b>		<b>Fair Value at June 30,2018</b>		
	<b>Classifications</b>	<b>Amount(1)</b>	<b>Classification</b>	<b>Amount(2)</b>	<b>Notional(3)</b>
Commodity Futures Long	Investment Revenue	\$ 2,333	Futures	\$ -	\$ -
Commodity Futures Short	Investment Revenue	686	Futures	-	-
Credit Default Swaps Bought	Investment Revenue	239	Swaps	-	-
Credit Default Swaps Written	Investment Revenue	(31)	Swaps	3,835	260,006
Fixed Income Futures Long	Investment Revenue	(41,240)	Futures	-	3,376,500
Fixed Income Futures Short	Investment Revenue	20,961	Futures	-	(3,467,193)
Fixed Income Options Bought	Investment Revenue	(2,024)	Options	10,997	1,377,650
Fixed Income Options Written	Investment Revenue	(1,152)	Options	(17,175)	(1,248,035)
Foreign Currency Futures Long	Investment Revenue	505	Futures	-	-
Foreign Currency Futures Short	Investment Revenue	(3,326)	Futures	-	-
Foreign Currency Futures Written	Investment Revenue	747	Options	-	(28,230)
Futures Options Bought	Investment Revenue	296	Options	85	454
Futures Options Written	Investment Revenue	2,973	Options	(781)	(1,796)
FX Forwards	Investment Revenue	(12,870)	Long Term Instruments	13,787	21,845,360
Index Futures Long	Investment Revenue	16,878	Futures	-	78
Index Futures Short	Investment Revenue	300	Futures	-	-
Pay Fixed Interest Rate Swaps	Investment Revenue	26,541	Swaps	25,669	717,363
Receive Fixed Interest Rate Swaps	Investment Revenue	(191)	Swaps	103	25,804
Rights	Investment Revenue	397	Common Stock	311	6,221
Total Return Swaps Bond	Investment Revenue	19	Swaps	-	-
Warrants	Investment Revenue	10,809	Common Stock	12,565	2,101
		<b>\$ 22,850</b>		<b>\$ 49,396</b>	

**List of Derivatives Aggregated by Investment Type – At Fair Value as of June 30, 2017**  
*(in Thousands)*

<b>Currency</b>	<b>Changes in Fair Value(4)</b>		<b>Fair Value at June 30,2017</b>		
	<b>Classifications</b>	<b>Amount(1)</b>	<b>Classification</b>	<b>Amount(2)</b>	<b>Notional(3)</b>
Commodity Futures Long	Investment Revenue	\$ (13,727)	Futures	\$ -	\$ 170,339
Commodity Futures Short	Investment Revenue	(2,508)	Futures	-	(20)
Credit Default Swaps Bought	Investment Revenue	(112)	Swaps	(25)	1,141
Credit Default Swaps Written	Investment Revenue	1,345	Swaps	1,591	91,830
Fixed Income Futures Long	Investment Revenue	(67,200)	Futures	-	811,420
Fixed Income Futures Short	Investment Revenue	7,291	Futures	-	(1,054,704)
Fixed Income Options Bought	Investment Revenue	2,597	Options	15,537	653,796
Fixed Income Options Written	Investment Revenue	(3,700)	Options	(15,728)	(1,574,200)
Foreign Currency Futures Short	Investment Revenue	(3,040)	Futures	-	-
Futures Options Bought	Investment Revenue	(270)	Options	186	5,728
Futures Options Written	Investment Revenue	10,446	Options	(873)	(8,178)
FX Forwards	Investment Revenue	(41,734)	Long Term Instruments	(48,879)	20,505,582
Index Futures Long	Investment Revenue	6,582	Futures	-	946
Index Futures Short	Investment Revenue	(2,220)	Futures	-	-
Pay Fixed Interest Rate Swaps	Investment Revenue	34,916	Swaps	12,295	844,857
Receive Fixed Interest Rate Swaps	Investment Revenue	110,405	Swaps	(120)	24,696
Rights	Investment Revenue	1,282	Common Stock	229	597
Total Return Swaps Bond	Investment Revenue	5,423	Swaps	4	5,566
Warrants	Investment Revenue	3,297	Common Stock	46,127	12,581
		<b>\$ 49,073</b>		<b>\$ 10,344</b>	

*Note: Includes assets investmented on behalf of the Mass Transit Administration.*

1. Negative values (in brackets) refer to losses
2. Negative values (in brackets) refer to liabilities
3. Notional may be a dollar amount or size of underlying for futures and options, negative values (in brackets) refer to short positions
4. Changes in fair value excludes futures margin payments

## A. Credit Risk

The System is exposed to credit risk on derivative instruments that are in asset positions. To minimize its exposure to losses related to credit risk, the investment managers use counterparty collateral in their non-exchange-traded derivative instruments. Netting arrangements are also used when entering into more than one derivative instrument transaction with counterparty. At the present time, the Agency does not have a formal policy relating to counterparty collateral or netting arrangements.

The aggregate fair value of derivative instruments in asset positions at June 30, 2018, was \$358,209 (in thousands). This represents the maximum loss that would be recognized at the reporting date if all counterparties failed to perform. The maximum loss would, however, be reduced by the counterparty collateral and the liabilities included in netting arrangements with counterparties.

The following table lists the fair value of credit exposure per ratings of the Standard & Poor's (S&P), Moody's and Fitch.

### Counterparty Ratings

The following tables list the fair value of credit exposure per ratings of Standard & Poor's (S&P), Moody's and Fitch (in thousands):

<b>Fair Value</b>	<b>S&amp;P Rating</b>	<b>Fair Value</b>	<b>Moody's Rating</b>	<b>Fair Value</b>	<b>Fitch Rating</b>
\$ 116,389	AA-	\$ 24,798	Aa2	\$ 58,948	AA
71,857	A+	92,211	Aa3	238,893	AA-
145,983	A	166,924	A1	53,197	A+
22,659	A-	72,940	A2	7,171	A
1,321	BBB+	1,336	A3		
<b>\$ 358,209</b>	<b>(1)</b>	<b>\$ 358,209</b>	<b>(1)</b>	<b>\$ 358,209</b>	<b>(1)</b>

*(1) Total aggregate fair value*

### Risk Concentrations

The following tables list the counterparty risk concentration and credit ratings per ratings of Standard & Poor's (S&P), Moody's and Fitch:

<b>Counterparty Name</b>	<b>Percentage of Net Exposure</b>	<b>S&amp;P Rating</b>	<b>Fitch Rating</b>	<b>Moody's Rating</b>
STATE STREET BANK LONDON	25%	A	AA-	A1
WESTPAC BANKING CORPORATION	14%	AA-	AA-	Aa3
ROYAL BANK OF CANADA (UK)	9%	AA-	AA	A1
HSBC BANK PLC	9%	A	AA-	A2
JPMORGAN CHASE BANK NA LONDON	7%	A+	AA	Aa3
CITIBANK N.A.	7%	A+	A+	A1
WELLS FARGO LCH	6%	A-	A+	A2
TORONTO DOMINION BANK	6%	AA-	AA-	Aa2
UBS AG LONDON	5%	A+	AA-	Aa3
NORTHERN TRUST COMPANY, THE	4%	AA-	AA-	A2
BANK OF NEW YORK	4%	A	AA-	A1
STANDARD CHARTERED BANK	1%	A	A+	A1
WELLS FARGO CME	1%	A+	AA-	Aa2
BARCLAYS BANK ICE	1%	A	A	A2
BARCLAYS BANK PLC WHOLESALE	1%	A	A	A2

**B. Interest Rate Risk**

During fiscal year 2018, the Agency was exposed to interest rate risk. For more details, refer to the Interest Rate Risk Note 3.D. (GASB Statement No. 40).

