

A large, semi-transparent graphic in the center of the page. It features the letters 'SRPS' in a large, serif font at the top. Below the letters is a stylized, abstract design consisting of several overlapping shapes, including circles and rectangles, arranged in a way that suggests a financial or architectural structure. The entire graphic is set against a light gray background.

SRPS
Financial Section



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), which is a pension trust fund of the State of Maryland, as of and for the years ended June 30, 2019 and 2018, and the related notes to the financial statements, which collectively comprise the System's financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

The System's 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 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 audits to obtain reasonable assurance about whether the 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 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 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 financial statements referred to above present fairly, in all material respects, the respective financial position of the System, as of June 30, 2019 and 2018, 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 and related ratios, 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 introductory, investment, actuarial, statistical, and plan summary sections, and 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 table of contents, 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.

The introductory, investment, actuarial, statistical, and plan summary sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Owings Mills, Maryland
December 4, 2019

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, 2019, 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 2019 Compared to 2018

The following condensed comparative Statement of Plan Net Position for the fiscal years ended June 30, 2019 and 2018, present an increase in the System's net position of \$2.1 billion (4.1%). The increase is primarily due to positive net returns in equities, real estate, rate sensitive, credit, and private alternative investments.

A schedule of the System's investments and changes (by type) from fiscal year 2019 to 2018 is as follows (expressed in millions):

	June 30,		Change	
	2019	2018	Variance	%
Cash & cash equivalents	\$1,639.4	\$1,252.5	\$386.9	30.9%
U.S. Government obligations	6,441.4	6,585.1	(143.7)	-2.2%
Domestic corporate obligations	4,765.4	3,472.3	1,293.1	37.2%
International obligations	613.5	90.5	523.0	577.9%
Domestic stocks	9,779.0	9,466.3	312.7	3.3%
International stocks	9,957.6	10,186.0	(228.4)	-2.2%
Mortgages & mortgage-related securities	1,658.3	1,528.4	129.9	8.5%
Alternative investments	19,297.5	19,245.0	52.5	0.3%
Total managed investments	54,152.1	51,826.1	2,326.0	4.5%
Collateral for loaned securities	4,483.3	2,043.4	2,439.9	119.4%
Total investments and cash & cash equivalents	58,635.4	53,869.5	4,765.9	8.8%
Receivables	1,956.8	1,195.0	761.8	63.7%
Total Assets	60,592.2	55,064.5	5,527.7	10.0%
Liabilities	6,649.0	3,237.3	3,411.7	105.4%
Total Net Position, End of Year	\$53,943.2	\$51,827.2	\$2,116.0	4.1%

As depicted in the following comparative Statement of Changes in Plan Net Position for fiscal years 2019 and 2018, contributions to the System during fiscal year 2019 increased by approximately \$74.9 million. Additionally, the System's investments experienced a positive money-weighted investment return of 6.44% (time-weighted of 6.46%), net of fees, recognizing \$3,288 million in net investment income.

The System continues to pay out more benefits than contributions collected. An increase of \$182.1 million in benefits paid to retiree's correlates to the increase in the number of retirees and beneficiaries experienced in fiscal year 2019. The total fiscal year 2019 additions to the System exceeded benefits, refunds and administrative expenses resulting in an increase in net position of \$2.1 billion.

A schedule of the System's additions to and deductions from plan net position and related changes (by major category) from fiscal year 2019 to 2018, is as follows (expressed in millions):

	June 30,		Change	
	2019	2018	Variance	%
Employer contributions	\$1,301.6	\$1,247.7	\$53.9	4.3%
Member contributions	807.3	791.6	15.7	2.0%
State contributions on behalf of local governments & contribution interest	752.5	747.2	5.3	0.7%
Net investment income	3,288.2	3,899.4	(611.2)	-15.7%
Total additions	<u>6,149.6</u>	<u>6,685.9</u>	<u>(536.3)</u>	<u>-8.0%</u>
Benefit payments	3,926.2	3,744.1	182.1	4.9%
Refunds	67.4	68.6	(1.2)	-1.7%
Administrative expenses	39.8	33.2	6.6	19.9%
Total deductions	<u>4,033.4</u>	<u>3,845.9</u>	<u>187.5</u>	<u>4.9%</u>
Net increase in plan net position	<u>\$2,116.2</u>	<u>\$2,840.0</u>	<u>\$(723.8)</u>	<u>-25.5%</u>

Analysis of Net Pension Liability (expressed in millions)

	June 30,		Change	
	2019	2018	Variance	%
Total Pension Liability (TPL)	\$74,569.0	\$72,808.8	\$1,760.2	2.4%
Plan Fiduciary Net Position	53,943.4	51,827.2	2,116.2	4.1%
Net Pension Liability	<u>\$20,625.6</u>	<u>\$20,981.6</u>	<u>\$(356.0)</u>	<u>-1.7%</u>
Ratio - Fiduciary Net Position/TPL	<u>72.3%</u>	<u>71.2%</u>		

The System's net pension liability decreased by \$356 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 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):

	June 30,		Change	
	2018	2017	Variance	%
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%
Total managed investments	51,826.1	50,094.4	1,731.7	3.5%
Collateral for loaned securities	2,043.4	2,553.9	(510.5)	-20.0%
Total investments and cash & cash equivalents	53,869.5	52,648.3	1,221.2	2.3%
Receivables	1,195.0	1,128.6	66.4	5.9%
Total Assets	55,064.5	53,776.9	1,287.6	2.4%
Liabilities	3,237.3	4,789.7	(1,552.4)	-32.4%
Total Net Position, End of Year	\$51,827.2	\$48,987.2	\$2,840.0	5.8%

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 investment return of 8.08%, net of fees, recognizing \$3,899 million in net investment income.

The System continued 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 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%
Total additions	6,685.9	7,292.7	(606.8)	-8.3%
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%
Total deductions	3,845.9	3,671.4	174.5	4.8%
Net increase (decrease) in plan net position	\$2,840.0	\$3,621.3	\$(781.3)	-21.6%

Analysis of Net Pension Liability (expressed in millions)

	June 30,		Change	
	2018	2017	Variance	%
Total Pension Liability (TPL)	\$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 \$642.1 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.

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, CPA
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, 2019 and 2018

(Expressed in Thousands)

	2019	2018
Assets:		
Cash & Cash Equivalents (Note 3)	<u>\$1,639,447</u>	<u>\$1,252,466</u>
Receivables		
Contributions:		
Employers	18,968	11,643
Employers - long term (Note 6)	12,741	18,120
Members	3,837	7,461
Accrued investment income	250,325	151,421
Investment sales proceeds	<u>1,670,973</u>	<u>1,006,317</u>
Total receivables	<u>1,956,844</u>	<u>1,194,962</u>
Investments, at fair value (Notes 3 & 4)		
U.S. Government obligations	6,441,406	6,585,127
Domestic corporate obligations	4,765,438	3,472,338
International obligations	613,496	90,497
Domestic stocks	9,779,000	9,466,331
International stocks	9,957,602	10,185,922
Mortgages & mortgage-related securities	1,658,341	1,528,439
Alternative investments	19,297,504	19,245,043
Collateral for loaned securities	<u>4,483,334</u>	<u>2,043,411</u>
Total investments	<u>56,996,121</u>	<u>52,617,108</u>
Total Assets	<u>60,592,412</u>	<u>55,064,536</u>
Liabilities:		
Accounts payable & accrued expenses (Note 8)	63,403	60,407
Investment commitments payable	2,102,255	1,133,485
Obligation for collateral for loaned securities	<u>4,483,334</u>	<u>2,043,411</u>
Total Liabilities	<u>6,648,992</u>	<u>3,237,303</u>
NET POSITION RESTRICTED FOR PENSION BENEFITS	<u>\$53,943,420</u>	<u>\$51,827,233</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, 2019 and 2018**

(Expressed in Thousands)

	2019	2018
ADDITIONS:		
Contributions:		
Employers	\$1,301,554	\$1,247,722
Members	807,291	791,583
State contributions on behalf of local governments	751,945	746,354
Contribution interest	592	941
Total contributions	<u>2,861,382</u>	<u>2,786,600</u>
Investment Income:		
Net appreciation in fair value of investments	1,424,075	2,221,834
Interest	444,525	398,732
Dividends	1,776,675	1,641,374
Income before securities lending activity	<u>3,645,275</u>	<u>4,261,940</u>
Gross income from securities lending activity	74,284	36,609
Securities lending borrower rebates	(60,278)	(25,345)
Securities lending agent fees	(946)	(1,807)
Net income from securities lending activity	<u>13,060</u>	<u>9,457</u>
Total investment income	3,658,335	4,271,397
Investment expenses	(370,126)	(372,004)
Net investment income	<u>3,288,209</u>	<u>3,899,393</u>
TOTAL ADDITIONS	<u>6,149,591</u>	<u>6,685,993</u>
DEDUCTIONS:		
Benefit payments	3,926,220	3,744,132
Refunds	67,400	68,600
Administrative expenses	39,784	33,211
TOTAL DEDUCTIONS	<u>4,033,404</u>	<u>3,845,943</u>
Net increase in plan position	2,116,187	2,840,050
Net position restricted for pension benefits		
Beginning of the fiscal year	<u>51,827,233</u>	<u>48,987,183</u>
END OF THE FISCAL YEAR	<u>\$53,943,420</u>	<u>\$51,827,233</u>

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, 2019 and 2018, with comparative prior year totals:

	Inactive & Deferred Vested	Retirees & Beneficiaries	Active Plan Participants		
			Vested	Non-vested	Total
Teachers' Retirement & Pension Systems	24,474	79,151	64,042	43,740	107,782
Employees' Retirement & Pension Systems*	25,364	80,752	44,567	36,747	81,314
Judges' Retirement System	8	431	207	108	315
State Police Retirement System	89	2,505	882	482	1,364
Law Enforcement Officers' Pension System	311	2,053	1,502	1,181	2,683
Total as of June 30, 2019	50,246	164,892	111,200	82,258	193,458
Total as of June 30, 2018	52,301	160,374	118,835	73,596	192,431

*Employees' Retirement and Pension Systems include 42 vested and 55 non-vested active members, and 40 retired members, and 3 deferred members from the Correctional Officers Retirement System.

	Inactive & Deferred Vested	Retirees & Beneficiaries	Active Plan Participants		
			Vested	Non-vested	Total
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
Total as of June 30, 2018	52,301	160,374	118,835	73,596	192,431
Total as of June 30, 2017	53,628	156,366	127,537	65,205	192,742

*Employees' Retirement and Pension Systems include 60 vested and 37 non-vested active members, and 34 retired members, and 2 deferred members 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 7.40%).

A brief summary of the retirement eligibility requirements of and the benefits available under the various systems in effect during fiscal year 2019, 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, 2019 and 2018, was \$21,724,997 and \$18,887,820, 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 70 and 71 for detailed Schedules of Administrative and Investment Expenses, respectively.

F. Federal Income Tax Status

During the fiscal years ended June 30, 2019 and 2018, 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, 2019, 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 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:

Type	Description	As of June 30, 2019	
		Strategic Target	Actual
Public Equity	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%	36.4%
Private Equity	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%	14.0%
Rate Sensitive	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%	18.2%
Credit/Debt Related Strategies	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%	8.9%
Absolute Return	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%	7.4%
Real Assets	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%	13.3%
Cash, Equivalents and Equitization	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%	0.5%
Multi Assets	Investments that act as a proxy for all overall asset allocation through a combination of Exchange Traded Funds and fully funded Futures contracts.	0.0%	1.3%

All asset classes are within the transitional target ranges, which have been identified within the Chief Investment 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 Deutsche Bank to lend securities and reinvest cash collateral received from the transfer of securities in investment instruments authorized by the investment policy. Currently, the initial required collateral for foreign securities is equal to 105

percent of the aggregate market value of the transferred securities not denominated in the same currency as the collateral provided by the counterparty and 102 percent for domestic securities and foreign securities that are denominated in the same currency as the collateral provided by the counterparty. 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, 2019 and 2018, was \$1,639,447 and \$1,252,466 (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, 2019 and 2018, 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:

Investment Type:	Fair Value (in thousands)	As of June 30, 2019 Investment Maturities (in years)			
		Less than 1	1 thru 5	5+ thru 10	More than 10
Asset backed securities	\$ 200,847	\$ -	\$ 45,564	\$ 32,540	\$ 122,743
Bank loans	545,822	1,487	235,193	309,142	-
Collateralized mortgage obligations	488,840	21	7,359	53,968	427,492
Credit/debt commingled funds	569,945	27,167	452,582	86,484	3,712
Domestic corporate obligations	2,881,011	66,021	942,300	1,495,578	377,112
International obligations	613,495	8,253	240,827	194,915	169,500
Mortgage pass-throughs	1,169,502	6,891	19,407	1,143,204	-
Municipals	49,492	606	3,876	5,381	39,629
Options	14,239	14,239	-	-	-
Short-term	1,478,631	1,478,631	-	-	-
Swaps	(1,778)	(9,970)	14,979	(3,775)	(3,012)
U.S. government agency	154,444	348	18,799	13,950	121,347
U.S. treasury inflation linked	2,233,715	7	836,028	1,011,773	385,907
U.S. treasury notes/bonds	4,022,859	116,723	196,987	323,886	3,385,263
U.S. treasury strips	30,389	-	-	-	30,389
Yankee bonds	1,075,804	14,454	325,005	474,857	261,488
Total	\$15,527,257	\$1,724,878	\$3,338,906	\$5,141,903	\$5,321,570

Investment Type:	Fair Value (in thousands)	As of June 30, 2018 Investment Maturities (in years)			
		Less than 1	1 thru 5	5+ thru 10	More than 10
Asset backed securities	\$201,452	\$ 640	\$ 42,606	\$ 41,470	\$ 116,736
Bank loans	734,443	47	258,093	476,303	-
Collateralized mortgage obligations	479,500	995	7,782	24,767	445,956
Credit/debt commingled funds	1,969,014	380,454	968,875	376,400	243,285
Domestic corporate obligations	1,855,531	42,933	566,196	847,288	399,114
International obligations	126,128	33,411	41,809	36,218	14,690
Mortgage pass-throughs	1,038,548	386	1,285	25,000	1,011,877
Municipals	57,874	570	6,999	6,515	43,790
Options	(6,839)	(6,036)	(803)	-	-
Short-term	1,166,907	1,166,907	-	-	-
Swaps	30,208	1,083	3,835	24,451	839
U.S. government agency	200,629	550	4,434	8,301	187,344
U.S. treasury notes/bonds	6,011,627	23,516	978,420	1,152,083	3,857,608
U.S. treasury strips	77,179	-	-	-	77,179
Yankee bonds	518,811	4,208	178,000	226,955	109,648
Total	\$ 14,461,012	\$ 1,649,664	\$ 3,057,531	\$ 3,245,751	\$ 6,508,066

Markets 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, 2019 and 2018.

As of June 30, 2019 and 2018, the System had \$1,169,502 and \$1,038,548 (in thousands), respectively, 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, 2019 and 2018, are identified in greater detail in Note 4.