**C. Foreign Currency Risk**

The System's derivatives exposed it to foreign currency risk. For more details refer, to the Foreign Currency Risk Note 3.F. (GASB Statement No. 40).

## 5. CONTRIBUTIONS

The State Personnel and Pensions Article requires both active members and their respective employers to make contributions to the System. Rates for required contributions by active members are established by law. Members of the Teachers' and Employees' Retirement Systems are required to contribute 7% or 5% of earnable compensation depending upon the retirement option selected. Members of the State Police and Judges' Retirement Systems are required to contribute 8% and 6% of earnable compensation, respectively, and beginning July 1, 2014, members of the Judges Retirement System are required to make contributions of 8% of earnable compensation. Members of the Teachers' and Employees' Pension System, Alternate Contributory Pension Selection (ACPS), are required to contribute 7% of earnable compensation.

However, members of the Employees' Pension System who are employed by a participating governmental unit that elected to remain in the Contributory Pension System are required to contribute 2% of earnable compensation. The members of the Employees' Pension System who are employed by participating governmental units who elected to remain in the Non-Contributory Pension System are only required to contribute 5% of earnable compensation in excess of the social security taxable wage base.

Contribution rates for employer and other "nonemployer" contributing entities are established by annual actuarial valuations using the Individual Entry Age Normal Cost method with projection and other actuarial assumptions adopted by the Board of Trustees. These contribution rates have been established as the rates necessary to fully fund normal costs and amortize the unfunded actuarial accrued liability.

The unfunded actuarial liability was being amortized in distinct layers. The unfunded actuarial accrued liability which existed as of the June 30, 2000, actuarial valuation was being amortized over a 40-year period (as provided by law) from July 1, 1980 and as provided by law, any new unfunded liabilities or surpluses arising during the fiscal year ended June 30, 2001, or any fiscal year thereafter, was being amortized over a 25-year period from the end of the fiscal year in which the liability or surplus arose. However, in the 2014 legislative session, the Legislature changed the method used to fund the System. The unfunded liability for each System is being amortized over a single closed 25-year period.

Members of the State Police Retirement System (SPRS) are eligible to participate in a Deferred Retirement Option Program (DROP). For members who enter the DROP on or before June 30, 2011, the SPRS member is deemed retired and the retirement allowance placed in an account earning 6% interest per year, compounded monthly. For members who enter the DROP on or after July 1, 2011, the SPRS member is deemed retired and the retirement allowance is placed in an account earning 4% interest per year, compounded annually. At the end of the DROP period, the lump sum held in the DROP account is paid to the SPRS retiree. The SPRS member must end employment and fully retire at the end of the DROP period. The maximum period of participation is 4 years. The amount of funds held in the DROP as of June 30, 2018 and 2017, was \$18,887,820 and \$22,913,547, respectively.

The State of Maryland (which is also a non-employer contributor to the Teachers' Retirement and Pension Systems and the Judges' Retirement System), the Maryland Automobile Insurance Fund, the Injured Workers' Insurance Fund, and more than 150 participating governmental units make all of the employer and other (non-employer) contributions to the System.

## 6. LONG-TERM CONTRIBUTIONS RECEIVABLE

In addition to actuarially determined contributions, certain withdrawn employers also make annual installment payments, including interest at the actuarially assumed rate of return in effect at the time of withdrawal (7% or 7.5% per year), for liabilities associated with employees that have elected to stay in the System when their employer elected to withdraw. As of June 30, 2018, and 2017, the outstanding balances were \$18,120 and \$22,965 (expressed in thousands), respectively. These payments are due over various time periods, based on the date of the employer's withdrawal.

## 7. REFUNDS

Member contributions plus interest may be refunded to a member who withdraws from the System, or to the designated beneficiary following a member's death. Employer contributions may also be refunded with interest to any participating governmental unit electing to withdraw from the System. For the fiscal years ended June 30, 2018 and 2017, refunds to members and withdrawing employers were \$68,600 and \$63,441 (expressed in thousands), respectively.

## 8. ACCOUNTS PAYABLE AND ACCRUED EXPENSES

For the fiscal years ended June 30, 2018 and 2017, accounts payable and accrued expenses consisted of the following components (expressed in thousands):

	<b>2018</b>	<b>2017</b>
Administrative expenses	\$1,619	\$1,988
Investment management fees	22,436	22,504
Tax and other withholdings	36,352	39,304
Total	\$60,407	\$63,796

## 9. NET PENSION LIABILITY

Per the actuary reports dated June 30, 2018 and 2017, the components of the net pension liability of the participating employers as of June 30, 2018 and 2017 were as follows:

	<i>(expressed in thousands)</i>	<b>2018</b>	<b>2017</b>
Total Pension Liability (TPL)		\$72,808,833	\$70,610,885
Plan Fiduciary Net Position		51,827,233	48,987,184
Net Pension Liability		\$20,981,600	\$21,623,701
Ratio - Fiduciary Net Position/TPL		71.18%	69.38%

### A. Actuarial Assumptions

Inflation	In the 2018 actuarial valuation, 2.60% general, 3.10% wage. In the 2017 actuarial valuation, 2.65% general, 3.15% wage.
Salary Increases	In the 2018 actuarial valuation, 3.10% to 9.10%. In the 2017 actuarial valuation, 3.15% to 9.15%
Investment Rate of Return	In the 2018 actuarial valuation, 7.45%. In the 2017 actuarial valuation, 7.50%.
Discount Rate	7.45% in 2018; 7.5% in 2017
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2015 valuation pursuant to an experience study of the period 2010 - 2014.
Mortality	RP-2014 Mortality Tables with generational mortality projections using scale MP-2014 (2-dimmmensional) mortality improvement scale.

**B. Investments**

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of geometric real rates of return were adopted by the Board after considering input from the System's investment consultant(s) and actuary(s). For each major asset class that is included in the System's target asset allocation as of June 30, 2018, these best estimates are summarized in the following table:

<b>Asset Class</b>	<b>Target Allocation</b>	<b>Long-Term Expected Real Rate of Return</b>
Public Equity	37%	5.8%
Private Equity	13%	6.7%
Rate Sensitive	19%	1.1%
Credit Opportunity	9%	3.6%
Real Assets	14%	4.8%
Absolute Return	8%	3.2%
Total	100%	

The above was the Board of Trustees' adopted asset allocation policy and best estimate of geometric real rates of return for each major asset class as of June 30, 2018.