E. Credit Risk

The System's exposure to credit risk (in thousands) as of June 30, 2019 and 2018, is shown below:

Credit Quality Distribution for Securities with Credit Exposure as a Percentage of Total Investments (Expressed in Thousands)				
Rating	2019 Fair Value	Percentage Total Investments	2018 Fair Value	Percentage Total Investments
AAA	\$207,343	0.384%	\$245,453	0.474%
AA	391,386	0.726%	359,715	0.694%
A	2,138,617	3.965%	1,713,999	3.307%
BAA	137,682	0.255%	109,517	0.211%
BA	38,598	0.072%	10,622	0.020%
BBB	1,171,375	2.171%	1,008,148	1.945%
BB	1,196,634	2.218%	391,204	0.755%
B	836,615	1.551%	339,162	0.654%
CAA	4,860	0.009%	59,734	0.115%
CA	-	0.000%	10,290	0.020%
CCC	77,462	0.144%	51,168	0.099%
CC	3,785	0.007%	4,613	0.009%
C	304	0.001%	1,104	0.002%
D	18,843	0.035%	15,345	0.030%
NR	3,016,790	5.593%	5,006,272	9.660%
	<u>\$9,240,294</u>		<u>\$9,326,346</u>	

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, 2019 and 2018 is shown below:

International Investment Securities – At Fair Value as of June 30, 2019					
<i>(U.S. Dollars in Thousands)</i>					
Currency	Equity	Fixed Income	Cash	Alternative Investments	Total
Argentine Peso	\$ -	\$ 1,344	\$ -	\$ -	\$ 1,344
Australian Dollar	177,354	212	23,835	176,926	378,327
Brazilian Real	92,068	57,933	664	-	150,665
Canadian Dollar	241,961	650	4,811	132,515	379,937
Chilean Peso	-	7,305	-	-	7,305
Columbian Peso	-	14,541	247	-	14,788
Czech Koruna	1,835	11,080	76	-	12,991
Danish Krone	115,946	-	451	-	116,397
Egyptian Pound	12,168	-	-	-	12,168
Euro Currency	1,581,599	71,485	22,389	781,399	2,456,872
Hong Kong Dollar	409,598	-	1,234	83,969	494,801
Hungarian Forint	5,934	8,235	326	-	14,495
Indonesian Rupiah	18,192	46,574	853	-	65,619
Japanese Yen	801,761	(3,033)	8,633	73,269	880,630
Malaysian Ringgit	2,415	34,265	888	-	37,568
Mexican Peso	81,779	38,255	1,957	-	121,991
New Israeli Sheqel	29,858	13,670	107	2,086	45,721
New Taiwan Dollar	99,604	-	8,484	-	108,088
New Zealand Dollar	10,896	-	205	3,240	14,341
Norwegian Krone	44,117	-	935	7,997	53,049
Philippine Peso	5,870	13,142	137	-	19,149
Polish Zloty	17,717	24,542	386	-	42,645
Pound Sterling	641,423	47,269	8,919	210,858	908,469
Qatari Rial	614	-	26	-	640
Romanian Leu	-	6,340	81	-	6,421
Russian Ruble	-	31,663	625	-	32,288
Singapore Dollar	39,887	-	594	14,350	54,831
Sol	-	19,734	96	-	19,830
South African Rand	71,131	19,263	701	-	91,095
South Korean Won	216,822	125,460	756	-	343,038
Swedish Krona	117,387	58	1,081	8,381	126,907
Swiss Franc	356,497	-	415	4,727	361,639
Thailand Baht	44,709	33,144	816	-	78,669
Turkish Lira	14,118	8,611	150	-	22,879
Uae Dirham	13,403	-	27	-	13,430
Yuan Renminbi	2,765	65,817	677	833,518	902,777
Not Applicable (1)	4,182,348	1,230	-	-	4,183,578
Total Holdings Subject to Foreign Currency Risk	<u>\$9,451,776</u>	<u>\$698,789</u>	<u>\$91,582</u>	<u>\$2,333,235</u>	<u>\$12,575,382</u>

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
Total Holdings Subject to Foreign Currency Risk	<u>\$9,455,474</u>	<u>\$1,530,117</u>	<u>\$164,442</u>	<u>\$1,576,359</u>	<u>\$12,726,392</u>

- (1) *The majority foreign currency-denominated investments are in non-US stocks.
The Agency has an overlay program to help minimize its currency risk.*

Note: These schedules do not agree with the total international obligations and international equities as listed on the Statement of Plan Net Position due to American Depositary 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, 2019 and 2018 (in thousands):

	2019	2018
Interest income	\$ 74,284	\$ 36,609
Less:		
Interest expense	60,278	25,345
Program fees	946	1,807
Expenses from securities lending	61,224	27,152
Net income from securities lending	<u>\$ 13,060</u>	<u>\$ 9,457</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. Deutsche Bank, 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, 2019 included long-term U.S. government obligations, domestic and international equities, as well as domestic debt obligations. At the initiation of a loan, borrowers are required to provide collateral amounts of 102 percent (domestic securities and foreign securities that are denominated in the same currency as the collateral provided by the counterparty) and 105 percent (foreign securities that are not denominated in the same currency as the collateral provided by the counterparty) of the fair value of the securities lent. In the event the collateral fair value falls below 100 percent for domestic securities and foreign securities that are denominated in the same currency as the collateral or 103 percent on foreign securities not denominated in the same currency as the collateral provided by the counterparty, the borrower is required to provide additional collateral to the original levels by the end of the next business day. Deutsche Bank is obligated to indemnify the client if there are any losses of securities, collateral or investments of the client in the Bank's custody arising out of or related to the negligence or dishonesty of the Bank. Also, Deutsche Bank has put in place a custom insurance policy that can be called upon to the extent Deutsche Bank is unable to meet its indemnification obligation due to financial impairment. The initial duration of this policy will be in place until February 28, 2021.

The System maintains the right to terminate securities lending transactions upon notice. The lending agent reinvests the cash collateral received on each loan utilizing indemnified repurchase agreements (repos). As of June 30, 2019, such repos had average days to maturity of 4.06 days. The System cannot pledge or sell collateral securities received unless (and until) a borrower defaults. At year-end, 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 market value of securities on loan and the market value of collateral held for the System as of June 30, 2019 (in thousands) was \$4,405,333 and \$4,483,334, respectively. The market value of securities on loan and the market value of collateral held for the System as of June 30, 2018 (in thousands) was \$1,995,272 and \$2,043,411, respectively.

The following tables present the fair values of the underlying securities, and the value of the collateral pledged at June 30, 2019 and 2018 (in thousands):

Securities Lent	As of June 30, 2019		
	Fair Value Loaned Securities	Collateral Fair Value	Percent Collateralized
Lent for cash collateral			
U.S. government and agency	\$1,826,567	\$1,857,314	101.7%
Domestic bond & equity	1,370,770	1,399,332	102.1%
International fixed	5,026	5,124	101.9%
International equity	79,468	73,940	93.0%
Lent for non-cash collateral			
Domestic bond & equity	1,097,432	1,120,050	102.1%
International equity	26,260	27,574	105.0%
Total securities lent	<u>\$4,405,523</u>	<u>\$4,483,334</u>	101.8%

A reverse stock split of a foreign security caused an under-collateralization event. After June 30, 2019, Deutsche Bank provided additional collateral for international equity to be in compliance with the agreement.