For the years ended June 30, 2018 and 2017, the annual money-weighted rate of return on pension plan investments, net of the pension plan investment expense, was 8.08% and 10.02%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

**C. Discount Rate**

A single discount rate of 7.45% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.45%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

**D. Sensitivity of the Net Pension Liability**

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.45%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

<b>System</b>	<i>(Expressed in thousands)</i>		
	<b>1% Decrease to 6.45%</b>	<b>Discount Rate 7.45%</b>	<b>1% Increase to 8.45%</b>
Teachers	\$ 17,042,311	\$ 11,435,754	\$ 6,792,637
Employees	11,117,369	8,075,495	5,530,803
State Police	1,133,601	822,745	571,940
Judges	152,134	91,911	40,816
LEOPS	769,937	554,077	379,048
CORS	5,352	1,618	(1,436)
<b>Total System Net Pension Liability</b>	<b>\$ 30,220,704</b>	<b>\$ 20,981,600</b>	<b>\$ 13,313,808</b>

## REQUIRED SUPPLEMENTARY INFORMATION

**MARYLAND STATE RETIREMENT**  
**SCHEDULE OF CHANGES IN**  
for the Fiscal Year Ended  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>
Total pension liability			
Service cost	\$ 791,979	\$ 441,284	\$ 32,285
Interest	3,070,454	1,824,968	161,440
Changes of benefit terms	-	-	(2,167)
Difference between expected and actual experience	(466,863)	(204,581)	1,513
Changes in assumptions	92,669	55,131	2,013
Benefit payments, including refunds of employee contributions	(2,205,310)	(1,381,043)	(122,720)
Net change in total pension liability	1,282,929	735,759	72,364
Total pension liability, beginning of year	41,633,276	24,794,295	2,196,929
Total pension liability, end of year (a)	<u>\$ 42,916,205</u>	<u>\$ 25,530,54</u>	<u>\$ 2,269,293</u>
Plan fiduciary net position			
Contributions - employer	\$ 1,122,986	\$ 707,194	\$ 80,241
Contributions - members	484,923	283,670	8,063
Net investment income	2,364,521	1,318,438	109,405
Benefit payments, including refunds and administrative expenses	(2,223,399)	(1,395,375)	(122,963)
Net Transfer	229	(1,653)	21
Net Change in Plan Fiduciary Net Position	1,749,260	912,274	74,767
Plan fiduciary net position - beginning of year	29,731,192	16,540,665	1,371,781
Plan fiduciary net position - end of year (b)	<u>\$ 31,480,452</u>	<u>\$ 17,452,939</u>	<u>\$ 1,446,548</u>
Employer net pension liability (a) - (b)	<u>\$ 11,435,753</u>	<u>\$ 8,077,115</u>	<u>\$ 822,745</u>

*\*This schedule is presented to illustrate the requirement to present information for 10 years. However, until a full 10-year trend is compiled, pension plans should present information for those years for which the information is available.*

**AND PENSION SYSTEM**  
**EMPLOYERS' NET PENSION LIABILITY**  
June 30, 2018

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Judges' Retirement System	Law Enforcement Officers' Pension System	Total
\$ 18,482	\$ 36,988	\$ 1,321,018
40,740	106,465	5,204,067
-	4,566	2,399
(14,982)	13,780	(671,133)
(139)	4,655	154,329
(32,009)	(71,650)	(3,812,732)
<u>12,092</u>	<u>94,804</u>	<u>2,197,948</u>
<u>549,838</u>	<u>1,436,547</u>	<u>70,610,885</u>
<u>\$ 561,930</u>	<u>\$ 1,531,351</u>	<u>\$ 72,808,833</u>
\$ 22,465	\$ 62,131	\$ 1,995,017
3,071	11,855	791,582
35,195	71,834	3,899,393
(32,063)	(72,143)	(3,845,943)
-	1,403	-
28,668	75,080	2,840,049
<u>441,351</u>	<u>902,195</u>	<u>48,987,184</u>
<u>\$ 470,019</u>	<u>\$ 977,275</u>	<u>\$ 51,827,233</u>
<u>\$ 91,911</u>	<u>\$ 554,076</u>	<u>\$ 20,981,600</u>

## REQUIRED SUPPLEMENTARY INFORMATION

**MARYLAND STATE RETIREMENT**  
**SCHEDULE OF CHANGES IN**  
for the Fiscal Year Ended  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>
Total pension liability			
Service cost	\$ 777,084	\$ 444,566	\$ 32,324
Interest	3,010,496	1,806,261	160,396
Difference between expected and actual experience	(644,543)	(545,442)	(45,314)
Changes in assumptions	76,937	47,996	1,438
Benefit payments, including refunds of employee contributions	(2,120,119)	(1,305,891)	(118,833)
Net change in total pension liability	1,099,855	447,490	30,011
Total pension liability, beginning of year	\$ 40,533,421	\$ 24,346,805	\$ 2,166,918
Total pension liability, end of year (a)	\$ 41,633,276	\$ 24,794,295	\$ 2,196,929
Plan fiduciary net position			
Contributions - employer	\$ 1,137,472	\$ 730,506	\$ 83,000
Contributions - members	477,194	282,742	7,996
Net investment income	2,710,602	1,516,095	125,128
Benefit payments, including refunds and administrative expenses	(2,136,132)	(1,319,014)	(118,531)
Net Transfer	(157)	(1,117)	56
Net Change in Plan Fiduciary Net Position	2,188,979	1,209,212	97,649
Plan fiduciary net position - beginning of year	\$ 27,542,213	\$ 15,331,453	\$ 1,274,132
Plan fiduciary net position - end of year (b)	\$ 29,731,192	\$ 16,540,665	\$ 1,371,781
Employer net pension liability (a) - (b)	\$ 11,902,084	\$ 8,253,630	\$ 825,148

*\*This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, pension plans should present information for those years for which the information is available.*

**AND PENSION SYSTEM**  
EMPLOYERS' NET PENSION LIABILITY  
June 30, 2017

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<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
\$ 18,225	\$ 36,059	\$ 1,308,258
40,009	102,873	5,120,035
(13,325)	(18,348)	(1,266,972)
(136)	3,940	130,175
(31,253)	(64,468)	(3,640,564)
<u>13,520</u>	<u>60,056</u>	<u>1,650,932</u>
<u>536,318</u>	<u>1,376,491</u>	<u>68,959,953</u>
<u>\$ 549,838</u>	<u>\$ 1,436,547</u>	<u>\$70,610,885</u>
\$ 21,861	\$ 60,473	\$ 2,033,312
3,004	11,753	782,689
40,128	81,490	4,473,443
(31,302)	(63,207)	(3,668,186)
<u>(2)</u>	<u>1,220</u>	<u>-</u>
<u>33,689</u>	<u>91,729</u>	<u>3,621,258</u>
<u>407,662</u>	<u>810,466</u>	<u>45,365,926</u>
<u>\$ 441,351</u>	<u>\$ 902,195</u>	<u>\$48,987,184</u>
<u>\$ 108,487</u>	<u>\$ 534,352</u>	<u>\$21,623,701</u>

## REQUIRED SUPPLEMENTARY INFORMATION

**MARYLAND STATE RETIREMENT**  
**SCHEDULE OF CHANGES IN**  
for the Fiscal Year Ended  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>
Total pension liability			
Service cost	\$ 763,578	\$ 439,705	\$ 30,309
Interest	2,914,637	1,737,109	155,993
Changes of benefit terms	-	-	-
Difference between expected and actual experience	(327,577)	16,870	(8,573)
Changes in assumptions	-	-	-
Benefit payments, including refunds of employee contributions	(2,056,256)	(1,255,358)	(121,917)
Net change in total pension liability	1,294,382	938,326	55,812
Total pension liability, beginning of year	39,239,039	23,408,479	2,111,106
Total pension liability, end of year (a)	\$ 40,533,421	\$ 24,346,805	\$ 2,166,918
Plan fiduciary net position			
Contributions - employer	\$ 1,084,049	\$ 640,943	\$ 72,320
Contributions - members	464,470	278,944	7,251
Net investment income	301,774	168,775	13,806
Benefit payments, including refunds and administrative expenses	(2,071,845)	(1,267,809)	(122,123)
Net Transfer	(163)	(191)	41
Net Change in Plan Fiduciary Net Position	(221,715)	(179,338)	(28,705)
Plan fiduciary net position - beginning of year	27,763,928	15,510,791	1,302,837
Plan fiduciary net position - end of year (b)	\$ 27,542,213	\$ 15,331,453	\$ 1,274,132
Employer net pension liability (a) - (b)	\$ 12,991,208	\$ 9,015,352	\$ 892,786

\*This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, pension plans should present information for those years for which the information is available.