As of June 30, 2018			
Securities Lent	Fair Value Loaned Securities	Collateral Fair Value	Percent Collateralized
Lent for cash collateral			
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%
Lent for non-cash collateral			
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	107.8%
Total securities lent	\$ 1,995,272	\$ 2,043,411	102.4%

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, 2019 and 2018:

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, 2019, and 2018, the System had the following recurring fair value measurements:

As of June 30, 2019 Investments by fair value level (expressed in millions)	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Debt Securities				
U.S. Government obligations	\$ 6,441	\$ 6,441	\$ -	\$ -
Domestic corporate obligations	4,764		4,764	
International obligations	89		89	
Emerging markets debt	525		525	
Mortgages & mortgage related securities	1,658			1,658
Total debt securities	<u>13,477</u>	<u>6,441</u>	<u>5,378</u>	<u>1,658</u>
Equity Securities				
Domestic stocks (includes REITs)	9,766	9,766		
International stocks (includes REITs)	9,957	9,957		
Total equity securities	<u>19,723</u>	<u>19,723</u>		
Alternative Investment	32	32		
Cash and Cash Equivalents	1,627	1,627	-	-
Total investment by fair value level	<u>\$ 34,859</u>	<u>\$27,823</u>	<u>\$5,378</u>	<u>\$1,658</u>
Investment measured at the net asset value (NAV)				
Private funds (includes equity, real estate, credit, energy, infrastructure and timber)	9,623			
Real estate-open ended	3,924			
Multi-strategy	443			
Hedge Funds				
Equity long/short	1,073			
Event-driven	1,045			
Global macro	1,314			
Relative Value	1,515			
Opportunistic	329			
Total investment measured at the NAV	<u>\$ 19,266</u>			
Investment derivative instruments and foreign currency holdings				
Credit default swaps	\$ 15	\$ -	\$ 15	\$ -
Foreign exchange contracts (liabilities)	1	-	1	-
Foreign - international currencies	12	-	12	-
Interest rate swaps	(14)	-	(14)	-
Warrants	13	-	13	-
Total investment derivative instruments	<u>\$ 27</u>	<u>\$ -</u>	<u>\$ 27</u>	<u>\$ -</u>
Total	<u>\$ 54,152</u>			

As of June 30, 2018	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level (expressed in millions)				
Debt Securities				
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
Total debt securities	<u>12,938</u>	<u>6,585</u>	<u>4,825</u>	<u>1,528</u>
Equity Securities				
Domestic stocks (includes REITs)	9,455	9,455		
International stocks (includes REITs)	10,173	10,173		
Total equity securities	<u>19,628</u>	<u>19,628</u>		
Alternative Investment	51	51		
Cash and Cash Equivalents	1,185	1,185	-	-
Total investment by fair value level	<u>\$ 33,802</u>	<u>\$ 27,449</u>	<u>\$ 4,825</u>	<u>\$ 1,528</u>
Investment measured at the net asset value (NAV)				
Private funds (includes equity, real estate, credit, energy, infrastructure and timber)	\$ 9,283			
Real estate-open ended	3,183			
Global Macro	560			
Multi-strategy	418			
Hedge Funds				
Equity long/short	972			
Event-driven	876			
Global macro	858			
Multi-asset	1			
Relative Value	1,406			
Opportunistic	314			
Total investment measured at the NAV	<u>\$ 17,871</u>			
Investment derivative instruments and foreign currency holdings				
Credit default swaps	\$ 35	\$ -	\$ 35	\$ -
Foreign exchange contracts (liabilities)	13	-	13	-
Foreign - international currencies	67	-	67	-
Interest rate swaps	26	-	26	-
Warrants	11	-	11	-
Total investment derivative instruments	<u>\$ 152</u>	<u>\$ -</u>	<u>\$ 152</u>	<u>\$ -</u>
Total	<u>\$ 51,825</u>			

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, 2019				As of June 30, 2018			
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice
Private funds (includes equity, credit, energy, infrastructure, real estate and timber) (1)	\$9,623	\$9,836			\$ 9,283	\$ 7,805		
Real estate-open ended (2)	3,924	-	Quarterly	45 - 90 days	3,183	-	Quarterly	45 - 90 days
Global macro (3)					352	-	Weekly	3 days
					208	-	Daily	2 days
Multi-asset (4)	443	-	Monthly	5 days	418	-	Monthly	5 days
Hedge Funds								
Equity long/short (5)	936	-	Monthly	30 - 45 days	819	-	Monthly	30 - 45 days
	137	-	Quarterly	45 - 90 days	135	-	Quarterly	45 - 90 days
					18	-	N/A	Liquidating
Event-driven (6)	174	-	Monthly	15 days	159	-	Monthly	15 days
	504	-	Quarterly	60 - 65 days	127	-	Semi Annual	45 days
	316	-	Quarterly	120 days +	524	-	Quarterly	65 days
	51	-	N/A	Liquidating	66	-	N/A	Liquidating
Global macro (3)	806	-	Monthly	5 - 30 days	858	-	Monthly	5 - 30 days
	281	-	Weekly	3 days				
	226	-	Daily	2 days				
Multi-asset (4)					1	-	N/A	Liquidating
Relative value (7)	1,203	-	Quarterly	60 - 65 days	1,406	-	Quarterly	60 - 65 days
	313	-	Quarterly	30 days				
Opportunitstic (8)	234	-	Quarterly	90 days	228	-	Quarterly	90 days
	95	-	Semi Annual	90 - 120 days	86	-	Semi Annual	90 - 120 days
	<u>\$19,266</u>	<u>\$9,836</u>			<u>\$17,871</u>	<u>\$7,805</u>		

- (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 funds 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, 2019
(in Thousands)

Currency	Changes in Fair Value(4)		Fair Value at June 30,2019		
	Classifications	Amount(1)	Classification	Amount(2)	Notional(3)
Credit Default Swaps Bought	Investment Revenue	\$ 63	Swaps	\$ -	\$ -
Credit Default Swaps Written	Investment Revenue	15,172	Swaps	15,010	396,364
Fixed Income Futures Long	Investment Revenue	84,059	Futures	-	845,338
Fixed Income Futures Short	Investment Revenue	(48,140)	Futures	-	(314,861)
Fixed Income Options Bought	Investment Revenue	2,341	Options	15,973	1,341,400
Fixed Income Options Written	Investment Revenue	4,687	Options	(15,223)	(1,675,422)
Foreign Currency Futures Long	Investment Revenue	-	Futures	-	-
Foreign Currency Futures Short	Investment Revenue	-	Futures	-	-
Foreign Currency Futures Written	Investment Revenue	-	Options	-	-
Foreign Currency Options Written	Investment Revenue	7	Options	-	-
Futures Options Bought	Investment Revenue	(85)	Options	-	16,236,939
Futures Options Written	Investment Revenue	1,802	Options	(54)	542
FX Forwards	Investment Revenue	30,596	Long Term Instruments	(2,280)	(229)
Index Futures Long	Investment Revenue	72,952	Futures	-	542
Index Futures Short	Investment Revenue	(967)	Futures	-	(229)
Pay Fixed Interest Rate Swaps	Investment Revenue	(46,510)	Swaps	(16,580)	(1,005,373)
Receive Fixed Interest Rate Swaps	Investment Revenue	6,617	Swaps	2,136	(80,000)
Rights	Investment Revenue	492	Common Stock	363	663
Total Return Swaps Bond	Investment Revenue	2,827	Swaps	201	(80,000)
Warrants	Investment Revenue	2,340	Common Stock	13,416	511
		\$ 128,253		\$ 12,962	

DERIVATIVES (continued)

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

Currency	Changes in Fair Value ⁽⁴⁾		Fair Value at June 30, 2018		
	Classifications	Amount ⁽¹⁾	Classification	Amount ⁽²⁾	Notional ⁽³⁾
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
		\$ 22,850		\$ 49,396	

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

1. Negative values (in brackets) refer to unrealized losses.

2. Negative values (in brackets) refer to liabilities.

3. Notional may be a dollar amount or size of underlying futures and options; negative values (in brackets) refer to short positions.