## **AND PENSION SYSTEM**

### **EMPLOYERS' NET PENSION LIABILITY**

June 30, 2016

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<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
\$ 17,295	\$ 34,001	\$ 1,284,888
37,910	97,371	4,943,020
-	-	-
2,999	4,629	(311,652)
-	-	-
(30,487)	(63,837)	(3,527,855)
27,717	72,164	2,388,401
<u>508,601</u>	<u>1,304,327</u>	<u>66,571,552</u>
<u>\$ 536,318</u>	<u>\$ 1,376,491</u>	<u>\$68,959,953</u>
\$ 18,384	\$ 54,959	\$ 1,870,655
2,863	10,886	764,414
4,415	8,761	497,531
(30,532)	(64,205)	(3,556,514)
-	313	-
(4,870)	10,714	(423,914)
<u>412,532</u>	<u>799,752</u>	<u>45,789,840</u>
<u>\$ 407,662</u>	<u>\$ 810,466</u>	<u>\$45,365,926</u>
<u>\$ 128,656</u>	<u>\$ 566,025</u>	<u>\$23,594,027</u>

## REQUIRED SUPPLEMENTARY INFORMATION

**MARYLAND STATE RETIREMENT**  
**SCHEDULE OF CHANGES IN**  
for the Fiscal Year Ended  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>
Total pension liability			
Service cost	\$ 783,603	\$ 461,524	\$ 30,556
Interest	2,811,261	1,663,866	147,839
Changes of benefit terms	-	-	-
Difference between expected and actual experience	(476,190)	(19,591)	(10,512)
Changes in assumptions	753,521	375,148	86,689
Benefit payments, including refunds of employee contributions	<u>(1,958,092)</u>	<u>(1,170,116)</u>	<u>(119,804)</u>
Net change in total pension liability	<u>1,914,103</u>	<u>1,310,831</u>	<u>134,768</u>
 Total pension liability, beginning of year	 <u>37,324,936</u>	 <u>22,097,648</u>	 <u>1,976,338</u>
Total pension liability, end of year (a)	<u>\$ 39,239,039</u>	<u>\$ 23,408,479</u>	<u>\$ 2,111,106</u>
 Plan fiduciary net position			
Contributions - employer	\$ 1,063,763	\$ 643,219	\$ 76,056
Contributions - members	454,770	280,133	7,205
Net investment income	727,858	405,846	33,035
Benefit payments, including refunds and administrative expenses	(1,973,827)	(1,182,886)	(120,006)
Net Transfer	<u>309</u>	<u>(535)</u>	<u>-</u>
Net Change in Plan Fiduciary Net Position	<u>272,873</u>	<u>145,777</u>	<u>(3,710)</u>
 Plan fiduciary net position - beginning of year	 <u>27,491,055</u>	 <u>15,365,014</u>	 <u>1,306,547</u>
Plan fiduciary net position - end of year (b)	<u>\$ 27,763,928</u>	<u>\$ 15,510,791</u>	<u>\$ 1,302,837</u>
 Employer net pension liability (a) - (b)	 <u>\$ 11,475,111</u>	 <u>\$ 7,897,688</u>	 <u>\$ 808,269</u>

*\*This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, pension plans should present information for those years for which the information is available.*

## **AND PENSION SYSTEM**

### **EMPLOYERS' NET PENSION LIABILITY**

June 30, 2015

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<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
\$ 16,306	\$ 33,934	\$ 1,325,923
34,735	93,085	4,750,786
-	-	-
(843)	(5,846)	(512,982)
27,072	11,471	1,253,901
<u>(28,899)</u>	<u>(55,884)</u>	<u>(3,332,795)</u>
<u>48,371</u>	<u>76,760</u>	<u>3,484,833</u>
<u>460,230</u>	<u>1,227,567</u>	<u>63,086,719</u>
<u>\$ 508,601</u>	<u>\$ 1,304,327</u>	<u>\$ 66,571,552</u>
\$ 19,028	\$ 56,546	\$ 1,858,612
2,813	10,523	755,444
10,759	20,173	1,197,671
<u>(28,945)</u>	<u>(56,211)</u>	<u>(3,361,875)</u>
<u>(6)</u>	<u>232</u>	<u>-</u>
<u>3,649</u>	<u>31,031</u>	<u>449,852</u>
<u>408,883</u>	<u>768,489</u>	<u>45,339,988</u>
<u>\$ 412,532</u>	<u>\$ 799,752</u>	<u>\$ 45,789,840</u>
<u>\$ 96,069</u>	<u>\$ 504,575</u>	<u>\$ 20,781,712</u>

## REQUIRED SUPPLEMENTARY INFORMATION

**MARYLAND STATE RETIREMENT**  
**SCHEDULE OF CHANGES IN**  
for the Fiscal Year Ended  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>
Total pension liability			
Service cost	\$ 796,354	\$ 469,747	\$ 28,508
Interest	2,694,942	1,597,397	141,875
Changes of benefit terms	-	-	-
Difference between expected and actual experience	-	-	-
Changes in assumptions	182,000	86,638	33,418
Benefit payments, including refunds of employee contributions	(1,878,801)	(1,121,293)	(109,964)
Net change in total pension liability	<u>1,794,495</u>	<u>1,032,489</u>	<u>93,837</u>
 Total pension liability, beginning of year	 <u>35,530,441</u>	 <u>21,065,159</u>	 <u>1,882,501</u>
Total pension liability, end of year (a)	<u>\$ 37,324,936</u>	<u>\$ 22,097,648</u>	<u>\$ 1,976,338</u>
 Plan fiduciary net position			
Contributions - employer	\$ 1,000,193	\$ 592,185	\$ 56,243
Contributions - members	441,559	267,139	6,592
Net investment income	3,458,512	1,940,319	165,097
Benefit payments, including refunds and administrative expenses	(1,878,801)	(1,121,293)	(109,964)
Net Transfer	(33)	(210)	16
Net Change in Plan Fiduciary Net Position	<u>3,021,430</u>	<u>1,678,140</u>	<u>117,984</u>
 Plan fiduciary net position - beginning of year	 <u>24,469,625</u>	 <u>13,686,874</u>	 <u>1,188,563</u>
Plan fiduciary net position - end of year (b)	<u>\$ 27,491,055</u>	<u>\$ 15,365,014</u>	<u>\$ 1,306,547</u>
 Employer net pension liability (a) - (b)	 <u>\$ 9,833,881</u>	 <u>\$ 6,732,634</u>	 <u>\$ 669,791</u>

*\*This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, pension plans should present information for those years for which the information is available.*

## **AND PENSION SYSTEM**

### **EMPLOYERS' NET PENSION LIABILITY**

June 30, 2014

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<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
\$ 15,309	\$ 31,927	\$ 1,341,845
33,337	87,207	4,554,758
-	-	-
-	-	-
46	18,798	320,900
(27,298)	(53,519)	(3,190,875)
<u>21,394</u>	<u>84,413</u>	<u>3,026,628</u>
<u>438,836</u>	<u>1,143,154</u>	<u>60,060,091</u>
<u>\$ 460,230</u>	<u>\$ 1,227,567</u>	<u>\$ 63,086,719</u>
\$ 21,110	\$ 63,922	\$ 1,733,653
2,566	9,870	727,726
50,173	92,166	5,706,267
(27,298)	(53,519)	(3,190,875)
<u>-</u>	<u>227</u>	<u>-</u>
<u>46,551</u>	<u>112,666</u>	<u>4,976,771</u>
<u>362,332</u>	<u>655,823</u>	<u>40,363,217</u>
<u>\$ 408,883</u>	<u>\$ 768,489</u>	<u>\$ 45,339,988</u>
<u>\$ 51,347</u>	<u>\$ 459,078</u>	<u>\$ 17,746,731</u>

**SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS**  
for the Fiscal Year Ended June 30, 2018  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Total pension liability	\$ 42,916,204	\$ 25,530,054	\$ 2,269,293	\$ 561,930	\$ 1,531,351	\$ 72,808,833
Plan fiduciary net position	(31,480,451)	(17,452,939)	(1,446,548)	(470,019)	(977,275)	(51,827,233)
Employer net pension liability	<u>\$ 11,435,753</u>	<u>\$ 8,077,115</u>	<u>\$ 822,745</u>	<u>\$ 91,911</u>	<u>\$ 554,076</u>	<u>\$ 20,981,600</u>
Plan fiduciary net position as a percentage of the total pension liability	73.35%	68.36%	63.74%	83.64%	63.82%	71.18%
Covered employee payroll	\$ 6,941,097	\$ 4,306,746	\$ 100,325	\$ 47,498	\$ 170,556	\$ 11,566,222
Employer net pension liability as a percent of covered-employee payroll	164.75%	187.55%	820.08%	193.50%	324.86%	181.40%

**SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS**  
for the Fiscal Year Ended June 30, 2017  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Total pension liability	\$ 41,633,276	\$ 24,794,295	\$ 2,196,929	\$ 549,838	\$ 1,436,547	\$ 70,610,885
Plan fiduciary net position	(29,731,192)	(16,540,665)	(1,371,781)	(441,351)	(902,195)	(48,987,184)
Employer net pension liability	<u>\$ 11,902,084</u>	<u>\$ 8,253,630</u>	<u>\$ 825,148</u>	<u>\$ 108,487</u>	<u>\$ 534,352</u>	<u>\$ 21,623,701</u>
Plan fiduciary net position as a percentage of the total pension liability	71.41%	66.71%	62.44%	80.27%	62.80%	69.38%
Covered employee payroll	\$ 6,780,838	\$ 4,324,315	\$ 100,384	\$ 46,876	\$ 166,561	\$ 11,418,974
Employer net pension liability as a percent of covered-employee payroll	175.53%	190.87%	821.99%	231.43%	320.81%	189.37%

**SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS**  
for the Fiscal Year Ended June 30, 2016  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Total pension liability	\$ 40,533,421	\$ 24,346,805	\$ 2,166,918	\$ 536,318	\$ 1,376,491	\$ 68,959,953
Plan fiduciary net position	(27,542,213)	(15,331,453)	(1,274,132)	(407,662)	(810,466)	(45,365,926)
Employer net pension liability	<u>\$ 12,991,208</u>	<u>\$ 9,015,352</u>	<u>\$ 892,786</u>	<u>\$ 128,656</u>	<u>\$ 566,025</u>	<u>\$ 23,594,027</u>
Plan fiduciary net position as a percentage of the total pension liability	67.95%	62.97%	58.80%	76.01%	58.88%	65.79%
Covered employee payroll	\$ 6,611,038	\$ 4,250,288	\$ 93,491	\$ 44,711	\$ 156,396	\$ 11,155,924
Employer net pension liability as a percent of covered-employee payroll	196.51%	212.11%	954.94%	287.75%	361.92%	211.49%

**SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS**  
 for the Fiscal Year Ended June 30, 2015  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Total pension liability	\$ 39,239,039	\$ 23,408,479	\$ 2,111,106	\$ 508,601	\$ 1,304,327	\$ 66,571,552
Plan fiduciary net position	<u>(27,763,619)</u>	<u>(15,510,791)</u>	<u>(1,302,837)</u>	<u>(412,532)</u>	<u>(799,752)</u>	<u>(45,789,840)</u>
Employer net pension liability	<u>\$ 11,475,420</u>	<u>\$ 7,897,688</u>	<u>\$ 808,269</u>	<u>\$ 96,069</u>	<u>\$ 504,575</u>	<u>\$ 20,781,712</u>
Plan fiduciary net position as a percentage of the total pension liability	70.76%	66.26%	61.71%	81.11%	61.32%	68.78%
Covered employee payroll	\$ 6,470,706	\$ 4,305,637	\$ 91,050	\$ 44,613	\$ 151,955	\$ 11,063,961
Employer net pension liability as a percent of covered-employee payroll	177.34%	183.43%	887.72%	215.34%	332.06%	187.83%

**SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS**  
 for the Fiscal Year Ended June 30, 2014  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Total pension liability	\$ 37,324,936	\$ 22,097,648	\$ 1,976,338	\$ 460,230	\$ 1,227,567	\$ 63,086,719
Plan fiduciary net position	<u>(27,491,055)</u>	<u>(15,365,014)</u>	<u>(1,306,547)</u>	<u>(408,883)</u>	<u>(768,489)</u>	<u>(45,339,988)</u>
Employer net pension liability	<u>\$ 9,833,881</u>	<u>\$ 6,732,634</u>	<u>\$ 669,791</u>	<u>\$ 51,347</u>	<u>\$ 459,078</u>	<u>\$ 17,746,731</u>
Plan fiduciary net position as a percentage of the total pension liability	73.65%	69.53%	66.11%	88.84%	62.60%	71.87%
Covered employee payroll	\$ 6,310,253	\$ 4,219,732	\$ 85,660	\$ 42,313	\$ 145,673	\$ 10,803,631
Employer net pension liability as a percent of covered-employee payroll	155.84%	159.55%	781.92%	121.35%	315.14%	164.27%