4. Changes in fair value excludes futures margin payments.

DERIVATIVES (continued)

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, 2019 and 2018, was \$174,850 and \$358,209 (in thousands), respectively. 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) as of June 30, 2019 and 2018:

As of June 30, 2019					
S&P		Moody's		Fitch	
Fair Value	Rating	Fair Value	Rating	Fair Value	Rating
\$55,082	AA-	\$7,406	Aa2	\$21,290	AA
23,465	A+	54,550	Aa3	97,005	AA-
83,060	A	58,774	A1	43,570	A+
258	A-	41,135	A2	7,797	A
7,797	BBB+	7,797	A3	5,188	NR
5,188	NR	5,188	NR	-	
\$174,850	(1)	\$174,850	(1)	\$174,850	(1)

As of June 30, 2018					
S&P		Moody's		Fitch	
Fair Value	Rating	Fair Value	Rating	Fair Value	Rating
\$ 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		
\$ 358,209	(1)	\$ 358,209	(1)	\$ 358,209	(1)

(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 as of June 30, 2019:

Counterparty Name	Percentage of Net Exposure	S&P Rating	Fitch Rating	Moody's Rating
STATE STREET BANK LONDON	18%	A	AA-	A1
WESTPAC BANKING CORPORATION	16%	AA-	AA-	Aa3
STANDARD CHARTERED BANK	14%	A	A+	A1
HSBC BANK PLC	11%	A	AA-	A2
ROYAL BANK OF CANADA (UK)	8%	AA-	AA	A2
CITIBANK N.A.	7%	A+	A+	Aa3
TORONTO DOMINION BANK	6%	AA-	AA-	Aa3
MORGAN STANLEY ICE	4%	BBB+	A	A3
JPMORGAN CHASE BANK NA LONDON	4%	A+	AA	Aa2
WELLS FARGO LCH	3%	NRD	NRD	NRD
BARCLAYS BANK ICE	2%	A	A+	A2
BANK OF NEW YORK	2%	A	AA-	A1
UBS AG LONDON	2%	A+	AA-	Aa3
NORTHERN TRUST COMPANY, THE	2%	AA-	AA-	A2
BARCLAYS BANK PLC WHOLESALE	1%	A	A+	A2

B. Interest Rate Risk

During fiscal years 2019 and 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.

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, 2019 and 2018, the outstanding balances were \$12,741 and \$18,120 (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, 2019 and 2018, refunds to members and withdrawing employers were \$67,400 and \$68,600 (expressed in thousands), respectively.

8. ACCOUNTS PAYABLE AND ACCRUED EXPENSES

For the fiscal years ended June 30, 2019 and 2018, accounts payable and accrued expenses consisted of the following components (expressed in thousands):

	2019	2018
Administrative expenses	\$ 1,497	\$ 1,619
Investment management fees	23,362	22,436
Tax and other withholdings	38,544	36,352
Total	<u>\$ 63,403</u>	<u>\$ 60,407</u>

9. NET PENSION LIABILITY

Per the actuary reports dated June 30, 2019 and 2018, the components of the net pension liability of the participating employers as of June 30, 2019, 2018 were as follows:

(expressed in thousands)

	2019	2018
Total Pension Liability (TPL)	\$74,569,030	\$72,808,833
Plan Fiduciary Net Position	53,943,420	51,827,233
Net Pension Liability	<u>20,625,610</u>	<u>\$20,981,600</u>
Ratio - Fiduciary Net Position/TPL	<u>72.34%</u>	<u>71.18%</u>

A. Actuarial Assumptions

The actuarial assumptions presented below for 2019 were adopted pursuant to an experience study for the period July 1, 2014 to June 30, 2018.

Inflation	In the 2019 actuarial valuation, 2.65% general, 3.15% wage. In the 2018 actuarial valuation, 2.60% general, 3.10% wage.
Salary Increases	In the 2019 actuarial valuation, 3.10% to 11.6% including inflation. In the 2018 actuarial valuation, 3.20% to 9.10% including inflation.
Investment Rate of Return	In the 2019 actuarial valuation, 7.40%. In the 2018 actuarial valuation, 7.45%.
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2018 valuation pursuant to an experience study of the period July 1, 2014 to July 30, 2018.
Mortality	Public Sector 2010 Mortality Tables calibrated to MSRPS experience with generational projections using MP-2018 (2-dimensional) 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, 2019, these best estimates are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return</u>
Public Equity	37%	6.3%
Private Equity	13%	7.5%
Rate Sensitive	19%	1.3%
Credit Opportunity	9%	3.9%
Real Assets	14%	4.5%
Absolute Return	8%	3.0%
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, 2019.

For the years ended June 30, 2019 and 2018, the annual money-weighted rate of return on pension plan investments, net of the pension plan investment expense, was 6.44% and 8.08%, 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 7.40% 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 7.40%. 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 7.40%, 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:

(Expressed in thousands)

<u>System</u>	<u>1% Decrease to 6.40%</u>	<u>Discount Rate 7.40%</u>	<u>1% Increase to 8.40%</u>
Teachers	\$16,183,187	\$10,686,306	\$6,113,779
Employees	11,665,321	8,521,652	5,888,943
State Police	1,078,322	773,777	526,511
Judges	131,874	73,240	23,281
LEOPS	787,999	567,888	387,993
CORS	6,803	2,747	(571)
Total System Net Pension Liability	\$29,853,506	\$20,625,610	\$12,939,936

REQUIRED SUPPLEMENTARY INFORMATION

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

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
Total pension liability			
Service cost	\$ 814,019	\$ 451,990	\$ 34,276
Interest	3,143,018	1,864,909	165,837
Changes of benefit terms	-	-	-
Difference between expected and actual experience	(189,803)	(44,635)	(19,980)
Changes in assumptions	(897,464)	283,109	(42,874)
Benefit payments, including refunds of employee contributions	(2,296,744)	(1,465,624)	(122,446)
Net change in total pension liability	<u>573,026</u>	<u>1,089,749</u>	<u>14,813</u>
Total pension liability, beginning of year	<u>42,916,205</u>	<u>25,530,054</u>	<u>2,269,293</u>
Total pension liability, end of year (a)	<u>\$ 43,489,231</u>	<u>\$ 26,619,803</u>	<u>\$ 2,284,106</u>
Plan fiduciary net position			
Contributions - employer	\$ 1,143,584	\$ 737,284	\$ 86,172
Contributions - members	494,698	288,350	8,579
Net investment income	1,999,261	1,103,927	91,778
Benefit payments, including refunds and administrative expenses	(2,318,939)	(1,482,270)	(122,721)
Net Transfer	3,870	(4,830)	(28)
Net Change in Plan Fiduciary Net Position	<u>1,322,474</u>	<u>642,461</u>	<u>63,780</u>
Plan fiduciary net position - beginning of year	<u>31,480,452</u>	<u>17,452,939</u>	<u>1,446,548</u>
Plan fiduciary net position - end of year (b)	<u>\$ 32,802,926</u>	<u>\$ 18,095,400</u>	<u>\$ 1,510,328</u>
Employer net pension liability (a) - (b)	<u>\$ 10,686,305</u>	<u>\$ 8,524,403</u>	<u>\$ 773,778</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, 2019

Judges' Retirement System	Law Enforcement Officers' Pension System	Total
\$ 19,173	\$ 39,299	\$ 1,358,757
41,302	112,806	5,327,872
-	-	-
(5,570)	8,400	(251,588)
(19,037)	(4,959)	(681,225)
(34,540)	(74,265)	(3,993,619)
<u>1,328</u>	<u>81,281</u>	<u>1,760,197</u>
561,930	1,531,351	72,808,833
<u>\$ 563,258</u>	<u>\$1,612,632</u>	<u>\$74,569,030</u>
\$ 21,737	\$ 65,314	\$ 2,054,091
3,176	12,488	807,291
29,689	63,554	3,288,209
(34,604)	(74,870)	(4,033,404)
-	988	-
19,998	67,474	2,116,187
470,019	977,275	51,827,233
<u>\$ 490,017</u>	<u>\$1,044,749</u>	<u>\$53,943,420</u>
<u>\$ 73,241</u>	<u>\$ 567,883</u>	<u>\$20,625,610</u>

REQUIRED SUPPLEMENTARY INFORMATION

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

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
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	<u>1,282,929</u>	<u>735,759</u>	<u>72,364</u>
Total pension liability, beginning of year	<u>41,633,276</u>	<u>24,794,295</u>	<u>2,196,929</u>
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	<u>1,749,260</u>	<u>912,274</u>	<u>74,767</u>
Plan fiduciary net position - beginning of year	<u>29,731,192</u>	<u>16,540,665</u>	<u>1,371,781</u>
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

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>
549,838	1,436,547	70,610,885
<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
441,351	902,195	48,987,184
<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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
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	<u>1,099,855</u>	<u>447,490</u>	<u>30,011</u>
Total pension liability, beginning of year	40,533,421	24,346,805	2,166,918
Total pension liability, end of year (a)	<u>\$ 41,633,276</u>	<u>\$ 24,794,295</u>	<u>\$ 2,196,929</u>
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	<u>2,188,979</u>	<u>1,209,212</u>	<u>97,649</u>
Plan fiduciary net position - beginning of year	27,542,213	15,331,453	1,274,132
Plan fiduciary net position - end of year (b)	<u>\$ 29,731,192</u>	<u>\$ 16,540,665</u>	<u>\$ 1,371,781</u>
Employer net pension liability (a) - (b)	<u>\$ 11,902,084</u>	<u>\$ 8,253,630</u>	<u>\$ 825,148</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, 2017

Judges' Retirement System	Law Enforcement Officers' Pension System	Total
\$ 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>
536,318	1,376,491	68,959,953
<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)
(2)	1,220	-
<u>33,689</u>	<u>91,729</u>	<u>3,621,258</u>
407,662	810,466	45,365,926
<u>\$ 441,351</u>	<u>\$ 902,195</u>	<u>\$ 48,987,184</u>
\$ 108,487	\$ 534,352	\$ 21,623,701

REQUIRED SUPPLEMENTARY INFORMATION

MARYLAND STATE RETIREMENT

SCHEDULE OF CHANGES IN

for the Fiscal Year Ended

(Expressed in Thousands)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
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	<u>1,294,382</u>	<u>938,326</u>	<u>55,812</u>
Total pension liability, beginning of year	<u>39,239,039</u>	<u>23,408,479</u>	<u>2,111,106</u>
Total pension liability, end of year (a)	<u>\$ 40,533,421</u>	<u>\$ 24,346,805</u>	<u>\$ 2,166,918</u>
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	<u>(221,715)</u>	<u>(179,338)</u>	<u>(28,705)</u>
Plan fiduciary net position - beginning of year	<u>27,763,928</u>	<u>15,510,791</u>	<u>1,302,837</u>
Plan fiduciary net position - end of year (b)	<u>\$ 27,542,213</u>	<u>\$ 15,331,453</u>	<u>\$ 1,274,132</u>
Employer net pension liability (a) - (b)	<u>\$ 12,991,208</u>	<u>\$ 9,015,352</u>	<u>\$ 892,786</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, 2016

Judges' Retirement System	Law Enforcement Officers' Pension System	Total
\$ 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)
<u>27,717</u>	<u>72,164</u>	<u>2,388,401</u>
508,601	1,304,327	66,571,552
<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	-
<u>(4,870)</u>	<u>10,714</u>	<u>(423,914)</u>
412,532	799,752	45,789,840
<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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
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	(1,958,092)	(1,170,116)	(119,804)
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

Judges' Retirement System	Law Enforcement Officers' Pension System	Total
\$ 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
(28,899)	(55,884)	(3,332,795)
<u>48,371</u>	<u>76,760</u>	<u>3,484,833</u>
460,230	1,227,567	63,086,719
<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
(28,945)	(56,211)	(3,361,875)
(6)	232	-
<u>3,649</u>	<u>31,031</u>	<u>449,852</u>
408,883	768,489	45,339,988
<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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
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

Judges' Retirement System	Law Enforcement Officers' Pension System	Total
\$ 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>
438,836	1,143,154	60,060,091
<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>
46,551	112,666	4,976,771
362,332	655,823	40,363,217
<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, 2019

(Expressed in Thousands)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
Total pension liability	\$43,489,231	\$26,619,803	\$2,284,106	\$563,258	\$1,612,632	\$74,569,030
Plan fiduciary net position	(32,802,926)	(18,095,400)	(1,510,328)	(490,017)	(1,044,749)	(53,943,420)
Employer net pension liability	<u>\$10,686,305</u>	<u>\$8,524,403</u>	<u>\$773,778</u>	<u>\$73,241</u>	<u>\$567,883</u>	<u>\$20,625,610</u>
Plan fiduciary net position as a percentage of the total pension liability	75.43%	67.98%	66.12%	87.00%	64.79%	72.34%
Covered payroll	\$ 7,153,063	\$ 4,415,523	\$ 106,978	\$ 48,935	\$ 180,964	\$ 11,905,463
Employer net pension liability as a percent of covered payroll	149.39%	193.06%	723.31%	149.67%	313.81%	173.24%

SCHEDULE OF EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS

for the Fiscal Year Ended June 30, 2018

(Expressed in Thousands)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
Total pension liability	\$ 42,916,205	\$ 25,530,054	\$ 2,269,293	\$ 561,930	\$ 1,531,351	\$ 72,808,833
Plan fiduciary net position	(31,480,452)	(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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
Total pension liability	\$ 39,239,039	\$ 23,408,479	\$ 2,111,106	\$ 508,601	\$ 1,304,327	\$ 66,571,552
Plan fiduciary net position	(27,763,928)	(15,510,791)	(1,302,837)	(412,532)	(799,752)	(45,789,840)
Employer net pension liability	<u>\$ 11,475,111</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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
Total pension liability	\$ 37,324,936	\$ 22,097,648	\$ 1,976,338	\$ 460,230	\$ 1,227,567	\$ 63,086,719
Plan fiduciary net position	(27,491,055)	(15,365,014)	(1,306,547)	(408,883)	(768,489)	(45,339,988)
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, 2019

(Expressed in Thousands)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
Actuarially determined contribution	\$ 1,143,584	\$ 737,284	\$ 86,172	\$ 21,737	\$ 65,314	\$ 2,054,091
Actual contribution	(1,143,584)	(737,284)	(86,172)	(21,737)	(65,314)	(2,054,091)
Contribution deficiency	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Covered employee payroll	\$ 7,153,063	\$ 4,415,523	\$ 106,978	\$ 48,935	\$ 180,964	\$11,905,463
Actual contribution as a percent of covered payroll	15.99%	16.70%	80.55%	44.42%	36.09%	17.25%

SCHEDULE OF EMPLOYERS' CONTRIBUTIONS AND RELATED RATIOS

for the Fiscal Year Ended June 30, 2018

(Expressed in Thousands)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
Actuarially determined contribution	\$ 1,122,986	\$ 707,194	\$ 80,241	\$ 22,465	\$ 62,131	\$ 1,995,017
Actual contribution	(1,122,986)	(707,194)	(80,241)	(22,465)	(62,131)	(1,995,017)
Contribution deficiency	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
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)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System	Judges' Retirement System	Law Enforcement Officers' Pension System	Total
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)	\$ 358,798	\$ 220,458	\$ 8,082	\$ -	\$ -	\$ 587,338
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

Fiscal Year Ended	Annual money-weighted rate of return, net of investment expenses
2014	14.38%
2015	2.68%
2016	1.16%
2017	10.02%
2018	8.08%
2019	6.44%

**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

1 ACTUARIAL METHODS AND ASSUMPTIONS

A. Funding Method

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

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

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

The System's unfunded actuarial liability is funded over a 25-year closed amortization period ending June 30, 2039 (19 years remaining as of the June 30, 2019 valuation date) as a level percentage of payroll.