**SCHEDULE OF EMPLOYERS' CONTRIBUTIONS AND RELATED RATIOS**  
 for the Fiscal Year Ended June 30, 2018  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Actuarially determined contribution	\$ 1,122,986	\$ 707,194	\$ 80,241	\$ 22,465	\$ 62,131	\$ 1,995,017
Actual contribution	<u>(1,122,986)</u>	<u>(707,194)</u>	<u>(80,241)</u>	<u>(22,465)</u>	<u>(62,131)</u>	<u>(1,995,017)</u>
Contribution deficiency	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Covered employee payroll	\$ 6,941,097	\$ 4,306,746	\$ 100,325	\$ 47,498	\$ 170,556	\$ 11,566,222
Actual contribution as a percent of covered payroll	16.18%	16.42%	79.98%	47.30%	36.43%	17.25%

**SCHEDULE OF EMPLOYERS' CONTRIBUTIONS AND RELATED RATIOS**  
 for the Fiscal Year Ended June 30, 2017  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Actuarially determined contribution	\$ 1,137,472	\$ 730,506	\$ 83,000	\$ 21,861	\$ 60,473	\$ 2,033,312
Actual contribution	(1,137,472)	(730,506)	(83,000)	(21,861)	(60,473)	(2,033,312)
Contribution deficiency	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Covered employee payroll	\$ 6,780,838	\$ 4,324,315	\$ 100,384	\$ 46,876	\$ 166,561	\$ 11,418,974
Actual contribution as a percent of covered payroll	16.77%	16.89%	82.68%	46.64%	36.31%	17.81%

**SCHEDULE OF EMPLOYERS' CONTRIBUTIONS AND RELATED RATIOS**  
 for the Fiscal Year Ended June 30, 2016  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Actuarially determined contribution	\$ 1,112,989	\$ 689,431	\$ 72,320	\$ 18,384	\$ 54,959	\$ 1,948,083
Actual contribution	(1,084,049)	(640,943)	(72,320)	(18,384)	(54,959)	(1,870,655)
Contribution deficiency	\$ 28,940	\$ 48,488	\$ -	\$ -	\$ -	\$ 77,428
Covered employee payroll	\$ 6,611,038	\$ 4,250,288	\$ 93,491	\$ 44,711	\$ 156,396	\$ 11,155,924
Actual contribution as a percent of covered payroll	16.40%	15.08%	77.36%	41.12%	35.14%	16.77%

**SCHEDULE OF EMPLOYERS' CONTRIBUTIONS AND RELATED RATIOS**  
 for the Fiscal Year Ended June 30, 2015  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Actuarially determined contribution	\$ 1,189,318	\$ 766,782	\$ 76,056	\$ 19,028	\$ 56,546	\$ 2,107,730
Actual contribution	(1,063,763)	(643,219)	(76,056)	(19,028)	(56,546)	(1,858,612)
Contribution deficiency (excess)	\$ 125,555	\$ 123,563	\$ -	\$ -	\$ -	\$ 249,118
Covered employee payroll	\$ 6,470,706	\$ 4,305,637	\$ 91,050	\$ 44,613	\$ 151,955	\$ 11,063,961
Actual contribution as a percent of covered payroll	16.44%	14.94%	83.53%	42.65%	37.21%	16.80%

**SCHEDULE OF EMPLOYERS' CONTRIBUTIONS AND RELATED RATIOS**  
for the Fiscal Year Ended June 30, 2014  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>	<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
Actuarially determined contribution	\$ 1,358,991	\$ 812,643	\$ 64,325	\$ 21,110	\$ 63,922	\$ 2,320,991
Actual contribution	(1,000,193)	(592,185)	(56,243)	(21,110)	(63,922)	(1,733,653)
Contribution deficiency (excess)	<u>\$ 358,798</u>	<u>\$ 220,458</u>	<u>\$ 8,082</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 587,338</u>
Covered employee payroll	\$ 6,310,253	\$ 4,219,732	\$ 85,660	\$ 42,313	\$ 145,673	\$ 10,803,631
Actual contribution as a percent of covered payroll	15.85%	14.03%	65.66%	49.89%	43.88%	16.05%

**SCHEDULE OF INVESTMENT RETURNS**

<b>Fiscal Year Ended</b>	<b>Annual money-weighted rate of return, net of investment expenses</b>
2014	14.38%
2015	2.68%
2016	1.15%
2017	10.02%
2018	8.08%

*\*These schedules are presented to illustrate the requirement to present information for 10 years. However, until a full 10-year trend is compiled, pension plans should present information for those years for which the information is available.*

*\*\*This disclosure is intended to capture performance net of pension plan investment expense, which has been adjusted for changing amounts actually invested; taking into consideration benefit payments and contributions. Currently, the Agency is experiencing net outflows resulting in contributions being used to pay benefits rather than flowing through invested funds; therefore, there is minimal variation between this schedule and the time-weighted rates of return presented in the Investment Section of this report.*

## NOTES TO REQUIRED SUPPLEMENTARY INFORMATION

### **Changes in Benefit Terms**

There were no benefit changes during the year.

### **Changes in Assumptions**

Adjustments to the roll-forward liabilities were made to reflect the following assumption change in the 2018 valuation:

- Inflation assumption changed from 2.65% to 2.60%

### **Method and Assumptions used in Calculations of Actuarially Determined Contributions**

Actuarial	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	22 years for the State Systems, 23 years for LEOPS Muni, and 30 years for CORS Muni. For ECS Numi: 100 years phasing down to 20 years over 6 years, 100 years remaining.
Asset Valuation Method	Five-year smoothed market; 20% collar
Inflation	In the 2018 actuarial valuation, 2.60% general, 3.10% wage. In the 2017 actuarial valuation, 2.65% general, 3.15% wage.
Salary Increases	In the 2018 actuarial valuation, 3.10% to 9.10% including inflation. In the 2017 actuarial valuation, 3.15% to 9.15% including inflation.
Investment Rate of Return	In the 2018 actuarial valuation, 7.45%. In the 2017 actuarial valuation, 7.50%.
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2015 valuation pursuant to an experience study of the period 2010 - 2014.
Mortality	RP-2014 Mortality Tables calibrated to MSRPS experience with generational mortality projections using MP-2014 (2-dimensional) mortality improvement scale.

## OTHER SUPPLEMENTARY INFORMATION

### SCHEDULE OF FUNDING PROGRESS (Expressed in Thousands)

<b>Actuarial Valuation Date June 30,</b>	<b>Actuarial Value of Assets <b>a</b></b>	<b>Actuarial Accrued Liability (AAL) <b>b</b></b>	<b>Unfunded AAL (UAAL) (b - a)</b>	<b>Funded Ratio (a / b)</b>	<b>Covered Payroll <b>c</b></b>	<b>UAAL as a Percentage of Covered Payroll [(b - a) / c]</b>
2009	\$ 34,284,569	\$ 52,729,171	\$ 18,444,602	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	20,620,744	64.37%	10,336,537	199%
2013	39,350,969	60,060,091	20,709,122	65.52%	10,478,800	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%	11,063,961	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%	11,418,974	173%
2018	52,586,528	72,574,689	19,988,161	72.46%	11,566,220	173%

### SCHEDULE OF CONTRIBUTIONS FROM EMPLOYERS AND OTHER CONTRIBUTING ENTITIES (Expressed in Thousands)

<b>Fiscal Year Ended June 30,</b>	<b>Annual Required Contributions</b>	<b>Percentage Contributed</b>
2009	\$ 1,313,560	84%
2010	1,519,980	86%
2011	2,035,401	74%
2012	2,146,624	71%
2013	2,149,985	76%
2014	2,320,991	75%
2015	2,107,730	88%
2016	1,948,083	96%
2017	2,033,312	100%
2018	1,995,017	100%

## OTHER SUPPLEMENTARY INFORMATION

### FUND BALANCE ACCOUNTS

As provided by law, all System assets must be credited, according to the purpose for which they are held, to either the Annuity Savings Fund, the Accumulation Fund, or the Expense Fund. These funds are classified as accounts for financial reporting purposes and are further explained as follows:

#### **A. Annuity Savings Fund**

Members' contributions together with interest thereon, at statutory interest rates, are credited to the Annuity Savings Fund. Upon retirement, members' accumulated contributions and interest are transferred from the Annuity Savings Fund to the Accumulation Fund.