There is an additional component in the Unfunded Actuarial Accrued Liability amortization contribution rate that accounts for the effects of the lag between the valuation date and when the contribution is made. This calculation assumes the contributions that would be received in fiscal year 2020 are equal to the budgeted contributions developed in the valuation as of June 30, 2018, plus the proportionate share of reinvested savings allocated to each System for fiscal year 2020 under the pension reforms.

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

B. Asset Valuation Method

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

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

C. Actuarial Assumptions

The assumptions used for the actuarial valuation were recommended by the System's independent actuary, based upon periodic analyses of the System's experience, and adopted by the Board of Trustees. The most recent analysis of the System's experience was performed in 2019 and the June

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION

C. Actuarial Assumptions (continued)

30, 2019 valuation reflects the adoption of the assumptions recommended from that analysis. New assumptions were adopted for the June 30, 2019 valuation. Differences between assumed and actual experience (i.e., actuarial gains and losses) are part of the unfunded actuarial liability. The following significant assumptions were used in the actuarial valuation as of June 30, 2019:

- A rate of return on investments of 7.40% compounded annually (effective June 30, 2019);
- projected salary increases of 3.10% compounded annually, attributable to wage inflation (effective June 30, 2019);
- additional projected salary increases ranging from 0.00% to 8.50% per year attributable to seniority and merit (effective June 30, 2019);
- post-retirement benefit increases ranging from 2.19% to 3.10% per year depending on the system for service earned prior to July 1, 2011, and 1.42% to 3.10% per year depending on the system for service earned on or after July 1, 2011 (effective June 30, 2019);
- rates of mortality, termination of service, disablement and retirement based on actual experience during the period from June 30, 2014 through June 30, 2018 (effective June 30, 2019); and an
- increase in the aggregate active member payroll of 3.10% annually (effective June 30, 2019).

OTHER SUPPLEMENTARY INFORMATION

SCHEDULE OF FUNDING PROGRESS

(Expressed in Thousands)

Actuarial Valuation Date June 30,	Actuarial Value of Assets a	Actuarial Accrued Liability (AAL) b	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll c	UAAL as a Percentage of Covered Payroll [(b - a) / c]
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%
2019	54,361,969	74,526,000	20,164,031	72.94%	11,905,463	169%

DESCRIPTION OF SCHEDULE OF FUNDING PROGRESS

The Schedule of Funding Progress summarizes the actuarial value of the System's assets and actuarial accrued liability as of the June 30, 2019 actuarial valuation date and each of the 9 preceding years. The data presented in the schedule was obtained from the System's independent actuary's annual valuation report for each year presented.

The schedule is presented to provide a consistent basis for measuring the System's annual progress toward funding its actuarial accrued liability in accordance with its actuarial funding method. The primary measure of funding progress is the System's funded ratio (i.e., actuarial value of assets expressed as a percentage of the actuarial accrued liability). An increase in the funded ratio indicates improvement in the System's ability to pay all projected benefits as they become due. The System is fully funded if the funded ratio is greater than or equal to 100 percent. During the year ended June 30, 2019 the System's funded ratio increased from 72.46% to 72.94%.

The Schedule of Funding Progress also discloses the relationship between the System's covered payroll (i.e., all elements included in compensation paid to active members on which contributions are based) and the unfunded actuarial accrued liability. This relationship, expressed as a ratio, is a measure of the significance of the unfunded actuarial accrued liability relative to the capacity to contribute based on the active participants covered payroll. During the year ended June 30, 2019 the System's ratio of the unfunded actuarial accrued liability to its covered payroll decreased from 173% to 169%.

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

Fiscal Year Ended June 30,	Annual Required Contributions	Percentage Contributed
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%
2019	2,054,091	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:

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.

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.

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, 2019 (with Comparative 2018 Totals)

(Expressed in Thousands)

	Annuity Savings Fund	Accumulation Fund	Expense Fund	Totals	
				2019	2018
Fund Balances, Beginning of Year	\$8,425,105	\$43,398,132	\$3,996	\$51,827,233	\$48,987,183
Additions					
Net investment income (loss)	-	3,658,335	(370,126)	3,288,209	3,899,393
Contributions (Note 5):					
Employers	-	1,268,855	32,699	1,301,554	1,247,722
Members	807,291	-	-	807,291	791,583
State contributions on behalf of local governments	-	751,945	-	751,945	746,354
Contribution interest	-	592	-	592	941
Deductions					
Benefit payments		(3,926,220)	-	(3,926,220)	(3,744,132)
Refunds (Note 7)	(67,400)	-	-	(67,400)	(68,600)
Administrative expenses (Note 2)	-	(7,834)	(31,950)	(39,784)	(33,211)
Transfers					
From the Accumulation Fund to the Annuity Savings Fund for interest credited to members' accounts	(457,343)	457,343	-	-	-
To the Accumulation Fund from the Annuity Savings Fund for contributions of retiring members	414,304	(414,304)	-	-	-
From the Accumulation Fund to the Expense Fund for administrative and investment expenses	-	(370,126)	370,126	-	-
Net changes in fund balances	696,852	1,418,586	749	2,116,187	2,840,050
Fund Balances, End of Year	\$9,121,957	\$44,816,718	\$4,745	\$53,943,420	\$51,827,233

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

SCHEDULE OF ADMINISTRATIVE EXPENSES

for the Fiscal Years Ended June 30, 2019 and 2018

(Expressed in Thousands)

	2019	2018
Personnel services		
Staff salaries	\$13,833	\$13,587
Fringe benefits	<u>6,548</u>	<u>6,328</u>
Total personnel services	<u>20,381</u>	<u>19,915</u>
Professional and contractual services		
Actuarial services	360	281
Legal and financial services	4,182	3,560
Consulting services	2,172	1,534
Data processing services	4,363	1,816
Other contractual services	1,213	962
Total professional and contractual services	<u>12,290</u>	<u>8,153</u>
Miscellaneous		
Communications	867	740
Rent	1,686	1,737
Equipment and supplies	1,091	772
Other	<u>3,469</u>	<u>1,894</u>
Total miscellaneous	<u>7,113</u>	<u>5,143</u>
Total Administrative Expenses	<u>\$ 39,784</u>	<u>\$33,211</u>

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

SCHEDULE OF INVESTMENT EXPENSES for the Fiscal Years Ended June 30, 2019 and 2018 (Expressed in Thousands)

	Management Fees for 2019	Incentive Fees for 2019	Total
Investment advisors			
Public equity	\$76,412	\$12,343	\$88,755
Fixed income	12,342	1,202	13,544
Credit opportunity	20,165	-	20,165
Real return	15,591	-	15,591
Absolute return	51,423	20,991	72,414
Multi Asset	1,436		1,436
Private equity	109,445	341	109,786
Real estate	36,542	1,869	38,411
Total investment advisory fees	<u>323,356</u>	<u>36,746</u>	<u>360,102</u>
Other investment service fees			
Currency overlay	4,672	-	4,672
Other investment expenses	5,352	-	5,352
Total other investment service fees	<u>10,024</u>	<u>-</u>	<u>10,024</u>
Total Investment Expenses	<u>\$333,380</u>	<u>\$36,746</u>	<u>\$370,126</u>
<hr/>			
	Management Fees for 2018	Incentive Fees for 2018	Total
Investment advisors			
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>
Other investment service fees			
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>
Total Investment Expenses	<u>\$ 330,584</u>	<u>\$ 41,420</u>	<u>\$ 372,004</u>