#### **B. Accumulation Fund**

Contributions made by employers, other contributions and investment income are credited to the Accumulation Fund. All retirement, disability, and death benefits are paid from this Fund.

#### **C. Expense Fund**

All of the System's administrative and investment management expenses are recorded in the Expense Fund. During the year, the System's investment expenses are covered by funds transferred from the Accumulation Fund, and the System's administrative expenses are covered by administrative fees assessed and collected into the Expense Fund from each participating employer to cover annual operating and administrative expenses of the System.

**MARYLAND STATE RETIREMENT AND PENSION SYSTEM****SCHEDULE OF FUND BALANCES**

for the Fiscal Year Ended June 30, 2018 (with Comparative 2017 Totals)

(Expressed in Thousands)

	<b>Annuity Savings Fund</b>	<b>Accumulation Fund</b>	<b>Expense Fund</b>	<b>Totals</b>	
				<b>2018</b>	<b>2017</b>
<b>Fund Balances, Beginning of Year</b>	<b>\$7,788,871</b>	<b>\$41,195,707</b>	<b>\$ 2,605</b>	<b>\$48,987,183</b>	<b>\$45,365,926</b>
<b>Additions</b>					
Net investment income (loss)	-	4,271,397	(372,004)	3,899,393	4,473,443
Contributions (Note 5):					
Employers	-	1,213,092	34,630	1,247,722	1,322,805
Members	791,583	-	-	791,583	782,686
State contributions on behalf of local governments	-	746,354	-	746,354	712,536
Contribution interest	-	941	-	941	1,255
<b>Deductions</b>					
Benefit payments		(3,744,132)	-	(3,744,132)	(3,577,123)
Refunds (Note 7)	(68,600)	-	-	(68,600)	(63,441)
Administrative expenses (Note 2)	-	28	(33,239)	(33,211)	(30,904)
<b>Transfers</b>					
From the Accumulation Fund to the Annuity Savings Fund for interest credited to members' accounts	380,572	(380,572)	-	-	-
To the Accumulation Fund from the Annuity Savings Fund for contributions of retiring members	(467,321)	467,321	-	-	-
From the Accumulation Fund to the Expense Fund for administrative and investment expenses	-	(372,004)	372,004	-	-
Net changes in fund balances	<u>636,234</u>	<u>2,202,425</u>	<u>1,391</u>	<u>2,840,050</u>	<u>3,621,257</u>
<b>Fund Balances, End of Year</b>	<b><u>\$8,425,105</u></b>	<b><u>\$43,398,132</u></b>	<b><u>\$ 3,996</u></b>	<b><u>\$51,827,233</u></b>	<b><u>\$48,987,183</u></b>

**MARYLAND STATE RETIREMENT AND PENSION SYSTEM****SCHEDULE OF ADMINISTRATIVE EXPENSES**

for the Fiscal Years Ended June 30, 2018 and 2017

(Expressed in Thousands)

	<b>2018</b>	<b>2017</b>
<b>Personnel services</b>		
Staff salaries	\$13,587	\$13,221
Fringe benefits	6,328	6,878
Total personnel services	<u>19,915</u>	<u>20,099</u>
<b>Professional and contractual services</b>		
Actuarial services	281	356
Legal and financial services	3,560	2,749
Consulting services	1,534	1,015
Data processing services	1,816	1,536
Other contractual services	962	718
Total professional and contractual services	<u>8,153</u>	<u>6,374</u>
<b>Miscellaneous</b>		
Communications	740	640
Rent	1,737	1,564
Equipment and supplies	772	346
Other	1,894	1,881
Total miscellaneous	<u>5,143</u>	<u>4,431</u>
<b>Total Administrative Expenses</b>	<b><u>\$33,211</u></b>	<b><u>\$30,904</u></b>

## **MARYLAND STATE RETIREMENT AND PENSION SYSTEM**

### SCHEDULE OF INVESTMENT EXPENSES

for the Fiscal Years Ended June 30, 2018 and 2017

*(Expressed in Thousands)*

	<b>Management Fees for 2018</b>	<b>Incentive Fees for 2018</b>	<b>Total</b>
<b>Investment advisors</b>			
Public equity	\$ 83,023	\$ 19,247	\$ 102,270
Fixed income	12,555	4,351	16,906
Credit opportunity	29,668	3,111	32,779
Real return	16,504	2,323	18,827
Absolute return	44,189	10,939	55,128
Private equity	103,714	-	103,714
Real estate	31,389	1,449	32,838
Total investment advisory fees	<u>321,042</u>	<u>41,420</u>	<u>362,462</u>
<b>Other investment service fees</b>			
Currency overlay	5,275	-	5,275
Other investment expenses	4,267	-	4,267
Total other investment service fees	<u>9,542</u>	<u>-</u>	<u>9,542</u>
<b>Total Investment Expenses</b>	<b><u>\$ 330,584</u></b>	<b><u>\$ 41,420</u></b>	<b><u>\$ 372,004</u></b>
	Management Fees for 2017	Incentive Fees for 2017	Total
<b>Investment advisors</b>			
Public equity	\$77,520	\$2,596	\$80,116
Fixed income	10,300	220	10,520
Credit opportunity	33,674	2,043	35,717
Real return	22,284	3,174	25,458
Absolute return	45,301	8,832	54,133
Private equity	85,950	47	85,997
Real estate	31,318	2,669	33,987
Total investment advisory fees	<u>306,347</u>	<u>19,581</u>	<u>325,928</u>
<b>Other investment service fees</b>			
Currency overlay	4,593	-	4,593
Other investment expenses	3,117	-	3,117
Total other investment service fees	<u>7,710</u>	<u>-</u>	<u>7,710</u>
<b>Total Investment Expenses</b>	<b><u>\$314,057</u></b>	<b><u>\$19,581</u></b>	<b><u>\$333,638</u></b>

**MARYLAND STATE RETIREMENT**

SCHEDULE OF PLAN NET  
as of June 30, 2018  
(Expressed in Thousands)

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>
<b>Assets:</b>			
Cash & cash equivalents (note 3)	<u>\$ 758,199</u>	<u>\$ 421,787</u>	<u>\$ 36,336</u>
<b>Receivables:</b>			
Contributions:			
Employers	11,965	(885)	374
Employers - Long Term (Note 5)	-	18,120	-
Members	5,270	2,033	-
Accrued investment income	91,674	51,396	4,270
Investment sales proceeds	611,102	339,987	28,139
Due from other systems	43,610	32,407	39
Total receivables	<u>763,621</u>	<u>443,058</u>	<u>32,822</u>
<b>Investments, at fair value (Notes 2 &amp; 3)</b>			
U.S. Government obligations	4,000,648	2,217,476	183,718
Domestic corporate obligations	2,109,542	1,169,275	96,875
International obligations	54,979	30,474	2,525
Domestic stocks	5,751,059	3,187,692	264,101
International stocks	6,188,231	3,430,007	284,177
Mortgages & mortgage related securities	928,569	514,687	42,642
Alternative investments	11,691,898	6,480,576	536,919
Collateral for loaned securities	1,245,212	687,512	56,663
Total investments	<u>31,970,138</u>	<u>17,717,699</u>	<u>1,467,620</u>
<b>Total assets</b>	<u>33,491,958</u>	<u>18,582,544</u>	<u>1,536,778</u>
<b>LIABILITIES</b>			
Accounts payable & accrued expenses	37,194	19,846	1,706
Investment commitments payable	684,822	387,427	31,917
Obligation for collateral for loaned securities	1,245,212	687,512	56,663
Due to other systems	44,276	34,820	(56)
<b>Total liabilities</b>	<u>2,011,504</u>	<u>1,129,605</u>	<u>90,230</u>
Net position restricted for pensions	<u>\$ 31,480,454</u>	<u>\$ 17,452,939</u>	<u>\$ 1,446,548</u>

\* Intersystem due from/to have been eliminated in the financial statements

**AND PENSION SYSTEM**

## POSITION BY SYSTEM

<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Subtotal</b>	<b>Eliminations*</b>	<b>Combined Total</b>
\$ 13,984	\$ 22,160	\$ 1,252,466	\$ -	\$ 1,252,466
(43)	232	11,643	-	11,643
-	-	18,120	-	18,120
-	158	7,461	-	7,461
1,363	2,718	151,421	-	151,421
9,005	18,084	1,006,317	-	1,006,317
-	2,986	79,042	(79,042)	-
<u>10,325</u>	<u>24,178</u>	<u>1,274,004</u>	<u>(79,042)</u>	<u>1,194,962</u>
59,431	123,854	6,585,127	-	6,585,127
31,338	65,308	3,472,338	-	3,472,338
817	1,702	90,497	-	90,497
85,434	178,045	9,466,331	-	9,466,331
91,928	191,579	10,185,922	-	10,185,922
13,794	28,747	1,528,439	-	1,528,439
173,686	361,964	19,245,043	-	19,245,043
18,198	35,826	2,043,411	-	2,043,411
<u>474,626</u>	<u>987,025</u>	<u>52,617,108</u>	<u>-</u>	<u>52,617,108</u>
<u>498,935</u>	<u>1,033,363</u>	<u>55,143,578</u>	<u>(79,042)</u>	<u>55,064,536</u>
665	996	60,407	-	60,407
10,051	19,268	1,133,485	-	1,133,485
18,198	35,826	2,043,411	-	2,043,411
-	-	79,042	(79,042)	-
<u>28,914</u>	<u>56,090</u>	<u>3,316,345</u>	<u>(79,042)</u>	<u>3,237,303</u>
\$ 470,021	\$ 977,273	\$ 51,827,233	\$ -	\$ 51,827,233

**MARYLAND STATE RETIREMENT**  
**SCHEDULE OF CHANGES IN**  
for the Fiscal Year Ended  
*(Expressed in Thousands)*

	<b>Teachers' Retirement and Pension Systems</b>	<b>Employees' Retirement and Pension Systems</b>	<b>State Police Retirement System</b>
<b>Additions:</b>			
<b>Contributions</b>			
Employers	\$ 376,632	\$ 706,253	\$ 80,241
Members	484,923	283,671	8,063
State contributions on behalf of local governments	746,354	-	-
Contribution interest	-	941	-
Total Contributions	1,607,909	990,865	88,304
<b>Investment Income</b>			
Net depreciation in fair value of investments	1,347,557	751,233	62,423
Interest	241,744	134,690	11,185
Dividends	994,957	555,141	45,947
<b>Income Before Securities Lending Activity</b>	2,584,258	1,441,064	119,555
Gross income from securities lending activity:			
Securities lending borrower rebates	(15,363)	(8,572)	(709)
Securities lending agent fees	(1,095)	(611)	(51)
Net income from securities lending activity	5,734	3,198	264
<b>Total Investment Income</b>	2,589,992	1,444,262	119,819
Less investment expenses:			
Investment advisory fees	(225,471)	(125,824)	(10,413)
Net investment income	2,364,521	1,318,438	109,406
<b>Transfers from other systems</b>	-	-	-
<b>Total Additions</b>	3,972,430	2,309,303	197,710
<b>Deductions:</b>			
Benefit payments	2,171,757	1,347,060	122,535
Refunds (Note 7)	33,553	33,983	185
Administrative expenses (Note 2)	18,089	14,332	243
Transfers to other systems	(231)	1,654	(21)
<b>Total Deductions</b>	2,223,168	1,397,029	122,942
<b>Net (decrease) increase in plan assets</b>	1,749,262	912,274	74,768
Net position restricted for pensions			
Beginning of the fiscal year	29,731,192	16,540,665	1,371,780
<b>End of the Fiscal Year</b>	\$ 31,480,454	\$ 17,452,939	\$ 1,446,548

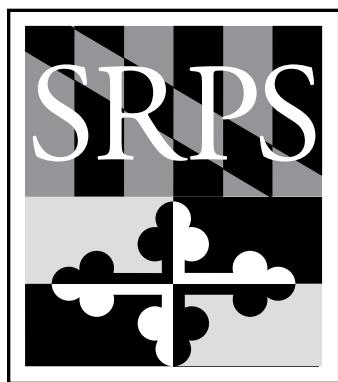
\* Intersystem due from/due to have been eliminated in the financial statements

**AND PENSION SYSTEM**

## PLAN NET POSITION BY SYSTEM

June 30, 2018

<b>Judges' Retirement System</b>	<b>Law Enforcement Officers' Pension System</b>	<b>Total</b>
\$ 22,465	\$ 62,131	\$ 1,247,722
3,071	11,855	791,583
-	-	746,354
-	-	941
<u>25,536</u>	<u>73,986</u>	<u>2,786,600</u>
20,010	40,611	2,221,834
3,650	7,463	398,732
14,810	30,519	1,641,374
<u>38,470</u>	<u>78,593</u>	<u>4,261,940</u>
330	682	36,609
(229)	(472)	(25,345)
(16)	(34)	(1,807)
<u>85</u>	<u>176</u>	<u>9,457</u>
<u>38,555</u>	<u>78,769</u>	<u>4,271,397</u>
(3,360)	(6,936)	(372,004)
<u>35,195</u>	<u>71,833</u>	<u>3,899,393</u>
<u>60,731</u>	<u>145,819</u>	<u>6,685,993</u>
32,009	70,771	3,744,132
-	879	68,600
54	493	33,211
-	(1,404)	-
<u>32,063</u>	<u>70,739</u>	<u>3,845,943</u>
<u>28,668</u>	<u>75,080</u>	<u>2,840,050</u>
\$ <u>441,353</u>	<u>902,193</u>	<u>48,987,183</u>
<u>470,021</u>	<u>977,273</u>	<u>\$ 51,827,233</u>



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