MARYLAND STATE RETIREMENT

SCHEDULE OF PLAN NET

as of June 30, 2019

(Expressed in Thousands)

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
Assets:			
Cash & cash equivalents (note 3)	\$ 975,728	\$ 562,140	\$ 50,741
Receivables:			
Contributions:			
Employers	6,996	9,639	1,634
Employers - Long Term (Note 6)	-	12,741	-
Members	2,232	1,458	-
Accrued investment income	151,808	84,627	7,033
Investment sales proceeds	1,014,264	564,109	46,871
Due from other systems	47,480	44,541	39
Total receivables	<u>1,222,780</u>	<u>717,115</u>	<u>55,577</u>
Investments, at fair value (Notes 3 & 4)			
U.S. Government obligations	3,920,437	2,159,148	179,666
Domestic corporate obligations	2,900,393	1,597,366	132,919
International obligations	373,392	205,643	17,112
Domestic stocks	5,951,801	3,277,903	272,759
International stocks	6,060,504	3,337,770	277,741
Mortgages & mortgage related securities	1,009,318	555,873	46,255
Alternative investments	11,745,056	6,468,489	538,252
Collateral for loaned securities	2,725,974	1,509,530	125,083
Total investments	<u>34,686,875</u>	<u>19,111,722</u>	<u>1,589,787</u>
Total assets	<u>36,885,383</u>	<u>20,390,977</u>	<u>1,696,105</u>
LIABILITIES			
Accounts payable & accrued expenses	38,863	21,054	1,729
Investment commitments payable	1,273,345	713,208	58,992
Obligation for collateral for loaned securities	2,725,973	1,509,531	125,083
Due to other systems	44,275	51,784	(27)
Total liabilities	<u>4,082,456</u>	<u>2,295,577</u>	<u>185,777</u>
Net position restricted for pensions	<u>\$32,802,927</u>	<u>\$18,095,400</u>	<u>\$1,510,328</u>

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

AND PENSION SYSTEM

POSITION BY SYSTEM

Judges' Retirement System	Law Enforcement Officers' Pension System	Subtotal	Eliminations*	Combined Total
\$ 18,757	\$ 32,081	\$ 1,639,447	\$ -	\$ 1,639,447
(31)	730	18,968	-	18,968
-	-	12,741	-	12,741
-	147	3,837	-	3,837
2,255	4,602	250,325	-	250,325
15,073	30,656	1,670,973	-	1,670,973
-	3,974	96,034	(96,034)	-
<u>17,297</u>	<u>40,109</u>	<u>2,052,878</u>	<u>(96,034)</u>	<u>1,956,844</u>
58,079	124,076	6,441,406	-	6,441,406
42,967	91,793	4,765,438	-	4,765,438
5,532	11,817	613,496	-	613,496
88,172	188,365	9,779,000	-	9,779,000
89,782	191,805	9,957,602	-	9,957,602
14,952	31,943	1,658,341	-	1,658,341
173,995	371,712	19,297,504	-	19,297,504
<u>40,278</u>	<u>82,469</u>	<u>4,483,334</u>	<u>-</u>	<u>4,483,334</u>
<u>513,757</u>	<u>1,093,980</u>	<u>56,996,121</u>	<u>-</u>	<u>56,996,121</u>
<u>549,811</u>	<u>1,166,170</u>	<u>60,688,446</u>	<u>(96,034)</u>	<u>60,592,412</u>
				52,512,787
704	1,053	63,403	-	63,403
18,809	37,901	2,102,255	-	2,102,255
40,278	82,469	4,483,334	-	4,483,334
<u>2</u>	<u>-</u>	<u>96,034</u>	<u>(96,034)</u>	<u>-</u>
<u>59,793</u>	<u>121,423</u>	<u>6,745,026</u>	<u>(96,034)</u>	<u>6,648,992</u>
\$ <u>490,018</u>	\$ <u>1,044,747</u>	\$ <u>53,943,420</u>	\$ <u>-</u>	\$ <u>53,943,420</u>

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

	Teachers' Retirement and Pension Systems	Employees' Retirement and Pension Systems	State Police Retirement System
Additions:			
Contributions			
Employers	\$391,639	\$736,692	\$86,172
Members	494,698	288,350	8,579
State contributions on behalf of local governments	751,945	-	-
Contribution interest	-	592	-
Total Contributions	<u>1,638,282</u>	<u>1,025,634</u>	<u>94,751</u>
Investment Income			
Net depreciation in fair value of investments	868,109	475,684	39,543
Interest	269,618	149,736	12,516
Dividends	1,078,351	598,698	49,709
Income Before Securities Lending Activity	<u>2,216,078</u>	<u>1,224,118</u>	<u>101,768</u>
Gross income from securities lending activity:	45,097	25,013	2,077
Securities lending borrower rebates	(36,594)	(20,296)	(1,686)
Securities lending agent fees	(574)	(319)	(26)
Net income from securities lending activity	<u>7,929</u>	<u>4,398</u>	<u>365</u>
Total Investment Income	<u>2,224,007</u>	<u>1,228,516</u>	<u>102,133</u>
Less investment expenses:			
Investment advisory fees	(224,746)	(124,589)	(10,355)
Net investment income	<u>1,999,261</u>	<u>1,103,927</u>	<u>91,778</u>
Transfers from other systems	<u>-</u>	<u>-</u>	<u>-</u>
Total Additions	<u>3,637,543</u>	<u>2,129,561</u>	<u>186,529</u>
Deductions:			
Benefit payments	2,266,458	1,430,163	122,142
Refunds (Note 7)	30,286	35,462	304
Administrative expenses (Note 2)	22,195	16,645	275
Transfers to other systems	(3,870)	4,830	28
Total Deductions	<u>2,315,069</u>	<u>1,487,100</u>	<u>122,749</u>
Net (decrease) increase in plan assets	<u>1,322,474</u>	<u>642,461</u>	<u>63,780</u>
Net position restricted for pensions			
Beginning of the fiscal year	<u>31,480,453</u>	<u>17,452,939</u>	<u>1,446,548</u>
End of the Fiscal Year	<u>\$32,802,927</u>	<u>\$18,095,400</u>	<u>\$1,510,328</u>

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

AND PENSION SYSTEM

PLAN NET POSITION BY SYSTEM

June 30, 2019

Judges' Retirement System	Law Enforcement Officers' Pension System	Total
\$ 21,737	\$ 65,314	\$ 1,301,554
3,176	12,488	807,291
-	-	751,945
-	-	592
<u>24,913</u>	<u>77,802</u>	<u>2,861,382</u>
12,705	28,034	1,424,075
4,139	8,516	444,525
16,074	33,843	1,776,675
<u>32,918</u>	<u>70,393</u>	<u>3,645,275</u>
672	1,425	74,284
(545)	(1,157)	(60,278)
(9)	(18)	(946)
118	250	13,060
<u>33,036</u>	<u>70,643</u>	<u>3,658,335</u>
(3,347)	(7,089)	(370,126)
<u>29,689</u>	<u>63,554</u>	<u>3,288,209</u>
-	-	-
<u>54,602</u>	<u>141,356</u>	<u>6,149,591</u>
34,347	73,110	3,926,220
193	1,155	67,400
64	605	39,784
-	(988)	-
<u>34,604</u>	<u>73,882</u>	<u>4,033,404</u>
19,998	67,474	2,116,187
<u>470,020</u>	<u>977,273</u>	<u>51,827,233</u>
\$ <u>490,018</u>	\$ <u>1,044,747</u>	\$ <u>53,943,420</u>



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